Overview of fishing strategies and tactics classifications in the Bay of Biscay

How fishing strategies and tactics relate to common dolphin by-catch ?

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Fishing activity variables

We extracted vessels' fishing activity from the French SIH system (Système d'Information Halieutique, i.e. Fishing Information System: Leblond et al., 2008), and more specifically from SACROIS, a collation of data from logbooks (catch and landings), Vessel Monitoring Systems (for vessels >12m), commercial sales and activity surveys. These data are combined, classified, and qualified according to a standardized methodology developed by Demanèche et al. (2010). SACROIS allowed us to gather all available information on fishing activities (fishing gear, taxa caught, temporal and spatial activity), with a high degree of confidence in their accuracy. This dataset was complemented by information on vessel characteristics from the FPC (Fichier Pêche Communautaire, i.e. Community Fishing Fleet Register) dataset.

We selected variables related to fishing behaviours such as a vessel's dimensions (length and gross tonnage), age, main power, home port district, and crew size from the FPC database (values declared annually). Using the SACROIS database, we then considered four main aspects of the vessels' activity: fishing gear, fished taxa, temporal and spatial activity. All the information extracted from SACROIS was available at the fishing sequence level, a set of fishing operations taking place on the same day, during the same fishing trip, in the same area, with the same gear and target species. For fishing gear, we extracted information on its identity (FAO nomenclature), dimensions, and mesh size. Information on fished taxa included taxon identity (FAO nomenclature), the associated fishing weight, and economic value. Taxon identity was provided at different taxonomic level (species, species group, family, order, and ISSCAAP code level): we extracted information about the other corresponding taxonomic levels from the available one by using the FAO classification table, linking taxonomic codes with their higher taxonomic level where possible. We collected the temporal activity using the date of the fishing sequence (then used to describe month, trimester of activity, and the number of days spent at sea), time spent at sea (in decimal hours), and estimates of time spent fishing (i.e. fishing effort) obtained using the Algopesca algorithm (Ifremer, 2021 ; Weiss, 2020). We used the provided spatial location of the fishing sequence (i.e. ICES areas and distance from the coast where the fishing sequence took place) to describe how the fishing activity was spatially distributed. This information was available at various scales, among which we selected the exclusive economic zone, ICES divisions, statistical rectangles and sub-rectangles, and distance from the coast (possible values: offshore, coastal, mixed, 3-12 miles zone, 3 miles zone, fringing, foreshore, estuary, fluvial, pond).

From fishing activities to fishing behaviours

We used the fishing activity metrics previously described in SACROIS to define annual or trip level fishing behaviour. These behaviours were always considered at three scales (two at trip level): overall activity throughout the year (sum, at annual level only), average activity between fishing trips (or sum at trip level), and between fishing sequences (and their variability, calculated using the population standard deviation). Fishing trips sometimes overlapped two consecutive years; in this case, the fishing trip was attributed to the year in which it began, except when it was the only fishing trip available for the second year of overlap (a single occurrence). This methodology allows us to better account for any temporal variations.

We first considered the main profile of the activity, i.e. the sum or average of the quantitative variable values: weight, economic value, time spent at sea (decimal hours and days spent at sea), number of fishing trips (at year level only) and sequences, fishing effort, but also weight and economic productivity (values corrected for fishing effort). For the qualitative variables (taxa, gear, areas, periods), the main profile consisted of determining the main category of activity. We used different approaches to define a main category: the one associated with the greatest number of fishing sequences, the greatest fishing weight, economic values, effort, weight productivity, or economic productivity. Once again, determining the main categories was carried out for the three (or two at trip level) scales described initially, except for the temporal metrics (month, trimester), for which there are few variations within a fishing trip. In these cases, we only took into account the values of the criteria averaged over the fishing sequence. For the fishing trip and fishing sequence scales, there were two types of methodological approach: either the main categories were considered to be those with the highest value for the selected criterion on average over the fishing trip or sequence, or for each fishing trip or sequence, we considered the category with the highest value for the selected criterion and then retained the most frequent category from all the fishing trips or sequences. At the level of the fishing sequence, the second method was not applicable for the fishing effort or productivity criteria, nor for the gear, spatial, or temporal activity metrics, given that fishing effort, gear used, location, and period of activity are constant throughout the sequence. For variables often represented by several categories throughout the year/trip and of particular importance (fished taxa at both levels, gear only at annual level), we also considered the second (and third for fished taxa, due to their frequent high diversity) most important categories, but only at the scale of the whole year/trip. When determining the main categories, some ex-aequo cases (i.e. several categories having the same final weight) rarely occurred; in such cases, the first category to appear was retained (considering that this order of appearance should be distributed randomly).

Besides using quantitative criteria to determine the main category of activity, we also calculated the value of the criterion associated with each of the main categories. At the scale of the fishing trip or sequence, we considered either the average value of the criterion for the main categories determined for each trip or sequence, or the highest possible average criterion value over all fishing trips or sequences for a same category. For activity metrics of great importance (gear, fished taxa), we also considered the average value of the criterion between all the existing categories, including the values of the criterion already averaged at the scale of the fishing trip or sequence. In the case of particularly frequently associated categories, we also considered the values associated with each of them, to better describe mixed strategies. Strongly associated categories were identified using mining association rules with the Apriori algorithm (Agrawal et al., 1993 ; "arules" package, Hahsler et al., 2005, set with support of 0.1, confidence of 0.8, only searching for association couples), with a chi-square rule evaluation measure (0.1 threshold). For ICES divisions, we always provided the quantitative activity for the 27.8.a and 27.8.b areas as these areas were used for selecting the vessels we studied. We also did the same for distance to the coast (aggregated in three categories: "Coastal, <12 miles", "Offshore", "Mixed"), trimesters and month of activity as in these cases a limited number of categories are present and could be easily described. For each precisely described category (because strongly associated with others), we also described how other qualitative variables varied within it. Thus, for each precisely described spatial areas, we computed at a year scale the number, the Simpson diversity index (using weight or fishing effort as abundance proxy) and the main category for gear, species, family. We did the same for each previously described activity period, but adding the number of activity areas (ICES division and statistical rectangle), their Simpson diversity and main class during that period.

Finally, we determined how diverse the activity profiles were. For the quantitative variables, we considered the standard deviation of the population at the different scales of interest, as well as the mean standard deviation at the trip and sequence scales, and how standard deviation varied (again calculated using the standard deviation) between trips and sequences. For qualitative variables, we calculated the proportion of used criterion in the main (but also in the second or third) category, and also the number of different categories at the different scales (mean values and standard deviations at the trip and sequence scales). We also considered other measures of diversity: the Simpson and Shannon indices (Shannon, 1948 ; Simpson, 1949). These indices better account for the variation in abundance associated with each taxon by correcting for potential variation in abundance, but the two indices are not weighted in the same way: the Shannon index gives more weight to rare taxa than the Simpson index (DeJong, 1975). Abundance was approximated by the number of appearances in fishing trips or sequences, and by fishing weight for fished taxa or fishing effort for other qualitative variables. Again, we examined how these measures might vary between fishing trips or sequences by calculating their mean values and standard deviations between trips or sequences. As previously, the sequence level of variation was not considered for gears, spatial and temporal categories, as these are constant within a fishing sequence. We did not consider either the trip level of variation for the month and trimester as in most cases one trip is associated to only one month or trimester.

Additional information was also extracted from gear dimensions (linear length and surface area where available), mesh size, and timing of fishing (day, month, trimester), with mean values and standard deviation over the year, weighted or not by the quantitative values associated with the mesh size used (fishing effort, weight, economic value, productivity metrics). In our application, we did not retain any quantitative information on the dimensions of fishing gear because of too much uncertainty and a clear lack of standardisation for these measurements in our dataset. Yet, we retained information on the diversity of gears' dimensions under the expectation that a skipper should be consistent in their declaration over time, and therefore the number of different dimensions used by a same vessel should be reliable. We have also considered the different mesh size values as categories, for which we have applied the same methodology as above, but only at the scale of the whole year.

From fishing behaviours to fishing strategies/tactics

Once the annual/trip-level fishing behaviours of each vessel available, there were respectively used to determine annual fishing strategies and fishing trip tactics. The first step was to select the vessels/trips and fishing behaviours with sufficient information for subsequent analyses. There was a non-negligible amount of missing data in the initial fishing activity variables, which are therefore carried over in the fishing behaviour variables. We discarded all vessels/trips that did not have the most basic information on fishing activity, i.e. on taxa fished (at least at group of species level), used gears, fishing volumes (weight and economic values), spatial activity (at least at ICES division level for vessels, and at statistical rectangle level for trips) and temporal activity (only for vessels, at least at trimester level).

To construct groups of fishing strategies/tactics, we then used hierarchical clustering on principal components (HCPC, Husson et al., 2010 ; using "FactoMineR" package, Lê et al., 2008). The HCPC consisted of two consecutive steps: first, all the fishing behaviours were synthesised using factorial analysis on mixed data (Pagès, 2004), then the strategy/tactic groups were obtained using a hierarchical kmeans clustering (Lu et al., 2008). The first step allowed us to reduce the dimensionality of the data and avoid any collinearity problems since most fishing behaviours are highly inter-correlated. This method also has the advantage of accounting for both quantitative and qualitative variables, by combining a principal component analysis and a multiple correspondence analysis (Bécue-Bertaut & Pagès, 2008). All quantitative variables were scaled before this analysis. The number of axes retained in the factorial analysis was determined using Kaiser's rule (Kaiser, 1970), i.e. by selecting all axes with an eigenvalue greater than one. Therefore, only the axes explaining the greatest proportion of the observed variance were retained. The second stage, hierarchical k-means clustering, is a classification algorithm that uses the output of hierarchical clustering (Ward's aggregation criterion) to initialise k-means clustering. We chose this method because it is computationally efficient, not sensitive to initialization problems, and applicable in a high-dimensional space (Gao et al., 2023). Another advantage is the sensitivity of this method to outliers (Gao et al., 2023), which is particularly interesting in our case because we expect such outliers to occur due to small-scale fishing, and we do not want these outliers to be assimilated into other groups of strategies. The number of clusters was estimated using the method proposed by Fang and Wang (2012), based on the maximization of cluster stability, estimated by bootstrap resampling (using "fpc" package, Hennig, 2023). This method can run into issues: the criterion may not reach a minimum value but typically plateau with large sample sizes (Ben-David et al., 2006 ; Krieger & Green, 1999). In that case, the optimal number of clusters is pragmatically the one for which the plateau is reached. Criterion convergence was graphically evaluated using the derivation and second derivation plots (after adjusting a regression using smoothing splines). We used 500 bootstrap runs for strategies, and 50 for tactics.

Patterns of missing data were not randomly distributed within the identified clusters, i.e. the fishing strategies/tactics. For some strategies/tactics, all the vessels in the cluster had available data for at least some of the discarded behaviours. For each strategy, we reintegrated the behaviours for which data were available into the dataset describing the vessels' behaviours. We then used these enriched datasets to check whether or not each strategy could be disaggregated and, if so, to produce more detailed sub-strategies. We tested for such clusterability using the Hopkins statistic (Hopkins & Skellam, 1954; "factoextra" R package, Kassambara & Mundt, 2020, 'get_clust_tendency' function) when the sample size was greater than 100 (minimum sample size required, with 10% sampled points: Cross & Jain, 1982) or using the dip statistic (Hartigan & Hartigan, 1985; "clusterability" R package, Adolfsson et al., 2019) when the sample size was strictly lower than 100. The first statistic was selected because of its ability to produce small clusters compared to other methods (Adolfsson et al., 2019). The second statistic was used when the first was not applicable and was selected because of its effectiveness with high-dimensional data (Adolfsson et al., 2019). The cluster method was then applied when the p-values associated with the statistics obtained were less than one. The optimal number of clusters was estimated using the Calinski-Harabasz index (rather than the bootstrap methodology): this index tends to produce small estimates (Dimitriadou et al., 2002 ; Milligan & Cooper, 1985 ; Zalay, 2020) allowing a progression in the level of detail of the sub-strategies and bootstraps were too costly computation-wise. This method was applied recursively within each cluster until clusterability was exhausted.

A grapical illustration of the methodological workflow presented in the three first section is provided below.

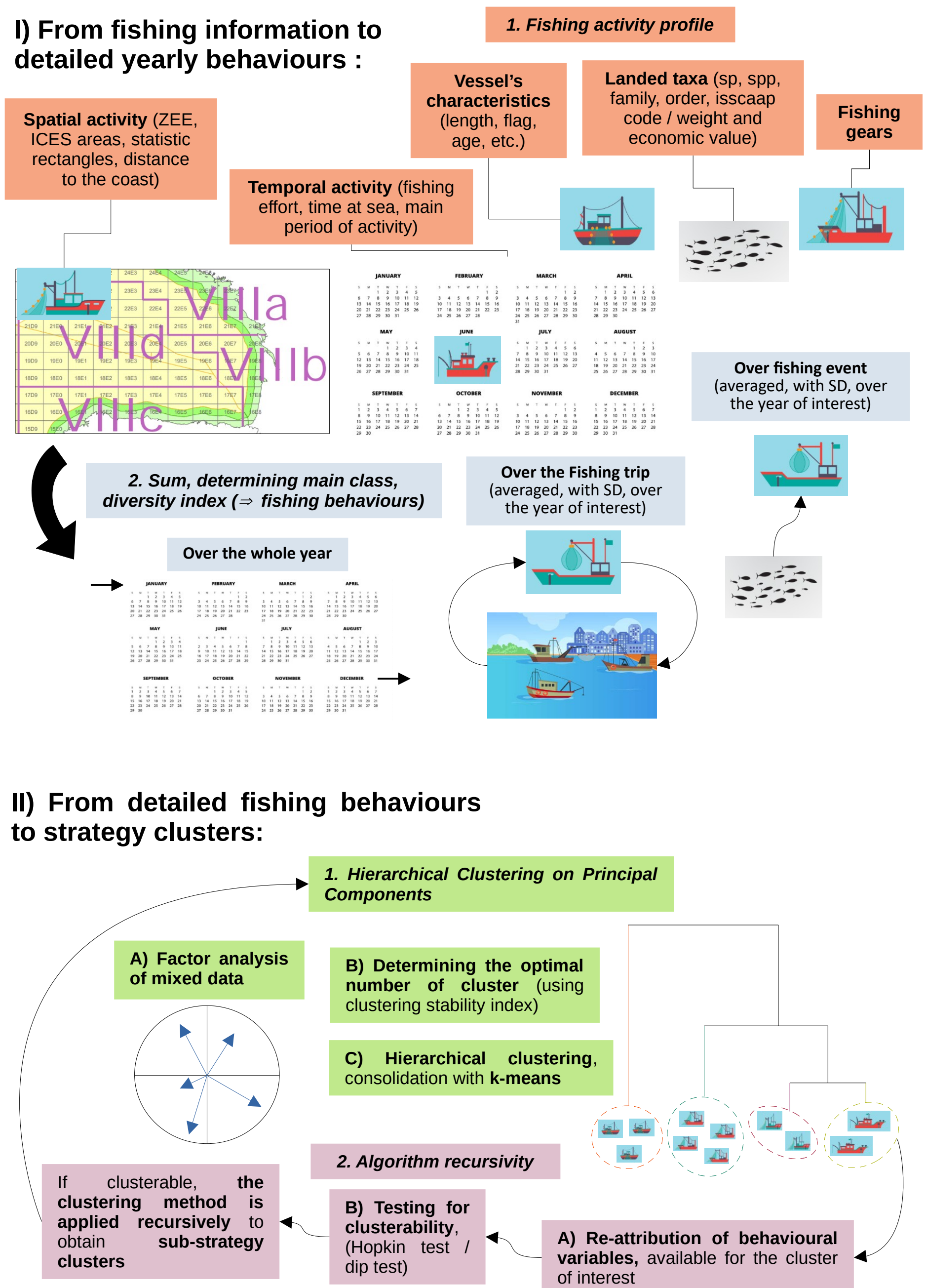


Figure 1: Methodological Workflow

Labeling fishing strategies/tactics

The main association between fishing strategies/tactics and behaviours were revealed using the ‘FactoMineR’ package (Lê et al., 2008): for quantitative variables, it compares the mean of the groups with the overall mean (Husson et al., 2016); for qualitative variables, it tests the association of the categories with each group using a hypergeometric distribution test. This function also gives, for each category, the proportion of the cluster included in the category (hereafter referred to as the exclusivity of the cluster for that category). We retained only those fishing behaviours that were significantly associated with the group of interest to describe it. We then considered the strength of the association between the behaviour metrics and the

Table 1: Used labels as a function of exclusivity values

Exlusivity_value	Importance_label	Description_label
x >95%	Determinant	"" clusters
95%> x >80%	Strongly predominant	clusters with a strong predominance of ""
80%> x >65%	Predominant	clusters with a predominance of ""
65%> x >50%	Major	clusters with a majority of ""
50%> x >35%	Strong component	clusters with a strong "" component
35%> x >20%	Component	clusters with a "" component
20%> x >5%	Minor component	clusters with a minor "" component

cluster to describe each cluster. For quantitative variables, this strength was estimated by the distance between the cluster mean and the overall mean: if this distance was greater than one or two times the standard deviation, the cluster was defined as high or particularly high in relation to the behaviour. For categorical variables, the strength of association was defined by exclusivity values, with categories defining a group as a whole or as a component depending on these values. The scales used to define the groups are shown in the table below. To simplify nomenclature, behavioural descriptors were grouped into thematic sets (primary, secondary, or tertiary taxa, gears, areas, time periods; weight, economic value, measures of effort, productivity, diversity, and vessel characteristics). Where behavioural measures from the same set appeared for different association strengths, only the highest strength level was retained for description. For convenience, groups have been more succinctly labelled in the Results and Discussion section by retaining only the strongest observed associations as descriptors, i.e. defining, predominant or major categories and particularly high quantitative metrics. Importantly, the strategies/tactics described include both mixed strategies/tactics, where different behaviours of the same class coexist over the course of the year/trip, and heterogeneous strategies, where secondary non-systematic behaviours occur. Consequently, the appearance of a behaviour in the nomenclature does not necessarily mean that this behaviour is present for all vessels in the strategy.

Strategies in the Bay of Biscay

We carried out all the subsequent analyses using R software, version 4.3.1. All data manipulations were performed using the "data.table" R package (Barrett et al., 2024). Graphs were produced using the "ggplot2" R package (Wickham, 2016) and its add-ons ("ggeffects", "ggalluvial", "ggnetwork"). We applied our methodology to the part of the Bay of Biscay with the highest by-catch risk for cetaceans (ICES, 2019 ; Peltier et al., 2014 ; Rouby et al., 2022), i.e. the French coastal part (areas 27.8.a and 27.8.b), from 2000 to 2022 (no SACROIS data available before). We selected all fishing vessels (on an annual basis) in the SACROIS database that had carried out at least one fishing operation in this area during the studied period (N=47,209), with an extension for the first months of 2023, necessary to take into account fishing trips overlapping 2022 and 2023. It should be noted that vessels with anecdotal activity in this zone or vessels with mixed spatial strategies, operating only partially in this zone, were included. We made this choice to be as conservative as possible when selecting the vessels, to avoid omitting vessels potentially associated with cetacean by-catch.

To check if this classification was consistent with previously established ones (SIH fleets applied on gillnetters, DEFIPEL fleets applied on trawlers, and ISIS fleets), we produced tables of comparisons (see Correspondence section) showing the correspondence between the present classification strategies and other classification categories. Correspondence is only shown if a category (from another classification) represents more than 20% of all available data in a given strategy. For each corresponding category, we provided the proportion of vessels that this category represents among all categories matching the strategy of interest. For each strategy we have also provided the number of vessels in that strategy as well as the number of vessels in the corresponding categories from other classifications, in order to provide information on the coverage of the different classifications of the total vessel population.

Bycatch distribution within strategies/tactics

Data on of common dolphin by-catch were obtained from two different sources: direct reports from fishermen (available in SACROIS) and independent on-board observations (OBSMER program). For all these sources, we have only selected events occurring in ICES Divisions 27.8.a and 27.8.b. Direct declarations by fishermen were only available since 2019 (application of the French law requiring these declarations in fishing logbooks). OBSMER observations are almost exclusively between 2008 and 2010 or 2015 and 2022 (rare observations in 2013 and 2014). We examined the distribution of reported by-catch events in the different strategies over the whole period studied. We looked at both the number of events and their intensity (number of individual by-caught).

For the four most important strategies in terms of the number of by-catch (see Results and Discussion section), the same procedure was applied at the trip level as was used to determine fishing strategies. We thus obtained groups of homogeneous fishing trips in terms of fishing behaviour, referred to as fishing tactics. These fishing tactics allowed us to better understand which types of fishing trips were most at risk of common dolphin by-catch. Note that the OBSMER dataset does not use the same trip IDs as SACROIS. Since the tactic classification is based on SACROIS data, in order to correctly attribute OBSMER bycatch events to a given tactic, we needed to find the correspondence between the trip IDs of the two sources. To find matching trip IDs, we used the available information on trip fishing activity from the OBSMER and SACROIS datasets: we searched for trips with the same vessel ID, landing port, and date. As the trip date can be different in the two datasets, we sometimes have several SACROIS trips overlapping the same OBSMER trip: in this case, we kept the SACROIS trip with the highest number of fishing sequences included in the OBSMER trip. There is also a significant proportion of OBSMER trips that were found to have no correspondence with a SACROIS trip when using these selection criteria (~26% of OBSMER bycatch observations). These unidentified trips were then not used for further analyses (i.e. the corresponding observed bycatch events were not attributed to a specific tactic).

Reading/Interpretation Guide

The main body of this document describes which strategies and tactics were found to be associated with accidental bycatch of common dolphins in the Bay of Biscay, with detailed descriptions of all strategies and tactics associated with such bycatch events. A synthesis and discussion of these results can be found in the next section. The following sections consist of the presentation of tables and graphs illustrating the bycatch distributions and associated strategies/tactics descriptions. Descriptions of all strategies, including those not associated with bycatch events, can be found in the second Appendix ("Appendix II: All Strategy Descriptions").

Description of Bycatch Events

The first output section ("Distribution of Bycatch") shows how bycatch events and captured dolphins (corrected or not for fishing effort/sampling coverage for SACROIS/OBSMER data) are distributed across the different strategies and tactics, and how this distribution evolves over the years. The second and third output sections ("Description of strategies" and "Description of tactics") describe in detail the main strategies and tactics associated with bycatch events. In the introduction to the descriptions of strategies ("Global distribution and temporal evolutions"), we first described the temporal evolution of the size of strategies over years, for the largest and those with the most inter-annual variation. We also presented the way in which at-risk strategies transition to or from other strategies between consecutive years (note that strategies are computed on an annual scale, and therefore a same ship can change its strategy over years). Further descriptions of strategy and tactics are then provided, only for the most risky strategies and tactics (see introductory texts at the beginning of the output sections for details).

Synthesis and cautions notes on the classification methods used

As explained in Materials & Methods, strategies are assigned to each vessel on an annual scale based on an unsupervised classification using many annual metrics of fishing activity, both quantitative (fishing effort, weight, economic value, etc.) and qualitative (main gear, taxa fished, area visited, period of activity, etc.). Annual fishing activity metrics are computed from SACROIS data: all vessels present in this dataset and having at least one fishing sequence in ICES divisions 27.8.a and 27.8.b during the year of interest were initially retained for analysis. Only (annual) vessels that meet minimum information requirements (information on gear used, taxa caught, weight caught and associated economic value) are then classified into strategies. This includes foreign vessels not present in the FPC data, for which we may have incomplete information on their fishing activity: it is important to keep in mind that their classification is based on what is known from the French administration and could vary when integrating their whole activity pattern. Similarly, many other SACROIS vessels have incomplete information (for example, of all the annual vessels present in SACROIS, 13.6% have no information on fishing effort, and 78.3% of the other vessels have at least one fishing sequence without information on fishing effort). Classifications were performed using all metrics common to retained fishing vessels, excluding *de facto* all variables for which information was not available in at least one fishing vessel. These variables (such as fishing effort) can then be reintegrated into higher-level strategy classifications (see section "From fishing behaviours to fishing strategies/tactics" for details). Reintegration of data is specific to each set of strategies: each set of sub-strategies should then be considered separately when interpreting the results (for example, it is possible to compare sub-strategy "58.2" with "58.3", but not with "65.1", as they are not from the same strategy; if we want to compare the two latter sets of vessels, only a lower level comparison between strategies "58" and "65" should be considered). In the same way, it should be kept in mind that each strategy level is obtained separately, so it does not make sense to compare strategies from different levels (especially when considering quantitative variables, as the importance of such variables for one strategy is determined relative to its values in all other strategies, but also for qualitative variables: some higher level strategies could be very specific subset of lower level strategies, e.g. a gear of relatively low importance could become predominant after further segregation). Still, higher level strategy should be interpreted as a continuation of associated lower level strategies (e.g. if we consider a first level strategy with all vessels using the same gear, this gear will not appear as a descriptor of the higher level strategies, as the whole population of vessels is completely homogeneous for this metric). To avoid overwhelming information, we choose to limit the representation of strategy here to the third first level of precision, but higher-level strategies could be considered for sufficiently large strategies and could be useful for various fine-scale applications.

Description of strategies/tactics

Sections describing strategies or tactics all follow the same structure that will be detailed here. First, we detailed the number of vessels in the strategy and how they were distributed over the years. This distribution was then used to determine the "reference year" (i.e., the year with a maximum number of ships), which will be used as the basis for all graphical representations. In cases with years with the same amount of vessels for a given strategy, the reference year was the most recent year (unless one of the year was associated with an accidental bycatch in which cases we retained it instead). We also provided the distribution of vessels in the upper level strategy for the first and second level strategies, or the distribution of vessels in the tactics for the most high-risk third level strategies.

Synthesis Table

The following table is crucial for the interpretation of each strategy/tactic: it consists in highlighting which metrics mainly describe a given strategy (see section "Labeling fishing strategies/tactics" for more details).

The first part of the table shows the most important qualitative descriptors (variable name in the middle column and category value, i.e. descriptor, in the right column), ordered by their strength of association with the described strategy/tactic (left column). It is important to note that this table is not exhaustive, the variables used in the classification are grouped here by thematic sets (for example, behind the variable "species" we actually group different means of estimating which species are mainly fished; according to catch weight, associated effort, economic value; and at what scale; i.e. using cumulated value over the whole year or values averaged over fishing trips or sequences). The second part of the table shows the main quantitative descriptors (variable name in the middle column), divided into two groups (high values/very high values) according to the amplitude of the difference with the general population of vessels (the right column simply attests that these variables are significantly higher in this strategy compared to the average values in all the others). Again, we grouped qualitative variables by thematic set. Description of set of variables and correspondence with alias used in synthesis tables (middle column) are described in the table below. In the same way, we provided the table of correspondence in the first appendix ("Appendix I: Definition tables for ISSCAAP codes and stock codes") for ISSCAAP and stock codes present in the description tables. The areas used in the description tables come from the ICES spatial division nomenclatures, maps locating each entity can be found on the ICES website (https://gis.ices.dk/sf/index.html) or the IFREMER website (https://peche.ifremer.fr). In these quantitative variables, we distinguished two main subgroups: the general quantitative values (activity metrics such as catch weight, effort, economic value) and the quantitative value associated with a specific category. The latter correspond to the same activity metrics, but calculated specifically for a given category only, in order to better describe frequently associated categories (see section "From fishing activities to fishing behaviours" for details).

In the original association strength analysis, the same category of a given qualitative variable or quantitative variable from the same thematic set can be found several times, depending on how it was calculated (on which scales, using which metrics): in this case, we only kept the highest association strength in the description table. This level of synthesis is necessary to summarize the available information, but for a more detailed study of one or a few strategies/tactics in particular, it might be useful to favor a higher level of precision (e.g., to better distinguish taxa associated with high economic value, such as lobster, but associated with relatively low weights, or taxa fished consistently throughout the year, and therefore associated with significant fishing effort, but in relatively small quantities; or to better understand the meaning of quantitative variables, e.g. whether a variation in catch is temporal or between taxa/gears fished). Note that adding percentages of the same type of variable is not necessarily meaningful, as variables from the same set are calculated using different types of metrics: for example, more than 50% of vessels following the same strategy may mainly catch one species in terms of economic value, but the same proportion may mainly catch another species in terms of weight during the same period.

Table 2: Description of used set of quantitative variables

Classification type	Described activity	Alias used to refer to variables set	Detailed description of the set
		value_weight	Fishing weight values
		value_eco	Fishing economic values
		value_effort	Fishing effort values (time spent fishing)
		value_weight.prod	Fishing weight productivity (weight/effort) values
		value_eco.prod	Fishing economic productivity values
		sd_weight	Variations in weight values
		sd_eco	Variations in economic values
		sd_effort	Variations in fishing effort values
		sd_weight.prod	Variations in weight productivity values
	Fishing volumes and effort	sd_eco.prod	Variations in economic productivity values
		div_spe	Diversity metrics (richness, Simpson's and Shannon's indexes) at species scale
		div_sde_spe	Temporal variations in diversity metrics at species scale
		div_spp	Diversity metrics at group of species scale
		div_sde_spp	Temporal variations in diversity metrics at group of species scale
		div_family	Diversity metrics at family scale
		div_sde_family	Temporal variations in diversity metrics at family scale
		div_order	Diversity metrics at order scale
		div_sde_order	Temporal variations in diversity metrics at order scale
		div_isscaap	Diversity metrics at ISSCAAP categories scale

Table 2: Description of used set of quantitative variables *(continued)*

Classification type	Described activity	Alias used to refer to variables set	Detailed description of the set
		div__sde__isscaap	Temporal variations in diversity metrics at ISSCAAP categories scale
		prop__spe	Proportion values for the main species
		second__spe	Volume and proportion values associated with the second main species
		third__spe	Volume and proportion values associated with the third main species
		prop__spp	Proportion values for the main group species
		second__spp	Volume and proportion values associated with the second main group of species
		third__spp	Volume and proportion values associated with the third main group of species
		prop__family	Proportion values for the main family
		second__family	Volume and proportion values associated with the second main family
		third__family	Volume and proportion values associated with the third main family
		prop__order	Proportion values for the main order
		second__order	Volume and proportion values associated with the second main order
		third__order	Volume and proportion values associated with the third main order
		prop__isscaap	Proportion values for the main ISSCAAP code
		second__isscaap	Volume and proportion values associated with the second main ISSCAAP code
	Taxonomic diversity	third__isscaap	Volume and proportion values associated with the third main ISSCAAP code
		nb__engine	Number of gear used
		div__engine	Diversity indexes (Simpson, Shannon) on used gear
		div__sde__engine	Temporal variations in diversity indexes on used gear
		prop__engine	Proportion values for the main used gear
		second__engine	Volume and proportion values associated with the second main used gear
		nb__engines__dim	Number of different declared gear dimensions
		div__engines__dim	Diversity indexes (Simpson, Shannon) on declared gear dimensions
		nb__mesh__size	Number of different used mesh size
		div__mesh__size	Diversity indexes on used mesh size
		prop__mesh__size	Proportion values for the main used mesh size
		mean__mesh__size	Averaged mesh size values
	Diversity in used gears	sde__mesh__size	Variation in mesh size values
		nb__zee	Number of EEZ (Economic Exclusive Zone) visited
		div__zee	Diversity indexes on visited EEZ
		div__sde__zee	Temporal variation in diversity indexes on visited EEZ
		prop__zee	Proportion values for main visited EEZ
		nb__gradient	Number of exploited gradients to the coast
		div__gradient	Diversity indexes on exploited gradients to the coast
		div__sde__gradient	Temporal variation in diversity indexes on exploited gradients to the coast
		prop__gradient	Proportion values for main exploited gradients to the coast
		nb__ICES__divis	Number of visited ICES divisions
		div__ICES__divis	Diversity indexes on visited ICES divisions
		div__sde__ICES__divis	Temporal variation in diversity indexes on visited ICES divisions
		prop__ICES__divis	Proportion values for main visited ICES divisions
		nb__stat__rect	Number of visited ICES statistical rectangles
		div__stat__rect	Diversity indexes on visited ICES statistical rectangles
		div__sde__stat__rect	Temporal variation in diversity indexes on visited ICES statistical rectangles
		prop__stat__rect	Proportion values for main visited ICES statistical rectangles
		nb__stat__subrect	Number of visited ICES statistical subrectangles
		div__stat__subrect	Diversity indexes on visited ICES statistical subrectangles
		div__sde__stat__subrect	Temporal variation in diversity indexes on visited ICES statistical subrectangles
	Diversity in spatial activity	prop__stat__subrect	Proportion values for main visited ICES statistical subrectangles

Table 2: Description of used set of quantitative variables *(continued)*

Classification type	Described activity	Alias used to refer to variables set	Detailed description of the set
		value_nb_seq	Number of fishing sequence
		sd_nb_seq	Variations in fishing sequence number
		nb_marees_year	Number of fishing trip
		value_time_efficiency	Proportion of time spent fishing relative to time spent at sea
		sd_time_efficiency	Variations in the proportion of time spent fishing relative to time spent at sea
		value_sea_time	Time spent at sea
		sd_sea_time	Variation in time spent at sea
		sea_year	Number of periods at sea (days, months, trimester)
		value_average_sea	Average period at sea (day, month or trimester number)
		sd_average_sea	Variations in period at sea
		div_days	Diversity indexes on date of activity (day scale)
		div_sde_days	Temporal variations in diversity indexes on date of activity
		div_months	Diversity indexes on month of activity
		div_trimester	Proportion values for main month of activity
		prop_month	Diversity indexes on trimester of activity
		prop_trimester	Proportion values for main trimester of activity
		sea_marees	Average duration (in days) of trips
	Diversity in temporal activity	sd_sea_marees	Variation in average duration (in days) of trips
		CARN_AGE	Fishing vessel age
		CARN_EFFECTIF	Fishing vessel crew size
Strategy	Vessel characteristics	NAVP	Vessel size, tonnage and power
		value_weight	Fishing weight values
		value_eco	Fishing economic values
		value_effort	Fishing effort values (time spent fishing)
		value_weight.prod	Fishing weight productivity (weight/effort) values
		value_eco.prod	Fishing economic productivity values
		sd_weight	Variations in weight values
		sd_eco	Variations in economic values
		sd_effort	Variations in fishing effort values
		sd_weight.prod	Variations in weight productivity values
	Fishing volumes and effort	sd_eco.prod	Variations in economic productivity values
		div_val_spe	Diversity metrics (richness, Simpson's and Shannon's indexes) at species scale
		div_sde_spe	Temporal variations in diversity metrics at species scale
		div_val_spp	Diversity metrics at group of species scale
		div_sde_spp	Temporal variations in diversity metrics at group of species scale
		div_val_family	Diversity metrics at family scale
		div_sde_family	Temporal variations in diversity metrics at family scale
		div_val_order	Diversity metrics at order scale
		div_sde_order	Temporal variations in diversity metrics at order scale
		div_val_isscaap	Diversity metrics at ISSCAAP categories scale
		div_sde_isscaap	Temporal variations in diversity metrics at ISSCAAP categories scale
		main_prop_spe	Proportion values for the main species
		propor_sde_spe	Variations in proportion values for the main species
		second_spe	Volume and proportion values associated with the second main species
		third_spe	Volume and proportion values associated with the third main species
		main_prop_spp	Proportion values for the main group species
		propor_sde_spp	Variations in proportion values for the main group of species
		second_spp	Volume and proportion values associated with the second main group of species
		third_spp	Volume and proportion values associated with the third main group of species
		main_prop_family	Proportion values for the main family
		propor_sde_family	Variations in proportion values for the main family
		second_family	Volume and proportion values associated with the second main family
		third_family	Volume and proportion values associated with the third main family
		main_prop_order	Proportion values for the main order
		propor_sde_order	Variations in proportion values for the main order

Table 2: Description of used set of quantitative variables *(continued)*

Classification type	Described activity	Alias used to refer to variables set	Detailed description of the set
		second_order	Volume and proportion values associated with the second main order
		third_order	Volume and proportion values associated with the third main order
		main_prop_isscaap	Proportion values for the main ISSCAAP code
		propor_sde_isscaap	Variations in proportion values for the main ISSCAAP code
		second_isscaap	Volume and proportion values associated with the second main ISSCAAP code
	Taxonomic diversity	third_isscaap	Volume and proportion values associated with the third main ISSCAAP code
		div_val_gear_type	Diversity metrics (richness, Simpson and Shannon indexes) on used gear
		div_sde_gear_type	Temporal variations in diversity metrics on used gear
		prop_gear_type	Proportion values for the main used gear
		propor_sde_gear_type	Variations in proportion values for the main used gear
		div_val_dimension	Diversity metrics on gear dimensions
		div_sde_dimension	Temporal variations in diversity metrics on gear dimensions
		prop_dimension	Proportion values for the main gear dimensions
		propor_sde_dimension	Variations in proportion values for the main gear dimensions
		div_val_mesh_size	Diversity metrics on used mesh size
		div_sde_mesh_size	Temporal variations in diversity metrics on used mesh size
		prop_mesh_size	Proportion values for the main used mesh size
		propor_sde_mesh_size	Variations in proportion values for the main used mesh size
		value_mesh_size	Averaged mesh size values
	Diversity in used gears	sd_mesh_size	Variation in mesh size values
		div_val_zee	Diversity metrics on visited EEZ (Economic Exclusive Zone)
		div_sde_zee	Temporal variation in diversity metrics on visited EEZ
		prop_zee	Proportion values for main visited EEZ
		propor_sde_zee	Variations in proportion values for main visited EEZ
		div_val_gradient	Diversity metrics on exploited gradients to the coast
		div_sde_gradient	Temporal variation in diversity metrics on exploited gradients to the coast
		prop_gradient	Proportion values for main exploited gradients to the coast
		propor_sde_gradient	Variations in proportion values for main exploited gradients to the coast
		div_val_ICES_divis	Diversity metrics on visited ICES divisions
		div_sde_ICES_divis	Temporal variation in diversity metrics on visited ICES divisions
		prop_ICES_divis	Proportion values for main visited ICES divisions
		propor_sde_ICES_divis	Variations in proportion values for main visited ICES divisions
		div_val_stat_rect	Diversity metrics on visited ICES statistical rectangles
		div_sde_stat_rect	Temporal variation in diversity metrics on visited ICES statistical rectangles
		prop_stat_rect	Proportion values for main visited ICES statistical rectangles
		propor_sde_stat_rect	Variations in proportion values for main visited ICES statistical rectangles
		div_val_stat_subrect	Diversity metrics on visited ICES statistical subrectangles
		div_sde_stat_subrect	Temporal variation in diversity metrics on visited ICES statistical subrectangles
		prop_stat_subrect	Proportion values for main visited ICES statistical subrectangles
	Diversity in spatial activity	propor_sde_stat_subrect	Variations in proportion values for main visited ICES statistical subrectangles
		div_nb_effort	Number of fishing sequence
		div_nb_day	Number of fishing day
		prop_month	Proportion values for main month of activity
		propor_sde_month	Variations in proportion values for main month of activity
		prop_trimester	Proportion values for main trimester of activity
		propor_sde_trimester	Variations in proportion values for main trimester of activity

Table 2: Description of used set of quantitative variables *(continued)*

Classification type	Described activity	Alias used to refer to variables set	Detailed description of the set
Tactic	Diversity in temporal activity	value_temp	Average period at sea (day, month or trimester number)
		sd_temp	Variations in period at sea

Graphical representation during the reference year

The descriptive graphs provided below are concrete examples of the pattern of fishing activity during the reference year associated with the strategy/tactic under study. We first present the distribution of vessel length and flag during the reference year, then the volume of activity (per vessel, annual/trip fishing weight and effort, for strategies/tactics respectively) and patterns (annual, trip average/trip days at sea number, respectively for strategies/tactics; annual and cumulative fishing weight and effort per month, i.e. distribution per vessel and per year or distribution of sum of annual vessel values, for strategies, and only cumulative weight per month, for tactics). We then illustrated the main taxa fished and the gear used during the reference year, again using for main species, families and gear, annual/cumulative fishing weight and effort for strategies, or cumulative fishing weight only for tactics. Next, we provided illustrations of the diversity of fishing activity during the reference year, using first the trip-averaged/trip-level number of species, families fished (for strategy/tactic, respectively), the annual/trip-level number of gears used (for strategy/tactic, respectively), and the annual/trip-level proportion of fishing weight associated with the main taxa fished (species and family) or gears used (for strategy/tactic, respectively). Similarly, we provided the annual and trip-averaged number of ICES statistical rectangles (spatial areas) visited for strategies, and the trip-level number of ICES statistical rectangles visited, as well as the proportion of fishing weight in the main ICES statistical rectangles visited for tactics. Finally, we provided information on the spatial distribution of activity with annual and cumulative fishing weight and effort per exploited gradient (i.e. area defined relative to distance from shore) for strategies, or cumulative fishing weight per gradient for tactics; and cumulative fishing effort and weight maps (at the ICES statistical rectangle scale) for both strategies and tactics. In these maps, statistical rectangles that have been visited but have no associated weight or effort values are shown in gray. In some rare cases there are errors in reporting, with reported visited areas being particularly distant from the main areas of activity. To obtain maps more representative of reality we have only mapped areas close to the Bay of Biscay. In all these figures, the combination of cumulative and individual graphs allows to better visualize, on the one hand, the global picture of the activity and, on the other hand, the possible inter-individual variations. All individual (vessel or trip level) graphs are a combination of a boxplot (to visualize quantiles) and a larger violin plot (to visualize the global population continuous distribution). Graphical outputs have been simplified for tactics (mainly only cumulative graph, on fishing weight) because the information associated with it is more limited (sometimes only a few trips within it), making individual graphs less relevant and the graph on fishing effort more prone to biased representations. Indeed, it is important to note that information on fishing effort is often incomplete (as detailed earlier), it could be particularly problematic to illustrate fishing effort distribution at a trip scale (with lower amount of data than year-scale activity pattern) because the lack of information could be spatially biased (fishing effort only available in certain areas, giving the appearance that the area is predominantly exploited) or biased as a function of fishing techniques (for example, fishing effort is rarely provided for miscellaneous engine).

Comparisons with former classifications

The last document section (Correspondence with previous classifications) allows us to compare the strategy classification obtained here with previously established fleet/strategy classifications. Some of these classifications are specific to a defined set of vessels (DEFIPEL: trawlers only, SIH: gillnetters only) or more general (ISIS, IFREMER, DCR). Contrary to the present classification, some of these other classifications were carried out in more limited periods, the ISIS classification being available since 2010 and the SIH classification since 2008. In addition, these classifications do not include all foreign fishing vessels or vessels that do not appear in the French administrative register. For all these reasons, these classifications are only available for a subset of the vessels considered in the present classification. This is why, in some cases, the proportion of vessels compared is so low relative to the number of vessels in the strategy. In this section, we have provided a comparison table for each of the previously established classifications, showing for each of the most at-risk strategies the main corresponding categories (representing at least 20% of the available set of common fishing vessels) in the other classification system. Note that this comparison system is generalized to all other strategies in Appendix II.

Concrete reading example on strategy 65

We propose here a concrete application of strategy/tactic interpretation using the first-level strategy 65 and all higher-level strategies and tactics associated with bycatch events.

Main first-level strategy

Using the definition table, we can observe that this strategy is primarily defined by sole fishing, with a predominant use of trammel nets. Vessels operate in both divisions 27.8.a and 27.8.b, with a higher proportion in the former. The majority of the vessels reach a maximum activity in the first trimester, with a frequent maximum activity in February in particular (for 20 to 35% of the vessels). Gadidae catches are of primary importance for 20 to 35% of the vessels, other catches of primary importance are present in a minor proportion (5 to 20% of the vessels), with catches of rays, spider crabs, sea bass, or turbots. The primary use of other gear types, such as set gillnets and bottom trawls, also occurs in small proportions, as well as a large diversity of primary activity months and trimesters. Quantitatively, this strategy differs from the rest of the fishing vessels by a high taxonomic diversity in the catches, but with a majority of the catches only concerning the main species fished (i.e. probably soles in the vast majority of cases), meaning that a large number of taxa are fished, but in a low proportion relative to the soles catches. This strategy is also characterized by a high variability in catch weight (probably between taxa, as we observed a high diversity and catch proportion for the main taxa fished) and by a high number of fishing sequences, although this varies a lot between fishing trips. As expected, this strategy also differs from others in the amount of Pleuronectiformes caught, especially sole, brill, and turbot. The following graphical illustrations also inform us that this strategy is mainly followed by vessels of less than or equal to 12 meters in length (more than 50% of the vessels) and never by vessels of more than 24 meters in length during the reference year. This strategy is mainly followed by French vessels (with a small minority of Dutch vessels). During the reference year, the median annual catch weight of a vessel was around 25 tons, with a median economic volume of around 125,000 euros. The median number of days at sea is around 100, with a median trip duration of one day or less. The temporal distribution of activity is rather homogeneous, with local peaks in catch weight and effort in February and October. The catch weight is dominated by sole, with secondary catches of hake, sea bass, spider crab, cuttlefish, Gadidae, and goosefish. The majority of catches were made using trammel nets, a significant proportion with gillnets and a small proportion with bottom otter trawls. The median number of species and families caught per trip is around 5, with the main taxa caught accounting for 50 to 60% of the catch. The vast majority of vessels use only one gear, but a significant proportion also use two gears (probably a combination of trammel nets and gillnets), with a large predominance of the first gear. The median number of statistical rectangles visited during the year is around 2 (but with a long distribution queue), with most vessels visiting an average of one, and more rarely two, statistical rectangles per trip. The vast majority of vessels operate in coastal areas or have mixed activity between offshore and coastal areas. The fishing activity is mainly distributed in the coastal area of the Bay of Biscay, from the south of Brittany to the north of Aquitaine.

Second-level strategies (65.1 and 65.2)

The second-level strategies (65.1 and 65.2) are again mainly defined by an activity of sole fishing mainly with trammel nets, but differ in several other aspects. The first strategy has a predominant share of vessels operating mainly in division 27.8.a (65 to 80% in this division, against 20 to 35% in 27.8.b and 5 to 20% in 27.7.e), while the second strategy has a large share of vessels operating in division 27.8.b (50 to 65% in this division, against 35 to 50% in 27.8.a). The first strategy also appears to be more diversified in its temporal activity patterns, with 50 to 65% of vessels with maximum activity in the first trimester and 40 to 70% with maximum activity in the second or third trimester (with high diversity in the month of maximum activity, all present in small proportions), while in the second, 80 to 95% of the vessels have maximum activity in the first trimester (with 35 to 50% of the vessels with maximum activity in February and 5 to 20% in March), against 5 to 20% of the vessels with maximum activity in the fourth trimester (with 35 to 50% of the vessels with a maximum activity in December). There are also differences in the type of gear used: in the second strategy, most of the vessels used mainly trammel nets (80 to 95%), with a small proportion of vessels using mainly set gillnets (5 to 20%), while in the first strategy the main gear used is more diversified (65 to 80% using trammel nets, and 5 to 20% each for set gillnets, bottom trawls or glass eel sieves). The main taxa caught, other than sole, also differed between the two strategies: In the first, seabass or Gadidae are the main taxa caught in 20 to 35% of cases, and a small proportion of vessels (5 to 20%) caught mainly either spider crab, brill, bib, Sparidae, cuttlefish or edible crab; in the second, brill was the most important species caught (probably in terms of economic value) in 50 to 65% of cases, and a small proportion of vessels (5 to 20%) also caught mainly hake, turbot, black seabram, goosefish, gurnard or Gadidae. Finally, from a quantitative point of view, the second strategy is also defined (in comparison with the first one) by high catch volumes (catch weight and economic values), particularly for soles, turbots, gurnards, rascasses, goosefishes; with high variation in these catch volumes, a higher taxonomic diversity of the taxa fished, but also with a higher proportion of the main taxa fished (i.e. mainly soles). It is also characterized by a higher number of fishing sequences and longer fishing trips, but with high variation in the number of fishing sequences and duration between fishing trips, and by a higher diversity in its temporal activity, with a longer period of activity (probably due to the existence of activity peaks at the beginning and end of the year). Graphical illustrations during the reference year confirm the pattern of activity described above, but also point out that the length of the vessels differs strongly between the two strategies, the first one being mainly associated with small vessels (between 7 and 12 meters), while the second one is mainly associated with large vessels (between 12 and 24 meters). Spatially, it also informs us that there is more offshore activity in the second strategy.

Third-level strategies from 65.2 (65.2.1 and 65.2.2)

We then described the third-level strategies 65.2.1 and 65.2.2 in more detail. Both strategies are defined by fishing for sole and brill (the primary fished stocks in both cases), with the predominant use of trammel nets and peaks of activity during the first trimester (and especially in February). The differentiation between the two strategies began to become more subtle as we increased the precision a lot and retained a more limited set of fishing vessels. In terms of the gear used, trammel nets are largely predominant in both strategies (80 to 95% of the vessels), with a small proportion of vessels using mainly set gillnets in the first strategy (5 to 20%), while this gear is more frequently of major importance in the second strategy (35 to 50%), with also a small proportion of vessels using drifting longlines in this second strategy (5 to 20%). In terms of spatial activity, for the first strategy, a predominant proportion of vessels fished in division 27.8.b (65 to 80%), with a smaller proportion of vessels fishing in 27.8.a (20 to 35%), while for the second strategy, a predominant proportion of vessels fished in division 27.8.a (65 to 80%), with a large proportion of vessels also having an activity of primary importance in division 27.8.b (50 to 65%) and a small proportion in divisions 27.8.d and 27.7.e (5 to 20% each). In terms of temporal activity, the first strategy presents a small proportion of vessels (5 to 20%) with peaks of activity in March or at the end of the year (fourth trimester, December), while the second strategy is associated with a small proportion of vessels with peaks in the middle of the year (April to July, third trimester). The first strategy is associated with a large proportion of vessels with secondary catches of sea bass (65 to 80%) and cuttlefish (20 to 35%), and third-order catches of turbot (35 to 50%) and Gadidae (20 to 35%), while the second is associated with secondary catches of goosefish, Gadiformes (35 to 50% of vessels each), turbot (20 to 35% of vessels), and third-order catches of sea bass (35 to 50%), turbot and skate (20 to 35% each). In both cases, pouting seemed to be a species of primary importance for some vessels, with a higher proportion in the second strategy (35 to 50% against 20 to 35%), together with catches of hake for this second strategy (for 20 to 35% of vessels). In both strategies, a significant number of other taxa are also reported to be particularly important for a small proportion of vessels (5 to 20%), but we have not detailed them here to compare only the most relevant components. In terms of quantitative volumes associated with taxa, the first strategy is characterized by a high relative importance (within strategy 65.2 and compared to other third-level strategies belonging to this subset) of soles (and more generally Pleuronectiformes), sea bass, and greater weever, while the second is characterized by a high relative importance of common ling and non-gadiform demersal fishes (ISSCAAP code 34). Quantitatively, the first strategy is defined by a relatively high proportion of catches associated with the main fished taxa, a relatively high number of EEZs visited, but with a predominant proportion of activity in the main EEZ (probably rare events in fishing events in the Spanish EEZ), and a relatively high number of gears used, but with a largely predominant use of the main gear used. For the second strategy, a relatively high diversity of gears used is also highlighted (with probably a higher proportion of vessels using more than one gear, as shown in the following graphs), with also a high taxonomic diversity, associated with a high proportion of catches of main species, groups of species and ISSCAAP categories, reflecting a high diversity of catches, especially at the level of families and orders, which is also confirmed by the relatively high catches of secondary groups of species, families, and orders. This second strategy is also associated with considerable variation in catch weight (probably between taxa, given the diversity of catches and the high proportion of main species caught). The graphs illustrate the main points described above but also highlight the difference in vessel size between the two strategies: in the first, vessels are mainly between 12 and 24 meters (with a median of 16 meters), while in the second, vessels are mainly over 16 meters (with a median of 20 meters), with also longer time at sea and trip duration in the second strategy. It is also noteworthy that the graphs on fishing gear show the higher importance of set nets in the second strategy during the reference year (probably due to the frequent use of second gears with equal catches between the gears). The graphs also clearly illustrate that the second strategy, in contrast to the first, operates predominantly offshore.

Tactics from the 65.2.1 strategy

Finally, we described all tactics associated with strategy 65.2.1 and with at least one bycatch event. Tactic 19 is defined as sole fishing in divisions 27.8.a (50 to 65% of trips) and 27.8.b (35 to 50% of trips), in coastal areas from the Loire estuary to the Bay of Arcachon (but excluding the Gironde estuary), with a part of the trips associated with primary catches of brill (35 to 50% of trips) and bib (20 to 35% of trips). Tactic 21 is defined mainly by sole fishing with trammel nets (with a relatively high proportion of catches made with this gear), with a strong predominance of trips in division 27.8.b (80 to 95% of trips against 5 to 20% for 27. 8.a), mainly on the coasts of Northern Aquitaine, in the statistical rectangles 19E8 and 18E8 (respectively 35 to 50% and 20 to 35% of the trips), but also to a lesser extent on the coast of Southern Poitou-Charentes (20E8, 21E8, 21E7). This tactic is also characterized by a high taxonomic diversity in the catches, but with a high variation in diversity metrics between fishing sequences, with primary catches of Scophthalmidae (35 to 50% of trips, with high volumes of turbots caught) and Gadiformes (20 to 35% of trips, with high volumes of hake caught), but also bib, seabream and seabass caught (5 to 20%). Finally, this tactic is also characterized by high relative values of fishing effort, a high number of fishing sequences and days at sea in each trip, and an activity later in the year than the rest of the tactics. Tactic 22 is defined by sole fishing using trammel nets, with high relative volumes of sole fished. Most of the trips are made in division 27.8.b (65 to 80% of the trips, compared to 20 to 35% in 27.8.a), and in particular in the coastal areas of the Médoc (19E8, major in 35 to 50% of the trips), and more generally between the island of Oleron and the Bay of Arcachon (statistical rectangles 18E8, 2OE8 and 20E7). A frequent peak of activity is observed during the first trimester (65 to 80% of the trips). It is characterized by a high relative weight of catches and economic volume, even if the volumes vary greatly between sequences, and by long fishing sequences, even if their duration also varies greatly. Finally, it is also characterized by a high relative taxonomic diversity in the catches, with a proportion of the trip associated with primary catches of Scophthalmidae (35 to 50%), Gadidae (20 to 35%), but also black seabream and sea bass (5 to 20% each).

Results and Discussions

We obtained 88 fishing strategies in the Bay of Biscay, of which 14 were associated with at least one accidental bycatch event. We have described here only the three strategies associated with the most bycatch events (strategies 58, 65, 71, associated with 80% of the bycatch events, see Distribution of Bycatch section) and the associated sub-strategies (up to the third level of recursivity) and tactics with observed bycatch events. A synthetic description (using only qualitative descriptors present in the majority of vessels/trips from a given cluster, and grouping quantitative descriptors into thematic sets: see Appendix IV for details on the sets used) of all these particular strategies and tactics can be found in the table below. The different levels of importance of the descriptors are provided using the previously established nomenclature (see "Labelling fishing strategies/tactics" section for details), with each different level of importance separated by semicolons in the cluster description. In this table, taxonomic groups of the same importance are grouped according to their relatedness (each group included in another is placed in parentheses after the "parent" group, distinct groups are separated by slashes). None of the other strategies associated with accidental bycatch is associated with more than 5% of bycatch events. A description of all the strategies obtained by our method can be found in Appendix II. Of note, a comparison of our strategies with previously established classification systems is provided in the last section of the document (Correspondence with previous classifications), to understand the existing correspondences.

Table 3: Main elements of descriptions for strategies and tactics

First-level	Second-level	Third-level	Tactics	Description
58				Fishing for 32 (Gadiformes (Merlucciidae (Merluccius spp))); strong predominance of fishing ; majority of fishing with Set gillnets (anchored); with high relative: proportion of catches in main fished taxa
58	58.2			Fishing for 32 (Gadiformes (Merlucciidae (Merluccius spp (Merluccius merluccius)))); predominance of fishing ; majority of fishing for Gadidae, in division 27.8.b; with high relative: variation in fishing volumes
58	58.2	58.2.2		Fishing for 32 (Gadiformes (Merlucciidae (Merluccius spp (Merluccius merluccius)))); predominance of fishing for Gadidae; majority of fishing with secondary catches of 34, in division 27.8.a; with high relative: fishing volumes, variation in fishing volumes, proportion of catches in main fished taxa, activity proportion with main fishing gear used
58	58.2	58.2.2	6	Fishing for 32 (Gadiformes); strong predominance of fishing for Merlucciidae (Merluccius spp), with Set gillnets (anchored), in division 27.8.a; majority of fishing for Gadidae (Trisopterus luscus), in statistical rectangle 24E5; with high relative: activity proportion in main spatial area
58	58.2	58.2.2	10	Fishing for 33 (Perciformes); strong predominance of fishing with Set gillnets (anchored); predominance of fishing for 32 (Gadiformes); majority of fishing in division 27.8.a, during trimester 4; with high relative: proportion in main period of activity, taxonomic diversity in catches
58	58.2	58.2.2	12	Fishing for 32 (Gadiformes (Merlucciidae (Merluccius spp))); majority of fishing with Set gillnets (anchored); with high relative: fishing effort, diversity in temporal activity, diversity in spatial activity
58	58.2	58.2.2	20	Fishing for 32 (Gadiformes (Merlucciidae (Merluccius spp))); majority of fishing with Set gillnets (anchored), in division 27.8.a, during trimester 1; with high relative: fishing volumes, variation in fishing volumes, proportion of catches in main fished taxa
58	58.3			Fishing ; strong predominance of fishing for 32 (Gadiformes (Gadidae / Merlucciidae (Merluccius spp))), with Set gillnets (anchored), in division 27.8.a; predominance of fishing for Soleidae // Trisopterus luscus, during trimester 1; majority of fishing for Solea spp (Solea solea), with Trammel nets, in division 27.8.b; with high relative: variation in fishing volumes, fishing effort, diversity in temporal activity, proportion of catches in main fished taxa
58	58.3	58.3.3		Fishing for Gadiformes (Merlucciidae (Merluccius spp (Merluccius merluccius))) with secondary catches of 31 (Pleuronectiformes), with Set gillnets (anchored), in division 27.8.a; strong predominance of fishing for 32 with secondary catches of 33 (Perciformes) // Soleidae (Solea spp (Solea solea)), during trimester 1; predominance of fishing with secondary catches of Gadidae, with Trammel nets; majority of fishing in division 27.8.b, during trimester 3; with high relative: fishing volumes, variation in fishing volumes, fishing effort, diversity in temporal activity, proportion in main period of activity, proportion of catches in main fished taxa, activity proportion with main fishing gear used

Table 3: Main elements of descriptions for strategies and tactics *(continued)*

First-level	Second-level	Third-level	Tactics	Description
58	58.3	58.3.3	1	Fishing for 32 (Gadiformes (Merlucciidae (Merluccius spp))), with Set gillnets (anchored); predominance of fishing in division 27.8.a; majority of fishing for Gadidae; with high relative: fishing volumes, variation in fishing volumes, proportion of catches in main fished taxa
58	58.3	58.3.3	6	Fishing for 32 (Gadiformes (Merlucciidae (Merluccius spp))), with Set gillnets (anchored); strong predominance of fishing in division 27.8.a; predominance of fishing for Gadidae; majority of fishing for Trisopterus luscus; with high relative: taxonomic diversity in catches, proportion of catches in main fished taxa
58	58.3	58.3.3	14	Fishing for 32, with Set gillnets (anchored); strong predominance of fishing for Gadiformes; majority of fishing for Gadidae // Merlucciidae (Merluccius spp), during trimester 4; with high relative: taxonomic diversity in catches; and high relative catches of Gadidae
58	58.3	58.3.3	20	Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp))); strong predominance of fishing with Trammel nets, in division 27.8.a; predominance of fishing during trimester 1; majority of fishing for Scophthalmidae; with high relative: taxonomic diversity in catches, activity proportion in main spatial area; and high relative catches of 31 (Pleuronectiformes (Soleidae (Solea spp) / Pleuronectidae (Pleuronectes platessa) / Scophthalmidae (Scophthalmus rhombus / Scophthalmus maximus))) // 57 (Sepiida (Sepiidae (Sepia spp))) // 33 (Perciformes (Moronidae (Dicentrarchus spp)))
65				Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp))); predominance of fishing with Trammel nets; majority of fishing in division 27.8.a, during trimester 1; with high relative: variation in fishing volumes, fishing effort, proportion of catches in main fished taxa
65	65.1			Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp))); strong predominance of fishing for Solea solea; predominance of fishing with Trammel nets, in division 27.8.a; majority of fishing during trimester 1
65	65.1	65.1.2		Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp (Solea solea)))); predominance of fishing with Trammel nets, during trimester 1; majority of fishing in division 27.8.a; with high relative: fishing volumes, variation in fishing volumes, fishing effort, diversity in temporal activity, proportion of catches in main fished taxa
65	65.2			Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp (Solea solea)))); strong predominance of fishing with Trammel nets, during trimester 1; majority of fishing for Scophthalmus rhombus, in division 27.8.b; with high relative: fishing volumes, variation in fishing volumes, fishing effort, diversity in temporal activity, proportion of catches in main fished taxa
65	65.2	65.2.1		Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp (Solea solea)))); strong predominance of fishing with secondary catches of 33 (Perciformes), with Trammel nets, during trimester 1; predominance of fishing with secondary catches of Gadiformes // Dicentrarchus spp (Dicentrarchus labrax), in division 27.8.b; majority of fishing for Scophthalmus rhombus with secondary catches of Moronidae // Scophthalmidae; with high relative: proportion of catches in main fished taxa, activity proportion with main fishing gear used, activity proportion in main spatial area
65	65.2	65.2.1	19	Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp))); majority of fishing in division 27.8.a; with high relative: taxonomic diversity in catches, proportion of catches in main fished taxa; and high relative catches of 31 (Pleuronectiformes (Soleidae (Solea spp)))
65	65.2	65.2.1	21	Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp))), with Trammel nets; strong predominance of fishing in division 27.8.b; with high relative: fishing effort, diversity in temporal activity, taxonomic diversity in catches; and high relative catches of 31 (Pleuronectiformes (Soleidae (Solea spp) / Scophthalmidae)) // 33 (Perciformes) // 34 (Perciformes) // 32 (Gadiformes (Merlucciidae (Merluccius spp)))
65	65.2	65.2.1	22	Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp))), with Trammel nets; predominance of fishing in division 27.8.b, during trimester 1; with high relative: fishing volumes, variation in fishing volumes, taxonomic diversity in catches; and high relative catches of 31 (Pleuronectiformes (Soleidae (Solea spp)))
65	65.2	65.2.2		Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp (Solea solea)))); strong predominance of fishing with Trammel nets, during trimester 1; predominance of fishing in division 27.8.a; majority of fishing for Gadidae, in division 27.8.b, during month 02; with high relative: variation in fishing volumes, proportion of catches in main fished taxa
65	65.2	65.2.2	14	Fishing for 32 (Gadiformes); predominance of fishing for Merlucciidae (Merluccius spp), with Set gillnets (anchored), in division 27.8.a; majority of fishing for Gadidae; with high relative: proportion of catches in main fished taxa; and high relative catches of 32 (Gadiformes (Merlucciidae))

Table 3: Main elements of descriptions for strategies and tactics *(continued)*

First-level	Second-level	Third-level	Tactics	Description
65	65.2	65.2.2	20	Predominance of fishing for 34 (Lophiiformes (Lophiidae (Lophius spp))), with Trammel nets; majority of fishing in division 27.8.a, during trimester 2; and high relative catches of 34 (Lophiiformes (Lophiidae (Lophius spp))) // Rajiformes (Rajidae) // Decapoda (Cancridae (Cancer pagurus))
65	65.2	65.2.2	22	Strong predominance of fishing with Trammel nets; predominance of fishing for 57 // 31 (Pleuronectiformes (Soleidae (Solea spp))), during trimester 4; majority of fishing for Sepiida (Sepiidae (Sepia spp)); and high relative catches of 57 (Sepiida (Sepiidae (Sepia spp)))
65	65.2	65.2.2	24	Fishing for 31 (Pleuronectiformes (Soleidae (Solea spp))); strong predominance of fishing with Trammel nets; majority of fishing in division 27.8.a, during trimester 1; with high relative: taxonomic diversity in catches; and high relative catches of 31 (Pleuronectiformes (Soleidae (Solea spp) / Scophthalmidae (Scophthalmus rhombus))) // 57 (Sepiida) // 33 (Perciformes (Moronidae (Dicentrarchus spp)))
71				Fishing ; strong predominance of fishing for 36 (Perciformes (Thunnus spp)); predominance of fishing for Scombridae, with Pair trawls Midwater, in division 27.8.a, during trimester 3; majority of fishing for Gadidae; with high relative: fishing volumes, variation in fishing volumes, fishing effort, diversity in temporal activity, proportion of catches in main fished taxa
71	71.1			Strong predominance of fishing for Perciformes, with Pair trawls Midwater; predominance of fishing for 33 (Dicentrarchus labrax) // 36 (Thunnus spp (Thunnus alalunga)), in division 27.8.a; majority of fishing for Clupeiformes // Moronidae (Dicentrarchus spp) // Scombridae, during trimester 3; with high relative: proportion of catches in main fished taxa, activity proportion with main fishing gear used
71	71.1	71.1.1		Fishing for 33 (Moronidae (Dicentrarchus spp (Dicentrarchus labrax))); with high relative: fishing volumes, variation in fishing volumes, proportion in main period of activity, proportion of catches in main fished taxa, activity proportion with main fishing gear used, activity proportion in main spatial area
71	71.1	71.1.2		Strong predominance of fishing for Thunnus spp; with high relative: variation in fishing volumes, diversity in temporal activity, proportion in main period of activity, proportion of catches in main fished taxa, activity proportion in main spatial area, size/power of fishing vessel
71	71.1	71.1.2	9	Fishing for 32 (Gadiformes (Merlucciidae (Merluccius spp))); strong predominance of fishing in division 27.8.a; predominance of fishing with Pair trawls Midwater; majority of fishing during trimester 2; with high relative: proportion of catches in main fished taxa; and high relative catches of 32 (Gadiformes (Merlucciidae (Merluccius spp)))
71	71.1	71.1.2	10	Fishing for 33 (Perciformes (Moronidae (Dicentrarchus spp))); strong predominance of fishing with Pair trawls Midwater; predominance of fishing during trimester 1; with high relative: proportion of catches in main fished taxa; and high relative catches of 33 (Moronidae (Dicentrarchus spp))
71	71.1	71.1.2	11	Fishing for Perciformes; strong predominance of fishing for 37, with Pair trawls Midwater; predominance of fishing in division 27.8.a; majority of fishing for 33; and high relative catches of 37
71	71.1	71.1.2	14	Strong predominance of fishing for 38 (Carcharhiniformes), with Pair trawls Midwater; predominance of fishing for Triakidae (Mustelus spp); majority of fishing for 33 (Perciformes); with high relative: taxonomic diversity in catches; and high relative catches of 38 (Carcharhiniformes)
71	71.1	71.1.2	18	Predominance of fishing in division 27.8.a; majority of fishing for 33 (Perciformes); with high relative: taxonomic diversity in catches; and high relative catches of 57 (Myopsida (Loliginidae) / Sepiida) // 34 // 32 (Gadiformes (Gadidae (Merlangius merlangus) / Merlucciidae (Merluccius spp))) // 33 (Sparidae / Moronidae (Dicentrarchus spp))
71	71.2			Fishing for 36 (Thunnus spp); strong predominance of fishing for Perciformes (Scombridae (Thunnus alalunga)); predominance of fishing for Gadidae, with Pair trawls Midwater, during trimester 3; majority of fishing for Trisopterus luscus, in division 27.8.a; with high relative: variation in fishing volumes, fishing effort, proportion of catches in main fished taxa
71	71.2	71.2.2		Fishing for Perciformes (Thunnus alalunga); strong predominance of fishing for 36 (Scombridae (Thunnus spp)) // Gadidae, with Pair trawls Midwater, in division 27.8.a, during trimester 3; predominance of fishing for Trisopterus luscus; majority of fishing for Chelidonichthys spp // Merluccius merluccius with secondary catches of Gadiformes; with high relative: variation in fishing volumes, proportion of catches in main fished taxa

First-level strategies associated with bycatch

The three main "at-risk" strategies are (sorted by associated bycatch events): strategy 65, which can be roughly summarized as fishing for sole with trammel nets (83 bycatch events and 106 captured dolphins recorded); strategy 71, which can be roughly summarized as fishing for tuna (with secondary catch of gadids) with midwater pair trawls (51 bycatch events and 132 captured dolphins recorded); strategy 58, which can be roughly summarized as fishing for hake with set gillnets (43 bycatch events and 89 captured dolphins registered). These results reflects what was already observed in previous expert reports on the distribution of bycatch by gears/métiers (ICES, 2019 ; ICES, 2020). Bycatch is not evenly distributed between the two data sources (see Distribution of bycatch): a majority of bycatch events for strategies 58 and 65 come from the declaration, while a large majority of bycatch events for strategy 71 come from the OBSMER sampling program; these differences are not only due to temporal dynamics (declaration data are only available from 2019), as the same differences are observed only during the periods 2019-2022 (see Appendix III). The uneven distribution of data between the two sources suggests possible biases in data collection, with trawl catches under-reported and/or over-observed and net catches under-observed. Interestingly, the proportion of bycatch in data sources changes when considering the number of captured dolphins instead of events, with a huge increase in the importance of OBSMER data for strategies 58 and 71, suggesting a possible underreporting of the number of captured dolphins in declarations (rare declaration of massive bycatch events in contrast to the OBSMER survey). More generally, the clear difference between the number of bycatch events and the number of captured dolphins in strategy 71 argues for a higher average number of captured dolphins in this strategy (~2.5 per bycatch event, with four massive bycatch events with more than 8 captured individuals) in contrast to strategy 65 (~1.2 captured dolphins per bycatch event, with only one massive bycatch event) and strategy 58 (~2 captured dolphins per bycatch event, with three massive bycatch events, all associated with midwater pair trawl activity at fishing event scale, see strategy 58.2.2 and associated tactics 10 and 20; without these massive events, the average number of captured dolphins is ~1.1 per bycatch event). These observations suggests that midwater pair trawls are more likely to catch more dolphins when accidental bycatch occurs. We should have expected the number of bycatch events to be higher in the declaration data compared to the OBSMER survey, as the OBSMER program consists in surveying a small sub-sample of the total strategy activity (the ratio of OBSMER sampling effort to available fishing effort in SACROIS is about 1% for strategies 71 and 58, and about 5% for strategy 65). The fact that, on the contrary, there are more bycatch observations by OBSMER in strategy 71 during 2019-2022 suggests that there is a strong underreporting of bycatch events in this strategy. Also for other strategies, the comparison of the number of dolphin bycatch per fishing hour between the two data sources shows a much higher hourly catch rate during OBSMER monitoring (at least a factor of 10, in some cases up to a factor of 1000 such as strategies 71 or 59) compared to SACROIS data in all strategies, again suggesting that there is a global underreporting of bycatch that cannot be explained simply by OBSMER oversampling during most at-risk periods (Cloâtre et al., 2023), or current biases in used gillnet effort estimation (likely overestimated in the SACROIS dataset: Sans & Rodriguez, 2023).

It is noteworthy that some of the other strategies associated with a low proportion of bycatch are rather close to the three retained strategies (see Appendix II for details on these strategies): for instance the strategy 59 is mainly defined by mixed fishing of sole and/or Gadiformes and/or coastal fish (including sea bass, sea bream) and is therefore rather close to strategies 58 and 65 with a relatively high number of transitions between these strategies: see Overall distribution and temporal evolutions. Similarly, strategy 60 is mainly defined by gadid fishing (mainly pollock and pouting) with gillnets (recurrent transitions with strategy 65), strategy 47 is mainly defined by tuna and mackerel fishing mainly with midwater pair trawls (some transitions with 71), strategy 41 is mainly defined by sardine fishing either with midwater pelagic pair trawls or seines (some transitions with 71), strategy 74 is mainly defined by goosefish fishing with trammel nets and/or set gillnets (recurrent transitions with 65), strategy 77 is mainly defined by langoustine fishing (secondary catch of Gadiformes, especially pouting and hake) with bottom trawls (only some transitions with 71). Some other strategies are associated with a small proportion of by-catches, such as strategies 37 (seabass and other coastal fish with longlines or set nets), 72 (cuttlefish and sole fishing with bottom trawls), 64 (sole fishing with bottom trawls), 86 (gadid, gurnard and St Pierre fishing with bottom trawls), 42 (edible crab fishing with traps). This last strategy may seem odd, but by-catches occurred during trips targeting hake or gadids with gillnets. Again, we observed an asymmetry of bycatch observations across data sources, with many strategies only associated with bycatch events in the OBSMER survey (37, 42, 64, 72, 74 77), or the 59 strategy with more bycatch data associated with the OBSMER survey (even when considering only the 2019-2022 period), suggesting underreporting in the declaration data.

Taking into account the sampling effort (from OBSMER) and the fishing effort (from SACROIS) to weight the number of captured dolphins, we observed again the great relative importance of the three retained strategies (with a relatively low importance of strategy 65 in the OBSMER data, probably due to the good sampling coverage of this strategy in the OBSMER surveys), but also a high importance of other strategies as 41, 47 (but also 64, 77, 60 to a lesser extent), in particular for most recent year in the latter (see Appendix III). These latter strategies are of minor importance in terms of the absolute quantity of by-catches, but it should be kept in mind that increasing fishing effort in these strategies could increase the risk associated to these strategies in the future. It also points out the particular importance of midwater pair trawling for small pelagic fishes in bycatch dynamics as these two strategies (41, 47) are associated to such activities. It may also be important to consider whether bycatch in these strategies may be under-sampled/under-reported to ensure that they do not in fact represent an underestimated risk (Babcock et al., 2011).

Main second- and third-level strategies associated with bycatch

When considering further levels of precision by studying the distribution of by-catches in sub-strategies, we observed that by-catches from strategy 58 are rather evenly distributed between a strategy mainly targeting hake with frequent primary catches of Gadidae (58.2, slightly in the majority compared to the second sub-strategy), and more specifically with frequent primary catches of goosefish, a large part of the vessels with main activity in the northern Bay of Biscay and primary use of either set gillnets or bottom pair trawls (58.2.2); and a strategy targeting mainly hake (but also pouting) with set gillnets and sole with trammel nets, with a peak of activity in the first trimester, activity in both southern and northern Biscay, frequent use of several gears during the year, and high taxonomic diversity in catches (58.3), and more specifically, with a predominant activity in the northern Bay of Biscay, with sole and gadidae being of secondary importance compared to hake, with a frequent secondary peak of activity in the third trimester, and high relative catch volumes (58.3.3).

Bycatch in the 65 strategy is mainly associated with the 65.2 strategy, with a small proportion of bycatch in the 65.1 strategy, both sub-strategies are mainly defined by trammel net sole fishing, with a peak of activity in the first trimester. However, strategy 65.1 is rather exclusive to this type of fishing and occurs mainly in the northern Bay of Biscay, while strategy 65.2 is more diversified, with also brill and demersal taxa (other than Gadiformes) fished, higher activity volumes and occurs mainly in the southern Bay of Biscay. Bycatch is more specifically associated with strategy 65.1.2, precising the presence of secondary catches (sea bass, Scophtalmidae, goosefish, Gadiformes) in addition to sole fishing, and with strategies 65.2.1/65.2.2 (rather evenly distributed between the two), precising the importance of bycatches of sea bass in 65.2.1, while in 65.2.2 there is a higher taxonomic diversity in the catches (in particular: secondary catches of Gadidae), with a more frequent use of set nets as secondary gear and a spatial activity more evenly distributed between the northern and southern Bay of Biscay.

Bycatches from strategy 71 are largely associated with strategy 71.1, defined as fishing for tuna (albacore), coastal fish (mainly seabass, but also seabream) and Clupeiformes using midwater pair trawls, mainly in the northern Bay of Biscay, with a peak of activity in the third trimester. A small proportion of bycatches also occurred in strategy 71.2, defined as fishing for tuna (albacore), mainly with midwater pair trawls, but with a higher diversity of taxa caught and gear used, with also catches of Gadidae (in particular pouting) and the use of otter trawls (again, this strategy occurs mainly in the northern Bay of Biscay, with a peak of activity in the third trimester). More specifically, bycatches occurred in strategy 71.2.2, which was additionally characterised by a predominant use of midwater pair trawls and primary catches of small gurnard and hake. In strategy 71.1, bycatches are more specifically associated with strategy 71.1.2, which is very similar to strategy 71.1 (it only differs from 71.1.1, a strategy defined by the exclusive predominance of seabass fishing, with only one bycatch event associated with midwater pair trawling).

Interestingly, the distribution between data sources is again different for the sub-strategies considered: sub-strategies 65.1.2 and 58.2.2 are enriched in OBSMER observations, probably because these two strategies are associated with a small proportion of vessels using mainly trawls, a category of vessels particularly oversampled in OBSMER surveys (Cloâtre et al., 2023). This discrepancy in data distribution raises the question of a possible undersampling of the activity of gillnetters in OBSMER in comparison to trawlers, while their combined importance (with most of strategies 58 and 65) in bycatch is particularly highlighted here, especially in terms of the number of bycatch events (~60% of bycatch events for these two strategies alone).

Main tactics associated with bycatch

At this stage, 5 sub-strategies have been identified as being predominantly associated with bycatches (>70% of bycatch events): 58.3.3, 58.2.2, 65.2.1, 65.2.2, 71.1.2. The distribution of bycatches in the tactics associated with these sub-strategies is detailed below. Note that not all bycatch events assigned to strategies are always assigned to tactics, as the SACROIS trip ID is not always available in the OBSMER dataset (see Materials & Methods). It is worth noting that multiple bycatch events often occur during the same fishing trip (on different fishing sequences, with ~19% of registered trips in this case) and especially in the OBSMER surveys (~28% of trips compared to ~8% in the declared data), again suggesting a likely bias in the declared data, with potential undeclared events during trips with multiple events.

Within strategy 58.2.2, a large part of bycatch events are included in tactic 12, corresponding to fishing for hake, mostly with set nets, in both northern and southern Bay of Biscay (in offshore areas just after the 24-mile limit from the southern tip of Brittany to the Bay of Arcachon), with relatively long trips, high fishing effort and a high diversity of statistical rectangles visited within a trip. Some bycatch events also occurred in tactics 10 and 20. The first is mainly associated with catches of various coastal fish (sea bass, but also sea bream, meagre, goatfish) and Gadiformes, mainly in the northern Bay of Biscay (but with a non-negligible proportion in the southern Bay of Biscay; in coastal areas near the Gironde estuary or south of Brittany) and during the fourth trimester; the second is defined by hake catches, mainly by gillnets (but with a non-negligible proportion of trawl trips), in the northern Bay of Biscay (but with a non-negligible proportion in the southern Bay of Biscay; in offshore areas of the Bay), and with a peak of activity during the first trimester, with high relative fishing volumes. Accidental bycatches in the latter two tactics are actually associated with fishing events related to the use of midwater pair trawls use, an activity that represents a minority of the activity in the tactics, but which appears to be of particular importance for bycatch events. Three of these events are massive bycatch events with at least 10 individuals captured, which explains why these two tactics are so important in terms of the number of dolphins captured. Finally, a few bycatch events are associated with tactic 6, defined as hake fisheries (with primary catches of Gadidae, especially pouting) using set gillnets in the northern Bay of Biscay (mainly in the coastal area of the southern tip of Brittany). There is a clear separation between OBSMER and declarative data, with OBSMER bycatches associated only with tactics 10 and 20 (i.e. only with midwater pair trawl fishing events), whereas declarative bycatches are associated only with tactics 12 and 6.

Within strategy 58.3.3, the majority of bycatch events (all from declaration sources) are associated with either tactic 6 or 20. The first is defined by hake fishing with set gillnets, mainly in the northern Bay of Biscay (in offshore areas close to the 24-mile limit and in mixed offshore and coastal areas), with also catches of pouting being of primary importance (and, more generally, a high taxonomic diversity in catches, although the main taxa caught still largely predominate). The second is defined by fishing for sole, mainly with trammel nets (also with primary catches of Scophthalmidae) in the northern Bay of Biscay (mainly in the Poitou-Charentes mixed offshore/coastal area), and with a frequent peak of activity during the first trimester. A few bycatch events also occurred in tactics 1 and 14. The first tactic is very similar to tactic 6, but is associated with a higher fishing volumes and a higher proportion of hake catches. The second is mainly defined by set gillnet fishing for both hake and gadid (with high catch volumes of the latter compared to other tactics), with a frequent peak during the fourth trimester.

Within strategy 65.2.1, the vast majority of bycatch events occurred in tactic 21, defined by fishing for sole with trammel nets, mainly in the southern Bay of Biscay (particularly in coastal areas between the

Gironde estuary and the Bay of Arcachon, with a significant proportion also in coastal areas of Poitou-Charentes), with some sequences associated with high taxonomic diversity of catches (secondary catches of Scophtalmidae, Gadiformes, Moronidae, Sparidae), high fishing effort, and long fishing trips. Two other tactics are associated with some bycatch events: tactic 22, very close to tactic 21, but mostly associated with coastal areas between the Gironde estuary and the Bay of Arcachon, with a frequent peak of activity during the first trimester and associated with higher fishing volumes (also seems to be associated with more offshore activities); tactic 19, defined by fishing for sole, mainly in the northern Bay of Biscay (but with a significant proportion also in the southern Bay of Biscay, in coastal areas from the Loire estuary to the Bay of Arcachon), with a high txonmic diversity in catches bu with a predominance of sole catches. Interestingly, OBSMER bycatch observations only occur in tactics 21 and 22, with balanced observations in these two tactics (relatively to the declarative data: a strong increase in bycatch observations in tactic 21), potentially implying that there could be a bias in trip sampling in the OBSMER campaign or indicating a potential change in fishing behaviour during OBSMER surveys.

Within strategy 65.2.2, a large majority of bycatch events occurred in tactic 24, defined by sole fishing with trammel nets, but with high taxonomic diversity in the catches (secondary catches of Scophtalmidae, Gadiformes, Moronidae, Sparidae), and with a peak of activity in the northern part of the bay of Biscay and during the first trimester. Three other tactics are associated with a low number of bycatch events (a single, except for tactic 20): tactic 20, defined by predominant fishing for goosefish (secondary catches of Decapoda, Pleuronectiformes, Rajidae) with trammel nets (with also a recurrent use of set gillnets), in mixed offshore/coastal areas of the northern bay of Biscay and during the second trimester in majority; tactic 22, defined by the predominance of sole and cuttlefish fishing with trammel nets, with a predominant peak of activity during the fourth trimester, mainly off the Poitou-Charente region, but also in the southern Bay of Biscay, off the Gironde coast; tactic 14, defined by fishing for hake, mainly with set gillnets, predominantly in the northern bay of Biscay, with secondary catches of Gadidae. The OBSMER data on bycatches are only associated with tactics 24 and 20 (sole and goosefish), with a relative importance similar to the SACROIS data. It is difficult to say whether the rare events (tactics associated with a single event) specific to the OBSMER campaign or to the declarations are due to an observation bias or simply correspond to rare occurrences. Similarly, it is difficult to interpret the high catch rate (per hour of effort) for these under-represented tactics (22, 14), given that only one bycatch event was associated with them. Of note, the catch rates for tactics 20 and 22 are intriguingly high compared to the main tactic in term of number of bycatch event (24), but this could be due to the relative rarity of this tactic.

Within strategy 71.1.2 there are three main tactics associated with accidental bycatches (described here in order of importance). First, tactic 9 is defined by hake fishing, mainly with midwater pair trawls (but with other gears mainly used on some other trips: set gillnets, set longlines and bottom pair trawls), mainly in the northern Bay of Biscay and with a frequent peak of activity during the second and, to a lesser extent, first trimesters. Second, tactic 10 is defined by fishing for sea bass with midwater pair trawls, in the Bay of Biscay and the Channel Sea, with a frequent peak of activity during the first trimester. Third, tactic 11 is defined by primary catches of miscellaneous small pelagic fishes, with also major catches of coastal fishes (especially seabream), using midwater pair trawls, mainly in coastal areas of Pays de Loire or Poitou-Charentes, and with peaks of activity during the second and third trimesters. Two other tactics are also associated with a low number of bycatches: tactic 18, defined by a particularly high taxonomic diversity in the catches (primary catches of Moronidae, Gadiformes, Sparidae, cephalopods), mainly in the northern Bay of Biscay and with a predominance of coastal fish catches, with different primary gears used (mainly bottom or midwater pair trawls, in some cases bottom otter trawls); and tactic 14, which is defined by shark fishing (mainly smooth-hounding), with also significant catches of inshore fish (particularly sea bream) using midwater pair trawls. The relative importance of these tactics in terms of by-catches varies according to the data source: in the OBSMER data, tactics 9 and 10 are more important than others, whereas in the declared data, only tactic 9 is more important than other tactics, possibly indicating under-declaration of tactic 10 (seabass fishing) in particular. In terms of catch rate (based on the SACROIS dataset), we observed a significant increase in the importance of tactic 11 (small pelagic fisheries), highlighting a potentially higher risk of capture when targeting preys preferred by dolphins.

Transversal tendencies in accidental bycatch

Among all the tactics with the highest risk of bycatch, three main categories particularly risky seem to emerge: hake fishing with set nets (58.2.2, tactic 12, 6; 58.3.3, tactic 6, 1, 14; 65.2.2, tactic 14: ~15% of all bycatch events recorded in high-risk tactics and 24 dolphins captured), sole fishing with trammel nets (58.3.3, tactic 20; 65.2.1, tactic 21, 22, 19; 65.2.2, tactic 24, 22: ~43% of all bycatch events recorded in high-risk tactics and 80 by-caught dolphins) and midwater pair trawls for either hake (58.2.2, OBSMER events, 71.1.2, tactic 9: ~10% of all bycatch events recorded in high-risk tactics and 39 dolphins captured), or seabass (71.1.2, tactic 9: ~9% of all bycatch events recorded in high-risk tactics and 38 by-caught dolphins), or small pelagic fish (71.1.2, tactic 10: ~5% of all by-catch events recorded in high-risk tactics and 22 by-caught dolphins). Other less frequent trends also emerged, often associated with other lower-risk strategies (goosefish gillnets, Gadidae gillnets). These results are in line with previous observations from stranding data and co-occurrence of métiers in the Bay of Biscay (Peltier et al., 2021) or from various other studies based on direct information from fisheries (historical and recent characterization of at-risk fisheries in ICES, 2020). Some of main fished taxa (sole, hake, seabass) are particularly recurrent in the description of most risk tactics, including when looking at by-catches in gillnet strategies (58, 65). For hake and seabass, the high number of by-catch events can be explained by ecological relationships, with small-bodied, immature hake being preyed upon by common dolphins (Santos et al., 2013 ; Santos et al., 2014) and adult seabass/hake being top predators in the Bay of Biscay (Spitz et al., 2013 ; Cabral & Murta, 2002), potentially co-occurring with dolphins as their respective diets partially overlap. Nevertheless, it is surprising to observe that by-catches seem to be more frequent in the context of fishing for hake (trips associated with it represent more than 30% of by-catch events registered in high-risk tactics) than in the context of fishing for other common dolphin prey (and in particular small pelagic fish: trips associated with it represent only 5% of by-catch events registered in high-risk tactics). Several reasons could explain this dynamic: it could be explained by a sampling bias, with bycatch events associated with catches of small pelagic fish being under-reported or under-surveyed (with a possible change in the behaviour of fishermen when surveyed: Babcock et al., 2011); it could also be due to technical reasons, with a contrast in soaking time between the different strategies, as fishing for small pelagic fish is more restricted in time and area than fishing for hake (with a greater diversity of fishing methods for the latter, using both gillnets and trawls), and possibly in the gear and the way it is used in both cases; and finally it could be due to ecological processes, with dolphins perhaps engaging in more risky foraging behaviour when targeting hake than when targeting small pelagic fish. The particular importance of the sole fishery in terms of the number of dolphin by-catches is more puzzling, as this species is not known to interact particularly with dolphins (rare occurrence of sole in dolphin diet: Meynier et al., 2008). Indirect causality could be implied here, with dolphins possibly following the daily and/or seasonal movements of their prey close to the bottom (small pelagic fish have recently been observed to temporarily aggregate on the bottom: unpublished results from the DELMOGES project), or possibly occasionally foraging on demersal species (hake, but also possibly gobies, which are found in high numbers in the stomachs of stranded common dolphins: Meynier et al., 2008), coupled with the large spatial extent of sole trammel nets on the bottom (in OBSMER data within the Bay of Biscay: median value of 3 km across vessels) and their important soaking time (in OBSMER data within the Bay of Biscay: median value of 1290 minutes across vessels), thus multiplying the probability of entanglement events. Most of these hypotheses are currently being investigated to better understand the actual mechanisms involved. Complementary studies could be carried out to better understand the mechanisms at play; for example, it would be interesting to investigate whether the recent dietary intake of captured dolphins is consistent with the proportion of species actually caught during the fishing event that led to the by-catch (this could be done on stranded dolphins tagged by fishermen or observers on board), to determine whether the dolphins were foraging for the target species during the by-catch event or whether it is a by-product of interactions of a different nature. In terms of temporal trends, the trammel net sole fishing strategies associated with bycatch events show a clear peak of activity during the first trimester of the year (with a rather frequent peak in February), a period that also corresponds to the peak of common dolphin by-catch in the Bay of Biscay (Gilbert et al., 2021). For the gillnet hake fishery, the temporal distribution of the activity is more evenly distributed, but again with a frequent peak in the first trimester. The midwater pair trawl strategies, on the other hand, the peak of activity occurs mainly during the third trimester. There is no clear transversal spatial trend between strategies/tactics, with the spatial segregation mainly depending on the fishing strategies per se, but it should be highlighted that all main strategies and tactics largely occur on the continental plateau of the Bay of Biscay.

The results obtained here underline the need to be as precise as possible in our future analyses, as tactics nested within strategies and associated with bycatches do not necessarily reflect the general trends in the associated strategies. For example, strategy 71.1.2 is mainly defined by the activity of tuna fishing with secondary catches of coastal fishes, Clupeiformes and Gadiformes; it is these 'secondary' activities that are of interest here, as bycatch occurs during fishing trips specifically targeting these taxa and not during tuna fishing. Similarly, strategy 58.3.3 is defined by a mixed activity combining hake and sole fishing, both activities seem to be important with bycatch events distributed in tactics specialising in one or the other. In the latter case, our method allowed us to more precisely attribute bycatch events to specific fishing behaviours and to detect transversal tendencies between risky strategies. Further partitioning of bycatch events also occurred for other "low risk" strategies (with few associated bycatch events), such as the langoustine bottom trawl strategy (77), where bycatch events actually occurred during fishing events mainly targeting hake, or for decapod trammel nets (42), where bycatch events occurred when targeting gadids with set gillnets. Tactic subdivisions thus allow us to better understand how a strategy segregates into different tactics at the level of fishing trips, with sometimes the tactics themselves still being mixed activities, as for tactic 18 in strategy 71.1.2 (high taxonomic diversity in catches), or composed of different fishing modes on a specific aspect (as for tactic 20 in strategy 58.2.2, with different primary gear used: set gillnets, bottom or midwater pair trawls; meaning that all other descriptors are particularly close to each other and that this particular difference is not sufficient to create distinct clusters). In these cases of remaining diversity, additional analyses using regression tools on these specific subsets (either by characterising fishing trips in the whole tactic subset, or by considering all fishing sequences sampled in OBSMER for this specific tactic) could be of particular interest to determine precisely which fishing behaviour correlates with bycatch risk here.

Temporal dynamics in bycatch events distribution

The distribution of bycatch in the main high-risk strategies appears to evolve moderately over time (see section Temporal evolution of bycatch (#temporal-evolution-of-bycatch)), with in particular an increase in the proportion of bycatch attributed to strategies 65 (and in particular 65.2) and 58 in recent years (2020 to 2022), with no bycatch attributed to these tactics before 2014. Similarly, some sub-strategies (58.3, 71.2) have no bycatch attributed to them before recent years (from 2019). This recent dynamic could be explained by several mechanisms. First, it could be due to sampling methods, with potentially a lower coverage of gillnet activity compared to trawling activities in OBSMER surveys (or changes in fishing behaviour during these surveys), explaining why the addition of declarations (from 2019) significantly increases the number of bycatch events in these strategies. Second, these changes in distribution could be due to changes in the global importance of the associated strategy: in particular, if the number of vessels in these strategies increases, we would expect these strategies to be associated with more bycatch. This is likely to be the case for strategy 58.3.3, as this strategy appears only recently (stable since 2009), or for strategy 71.2, which increased significantly in number from 2016 compared to 2008 (first available data). At the overall level, there is no significant difference in the number of vessels for strategy 58 (slightly increasing compared to 2008) or strategy 65 (slightly decreasing compared to 2008), but there is a possibility that we have missed some process here as we lack information on gear dimensions and exact fishing effort of gillnetters in our current analysis (these parameters could have increased over the years and cause the increasing proportion of bycatch events in these strategies). Finally, differences in bycatch distribution could result from an evolution in dolphin behaviour leading to a higher propensity to be captured when these strategies are used. Of note, strong local temporal variations in the number of dolphins captured can also be observed between years, mainly due to massive bycatch events (at least 10 individuals captured in a single bycatch event) such as in 2016, 2021 for strategy 71.1.2 or in 2017 for strategy 58.2.2. Changes in the distribution of bycatch between tactics are more difficult to assess because data are usually only available for a few years with a limited number of bycatch events. Therefore, we have only commented on tactic trends for strategies with more than 3 years of bycatch data and for tactics with at least 5 bycatch events. For strategy 65.2.1, we observed that tactic 21 occurred only in the most recent years, in contrast to tactic 22, but there is no particular change in the number of fishing trips over the last year for this tactic, so this evolution probably results from adding declarative data to the analyses (probably overlooked or not collected during the OBSMER campaign). For strategy 65.2.2, we can only note the strong diversification of tactics implied by bycatch events in 2022 (this could be partly explained by the improvement in declaration coverage in the last year, with the number of declarations increasing from 7 in 2019 to an average of 40 in 2021 and 2022). There is no clear temporal trend in the distribution of tactics from 71.1.2, but it appears that bycatch events in each tactic are highly year specific, with, for example, bycatch in tactic 11 mainly occurring only in 2021, or bycatch in tactic 10 mainly occurring only in 2009, 2017 and 2021. However, there is no particular peak in the use of these tactics during these years, so either there are specific ecological dynamics in these particular years that explain a high propensity of bycatches in these tactics (inter-annual variations in the species condition for instance: see Doray et al., 2018 for small pelagic fishes), or they are particularly under-recorded/under-reported in the other years.

Fishing strategies dynamics

As mentioned in the last section, the number of vessels using a strategy can vary between years (as each strategy is allocated annually). These evolutions (see section Overall distribution and temporal evolutions) can sometimes be particularly marked, such as the huge increase in the number of vessels using strategies 3 and 15 between 2005 and 2011 (may be due to a change in clam fishing regulation in 2009 for the first one, and to an artifact in SACROIS data for the second one, with an assignment of vessel IDs to a large number of unidentified vessels in the Basque region during this period of time), the gradual decrease and disappearance of strategy 29 between 2000 and 2005, or also the appearance and huge increase of strategy 56 (octopus trap) between 2020 and 2022. For the main strategies at risk, there are no strong changes in the number of vessels, most of these strategies are stable or slightly decreasing (65.2.1, 71.1.2). However, these strategies are still dynamic, with vessels moving from or to these strategies between two consecutive years. We illustrate these transitions by means of network graphs over the whole period studied (see section Inter-annual transitions between strategies). It can be seen that strategies 65 and 71 are particularly prone to change, and in particular there are frequent transitions (almost 300 in both directions) between strategy 65 and 59 (mixed fishing of sole, Gadiformes, coastal fishes). Other transitions of secondary importance exist (at least one transiting vessel per year on average) between strategies 58 and 59, between 65 and 21/74 or between 71 and 72/84. These transitions may guide effort reporting from high-risk strategies to lower-risk strategies (e.g. strategies 59, 72, 74; the last two being mainly defined respectively by cuttlefish and sole fishing with bottom trawls, and trammel net fishing for goosefishes) or strategies with no apparent risk (e.g. 21, 84: respectively mainly defined by glass eel with other estuarine species secondary catches, and goosefish, skates fishing with bottom trawls), including during temporary closures (see Jenkins & Garrison, 2013 for an example of gear substitution measure). Similarly, transitions occur within first-level strategies, between the different existing sub-strategies (again, only transitions with at least one vessel transiting on average per year were considered), with recurrent transitions between strategies 58.2.2 and 58.1.2, strategies 71.1.2 and 71.2.2, or strategies 65.2.1 and 65.1.2. Again, favouring transitions towards lower risk sub-strategies (e.g. 71.2.2, 65.1.2) or sub-strategies with no apparent risk (e.g. 58.1.2) could be of particular interest to avoid increasing accidental by-catch, particularly in those sub-strategies where the transition could be more easily achieved than between first-level strategies.

Perspective and Recommendation

Our approach allows us to provide a first screening of the types of fishing behaviour that are most associated with accidental bycatch events, with particular emphasis on sole fishing with trammel nets, midwater pair trawling (targeting either hake, seabass or small pelagic fish) and hake fishing with set gillnets. However, our methodology has limitations: bycatch rarely occurred in specific subsets of a strategy or tactic, making it difficult to identify fishing behaviour implied in bycatch without studying the fishing event. This is evidenced in particular by massive bycatch events in strategy 58.2.2 associated with midwater pair trawling, which is rarely used in tactics 10 and 20, mainly catching hake and seabass. Therefore, these analyses should be complemented by further analyses using regression tools on specific subsets considered to be most at risk (e.g. a tactic or sub-strategy) in order to precisely characterise fishing behaviours associated with incidental bycatch and to be able to rank their importance for bycatch risk. Such analyses are currently in progress and should refine the main results presented here. Another limitation is that these analyses do not provide mechanisms of what actually happens during bycatch events (ecological context, environmental conditions, interactions with fishing gear), but only indicate the general fishing context in which these events occurred, and should be complemented by ongoing studies on more mechanistic and contextual processes.

The differences we observed between data sources allowed us to draw conclusions about potential biases associated with them. In particular, declarative data, which presumably include all bycatch events as declarations are mandatory, are currently not representative of the reality, due to the clear underreporting demonstrated here, at least for some strategies (such as 71). Nevertheless, it should be of global interest to improve the quality of these data in order to properly understand what actually happens when bycatch occurs, and such declarations should be encouraged in order to improve our knowledge and to find efficient mitigation measures for bycatch. On the other hand, OBSMER surveys may suffer from incomplete and biased sampling towards the strategy historically considered to be most at risk, and may overlook the importance of other strategies. Perhaps the two most high-risk strategies associated with gillnetting (58 and 65) should also be oversampled, as is currently the case for trawling. Transitions to less risky strategies and tactics should be encouraged where possible (see previous section), at least during periods of high risk. However, it is important to remember that the information we have here is only partial and that most high-risk strategies could evolve with full information. Both sources of data are currently of great importance given the scarcity of the data we have; more data would be needed to draw more reliable conclusions, in particular to determine the importance of strategies/tactics that are rarely associated with bycatch here and that may currently be overlooked. It should also be remembered that the results obtained here do not reflect the bycatch dynamics of other vulnerable and bycatch-sensitive species for which such analysis should also be carried out (such as harbour porpoise, which are caught in very high proportions in trammel nets targeting either Pleuronectiformes or goosefishes).

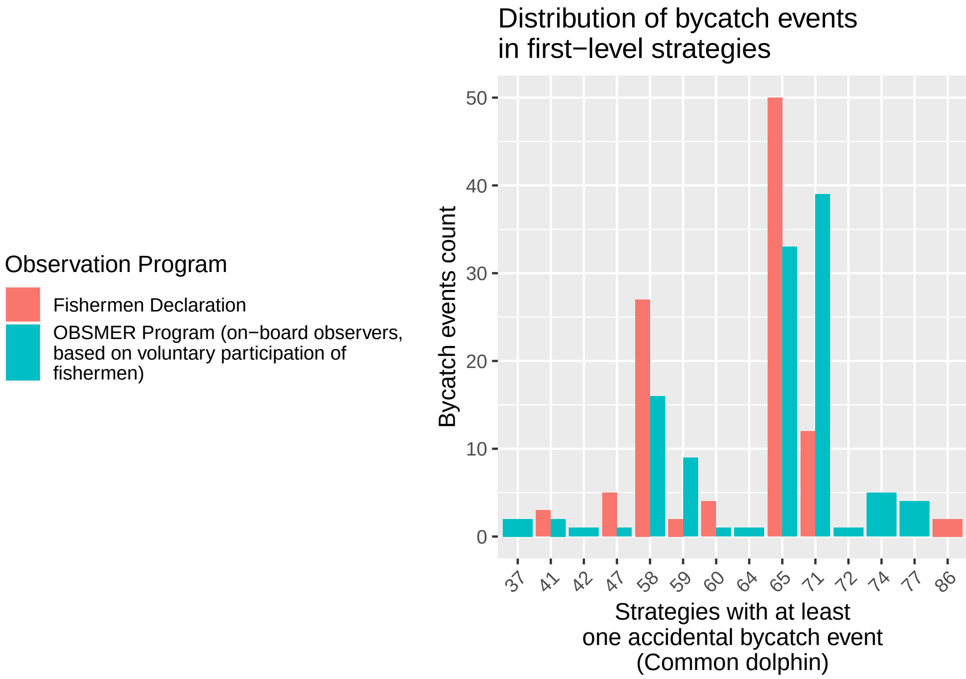
Distribution of Bycatch

We first plotted how bycatch (number of events and number of dolphins captured) was distributed among strategies and sub-strategies (annual level). We then considered, for each retained strategy, how bycatch was distributed within the underlying tactics (trip level). Of note, trip IDs were not the same in the SACROIS and OBSMER datasets, so we re-attributed trip IDs in the OBSMER datasets by comparing trips to the main metrics used to describe them (see Mat&Met section). There were 38 bycatch events in OBSMER for which we could not find a corresponding trip ID based on trip characteristics (over 144 bycatch events), so these events could not be associated with tactics. In some cases we found some identical trip IDs in both datasets (one in strategy 41 and four in strategy 71.1.2,, in these cases we kept only the data associated with the SACROIS dataset (declaration data) because we can be more confident about the associated trip ID. Nevertheless, there may be other duplicated events here, as two vessels with no identified matching trip ID are present in the OBSMER dataset (included in strategies 65.2.2 and 58.3.3 respectively, with two bycatch events each).

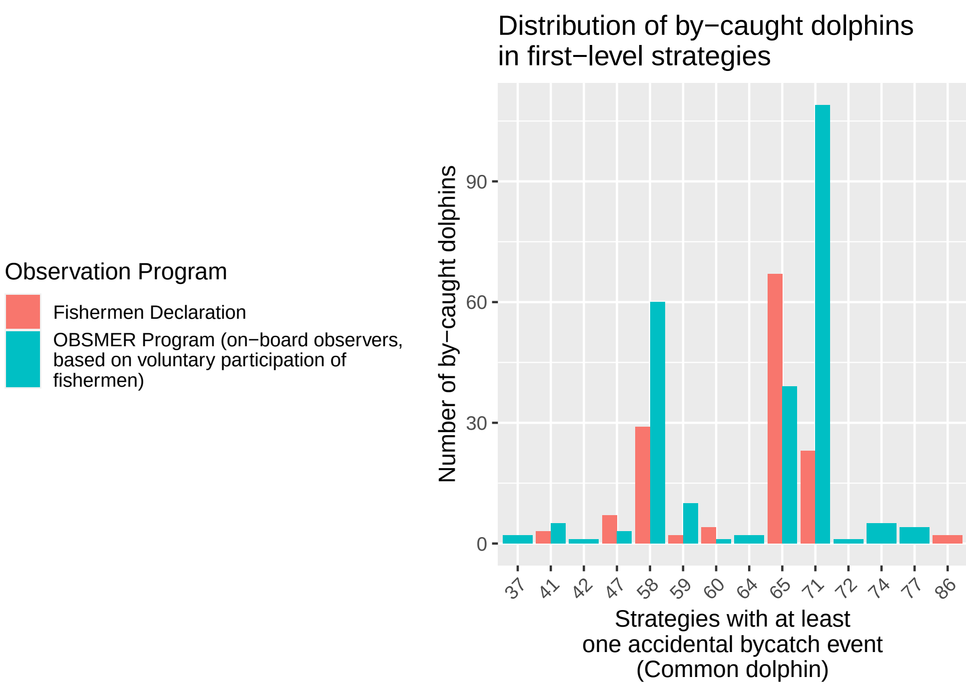
In strategies

We first display how bycatch (events and individuals number) were distributed in the first-level strategies. We then only display bycatch distribution in second- and third-level strategies included in the three most important first-level strategies (>80% of bycatch events / >86% of dolphins captured: 58, 65, 71). For each level, we also display how is distributed the number of by-caught dolphin corrected by the sampling coverage (in minutes) of the strategy during OBSMER campaign (sum of fishing operation duration for all vessels sampled during OBSMER campaign and belonging to the same strategy), and we did the same for declarative data by correcting the number of bycaught dolphins by available accumulated fishing effort for each strategy.

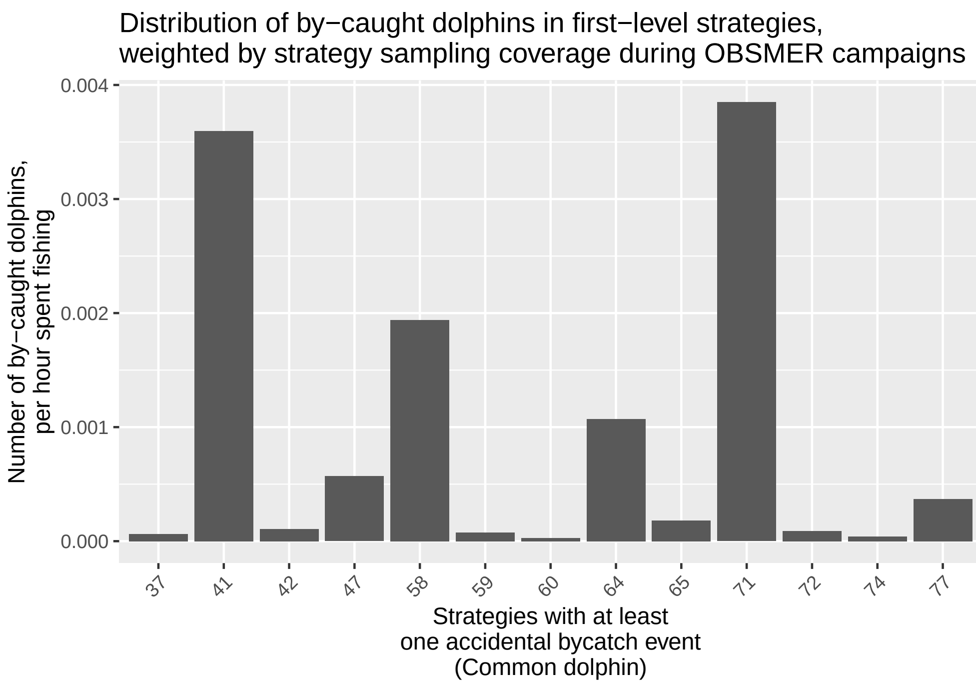
First level

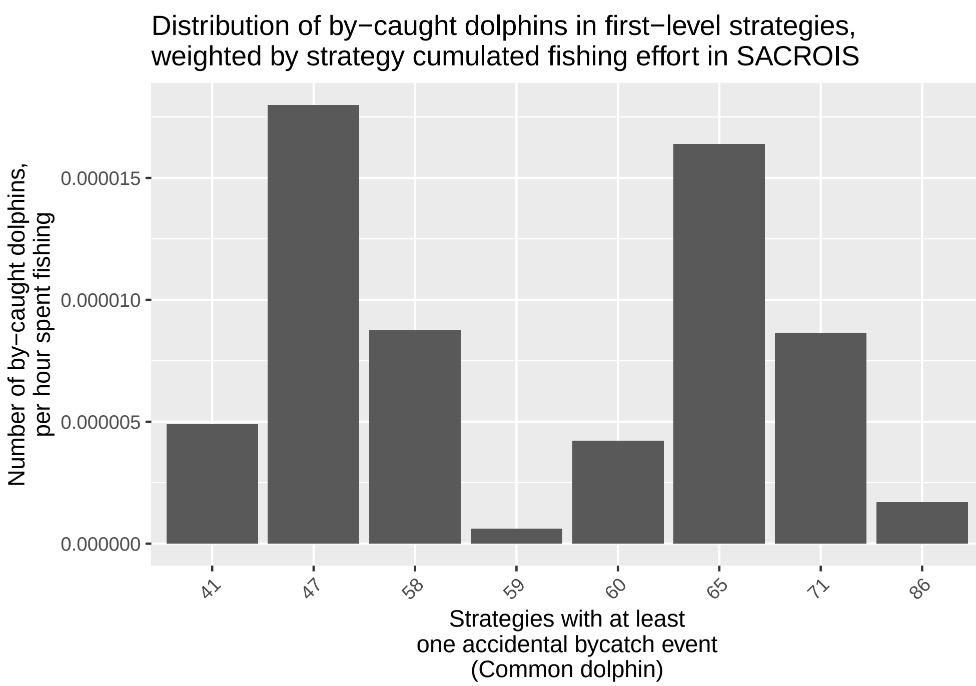


Distribution of bycatch events
in first−level strategies
Observation Program
Fishermen Declaration
OBSMER Program (on−board observers, based on voluntary participation of fishermen)
Bycatch events count
0
10
20
30
40
50
37
41
42
47
58
59
60
64
65
71
72
74
77
86
Strategies with at least
one accidental bycatch event
(Common dolphin)

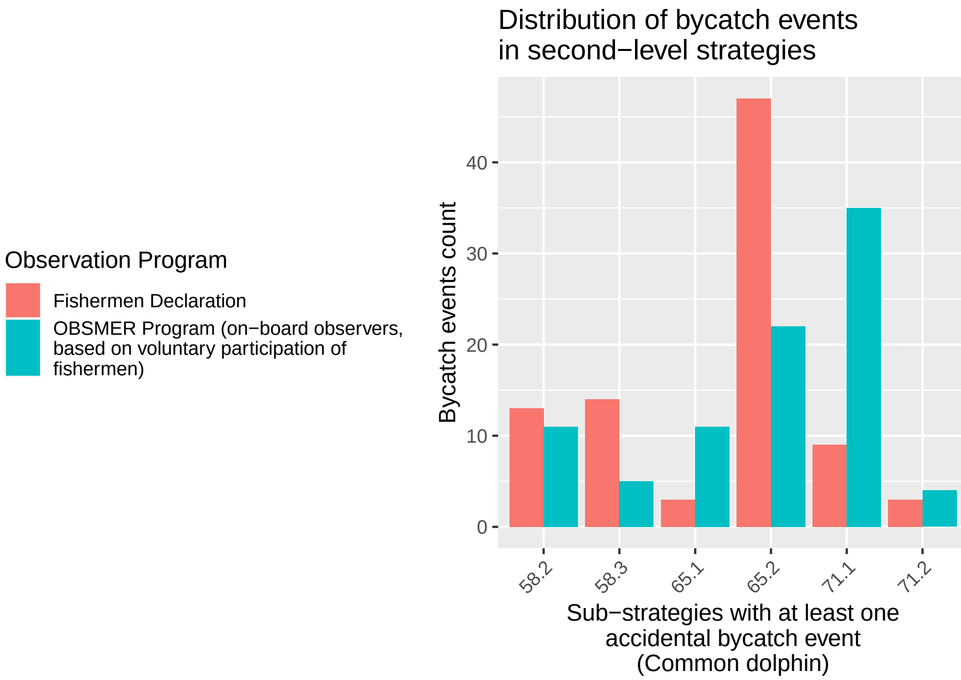


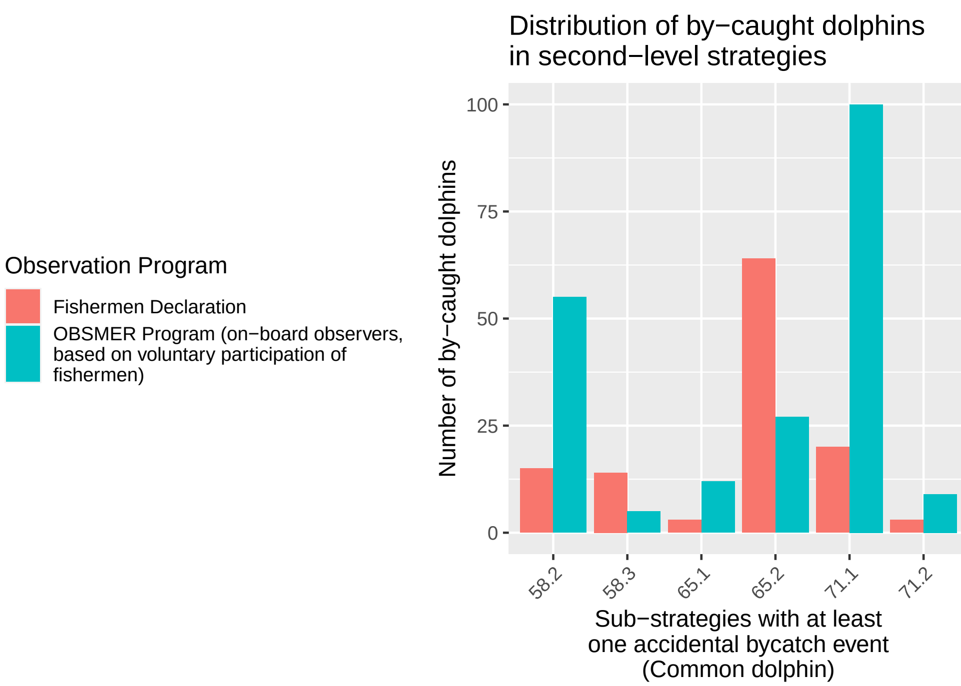
Distribution of by−caught dolphins
in first−level strategies
Observation Program
Fishermen Declaration
OBSMER Program (on−board observers, based on voluntary participation of fishermen)
Number of by−caught dolphins
0
30
60
90
37
41
42
47
58
59
60
64
65
71
72
74
77
86
Strategies with at least
one accidental bycatch event
(Common dolphin)

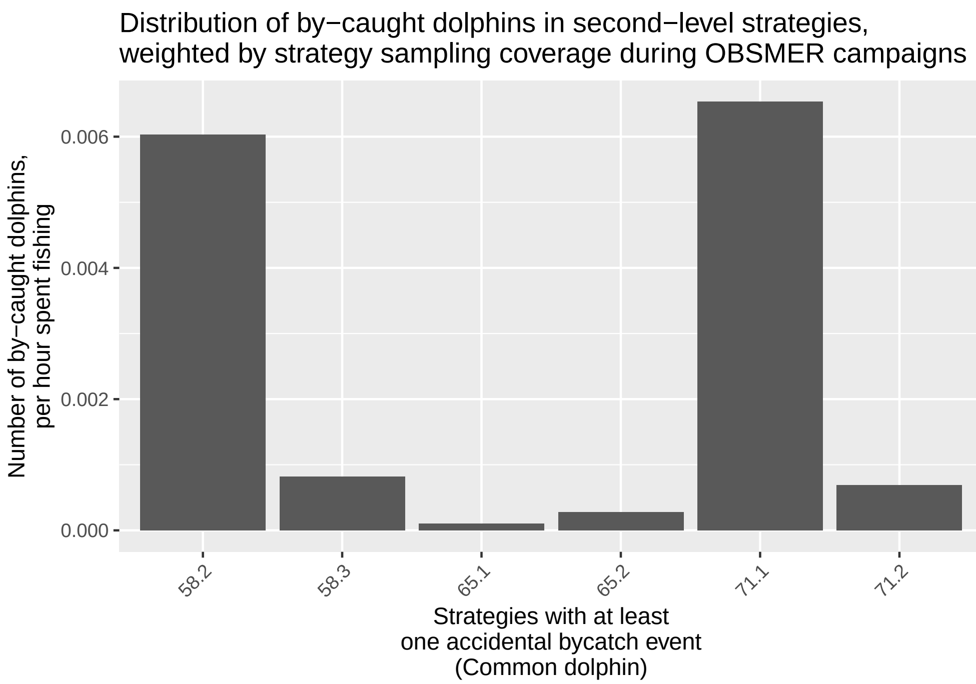

Distribution of by−caught dolphins in first−level strategies,
weighted by strategy sampling coverage during OBSMER campaigns
Number of by−caught dolphins,
per hour spent fishing
0.004
0.003
0.002
0.001
0.000
37
41
42
47
58
59
60
64
65
71
72
74
77
Strategies with at least
one accidental bycatch event
(Common dolphin)

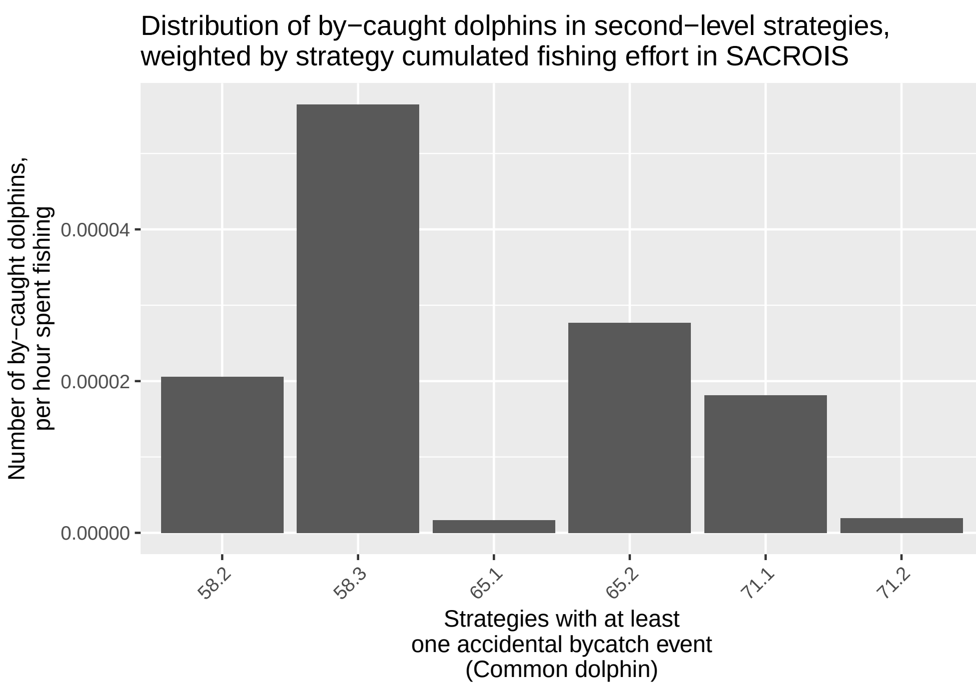

Distribution of by−caught dolphins in first−level strategies,
weighted by strategy cumulated fishing effort in SACROIS
Number of by−caught dolphins,
per hour spent fishing
0.000015
0.000010
0.000005
0.000000
41
47
58
59
60
65
71
86
Strategies with at least
one accidental bycatch event
(Common dolphin)

Second level

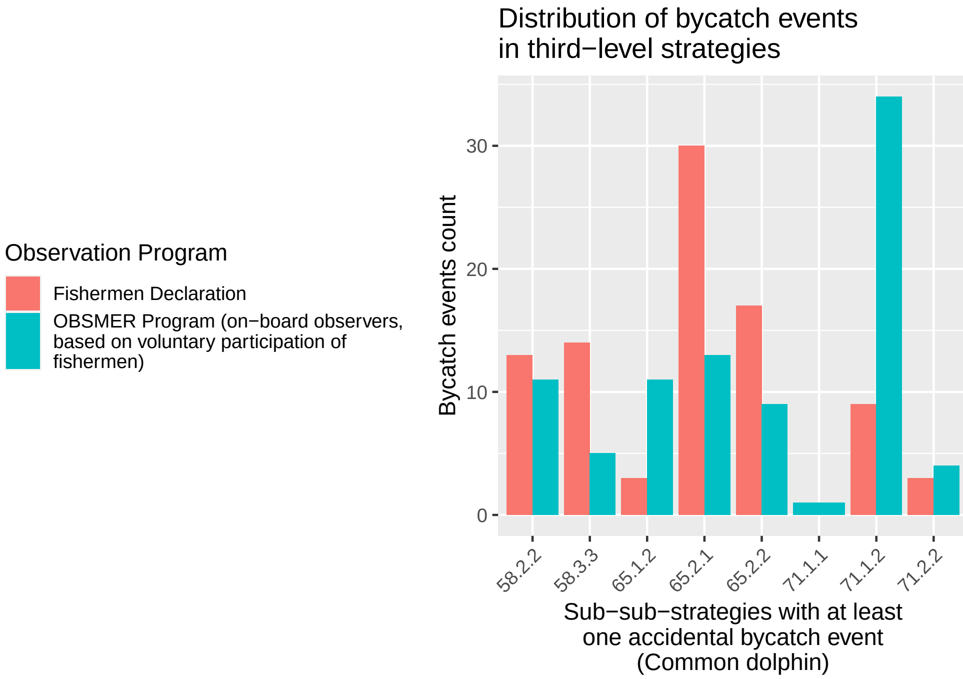




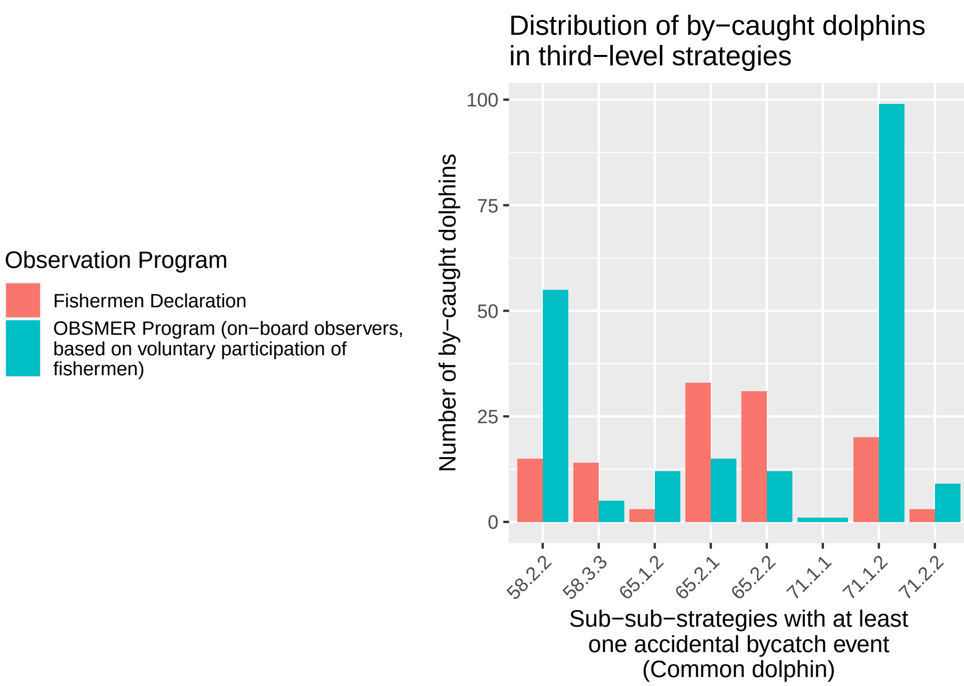

Distribution of by−caught dolphins in second−level strategies,
weighted by strategy sampling coverage during OBSMER campaigns
Number of by−caught dolphins,
per hour spent fishing
0.006
0.004
0.002
0.000
58.2
58.3
65.1
65.2
71.1
71.2
Strategies with at least
one accidental bycatch event
(Common dolphin)


Distribution of by−caught dolphins in second−level strategies,
weighted by strategy cumulated fishing effort in SACROIS
Number of by−caught dolphins,
per hour spent fishing
0.00004
0.00002
0.00000
58.2
58.3
65.1
65.2
71.1
71.2
Strategies with at least
one accidental bycatch event
(Common dolphin)

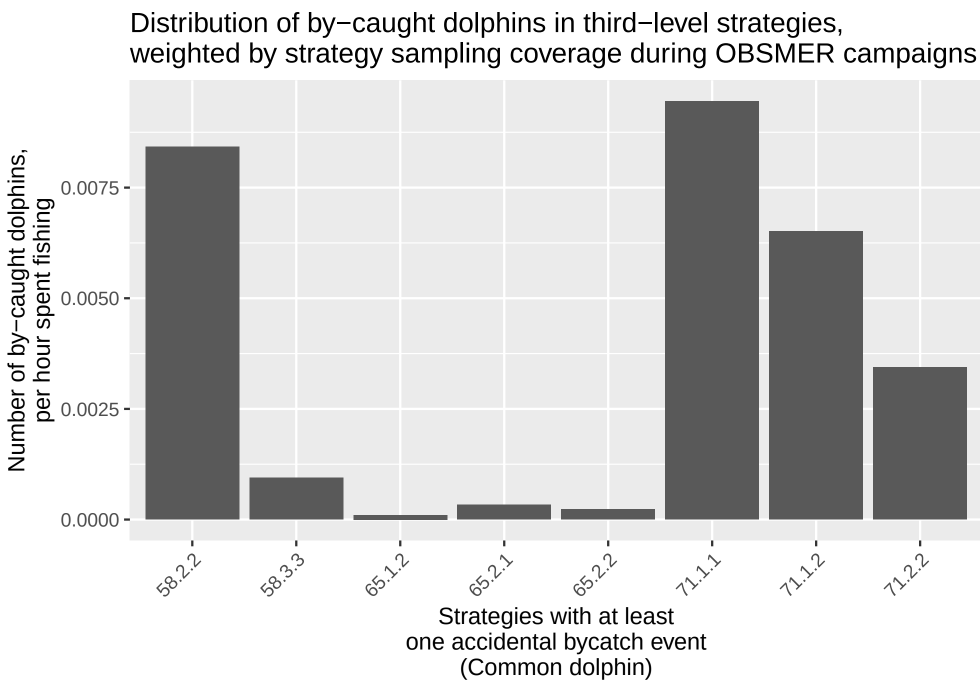
Third level

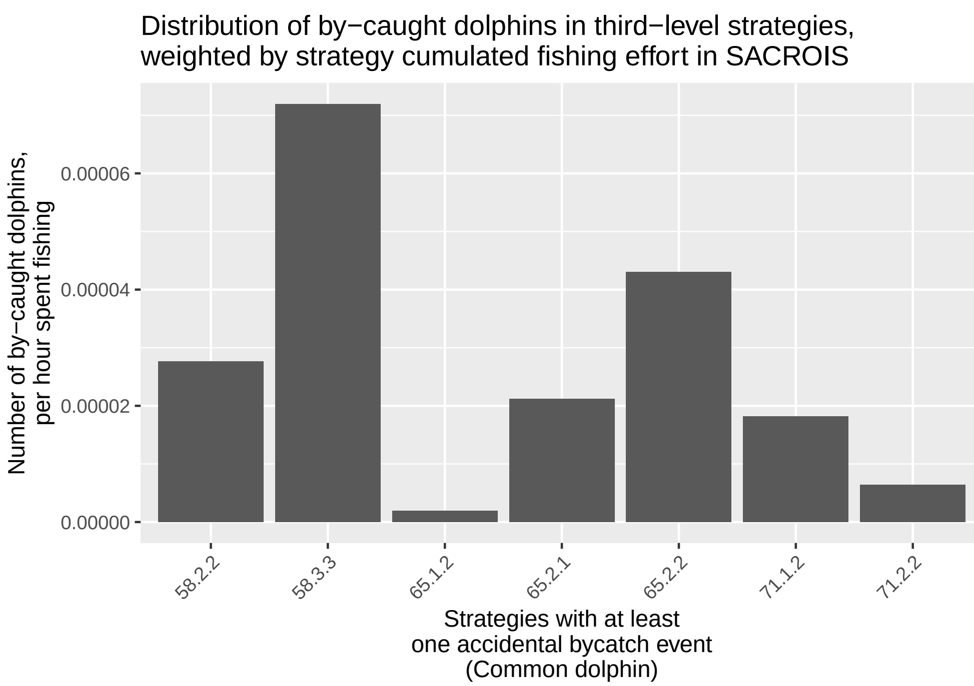


Distribution of bycatch events
in third−level strategies
Observation Program
Fishermen Declaration
OBSMER Program (on−board observers, based on voluntary participation of fishermen)
Bycatch events count
30
20
10
0
58.2.2
58.3.3
65.1.2
65.2.1
65.2.2
71.1.1
71.1.2
71.2.2
Sub−sub−strategies with at least one accidental bycatch event (Common dolphin)



Distribution of by−caught dolphins
in third−level strategies
Observation Program
Fishermen Declaration
OBSMER Program (on−board observers, based on voluntary participation of fishermen)
Number of by−caught dolphins
100
75
50
25
0
58.2.2
58.3.3
65.1.2
65.2.1
65.2.2
71.1.1
71.1.2
71.2.2
Sub−sub−strategies with at least one accidental bycatch event (Common dolphin)

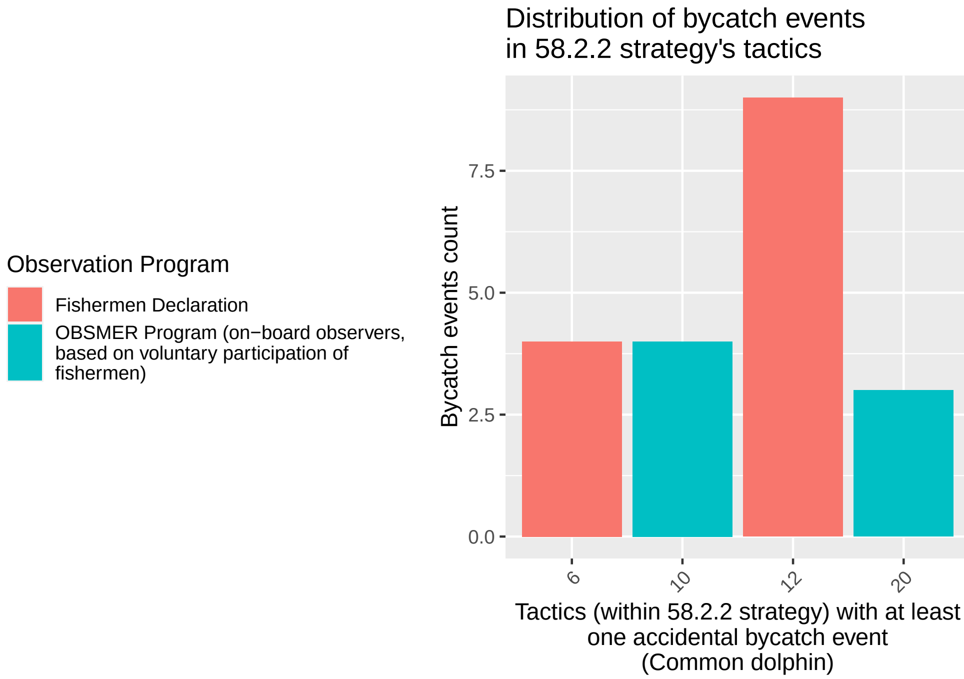


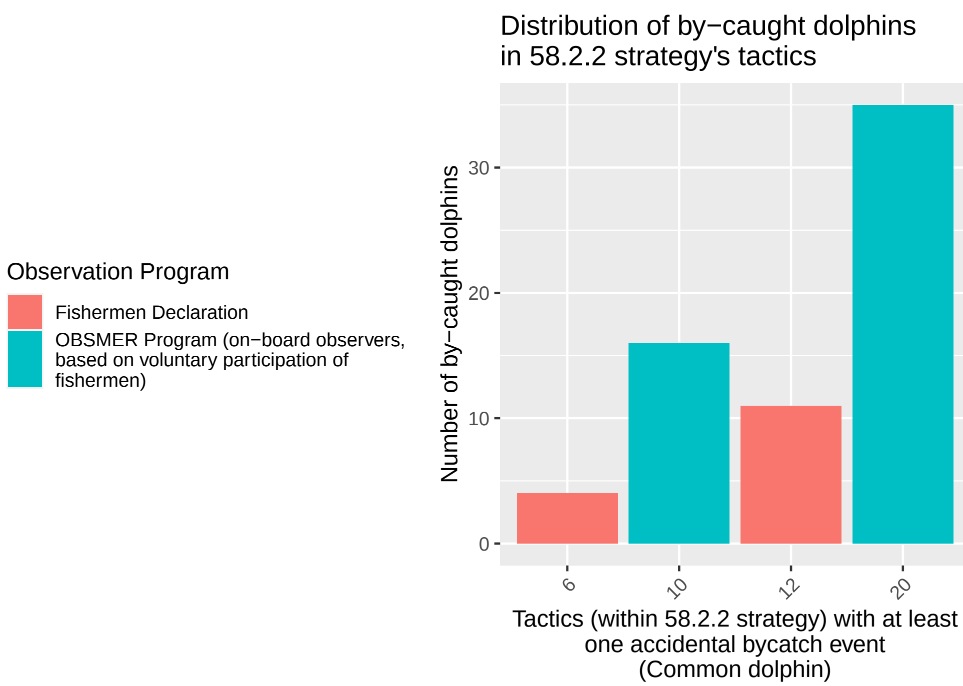


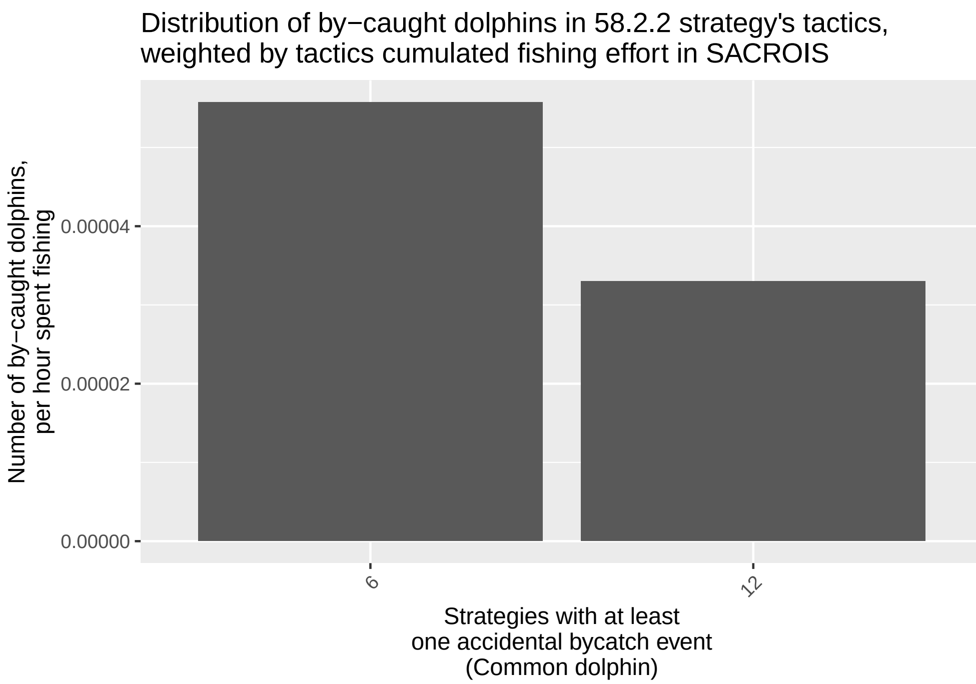
In tactics

We show how bycatch (events and number of dolphins captured) is distributed within tactics, for third-level strategies most associated with bycatch (>70% of bycatch events / >78% of dolphins captured: 58.2.2, 58.3.3, 65.2.1, 65.2.2, 71.1.2). For declarative data, we also presented the number of dolphins captured corrected for the fishing effort associated with each tactic (we do not present the correction for OBSMER data as we lack information on trip ID correspondence for OBSMER data).

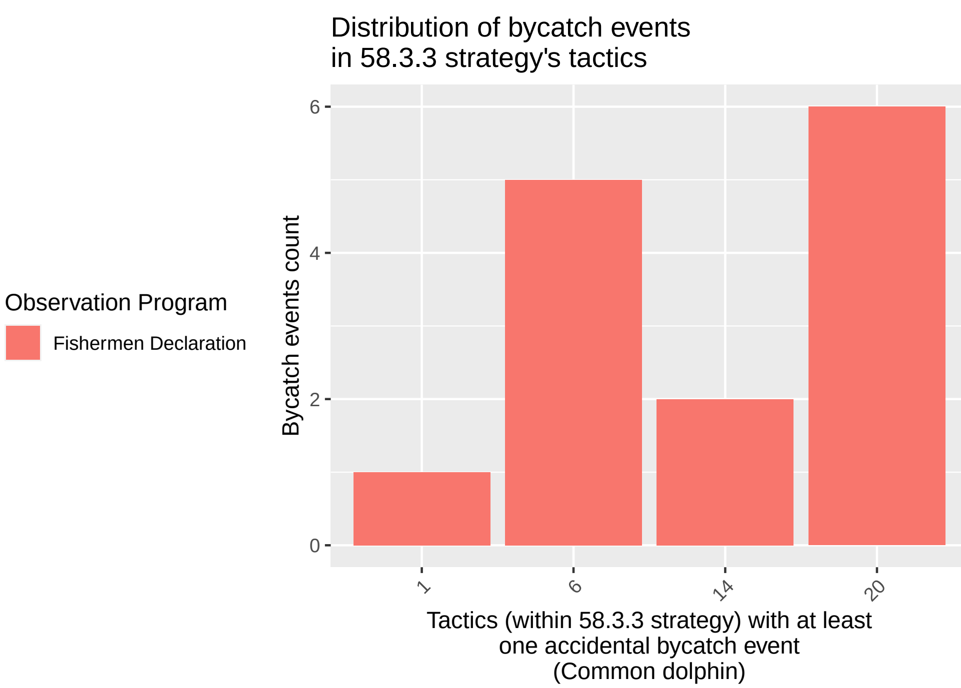
Within strategy 58.2.2

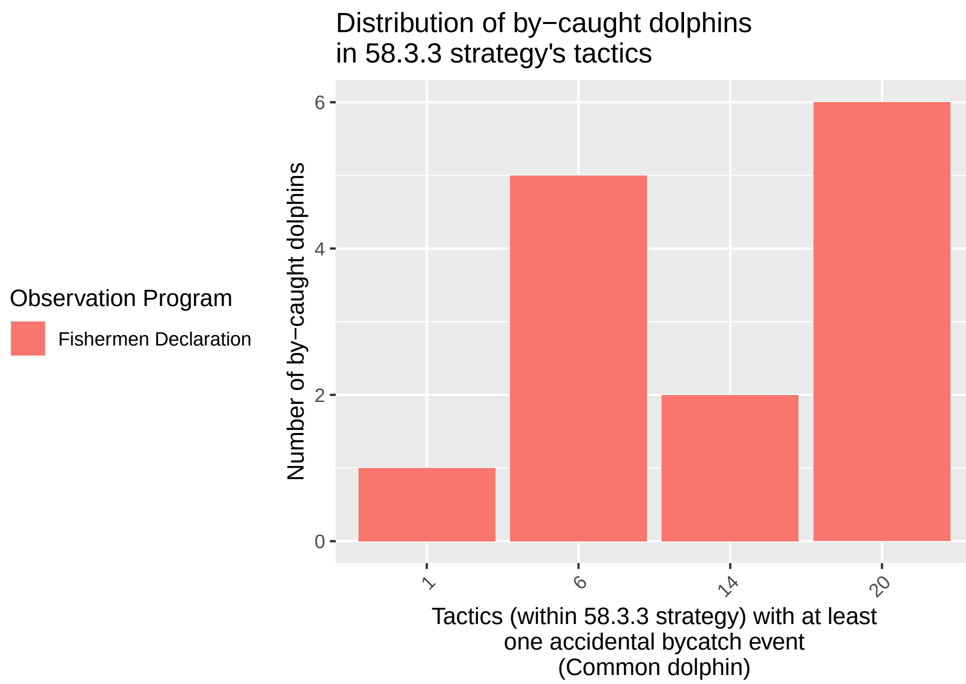


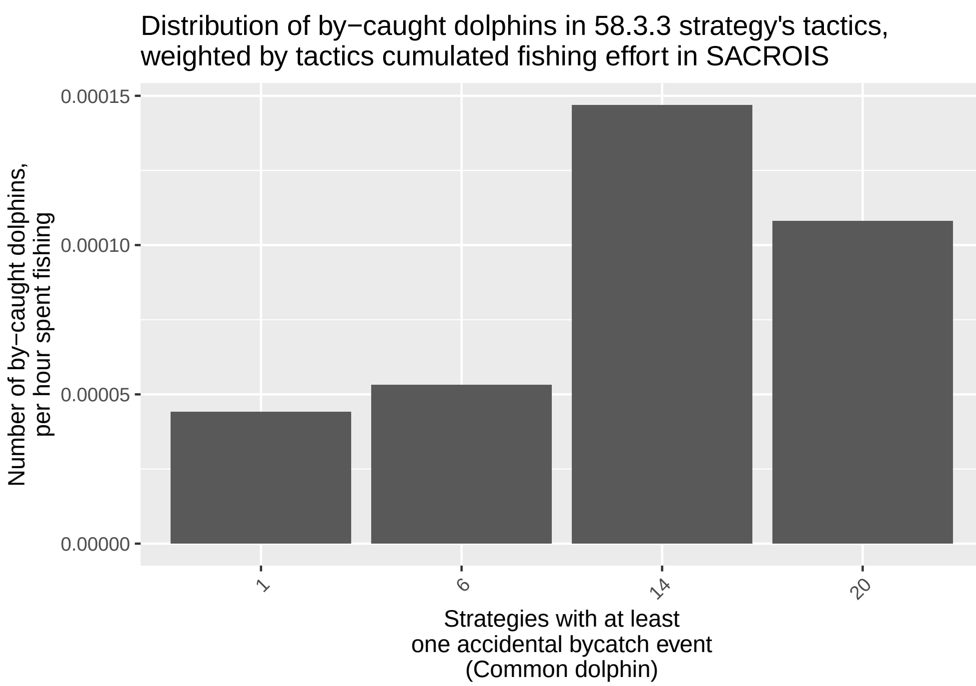




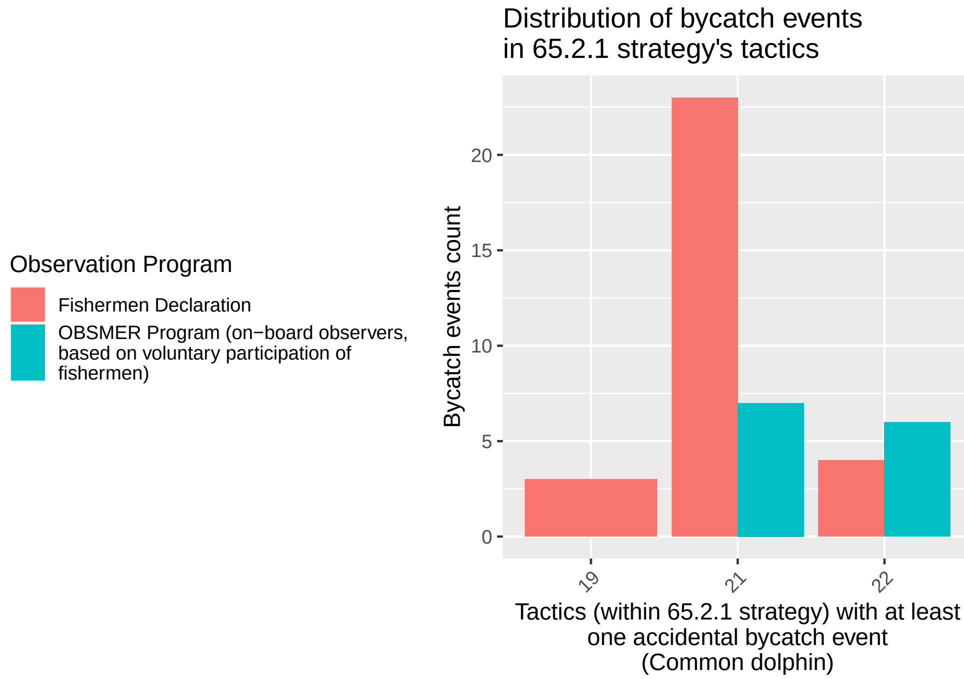
Within strategy 58.3.3

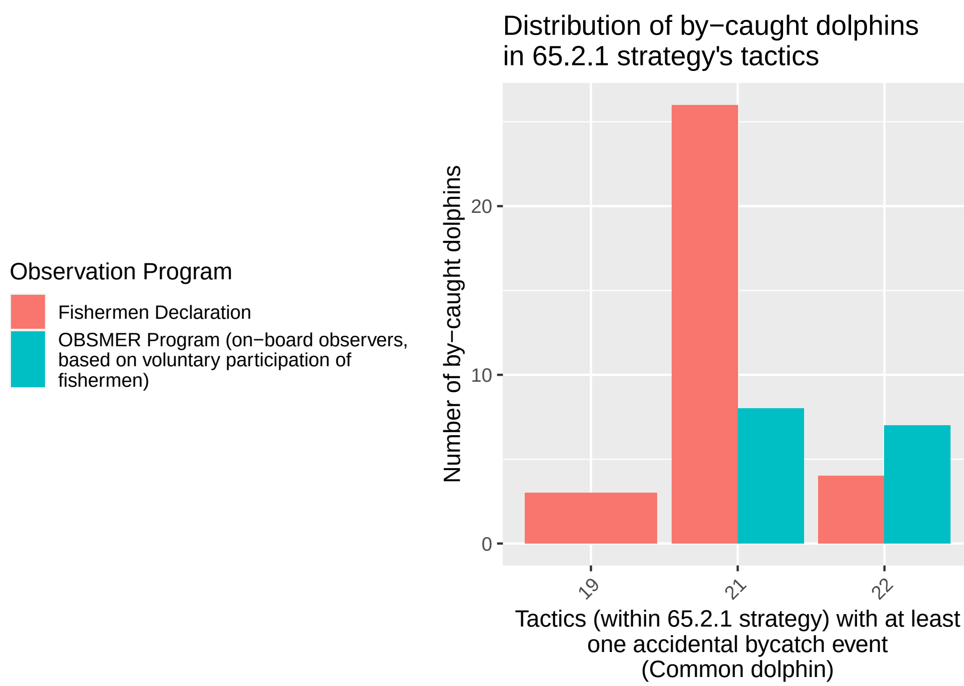


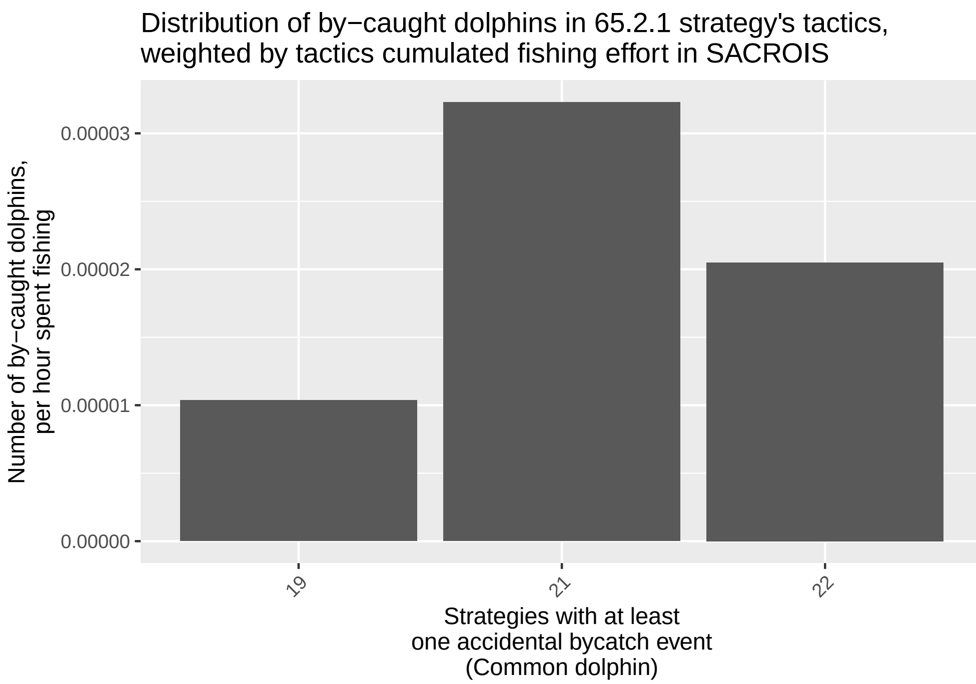

Distribution of by−caught dolphins
in 58.3.3 strategy's tactics
Observation Program
Fishermen Declaration
Number of by−caught dolphins
0
2
4
6
1
6
14
20
Tactics (within 58.3.3 strategy) with at least
one accidental bycatch event
(Common dolphin)


Distribution of by−caught dolphins in 58.3.3 strategy's tactics,
weighted by tactics cumulated fishing effort in SACROIS
Number of by−caught dolphins,
per hour spent fishing
0.00000
0.00005
0.00010
0.00015
1
6
14
20
Strategies with at least
one accidental bycatch event
(Common dolphin)

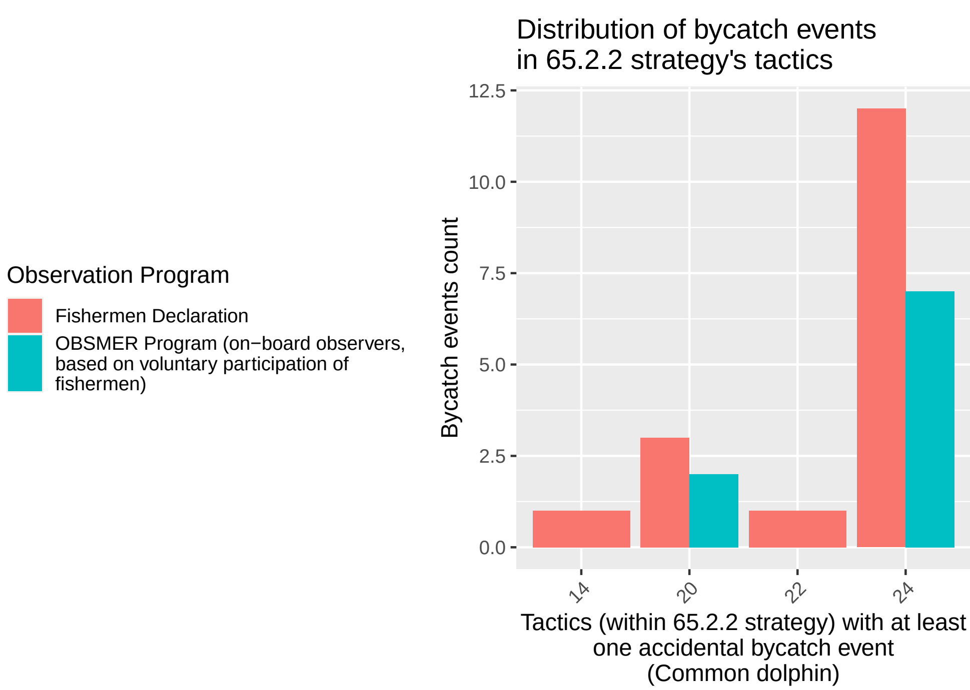
Within strategy 65.2.1

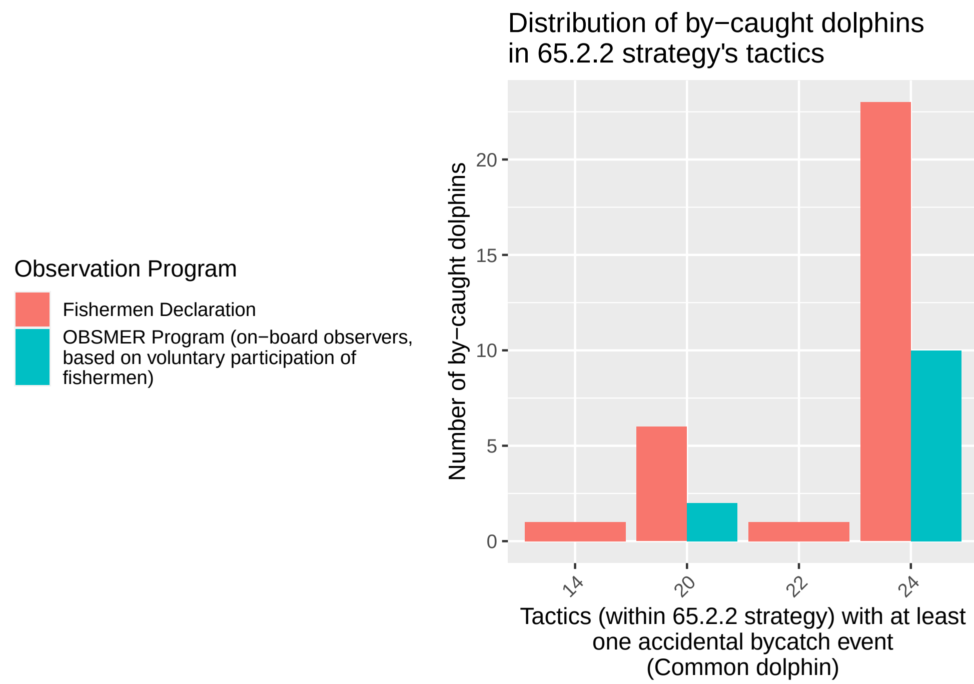


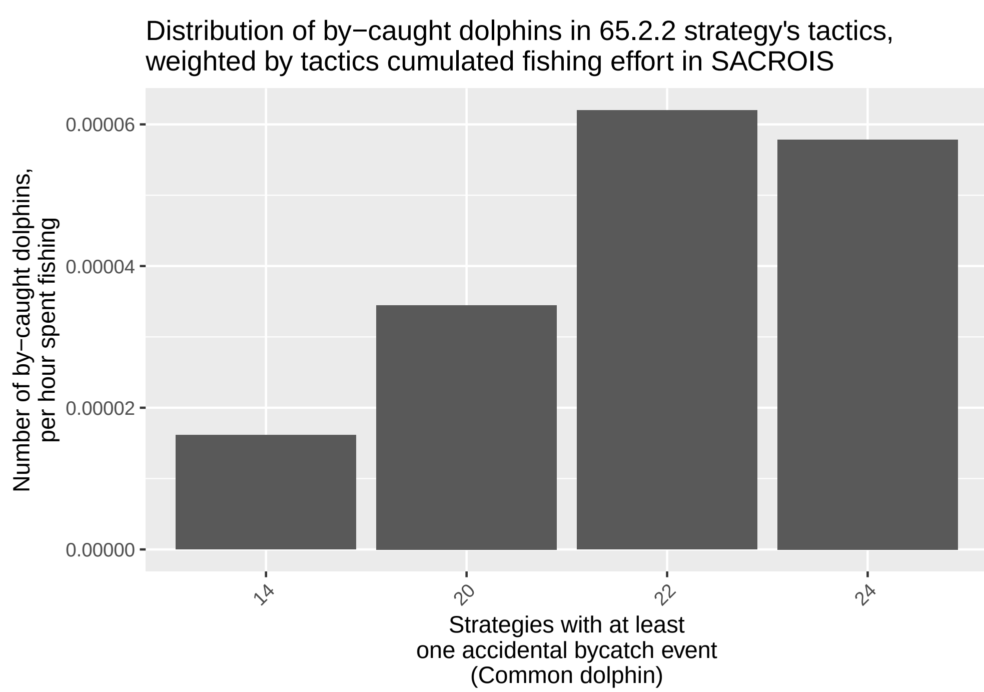




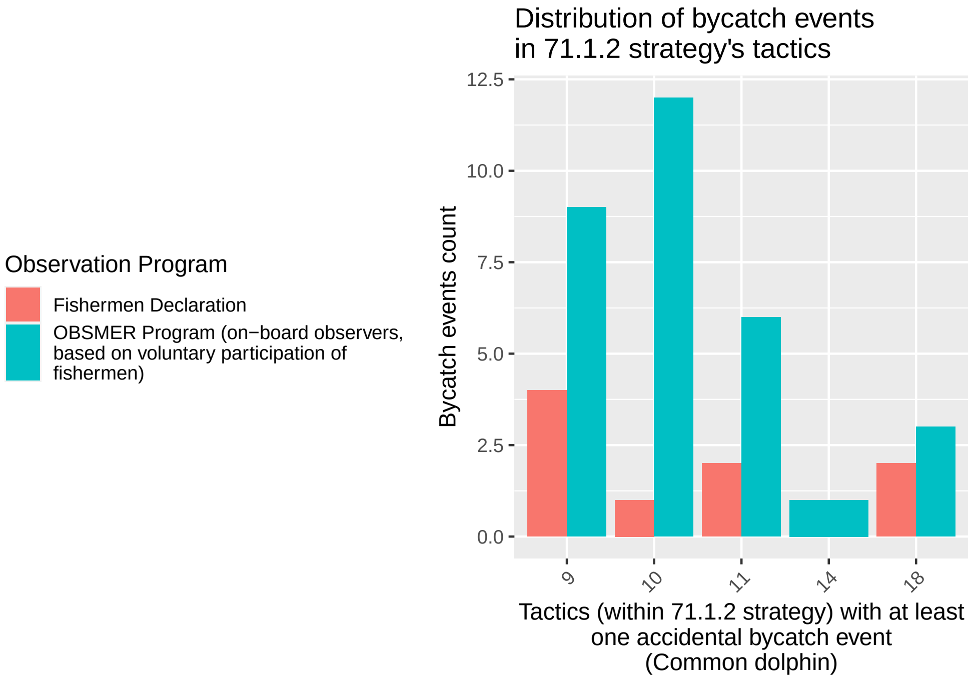
Within strategy 65.2.2

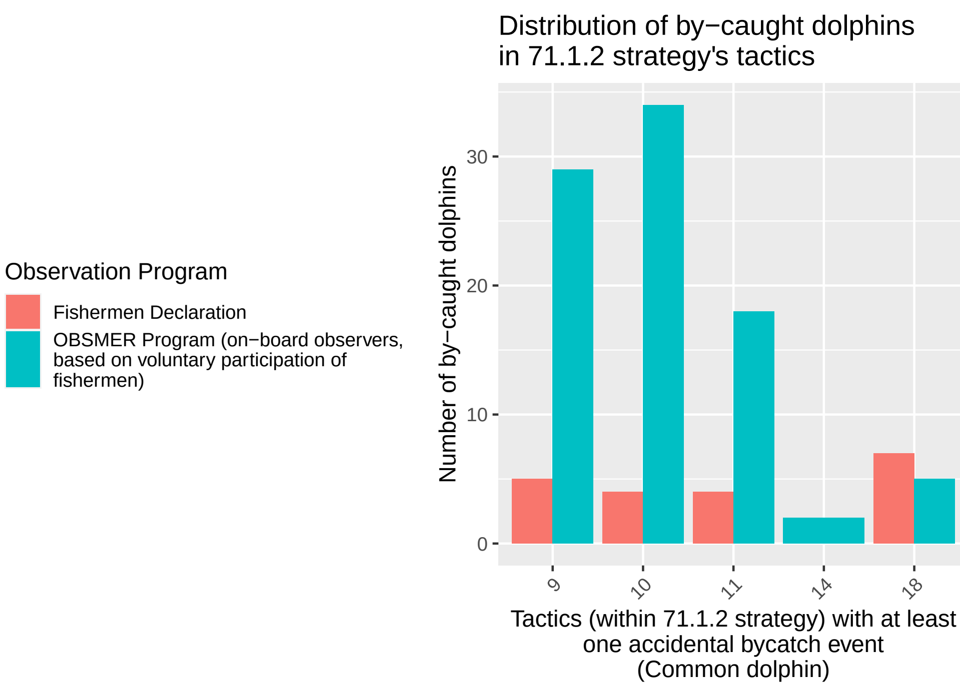


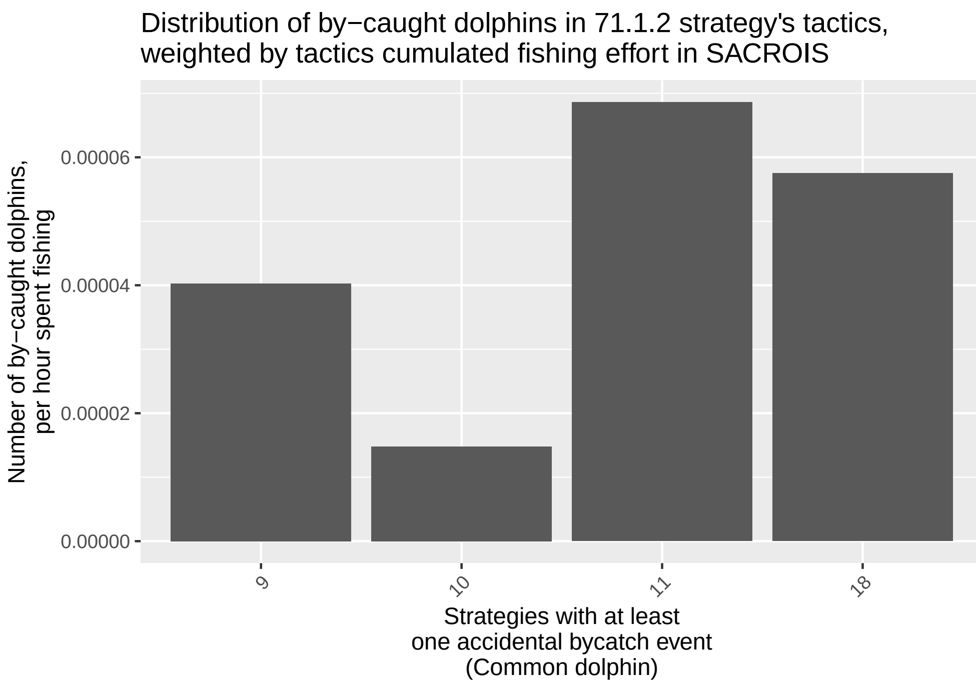

Distribution of by−caught dolphins
in 65.2.2 strategy's tactics
Observation Program
Fishermen Declaration
OBSMER Program (on−board observers, based on voluntary participation of fishermen)
Number of by−caught dolphins
0
5
10
15
20
14
20
22
24
Tactics (within 65.2.2 strategy) with at least one accidental bycatch event (Common dolphin)


Distribution of by−caught dolphins in 65.2.2 strategy's tactics,
weighted by tactics cumulated fishing effort in SACROIS
Number of by−caught dolphins, per hour spent fishing
0.00000
0.00002
0.00004
0.00006
14
20
22
24
Strategies with at least one accidental bycatch event (Common dolphin)

Within strategy 71.1.2



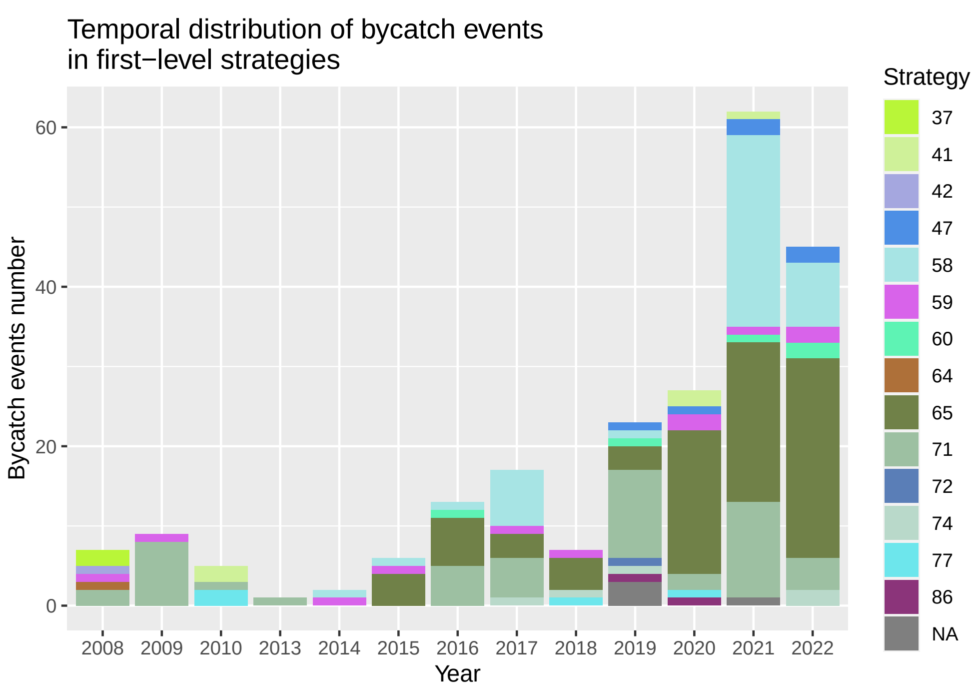


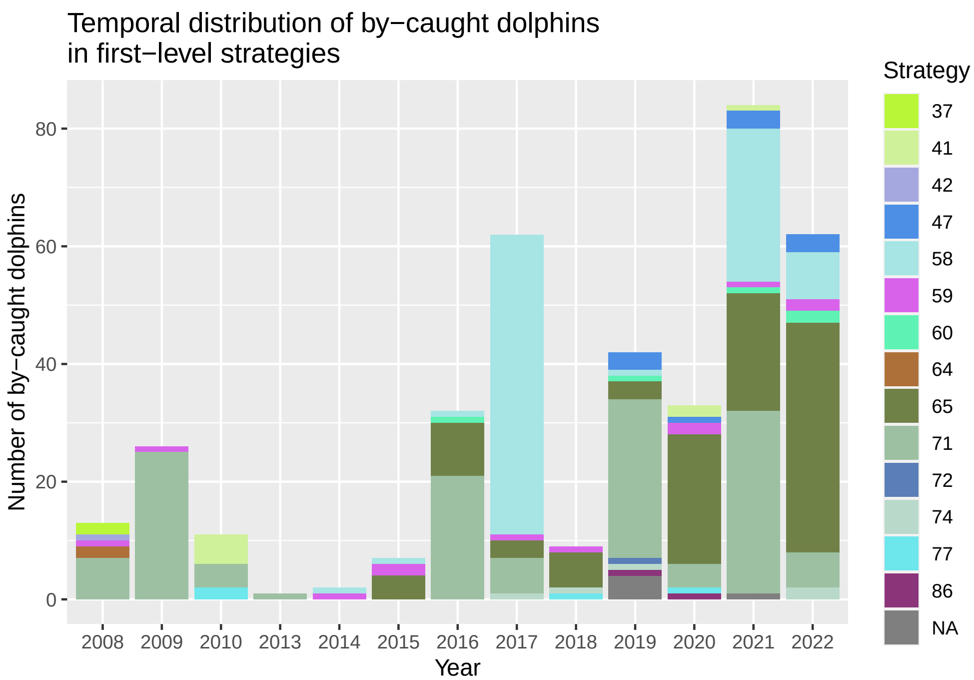


Temporal evolution of bycatch

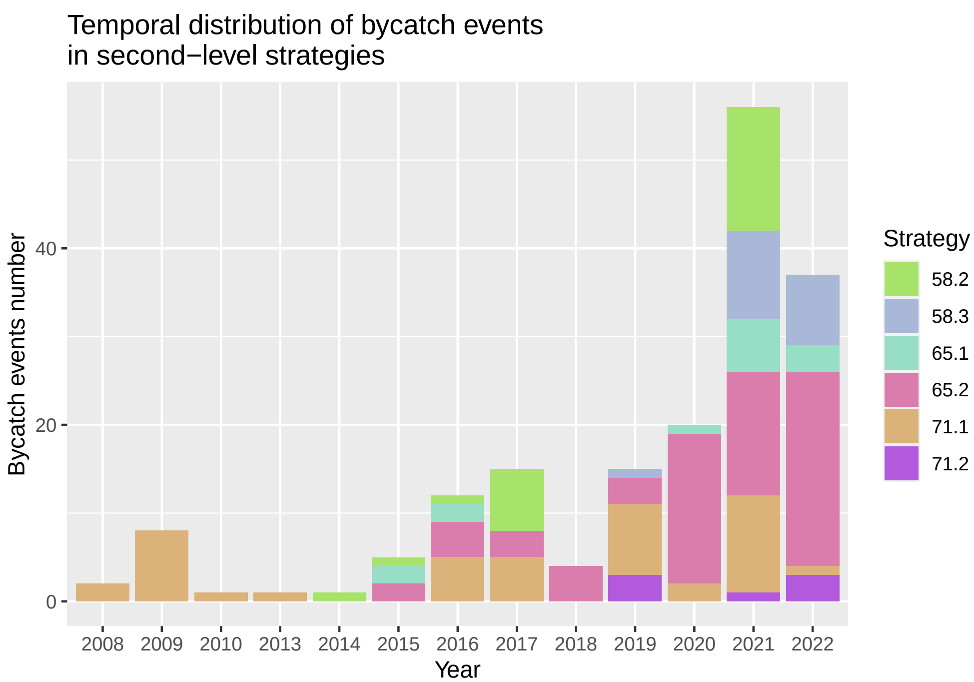
Graphs describing the temporal evolution of bycatch distribution within strategies were also generated. Again, we used both the number of bycatch events and the number of dolphins captured to describe bycatch risk.

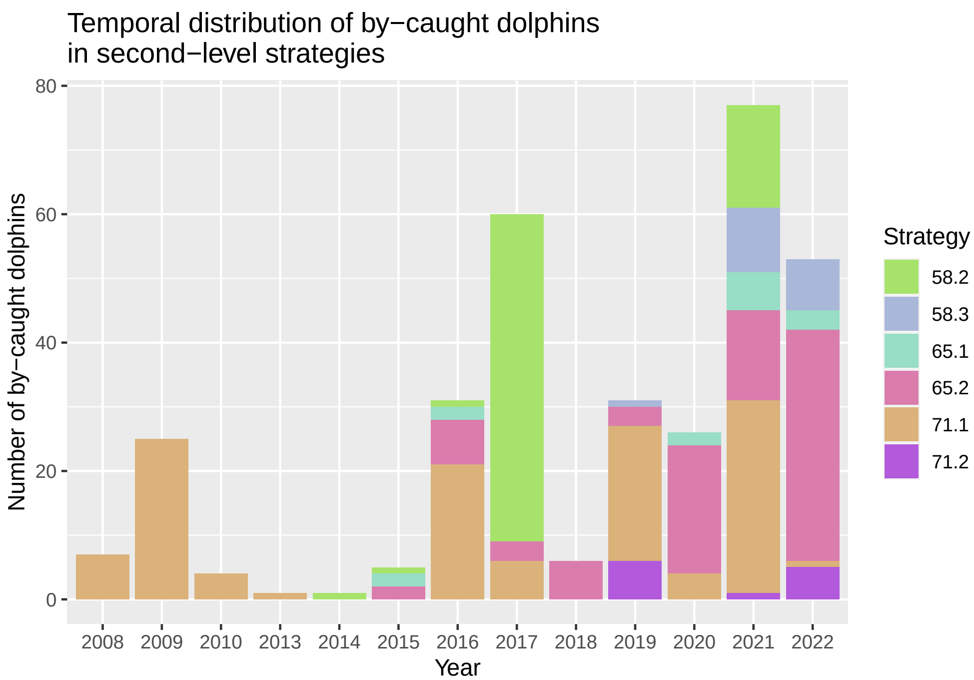
Strategy - First level



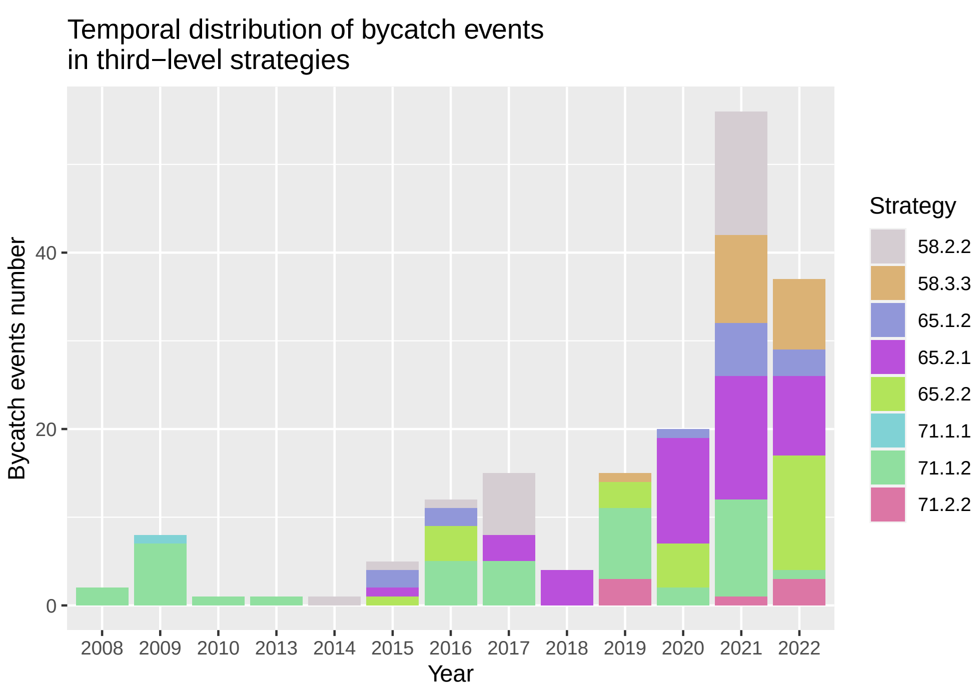


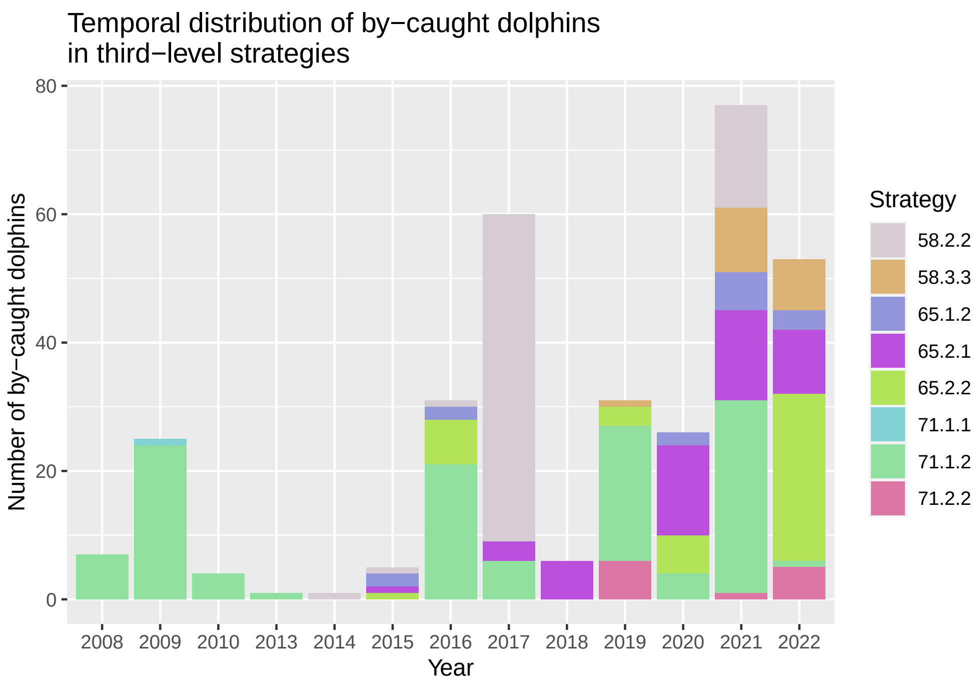
Strategy - Second level



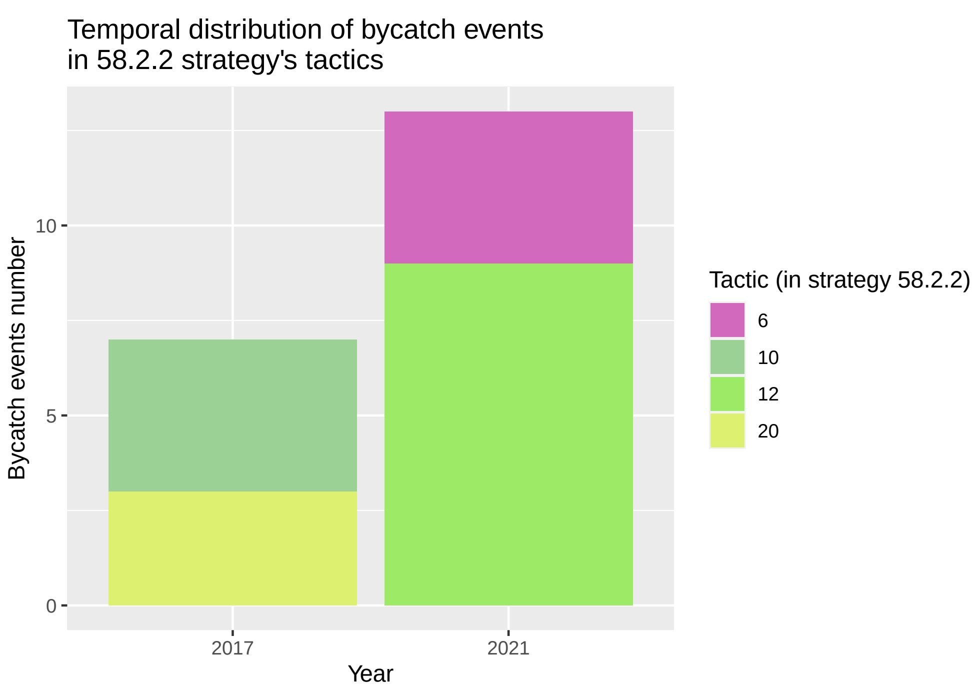


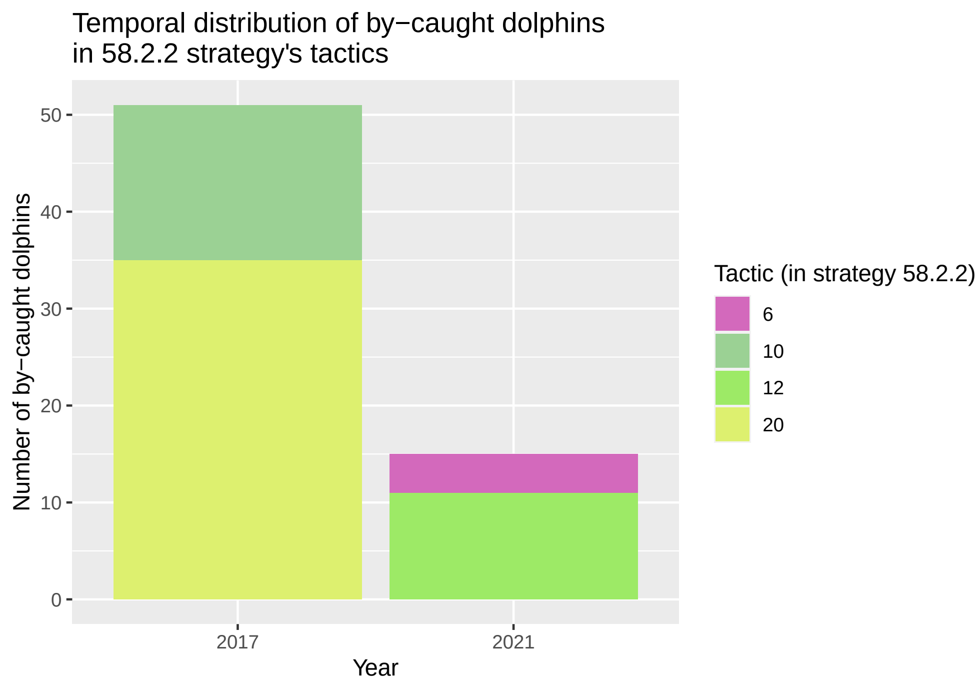
Strategy - Third level



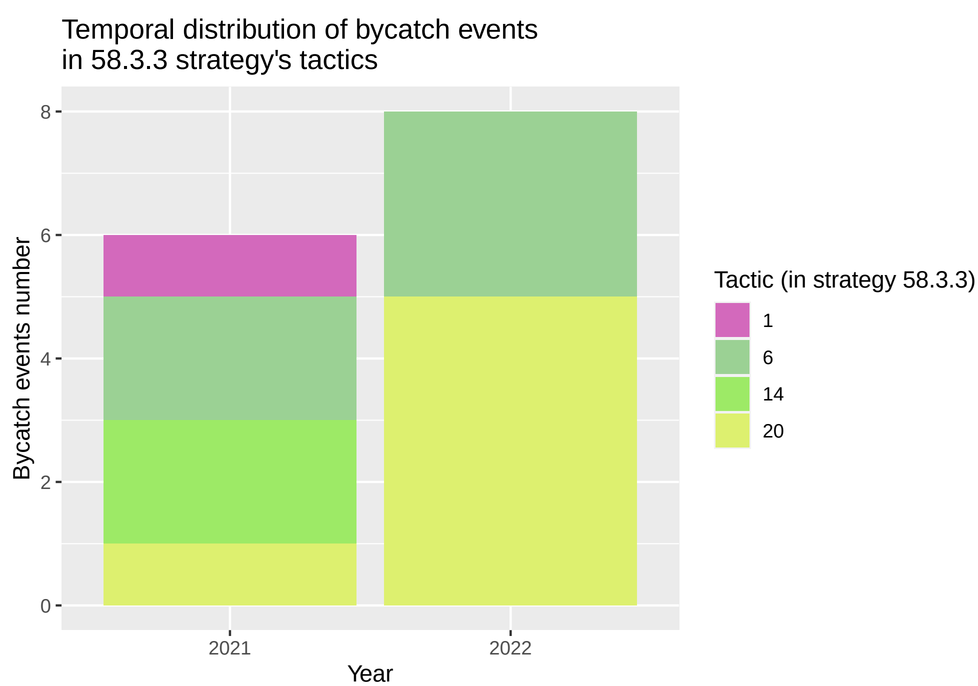


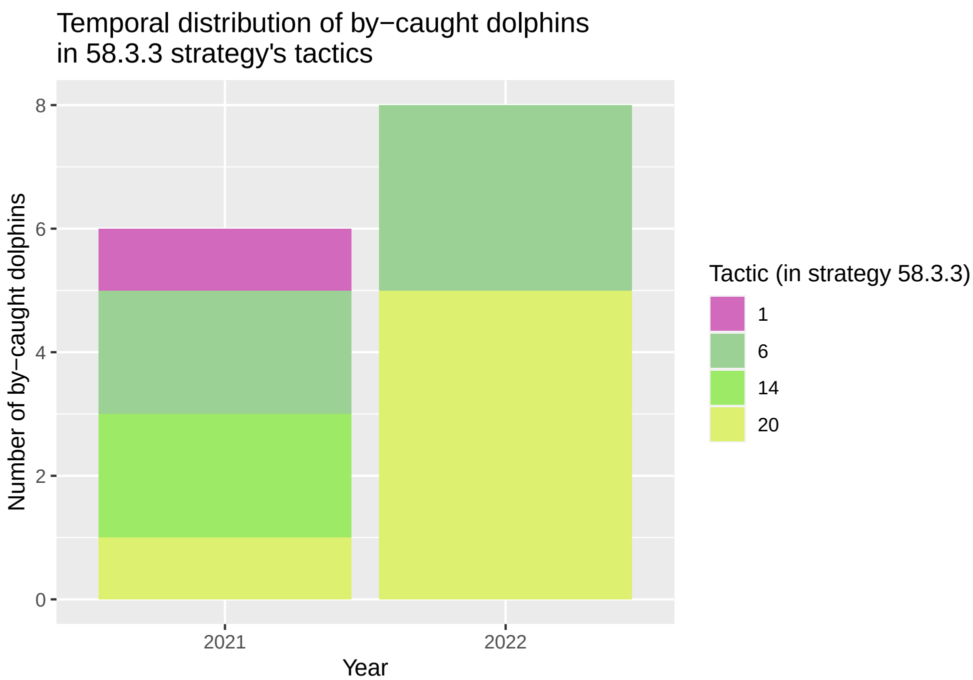
Tactic - Within strategy 58.2.2



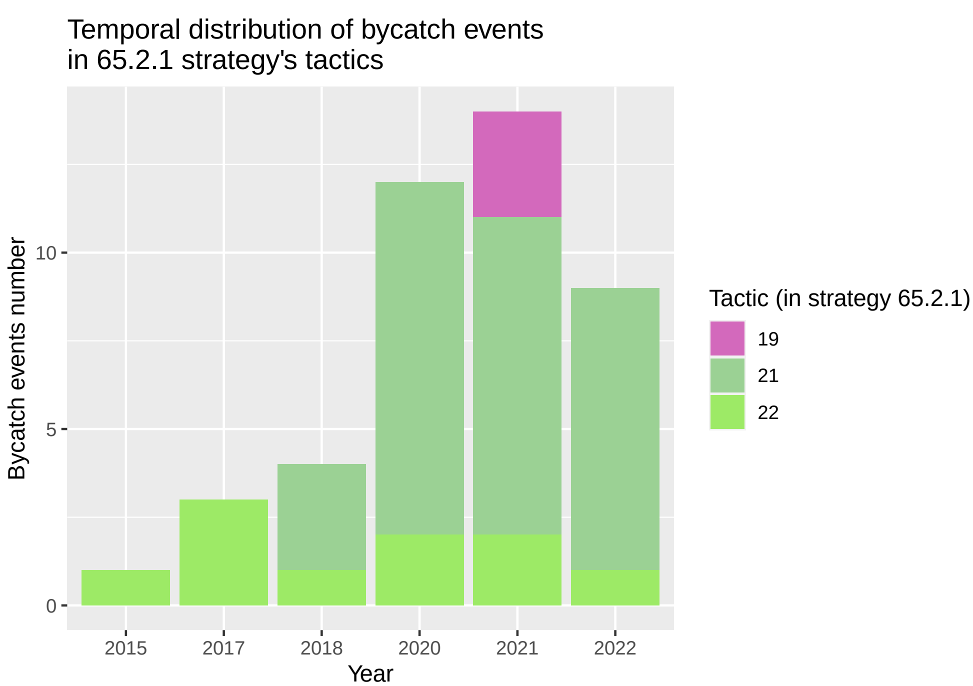


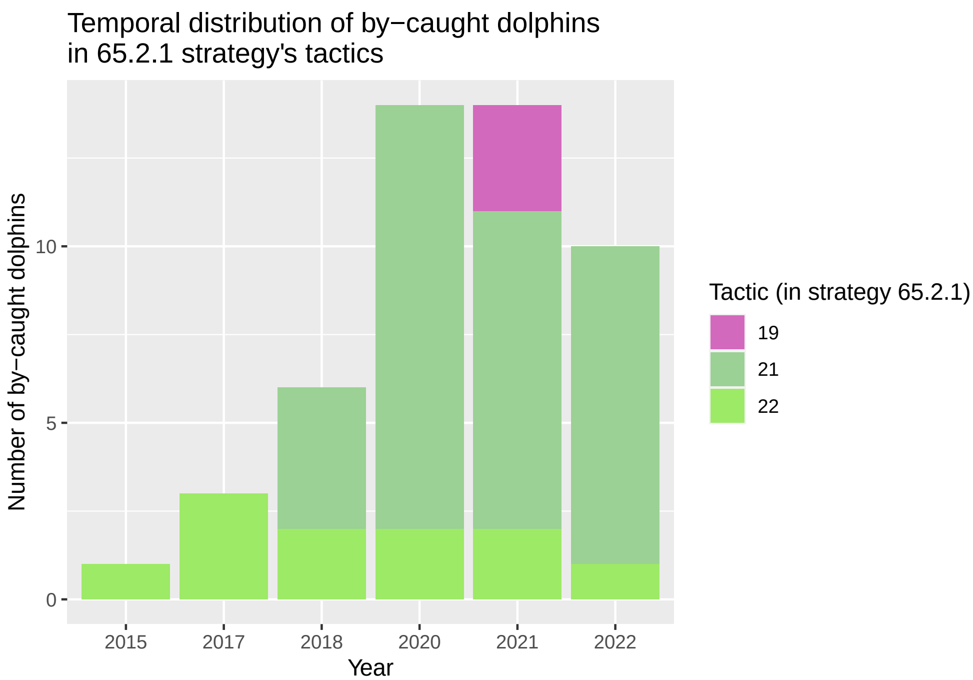
Tactic - Within strategy 58.3.3



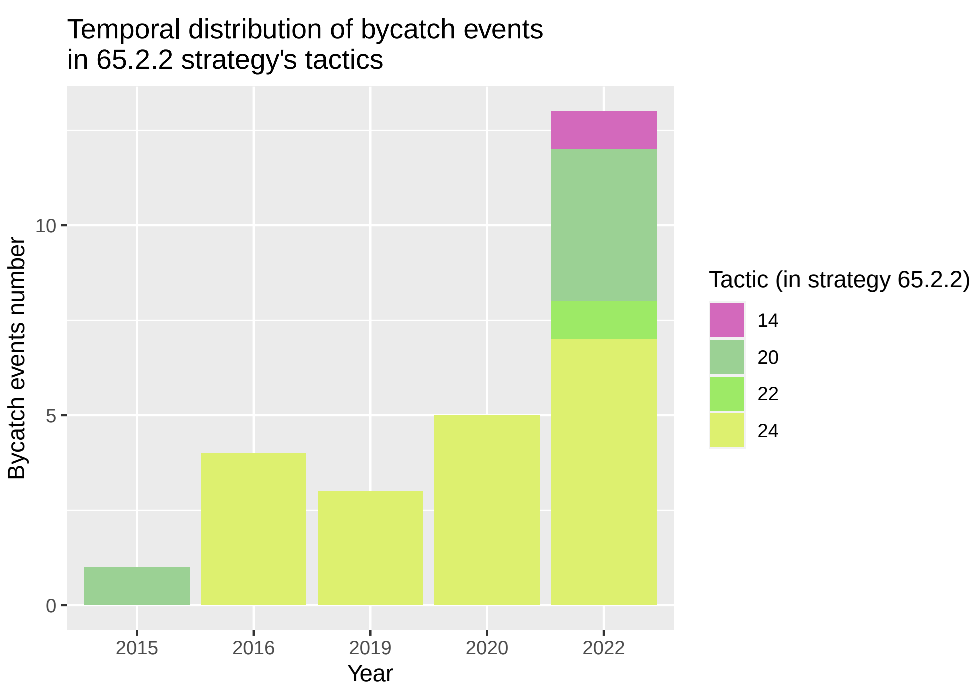


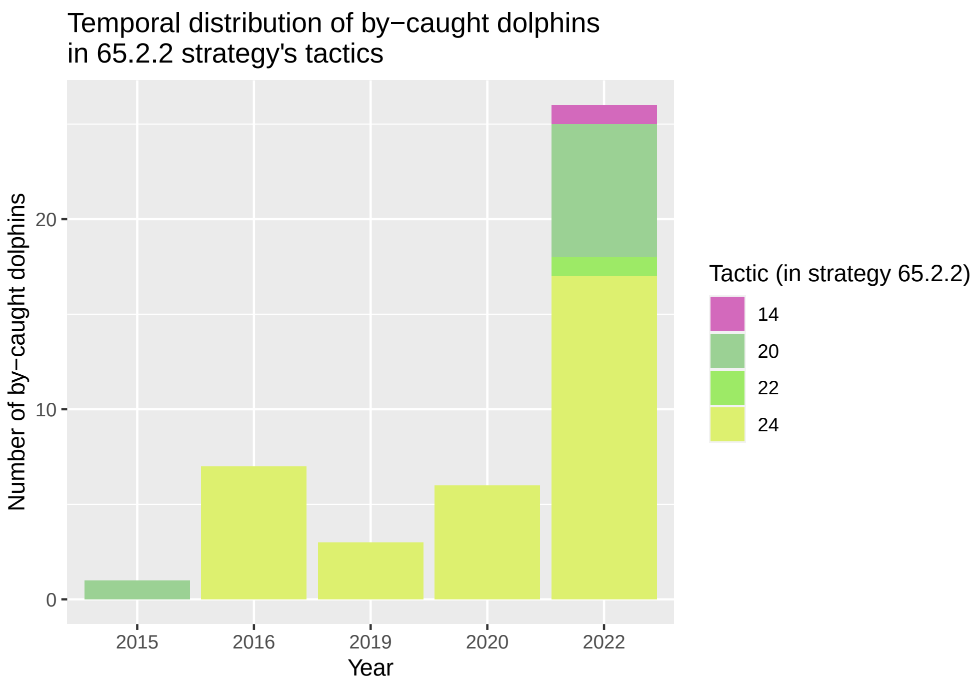
Tactic - Within strategy 65.2.1



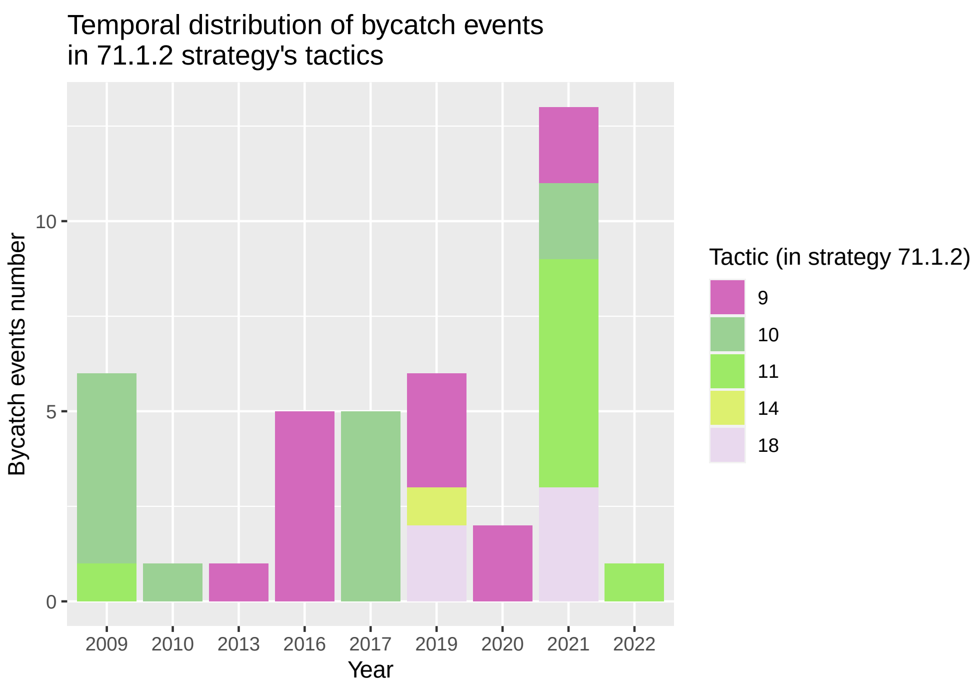


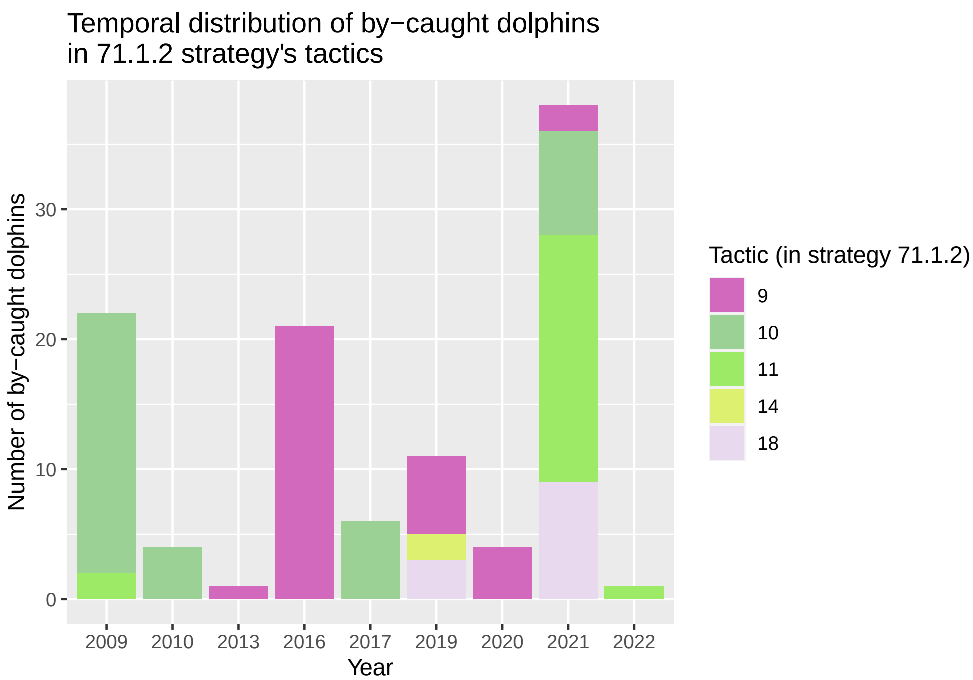
Tactic - Within strategy 65.2.2





Tactic - Within strategy 71.1.2



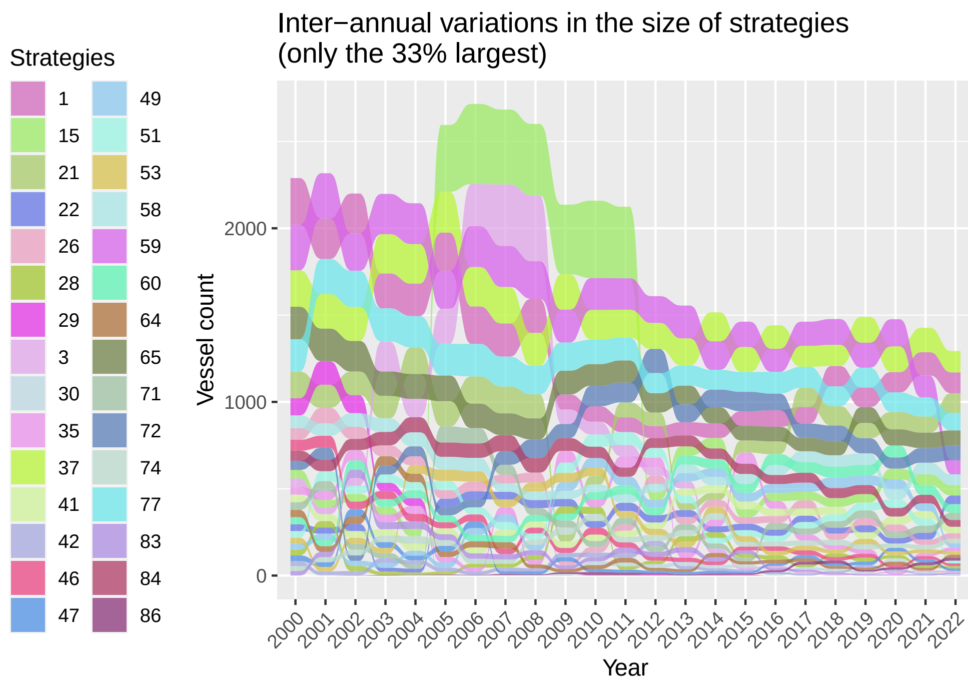


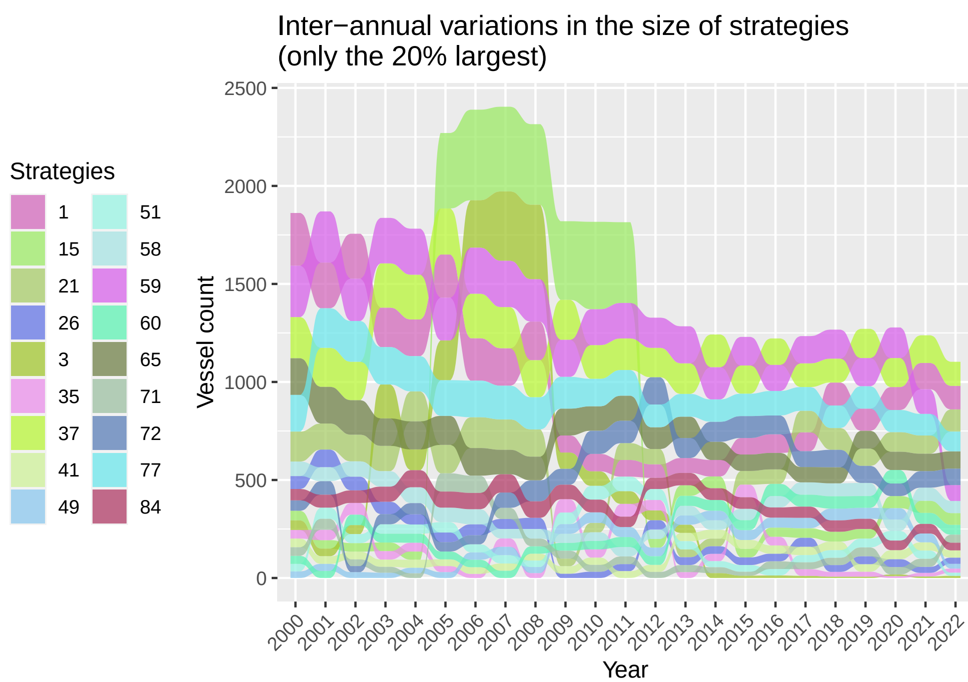
Description of strategies

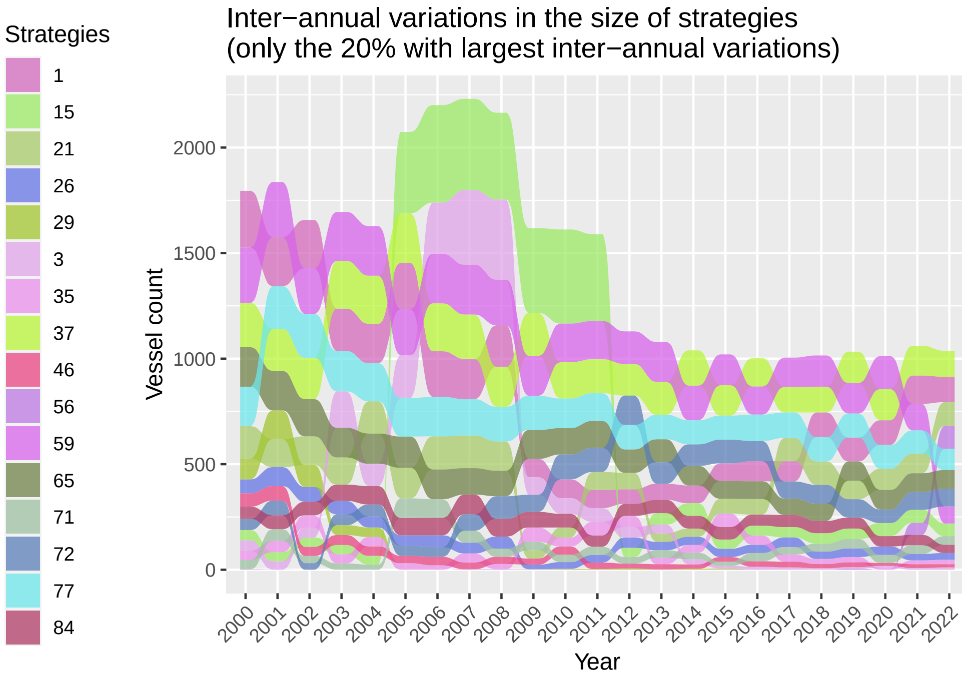
We only described the most high-risk strategies, i.e. the three most important first-level strategies in terms of bycatch (>80% of bycatch events / >86% of captured dolphins: 58, 65, 71) and all associated second- and third-level strategies with at least one bycatch event.

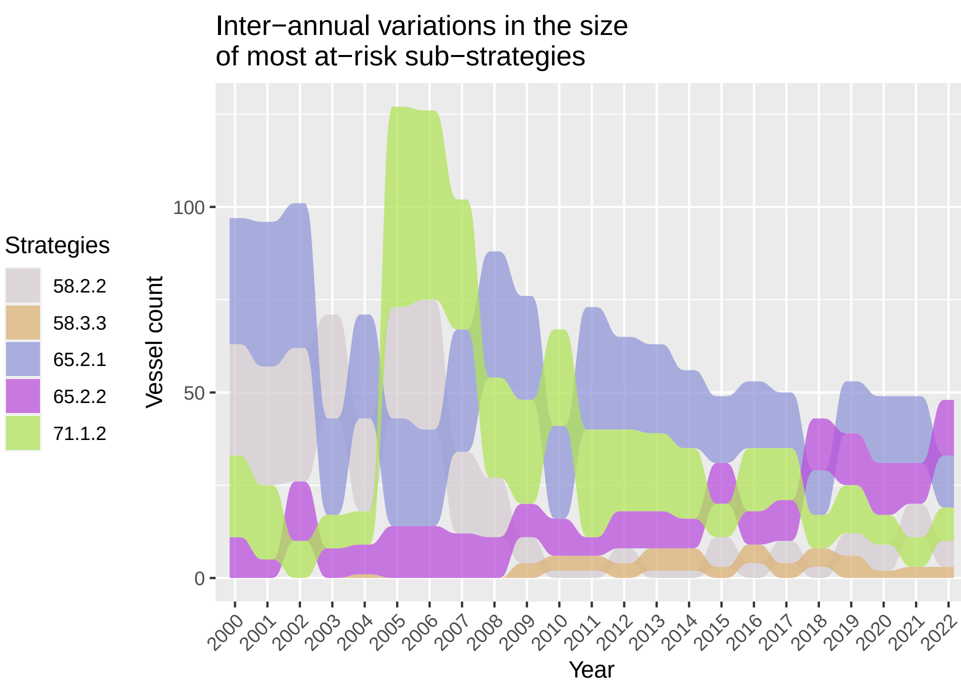
Overall distribution and temporal evolutions

First, we present a global overview of the temporal evolution of strategies over the last two decades. To improve readability, we first show the evolution of the 33% of strategies with the most ships, then the 20% of strategies with the most ships, and finally the 20% of strategies with the most inter-annual variation in size (measured by standard deviation). The three previously identified at-risk strategies (58, 65, 71) can be found in these graphs. We have also plotted the inter-annual variation in size for the five most at-risk third-level strategies (58.2.2, 58.3.3, 65.2.1, 65.2.2, 71.1.2). Note that the temporal variation in size is available for each strategy individually at the beginning of its description, in the following sections.


Inter−annual variations in the size of strategies
(only the 33% largest)
Strategies
1
15
21
22
26
28
29
3
30
35
37
41
42
46
47
49
51
53
58
59
60
64
65
71
72
74
77
83
84
86
Vessel count
0
1000
2000
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Year

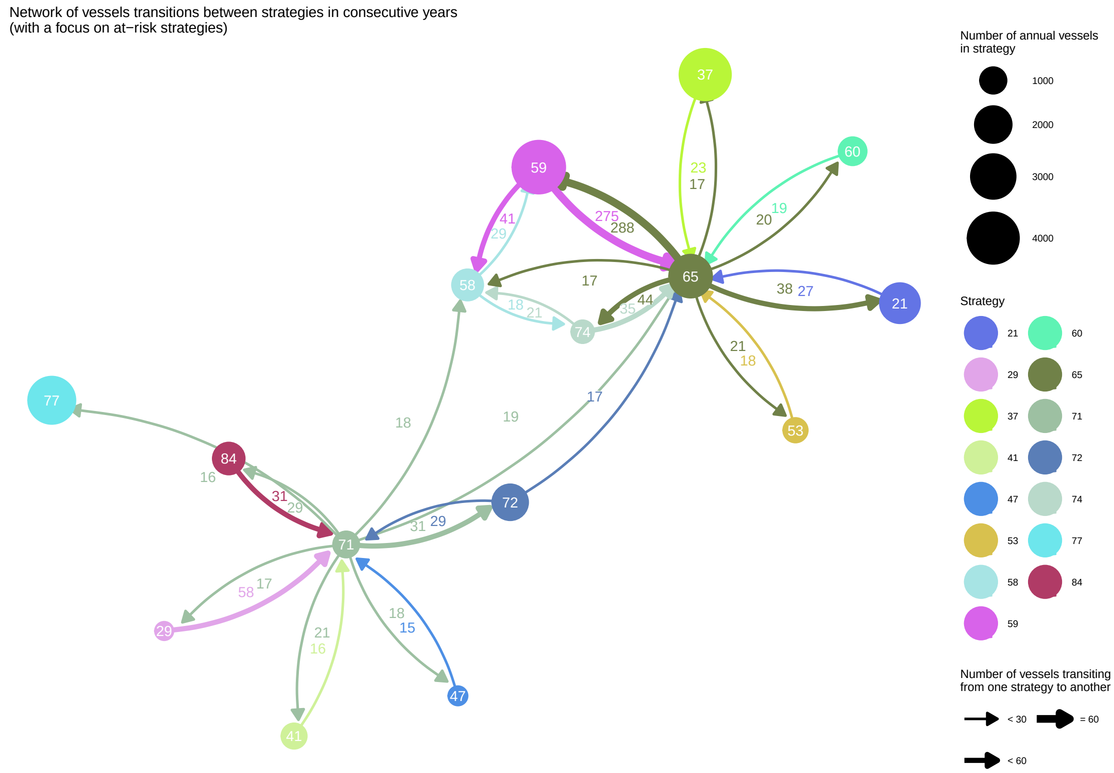

Inter−annual variations in the size of strategies
(only the 20% largest)
Strategies
1
15
21
26
3
35
37
41
49
51
58
59
60
65
71
72
77
84
Vessel count
0
500
1000
1500
2000
2500
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Year

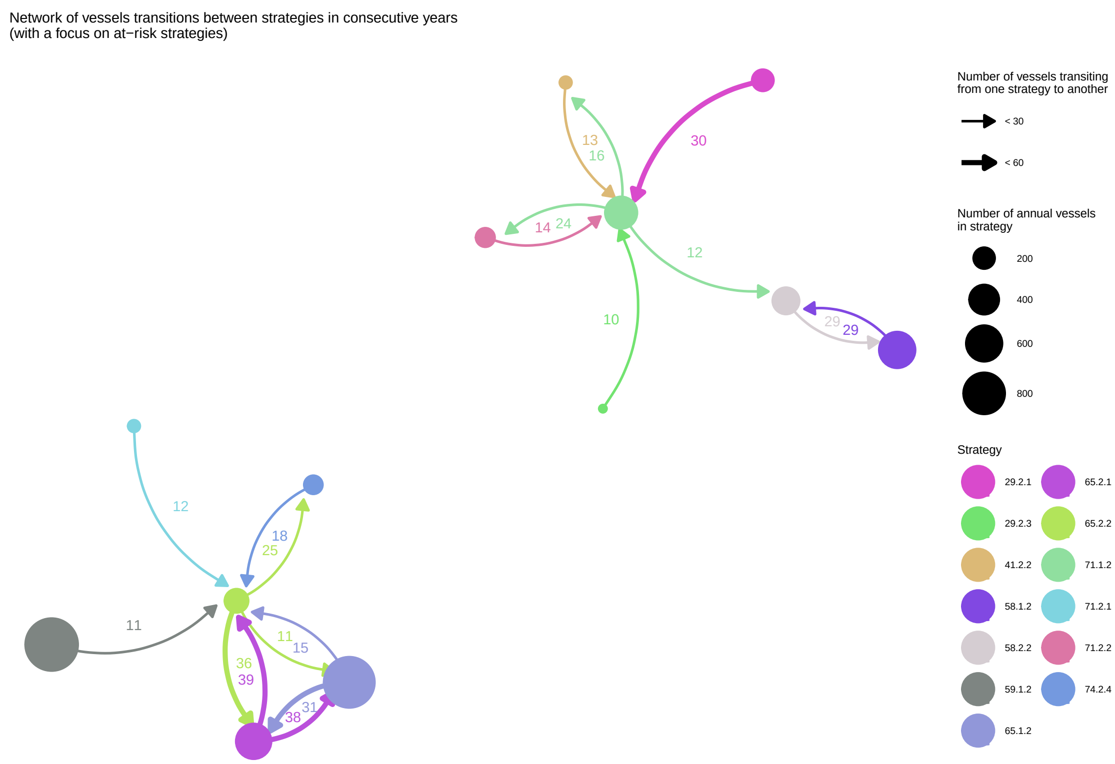




Inter-annual transitions between strategies

We also described how vessels could transit from/to at-risk strategies from/to other strategies: to do this, we displayed networks illustrating transitions between strategies over the entire period studied (only from or to at-risk strategies, and with at least 15/10 vessels transiting from one strategy/sub-strategy to another). The number of vessels transitioning from one strategy to another is indicated by labels near the edges on the graphs. The areas of the vertices are proportional to the total number of annual vessels.



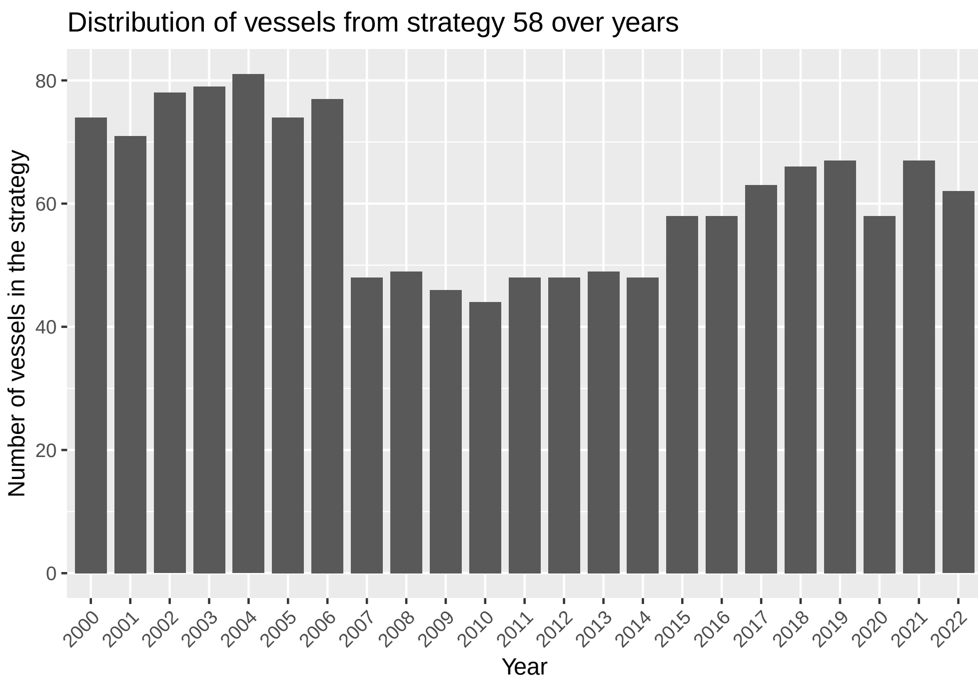


Description of all strategies or sub-strategies (three strategy levels, with increasing precision) are then provided in the sections below. The IDs of the different strategy levels are separated by mid-points. Main descriptors are synthesized in the introductory table, some of the key descriptors were then further illustrated by displaying main activity patterns for all vessels from the strategy in a reference year (the reference year being defined as the one with the highest number of vessels).

First-level strategies

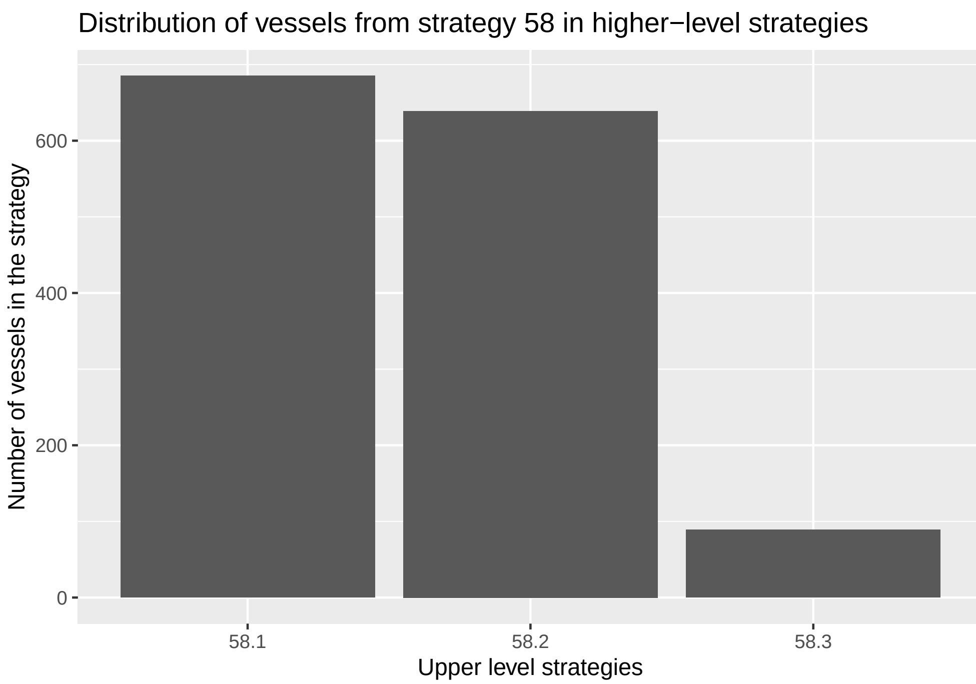
Strategy 58

This strategy includes N=1413 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=297. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2004.

The distribution of vessels (per year) from this strategy in the associated higher-level strategies is presented below. A detailed description of these higher-level strategies (58.1, 58.2, 58.3) can be found further on. Only 58.2, 58.3 are associated with accidental bycatch events.



Description table

This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

Table 4: Strategy 58

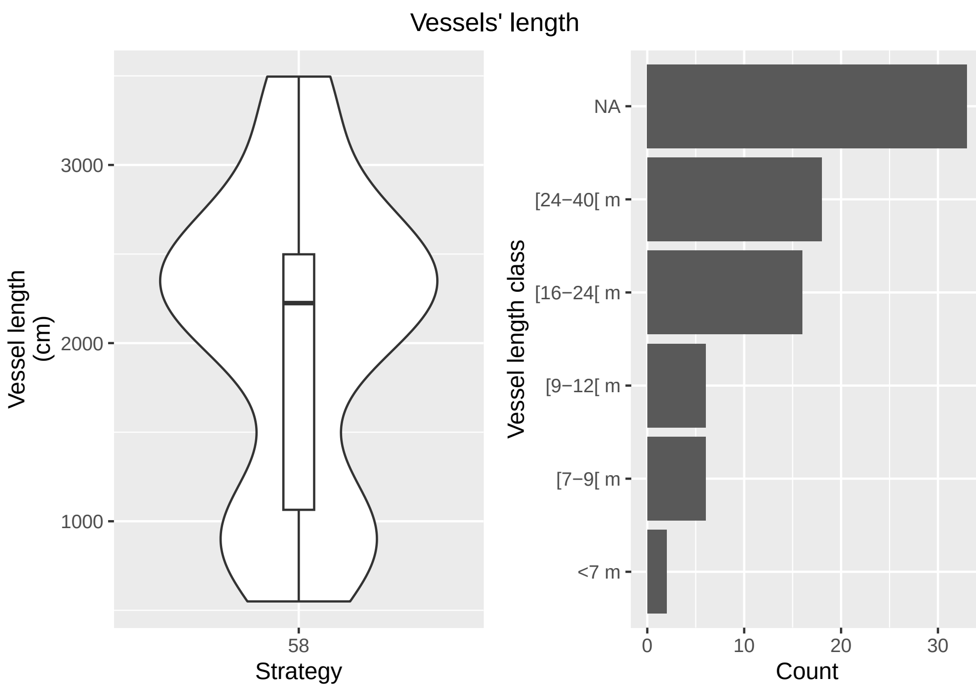
Importance	Variable	Value
	Spp.	Merluccius spp
	Family	Merlucciidae
	Order	Gadiformes
Determinant (>95%)	ISSCAAP	32
Strongly predominant (>80%)	PAVILLON	FRA
Major (>50%)	Gear	Set gillnets (anchored)
	Family	Gadidae
	ICES division	27.8.a
Strong component (>35%)	Trimester	1
	Gear	Set longlines
		27.7.j
	ICES division	27.8.b
		2
Component (>20%)	Trimester	3
		Chelidonichthys spp
	Spp.	Thunnus spp
	Order	Perciformes
	ISSCAAP	33
		Miscellaneous Gear
	Gear	Pair trawls Bottom
	PAVILLON	ESP
		27.7.h
		27.7.k
	ICES division	27.8.d
		01
		02
		03
		04

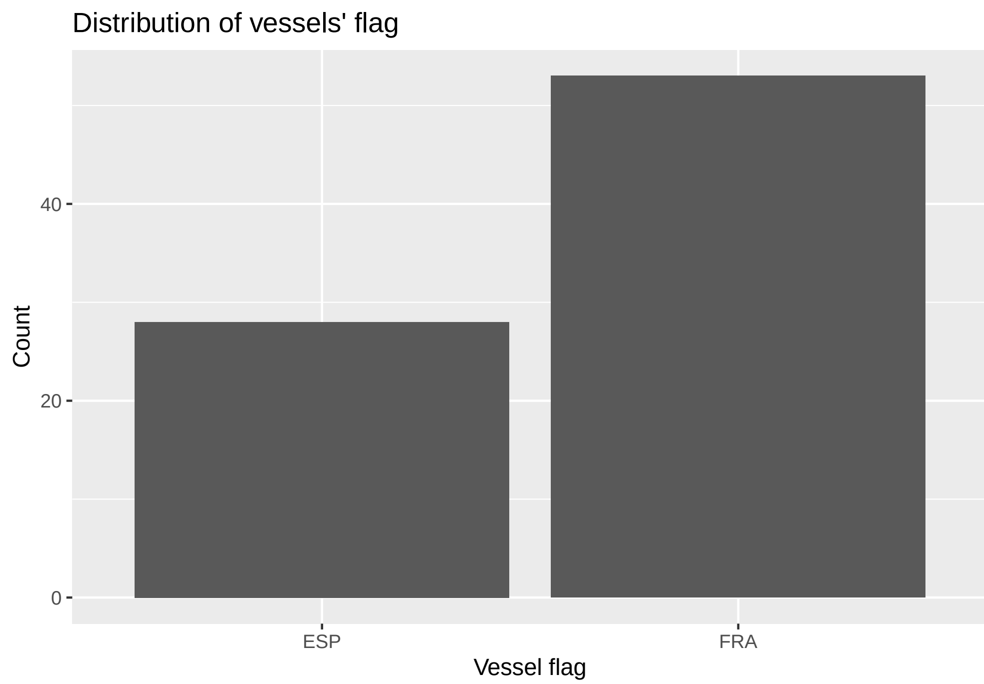
Table 4: Strategy 58 *(continued)*

Importance	Variable	Value
		05
		07
		08
		09
	Month	12
Minor component (>5%)	Trimester	4
	prop_spp	TRUE
	prop_family	TRUE
	prop_order	TRUE
High values (>SD)	prop_isscaap	TRUE

Distribution of vessel length and flag during the reference year (2004)

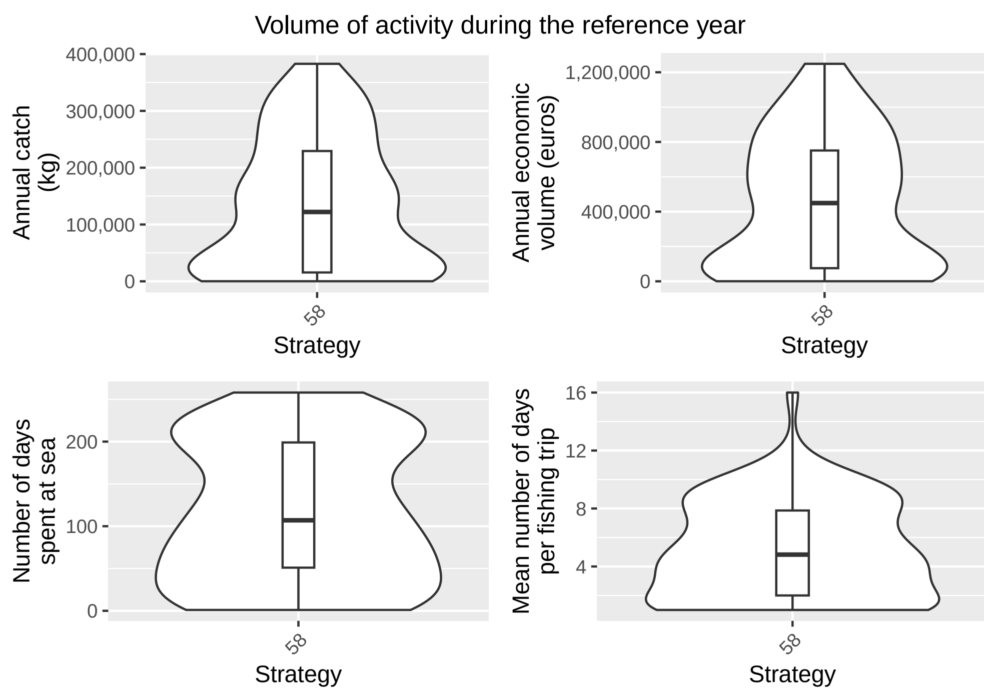
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



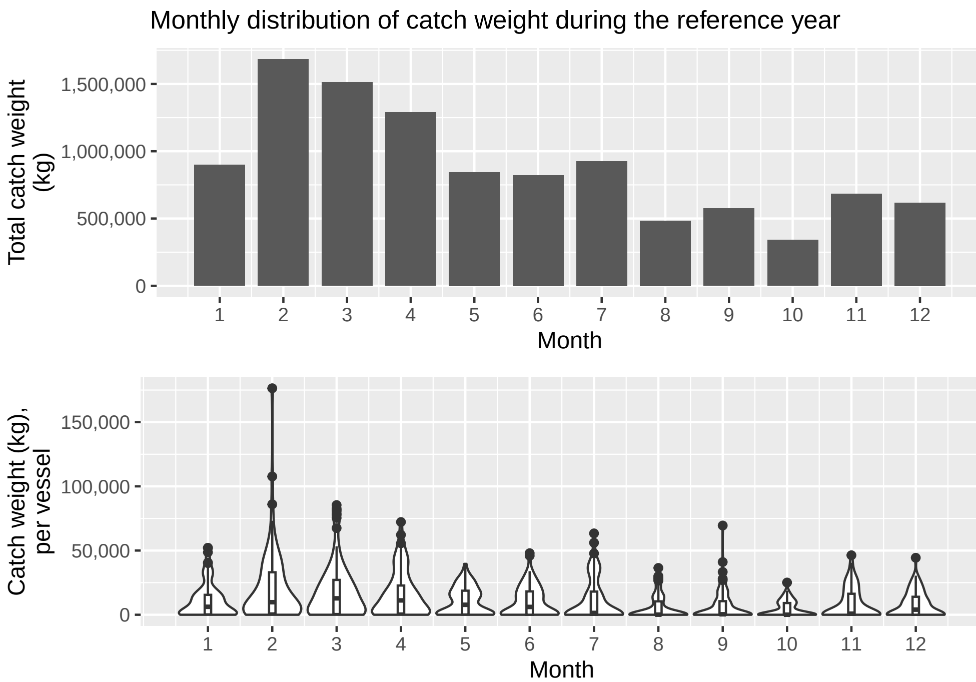


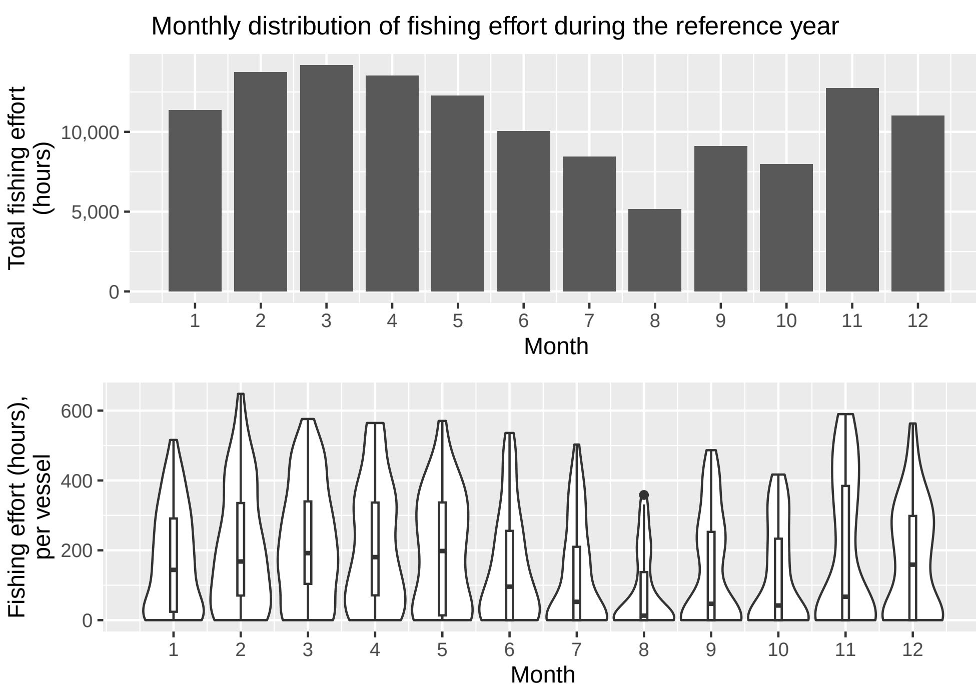
Description of the volume and pattern of fishing activities during the reference year (2004)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



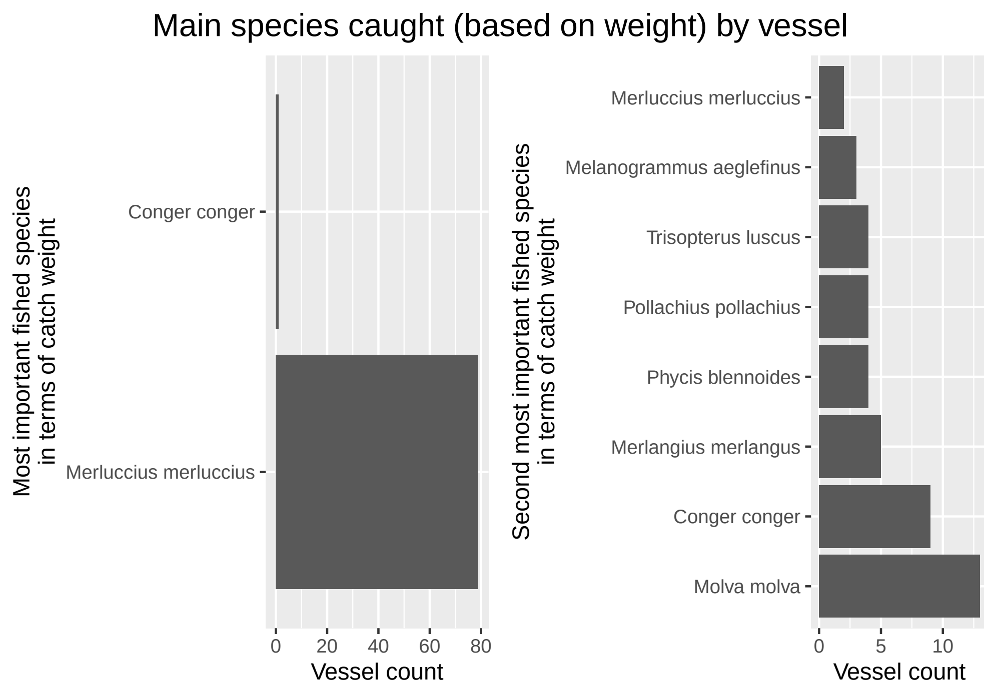
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

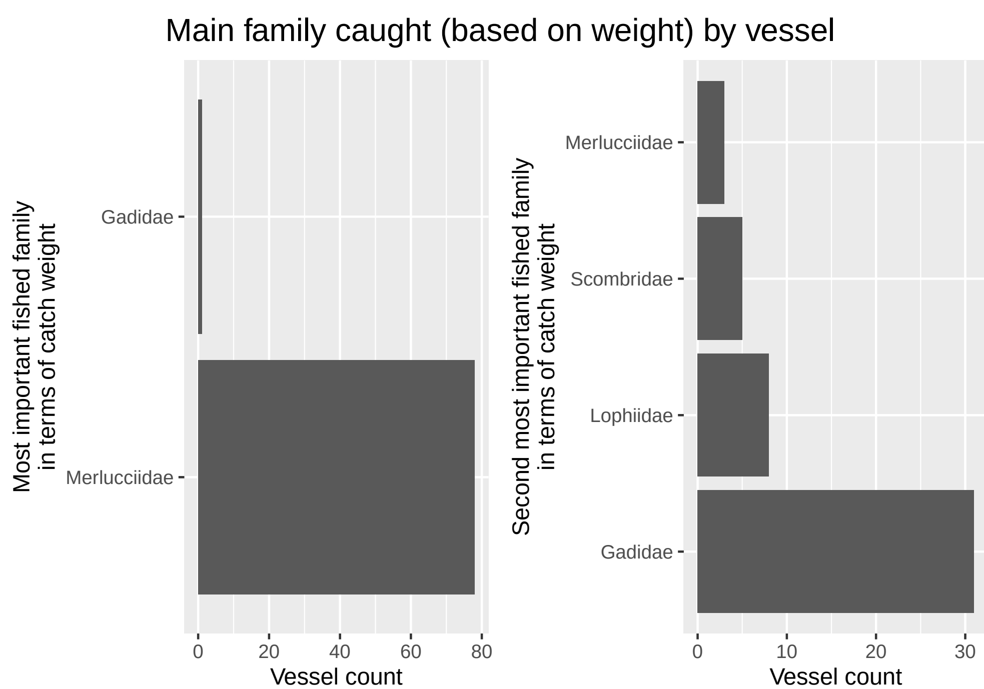


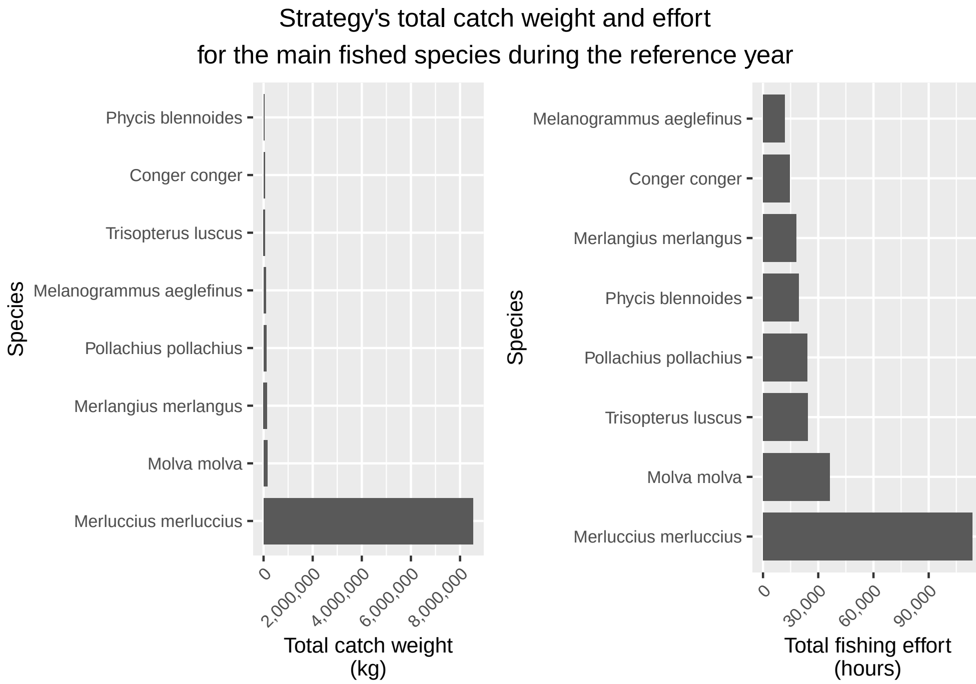


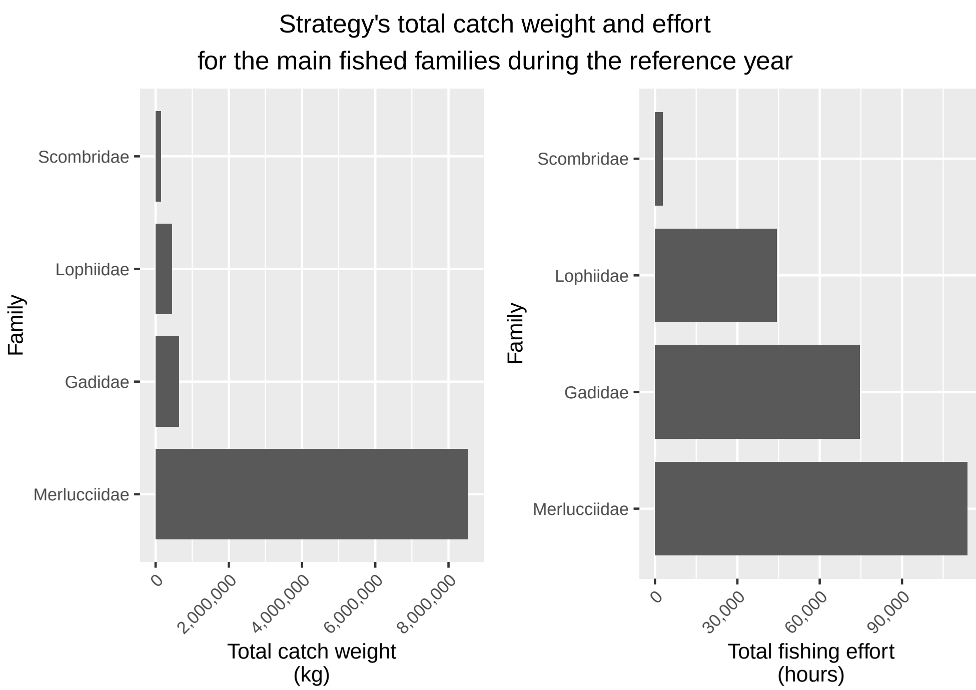
Main fished taxa and used gears during the reference year (2004)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

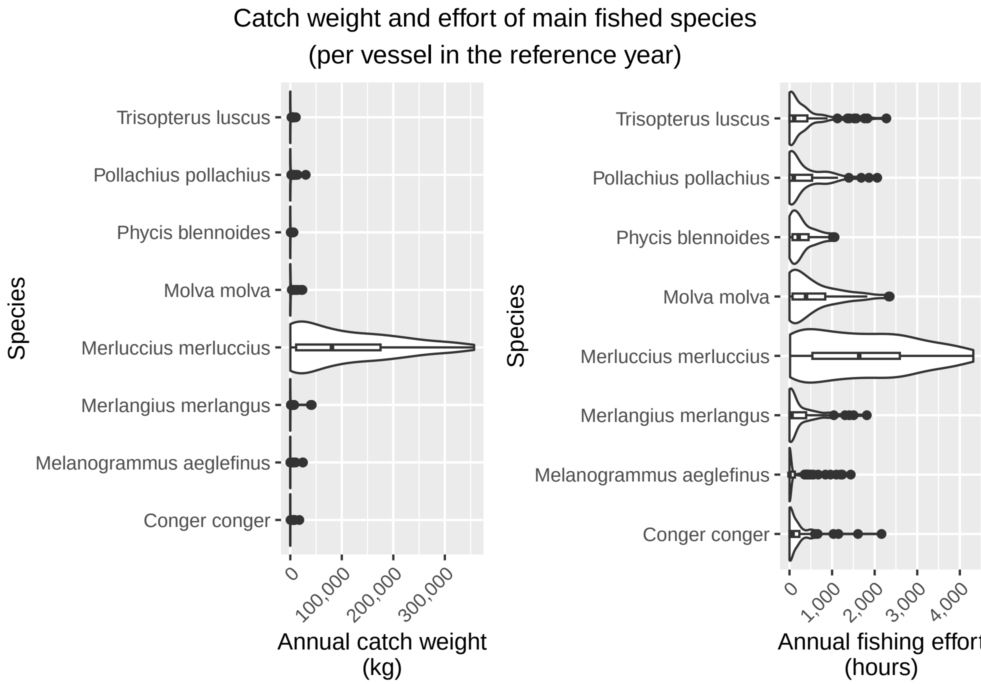

Main species caught (based on weight) by vessel
Most important fished species
in terms of catch weight
Conger conger
Merluccius merluccius
0
20
40
60
80
Vessel count
Second most important fished species
in terms of catch weight
Merluccius merluccius
Melanogrammus aeglefinus
Trisopterus luscus
Pollachius pollachius
Phycis blennoides
Merlangius merlangus
Conger conger
Molva molva
0
5
10
Vessel count

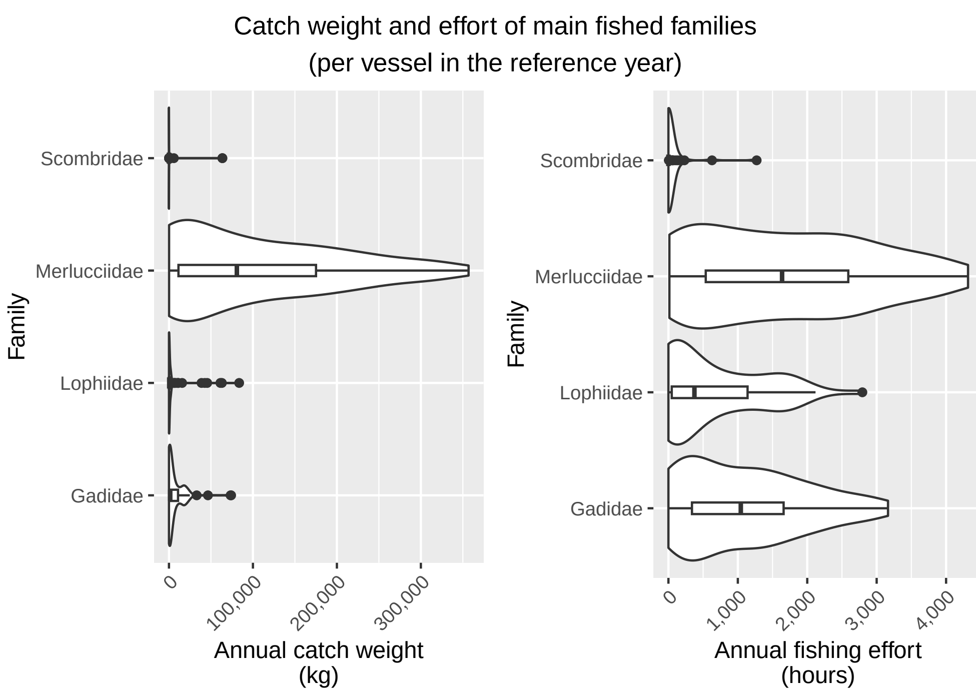

Main family caught (based on weight) by vessel
Most important fished family
in terms of catch weight
Gadidae
Merlucciidae
0
20
40
60
80
Vessel count
Second most important fished family
in terms of catch weight
Merlucciidae
Scombridae
Lophiidae
Gadidae
0
10
20
30
Vessel count





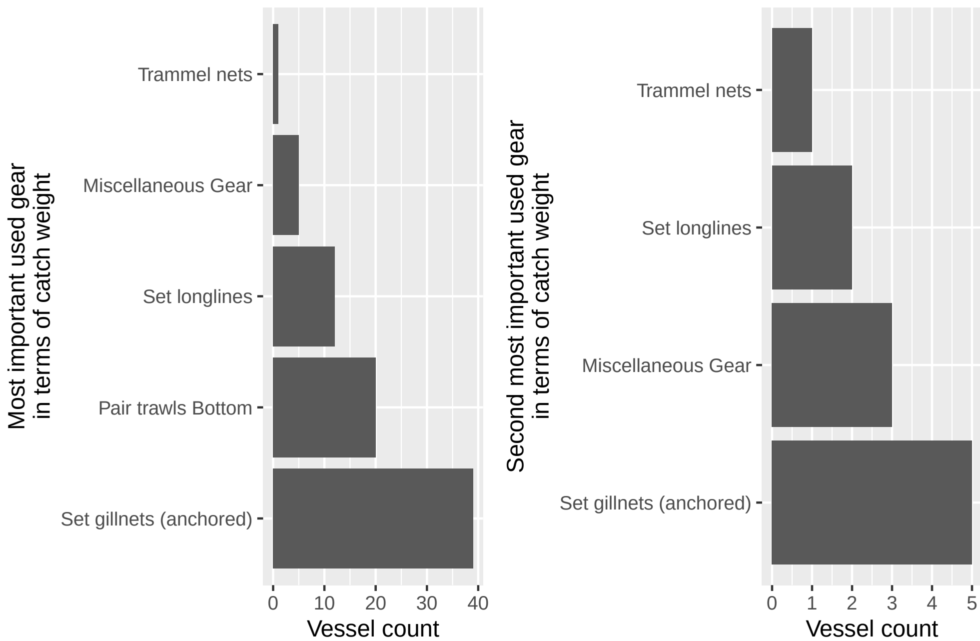
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.



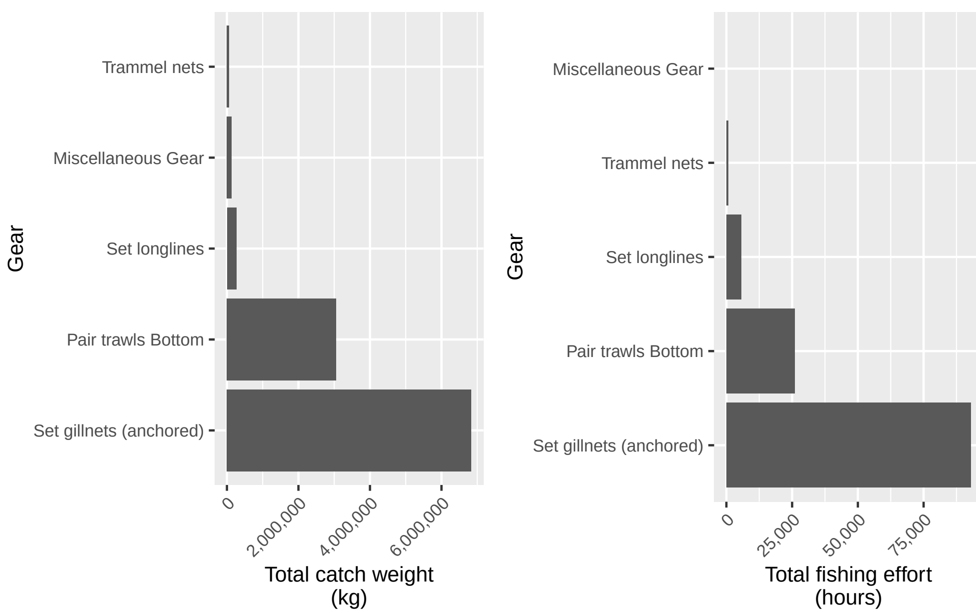


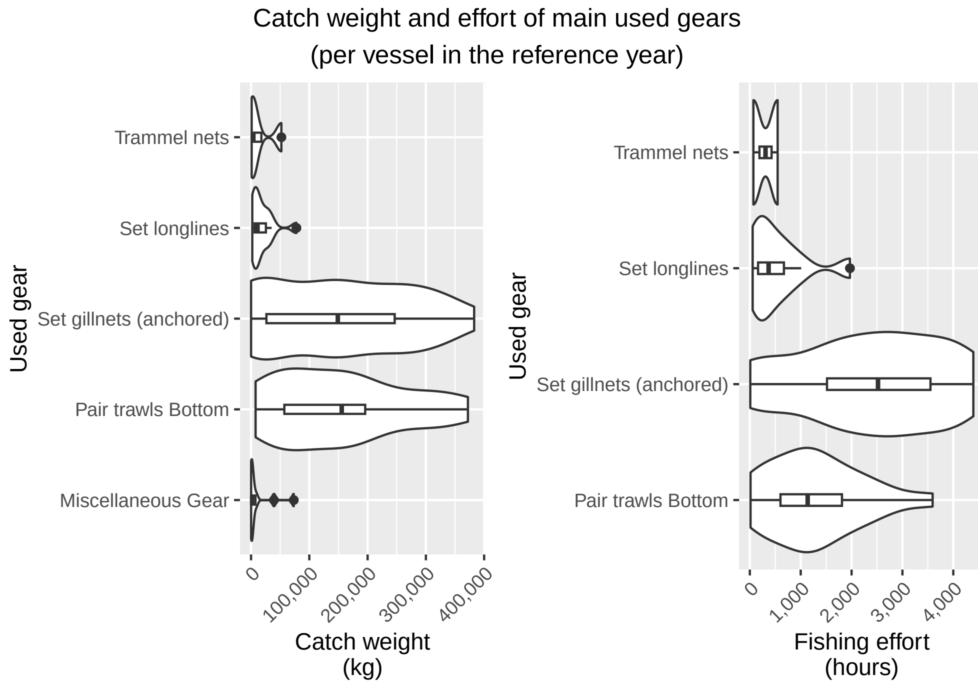
Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

Main gear used (based on catch weight) by vessel



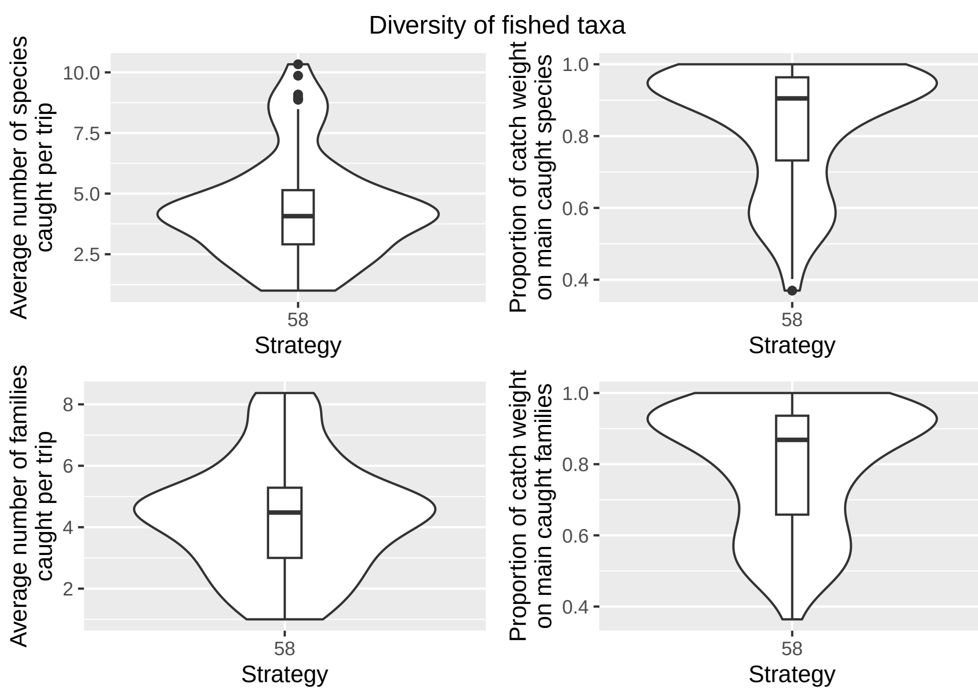
Strategy's total catch weight and effort
for the main gear used during the reference year



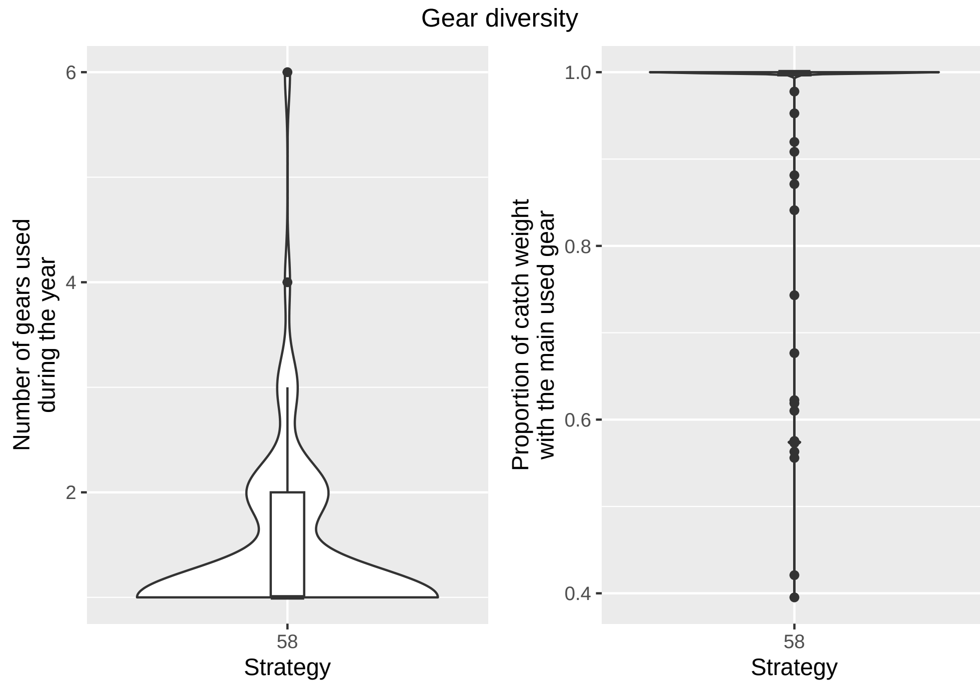


Diversity of fished taxa and used gears during the reference year (2004)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

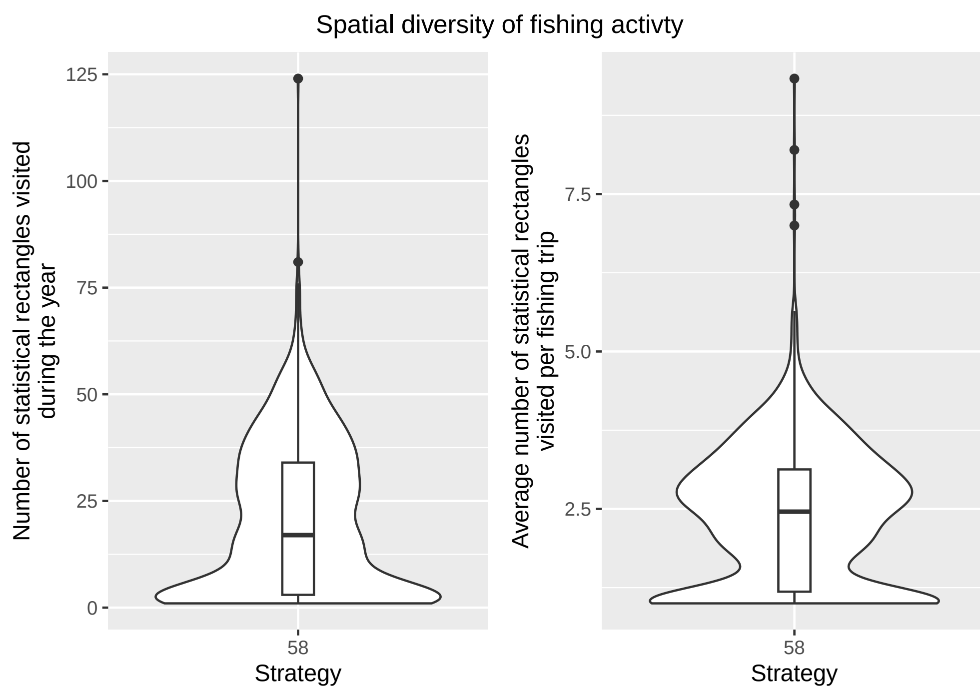


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.



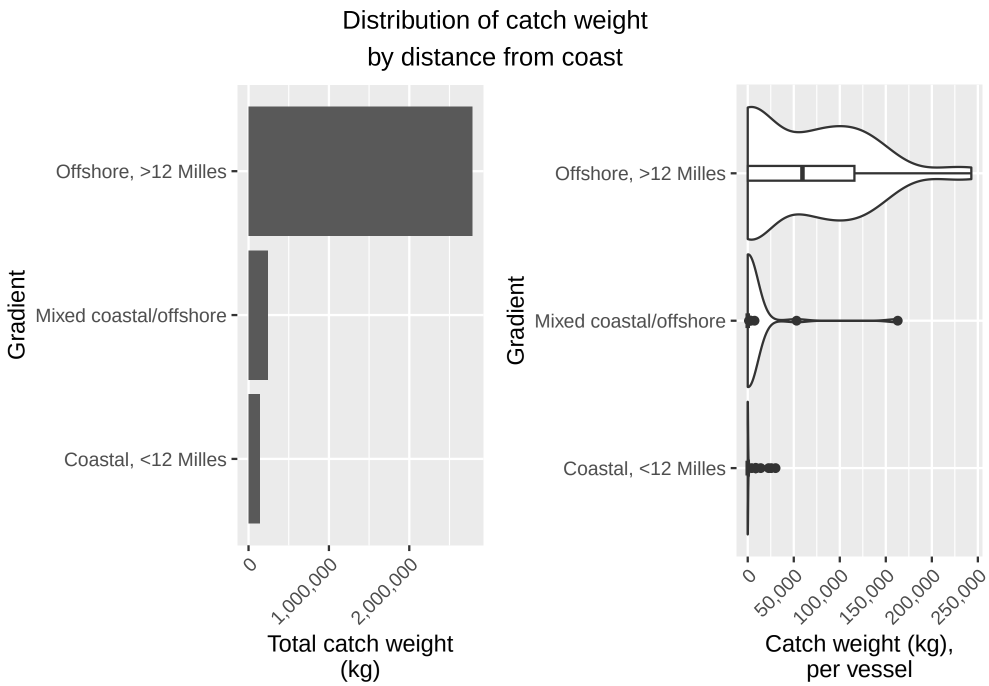
Diversity of areas visited during the reference year (2004)

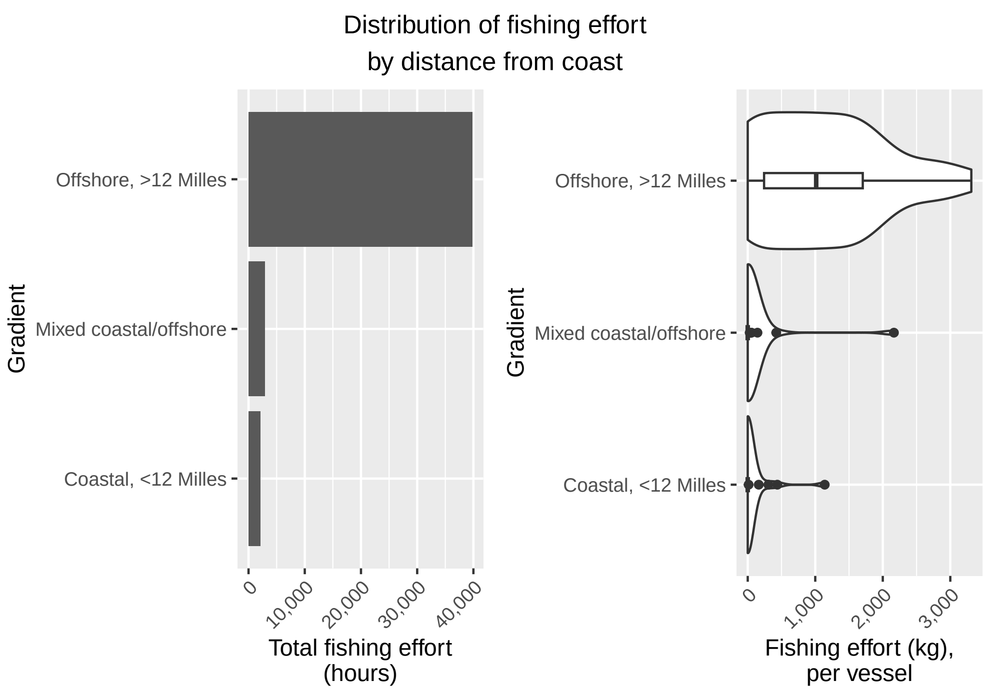
We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying

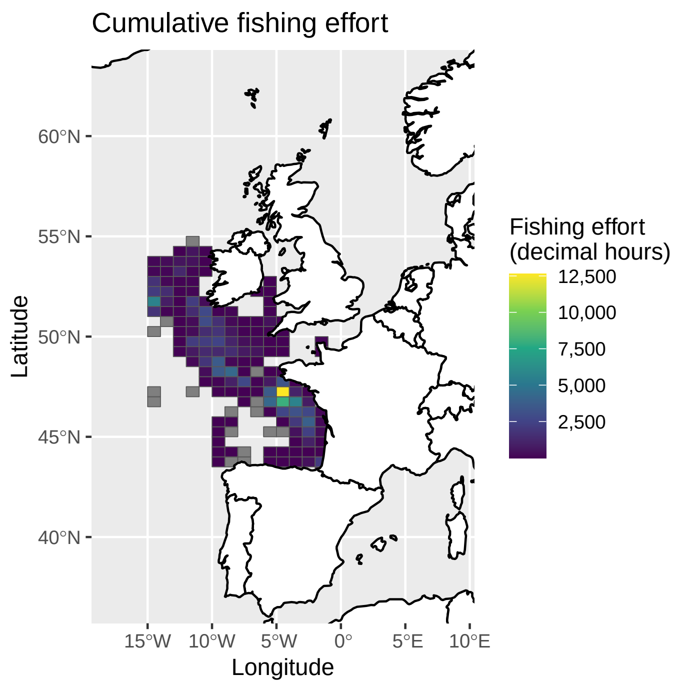
catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

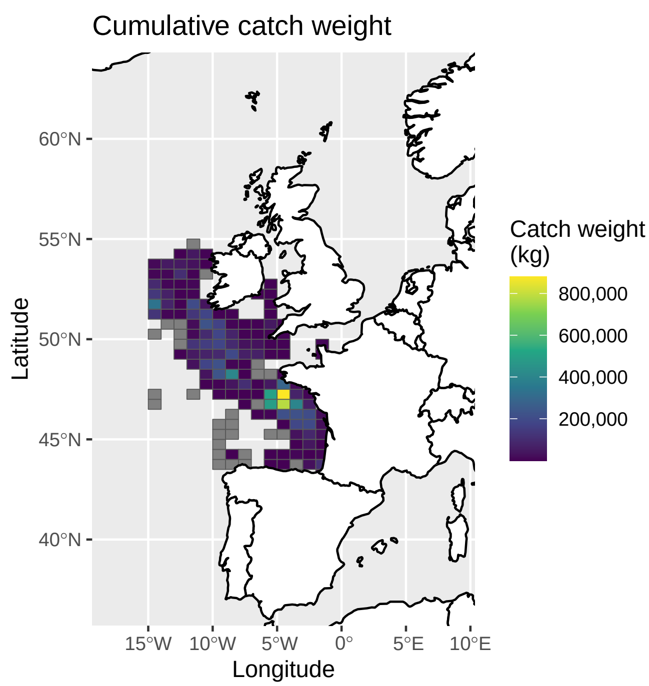




Maps of fishing activity distribution during the reference year (2004)

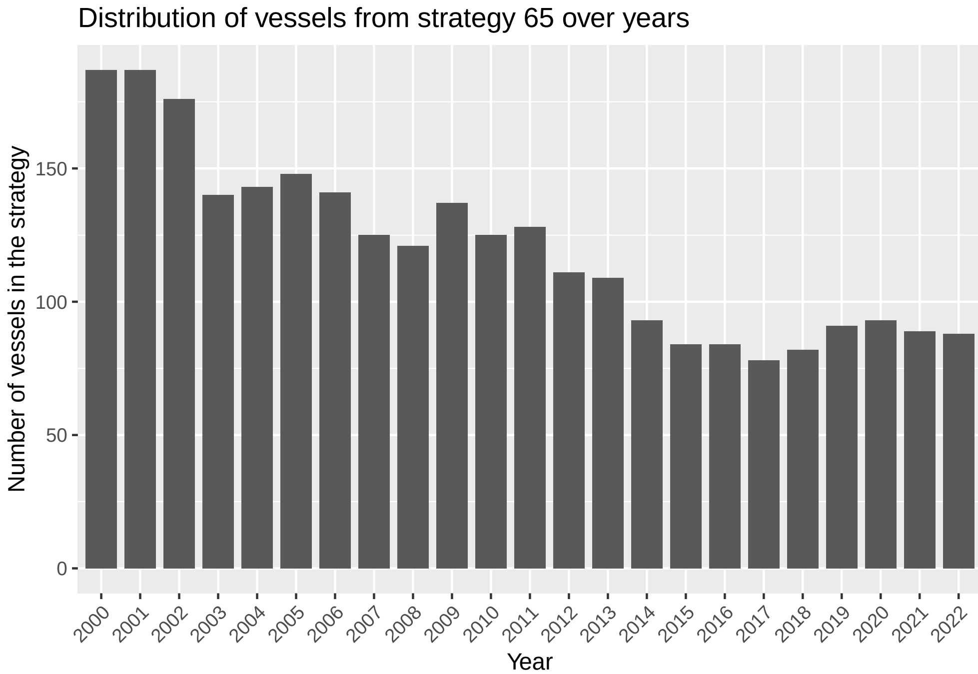
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





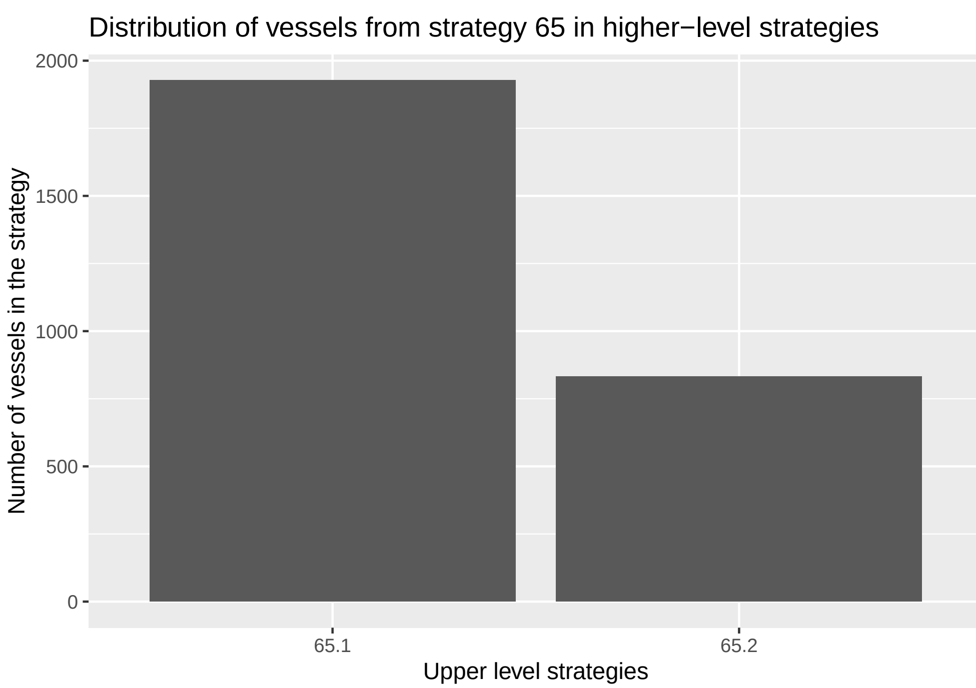
Strategy 65

This strategy includes N=2760 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=577. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2001.

The distribution of vessels (per year) from this strategy in the associated higher-level strategies is presented below. A detailed description of these higher-level strategies (65.1, 65.2) can be found further on. Only 65.1, 65.2 are associated with accidental bycatch events.



Description table

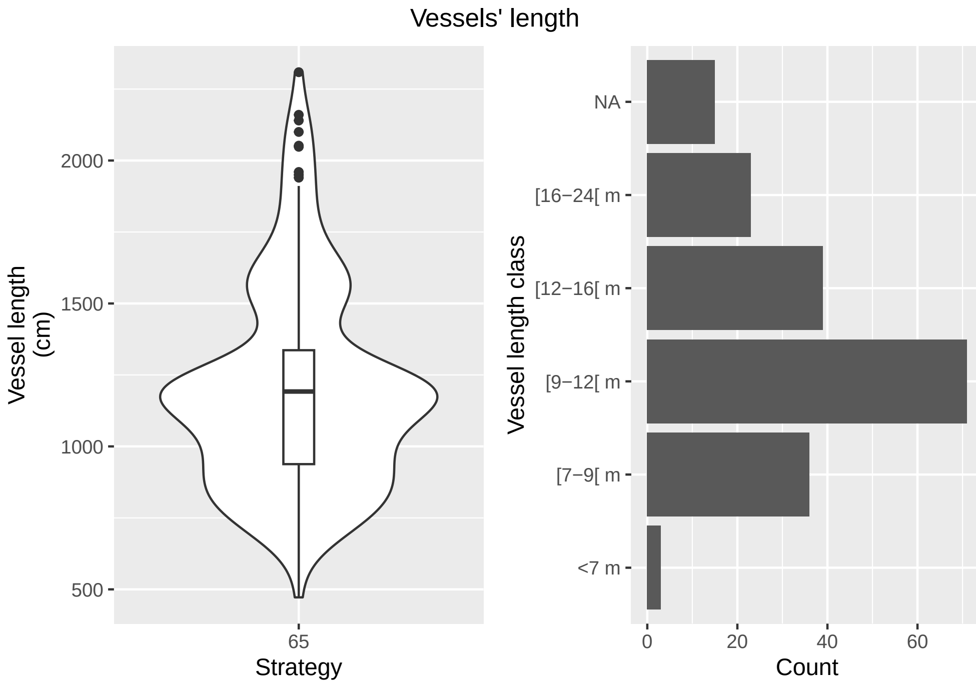
This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

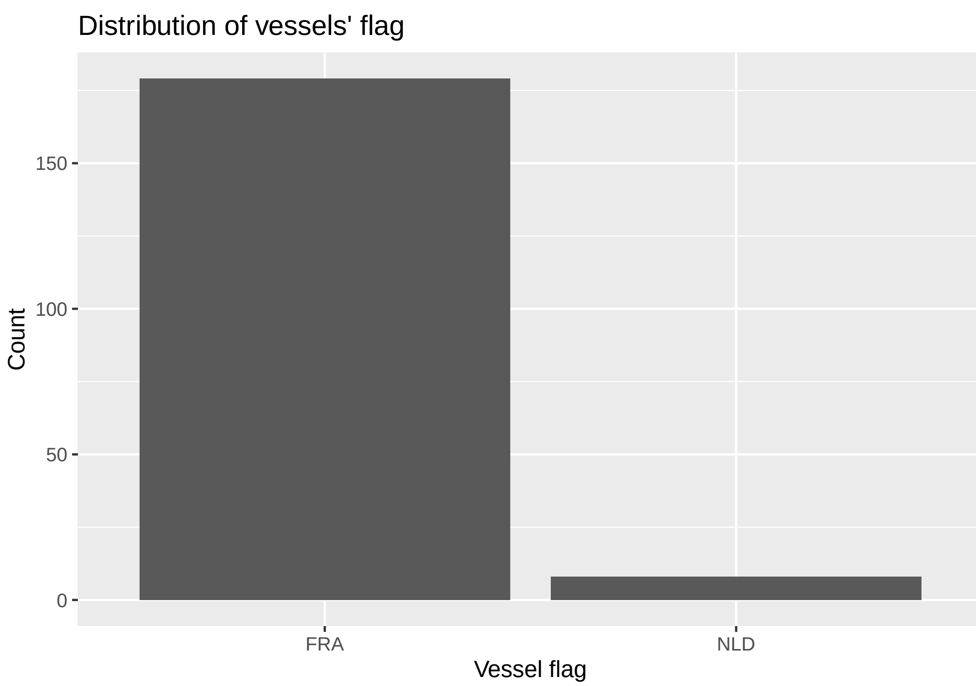
Table 5: Strategy 65

Importance	Variable	Value
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
	ISSCAAP	31
Determinant (>95%)	PAVILLON	FRA
Predominant (>65%)	Gear	Trammel nets
	ICES division	27.8.a
Major (>50%)	Trimester	1
Strong component (>35%)	ICES division	27.8.b
	Family	Gadidae
	Month	02
Component (>20%)	Trimester	2
	Sp.	Maja squinado
		Dicentrarchus spp
	Spp.	Raja spp
		Majidae
	Family	Scophthalmidae
		Decapoda
		Gadiformes
	Order	Perciformes
		32
		33
	ISSCAAP	42
		Otter trawls Bottom
	Gear	Set gillnets (anchored)
		01
		03
		04
		05
		06
		07
		08
		10
	Month	12
		3
Minor component (>5%)	Trimester	4
	sd_weight	TRUE
	prop_spp	TRUE
	prop_family	TRUE
	prop_order	TRUE
	prop_isscaap	TRUE
	value_nb_seq	TRUE
	sd_nb_seq	TRUE
High values (>SD)	value_nb_marees	TRUE

Distribution of vessel length and flag during the reference year (2001)

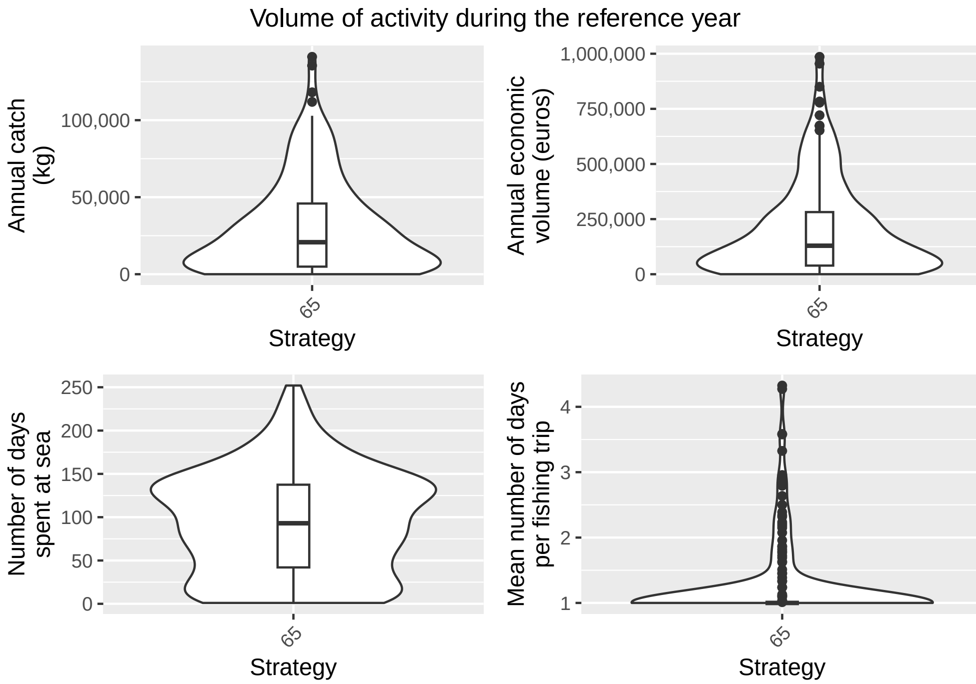
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



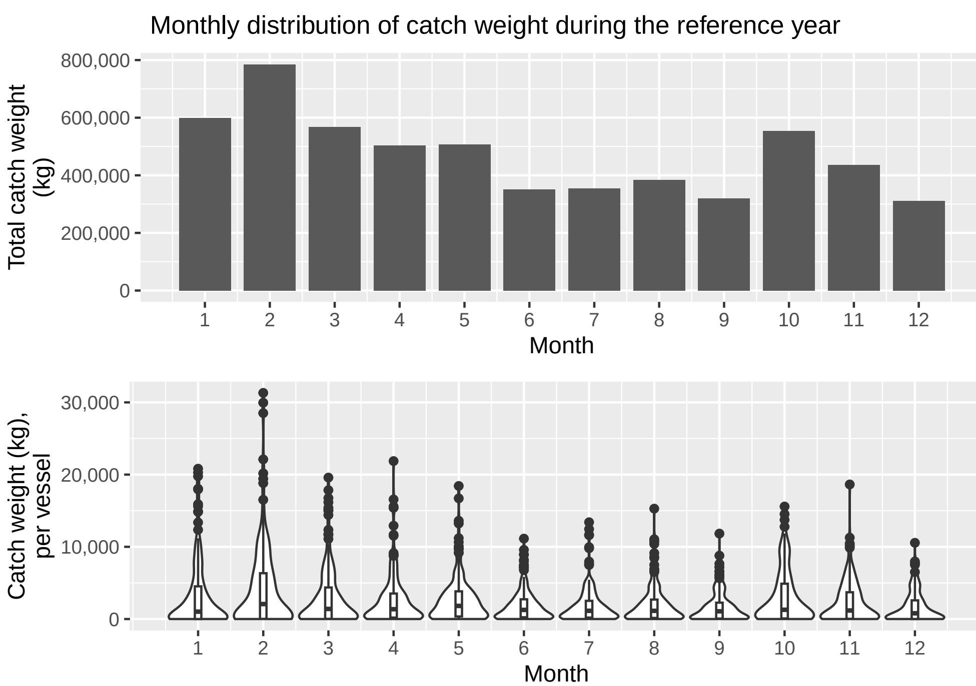


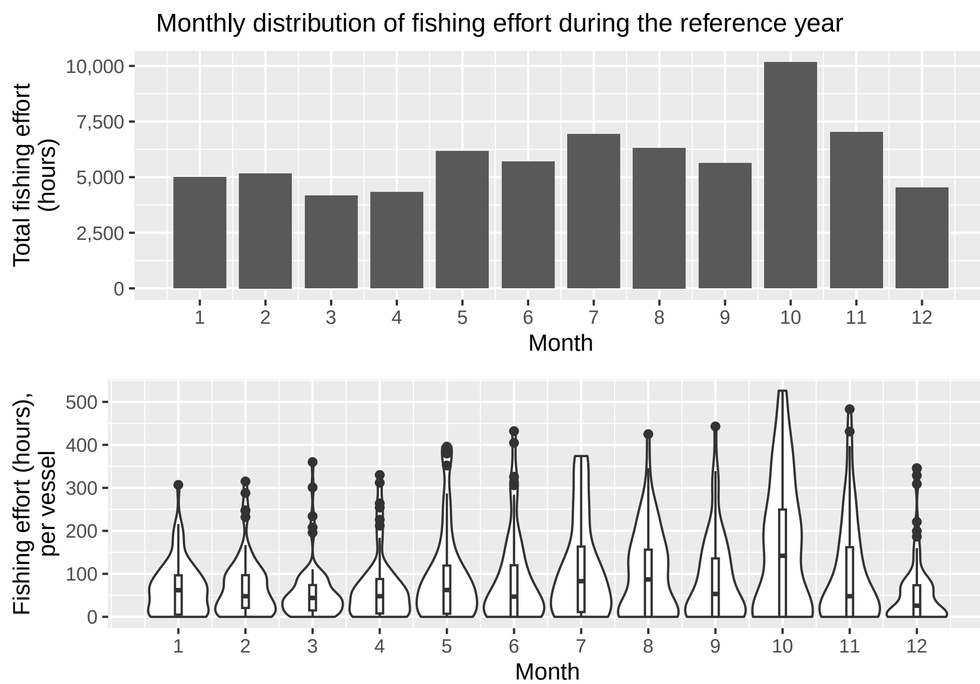
Description of the volume and pattern of fishing activities during the reference year (2001)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



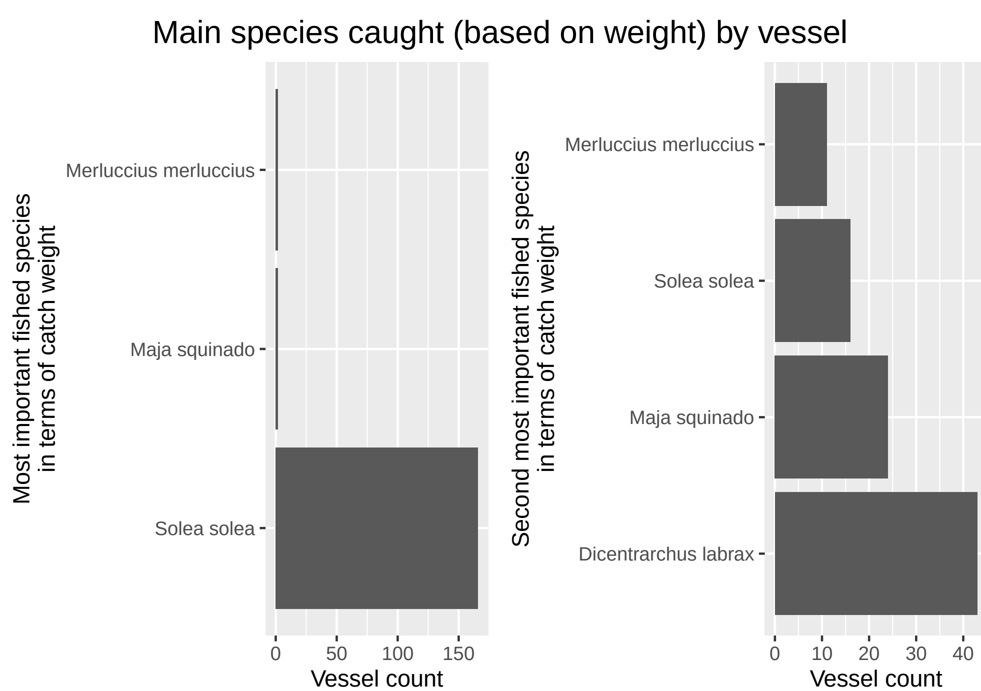
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

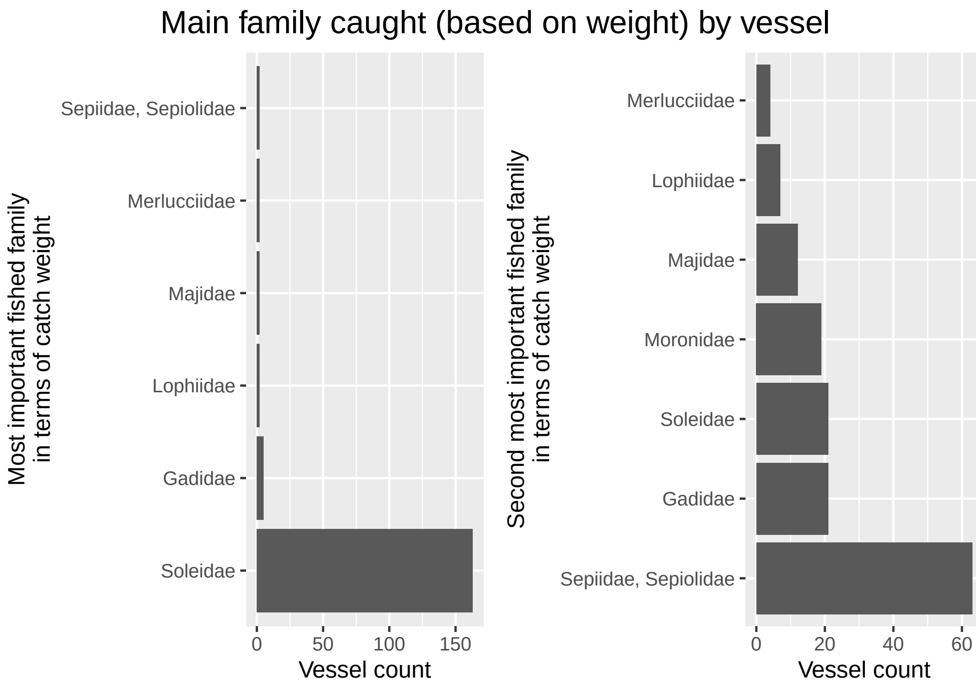


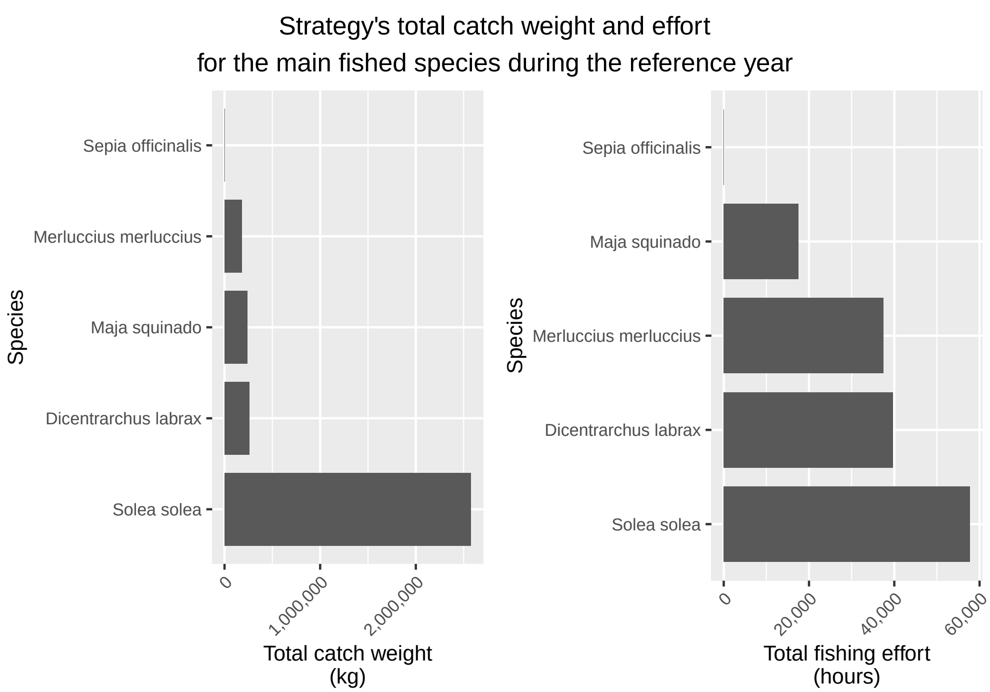


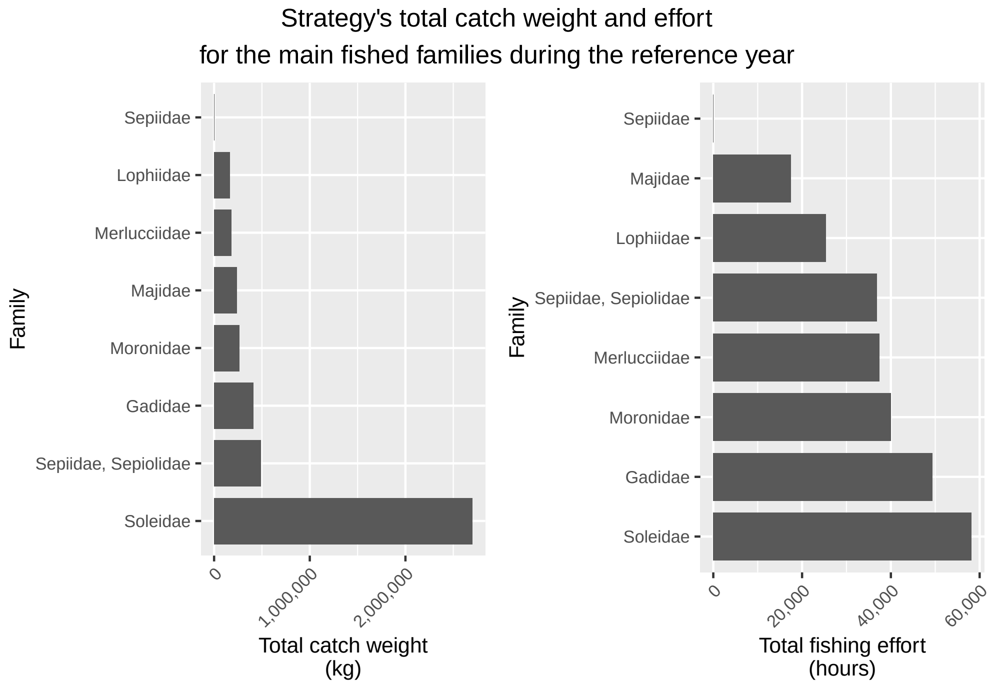
Main fished taxa and used gears during the reference year (2001)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

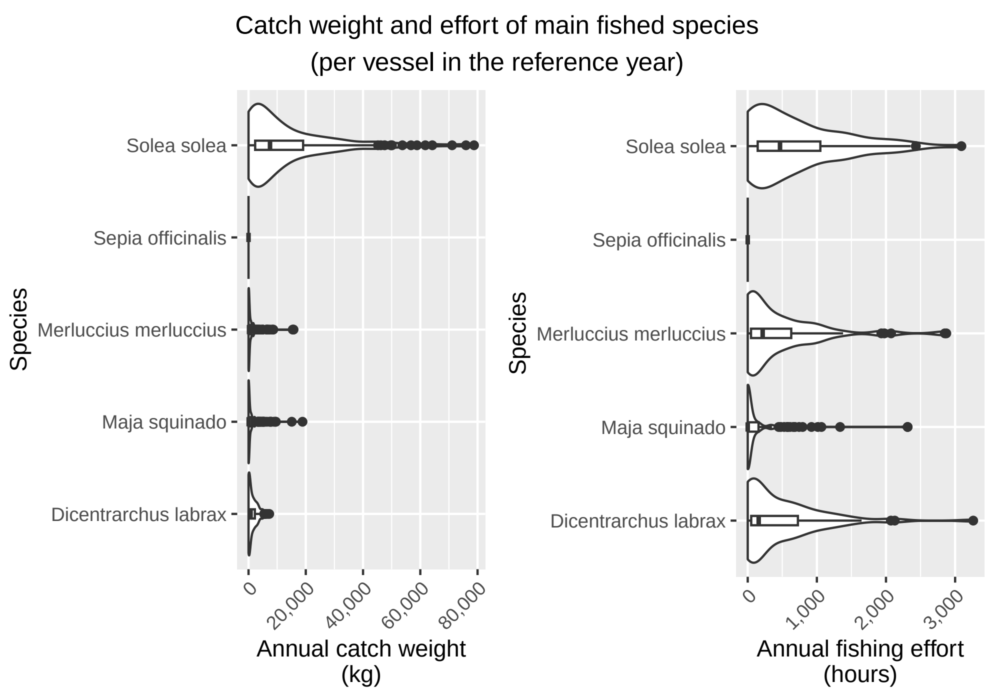


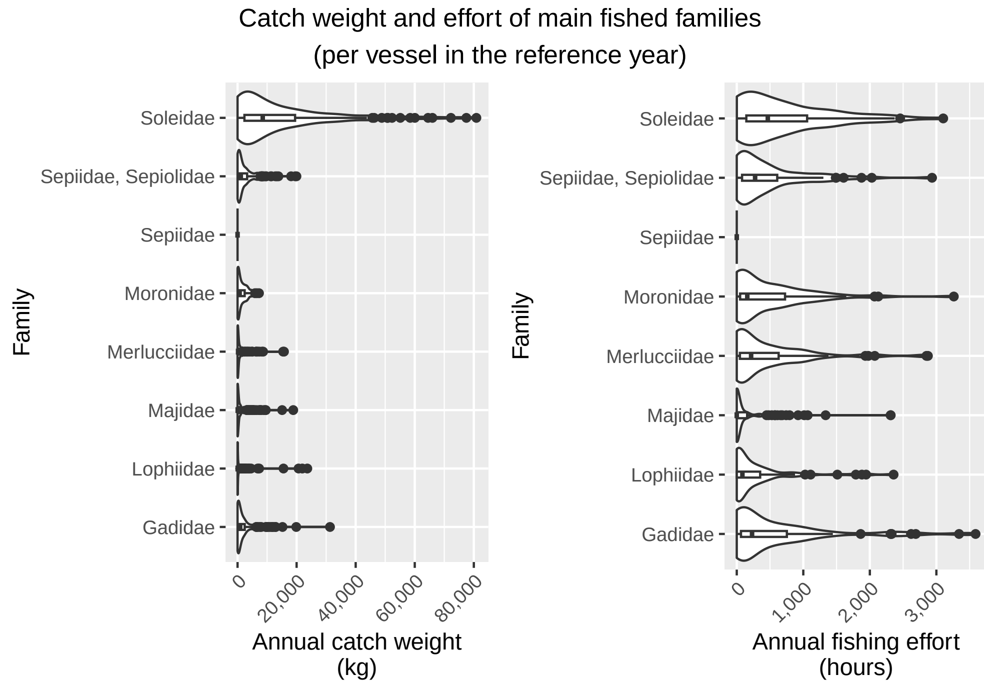

Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Sepiidae, Sepiolidae
Merlucciidae
Majidae
Lophiidae
Gadidae
Soleidae
0
50
100
150
Vessel count
Second most important fished family in terms of catch weight
Merlucciidae
Lophiidae
Majidae
Moronidae
Soleidae
Gadidae
Sepiidae, Sepiolidae
0
20
40
60
Vessel count


Strategy's total catch weight and effort
for the main fished species during the reference year
Species
Sepia officinalis
Merluccius merluccius
Maja squinado
Dicentrarchus labrax
Solea solea
0
1,000,000
2,000,000
Total catch weight
(kg)
Species
Sepia officinalis
Maja squinado
Merluccius merluccius
Dicentrarchus labrax
Solea solea
0
20,000
40,000
60,000
Total fishing effort
(hours)

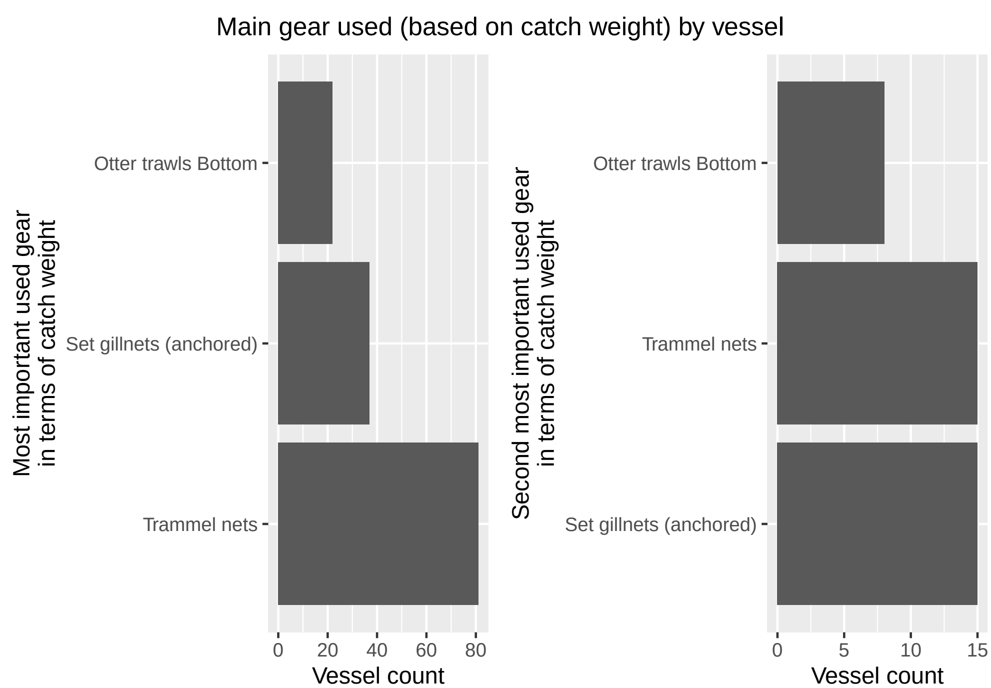


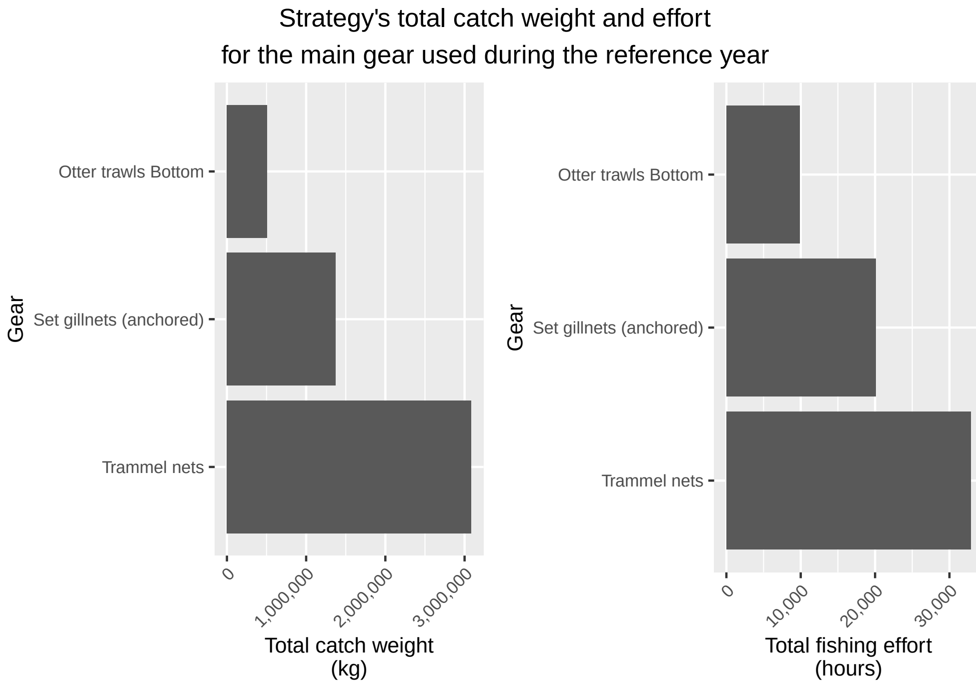
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

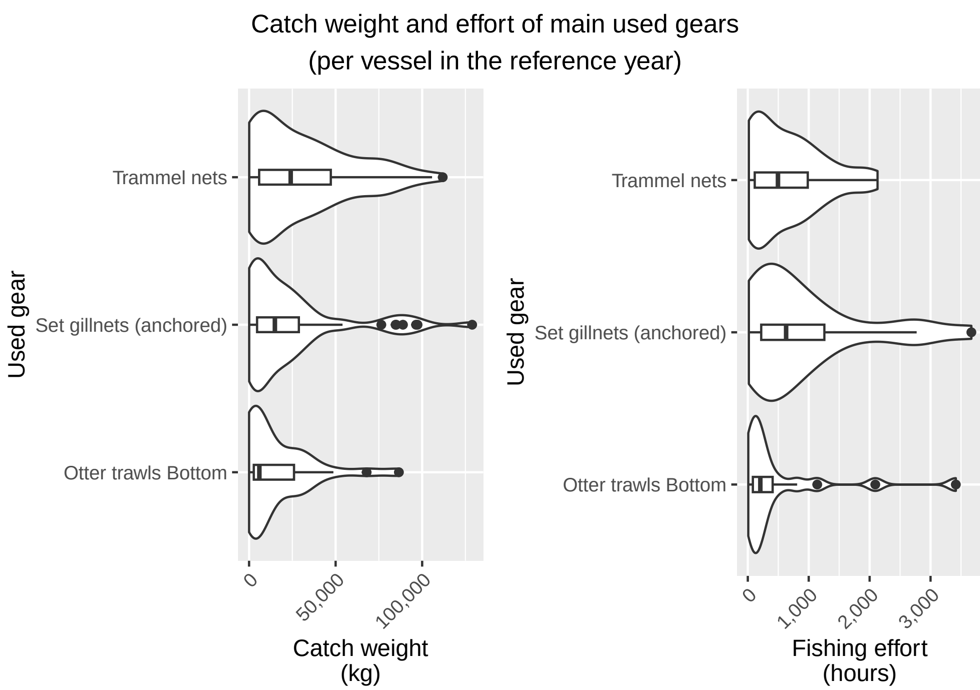




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

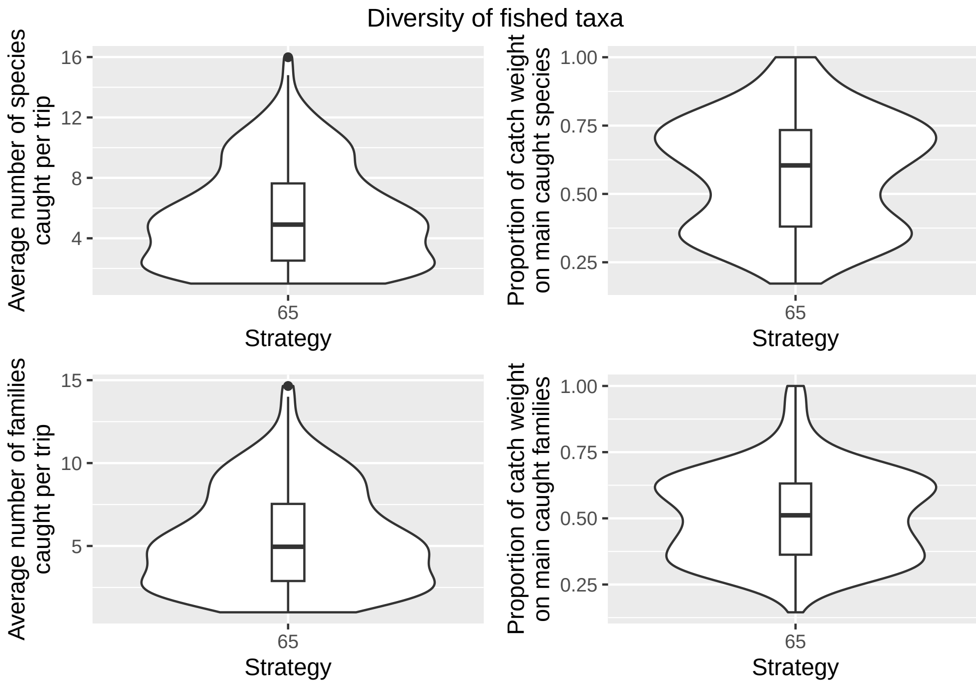




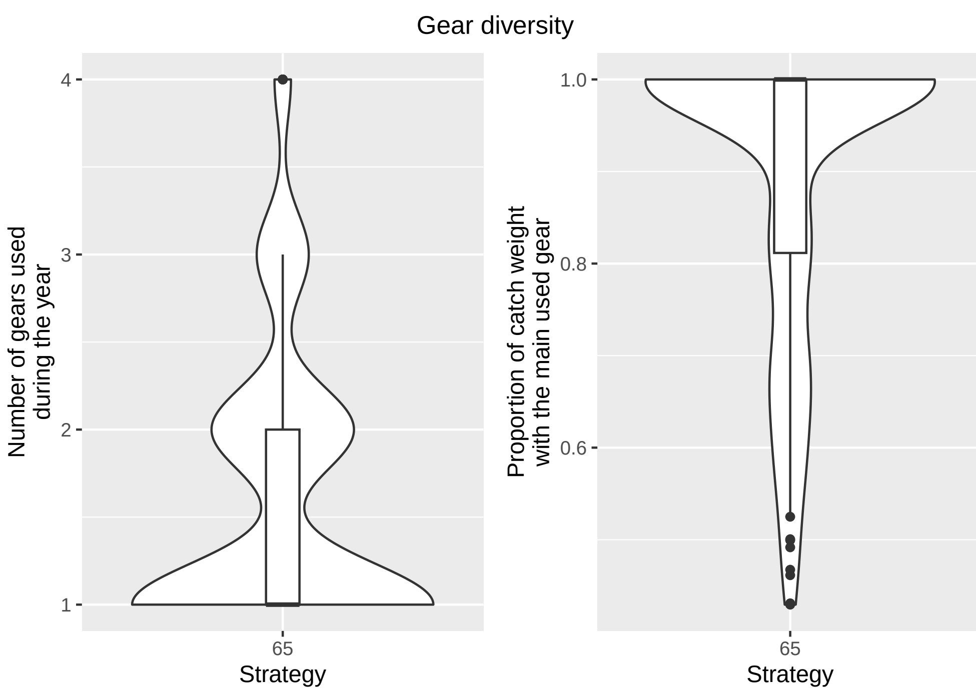


Diversity of fished taxa and used gears during the reference year (2001)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

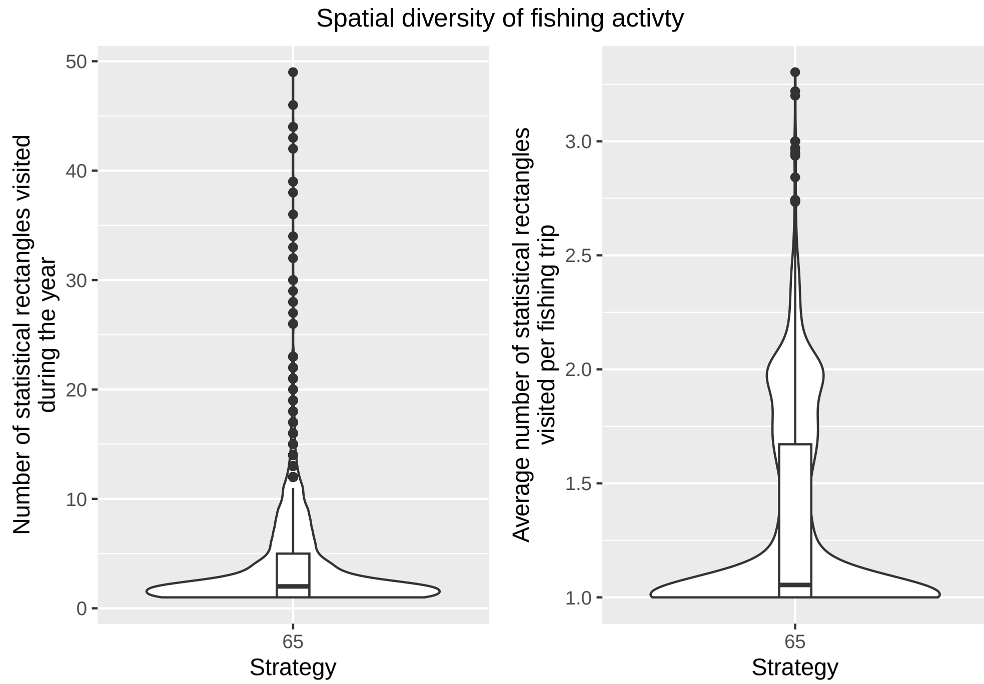


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

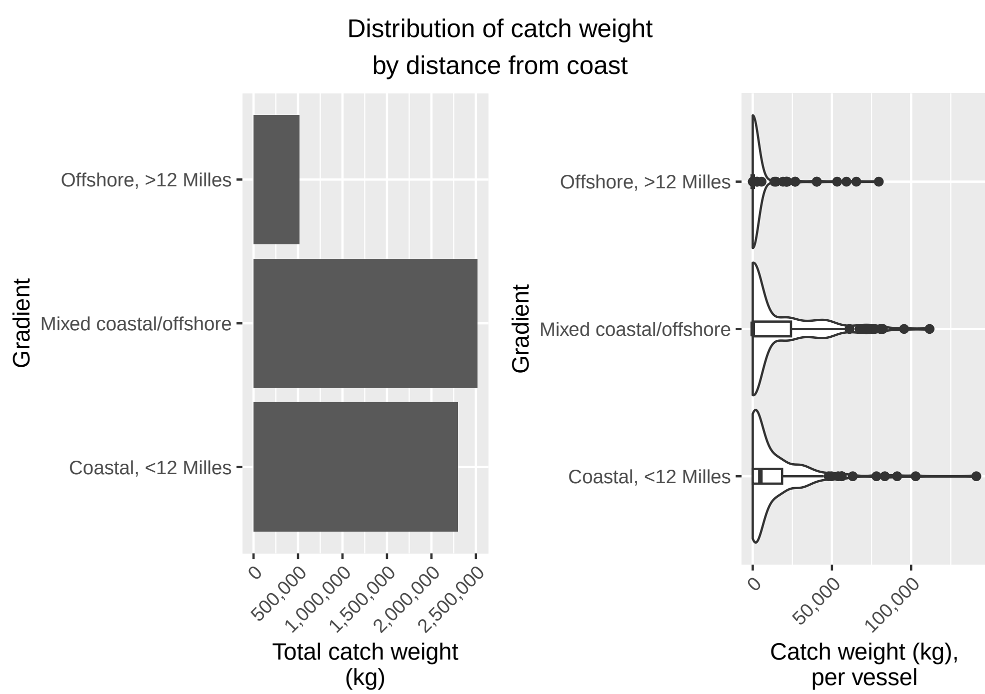


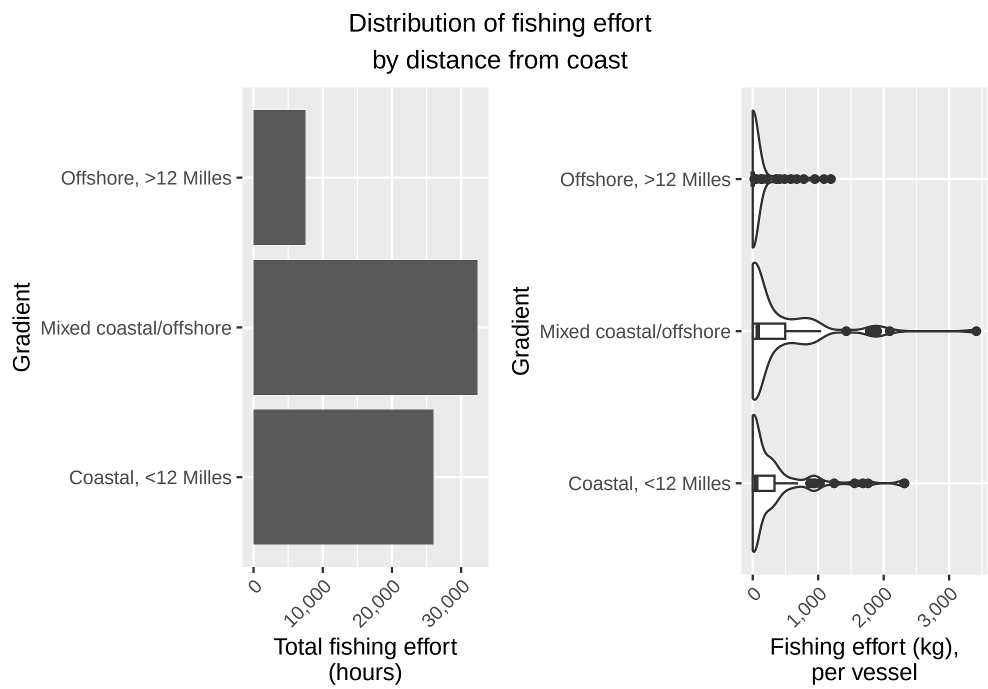
Diversity of areas visited during the reference year (2001)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



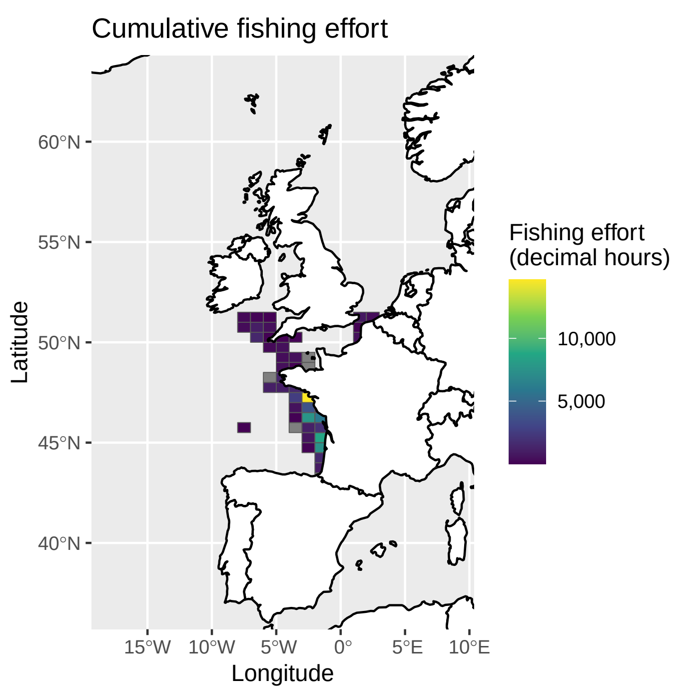
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

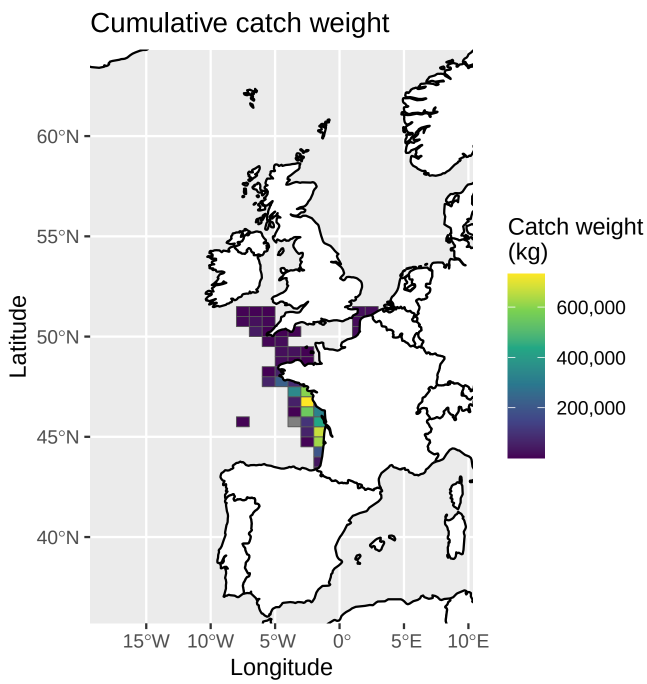




Maps of fishing activity distribution during the reference year (2001)

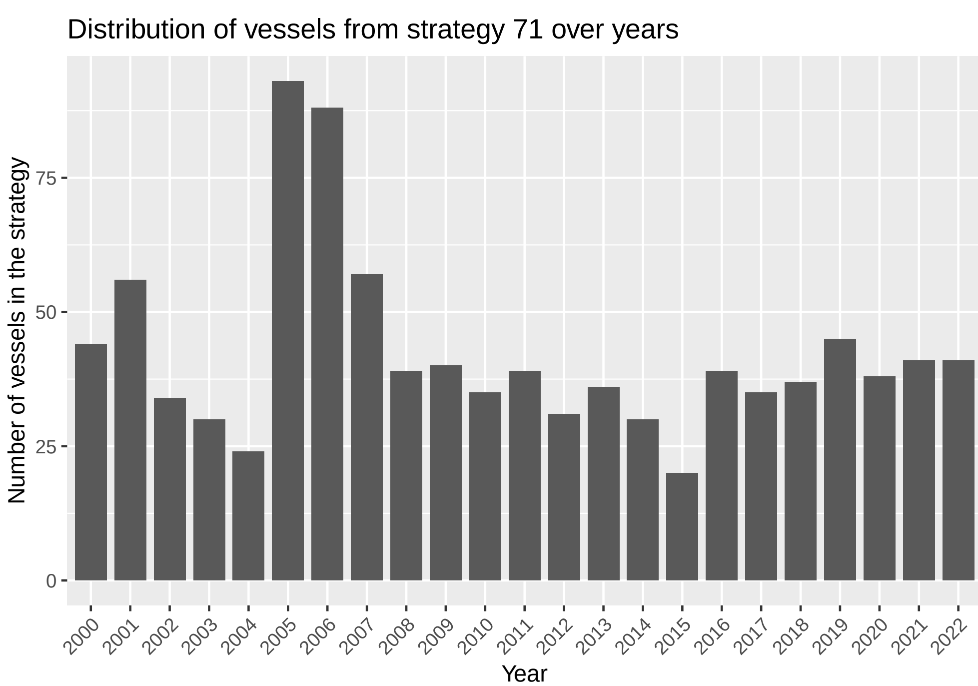
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





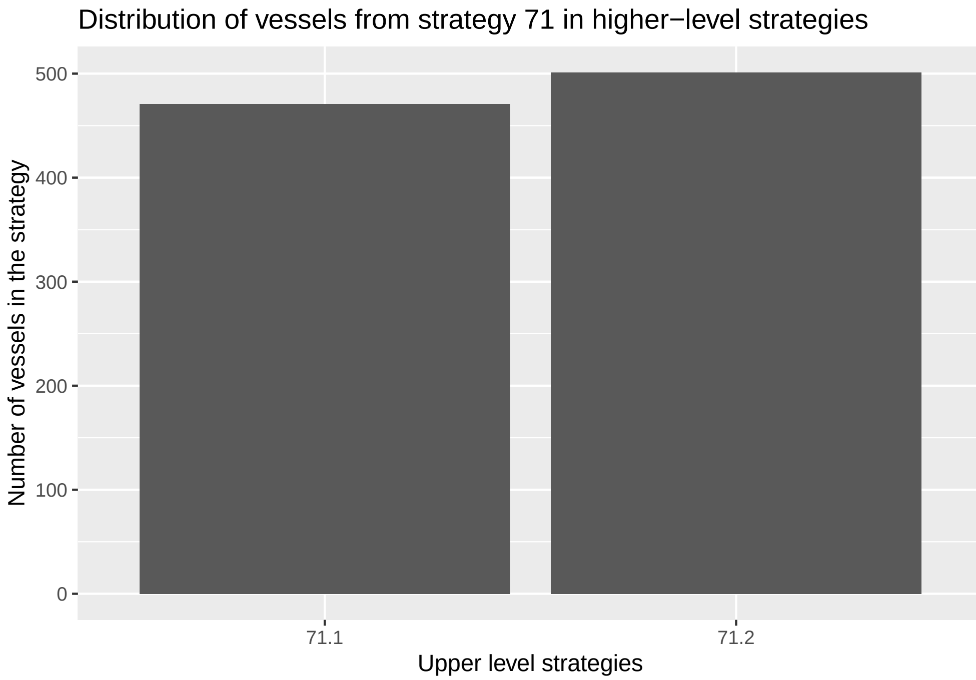
Strategy 71

This strategy includes N=972 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=193. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2005.

The distribution of vessels (per year) from this strategy in the associated higher-level strategies is presented below. A detailed description of these higher-level strategies (71.1, 71.2) can be found further on. Only 71.1, 71.2 are associated with accidental bycatch events.



Description table

This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

Table 6: Strategy 71

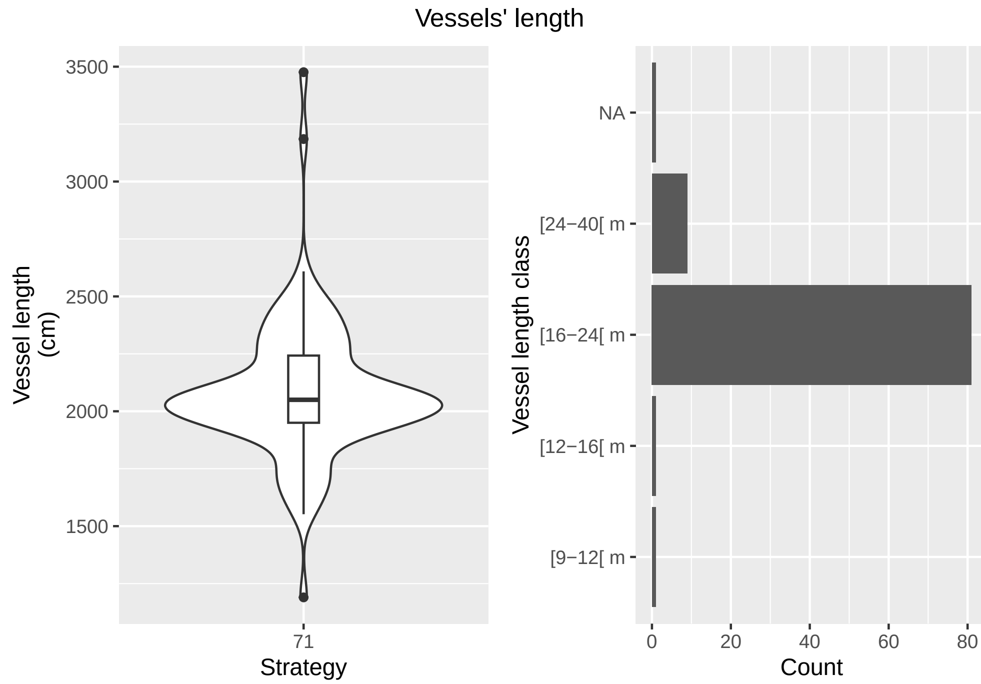
Importance	Variable	Value
Determinant (>95%)	PAVILLON	FRA
	Spp.	Thunnus spp
	Order	Perciformes
Strongly predominant (>80%)	ISSCAAP	36
	Family	Scombridae
	Gear	Pair trawls Midwater
	ICES division	27.8.a
Predominant (>65%)	Trimester	3
Major (>50%)	Family	Gadidae
	Spp.	Dicentrarchus spp
	ISSCAAP	33
Strong component (>35%)	Month	09
	Spp.	Chelidonichthys spp
	Family	Moronidae
		Clupeiformes
		Gadiformes
	Order	Pleuronectiformes
		32
	ISSCAAP	35
	Gear	Otter trawls Bottom
		27.7.e
	ICES division	27.7.j

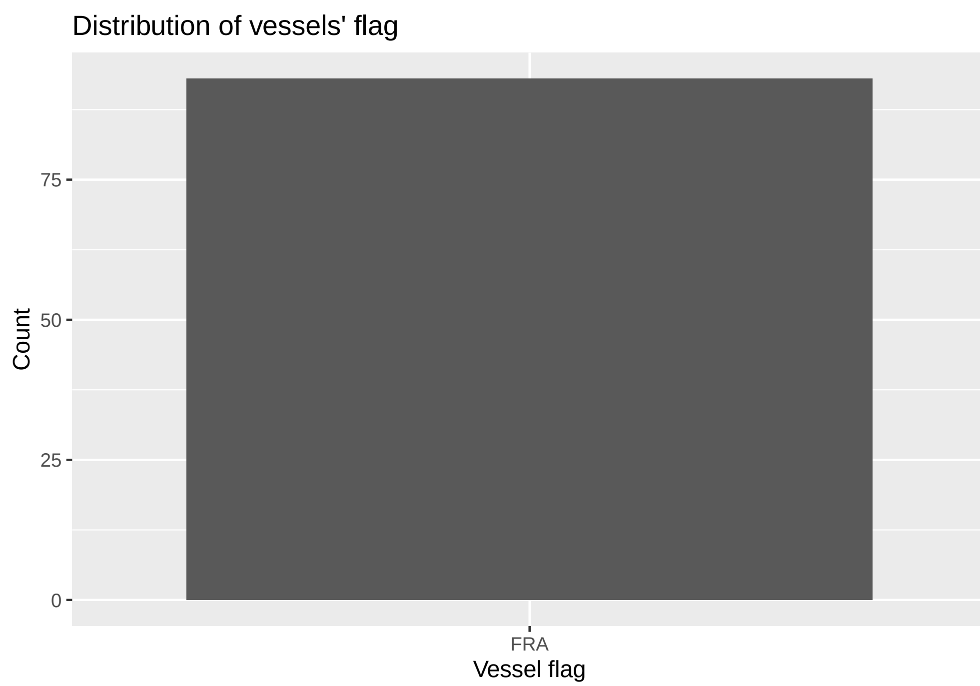
Table 6: Strategy 71 *(continued)*

Importance	Variable	Value
Component (>20%)	Month	08
		Engraulis spp
		Lophius spp
	Spp.	Merluccius spp
	Sp.	Nephrops norvegicus
	Spp.	Raja spp
	Sp.	Sardina pilchardus
		Sepia spp
	Spp.	Solea spp
		Clupeidae
		Engraulidae
		Lophiidae
		Merlucciidae
		Nephropidae
		Rajidae
	Family	Soleidae
		Decapoda
	Order	Lophiiformes
		31
		34
		38
		43
	ISSCAAP	57
	Gear	Otter twin trawls
		27.7.h
		27.7.k
		27.8.b
		27.8.c
	ICES division	27.8.d
		01
		03
		06
		07
		10
	Month	12
		1
		2
Minor component (>5%)	Trimester	4
	value__weight	TRUE
	value__eco	TRUE
	sd__weight	TRUE
	sd__eco	TRUE
	prop__spp	TRUE
	prop__family	TRUE
	prop__order	TRUE
	prop__isscaap	TRUE
	value__nb__seq	TRUE
	sd__nb__seq	TRUE
	value__nb__marees	TRUE
	sea__year	TRUE
	sd__average__sea	TRUE
High values (>SD)	sd__sea__days__marees	TRUE

Distribution of vessel length and flag during the reference year (2005)

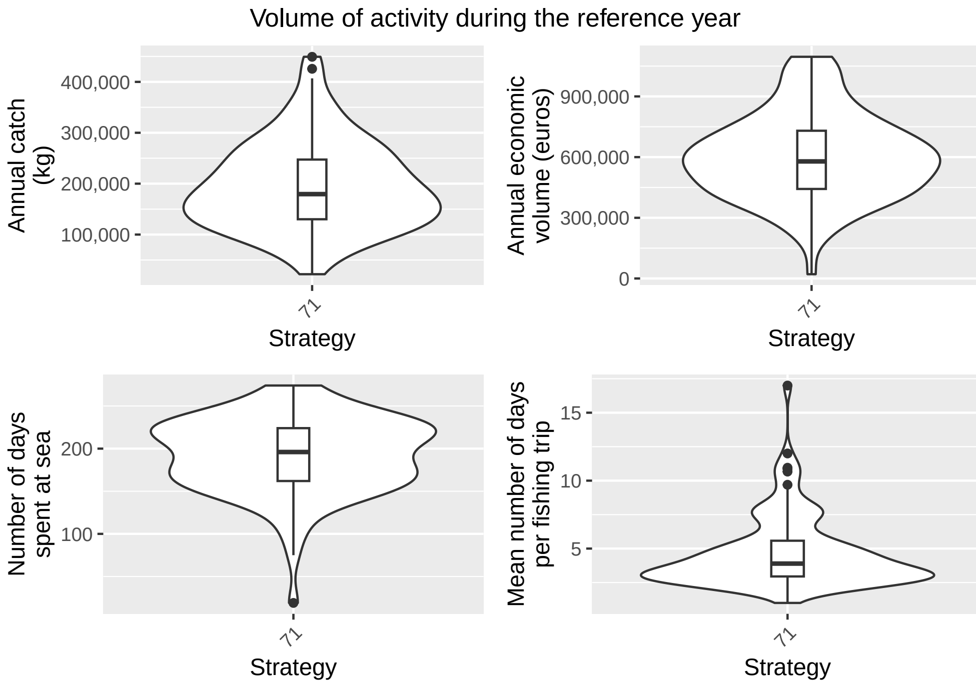
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



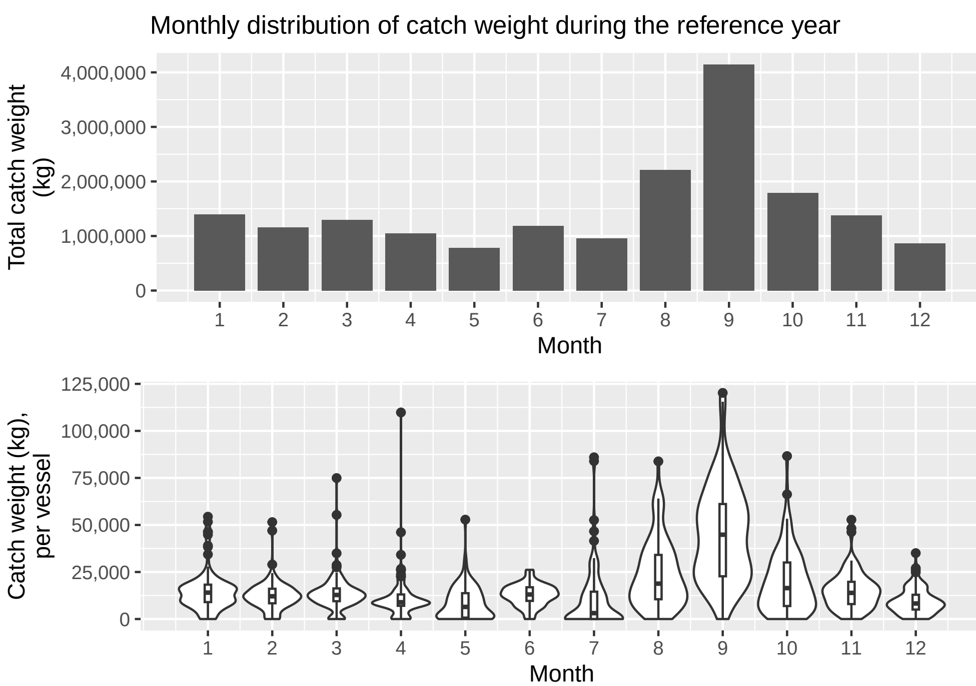


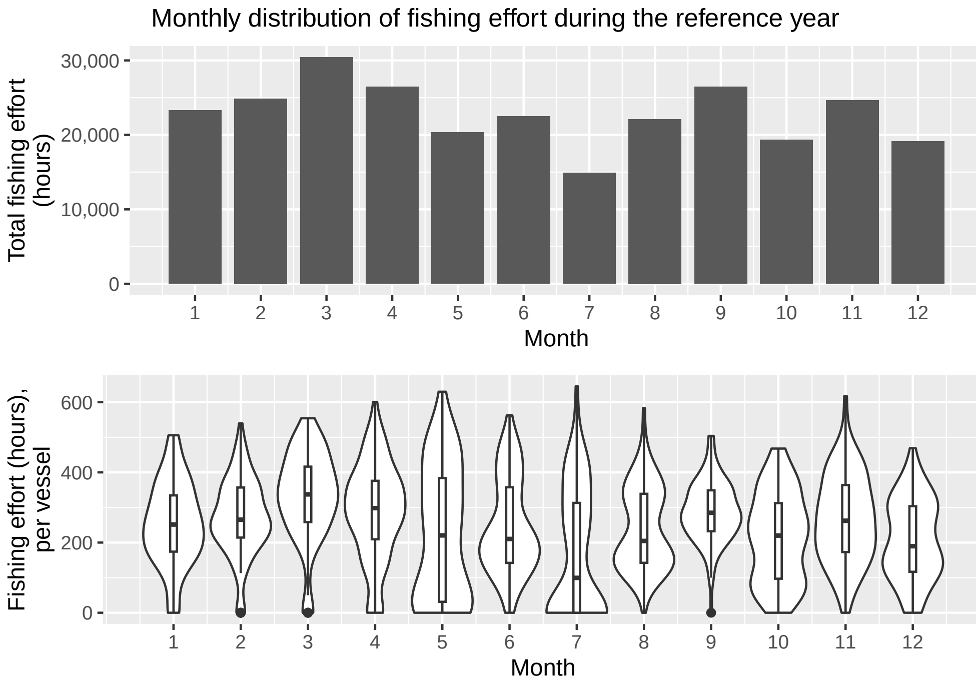
Description of the volume and pattern of fishing activities during the reference year (2005)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



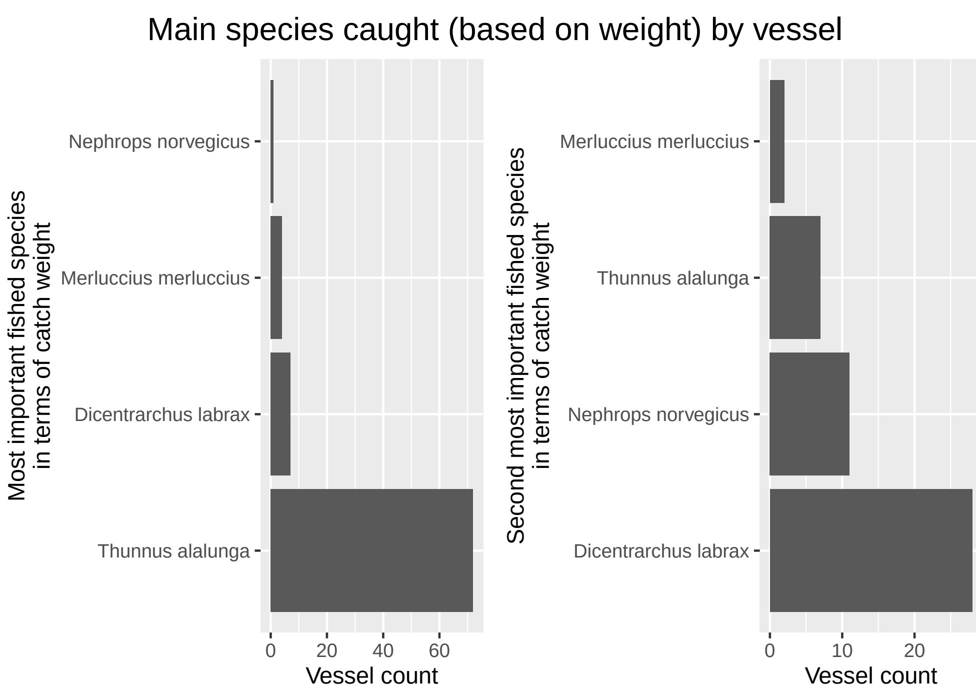
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

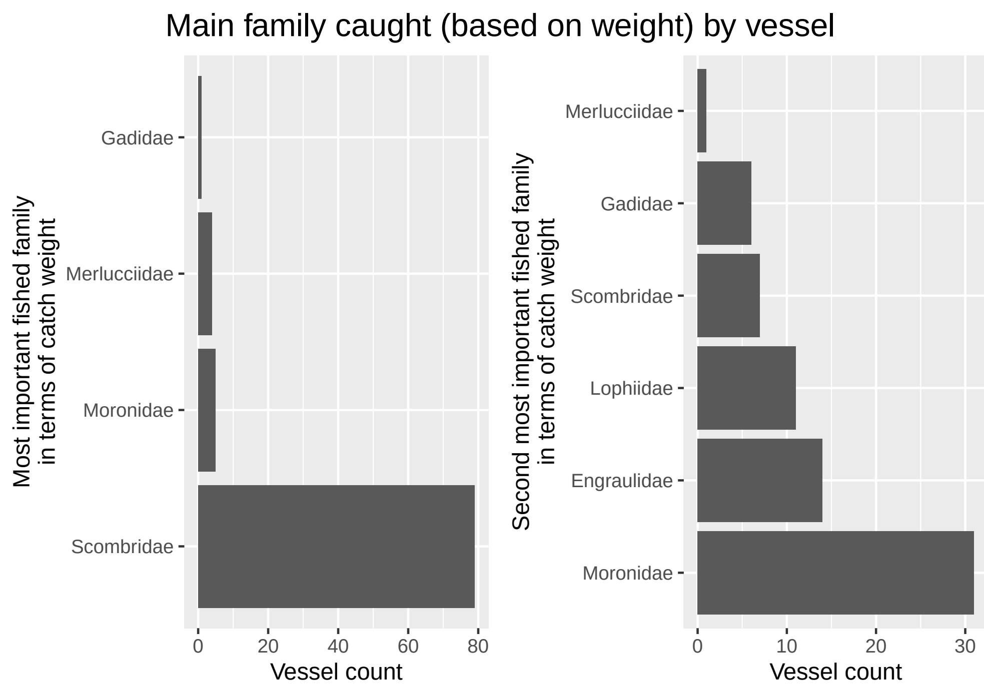


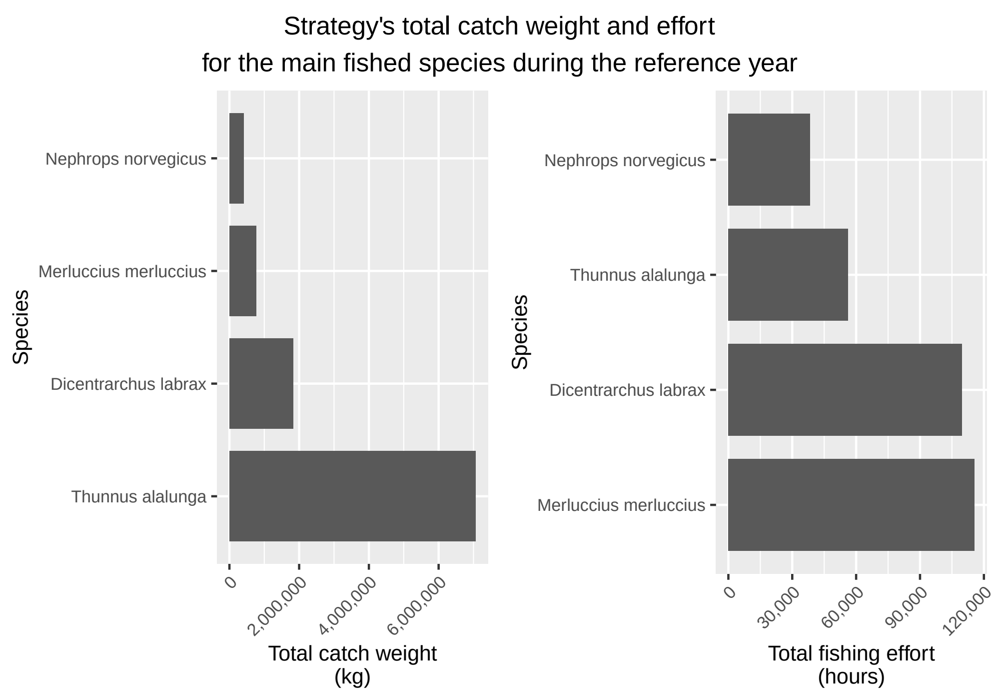


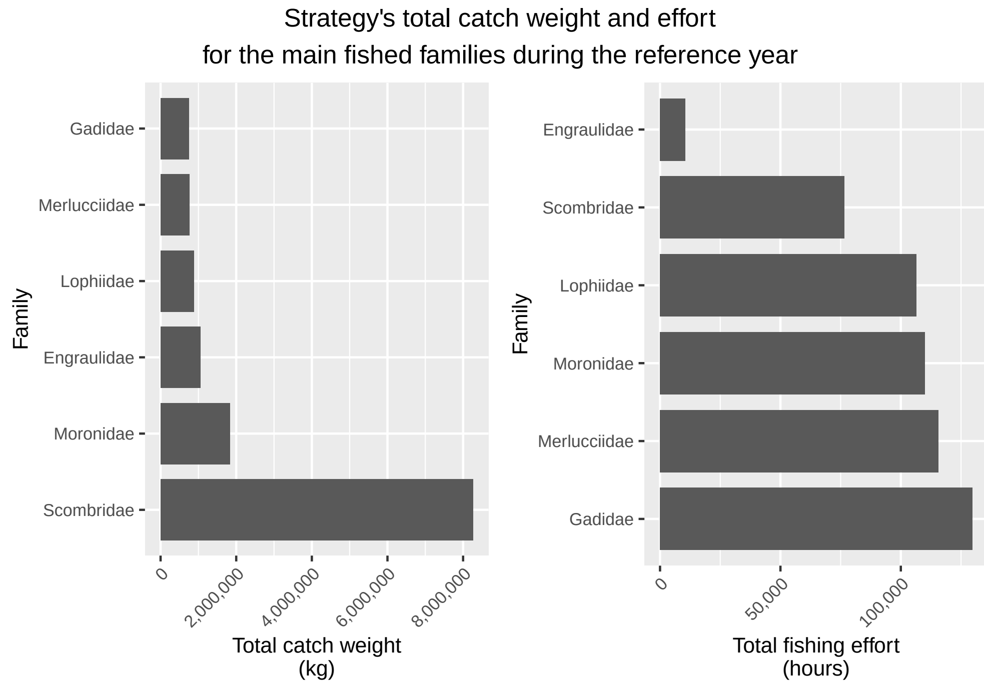
Main fished taxa and used gears during the reference year (2005)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

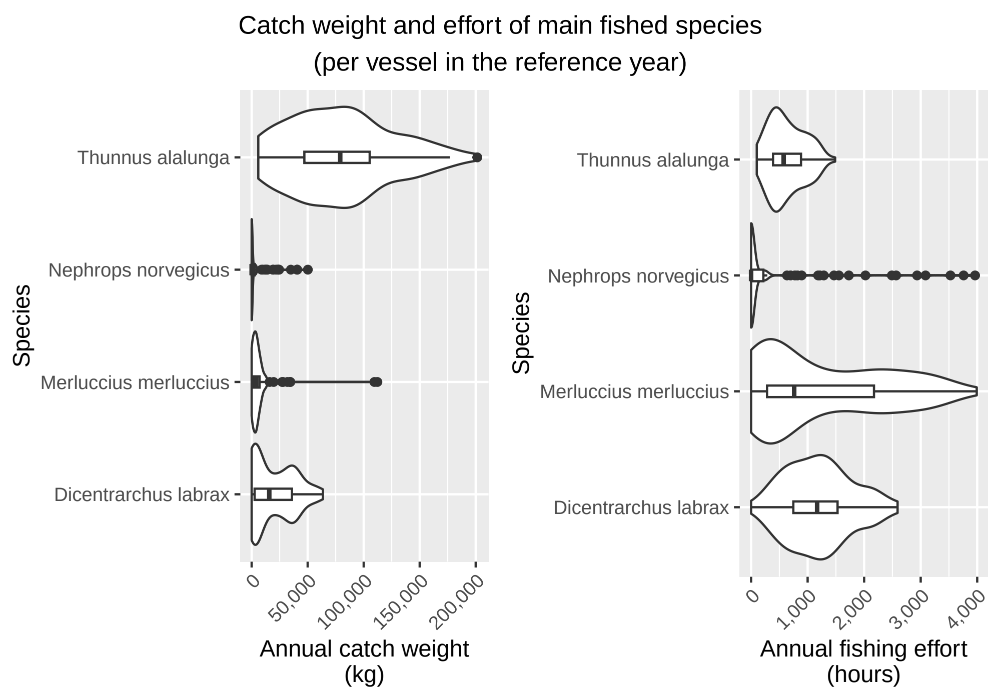


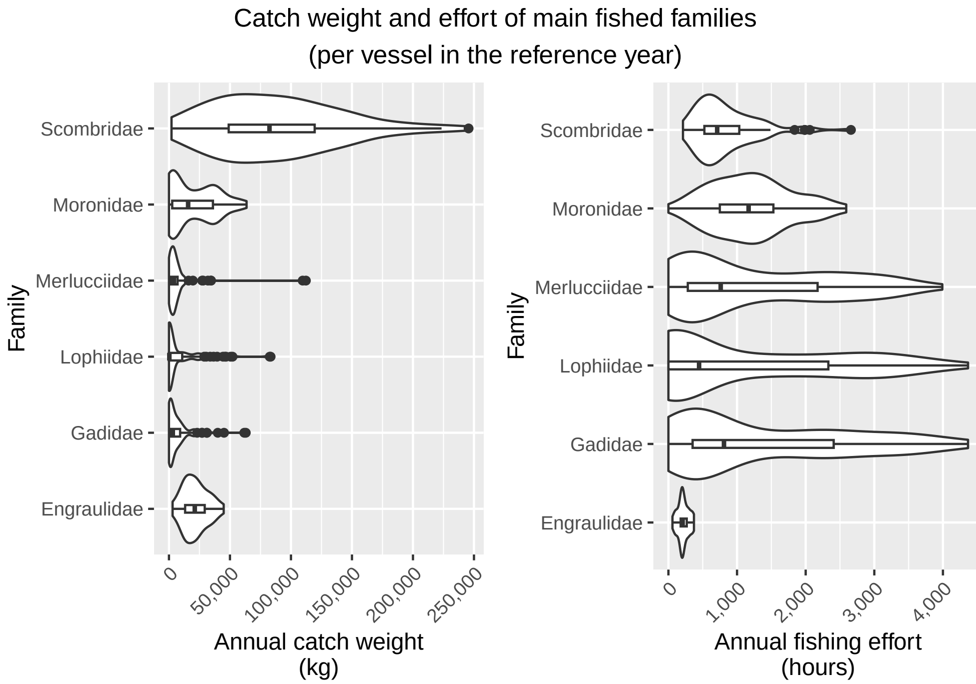

Main family caught (based on weight) by vessel
Gadidae
Merlucciidae
Moronidae
Scombridae
Most important fished family in terms of catch weight
0 20 40 60 80
Vessel count
Merlucciidae
Gadidae
Scombridae
Lophiidae
Engraulidae
Moronidae
Second most important fished family in terms of catch weight
0 10 20 30
Vessel count


Strategy's total catch weight and effort
for the main fished species during the reference year
Nephrops norvegicus
Merluccius merluccius
Dicentrarchus labrax
Thunnus alalunga
Species
0 2,000,000 4,000,000 6,000,000
Total catch weight (kg)
Nephrops norvegicus
Thunnus alalunga
Dicentrarchus labrax
Merluccius merluccius
Species
0 30,000 60,000 90,000 120,000
Total fishing effort (hours)

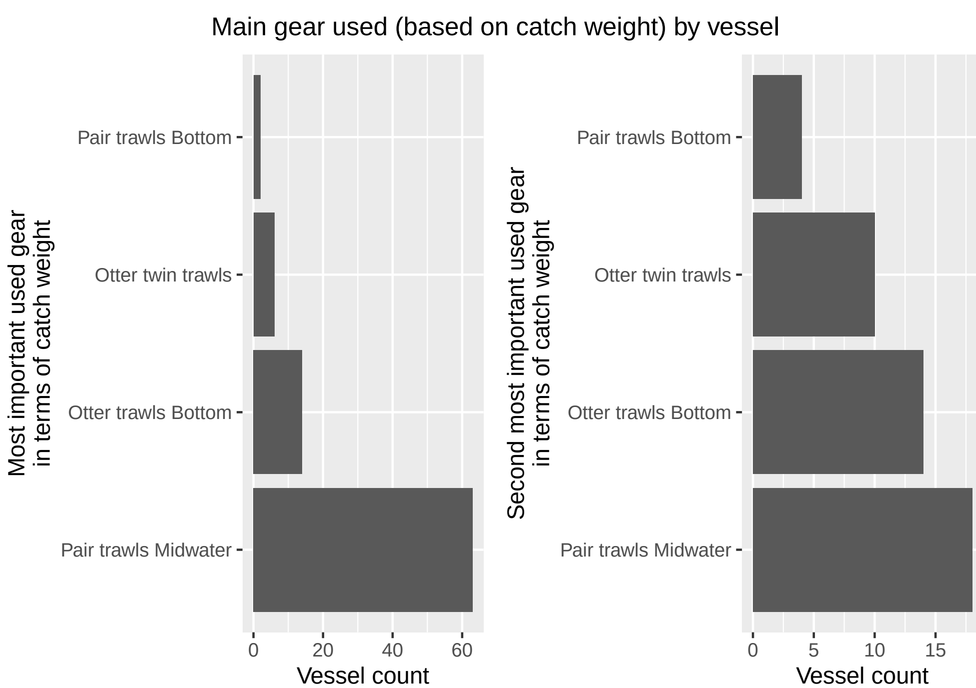


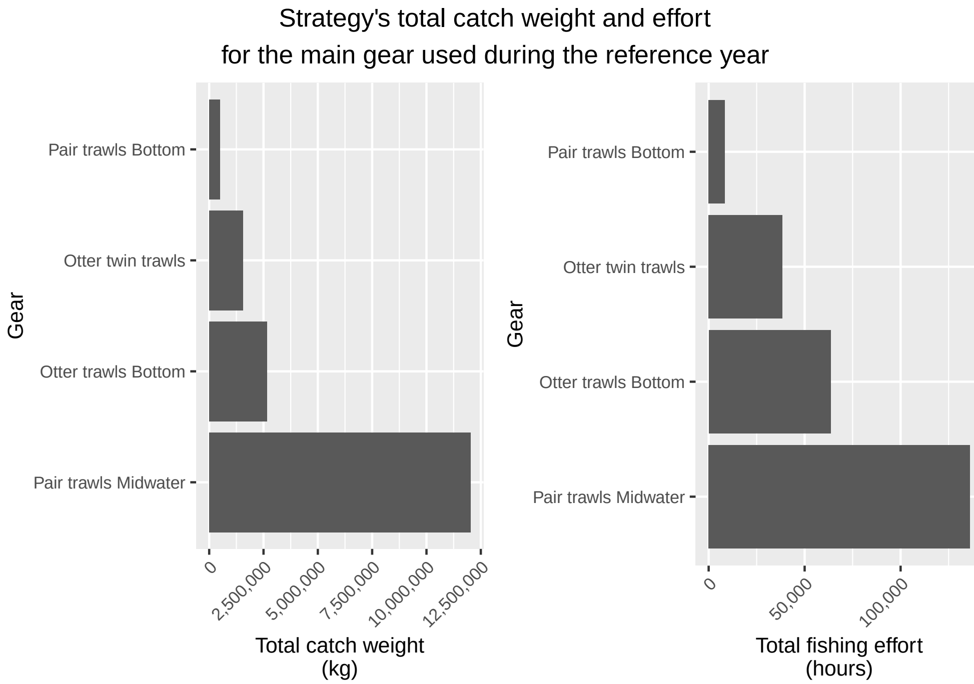
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

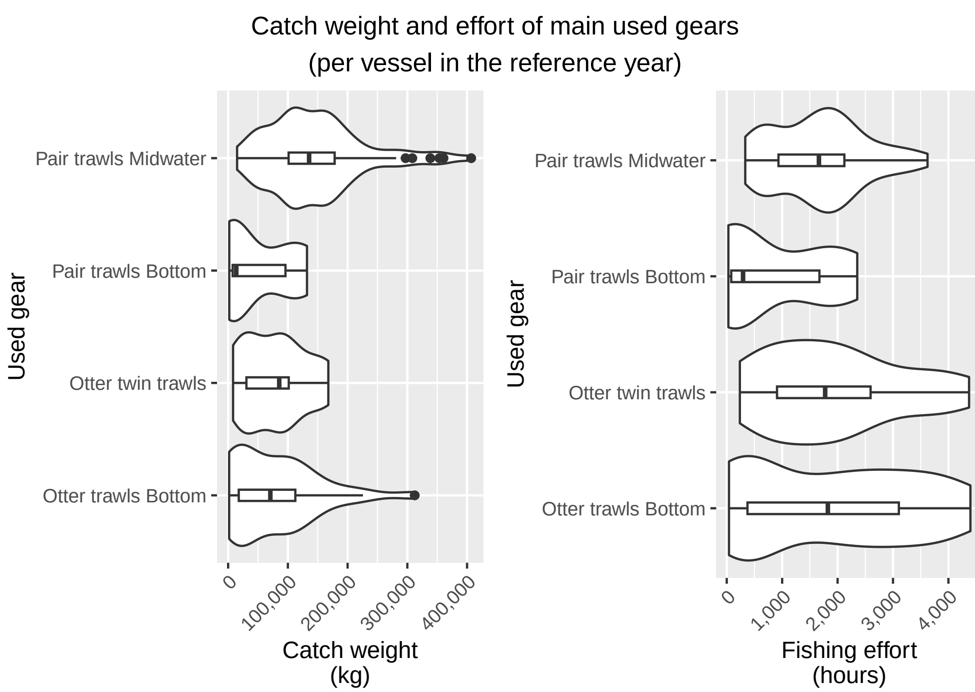




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

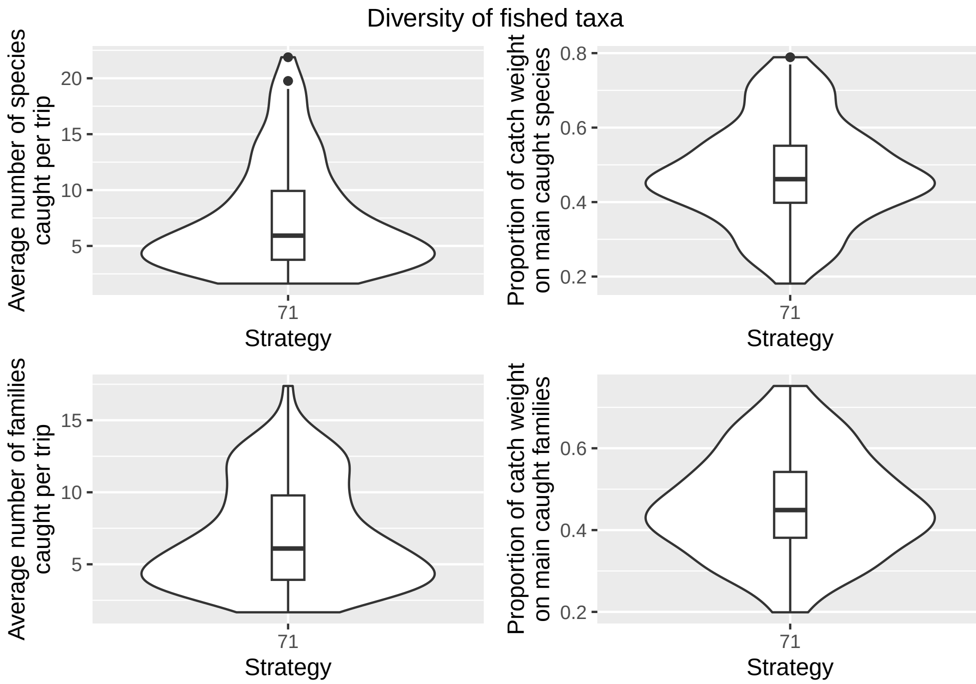




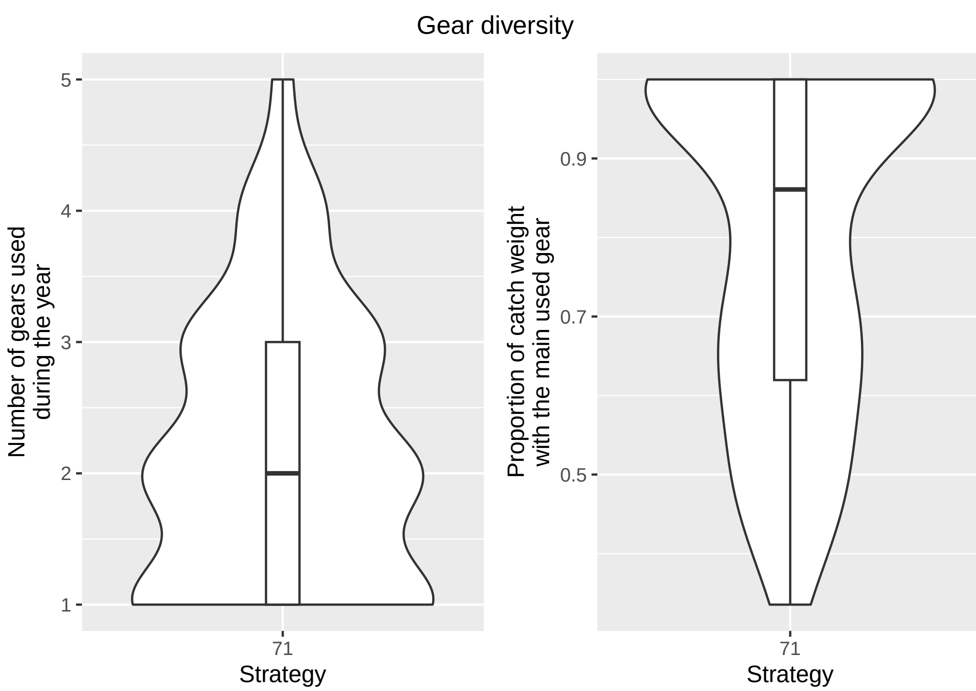


Diversity of fished taxa and used gears during the reference year (2005)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

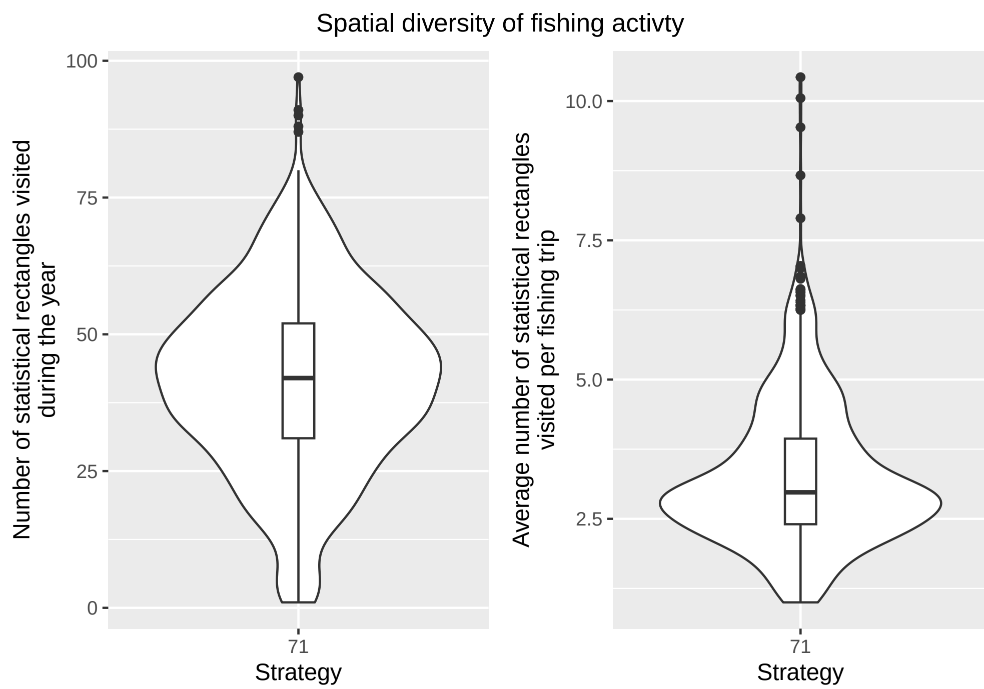


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

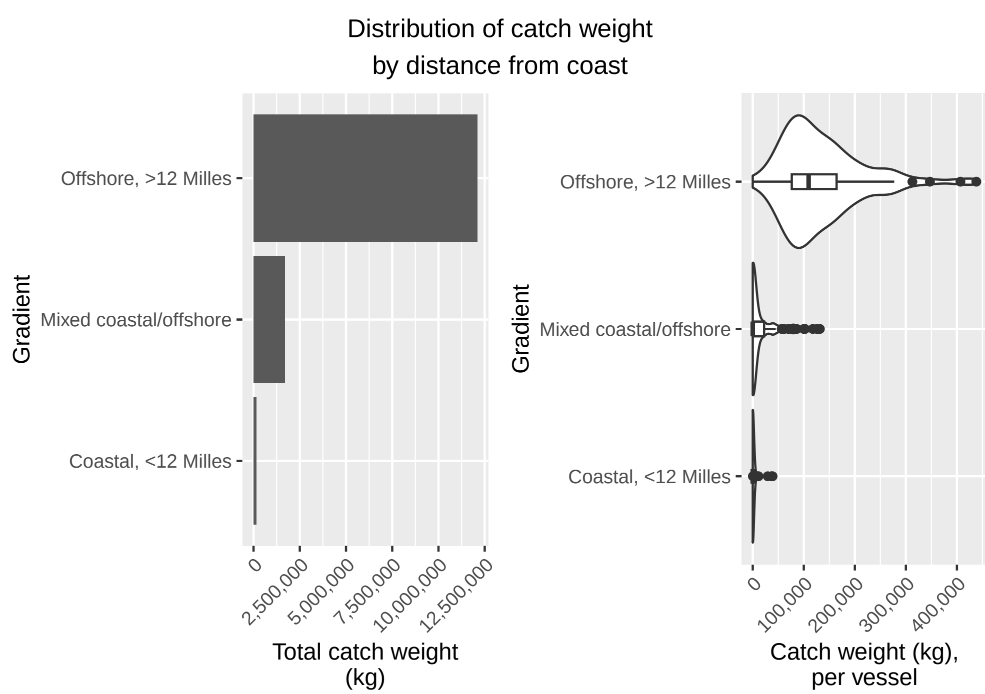


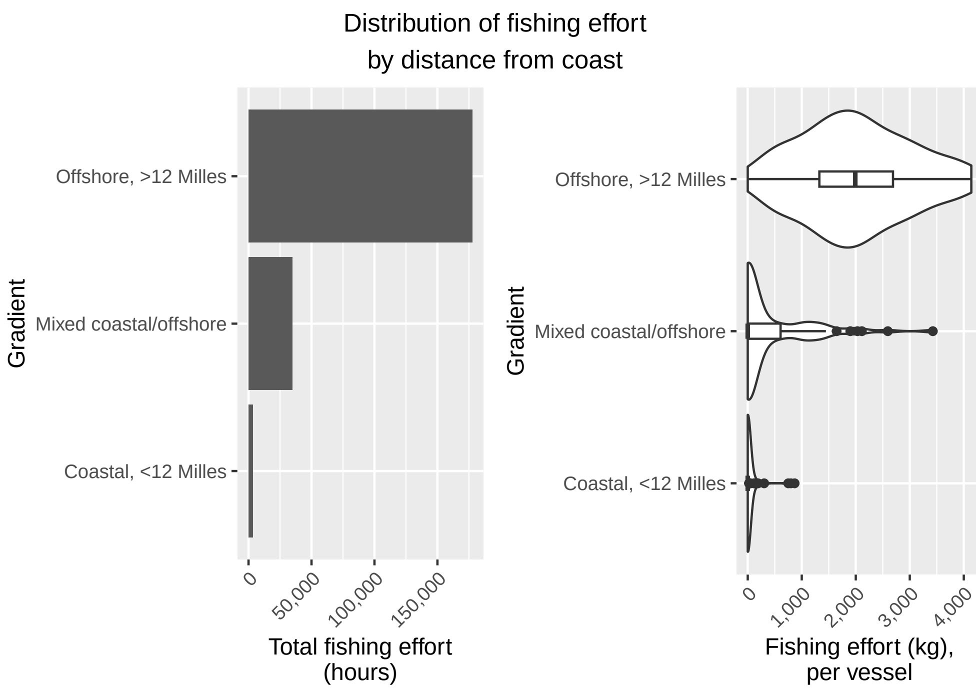
Diversity of areas visited during the reference year (2005)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



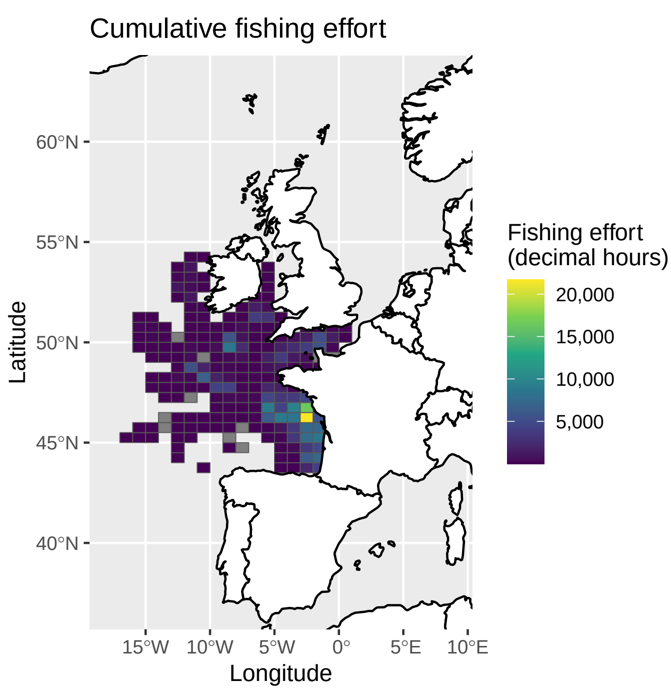
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

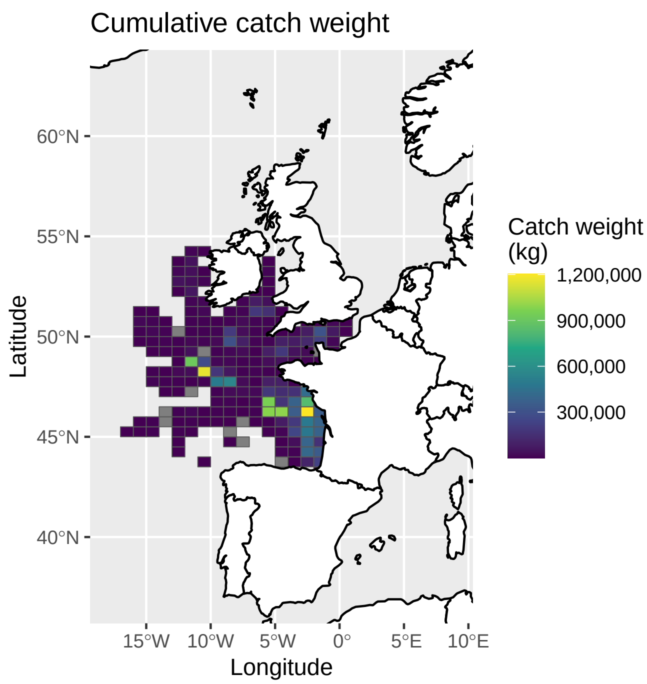




Maps of fishing activity distribution during the reference year (2005)

Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.

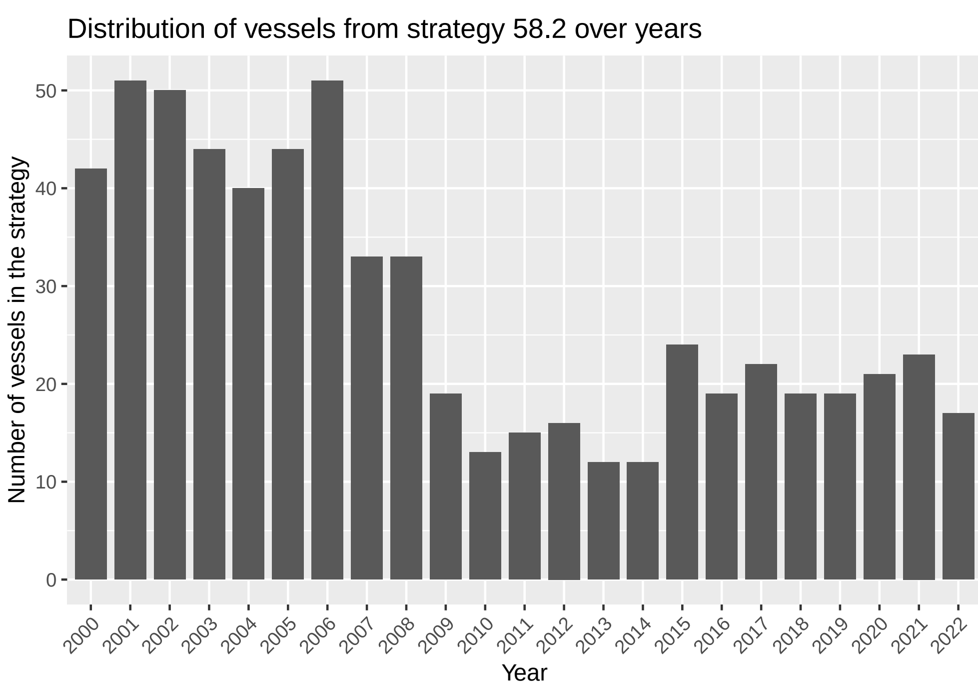




Second-level strategies

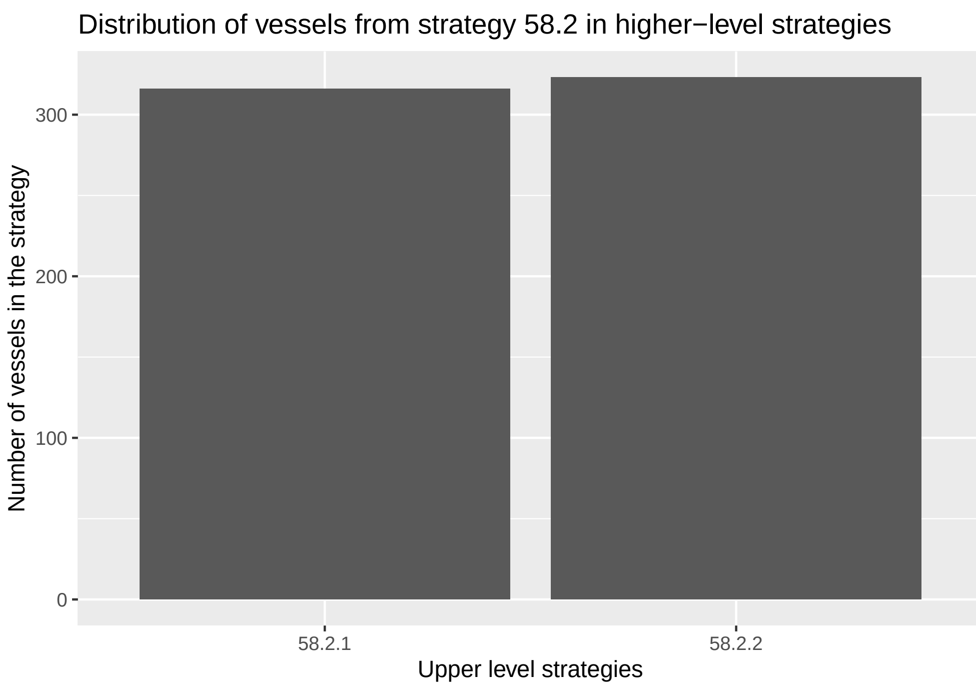
Strategy 58.2

This strategy includes N=639 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=203. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2006.

The distribution of vessels (per year) from this strategy in the associated higher-level strategies is presented below. A detailed description of these higher-level strategies (58.2.1, 58.2.2) can be found further on. Only 58.2.2 is associated with accidental bycatch events.



Description table

This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

Table 7: Strategy 58.2

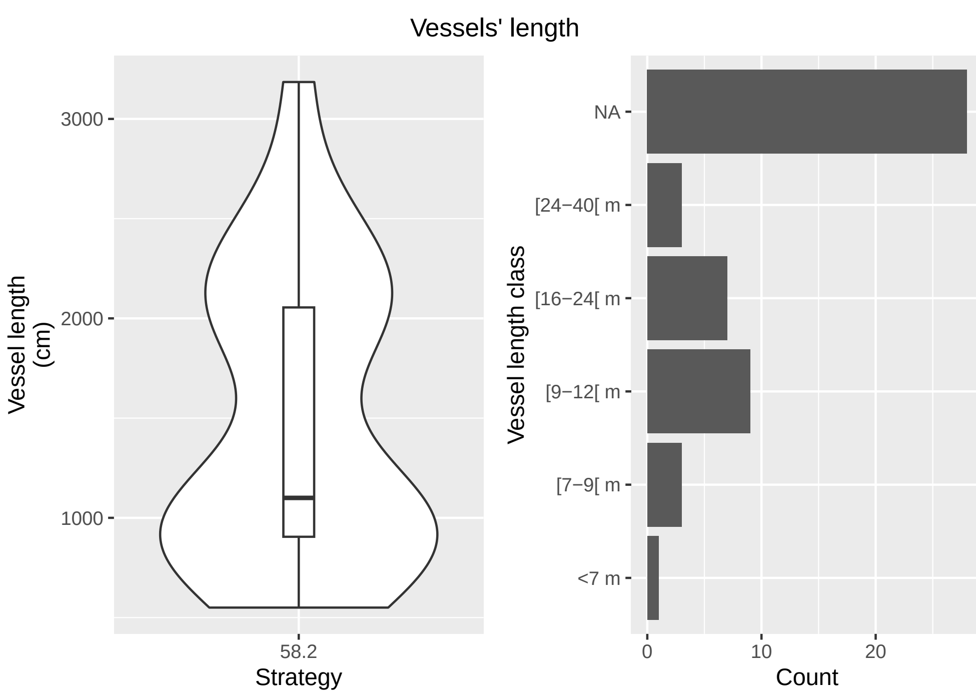
Importance	Variable	Value
	Sp.	Merluccius merluccius
	Spp.	Merluccius spp
	Family	Merlucciidae
	Order	Gadiformes
	ISSCAAP	32
Determinant (>95%)	Stock	HKE.27.3a4678abd
Predominant (>65%)	PAVILLON	FRA
	Family	Gadidae
Major (>50%)	ICES division	27.8.b
	Gear	Set longlines
Strong component (>35%)	Trimester	2
	Sp.	Trisopterus luscus
	Gear	Set gillnets (anchored)
	PAVILLON	ESP
	ICES division	27.8.a
Component (>20%)	Trimester	1
		Conger conger
	Sp.	Thunnus alalunga
		Chelidonichthys spp
		Conger spp
	Spp.	Thunnus spp

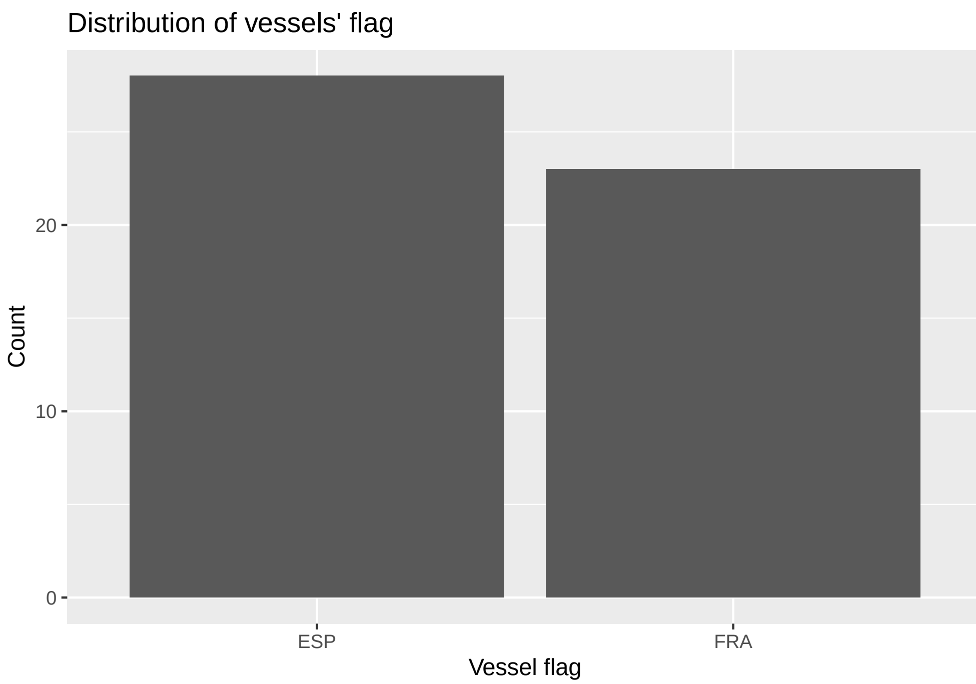
Table 7: Strategy 58.2 *(continued)*

Importance	Variable	Value
		Scombridae
	Family	Sparidae
	Order	Perciformes
		33
		34
		36
	ISSCAAP	37
		ALB.27
	Stock	COE.27
		Glass eel sieve
	Gear	Pair trawls Bottom
	ICES division	27.7.j
		02
		03
		04
		05
		06
		07
	Month	10
		3
Minor component (>5%)	Trimester	4
High values (>SD)	sd_weight	TRUE

Distribution of vessel length and flag during the reference year (2006)

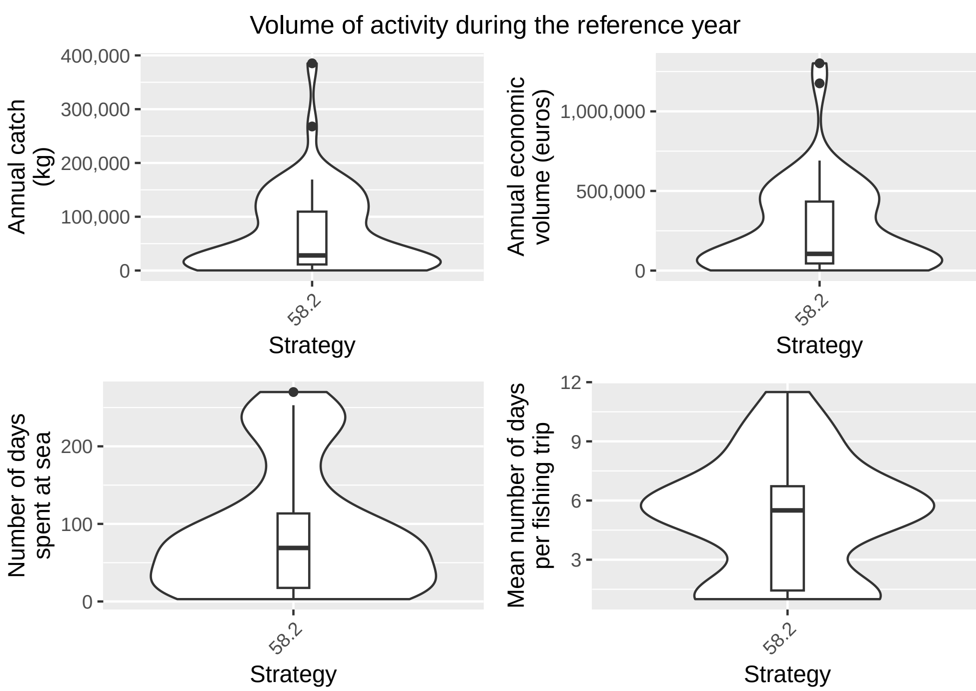
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



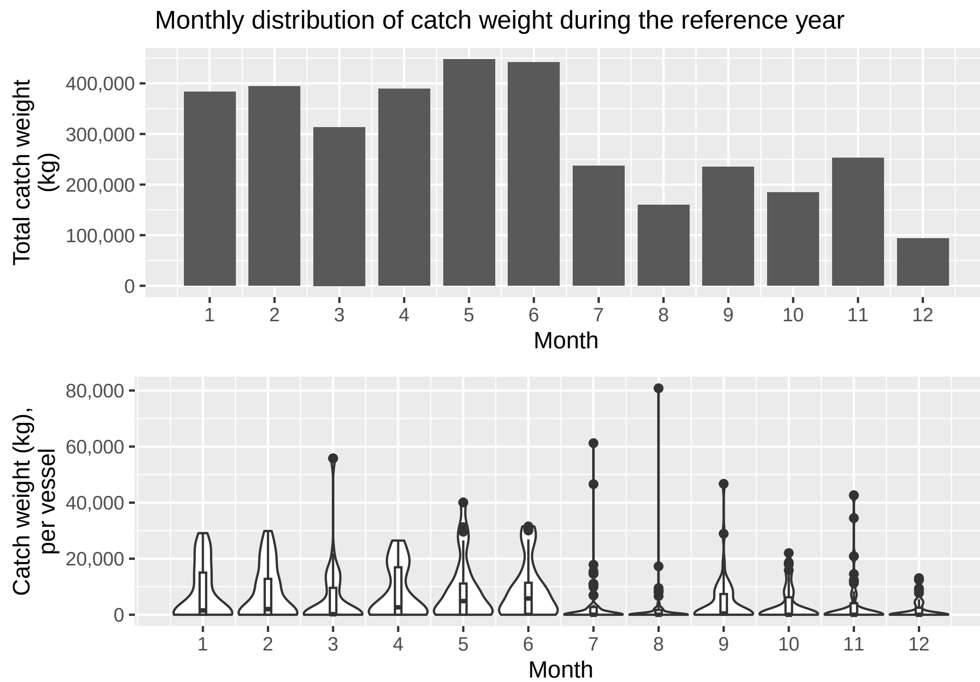


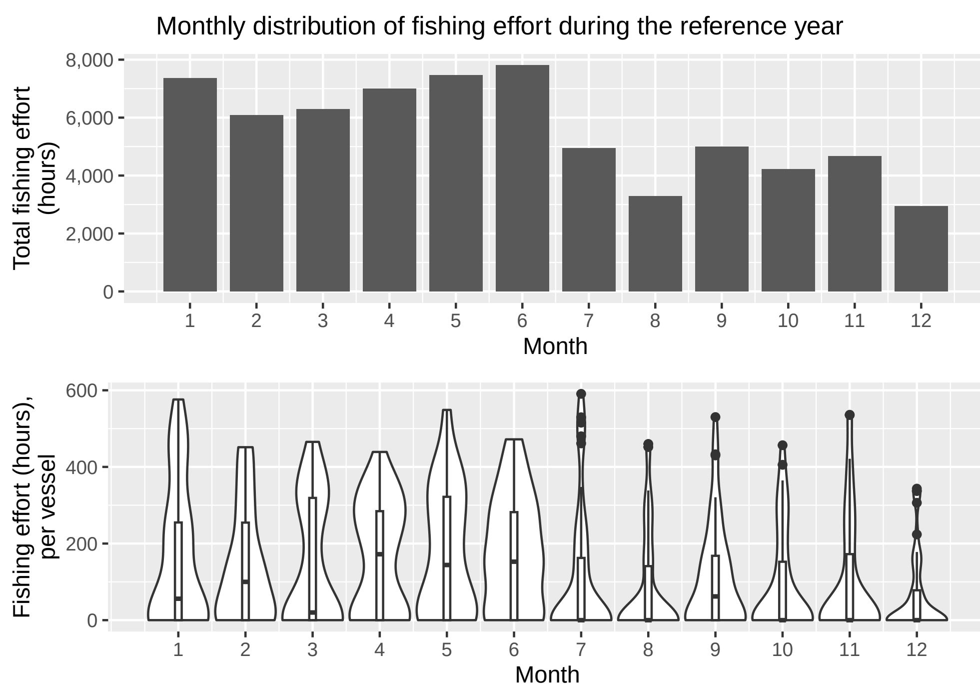
Description of the volume and pattern of fishing activities during the reference year (2006)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



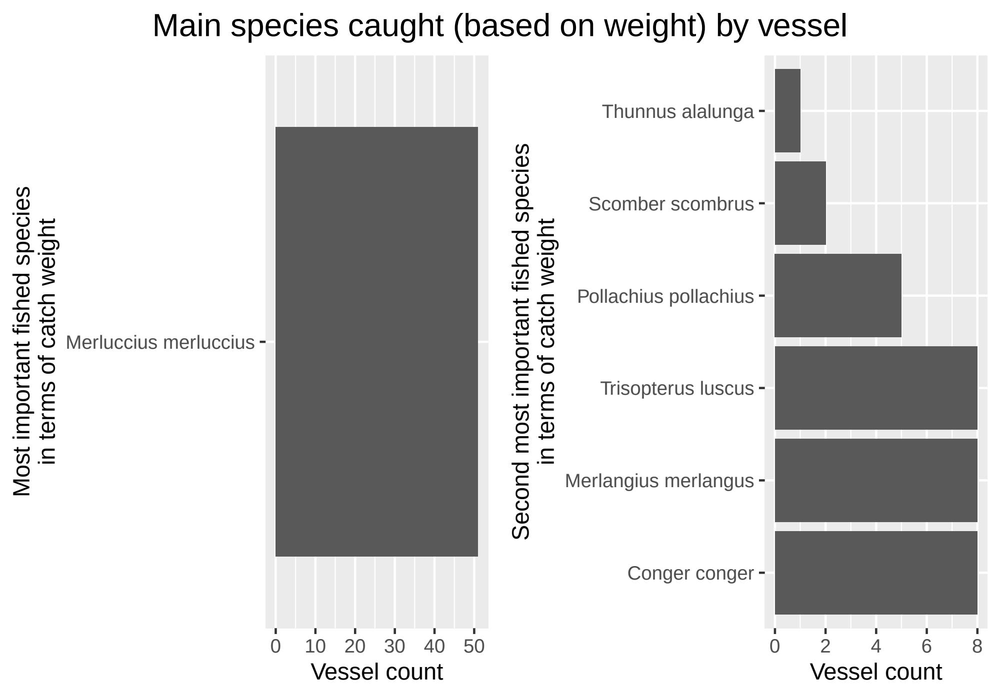
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

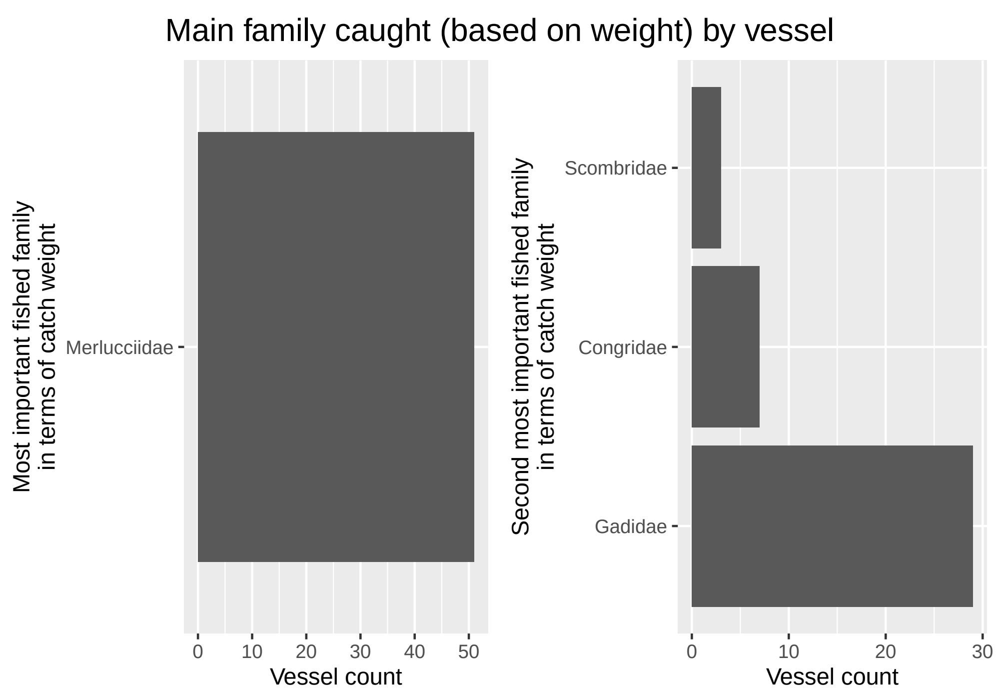


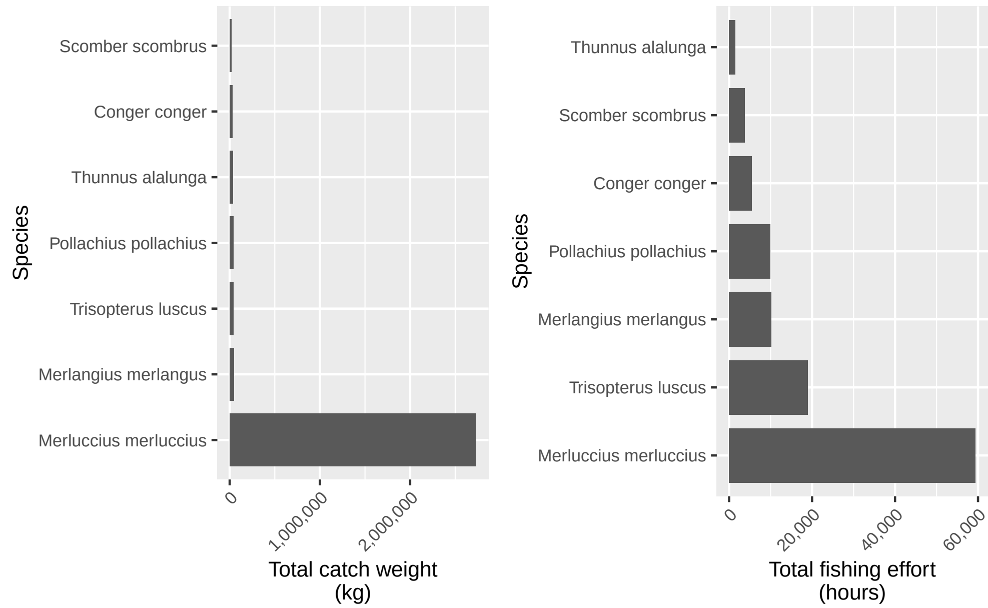


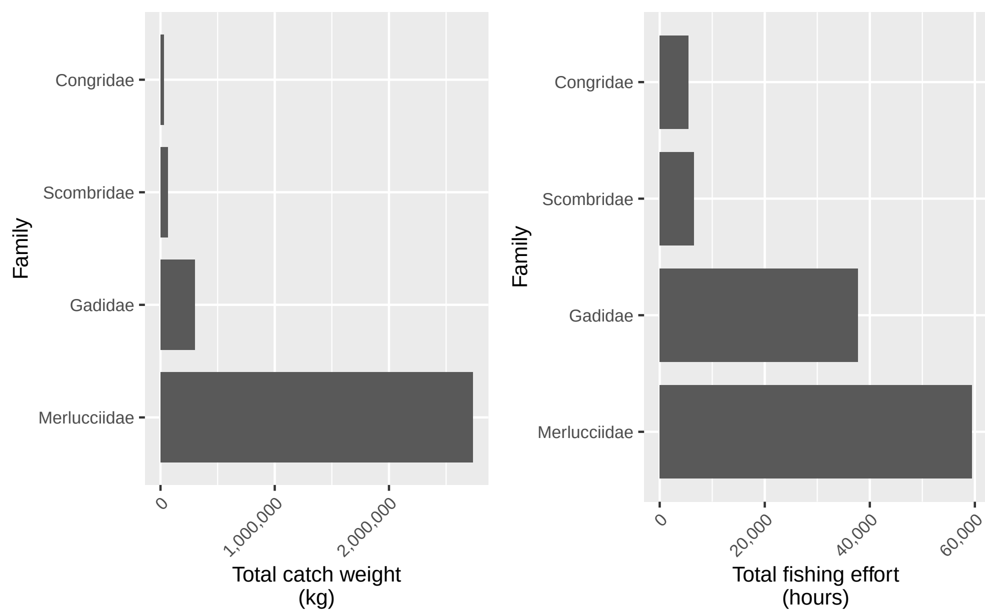
Main fished taxa and used gears during the reference year (2006)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

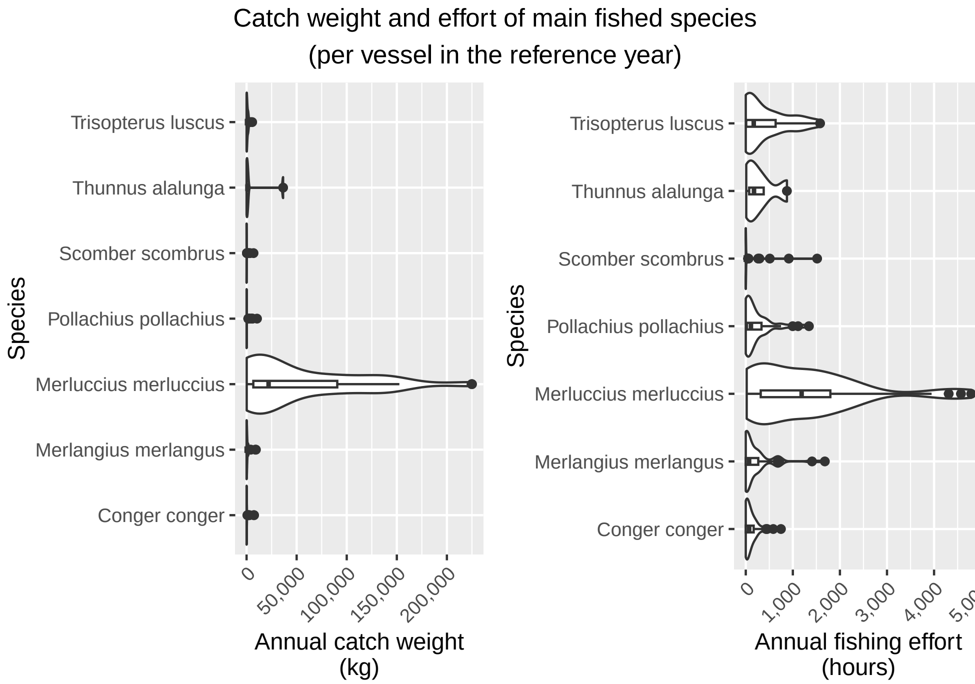

Main species caught (based on weight) by vessel
Most important fished species in terms of catch weight
Merluccius merluccius
0 10 20 30 40 50
Vessel count
Second most important fished species in terms of catch weight
Thunnus alalunga
Scomber scombrus
Pollachius pollachius
Trisopterus luscus
Merlangius merlangus
Conger conger
0 2 4 6 8
Vessel count

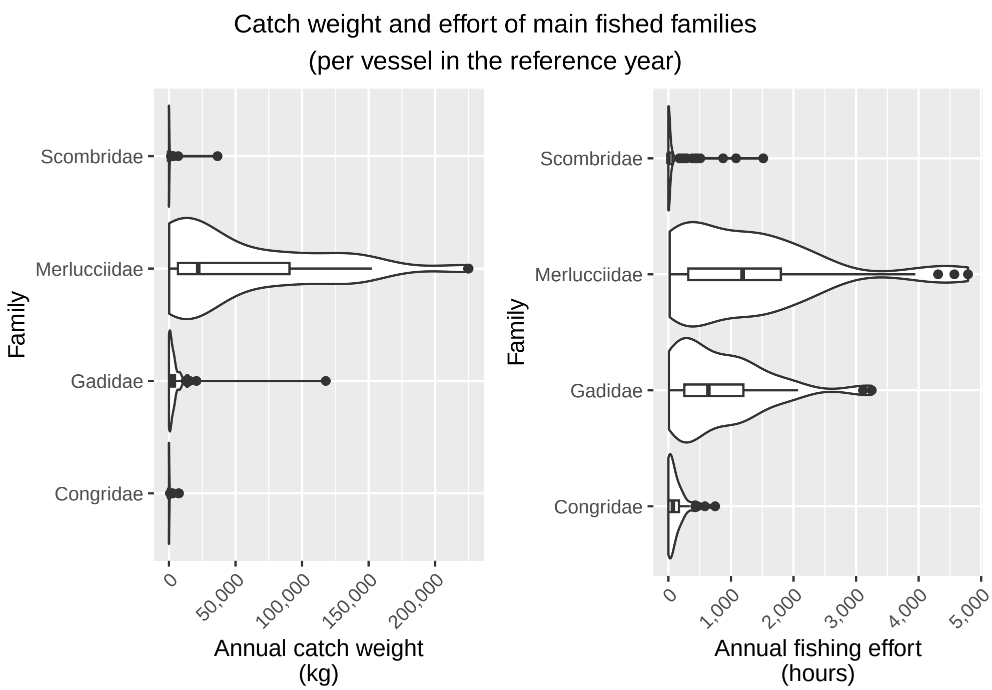

Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Merlucciidae
0 10 20 30 40 50
Vessel count
Second most important fished family in terms of catch weight
Scombridae
Congridae
Gadidae
0 10 20 30
Vessel count



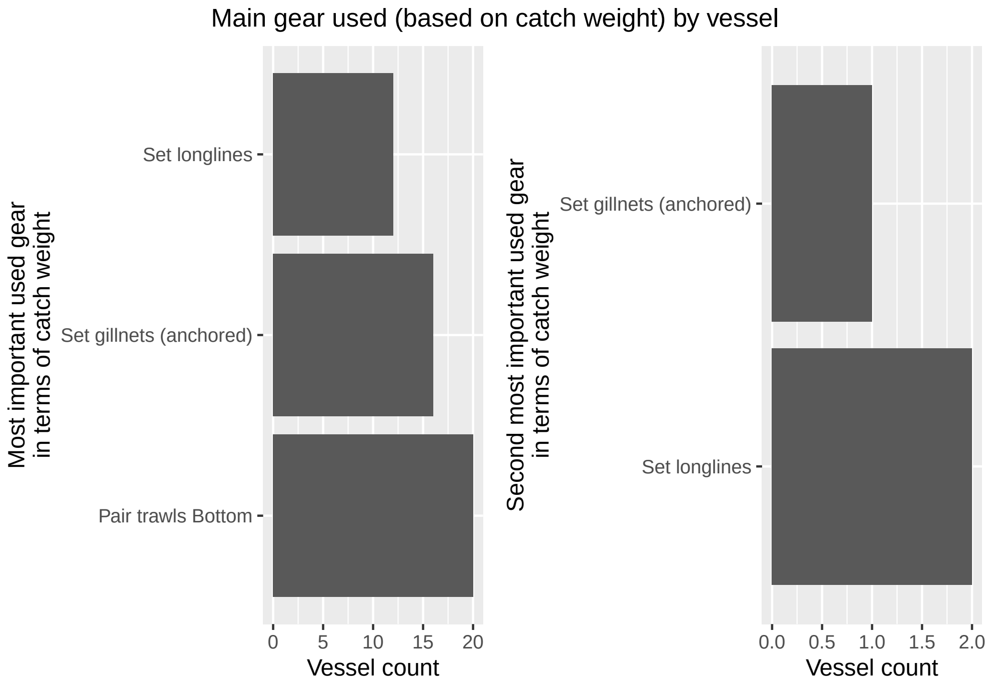


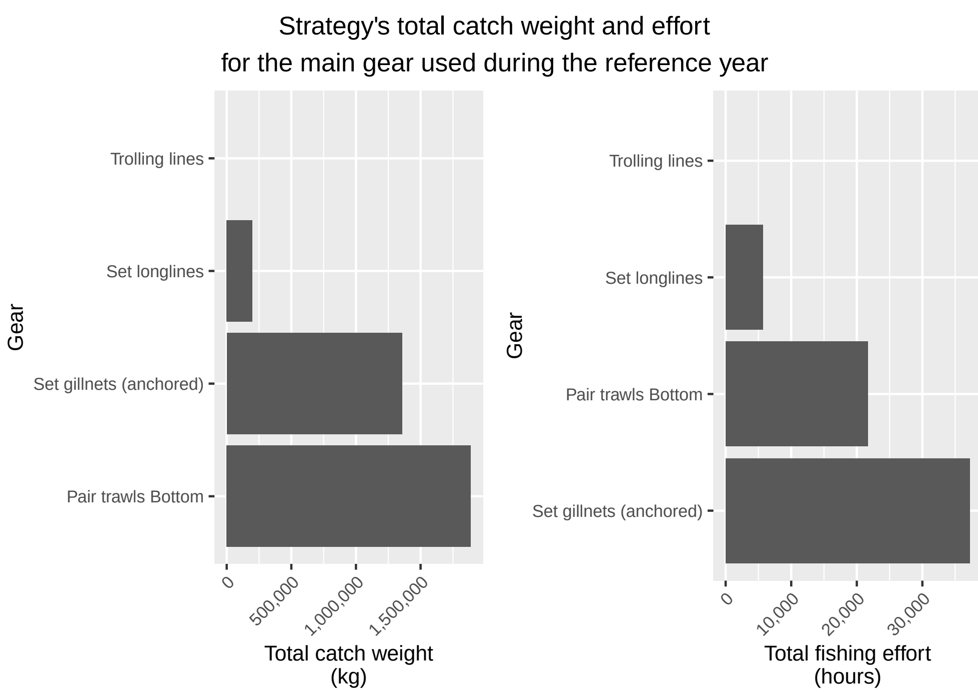
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

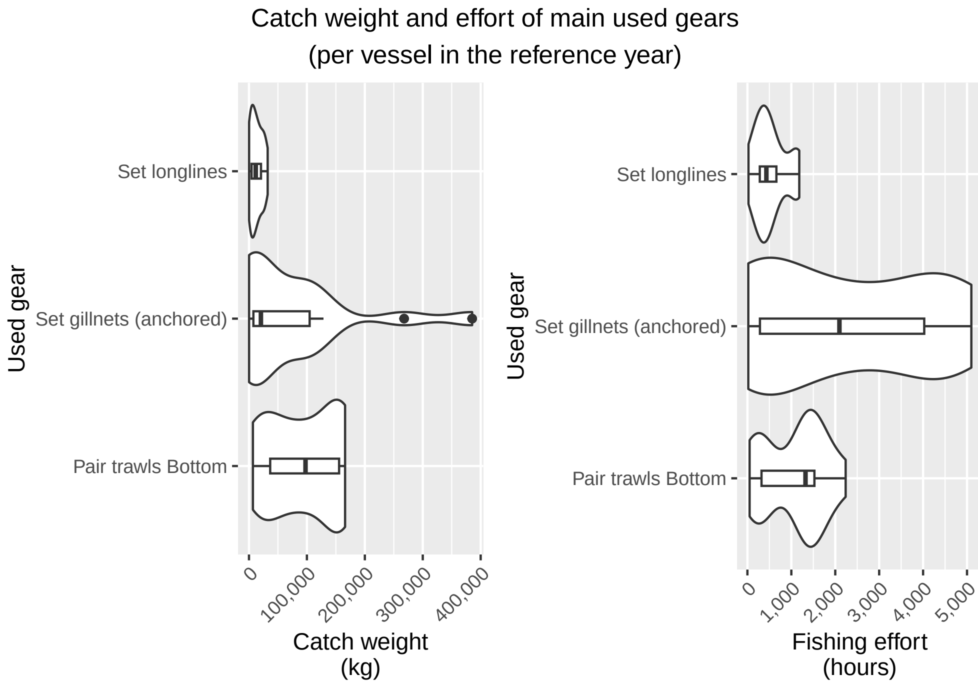




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

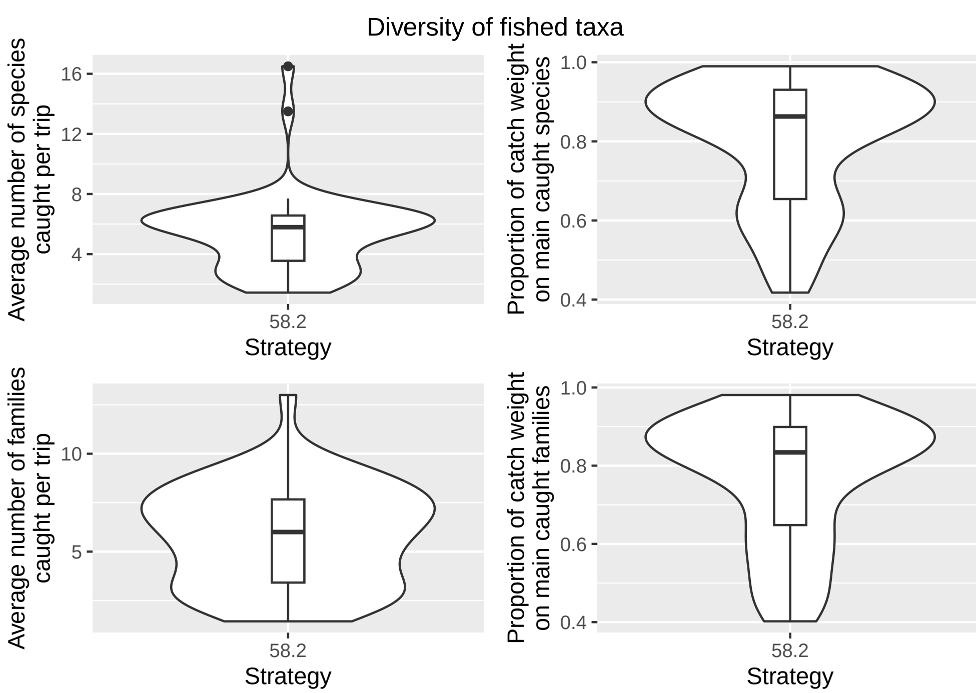

Main gear used (based on catch weight) by vessel
Most important used gear
in terms of catch weight
Set longlines
Set gillnets (anchored)
Pair trawls Bottom
0
5
10
15
20
Vessel count
Second most important used gear
in terms of catch weight
Set gillnets (anchored)
Set longlines
0.0
0.5
1.0
1.5
2.0
Vessel count


Strategy's total catch weight and effort
for the main gear used during the reference year
Gear
Trolling lines
Set longlines
Set gillnets (anchored)
Pair trawls Bottom
0
500,000
1,000,000
1,500,000
Total catch weight
(kg)
Gear
Trolling lines
Set longlines
Pair trawls Bottom
Set gillnets (anchored)
0
10,000
20,000
30,000
Total fishing effort
(hours)

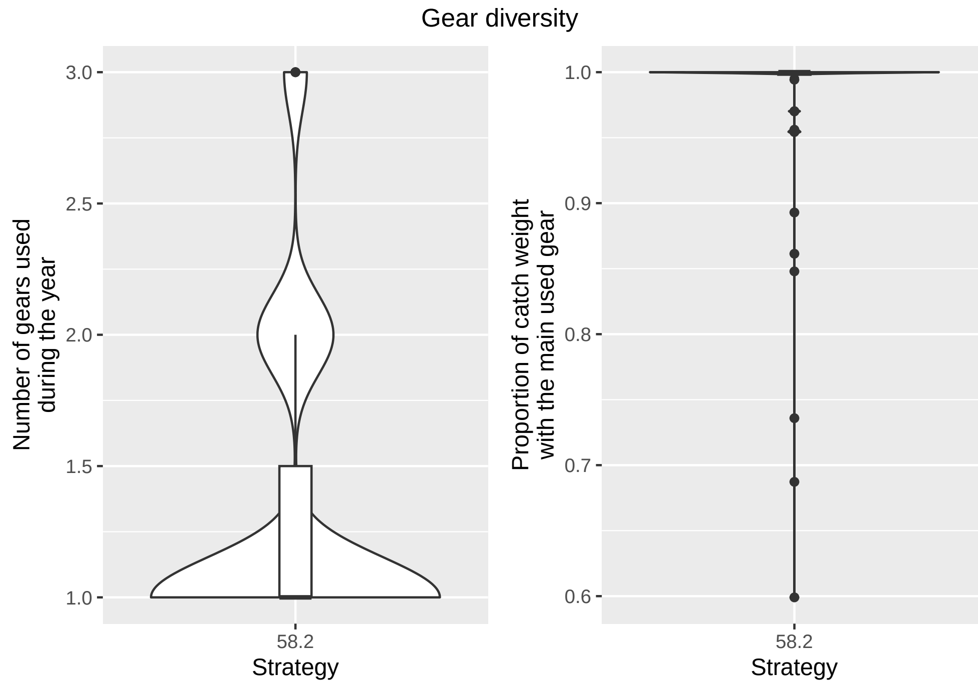


Diversity of fished taxa and used gears during the reference year (2006)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

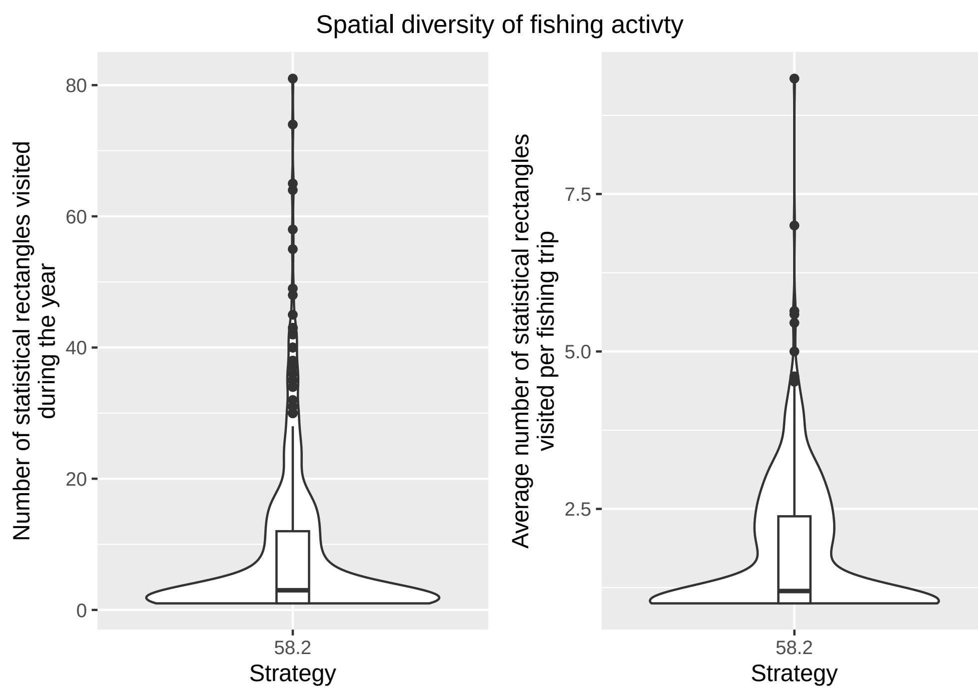


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.



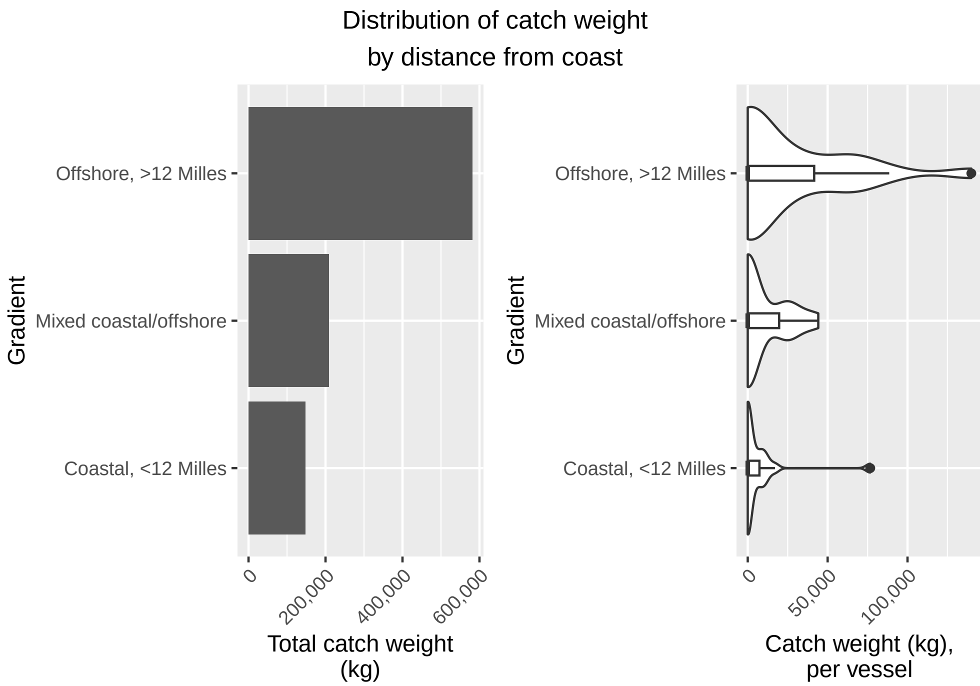
Diversity of areas visited during the reference year (2006)

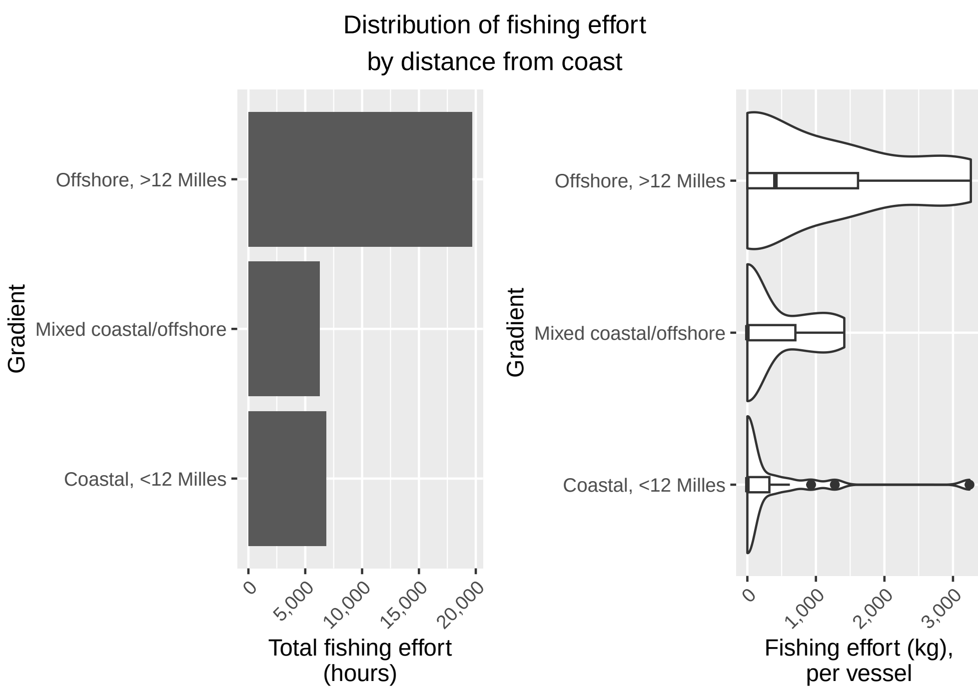
We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying

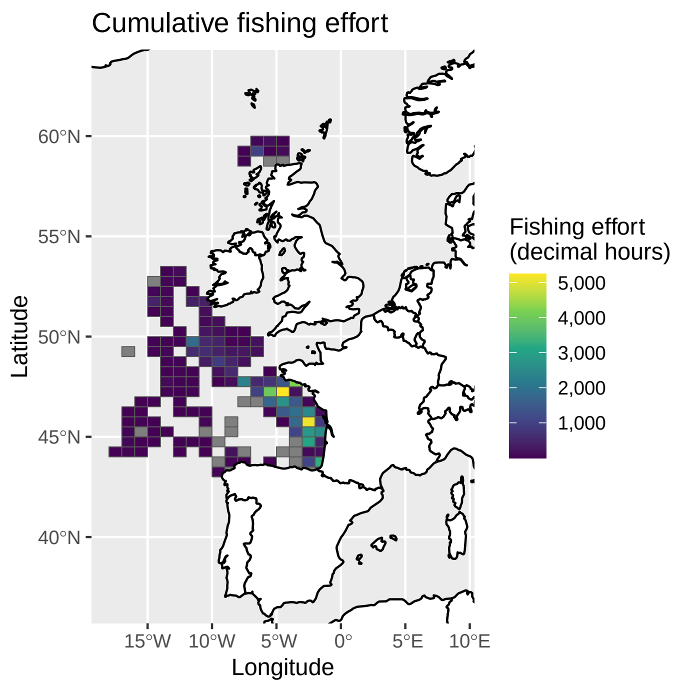
catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

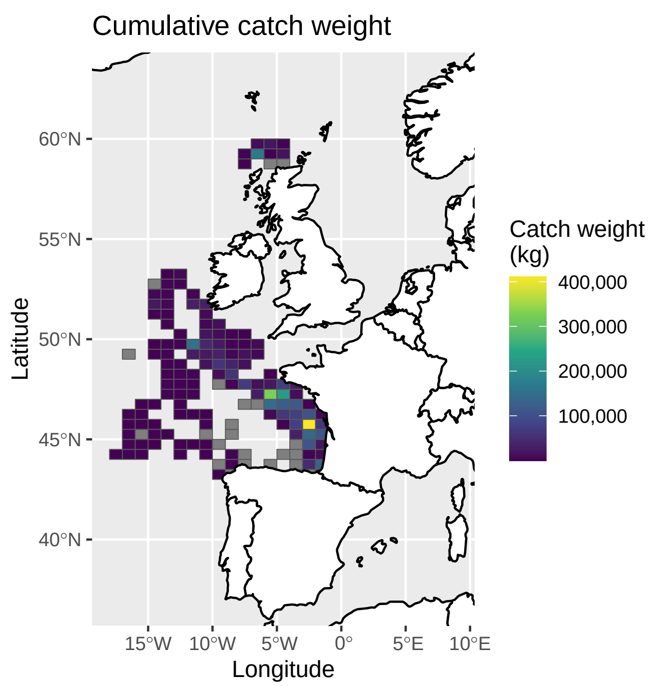




Maps of fishing activity distribution during the reference year (2006)

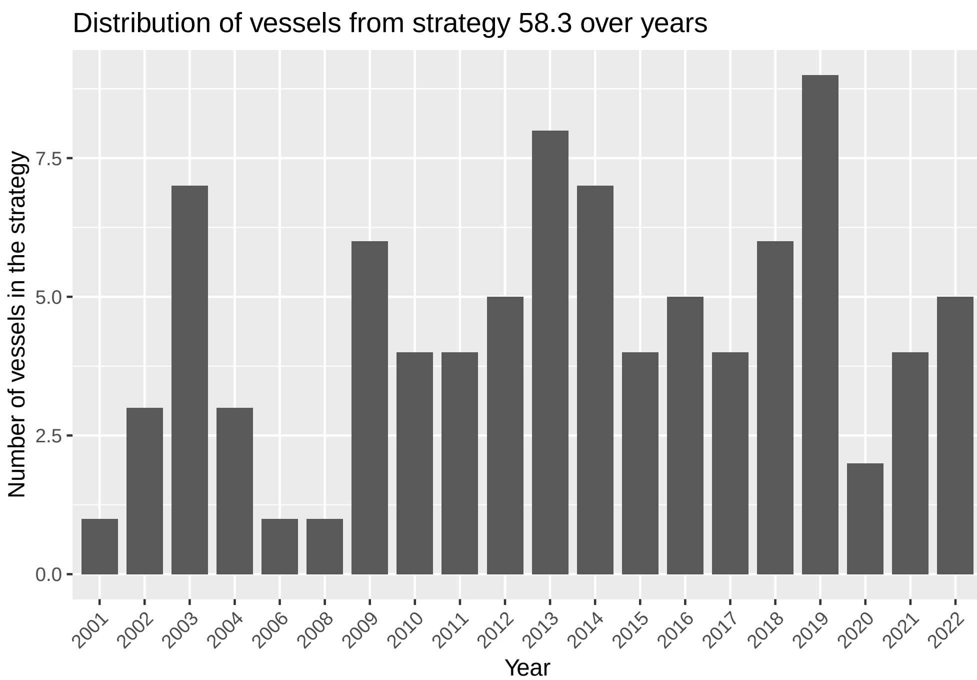
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





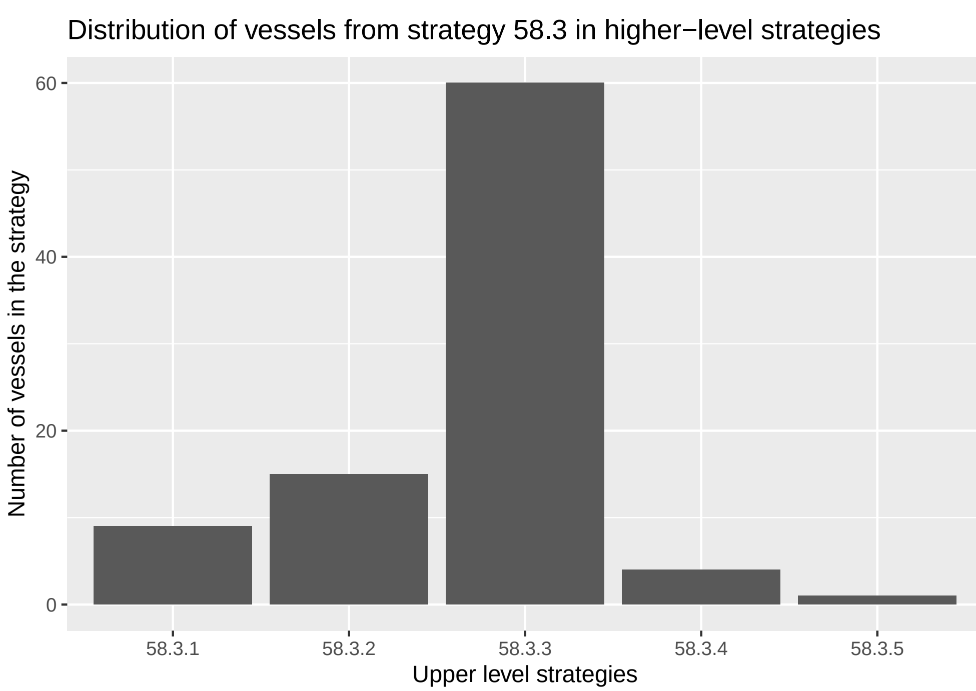
Strategy 58.3

This strategy includes N=89 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=34. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2019.

The distribution of vessels (per year) from this strategy in the associated higher-level strategies is presented below. A detailed description of these higher-level strategies (58.3.1, 58.3.2, 58.3.3, 58.3.4, 58.3.5) can be found further on. Only 58.3.3 is associated with accidental bycatch events.



Description table

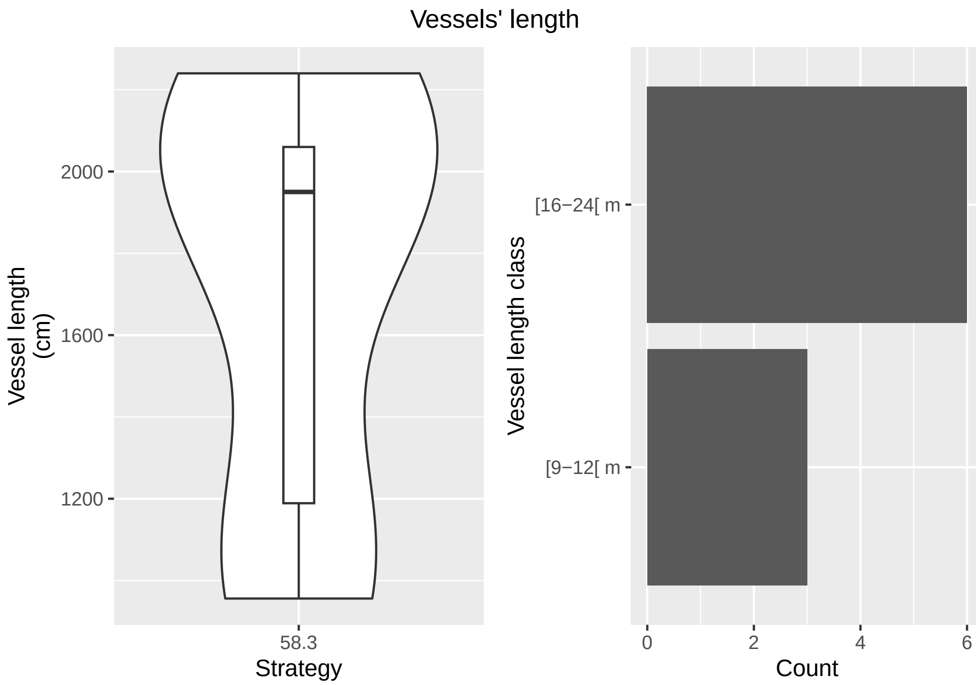
This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

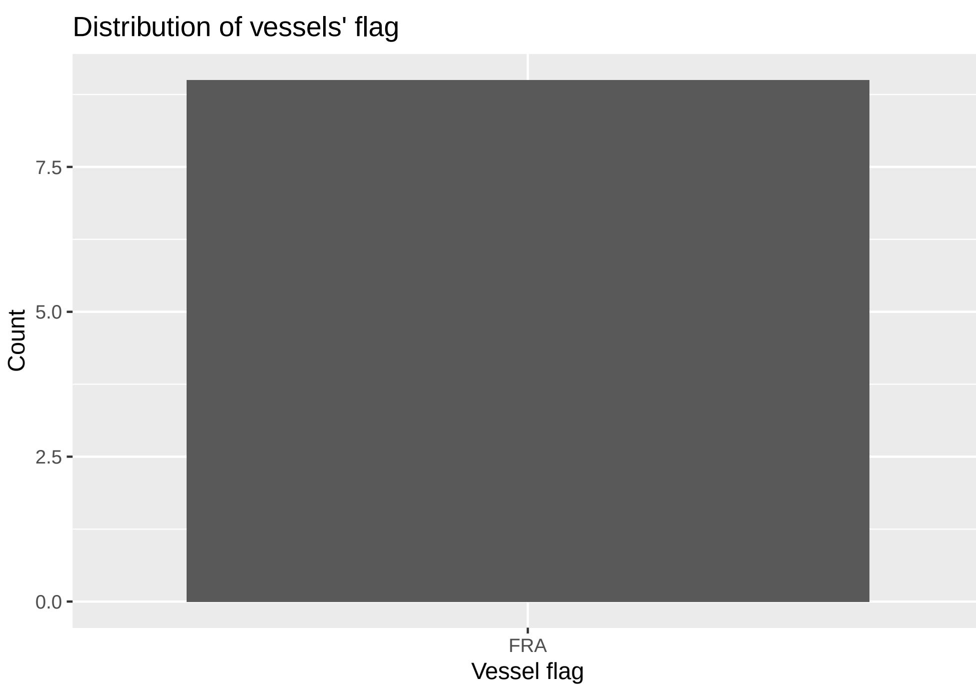
Table 8: Strategy 58.3

Importance	Variable	Value
Determinant (>95%)	PAVILLON	FRA
	Spp.	Merluccius spp
		Gadidae
	Family	Merlucciidae
	Order	Gadiformes
	ISSCAAP	32
	Stock	HKE.27.3a4678abd
	Gear	Set gillnets (anchored)
Strongly predominant (>80%)	ICES division	27.8.a
	Sp.	Trisopterus luscus
	Family	Soleidae
Predominant (>65%)	Trimester	1
	Sp.	Solea solea
	Spp.	Solea spp
	Stock	SOL.27.8ab
	Gear	Trammel nets
Major (>50%)	ICES division	27.8.b
	Sp.	Merluccius merluccius
	Spp.	Chelidonichthys spp
	Order	Pleuronectiformes
	ISSCAAP	31
Strong component (>35%)	Trimester	3
	Stock	BLL.27.8ab
		01
Component (>20%)	Month	02
		Solea senegalensis
	Sp.	Trachinus draco
	Spp.	Raja spp
	Order	Perciformes
	ISSCAAP	33
		BSH.27
		LEZ.27.7b-k8abd
		MAC.27
	Stock	RAJ.27.89a
		Otter trawls Bottom
	Gear	Set longlines
		08
	Month	12
		2
Minor component (>5%)	Trimester	4
	sd_weight	TRUE
	sd_eco	TRUE
	prop_spe	TRUE
	prop_spp	TRUE
	prop_family	TRUE
	prop_order	TRUE
	prop_isscaap	TRUE
	value_nb_engine	TRUE
	value_nb_seq	TRUE
	sd_nb_seq	TRUE
	value_nb_marees	TRUE
	sea_year	TRUE
High values (>SD)	sd_average_sea	TRUE

Distribution of vessel length and flag during the reference year (2019)

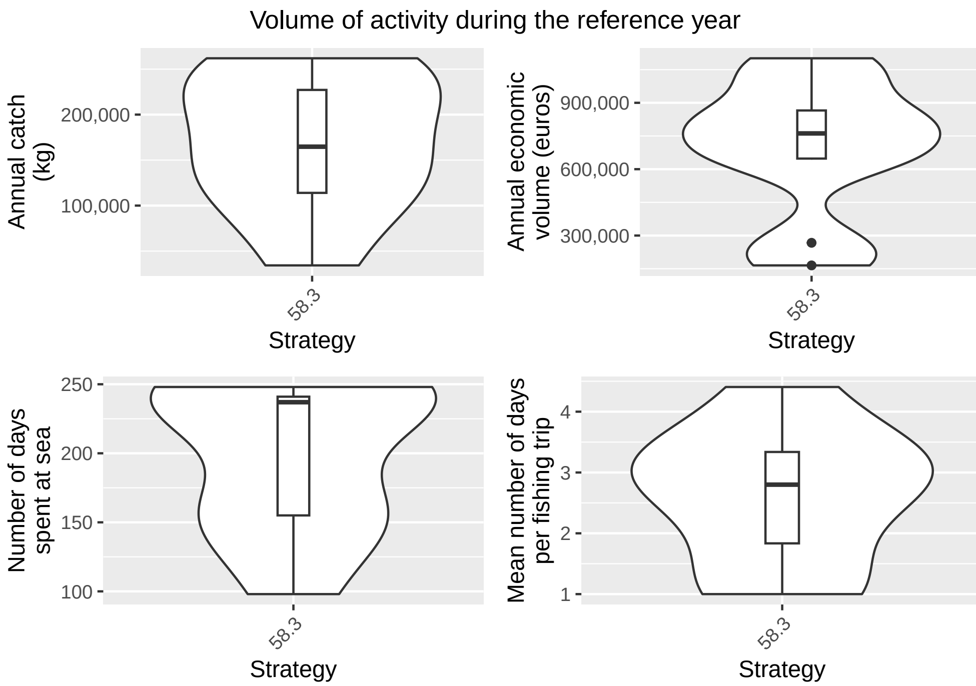
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



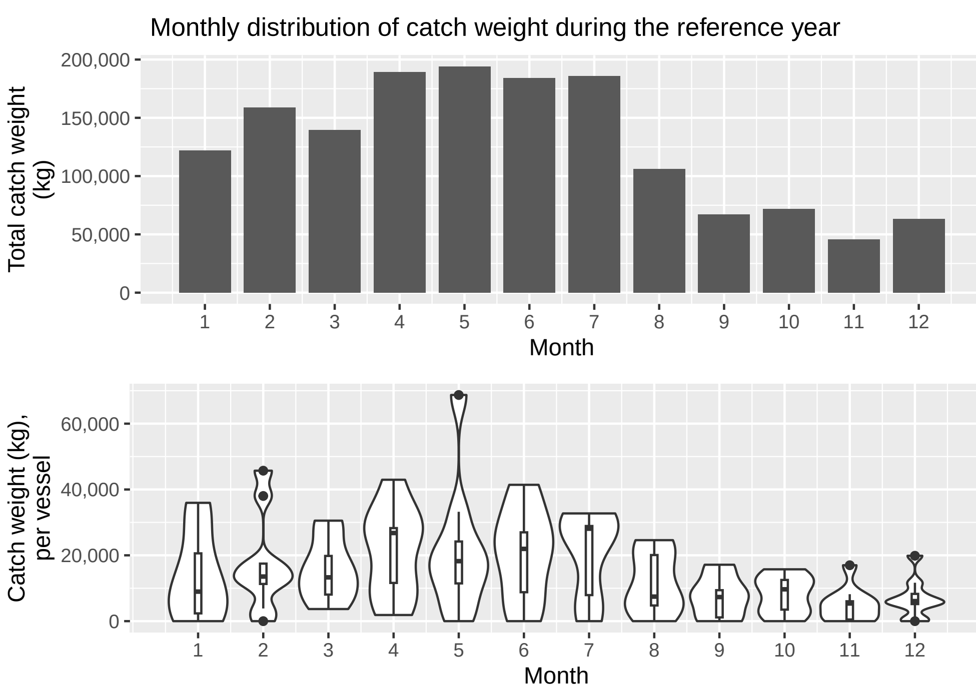


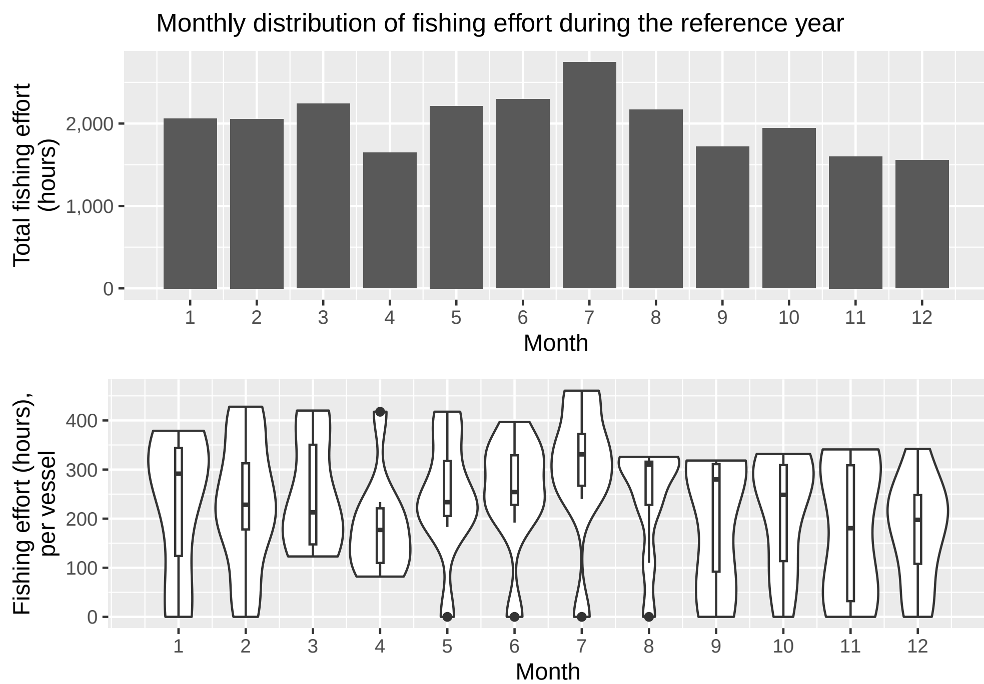
Description of the volume and pattern of fishing activities during the reference year (2019)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



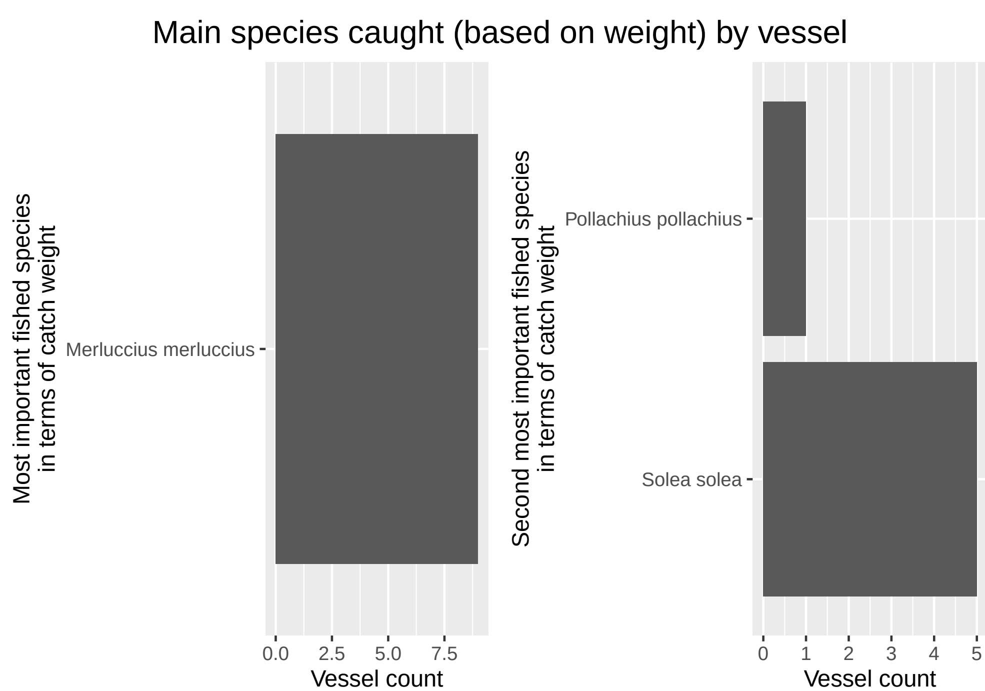
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.



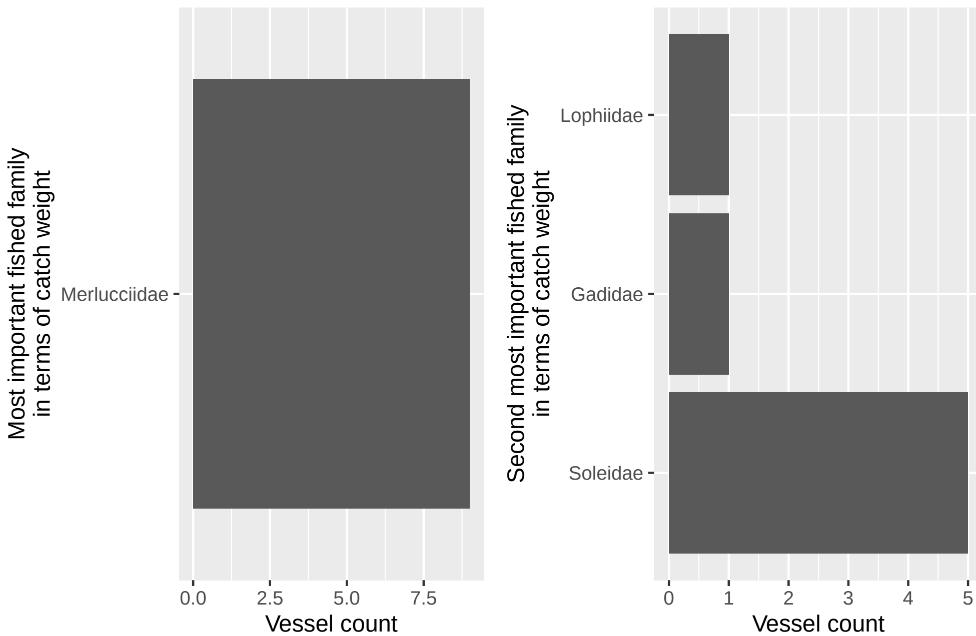


Main fished taxa and used gears during the reference year (2019)

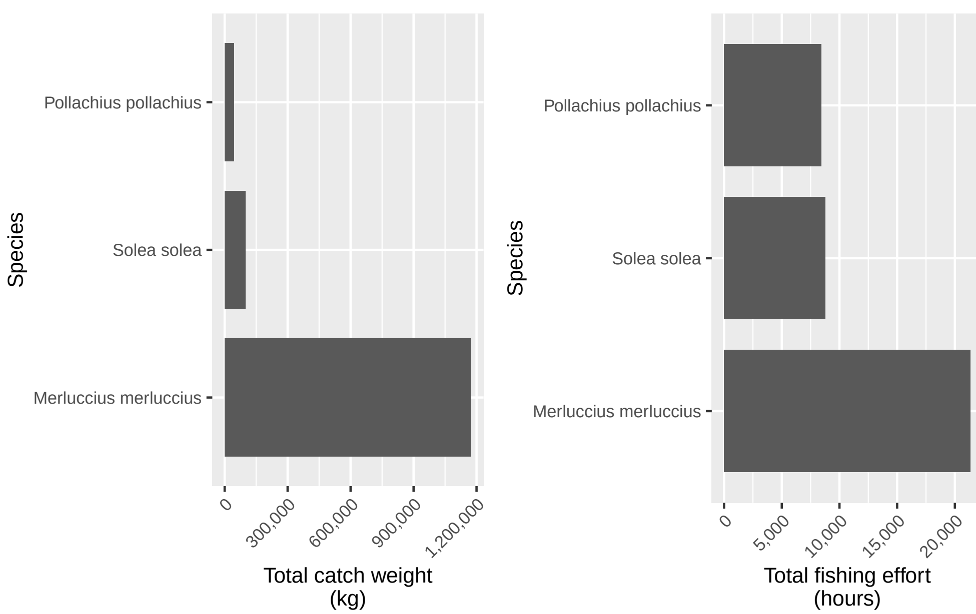
We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

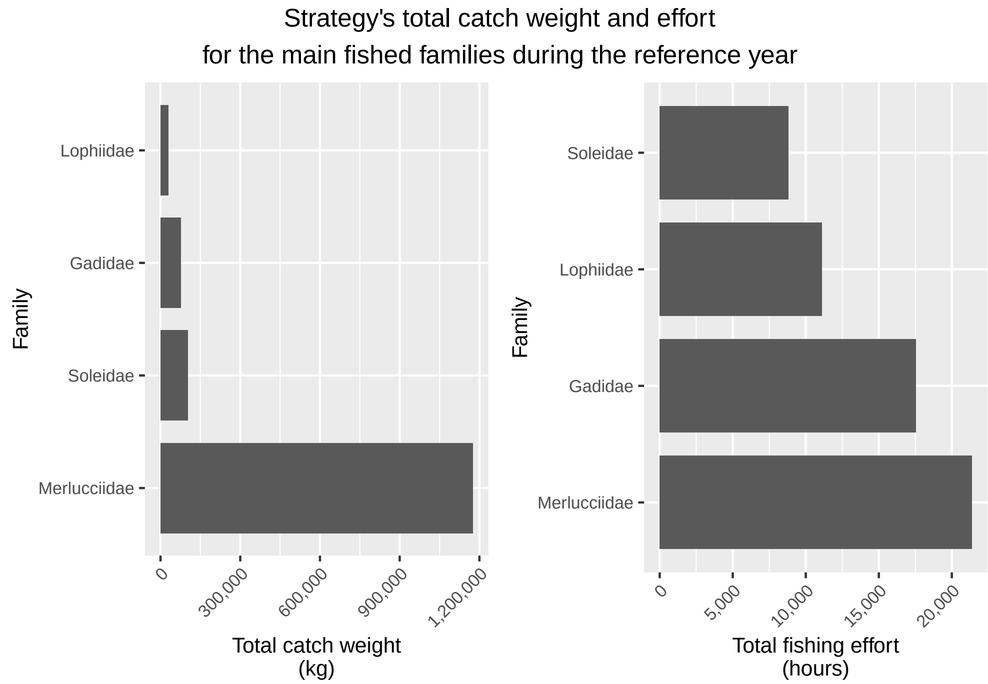


Main family caught (based on weight) by vessel

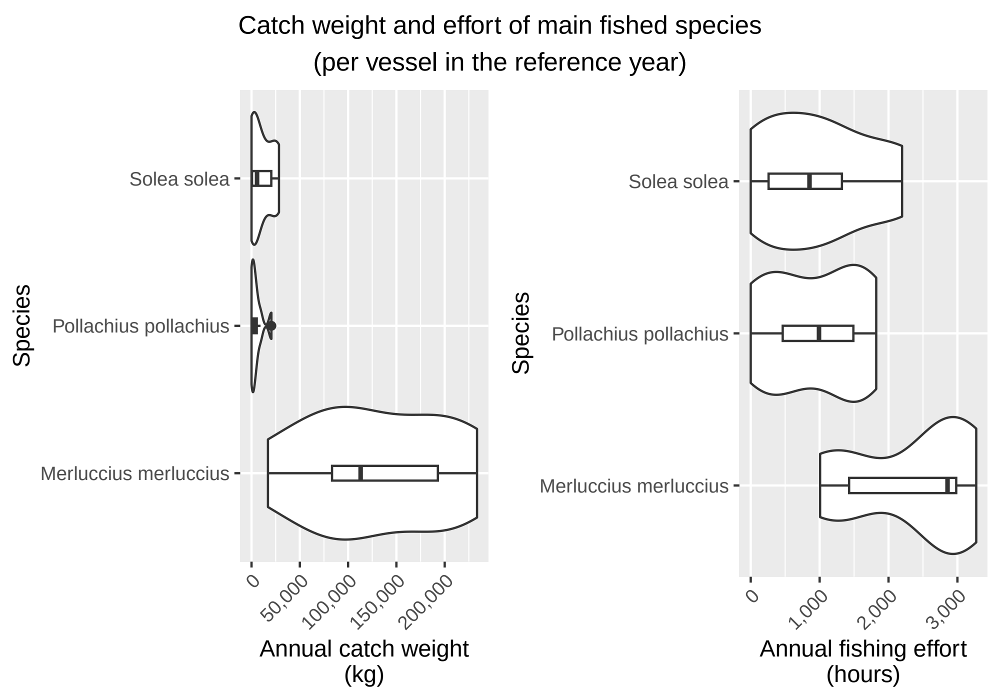


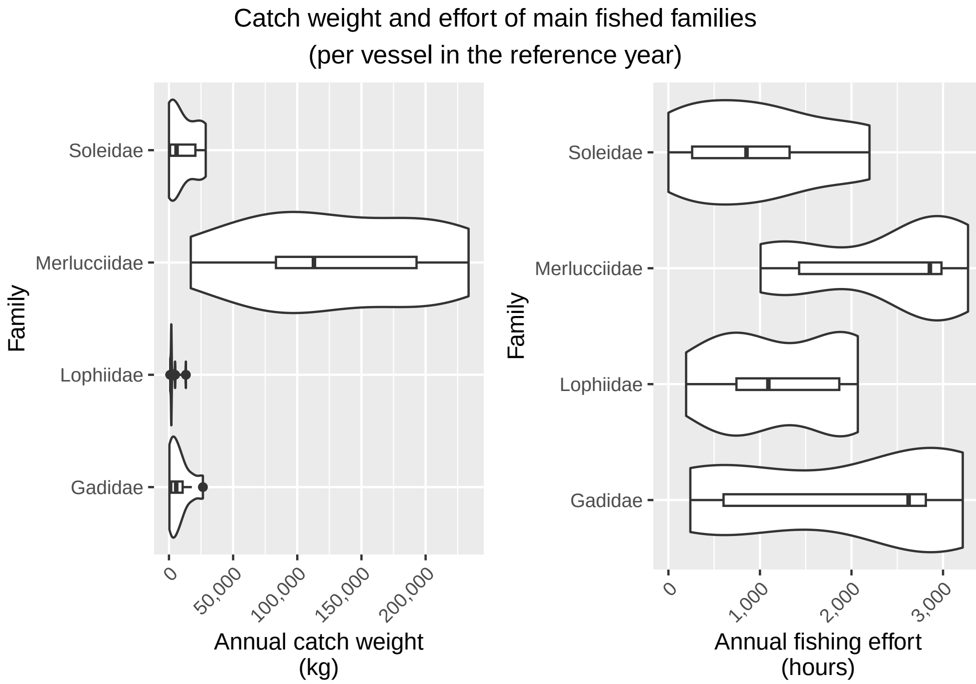
Strategy's total catch weight and effort
for the main fished species during the reference year



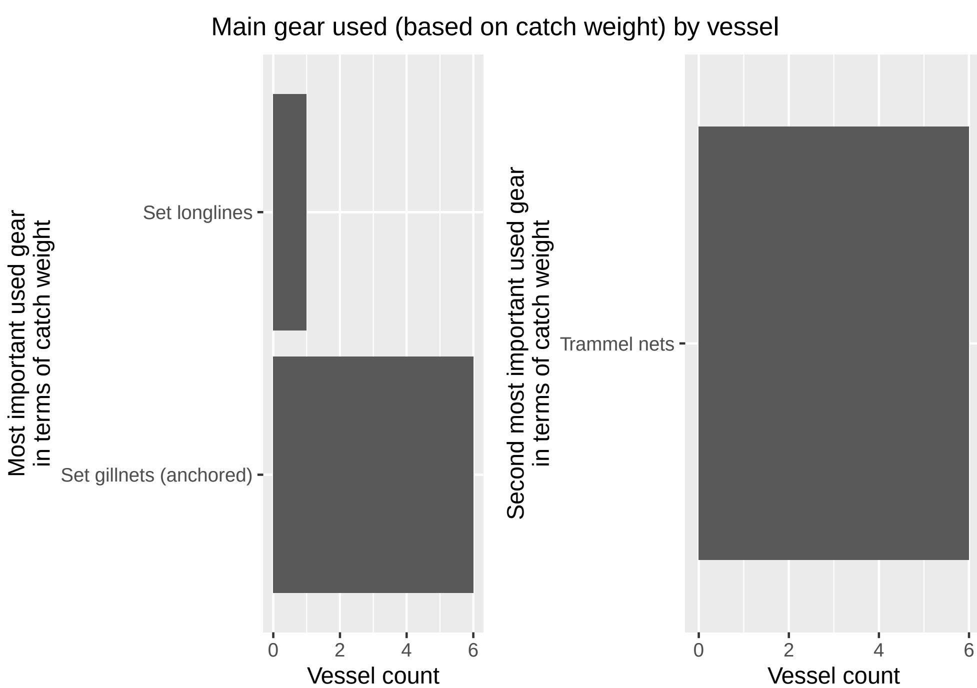


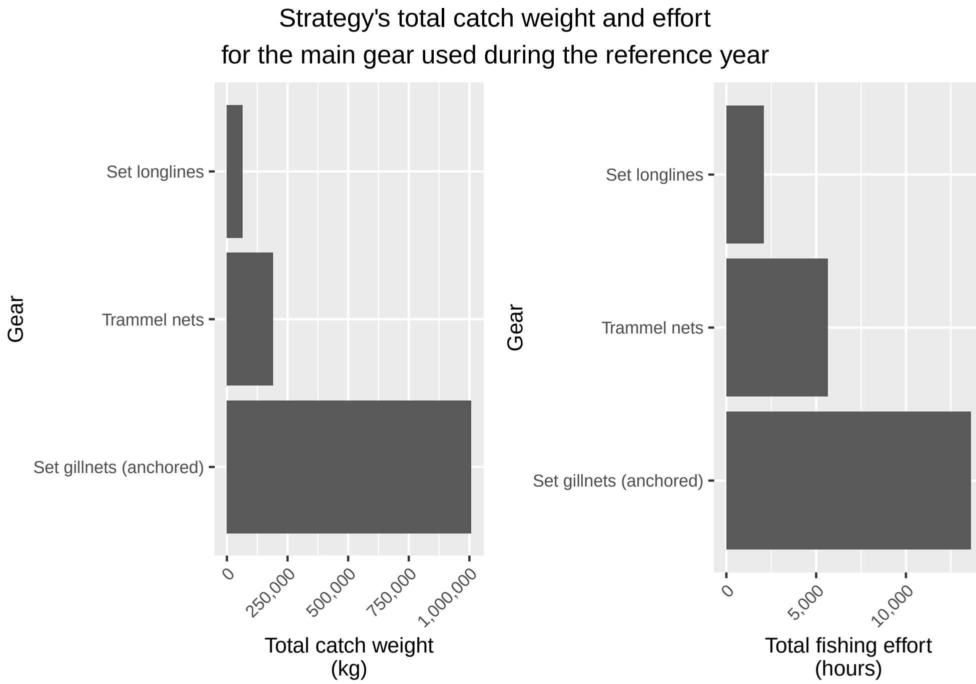
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

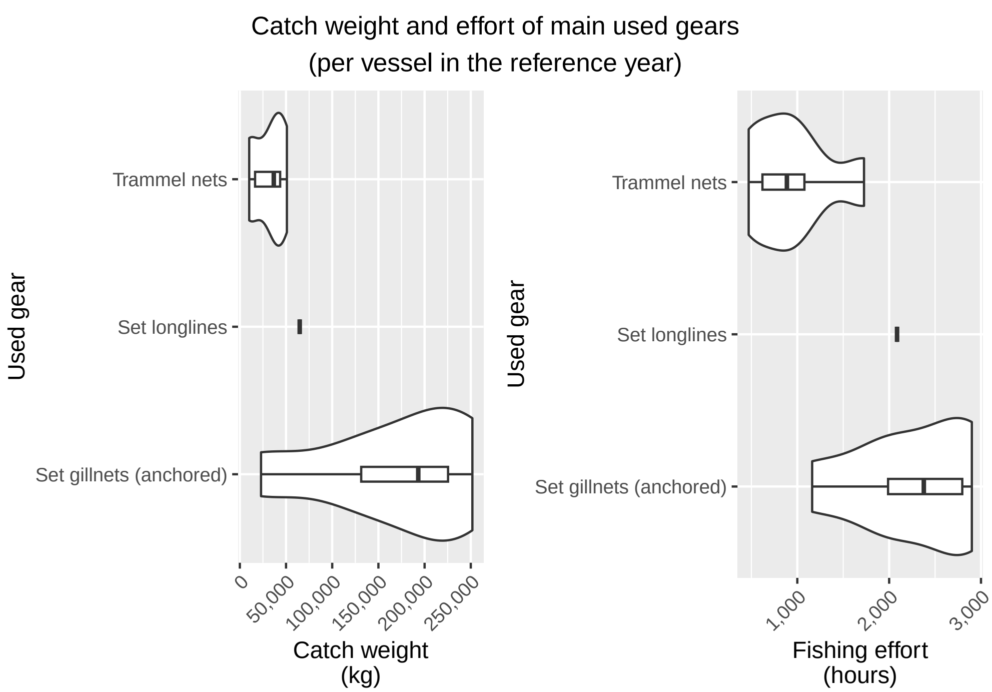




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

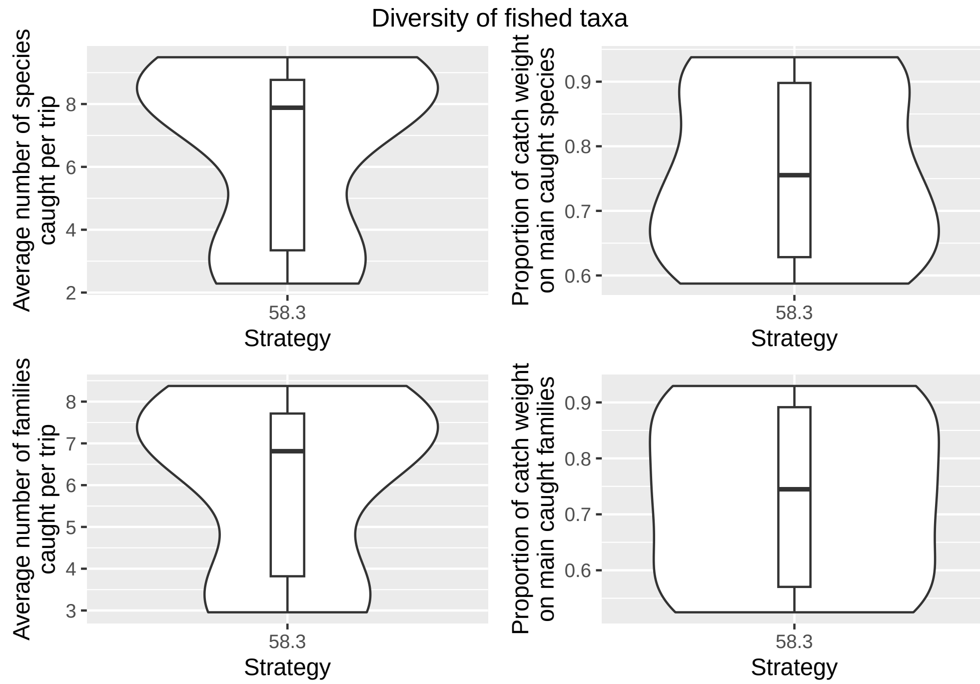




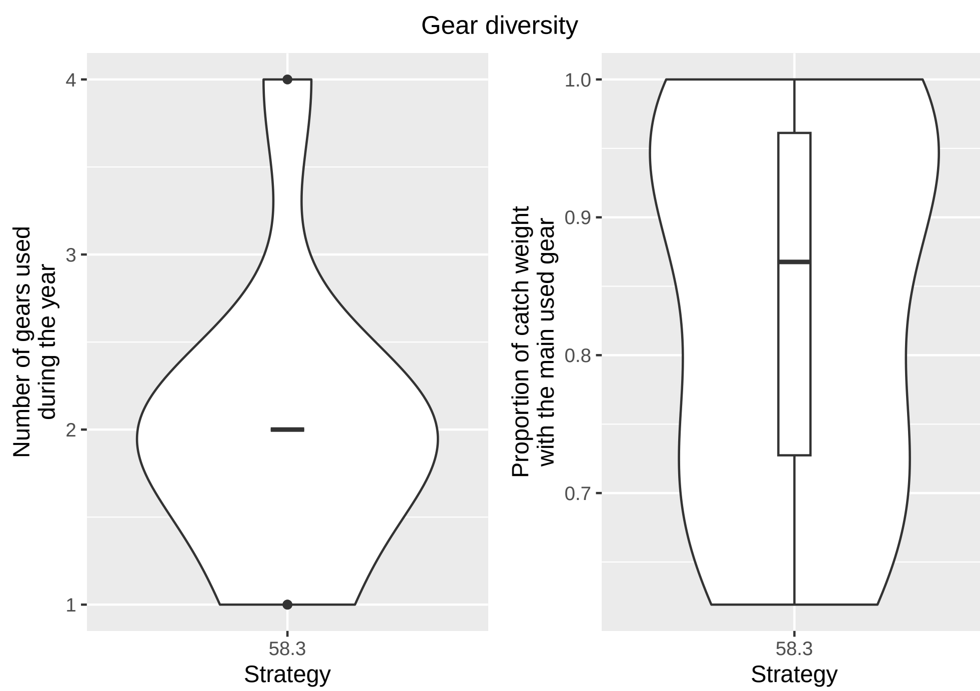


Diversity of fished taxa and used gears during the reference year (2019)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

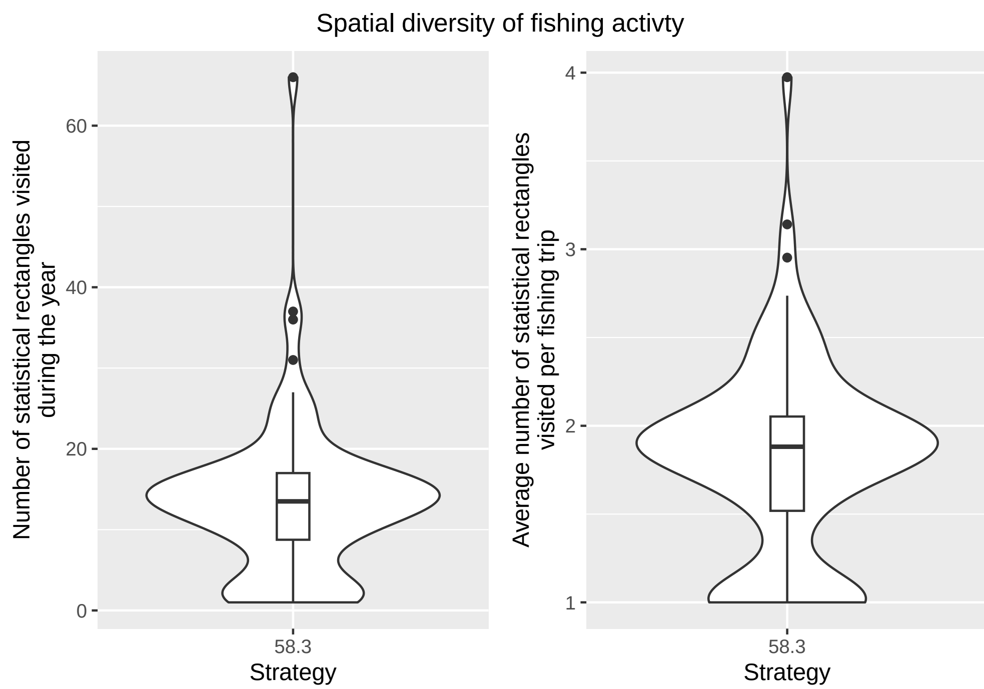


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

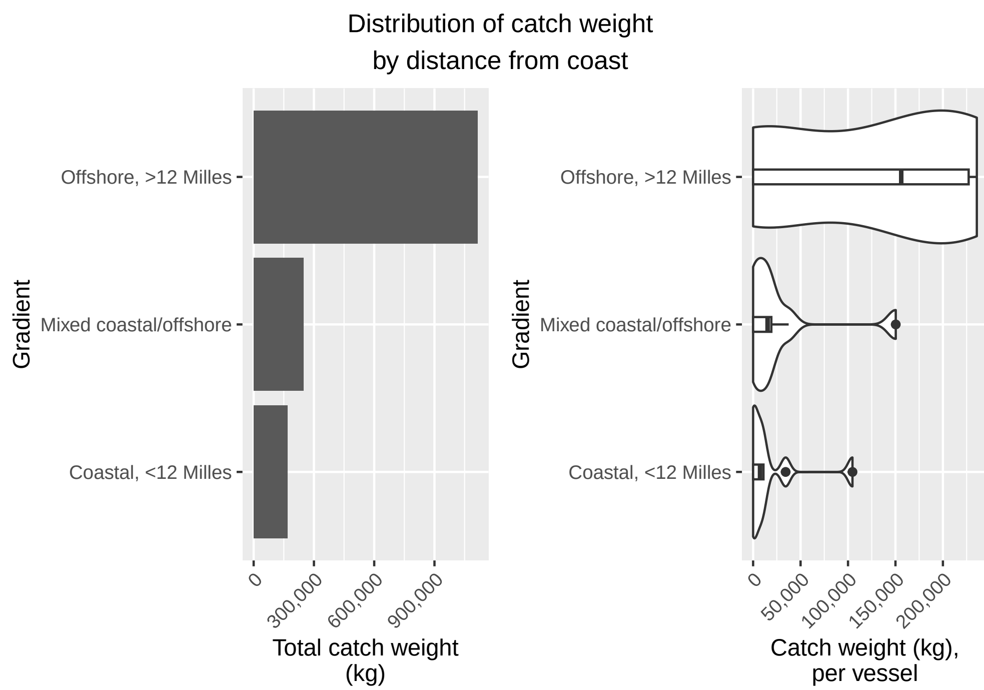


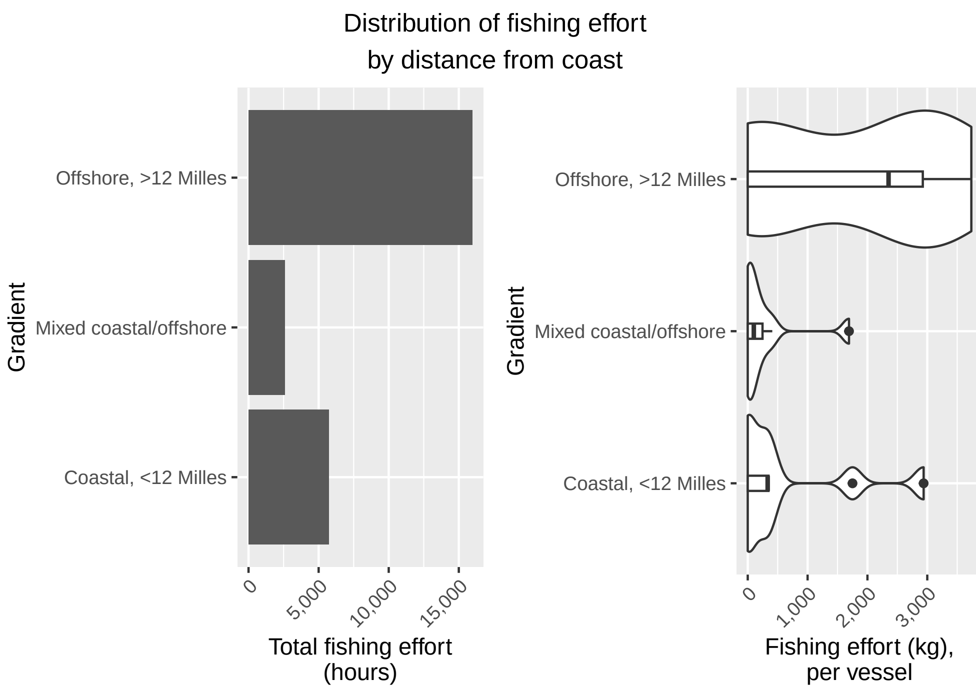
Diversity of areas visited during the reference year (2019)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



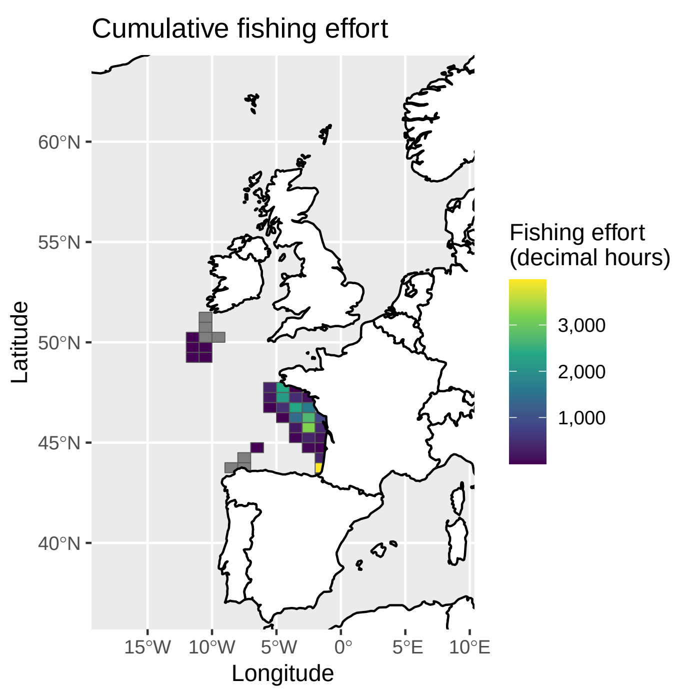
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

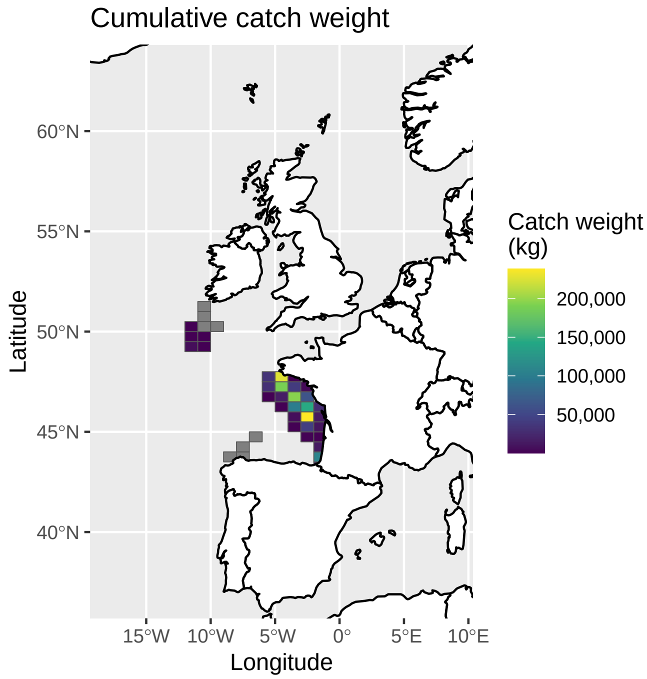




Maps of fishing activity distribution during the reference year (2019)

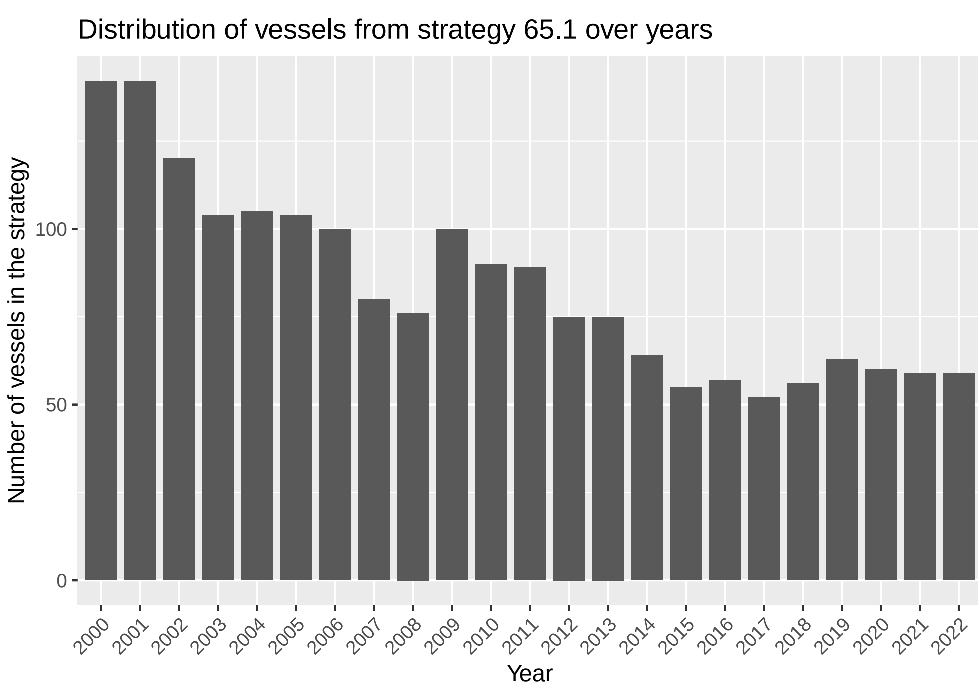
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





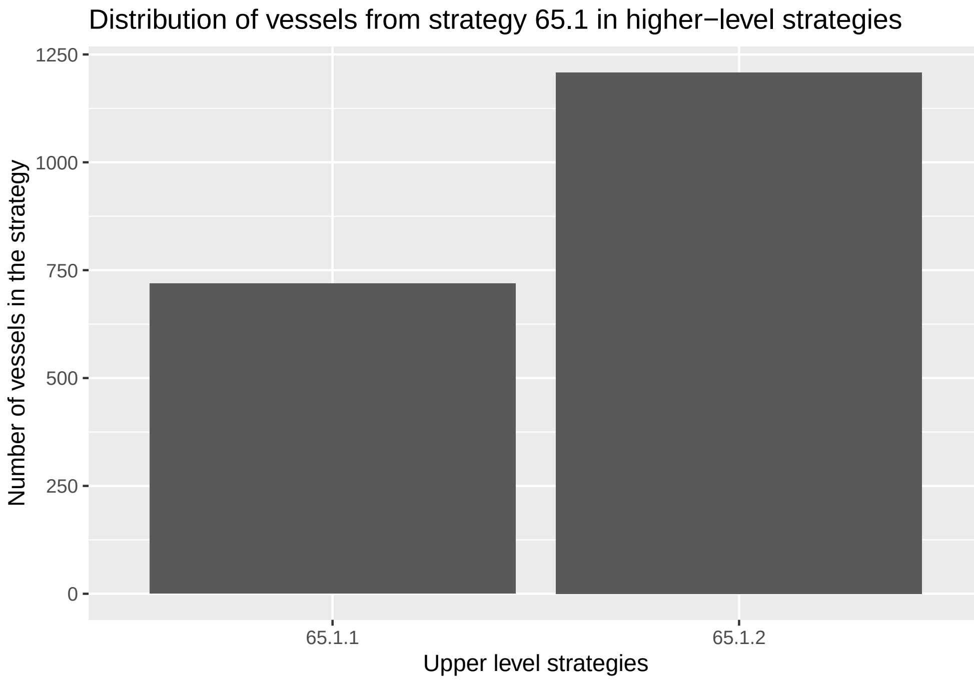
Strategy 65.1

This strategy includes N=1927 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=500. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2001.

The distribution of vessels (per year) from this strategy in the associated higher-level strategies is presented below. A detailed description of these higher-level strategies (65.1.1, 65.1.2) can be found further on. Only 65.1.2 is associated with accidental bycatch events.



Description table

This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

Table 9: Strategy 65.1

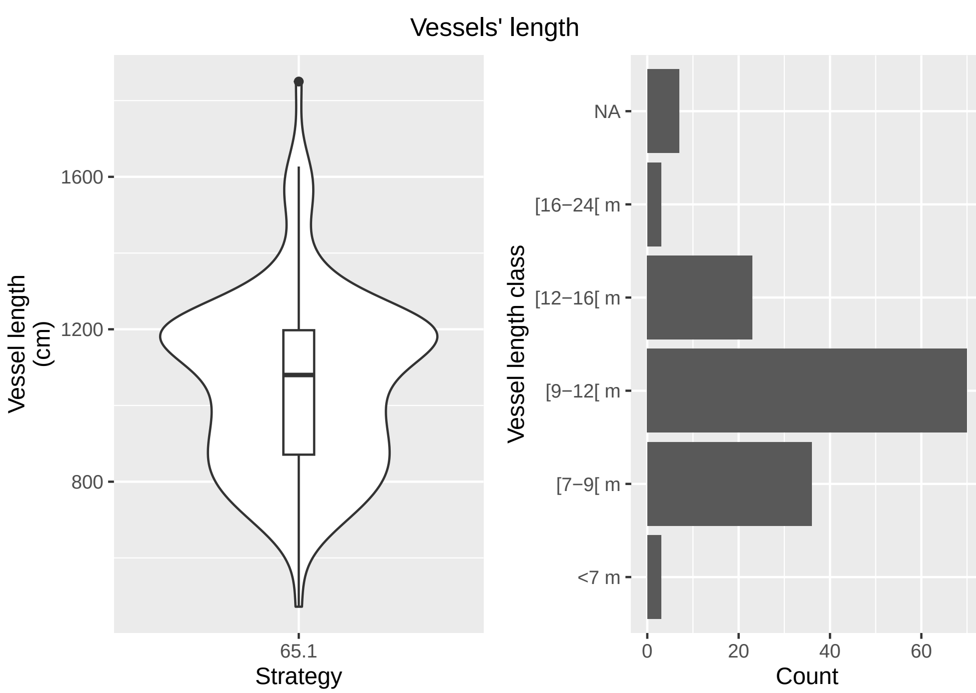
Importance	Variable	Value
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
	ISSCAAP	31
Determinant (>95%)	PAVILLON	FRA
Strongly predominant (>80%)	Sp.	Solea solea
	Gear	Trammel nets
Predominant (>65%)	ICES division	27.8.a
Major (>50%)	Trimester	1
	Sp.	Dicentrarchus labrax
	Spp.	Dicentrarchus spp
	Family	Gadidae
	Order	Perciformes
	ICES division	27.8.b
	Month	02
		2
Component (>20%)	Trimester	3
		Cancer pagurus
		Maja squinado
		Scophthalmus rhombus
	Sp.	Trisopterus luscus
		Majidae

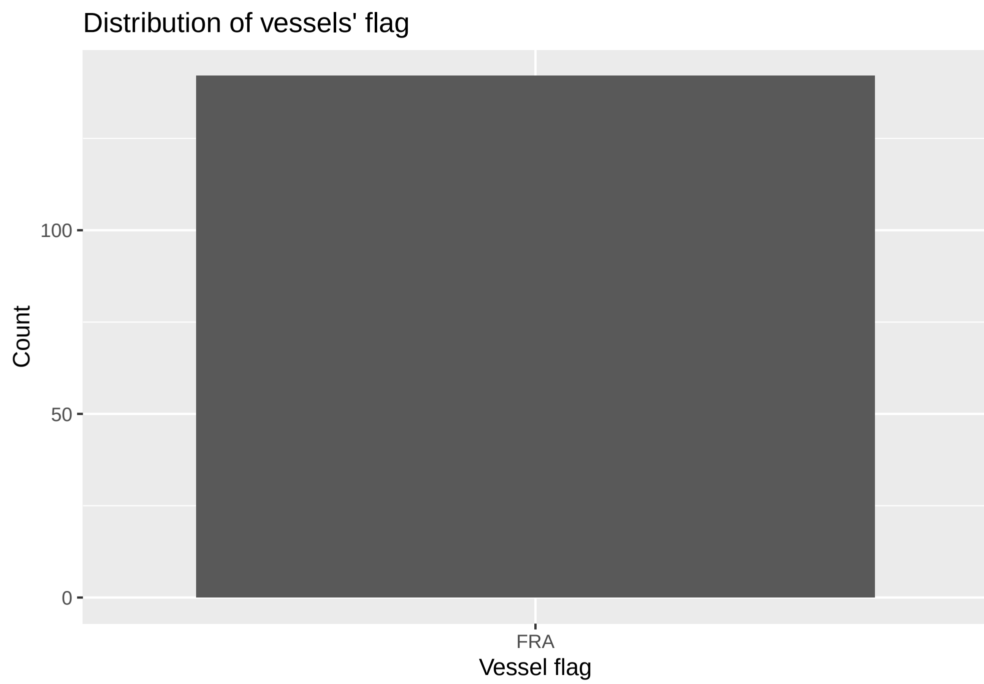
Table 9: Strategy 65.1 *(continued)*

Importance	Variable	Value
		Sepiidae, Sepiolidae
	Family	Sparidae
		Decapoda
		Gadiformes
	Order	Sepiida
		32
		33
		42
	ISSCAAP	57
		Glass eel sieve
		Otter trawls Bottom
	Gear	Set gillnets (anchored)
	ICES division	27.7.e
		01
		03
		04
		05
		06
		07
		08
		10
		11
	Month	12
Minor component (>5%)	Trimester	4

Distribution of vessel length and flag during the reference year (2001)

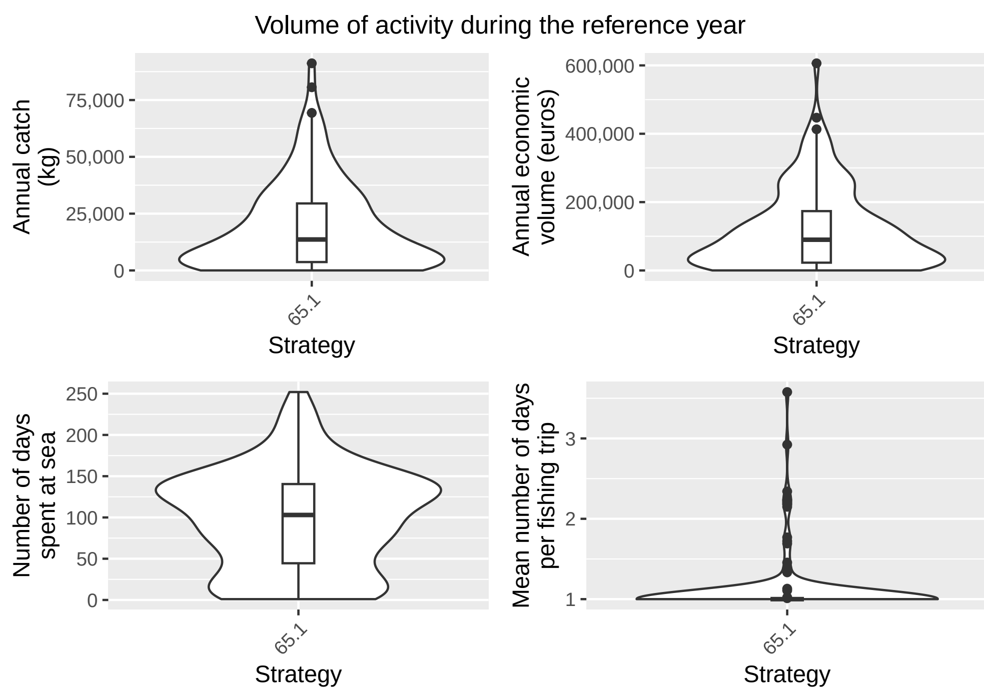
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



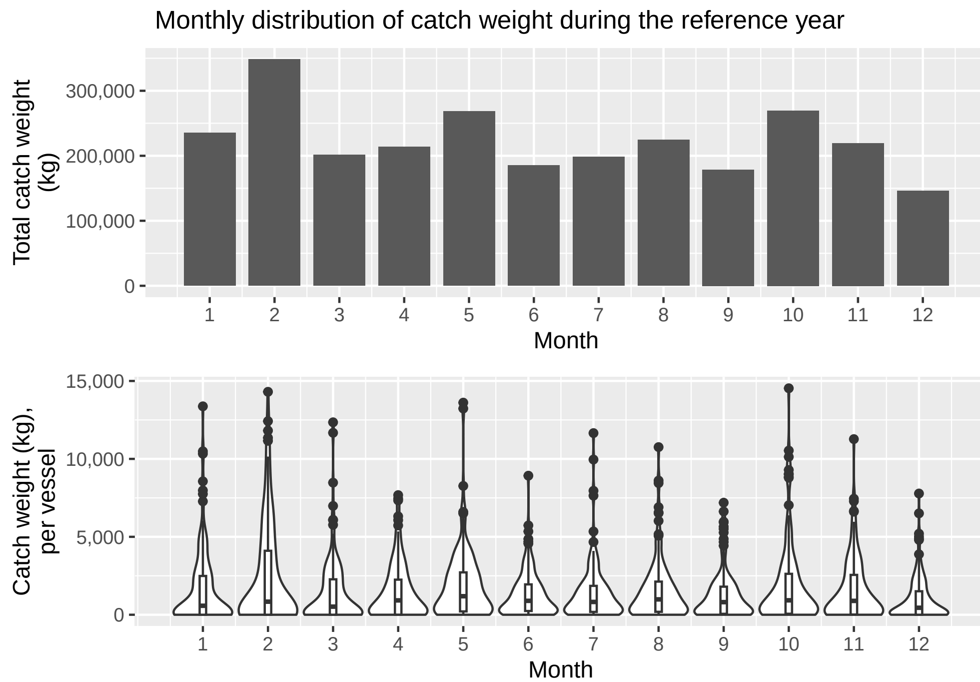


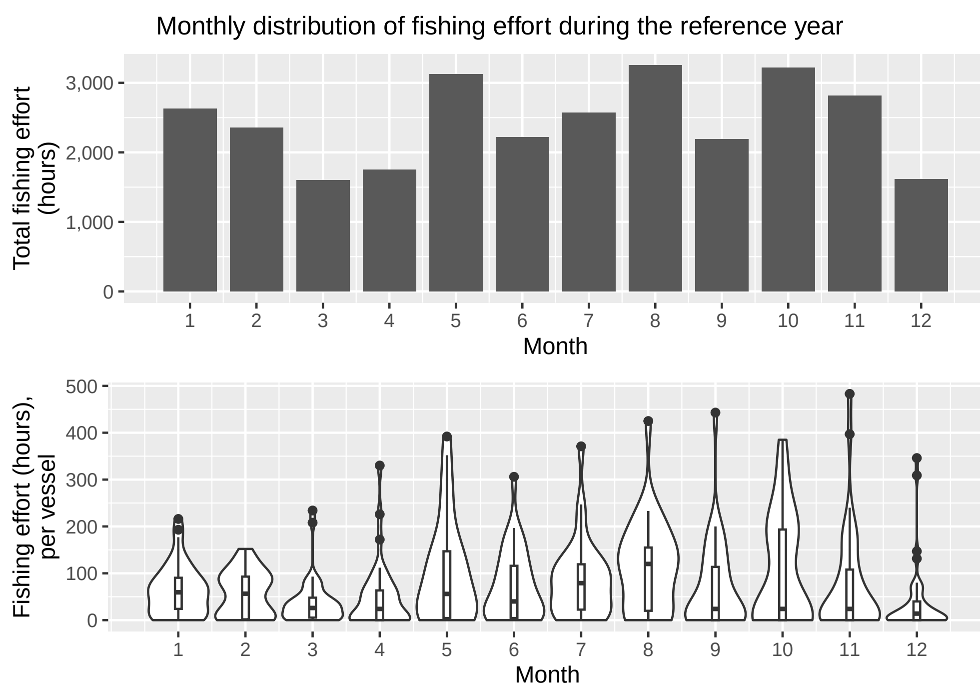
Description of the volume and pattern of fishing activities during the reference year (2001)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



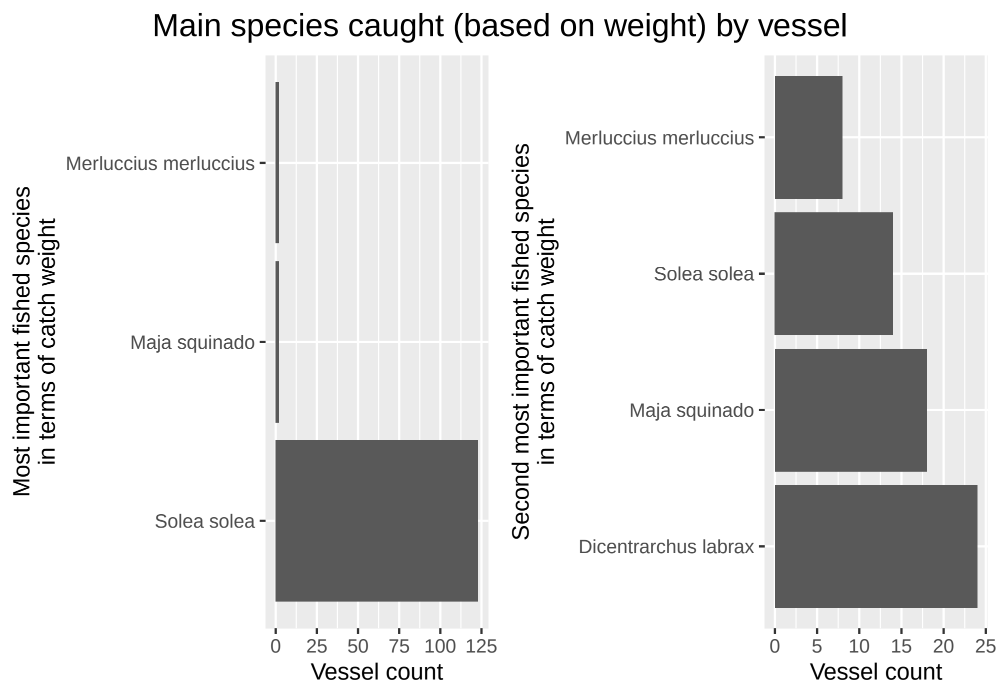
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

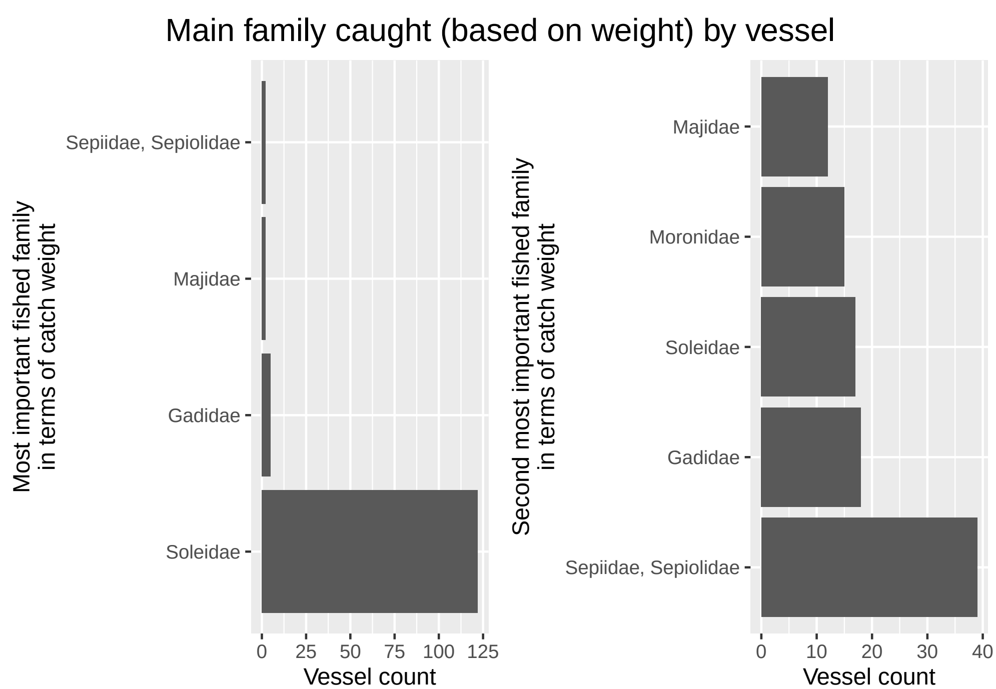


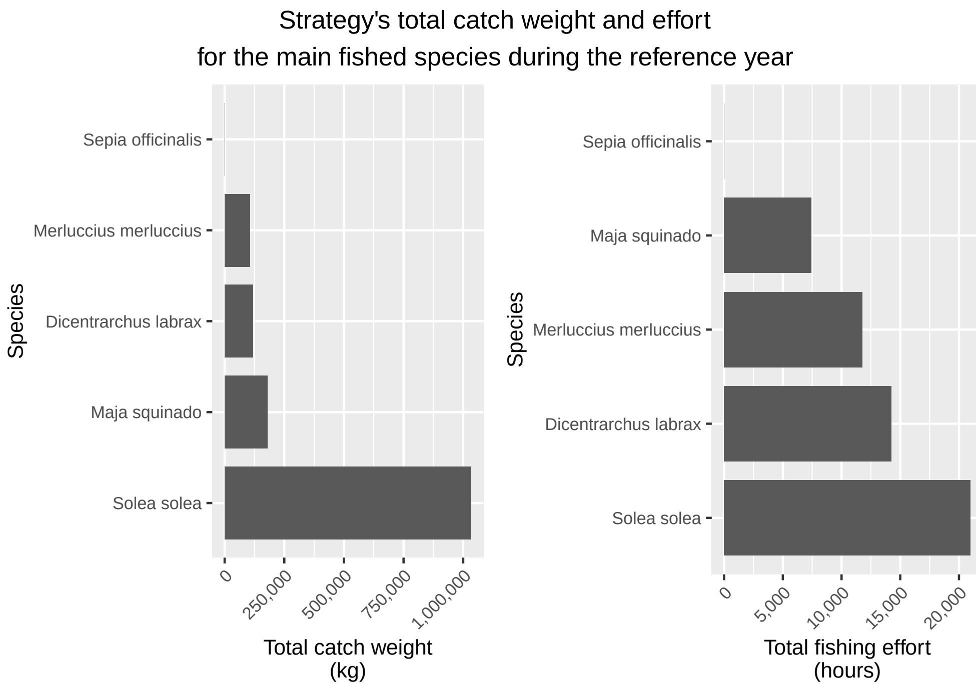


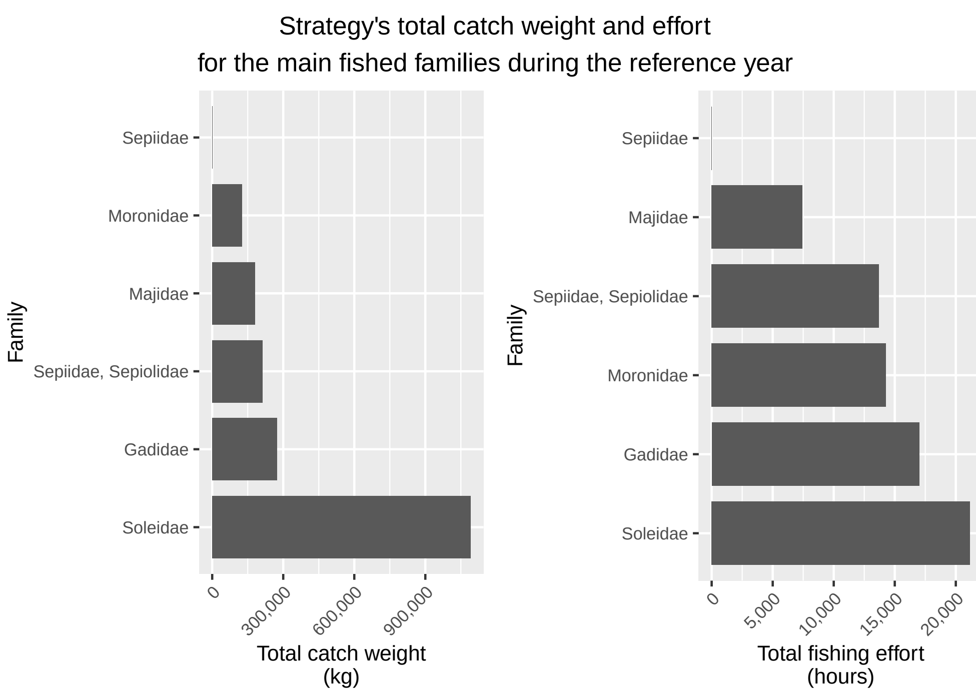
Main fished taxa and used gears during the reference year (2001)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

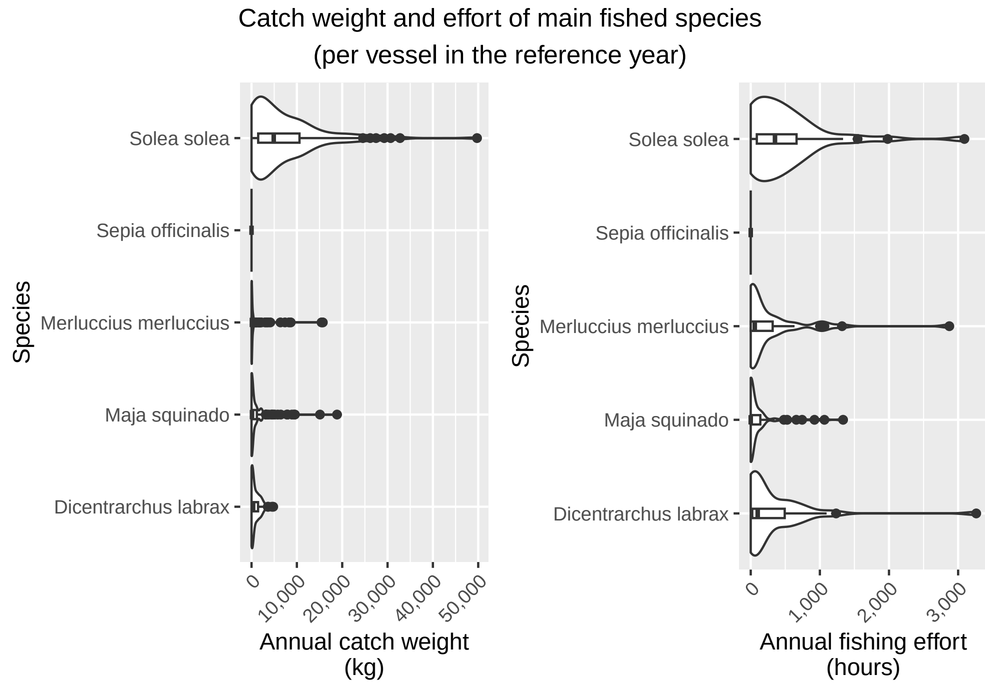

Main species caught (based on weight) by vessel
Most important fished species in terms of catch weight
Merluccius merluccius
Maja squinado
Solea solea
0 25 50 75 100 125
Vessel count
Second most important fished species in terms of catch weight
Merluccius merluccius
Solea solea
Maja squinado
Dicentrarchus labrax
0 5 10 15 20 25
Vessel count

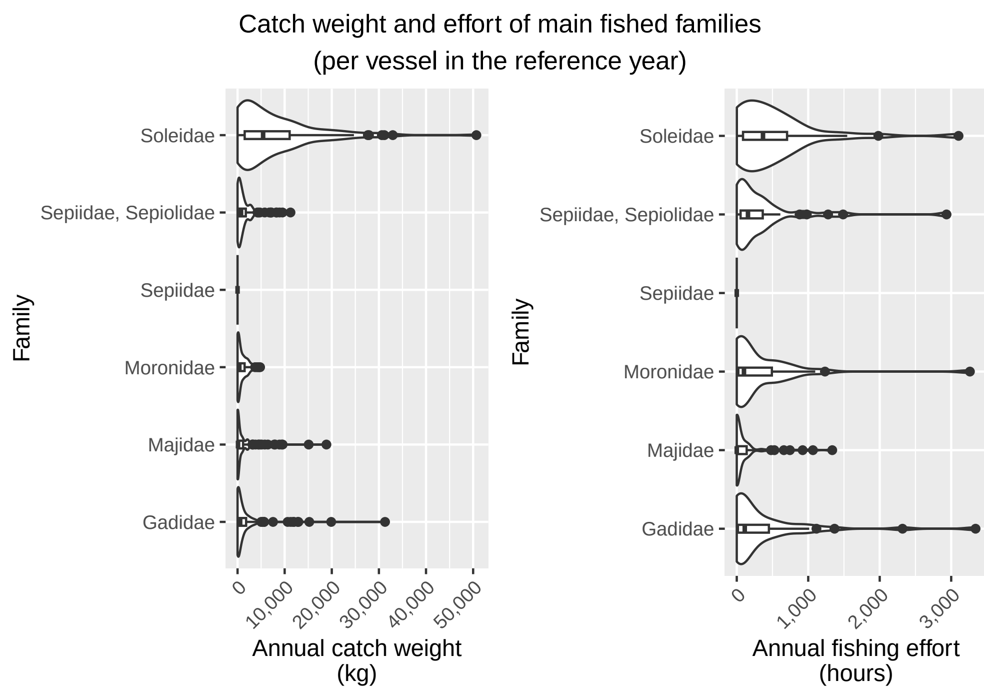

Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Sepiidae, Sepiolidae
Majidae
Gadidae
Soleidae
0 25 50 75 100 125
Vessel count
Second most important fished family in terms of catch weight
Majidae
Moronidae
Soleidae
Gadidae
Sepiidae, Sepiolidae
0 10 20 30 40
Vessel count



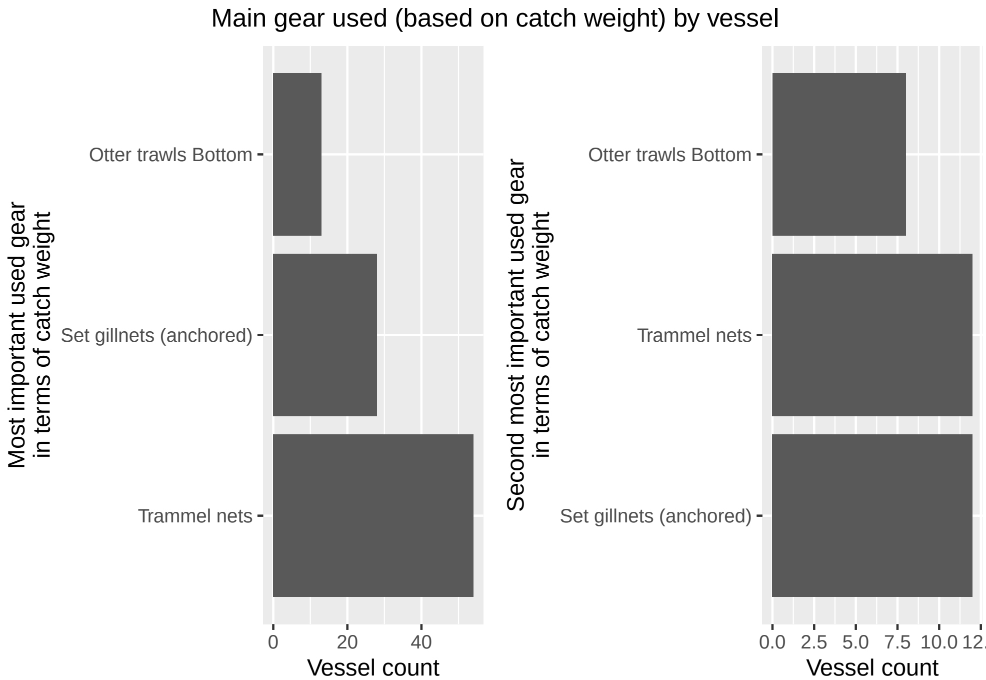


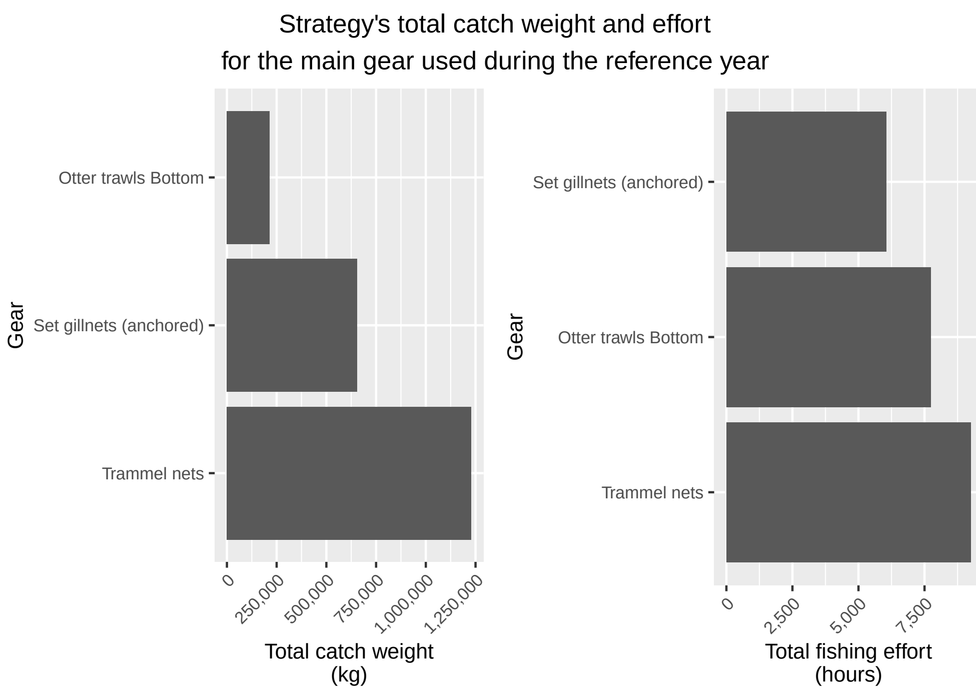
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

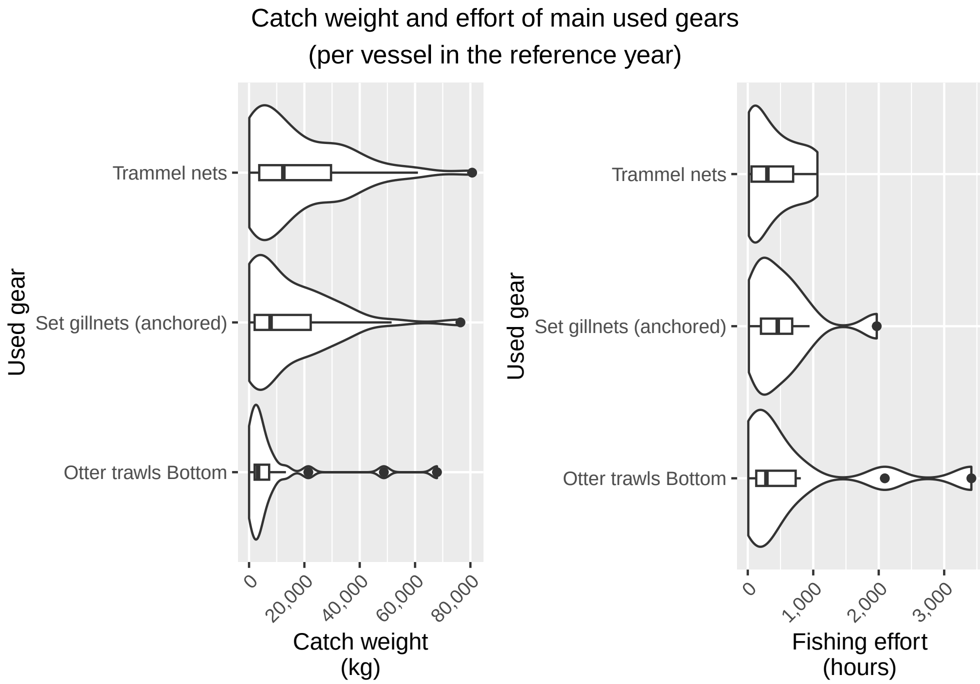




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

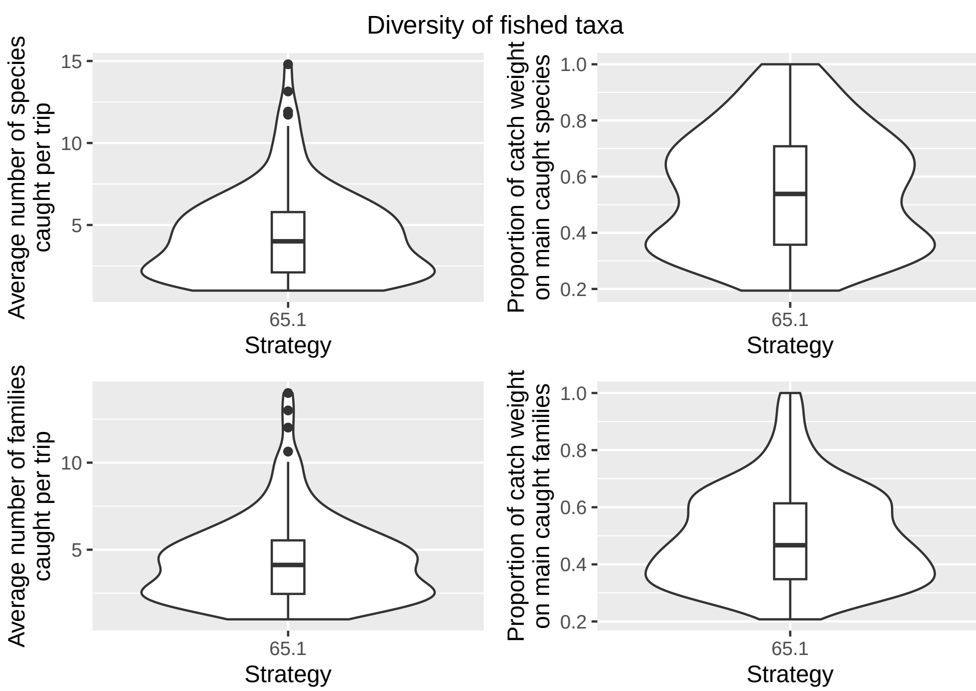

Main gear used (based on catch weight) by vessel
Most important used gear
in terms of catch weight
Otter trawls Bottom
Set gillnets (anchored)
Trammel nets
0
20
40
Vessel count
Second most important used gear
in terms of catch weight
Otter trawls Bottom
Trammel nets
Set gillnets (anchored)
0.0
2.5
5.0
7.5
10.0
Vessel count


Strategy's total catch weight and effort
for the main gear used during the reference year
Gear
Otter trawls Bottom
Set gillnets (anchored)
Trammel nets
0
250,000
500,000
750,000
1,000,000
1,250,000
Total catch weight
(kg)
Gear
Set gillnets (anchored)
Otter trawls Bottom
Trammel nets
0
2,500
5,000
7,500
Total fishing effort
(hours)

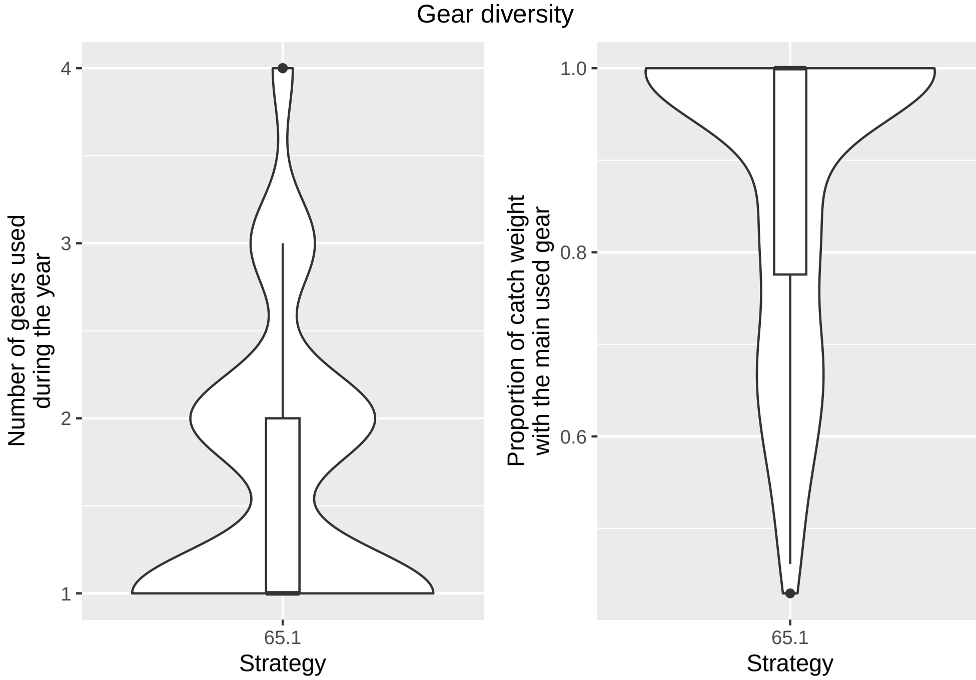


Diversity of fished taxa and used gears during the reference year (2001)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

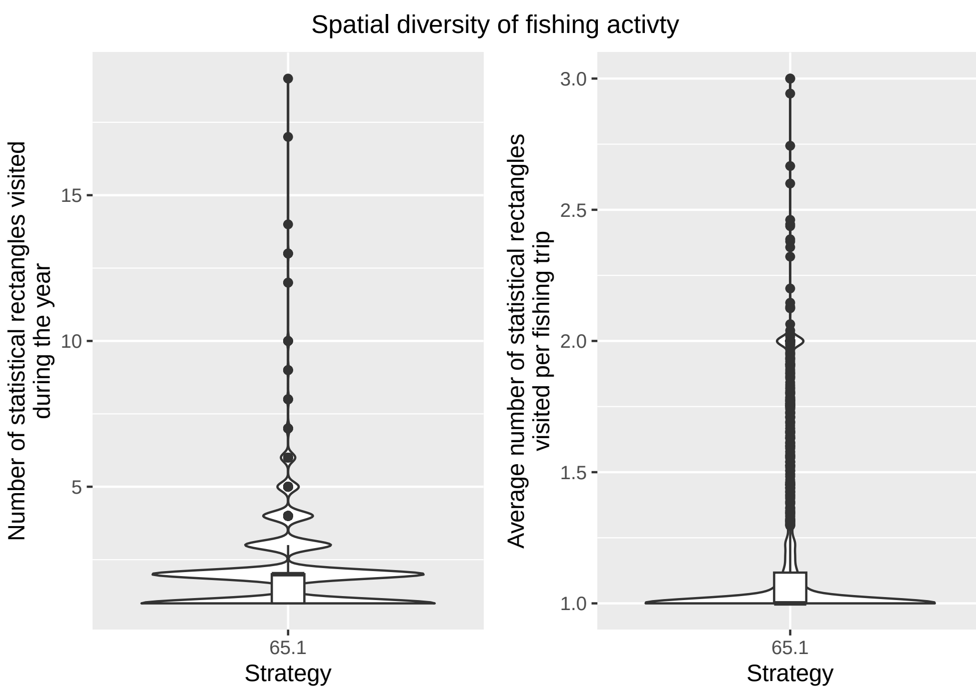


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.



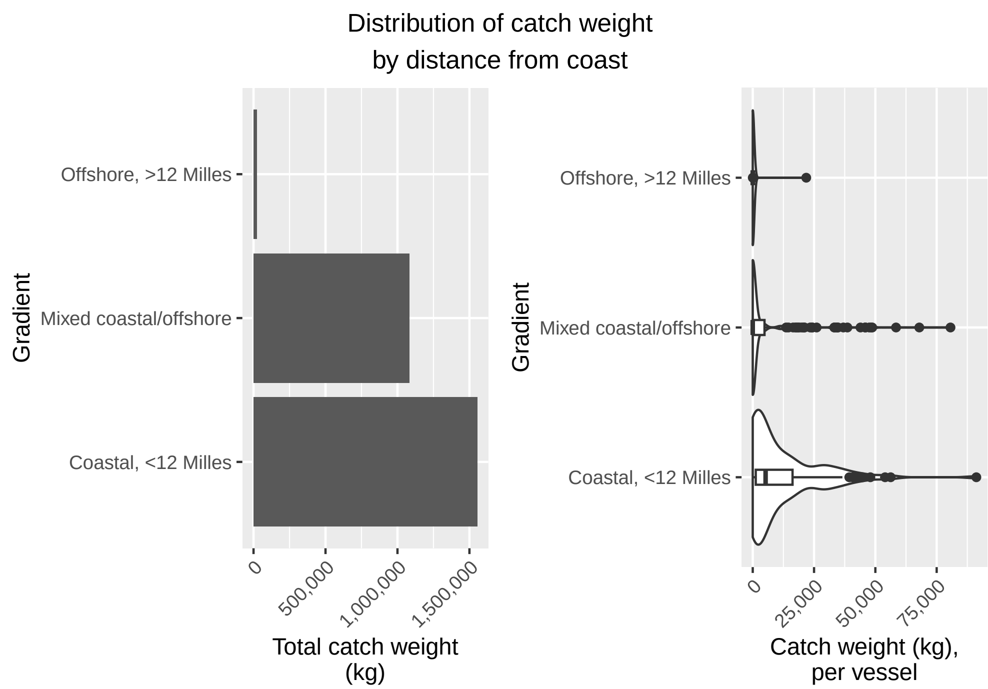
Diversity of areas visited during the reference year (2001)

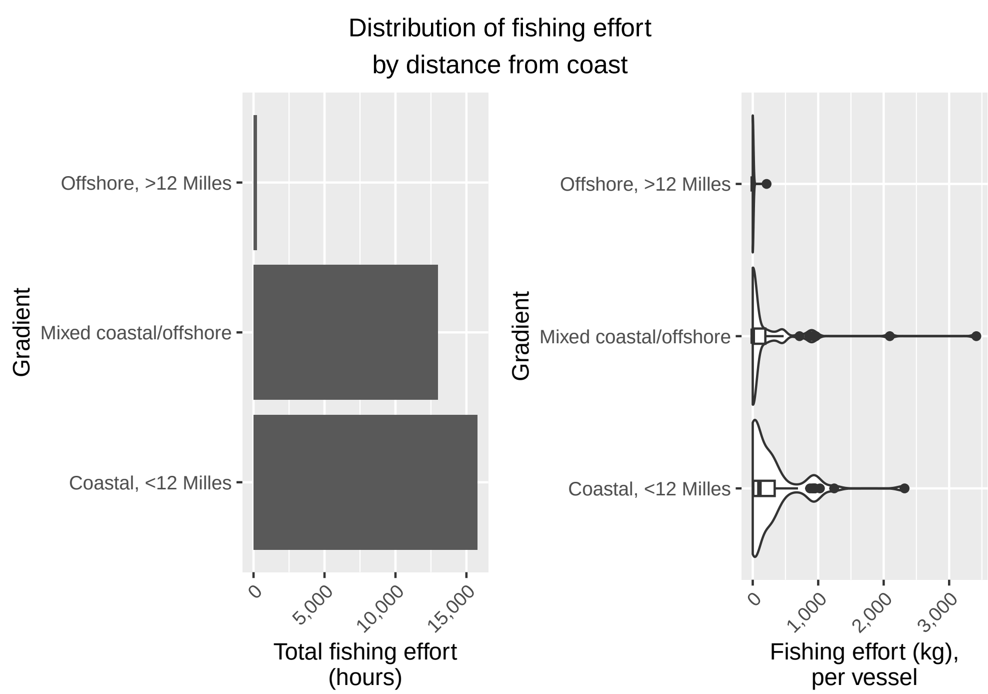
We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying

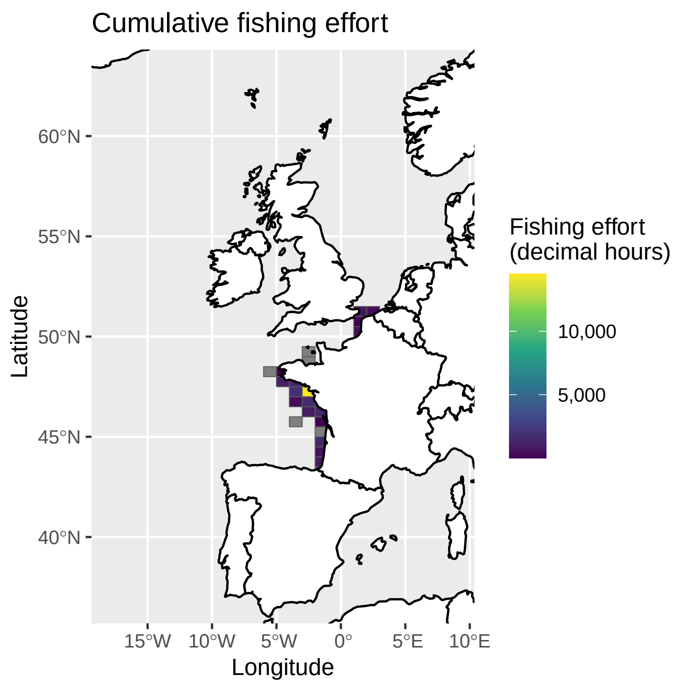
catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

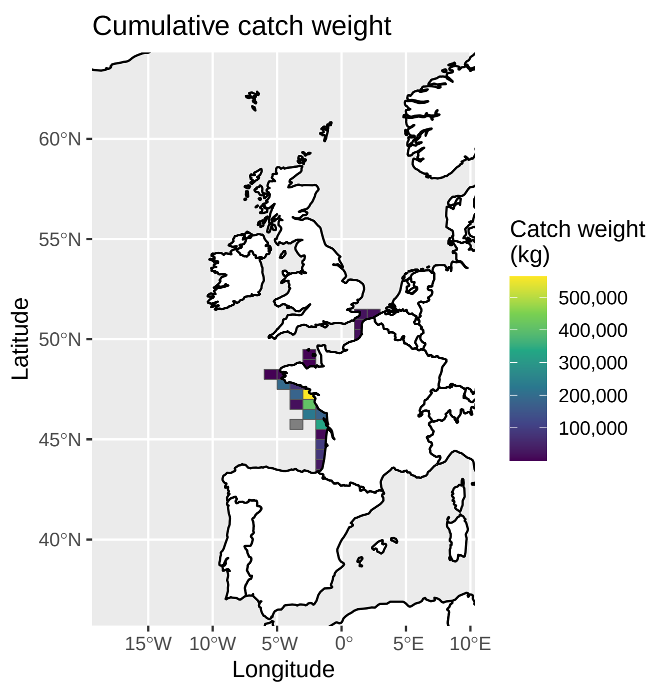




Maps of fishing activity distribution during the reference year (2001)

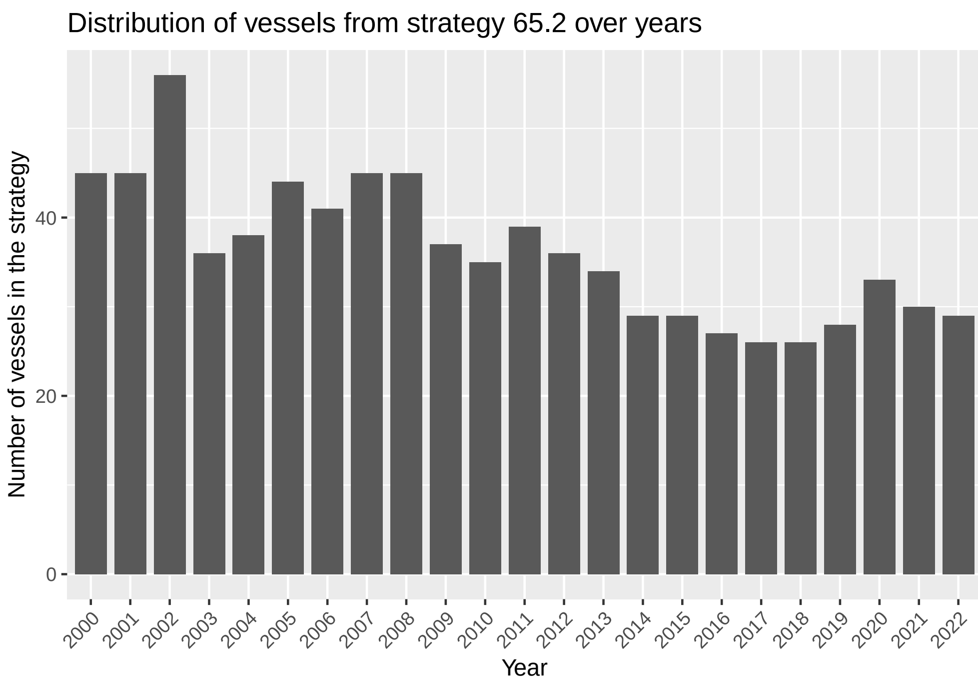
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





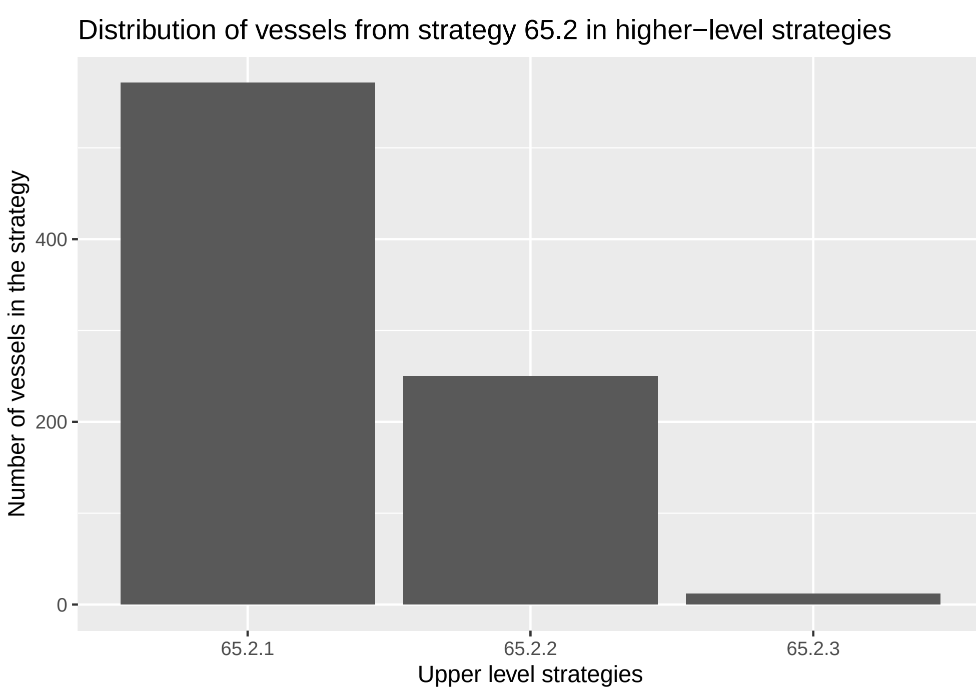
Strategy 65.2

This strategy includes N=833 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=132. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2002.

The distribution of vessels (per year) from this strategy in the associated higher-level strategies is presented below. A detailed description of these higher-level strategies (65.2.1, 65.2.2, 65.2.3) can be found further on. Only 65.2.1, 65.2.2 are associated with accidental bycatch events.



Description table

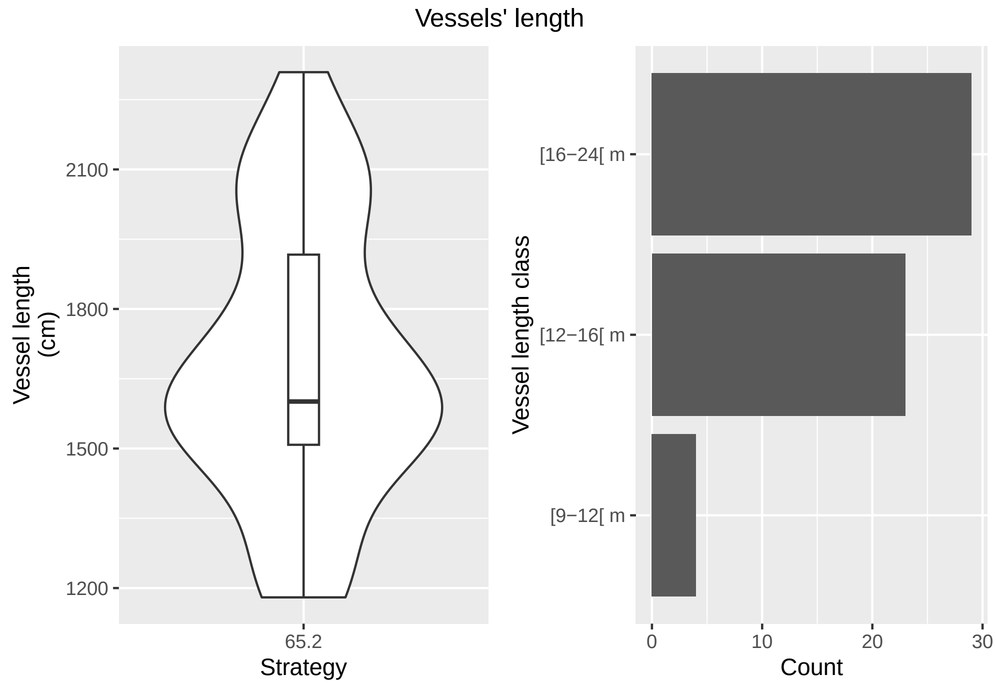
This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

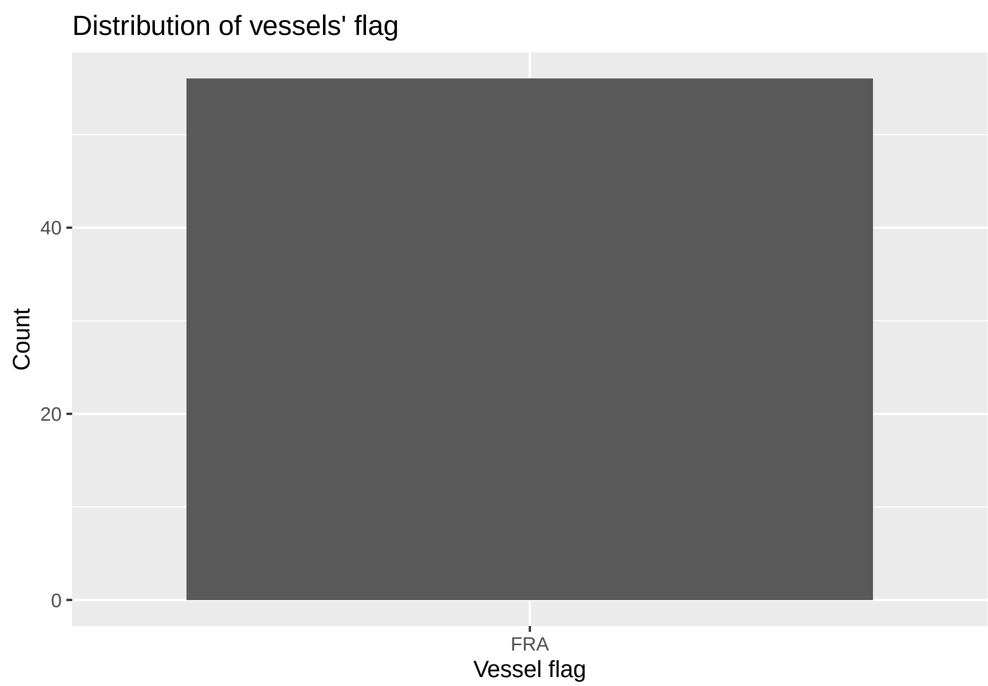
Table 10: Strategy 65.2

Importance	Variable	Value
	Sp.	Solea solea
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
	ISSCAAP	31
Determinant (>95%)	PAVILLON	FRA
	Gear	Trammel nets
Strongly predominant (>80%)	Trimester	1
	Sp.	Scophthalmus rhombus
Major (>50%)	ICES division	27.8.b
	ICES division	27.8.a
Strong component (>35%)	Month	02
Component (>20%)	Month	01
		Merluccius merluccius
		Scophthalmus maximus
	Sp.	Spondyliosoma cantharus
		Chelidonichthys spp
	Spp.	Lophius spp
		Gadidae
		Lophiidae
	Family	Scophthalmidae
		Lophiiformes
	Order	Perciformes
		32
		33
	ISSCAAP	34
	Gear	Set gillnets (anchored)
		03
	Month	12
		2
		3
Minor component (>5%)	Trimester	4
	value_weight	TRUE
	value_eco	TRUE
	sd_weight	TRUE
	sd_eco	TRUE
	prop_spe	TRUE
	prop_spp	TRUE
	prop_family	TRUE
	prop_order	TRUE
	prop_isscaap	TRUE
	value_nb_seq	TRUE
	sd_nb_seq	TRUE
	value_nb_marees	TRUE
	sea_year	TRUE
	sd_average_sea	TRUE
	mean_sea_days_marees	TRUE
High values (>SD)	sd_sea_days_marees	TRUE

Distribution of vessel length and flag during the reference year (2002)

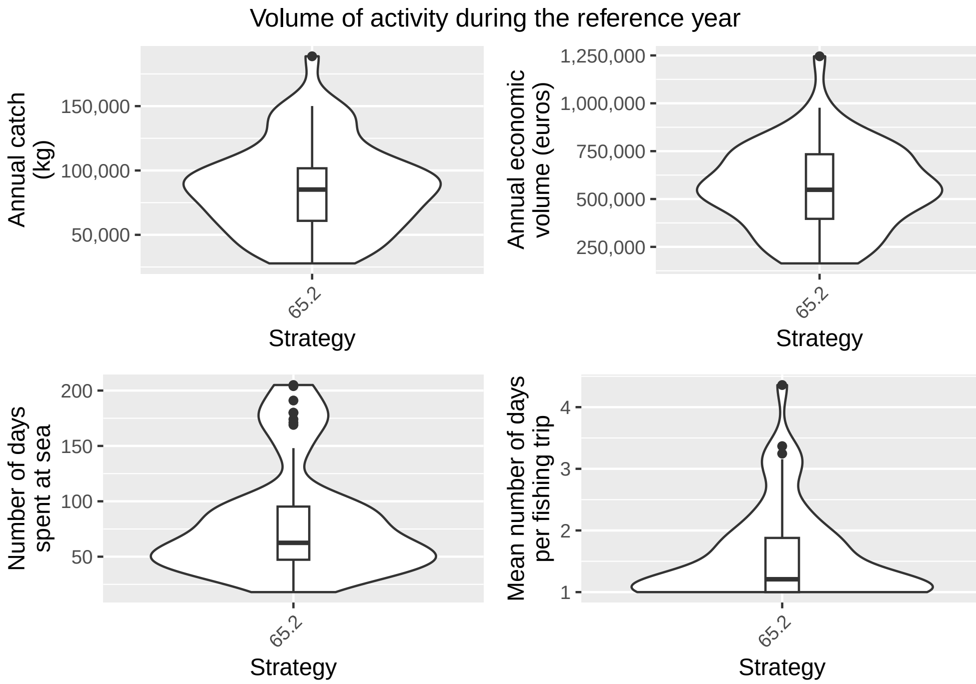
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



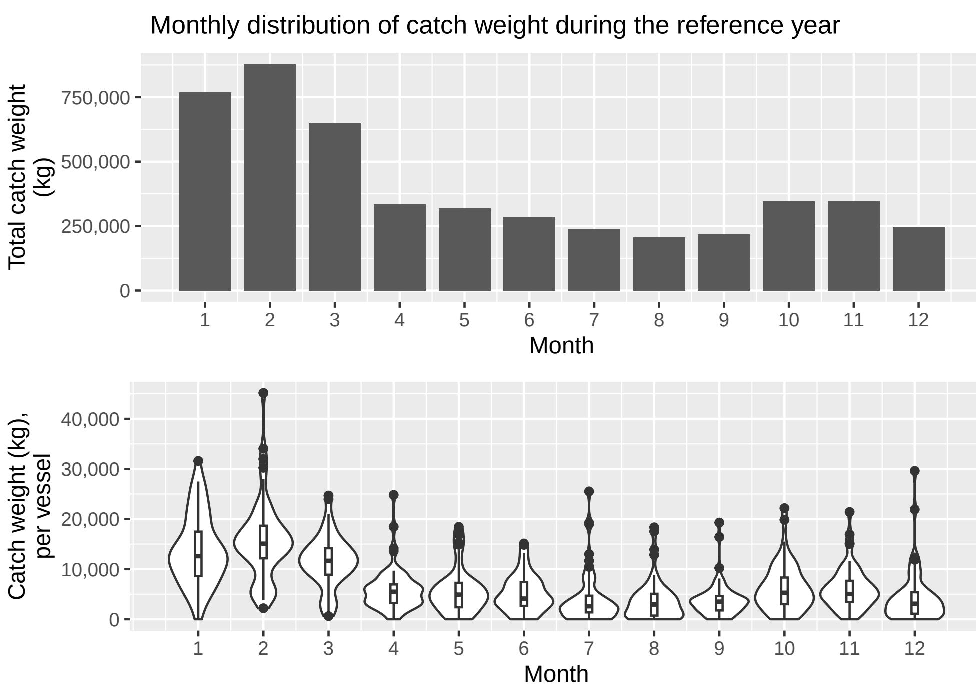


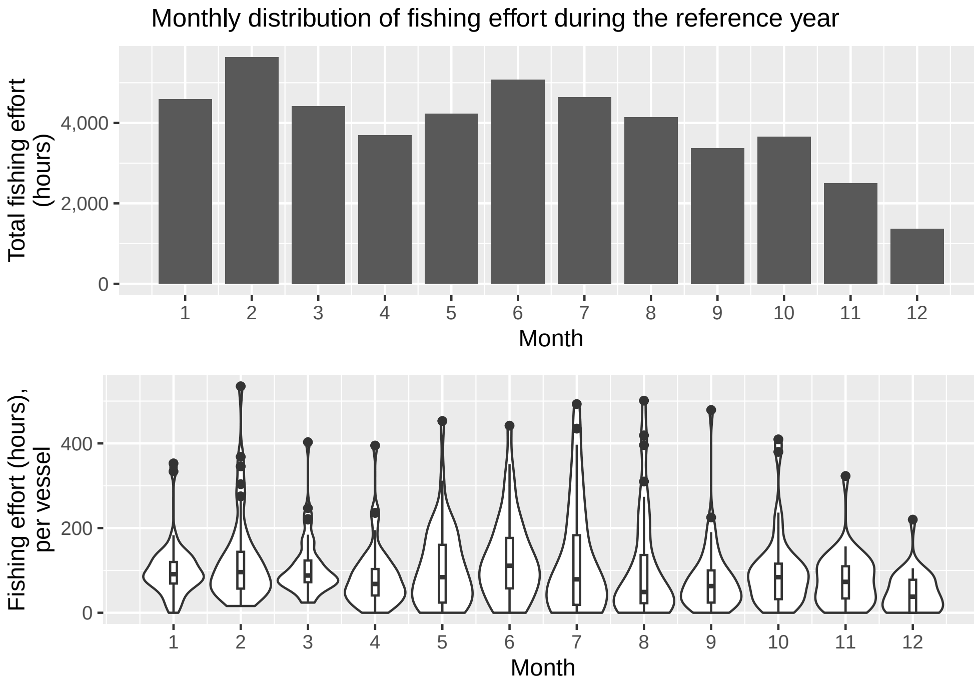
Description of the volume and pattern of fishing activities during the reference year (2002)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



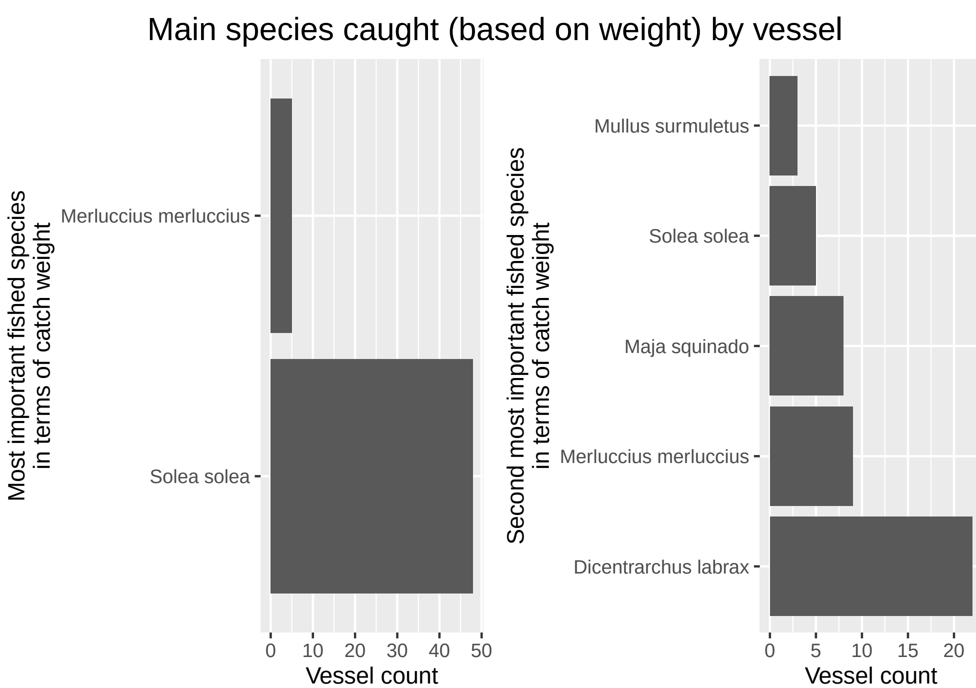
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

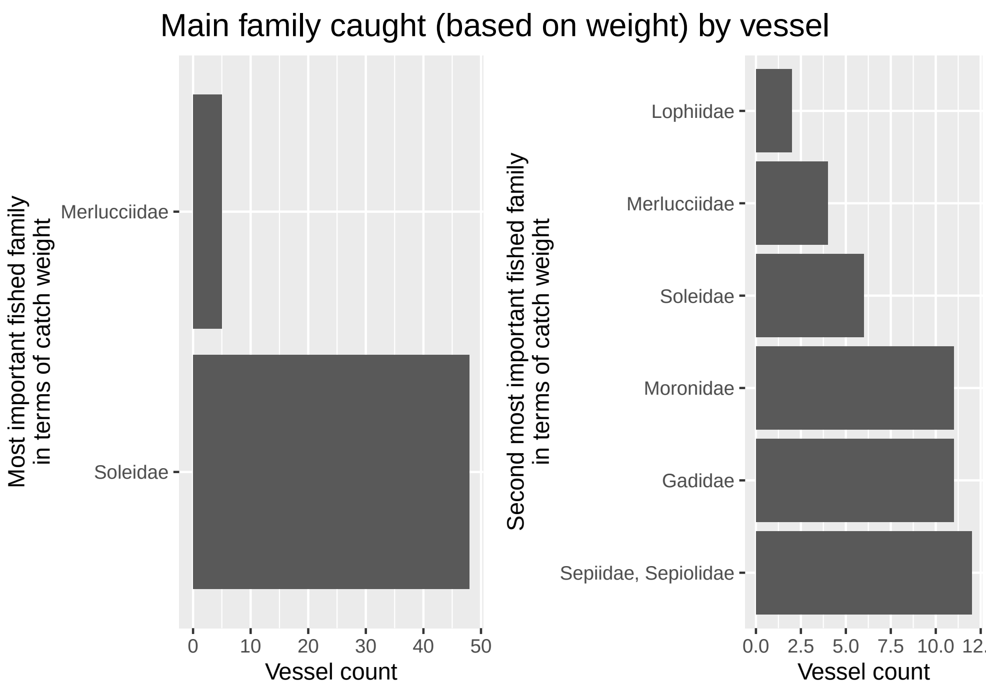


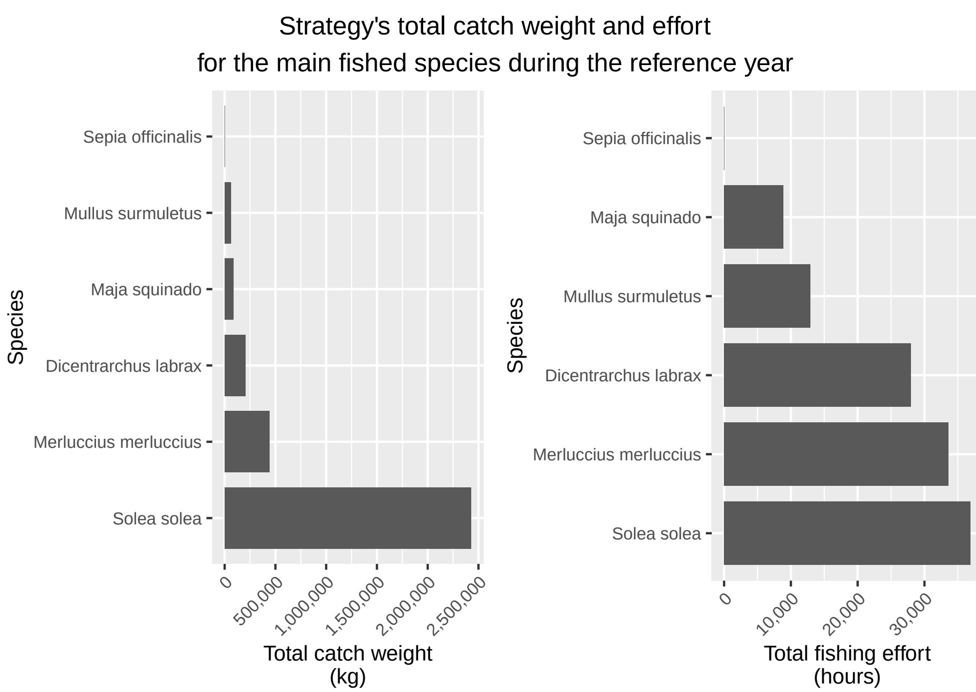


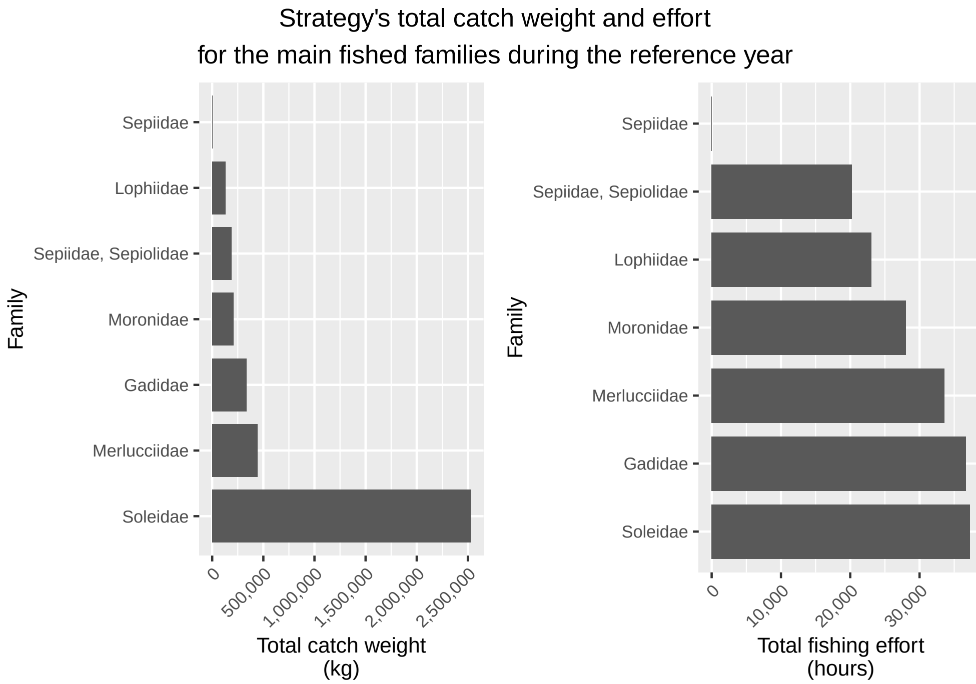
Main fished taxa and used gears during the reference year (2002)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

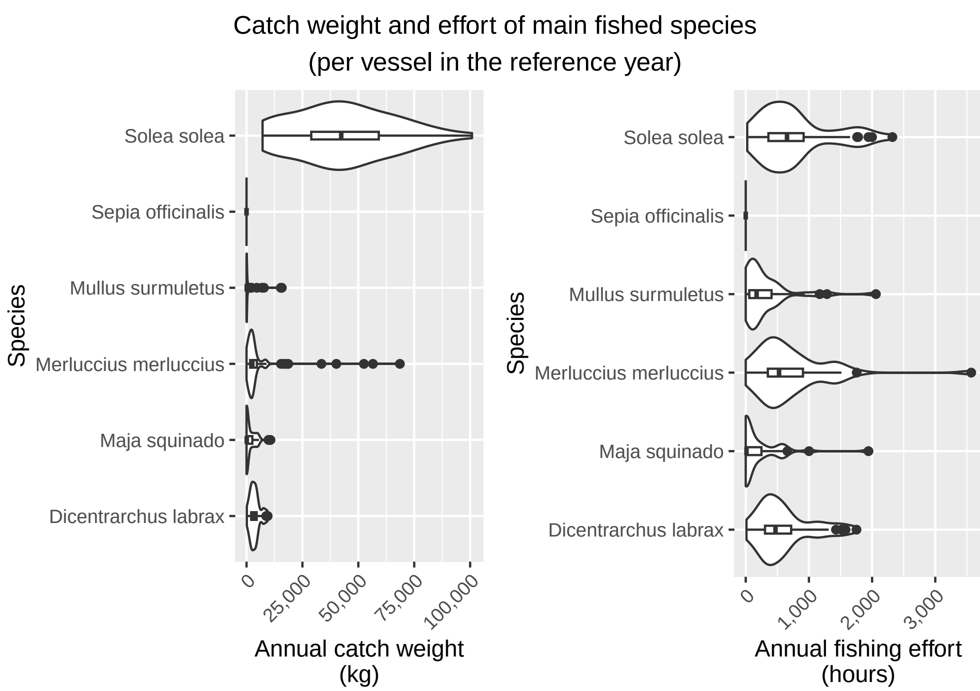


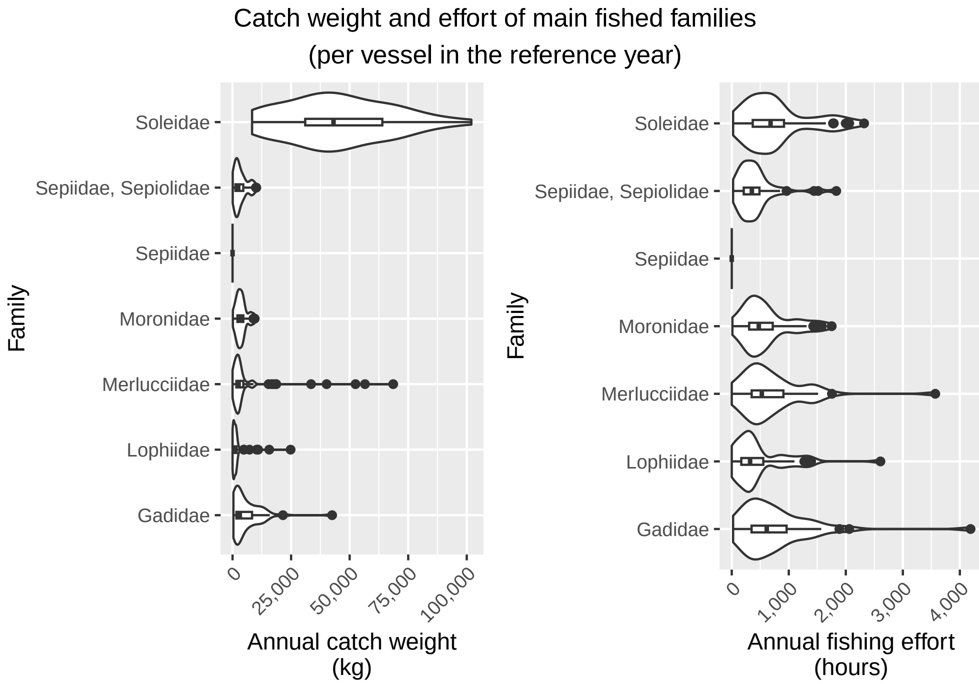

Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Merlucciidae
Soleidae
0 10 20 30 40 50
Vessel count
Second most important fished family in terms of catch weight
Lophiidae
Merlucciidae
Soleidae
Moronidae
Gadidae
Sepiidae, Sepiolidae
0.0 2.5 5.0 7.5 10.0 12.5
Vessel count


Strategy's total catch weight and effort
for the main fished species during the reference year
Species
Sepia officinalis
Mullus surmuletus
Maja squinado
Dicentrarchus labrax
Merluccius merluccius
Solea solea
0 500,000 1,000,000 1,500,000 2,000,000 2,500,000
Total catch weight
(kg)
Species
Sepia officinalis
Maja squinado
Mullus surmuletus
Dicentrarchus labrax
Merluccius merluccius
Solea solea
0 10,000 20,000 30,000
Total fishing effort
(hours)

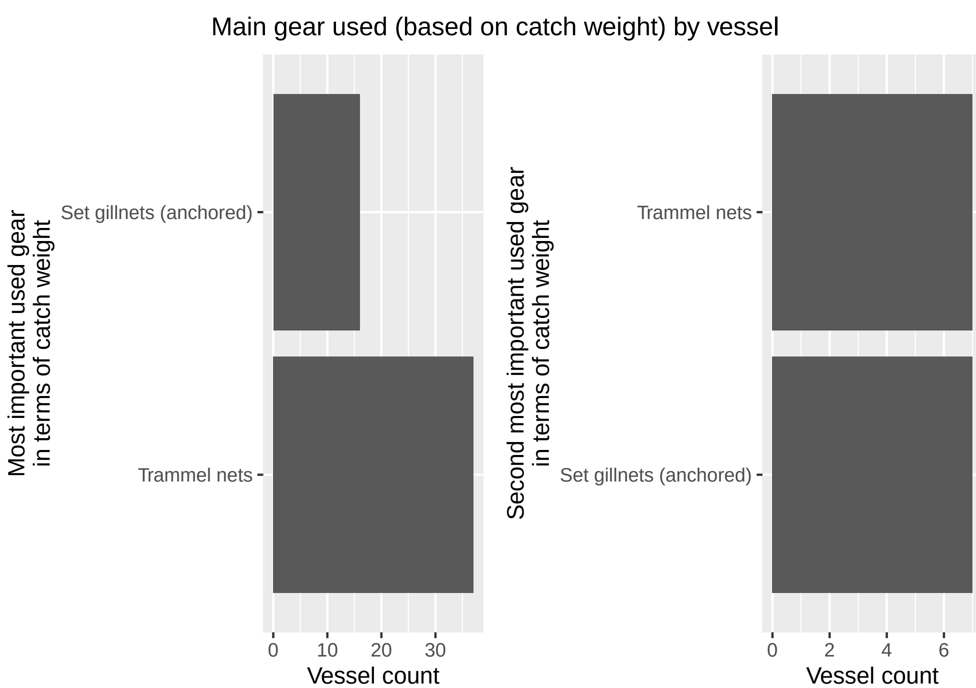


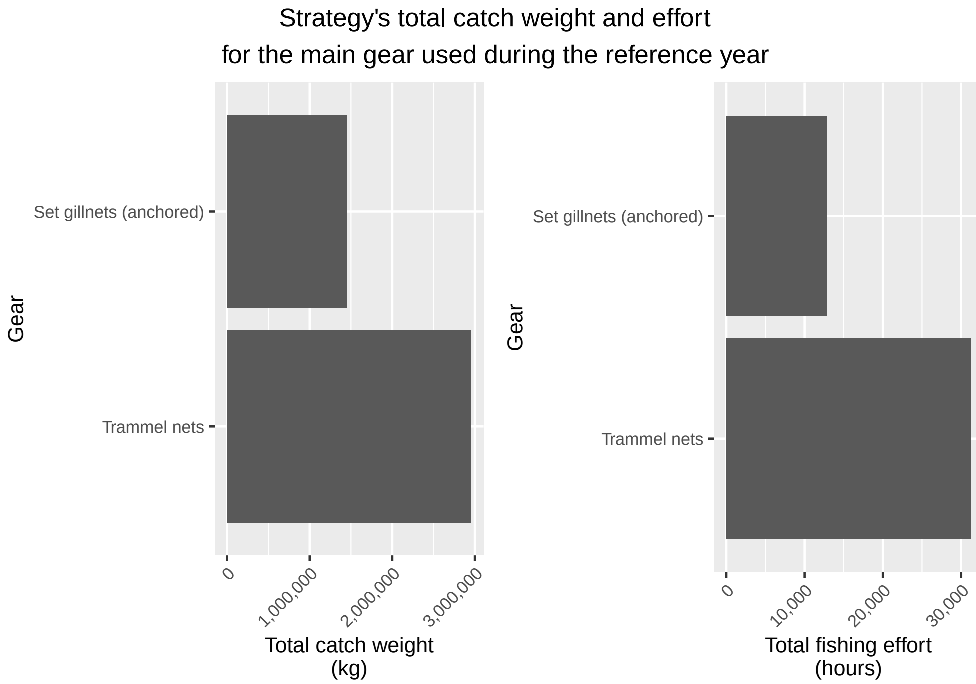
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

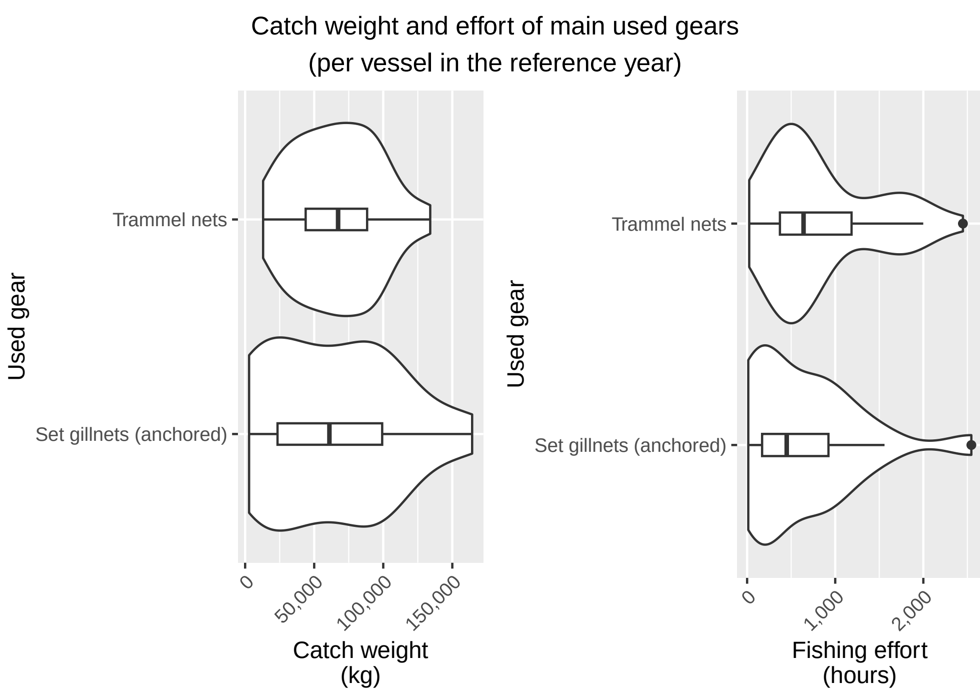




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

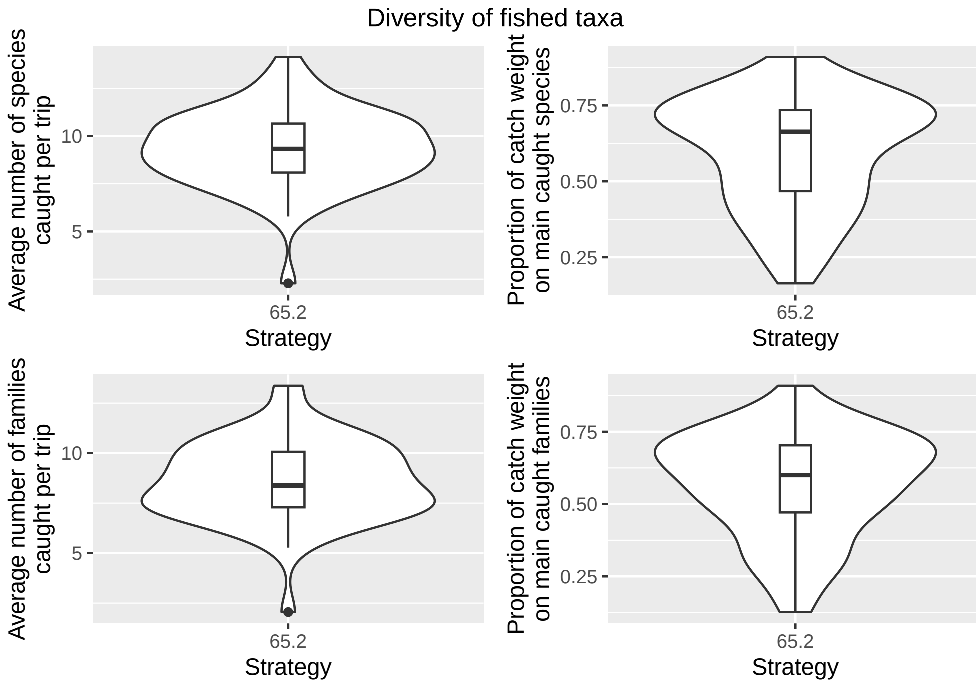




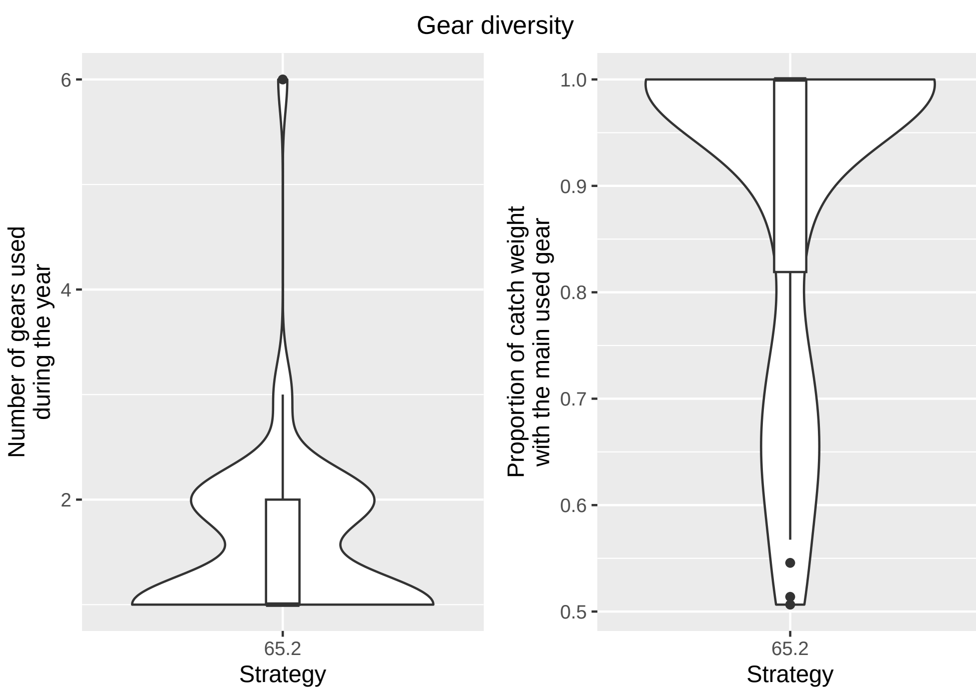


Diversity of fished taxa and used gears during the reference year (2002)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

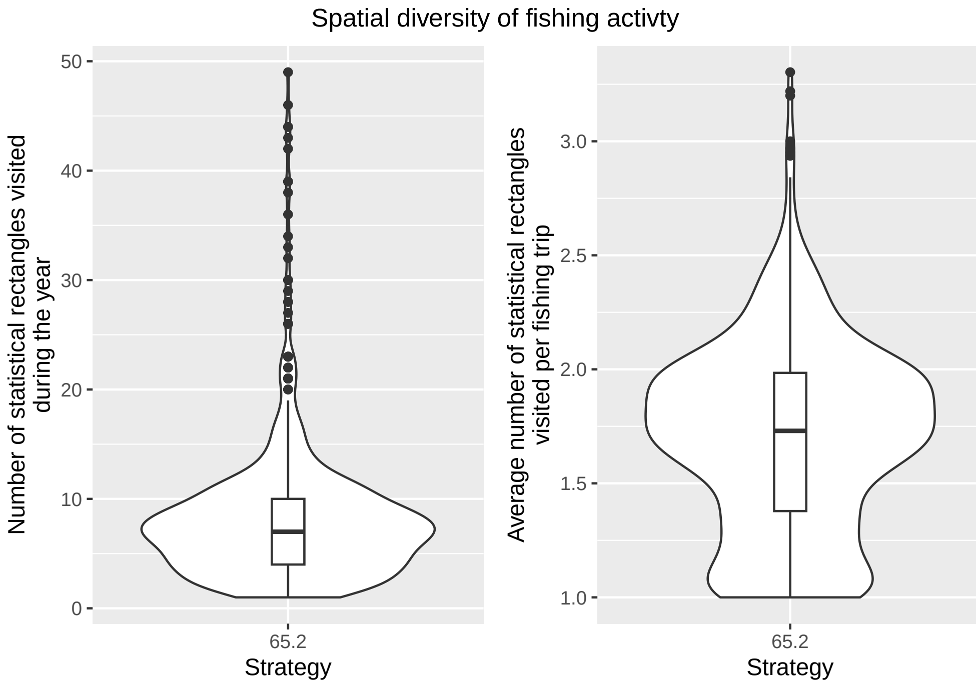


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

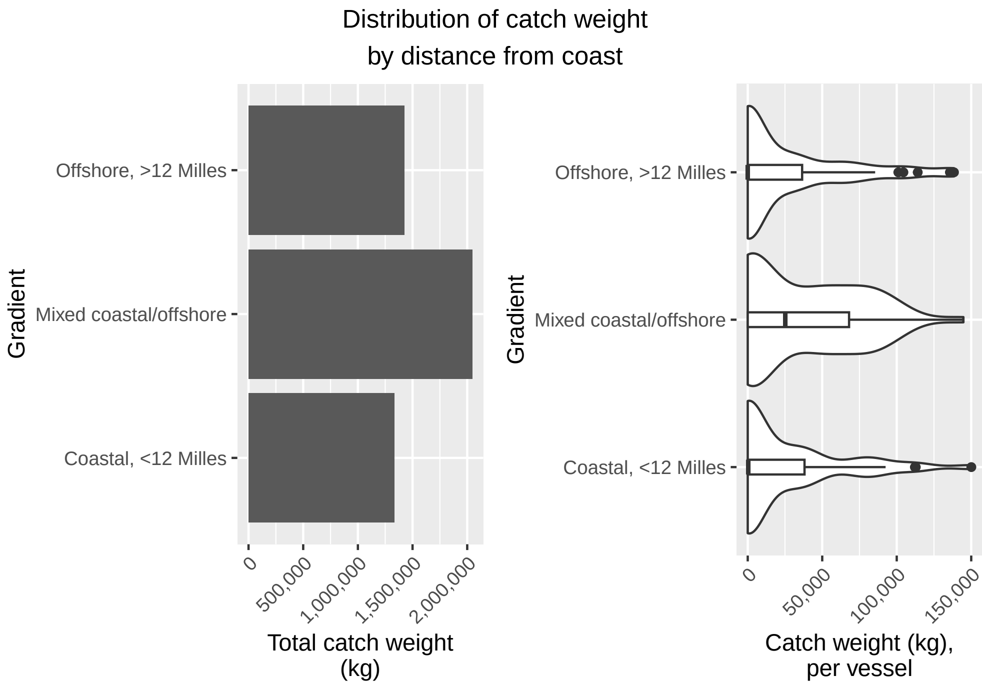


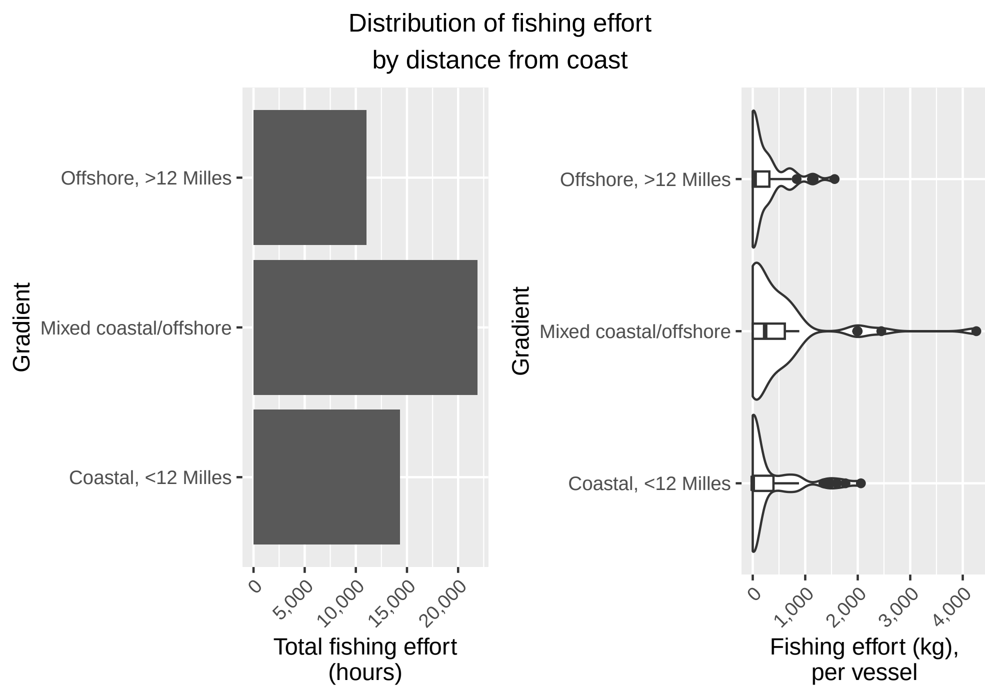
Diversity of areas visited during the reference year (2002)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



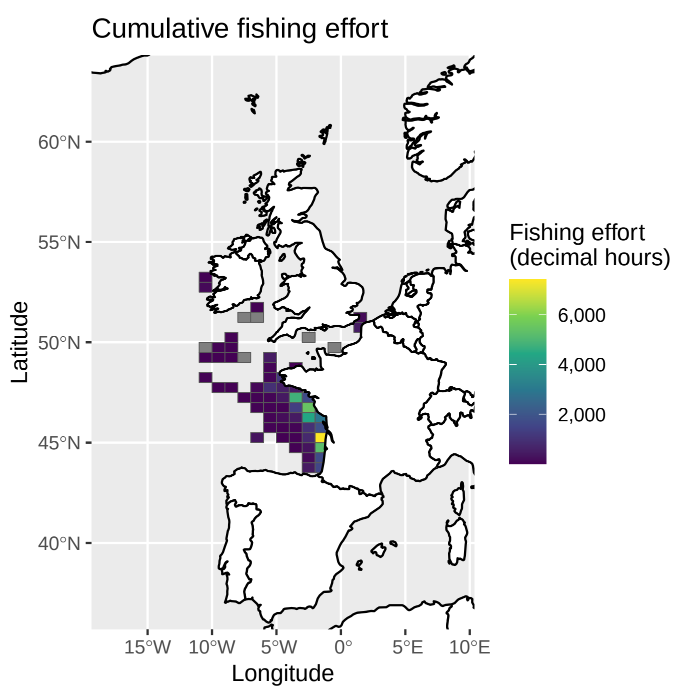
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

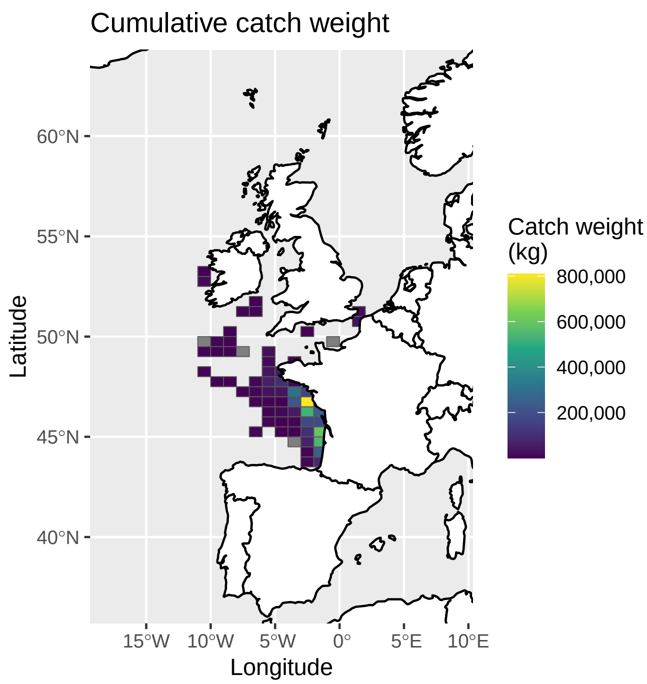




Maps of fishing activity distribution during the reference year (2002)

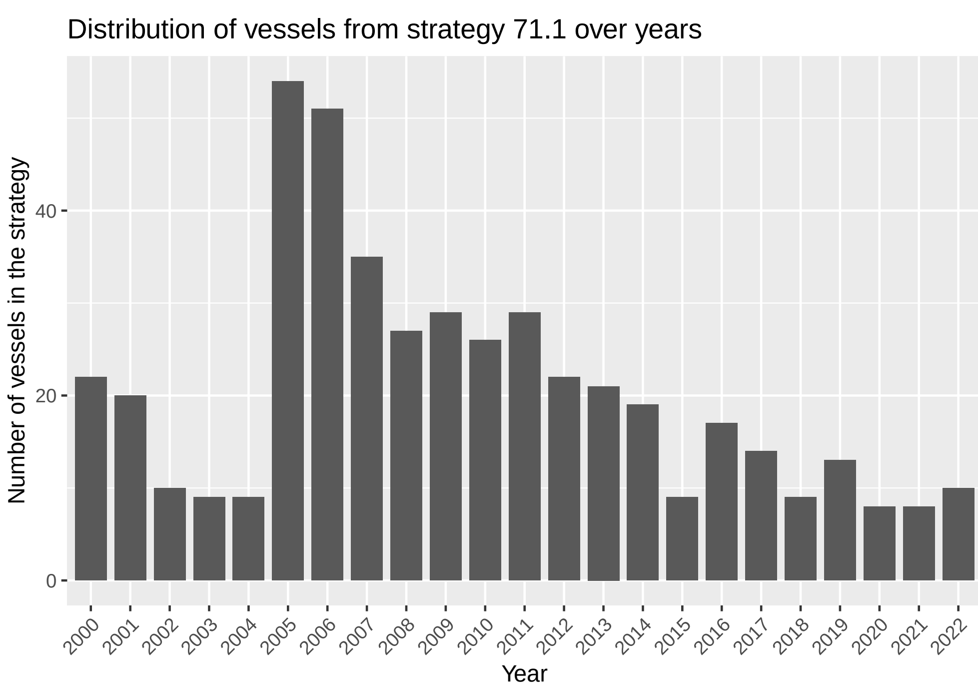
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





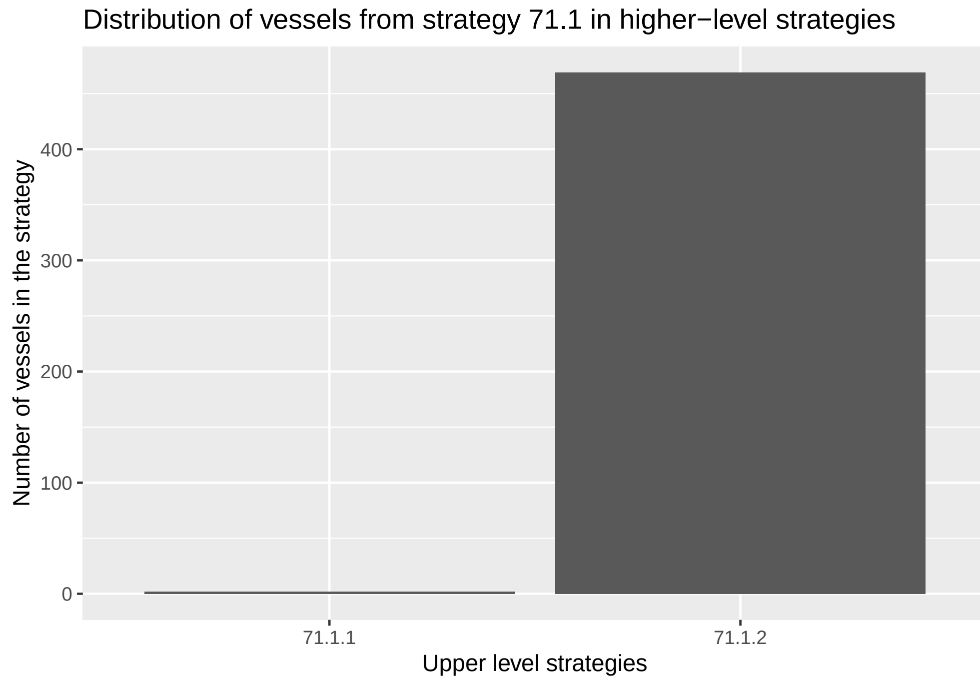
Strategy 71.1

This strategy includes N=471 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=103. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2005.

The distribution of vessels (per year) from this strategy in the associated higher-level strategies is presented below. A detailed description of these higher-level strategies (71.1.1, 71.1.2) can be found further on. Only 71.1.1, 71.1.2 are associated with accidental bycatch events.



Description table

This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

Table 11: Strategy 71.1

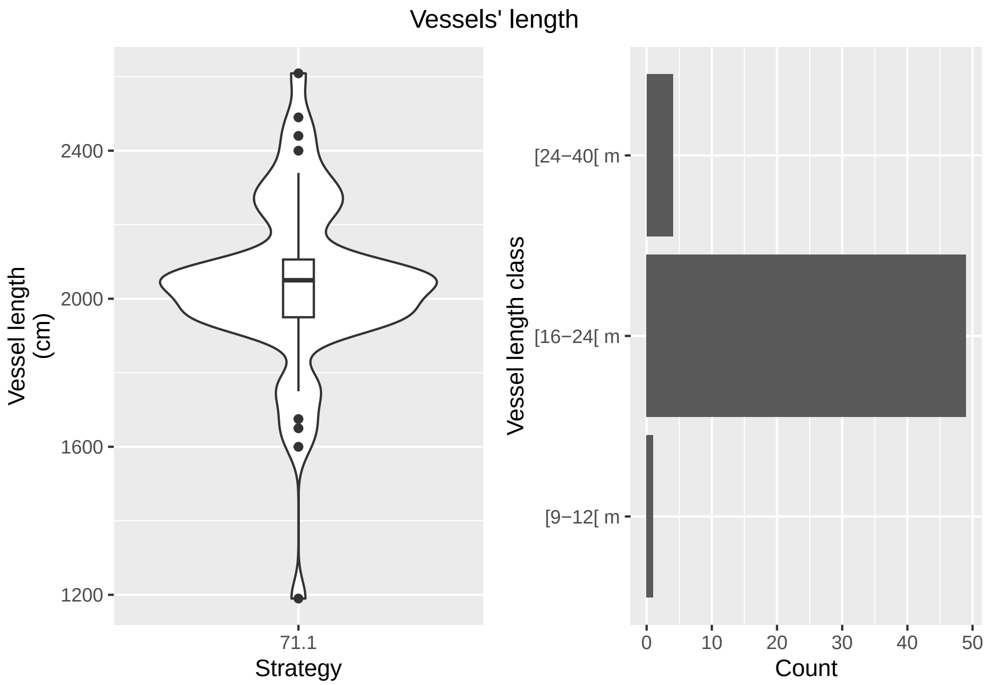
Importance	Variable	Value
	Order	Perciformes
Strongly predominant (>80%)	Gear	Pair trawls Midwater
		Dicentrarchus labrax
	Sp.	Thunnus alalunga
	Spp.	Thunnus spp
		33
	ISSCAAP	36
	Stock	ALB.27
Predominant (>65%)	ICES division	27.8.a
	Spp.	Dicentrarchus spp
		Moronidae
	Family	Scombridae
	Order	Clupeiformes
Major (>50%)	Trimester	3
	ISSCAAP	35
Strong component (>35%)	Stock	BSS.27.4bc7a7d-h
		Engraulis encrasicolus
	Sp.	Merluccius merluccius
		Engraulis spp
	Spp.	Merluccius spp
		Engraulidae
		Gadidae

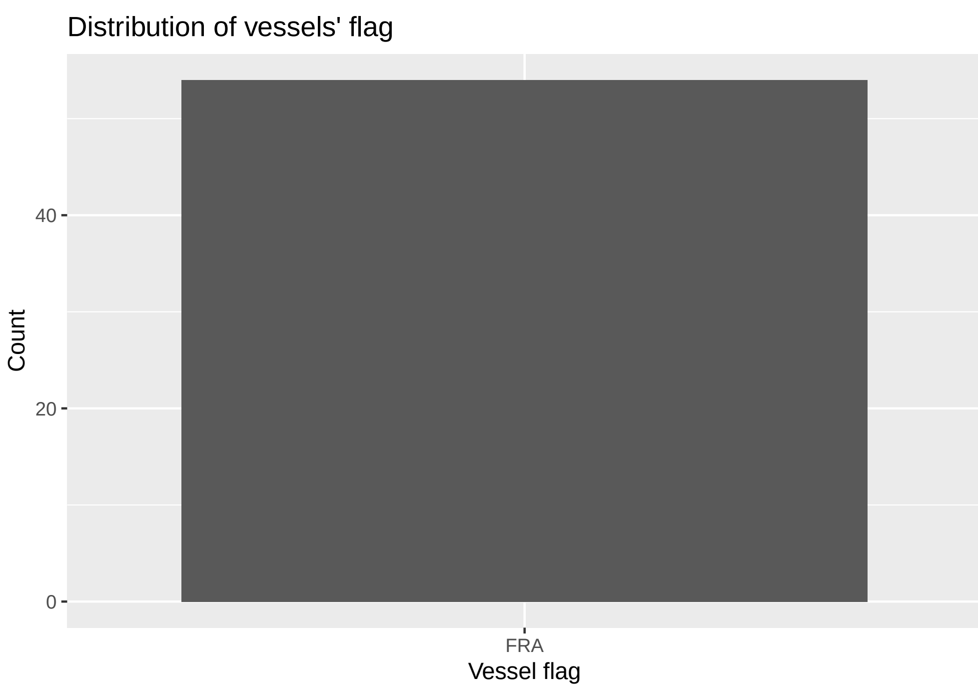
Table 11: Strategy 71.1 *(continued)*

Importance	Variable	Value
	Family	Merlucciidae
	ISSCAAP	32
		ANE.27.8
		BSS.27.8ab
	Stock	HKE.27.3a4678abd
		27.7.e
	ICES division	27.7.j
	Month	09
		1
Component (>20%)	Trimester	2
		Nephrops norvegicus
		Sardina pilchardus
		Spondyliosoma cantharus
		Thunnus thynnus
	Sp.	Trisopterus luscus
		Chelidonichthys spp
	Spp.	Scomber spp
		Clupeidae
		Nephropidae
		Rajidae
		Sparidae
	Family	Xiphiidae
		Decapoda
		Gadiformes
	Order	Pleuronectiformes
		31
		34
		37
	ISSCAAP	38
		BFT.27
		BRB.27.7de
		BRB.27.8ab
		MAC.27
		NEP.27.8ab.FU23-24
	Stock	PIL.27.8abd
		Otter trawls Bottom
	Gear	Pair trawls Bottom
		27.7.d
		27.7.h
		27.8.b
		27.8.c
	ICES division	27.8.d
		01
		02
		03
		06
		07
		08
		10
	Month	11
Minor component (>5%)	Trimester	4
	prop_spe	TRUE
	prop_spp	TRUE
	prop_family	TRUE
	prop_order	TRUE
	prop_isscaap	TRUE
High values (>SD)	prop_engine	TRUE

Distribution of vessel length and flag during the reference year (2005)

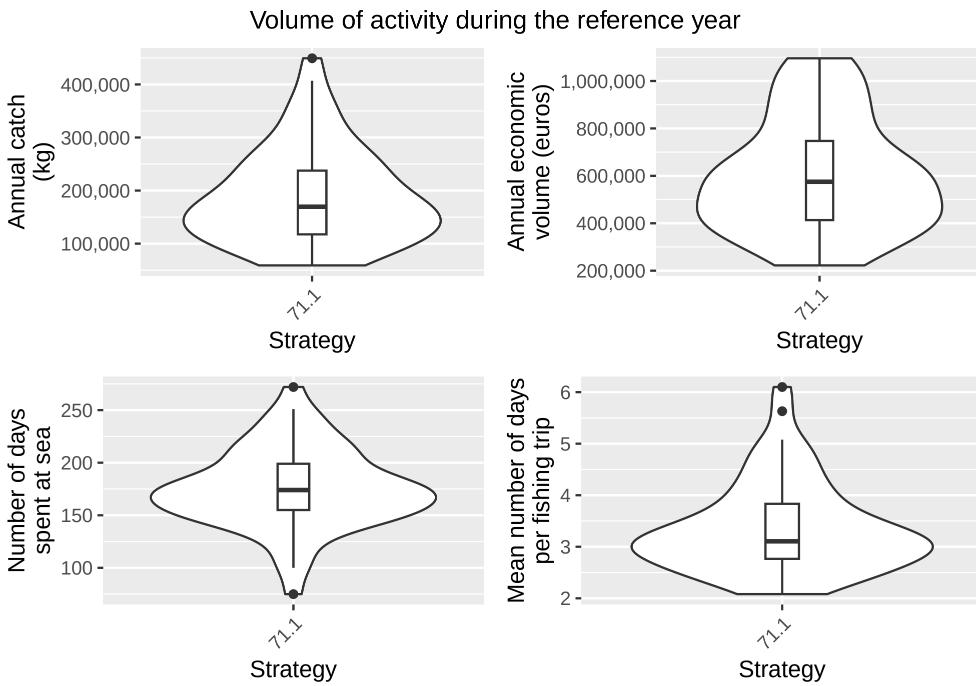
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



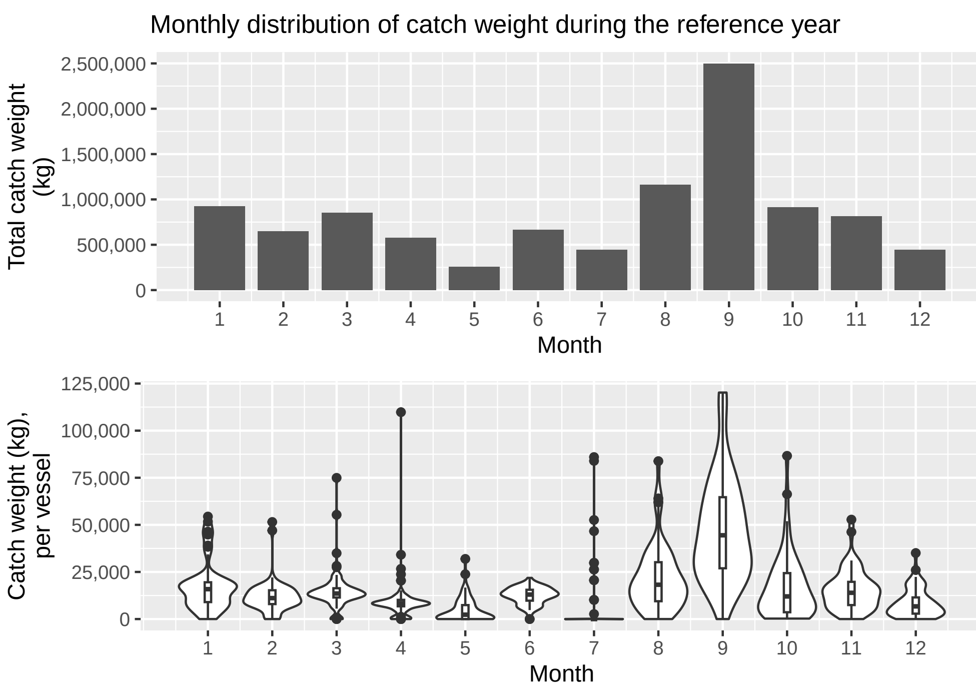


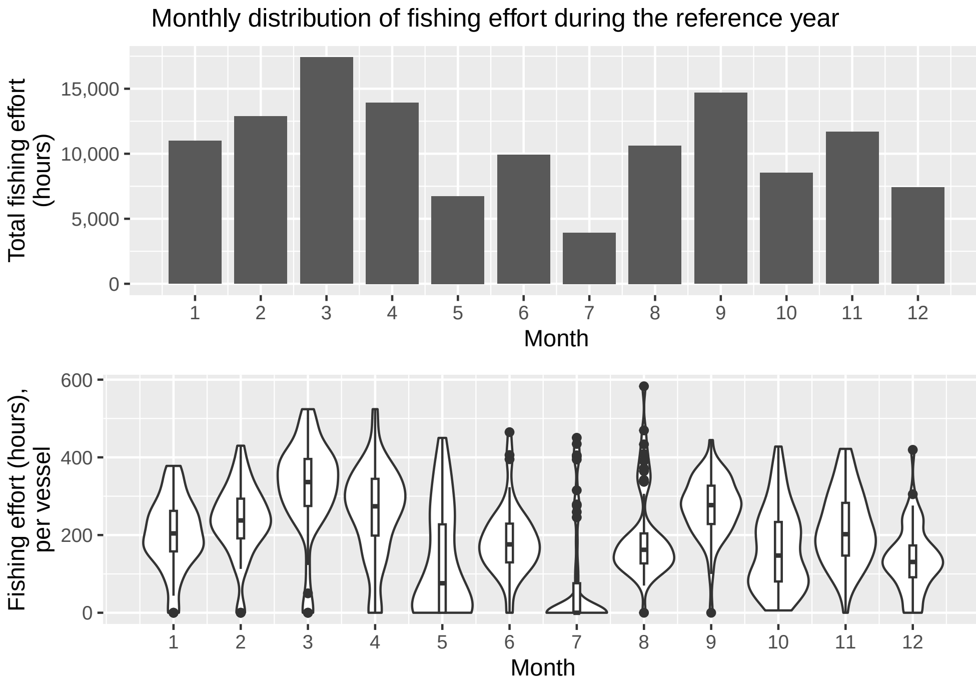
Description of the volume and pattern of fishing activities during the reference year (2005)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



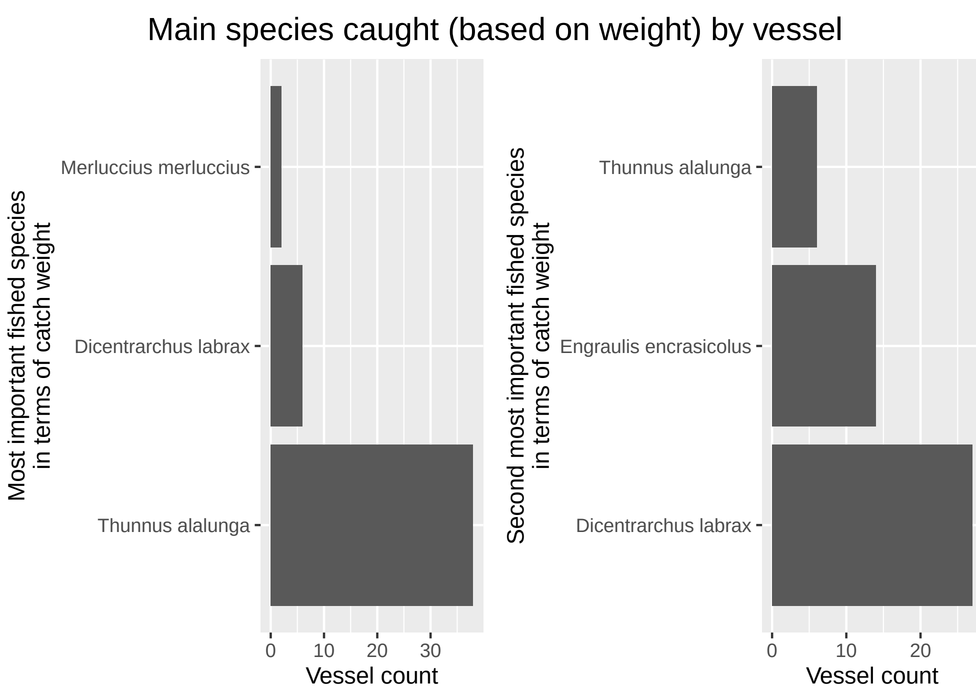
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

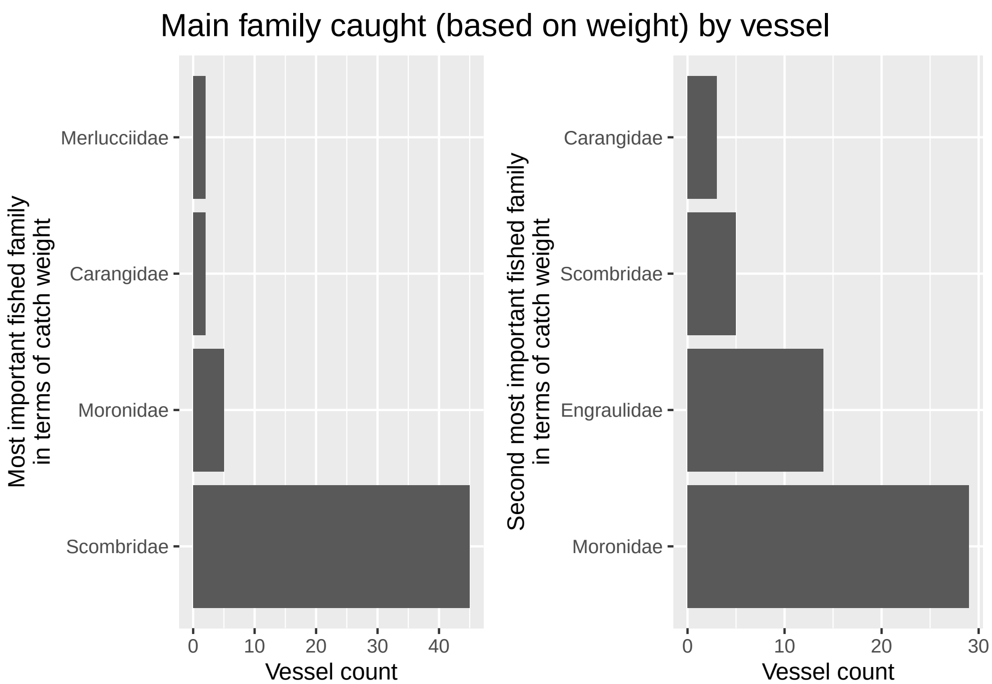


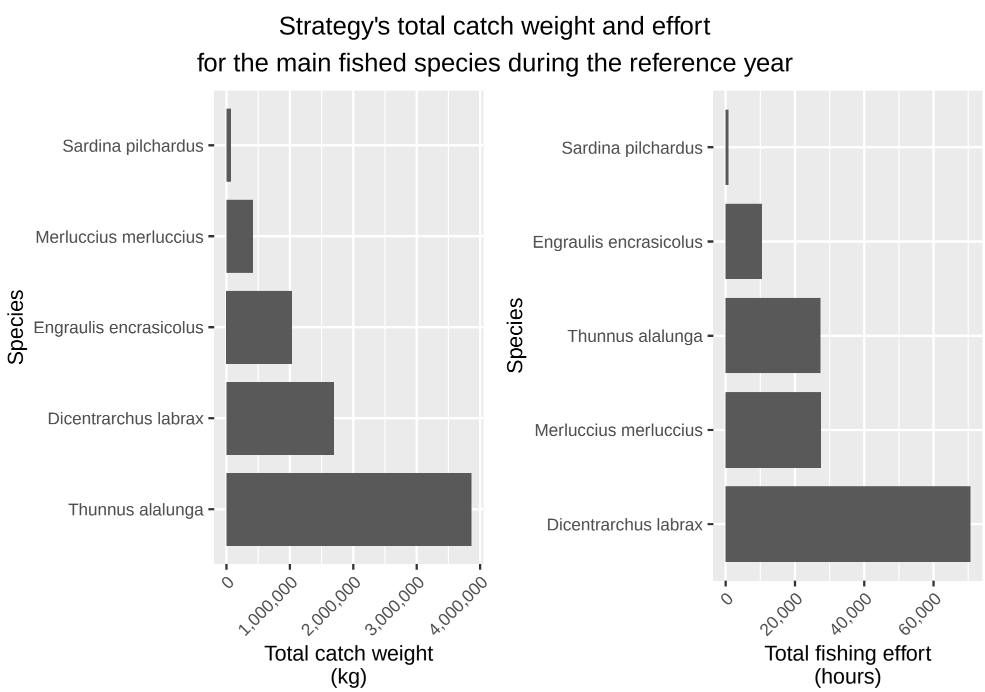


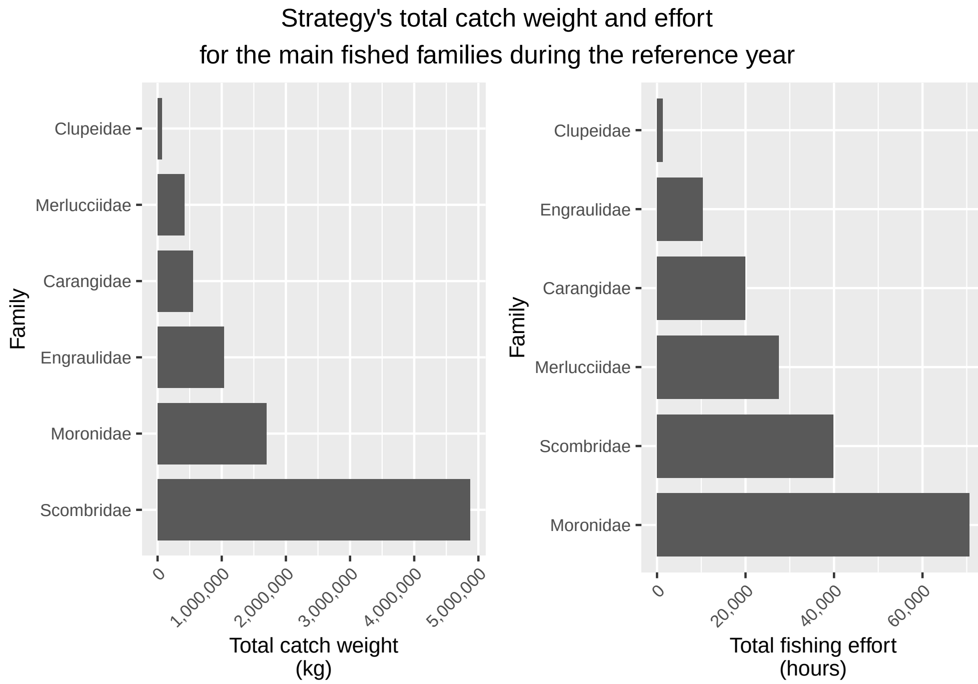
Main fished taxa and used gears during the reference year (2005)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

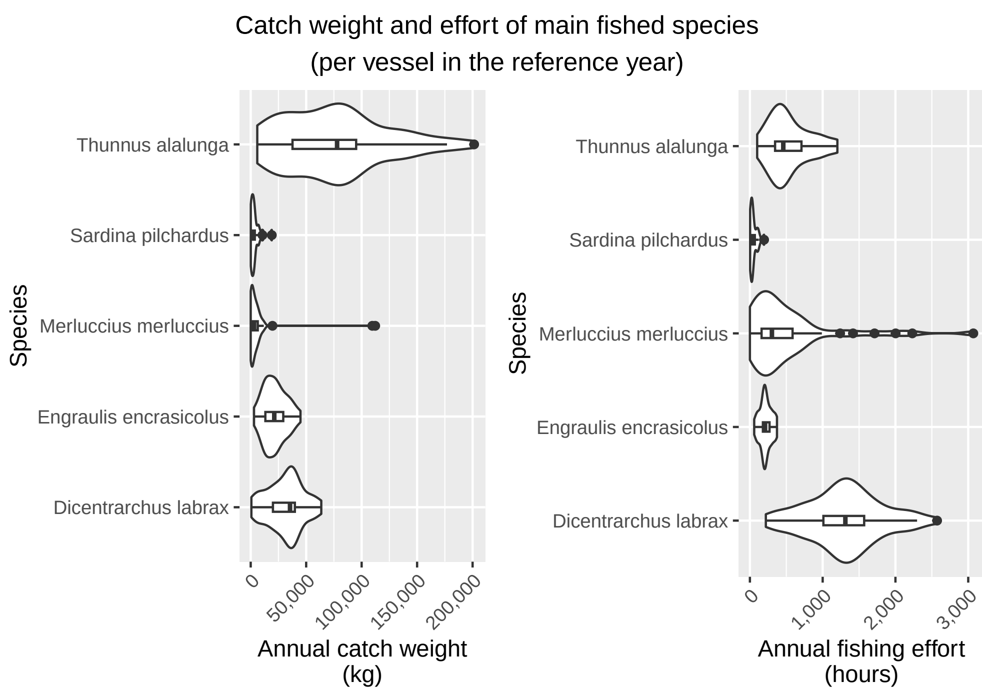


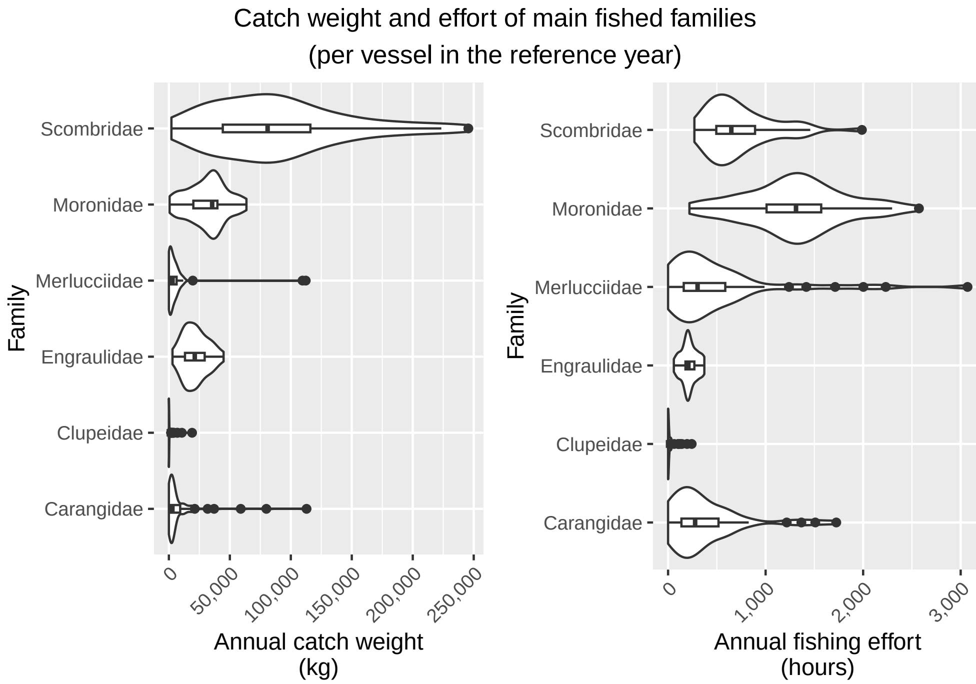

Main family caught (based on weight) by vessel
Most important fished family
in terms of catch weight
Merlucciidae
Carangidae
Moronidae
Scombridae
Vessel count
Second most important fished family
in terms of catch weight
Carangidae
Scombridae
Engraulidae
Moronidae
Vessel count


Strategy's total catch weight and effort
for the main fished species during the reference year
Species
Sardina pilchardus
Merluccius merluccius
Engraulis encrasicolus
Dicentrarchus labrax
Thunnus alalunga
Total catch weight
(kg)
Species
Sardina pilchardus
Engraulis encrasicolus
Thunnus alalunga
Merluccius merluccius
Dicentrarchus labrax
Total fishing effort
(hours)

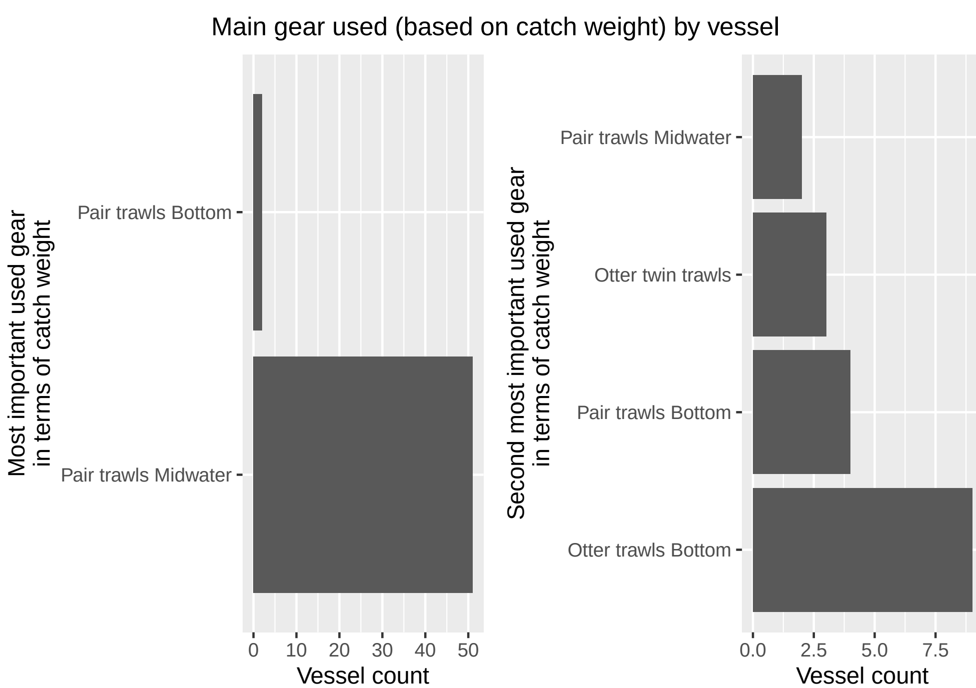


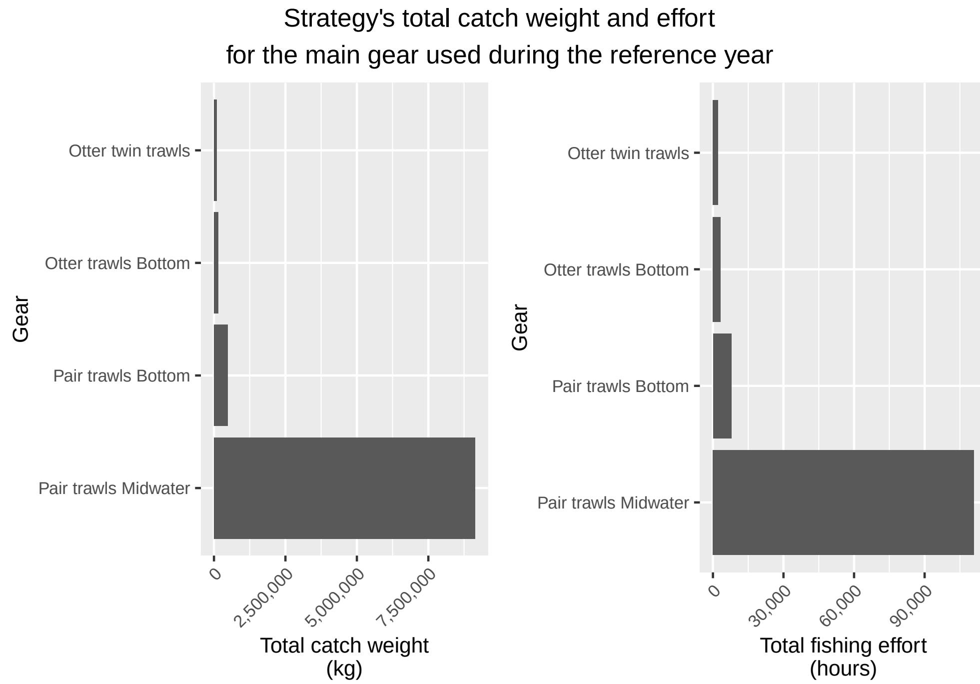
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

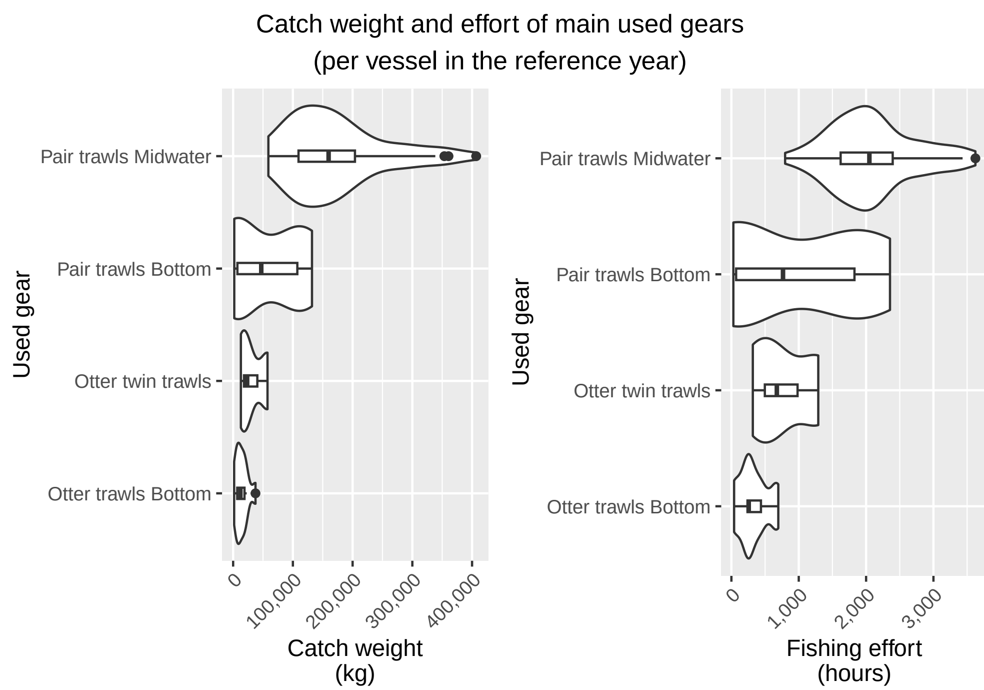




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

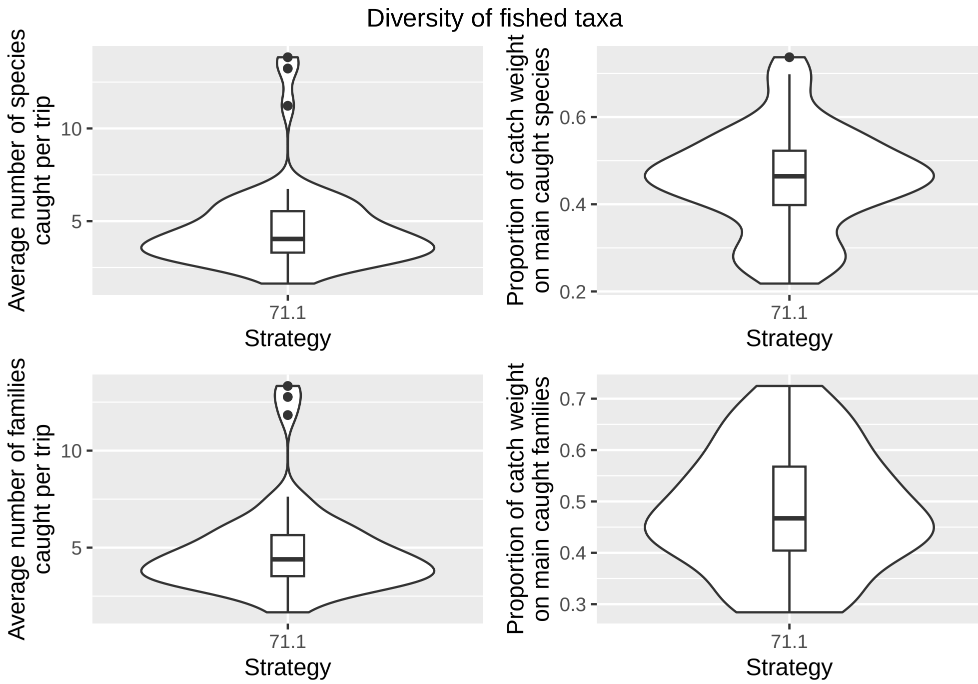




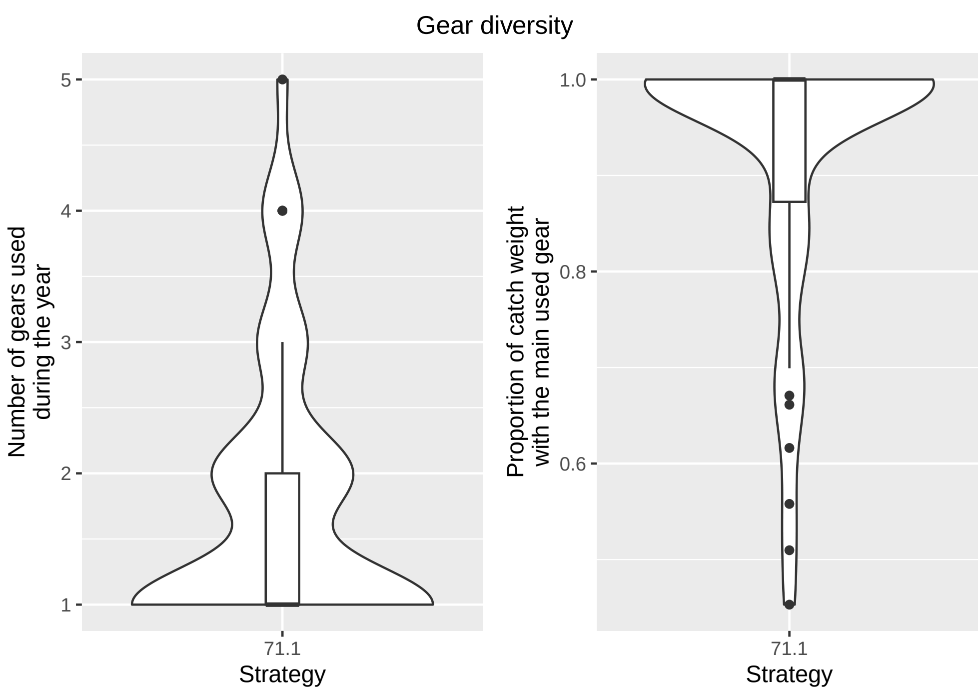


Diversity of fished taxa and used gears during the reference year (2005)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

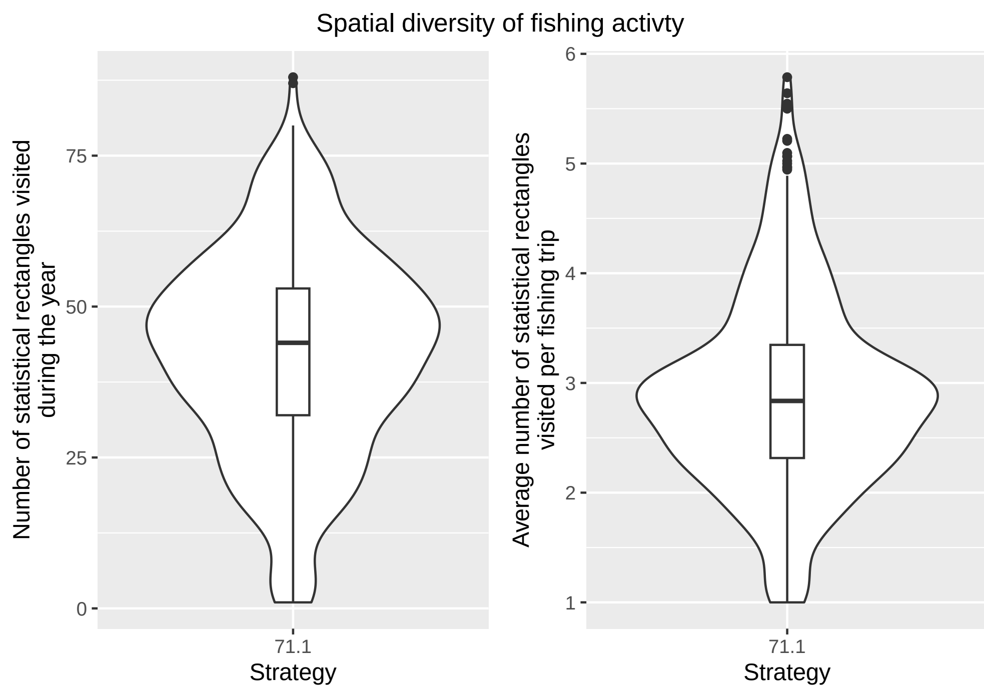


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

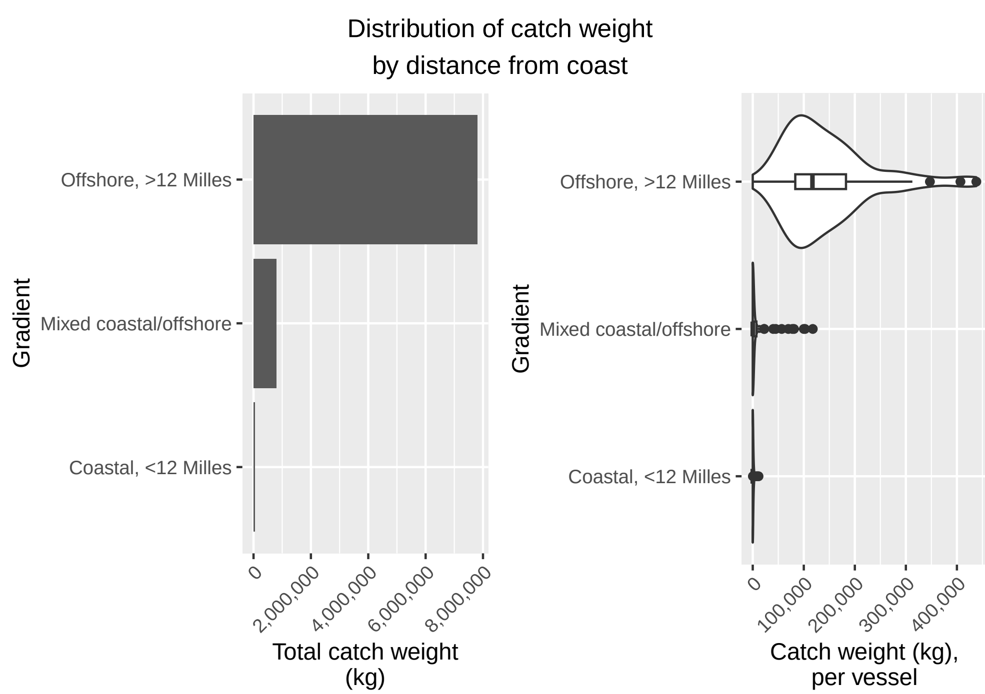


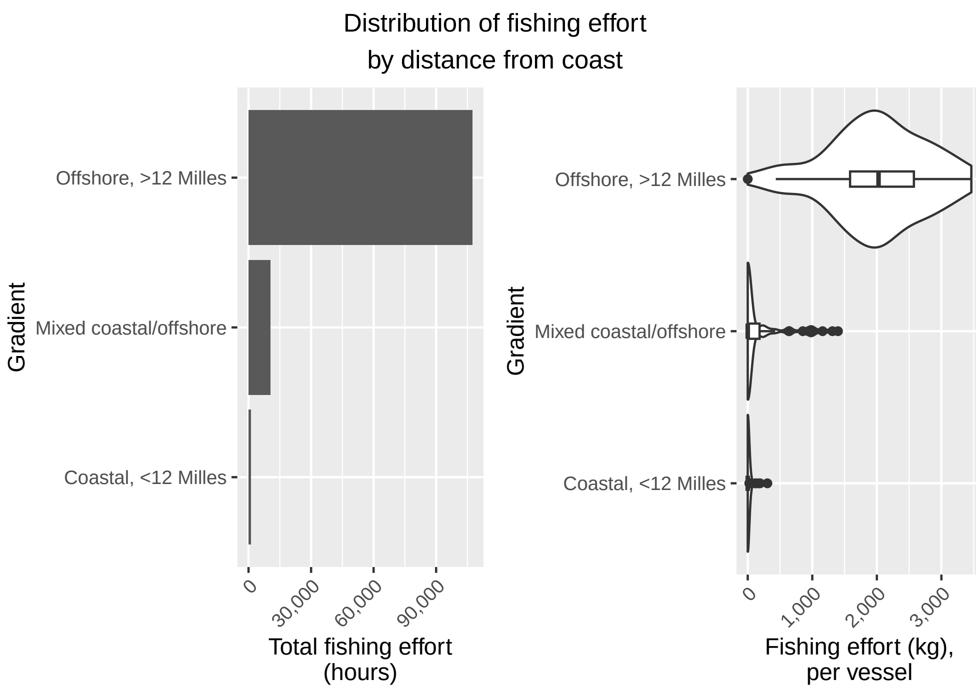
Diversity of areas visited during the reference year (2005)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



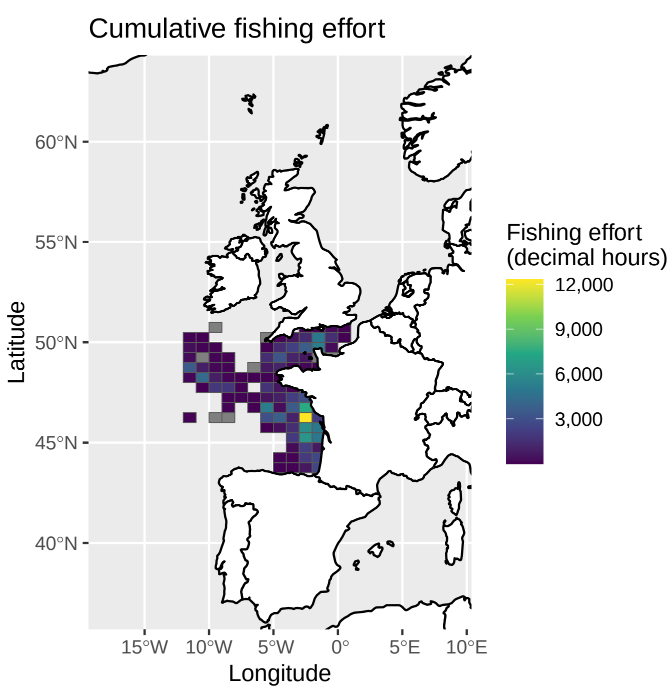
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

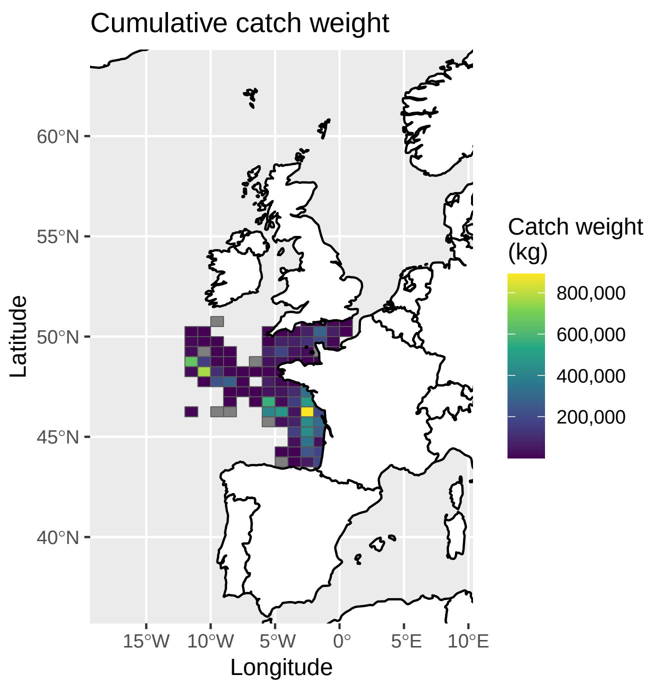




Maps of fishing activity distribution during the reference year (2005)

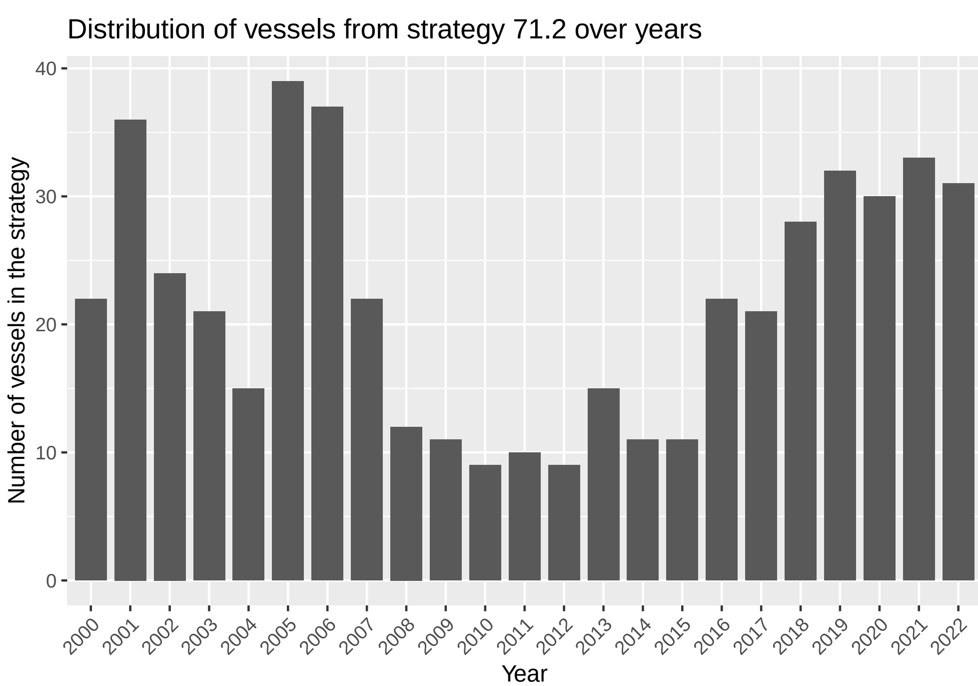
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





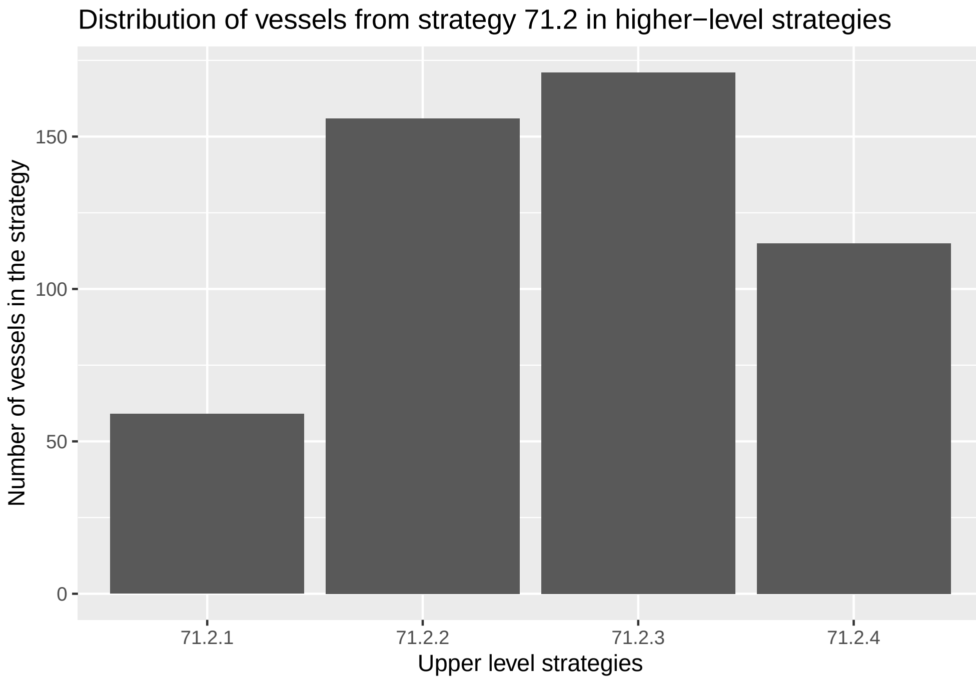
Strategy 71.2

This strategy includes N=501 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=133. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2005.

The distribution of vessels (per year) from this strategy in the associated higher-level strategies is presented below. A detailed description of these higher-level strategies (71.2.1, 71.2.2, 71.2.3, 71.2.4) can be found further on. Only 71.2.2 is associated with accidental bycatch events.



Description table

This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

Table 12: Strategy 71.2

Importance	Variable	Value
	Spp.	Thunnus spp
Determinant (>95%)	ISSCAAP	36
	Sp.	Thunnus alalunga
	Family	Scombridae
	Order	Perciformes
Strongly predominant (>80%)	Stock	ALB.27
	Family	Gadidae
	Gear	Pair trawls Midwater
Predominant (>65%)	Trimester	3
	Sp.	Trisopterus luscus
Major (>50%)	ICES division	27.8.a
	Sp.	Merluccius merluccius
	Order	Gadiformes
	Gear	Otter trawls Bottom
Strong component (>35%)	Month	09
		Chelidonichthys spp
		Lophius spp
		Raja spp
	Spp.	Solea spp
	Family	Lophiidae
		Lophiiformes
	Order	Pleuronectiformes

Table 12: Strategy 71.2 *(continued)*

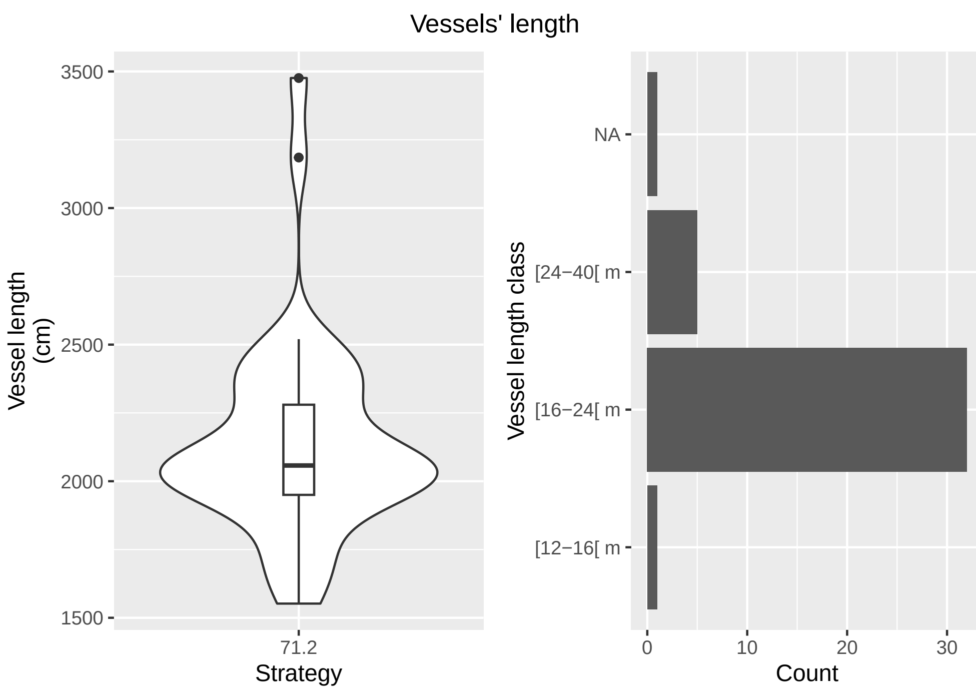
Importance	Variable	Value
		31
		32
		34
	ISSCAAP	57
		BLL.27.8ab
	Stock	MNZ.27.7b-k8abd
	Gear	Otter twin trawls
	ICES division	27.7.j
Component (>20%)	Month	08
		Dicentrarchus labrax
		Lepidorhombus whiffiagonis
		Leucoraja naevus
		Mullus surmuletus
		Nephrops norvegicus
		Scophthalmus rhombus
		Sepia officinalis
		Solea solea
	Sp.	Thunnus thynnus
		Dicentrarchus spp
		Merluccius spp
	Spp.	Sepia spp
		Engraulidae
		Loliginidae
		Merlucciidae
		Moronidae
		Nephropidae
		Rajidae
		Sepiidae
		Sepiidae, Sepiolidae
	Family	Soleidae
		Clupeiformes
		Decapoda
	Order	Sepiida
		33
		35
		38
	ISSCAAP	43
		BFT.27
		BRB.27.8ab
		COD.27.7e-k
		CTC.27.8ab
		HKE.27.3a4678abd
		MUR.27.67a-c7e-k89a
		NEP.27.7gh.FU20-21
		NEP.27.8ab.FU23-24
		SOL.27.8ab
	Stock	SQZ.27.8ab
		Danish seines
		Drifting longlines
	Gear	Trammel nets
		27.7.e
		27.7.g
		27.7.h
		27.8.b
		27.8.c
	ICES division	27.8.d
		01
		07
	Month	10
		1
		2
Minor component (>5%)	Trimester	4

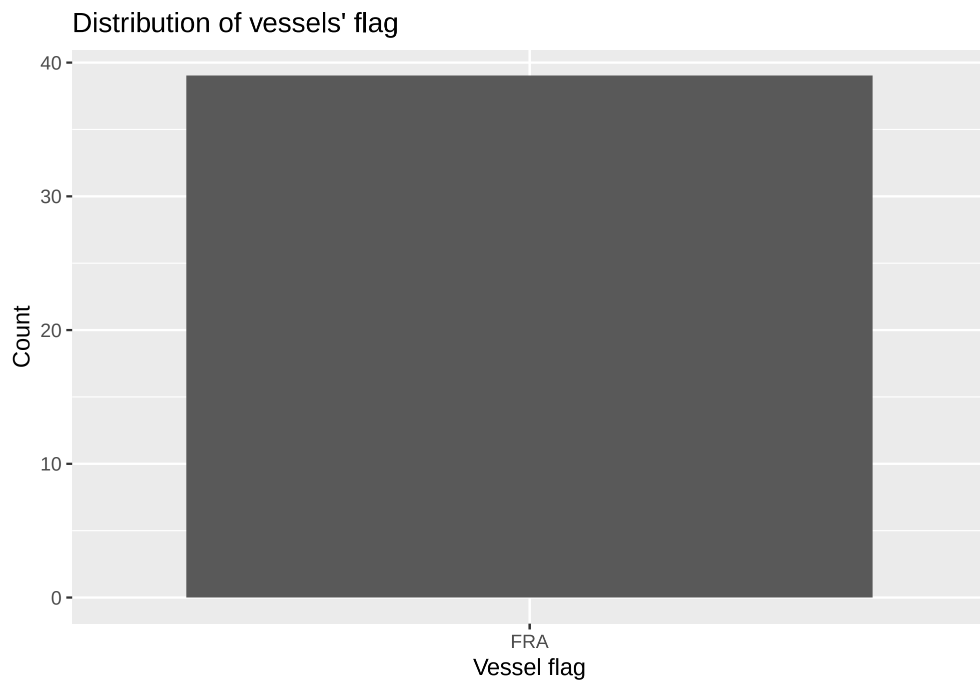
Table 12: Strategy 71.2 *(continued)*

Importance	Variable	Value
	sd__weight	TRUE
	prop__spe	TRUE
	prop__spp	TRUE
	prop__family	TRUE
	prop__order	TRUE
	prop__isscaap	TRUE
	value__nb__seq	TRUE
High values (>SD)	value__nb__marees	TRUE

Distribution of vessel length and flag during the reference year (2005)

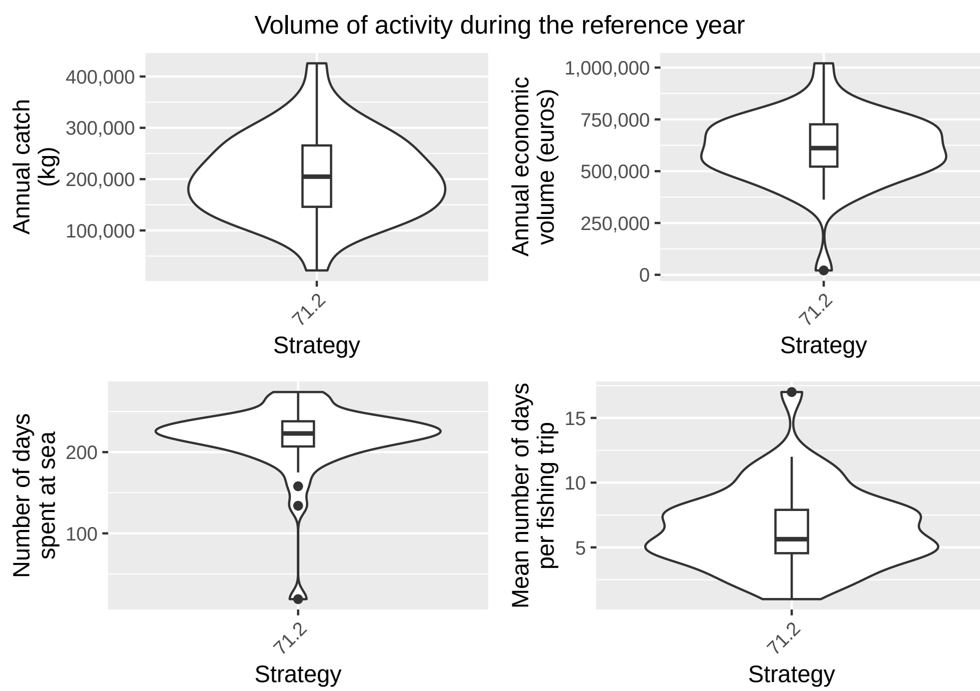
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



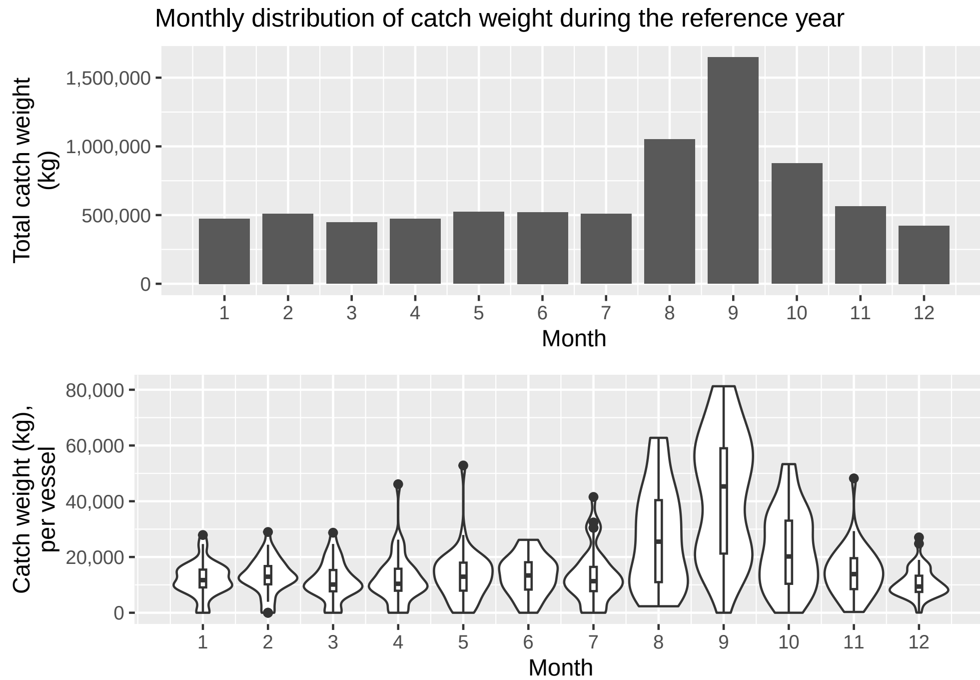


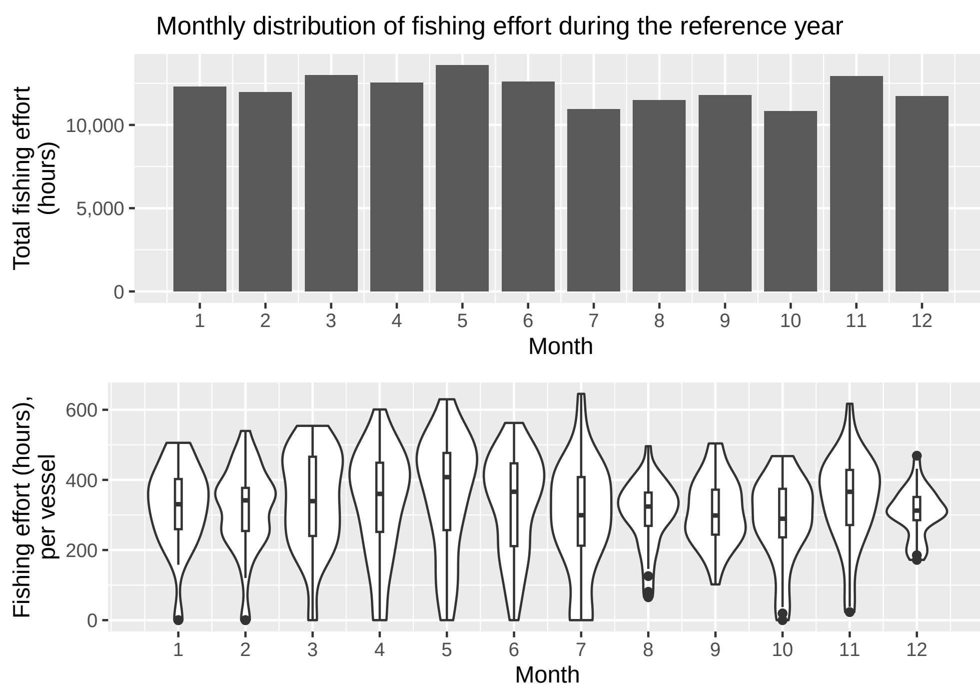
Description of the volume and pattern of fishing activities during the reference year (2005)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



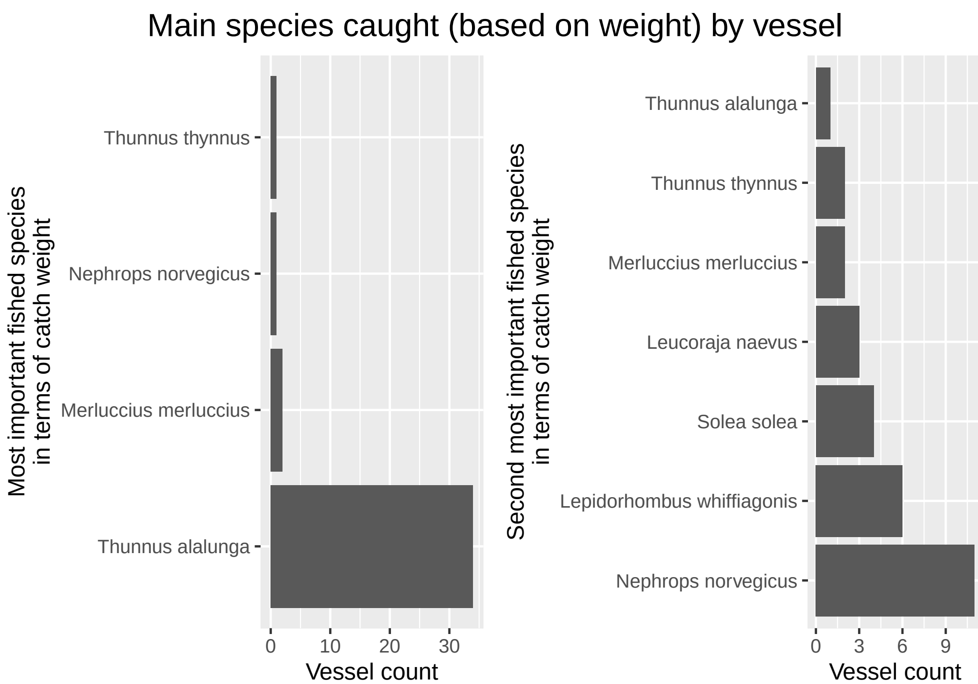
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

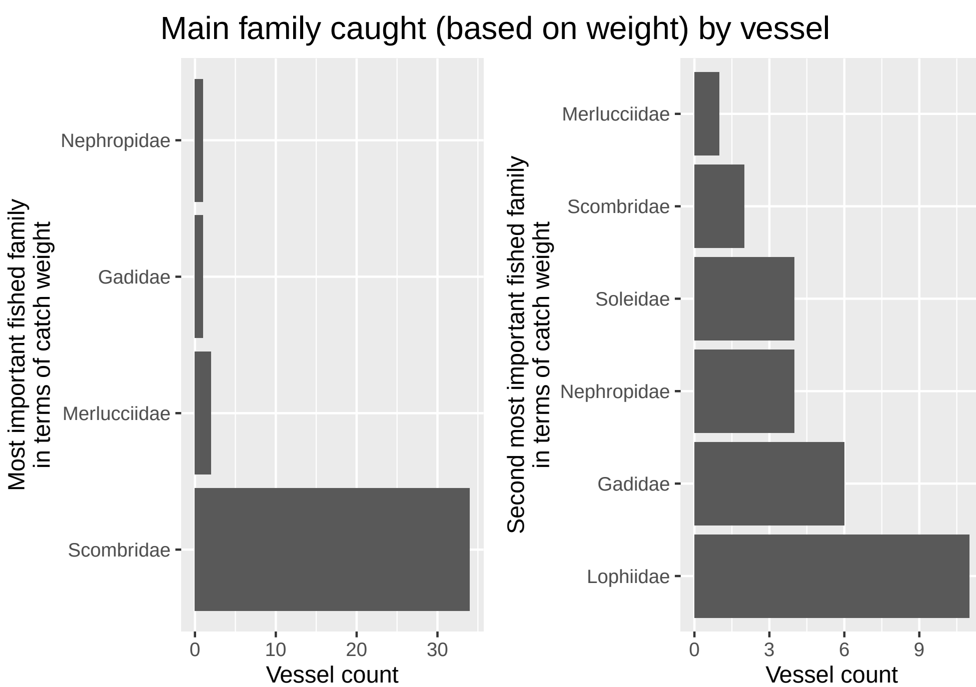


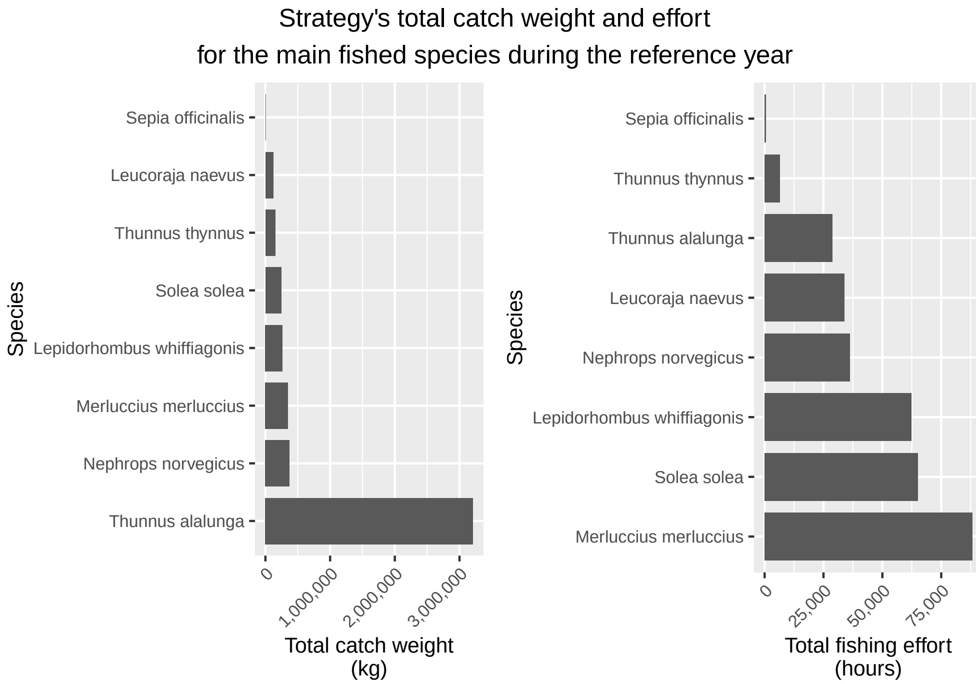


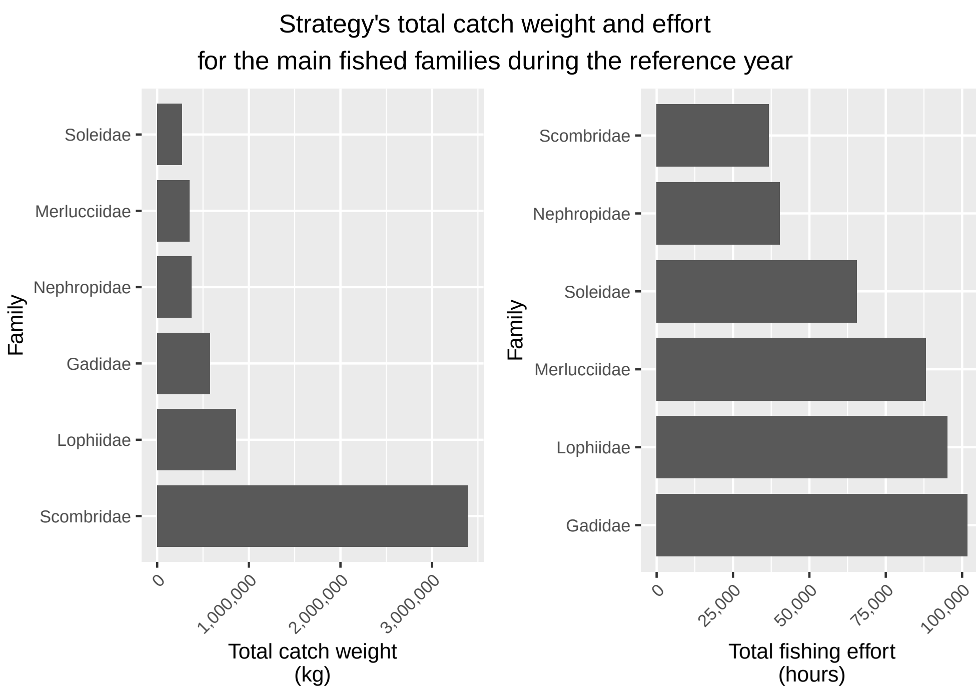
Main fished taxa and used gears during the reference year (2005)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

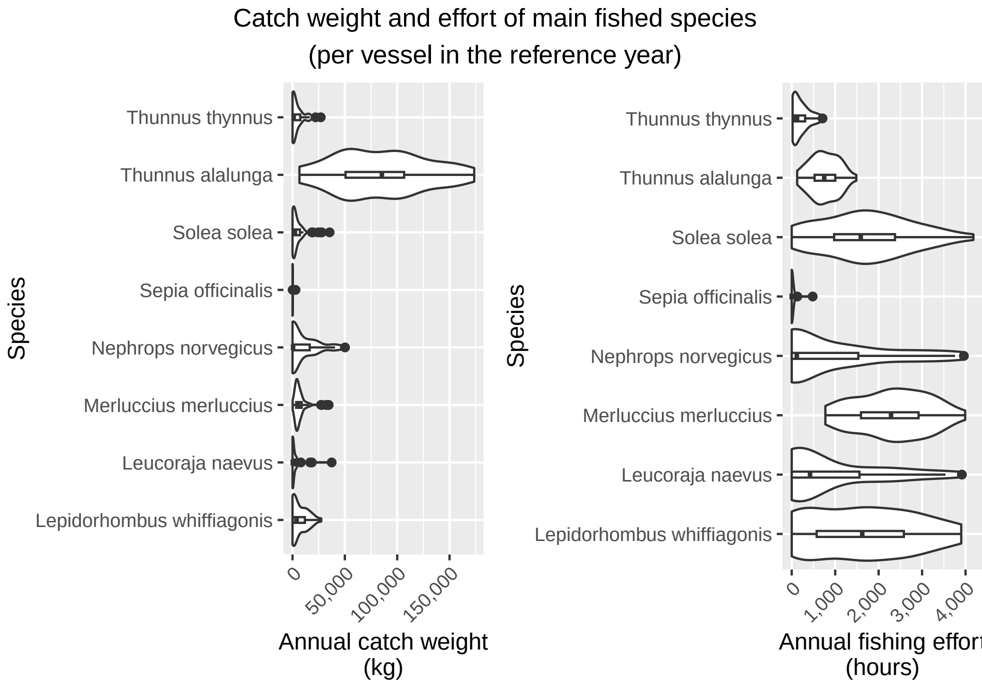

Main species caught (based on weight) by vessel
Most important fished species in terms of catch weight
Thunnus thynnus
Nephrops norvegicus
Merluccius merluccius
Thunnus alalunga
0
10
20
30
Vessel count
Second most important fished species in terms of catch weight
Thunnus alalunga
Thunnus thynnus
Merluccius merluccius
Leucoraja naevus
Solea solea
Lepidorhombus whiffiagonis
Nephrops norvegicus
0
3
6
9
Vessel count

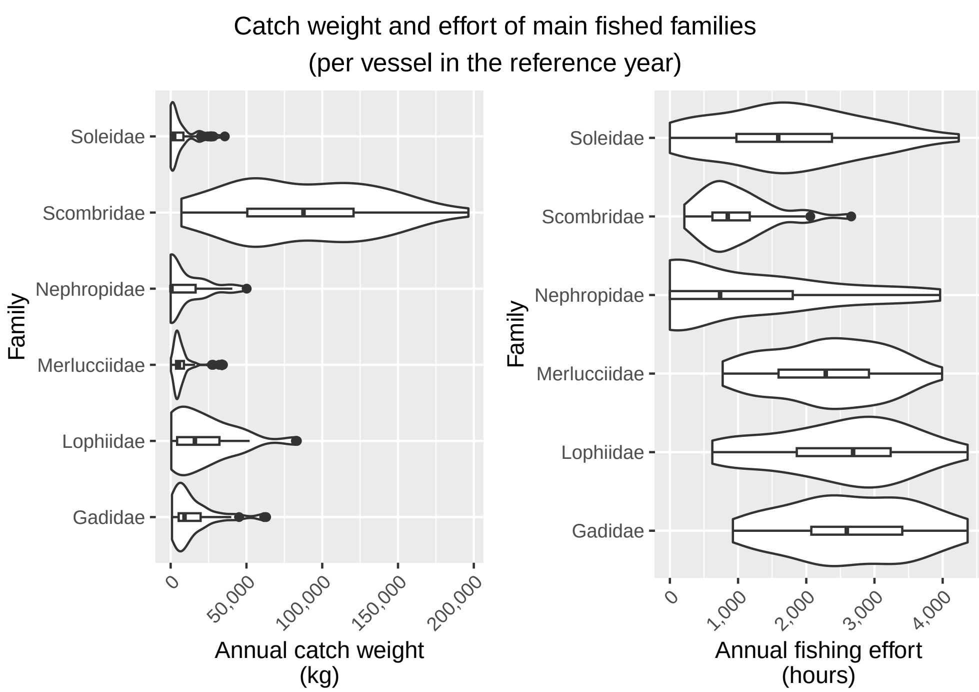

Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Nephropidae
Gadidae
Merlucciidae
Scombridae
0
10
20
30
Vessel count
Second most important fished family in terms of catch weight
Merlucciidae
Scombridae
Soleidae
Nephropidae
Gadidae
Lophiidae
0
3
6
9
Vessel count



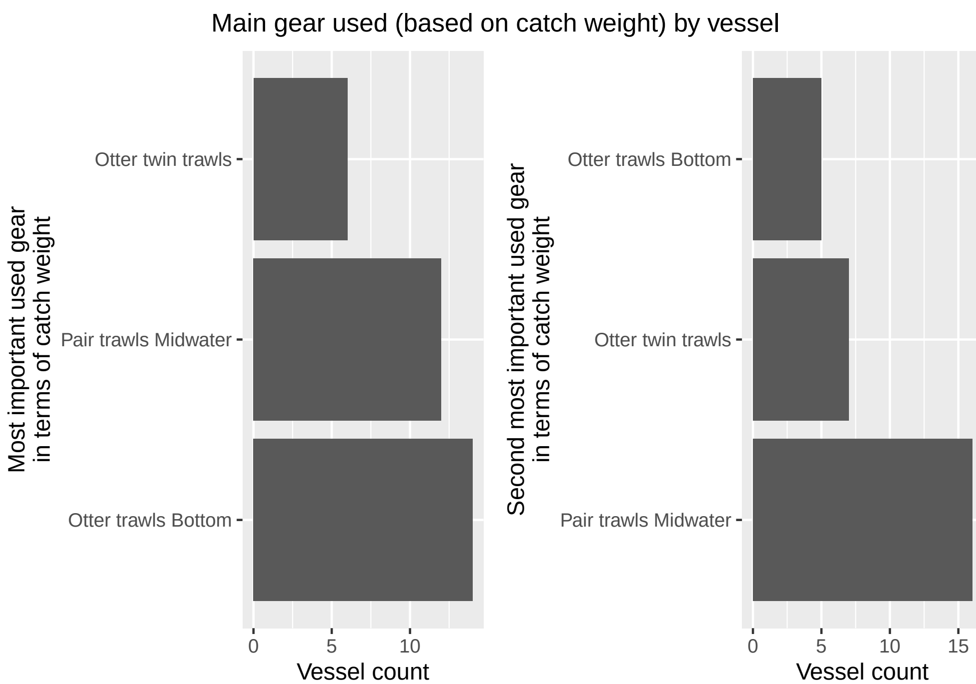


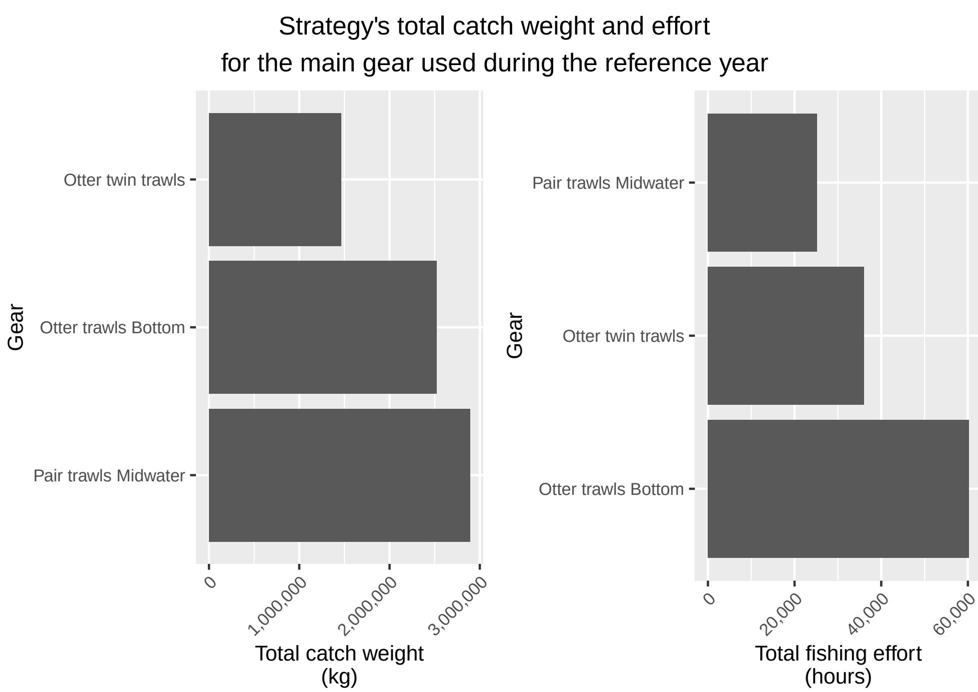
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

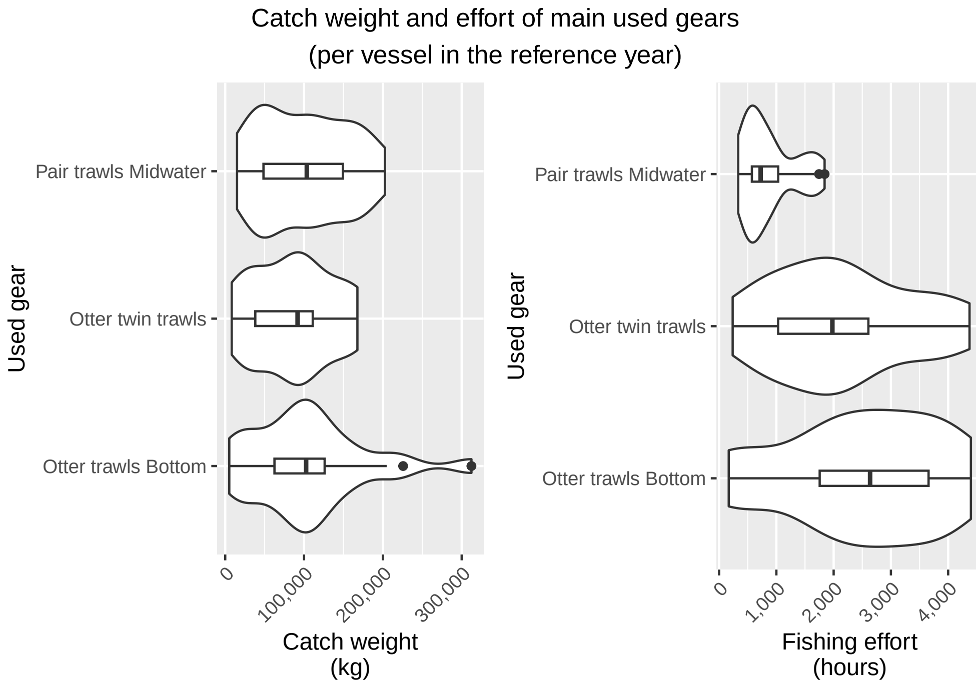




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

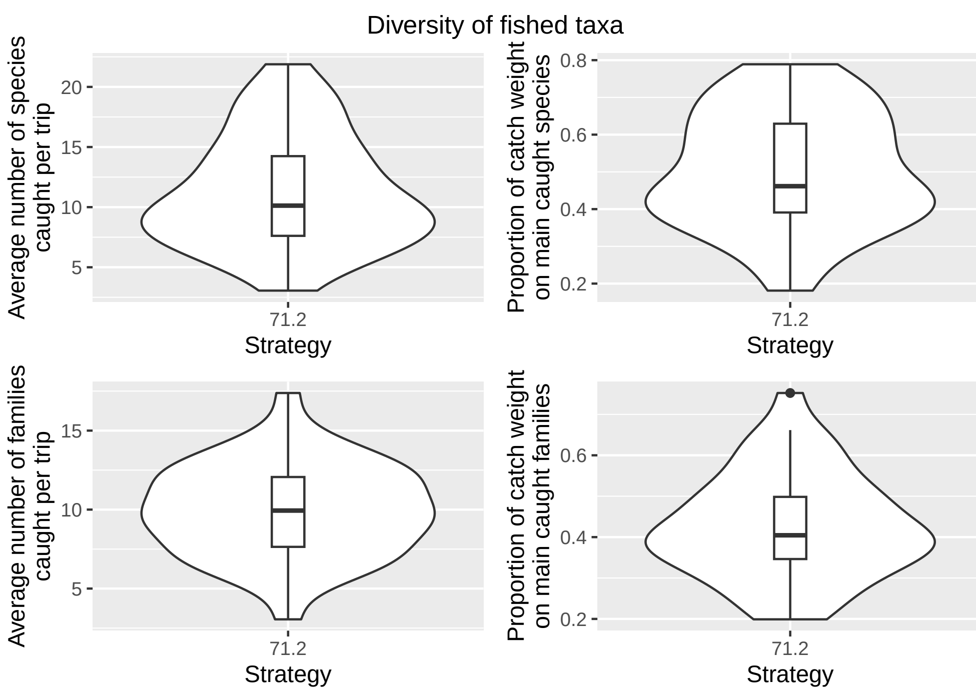

Main gear used (based on catch weight) by vessel
Most important used gear
in terms of catch weight
Otter twin trawls
Pair trawls Midwater
Otter trawls Bottom
0
5
10
Vessel count
Second most important used gear
in terms of catch weight
Otter trawls Bottom
Otter twin trawls
Pair trawls Midwater
0
5
10
15
Vessel count


Strategy's total catch weight and effort
for the main gear used during the reference year
Gear
Otter twin trawls
Otter trawls Bottom
Pair trawls Midwater
0
1,000,000
2,000,000
3,000,000
Total catch weight
(kg)
Gear
Pair trawls Midwater
Otter twin trawls
Otter trawls Bottom
0
20,000
40,000
60,000
Total fishing effort
(hours)

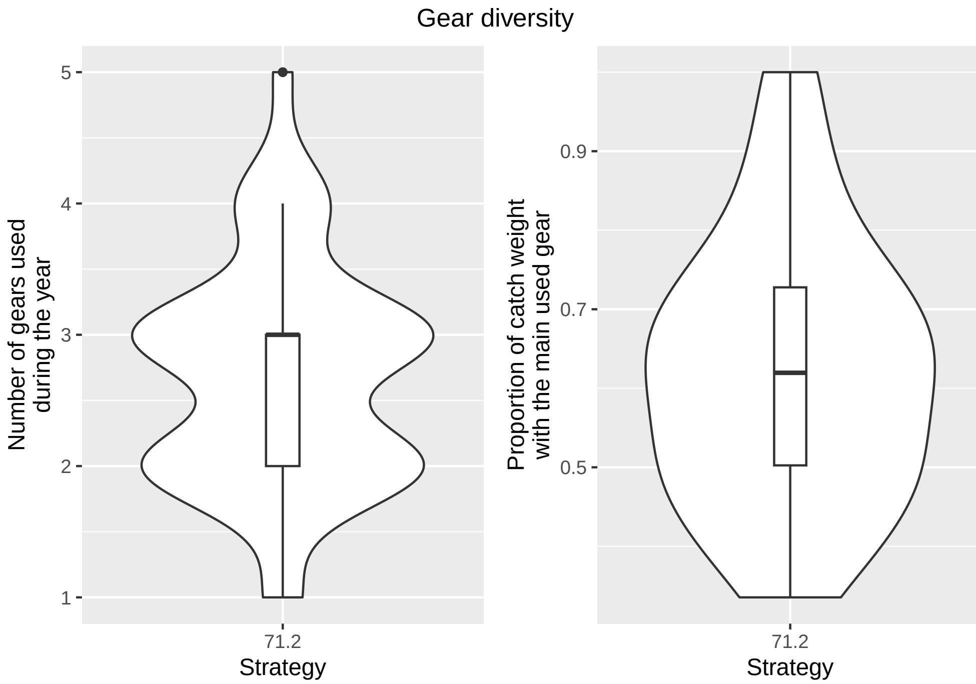


Diversity of fished taxa and used gears during the reference year (2005)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

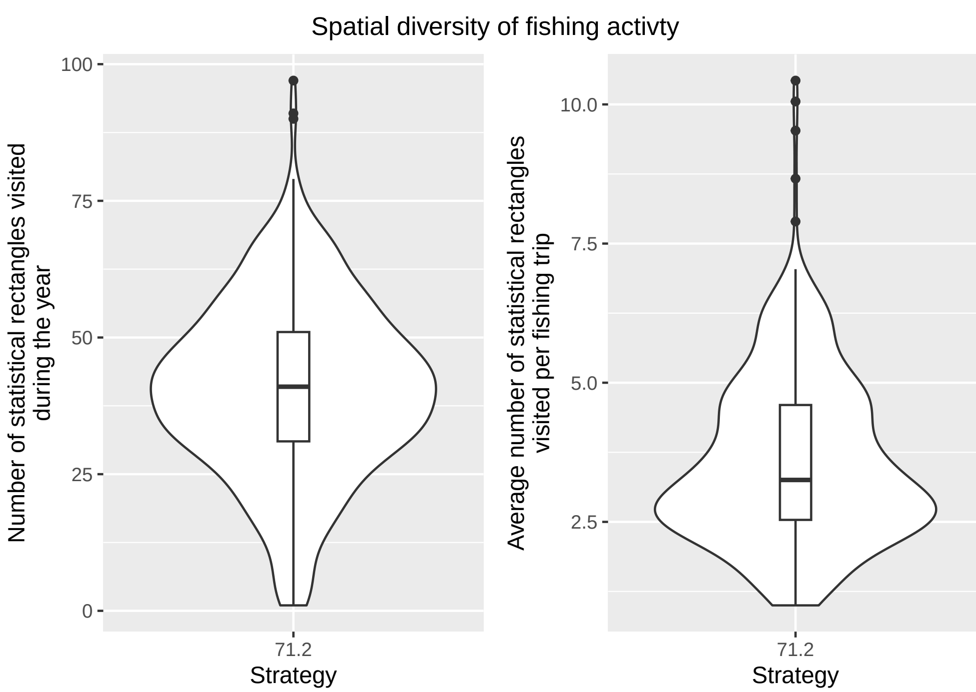


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.



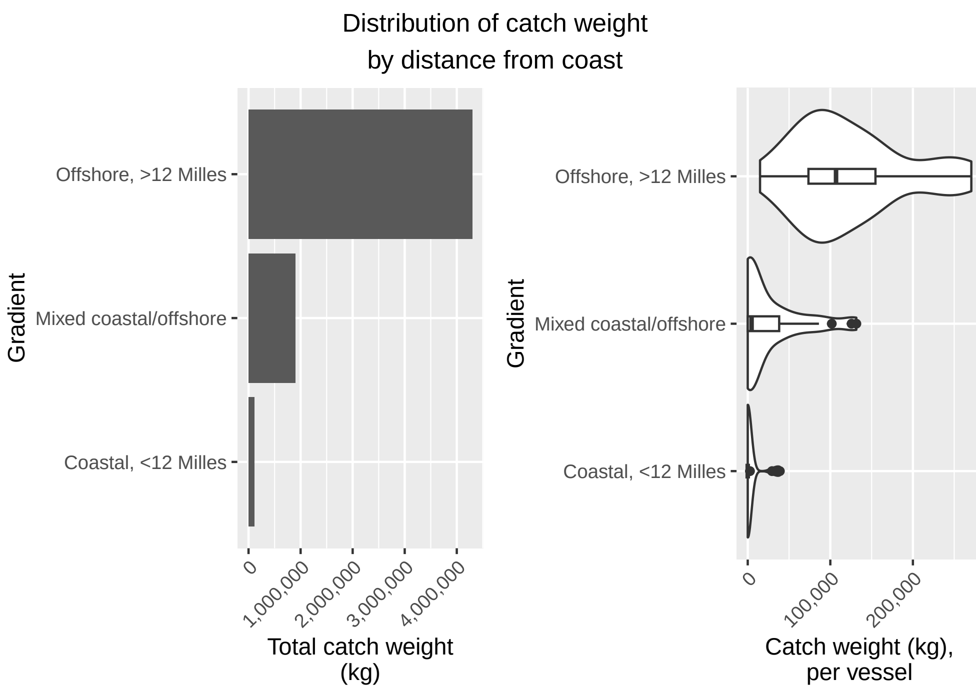
Diversity of areas visited during the reference year (2005)

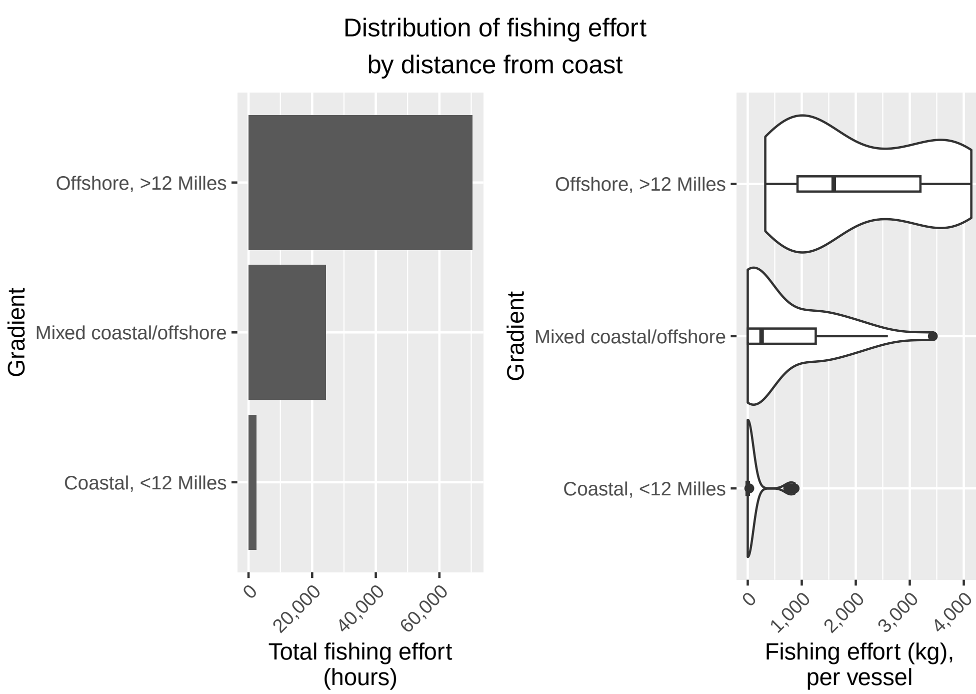
We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying

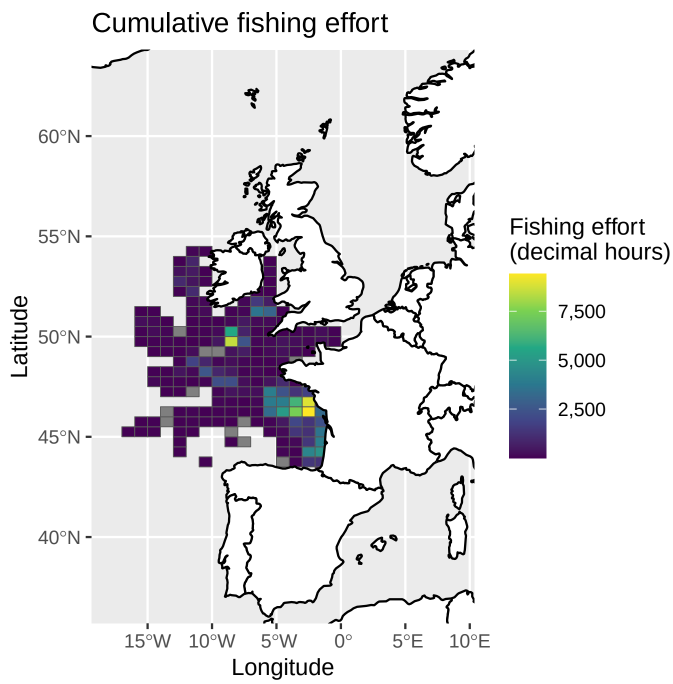
catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

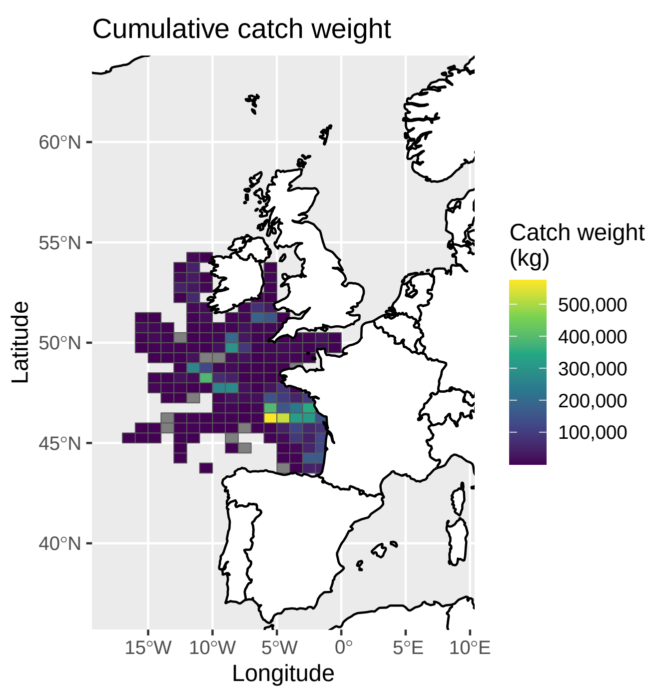




Maps of fishing activity distribution during the reference year (2005)

Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.

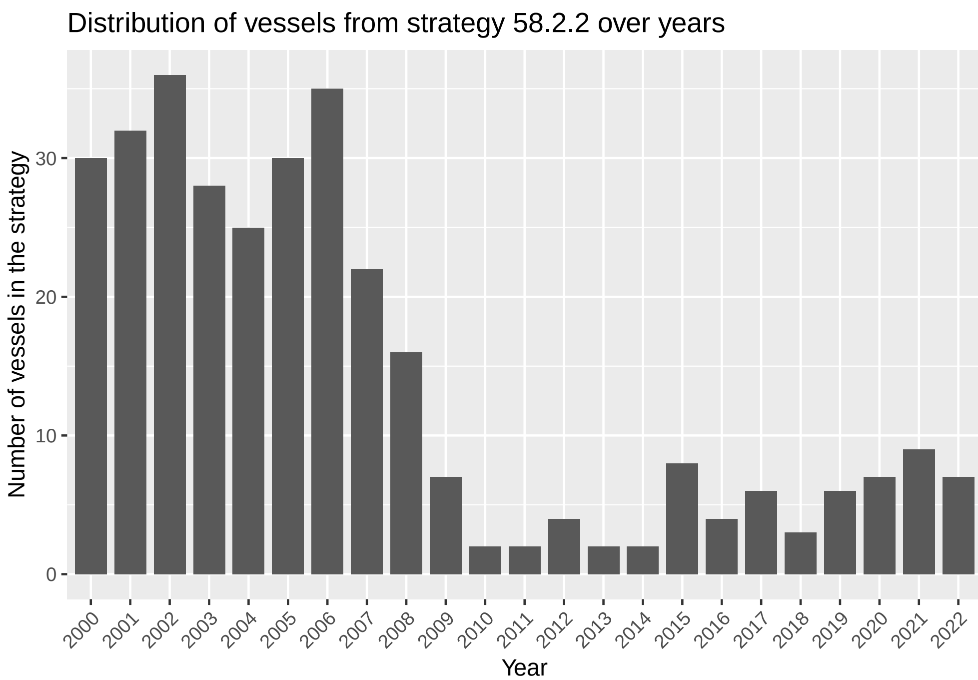




Third-level strategies

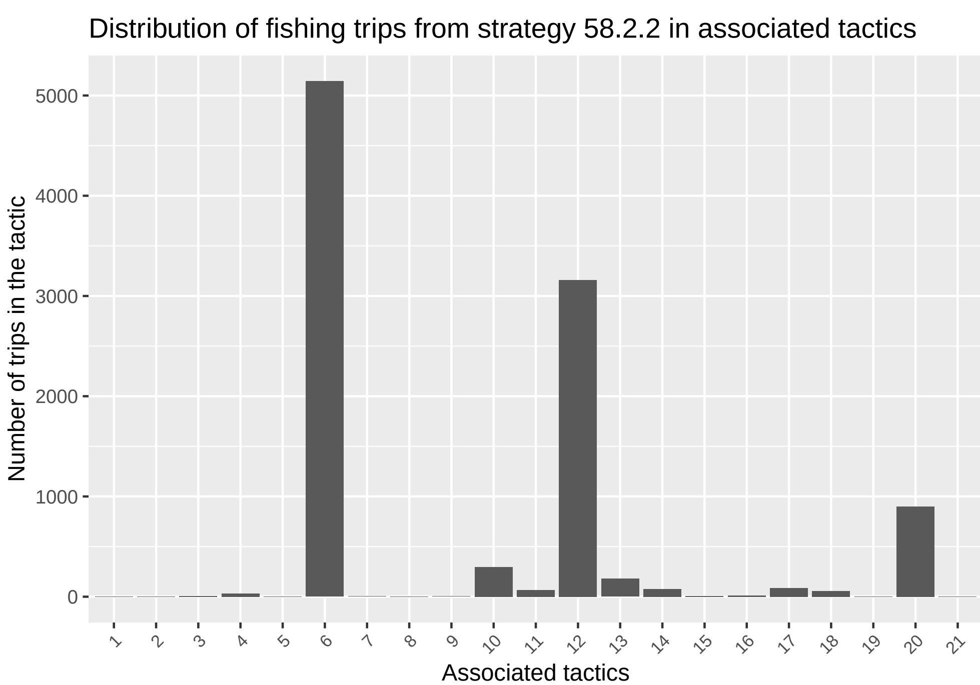
Strategy 58.2.2

This strategy includes N=323 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=126. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2002.

The distribution of fishing trips from this strategy in the corresponding tactic classification is presented below. We then described only the tactics associated with accidental bycatch (tactics: 6, 10, 12, 20).



Description table

This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

Table 13: Strategy 58.2.2

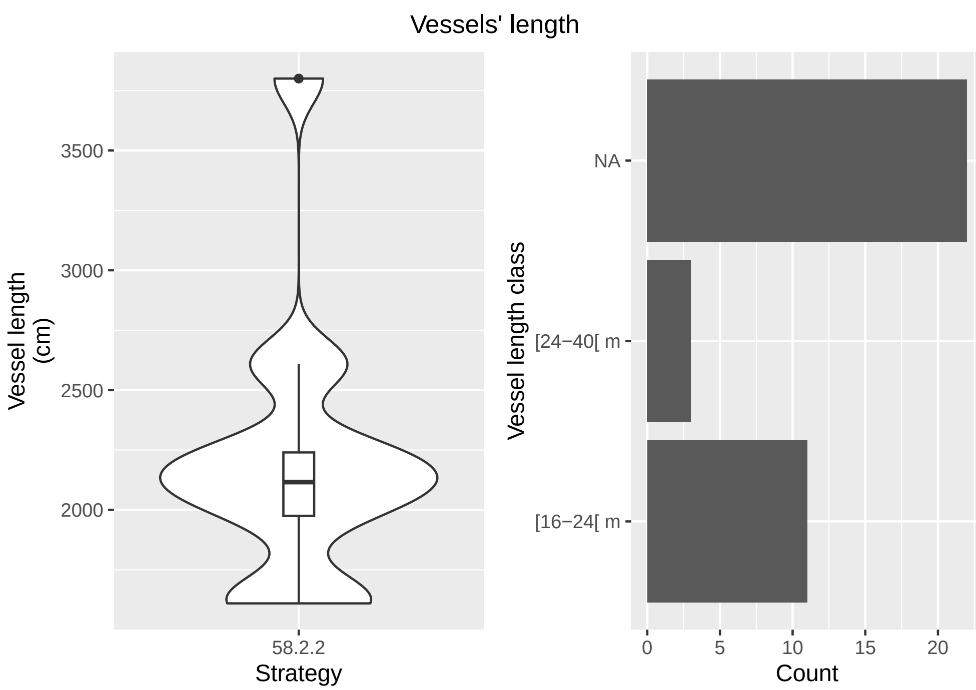
Importance	Variable	Value
	Sp.	Merluccius merluccius
	Spp.	Merluccius spp
	Family	Merlucciidae
	Order	Gadiformes
	ISSCAAP	32
Determinant (>95%)	Stock	HKE.27.3a4678abd
Predominant (>65%)	Family	Gadidae
	Second ISSCAAP	34
	PAVILLON	FRA
Major (>50%)	ICES division	27.8.a
	Sp.	Trisopterus luscus
	Second order	Perciformes
		Pair trawls Bottom
	Gear	Set gillnets (anchored)
	PAVILLON	ESP
Strong component (>35%)	Trimester	1
	Spp.	Chelidonichthys spp
	Second sp.	Trisopterus luscus
	ICES division	27.8.b
Component (>20%)	Trimester	2
	ISSCAAP	37
	Stock	HOM.27.2a4a5b6a7a-c7e-k8
		Merlangius merlangus
		Molva molva
		Pollachius pollachius
		Trachurus trachurus
	Second sp.	Zeus faber
		Lophius spp
		Molva spp
	Second spp.	Trachurus spp
		Carangidae
		Loliginidae
		Lophiidae
	Second family	Triglidae
		Actinopterygii
		Carcharhiniformes
		Lophiiformes
		Myopsida
		Scorpaeniformes
	Second order	Zeiformes
		33
		38
	Second ISSCAAP	57
		Pair trawls Midwater
	Gear	Set longlines
		27.7.h
		27.7.j
	ICES division	27.8.d
		01
		02
		03
		04
		05
		06
		07
		10

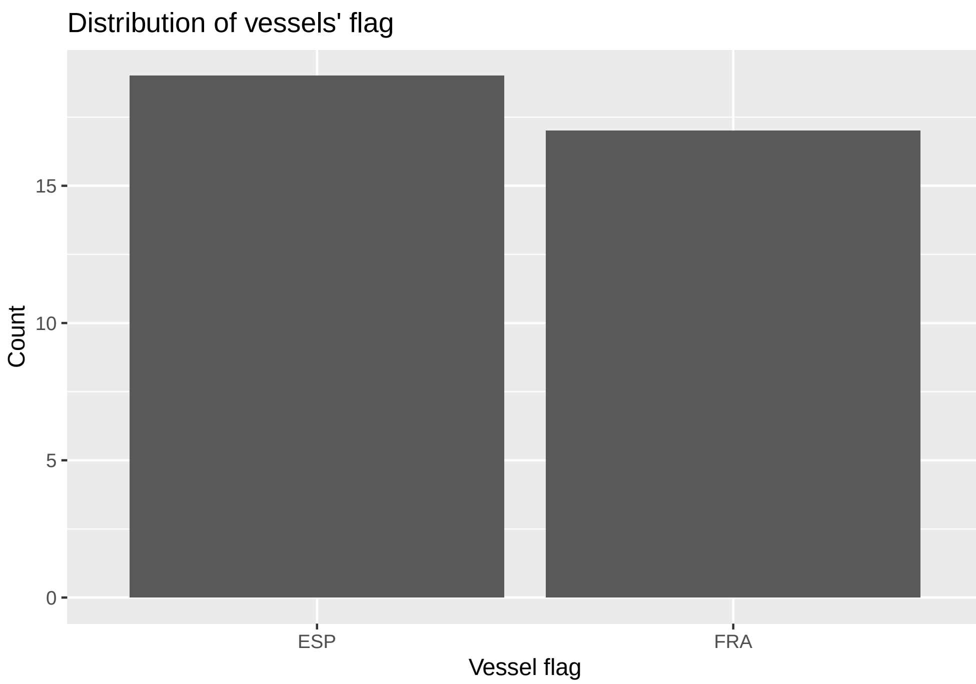
Table 13: Strategy 58.2.2 *(continued)*

Importance	Variable	Value
	Month	12
		3
Minor component (>5%)	Trimester	4
	value__weight	TRUE
	value__eco	TRUE
	sd__weight	TRUE
	sd__eco	TRUE
	prop__spe	TRUE
	prop__spp	TRUE
	prop__family	TRUE
	prop__order	TRUE
	prop__isscaap	TRUE
	prop__engine	TRUE
	sd__nb__seq	TRUE
	value__nb__marees	TRUE
	mean__sea__days__marees	TRUE
High values (>SD)	sd__sea__days__marees	TRUE

Distribution of vessel length and flag during the reference year (2002)

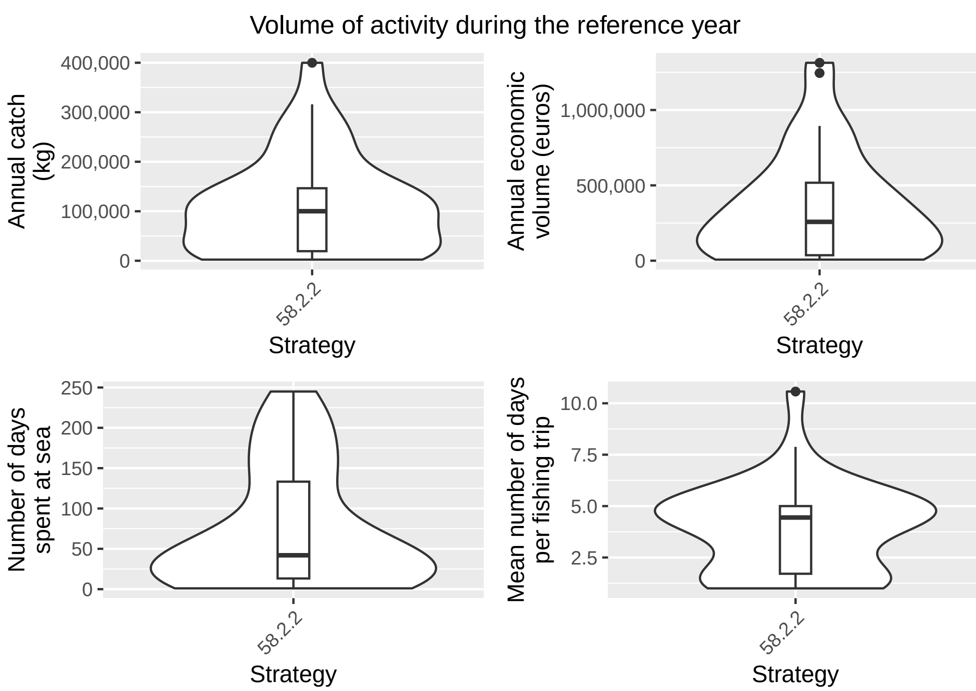
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



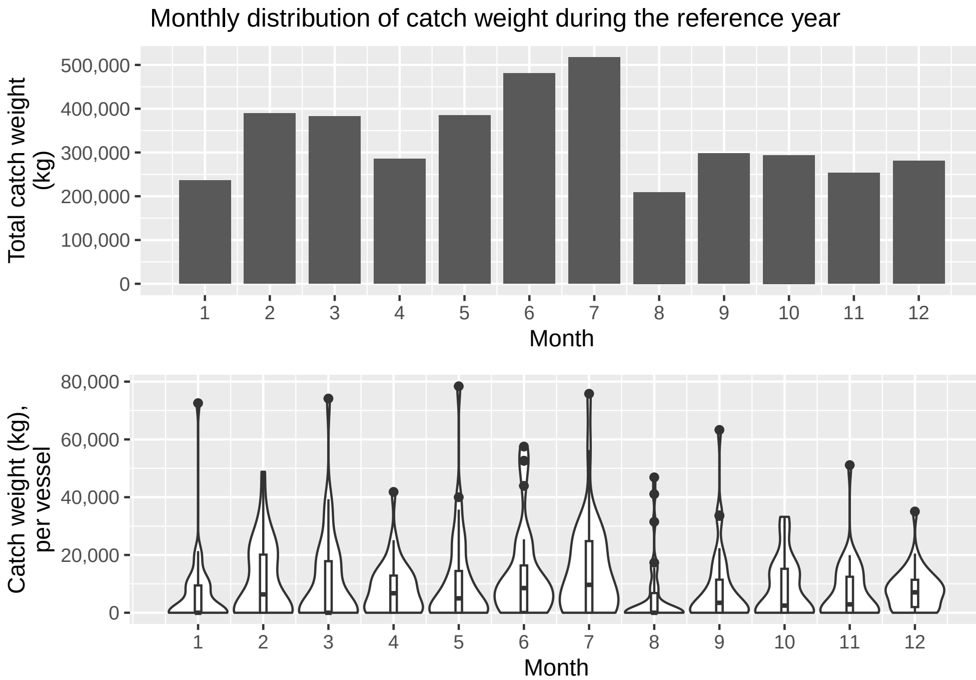


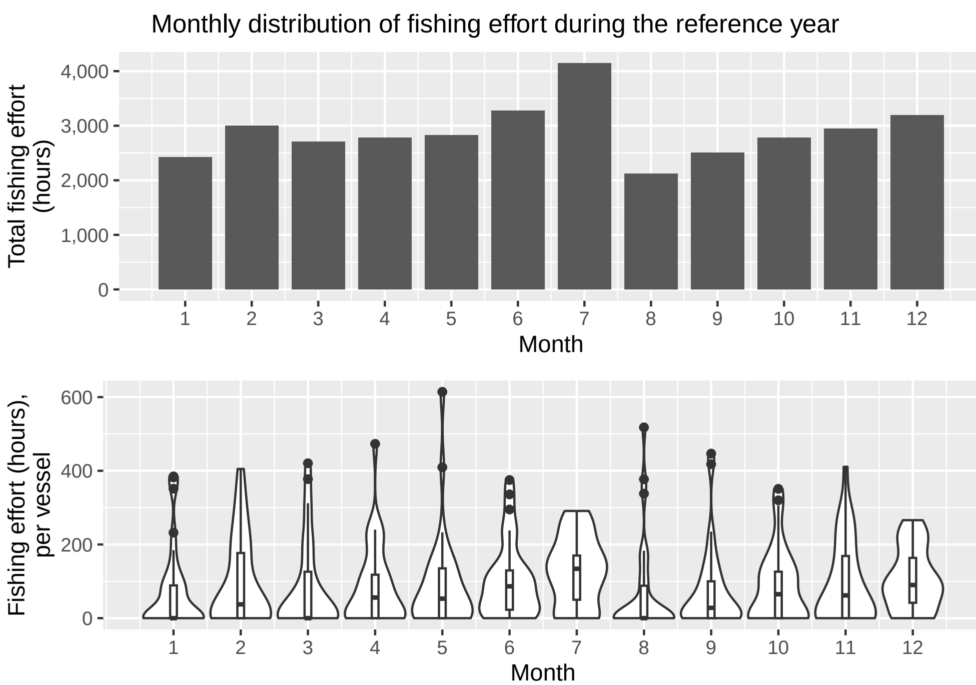
Description of the volume and pattern of fishing activities during the reference year (2002)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



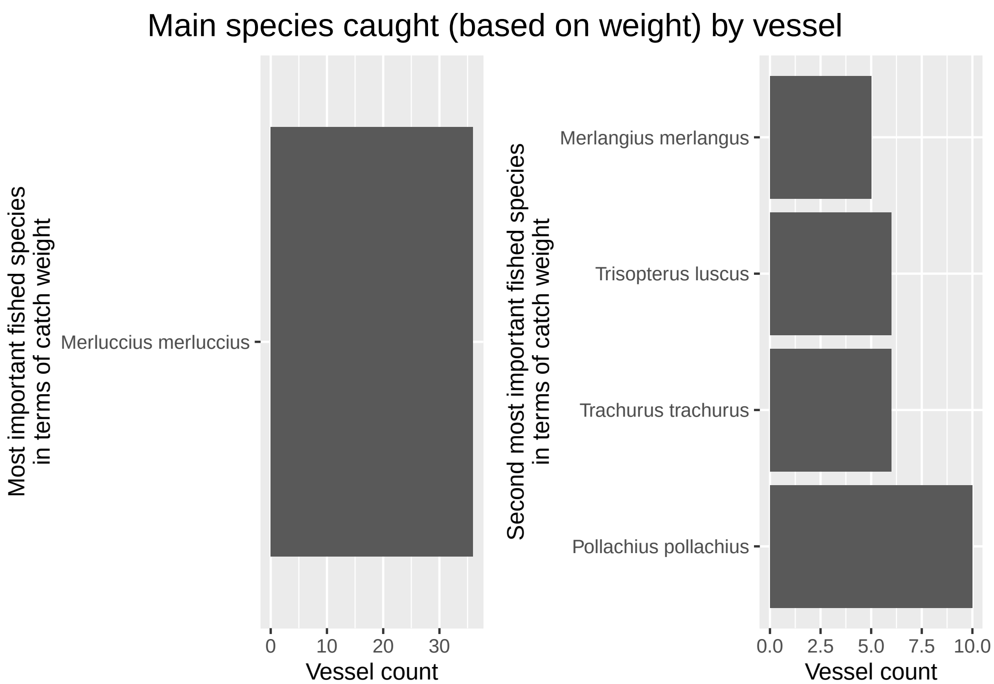
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

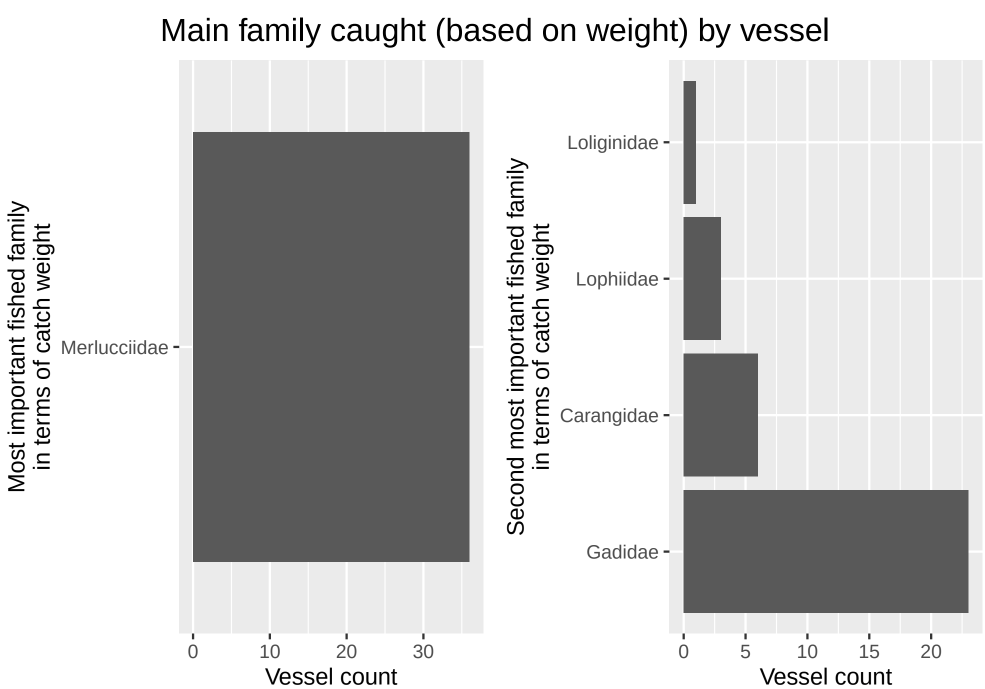


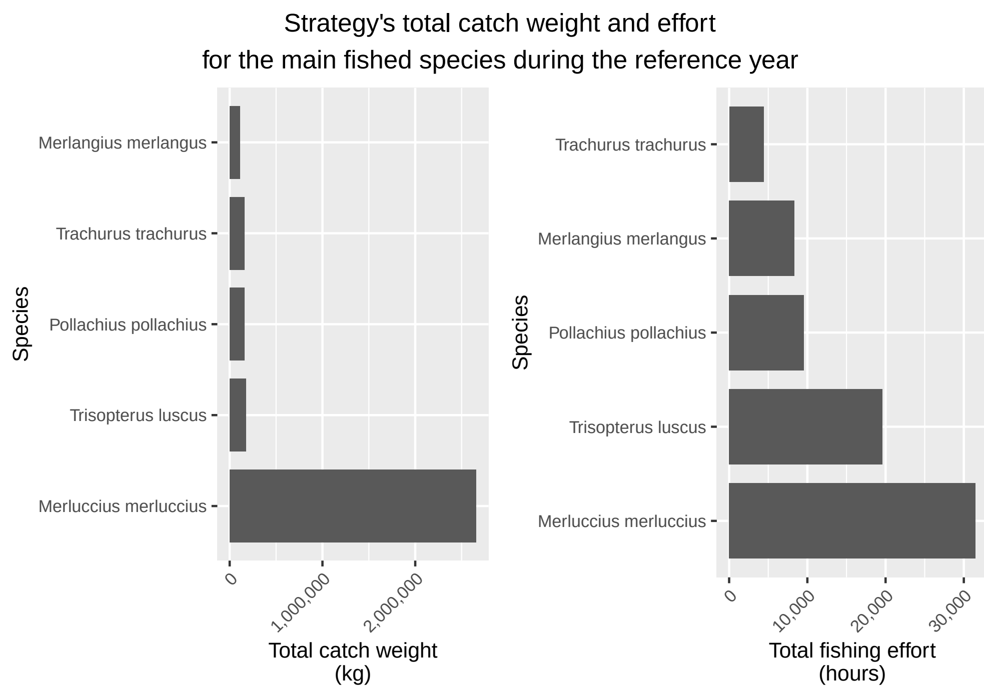


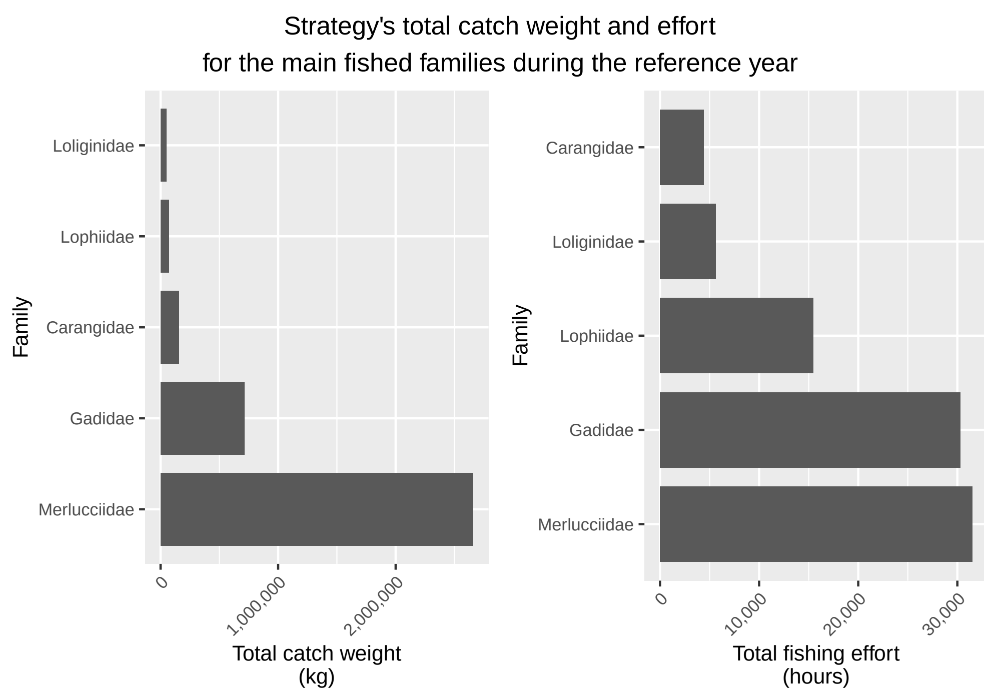
Main fished taxa and used gears during the reference year (2002)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).


Main species caught (based on weight) by vessel
Most important fished species
in terms of catch weight
Merluccius merluccius
0
10
20
30
Vessel count
Second most important fished species
in terms of catch weight
Merlangius merlangus
Trisopterus luscus
Trachurus trachurus
Pollachius pollachius
0.0
2.5
5.0
7.5
10.0
Vessel count

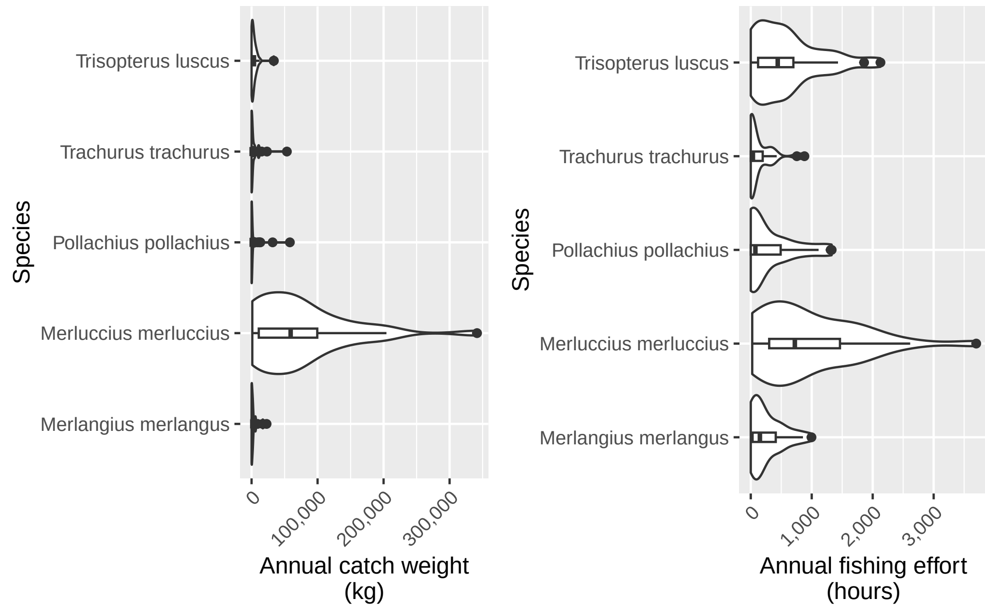

Main family caught (based on weight) by vessel
Most important fished family
in terms of catch weight
Merlucciidae
0
10
20
30
Vessel count
Second most important fished family
in terms of catch weight
Loliginidae
Lophiidae
Carangidae
Gadidae
0
5
10
15
20
Vessel count



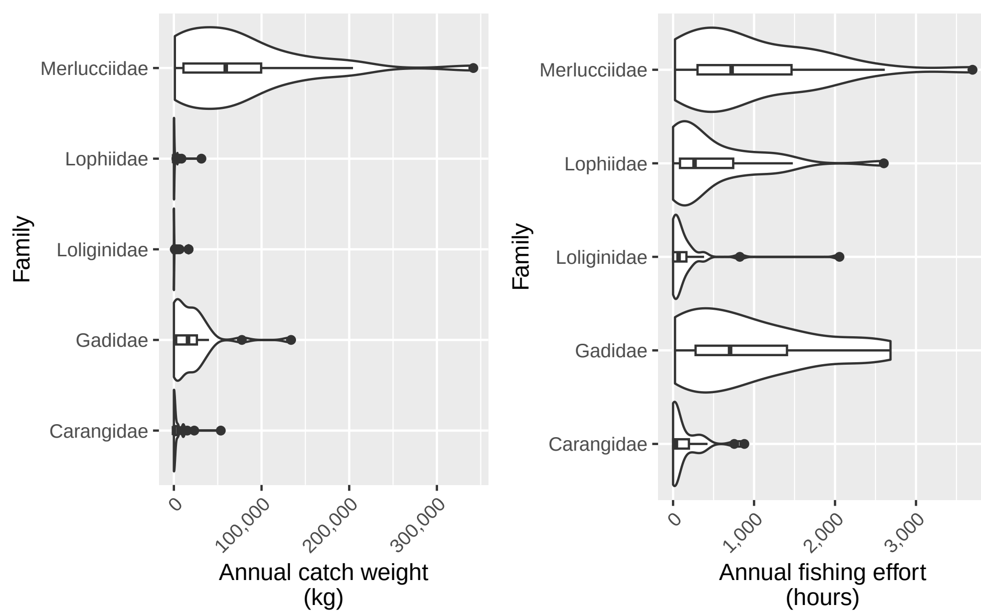


We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

Catch weight and effort of main fished species
(per vessel in the reference year)

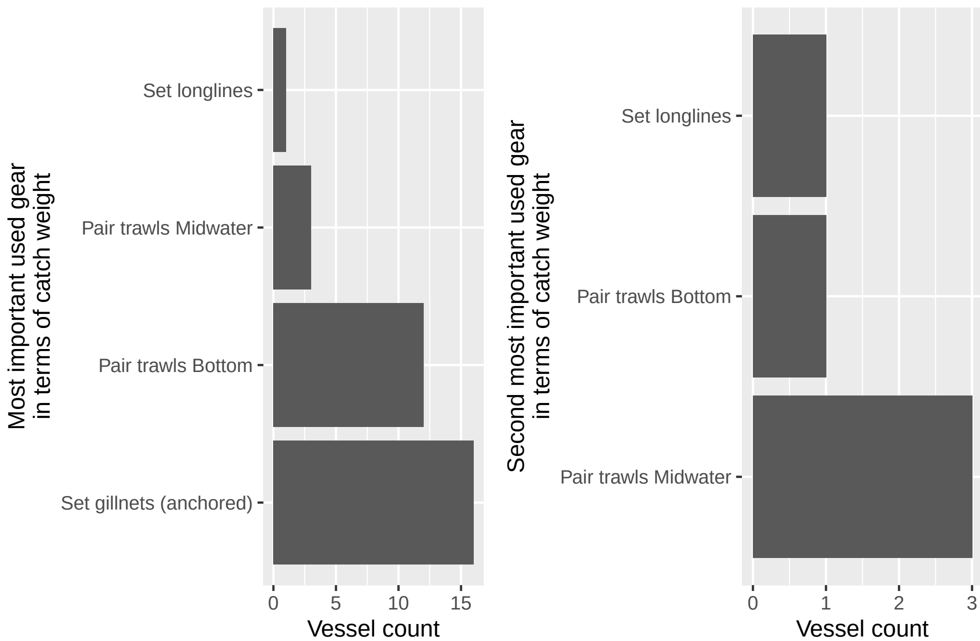


Catch weight and effort of main fished families
(per vessel in the reference year)

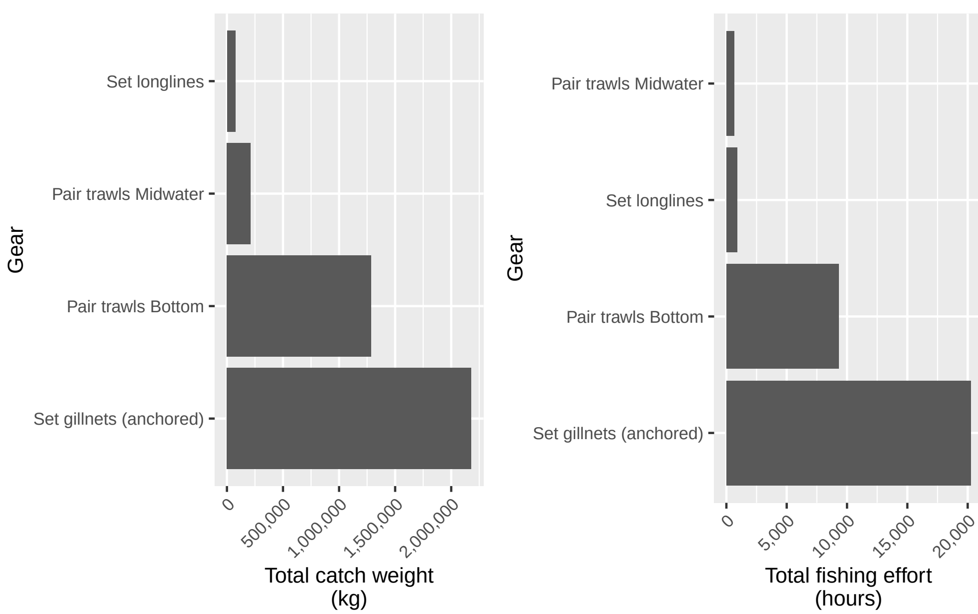


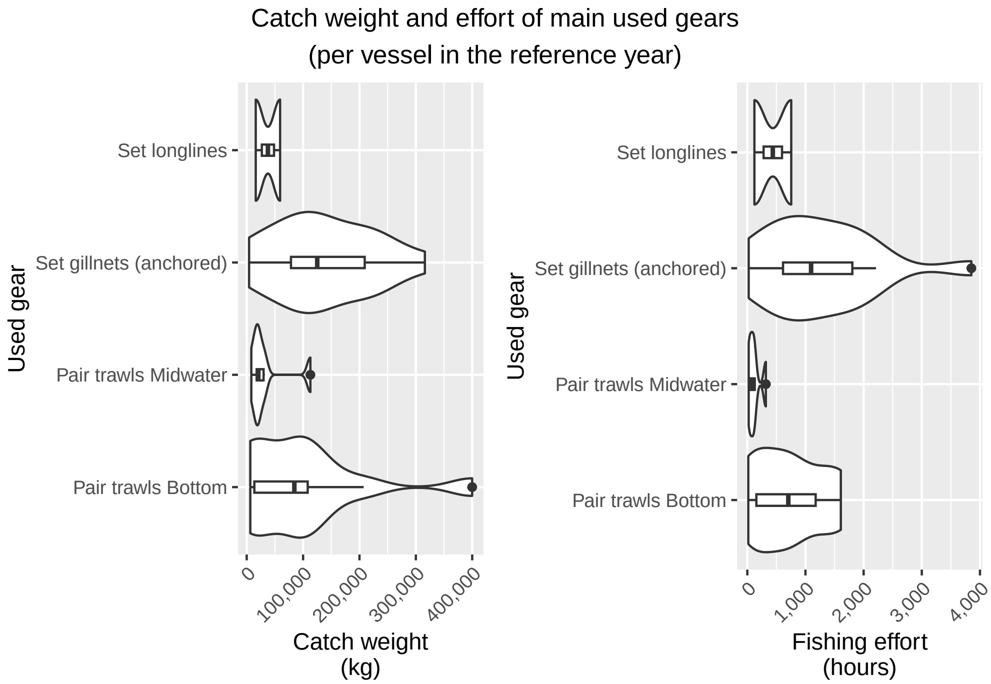
Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

Main gear used (based on catch weight) by vessel



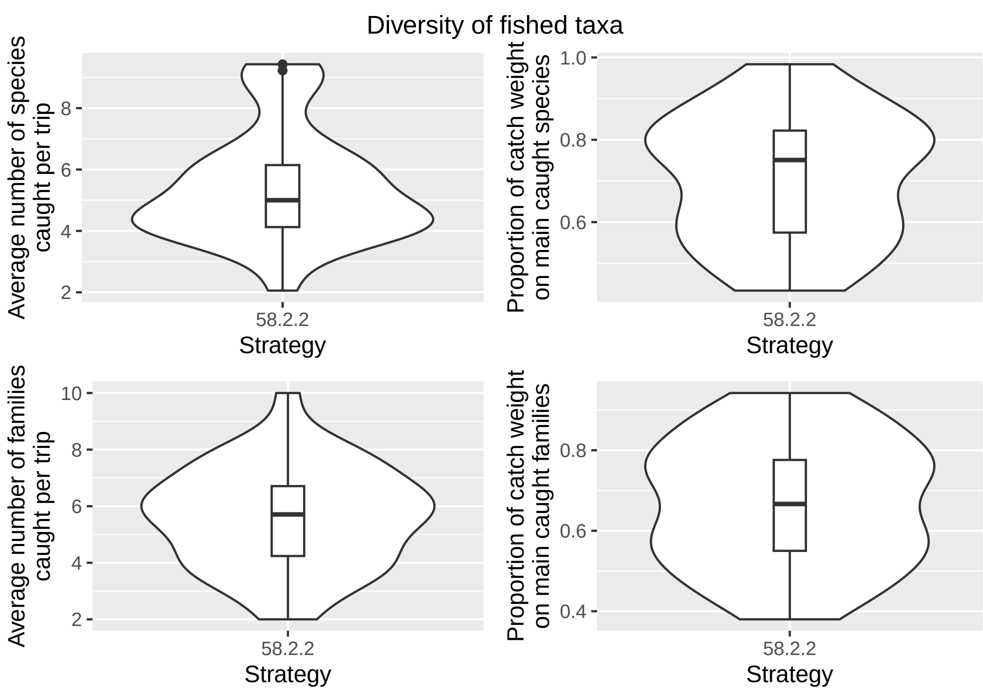
Strategy's total catch weight and effort
for the main gear used during the reference year



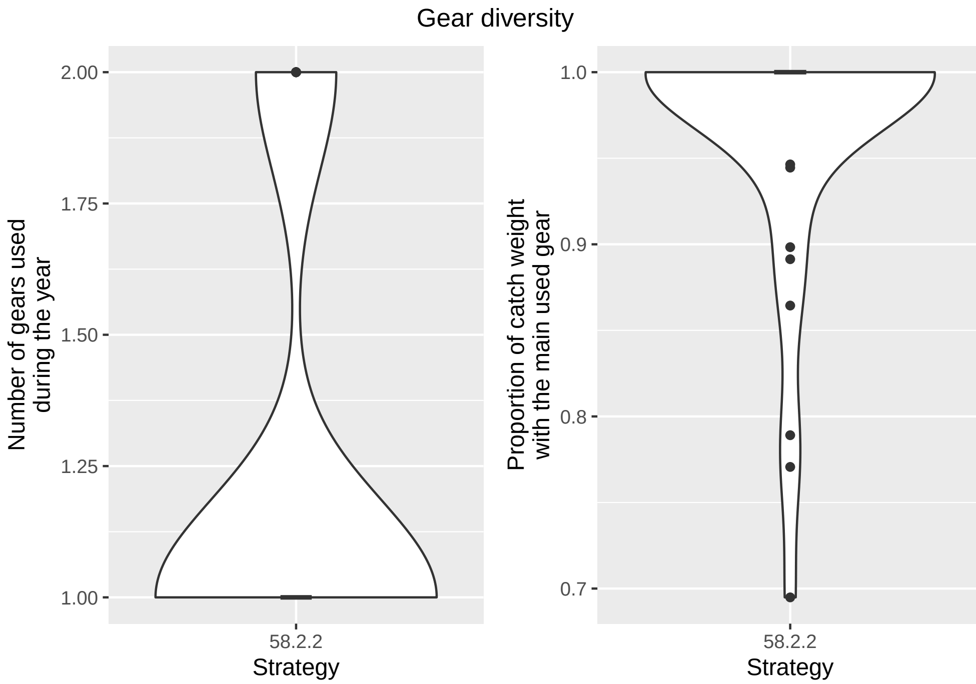


Diversity of fished taxa and used gears during the reference year (2002)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

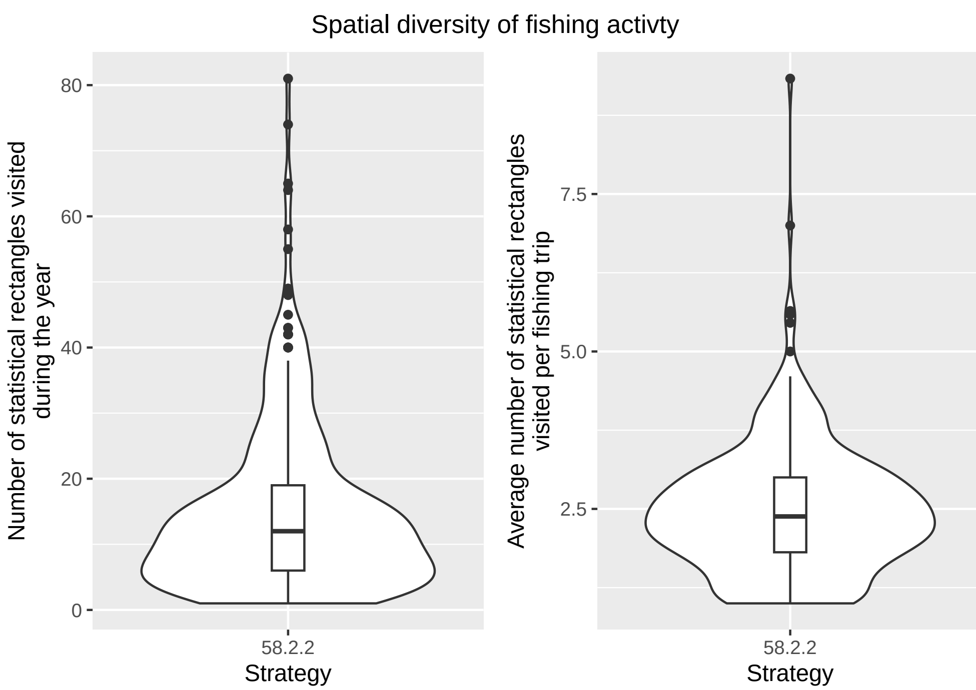


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.



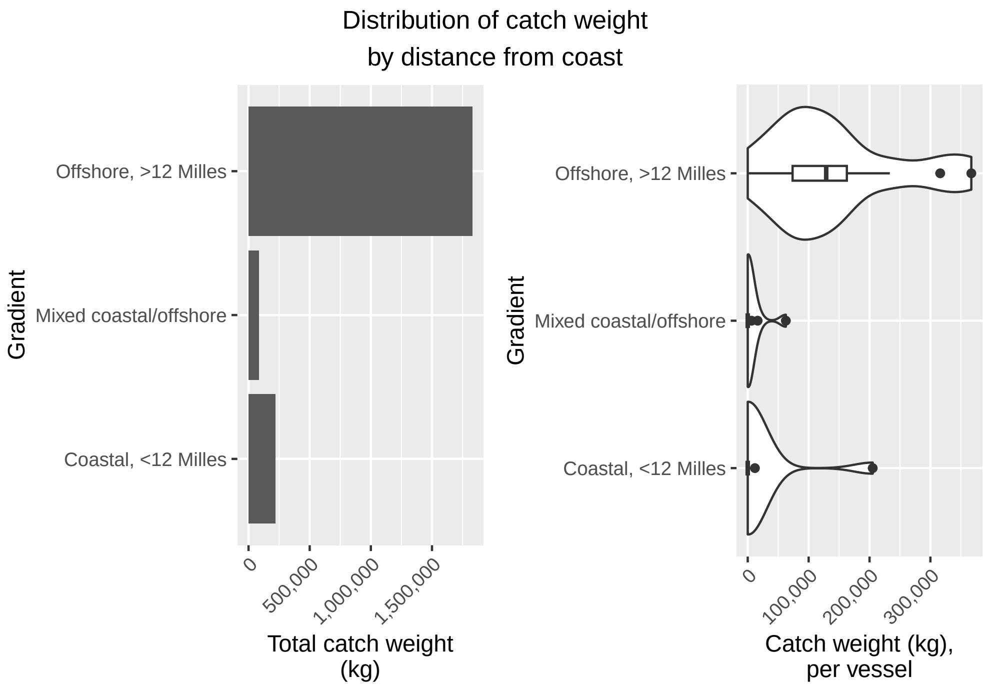
Diversity of areas visited during the reference year (2002)

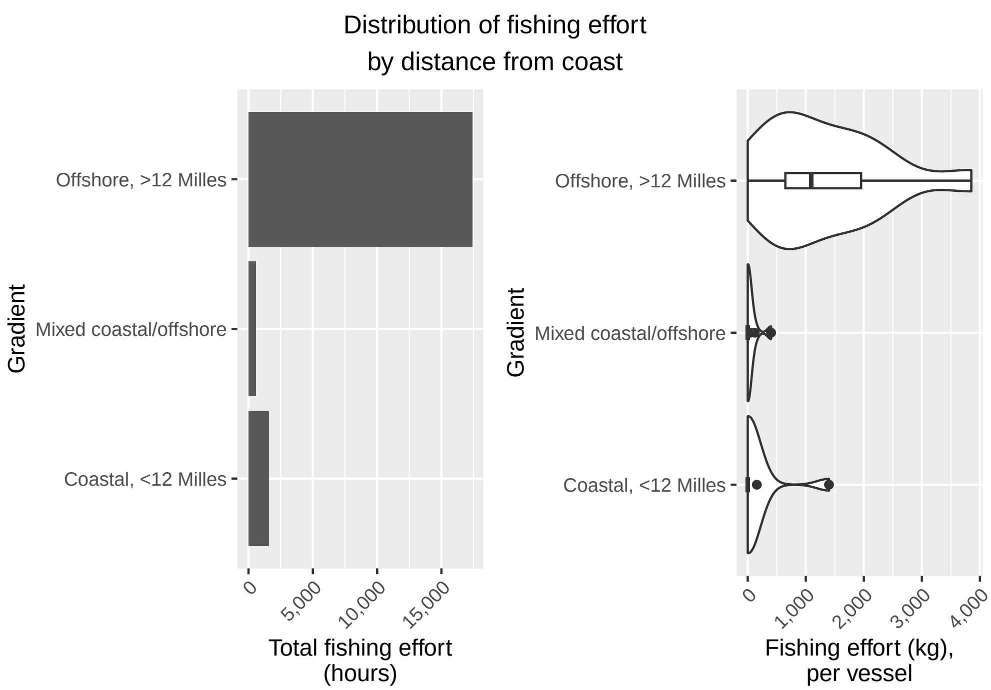
We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying

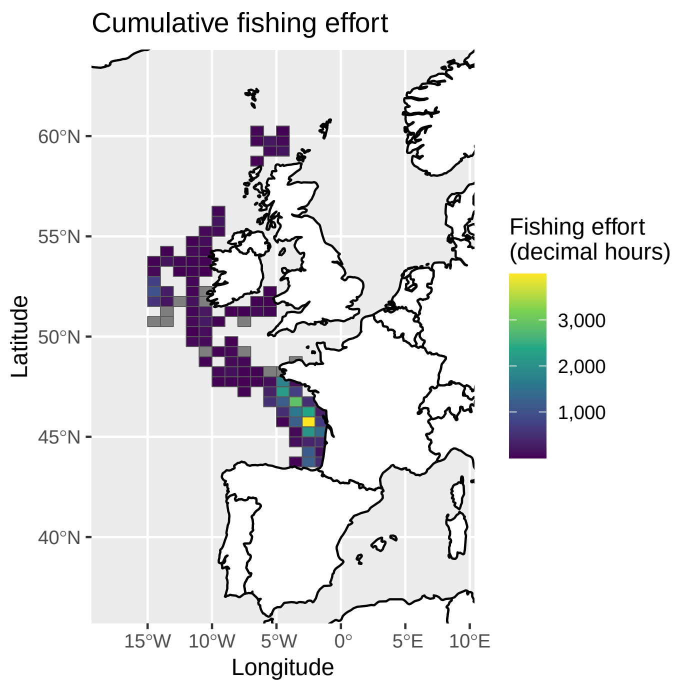
catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

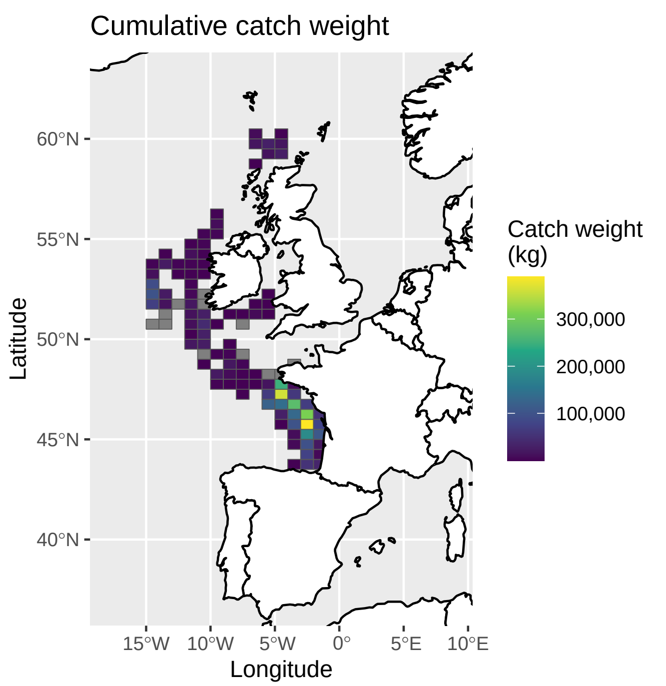




Maps of fishing activity distribution during the reference year (2002)

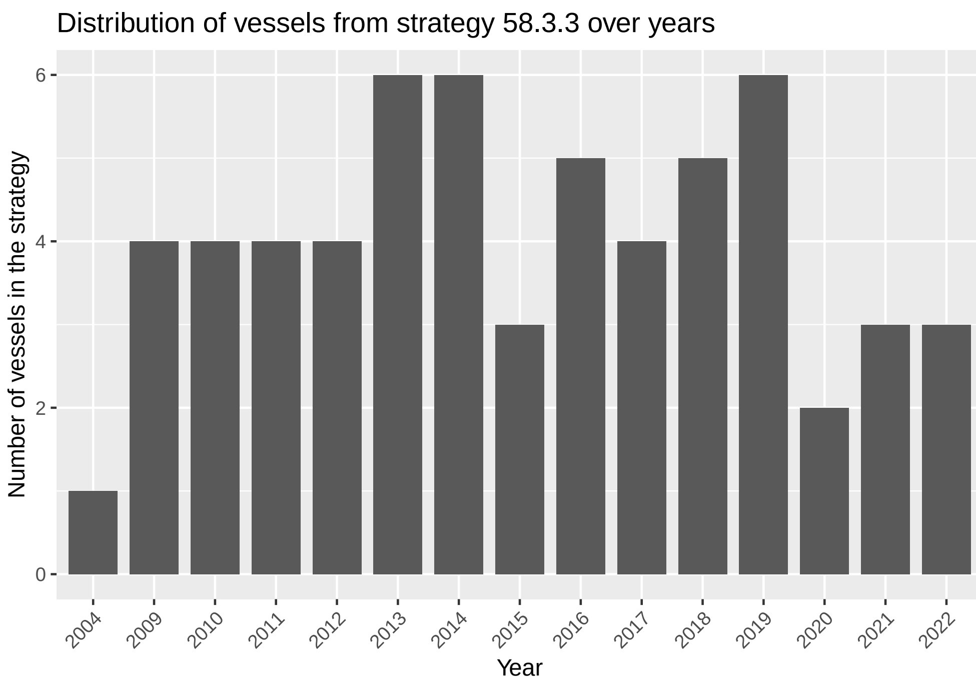
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





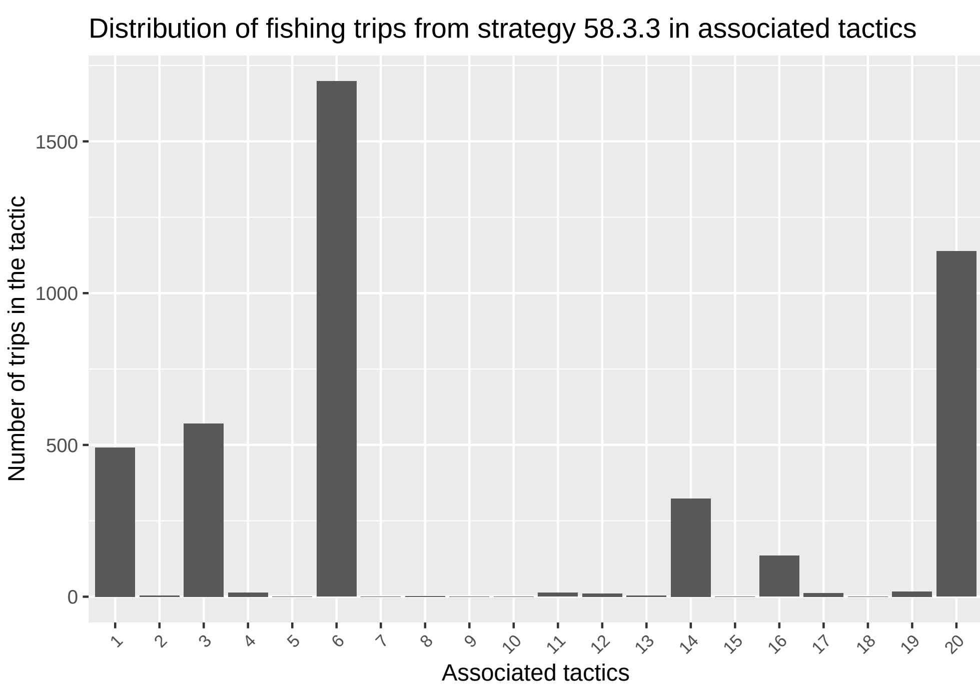
Strategy 58.3.3

This strategy includes N=60 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=14. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2019.

The distribution of fishing trips from this strategy in the corresponding tactic classification is presented below. We then described only the tactics associated with accidental bycatch (tactics: 1, 6, 14, 20).



Description table

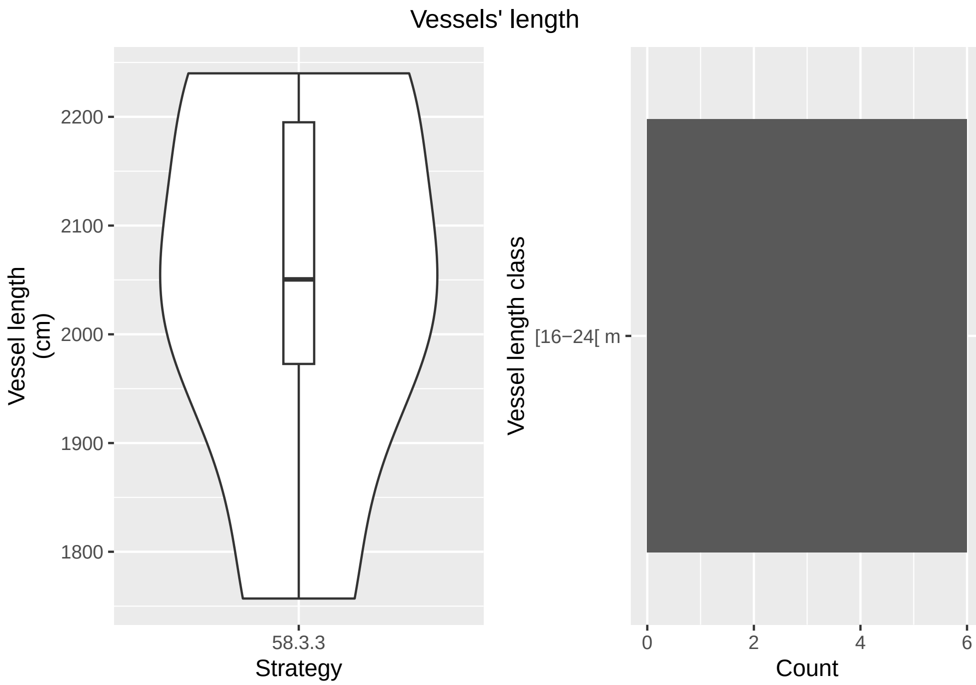
This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

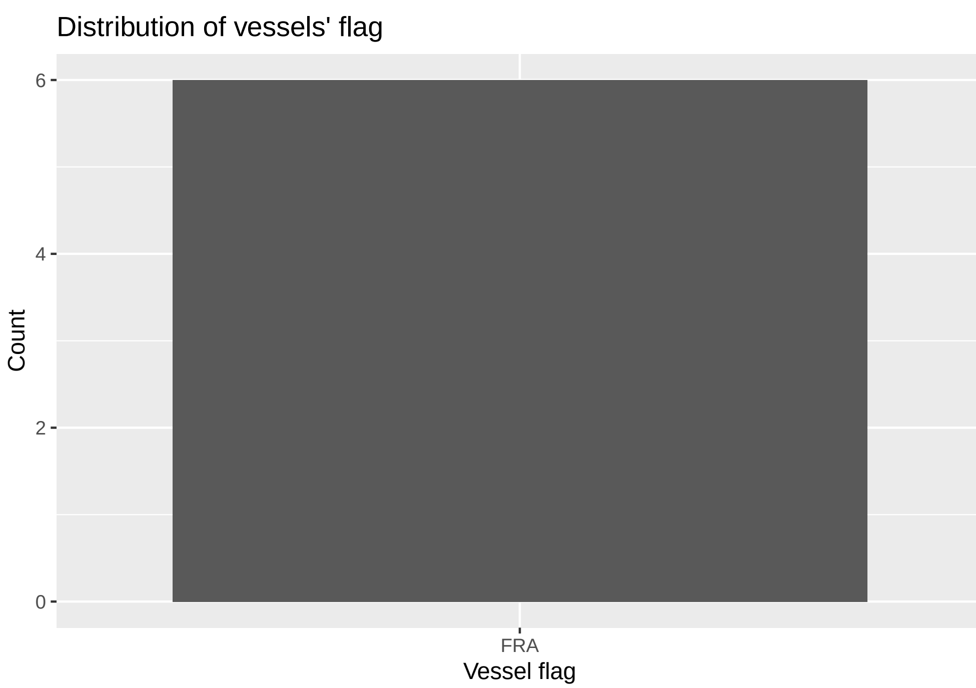
Table 14: Strategy 58.3.3

Importance	Variable	Value
	Sp.	Merluccius merluccius
	Spp.	Merluccius spp
	Family	Merlucciidae
	Order	Gadiformes
	Stock	HKE.27.3a4678abd
	Second order	Pleuronectiformes
	Second ISSCAAP	31
	Gear	Set gillnets (anchored)
Determinant (>95%)	ICES division	27.8.a
	ISSCAAP	32
	Second sp.	Solea solea
	Second spp.	Solea spp
	Second family	Soleidae
	Third order	Perciformes
	Third ISSCAAP	33
Strongly predominant (>80%)	Trimester	1
	Stock	SOL.27.8ab
	Third family	Gadidae
Predominant (>65%)	Gear	Trammel nets
	ICES division	27.8.b
Major (>50%)	Trimester	3
	Spp.	Chelidonichthys spp
	Third sp.	Pollachius pollachius
	Month	02
Strong component (>35%)	Trimester	2
Component (>20%)	Stock	BLL.27.8ab
		Scophthalmidae
	Second family	Triglidae
		Argyrosomus regius
	Third sp.	Chelidonichthys lucerna
Minor component (>5%)	Third family	Sciaenidae
	value_weight	TRUE
	value_eco	TRUE
	sd_weight	TRUE
	sd_eco	TRUE
	prop_spe	TRUE
	Second sp.	TRUE
	prop_spp	TRUE
	prop_family	TRUE
	Second family	TRUE
	prop_order	TRUE
	Second order	TRUE
	prop_isscaap	TRUE
	Second ISSCAAP	TRUE
	prop_engine	TRUE
	value_nb_seq	TRUE
	sea_year	TRUE
	prop_month	TRUE
	prop_trimester	TRUE
High values (>SD)	mean_sea_days_marees	TRUE

Distribution of vessel length and flag during the reference year (2019)

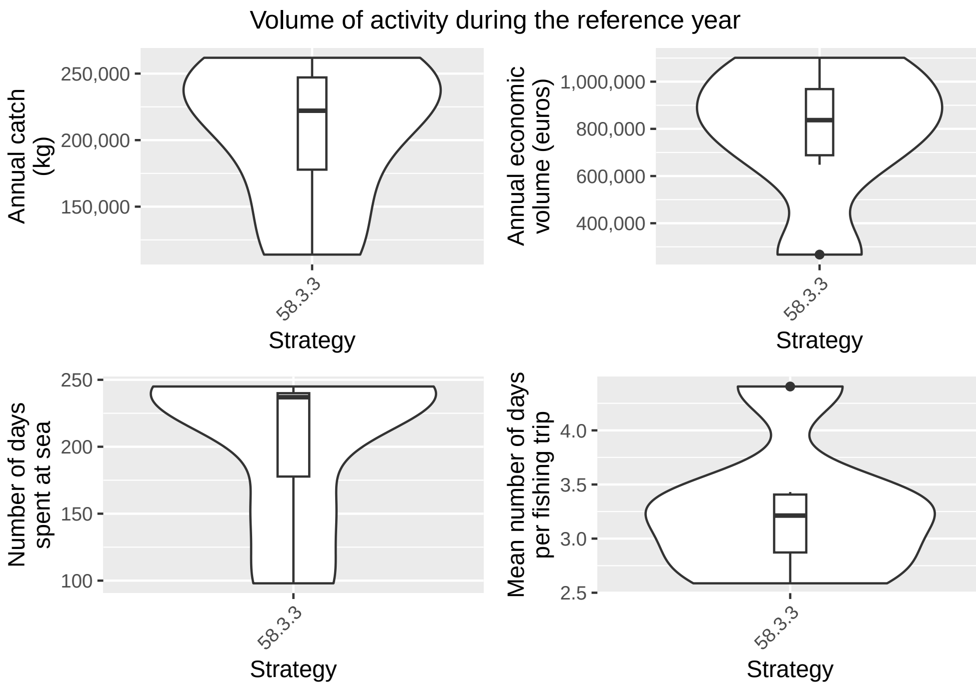
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



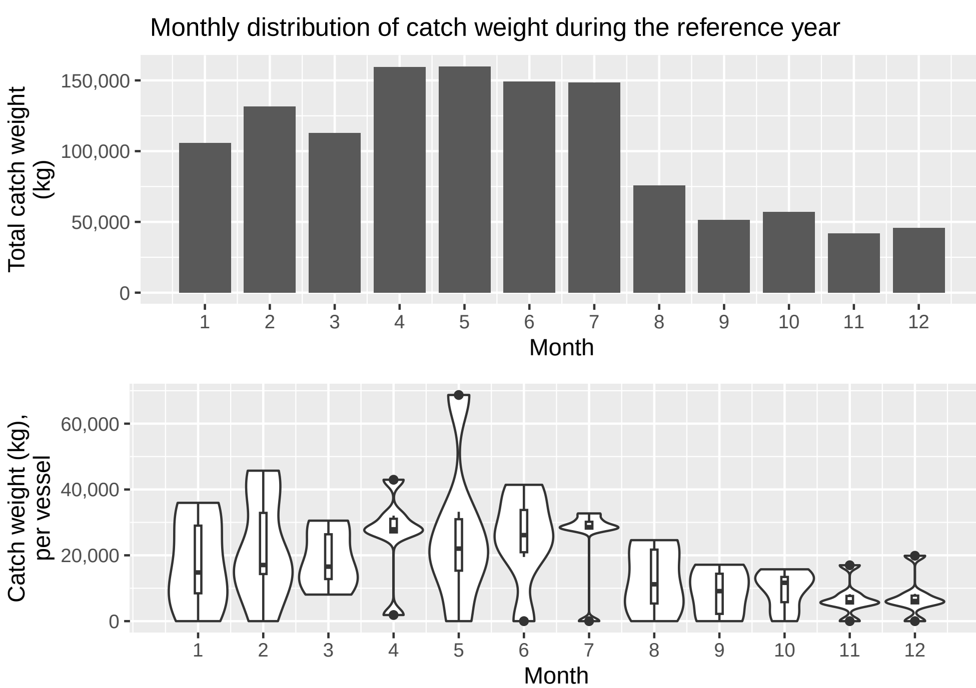


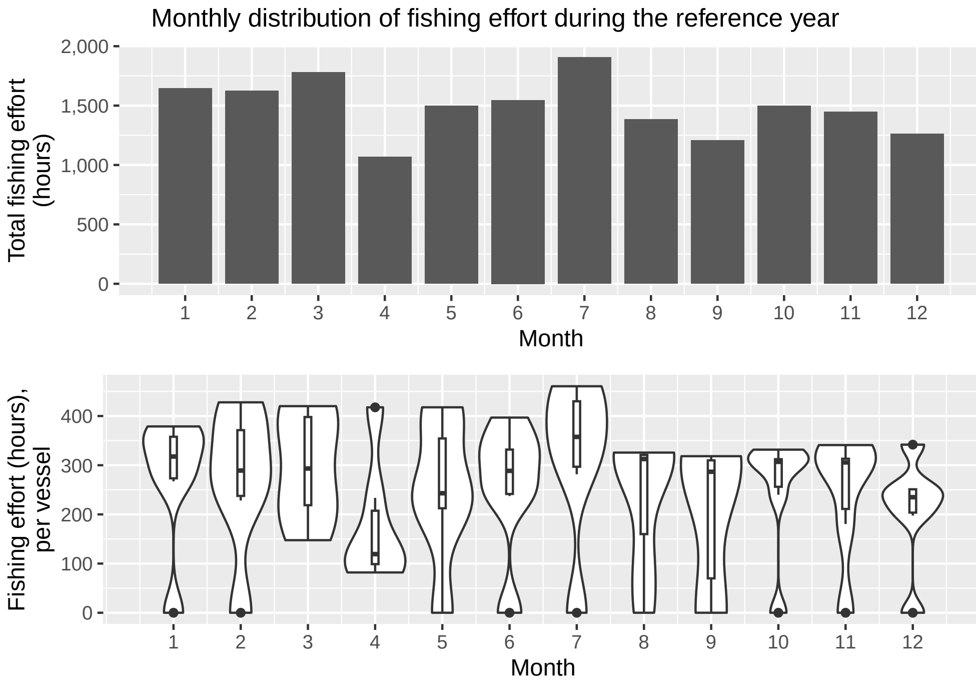
Description of the volume and pattern of fishing activities during the reference year (2019)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



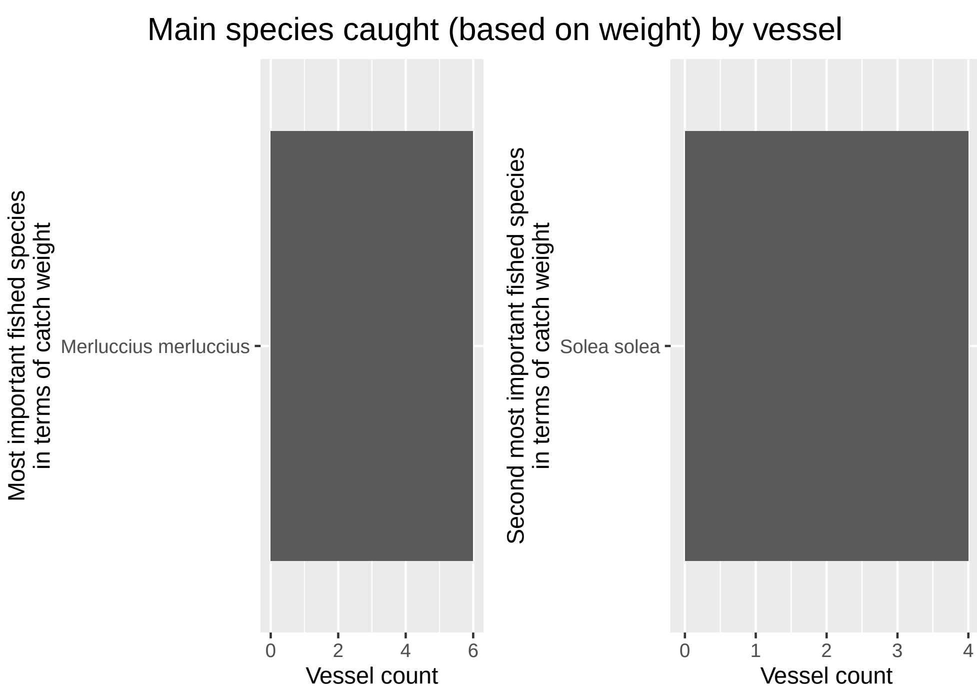
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

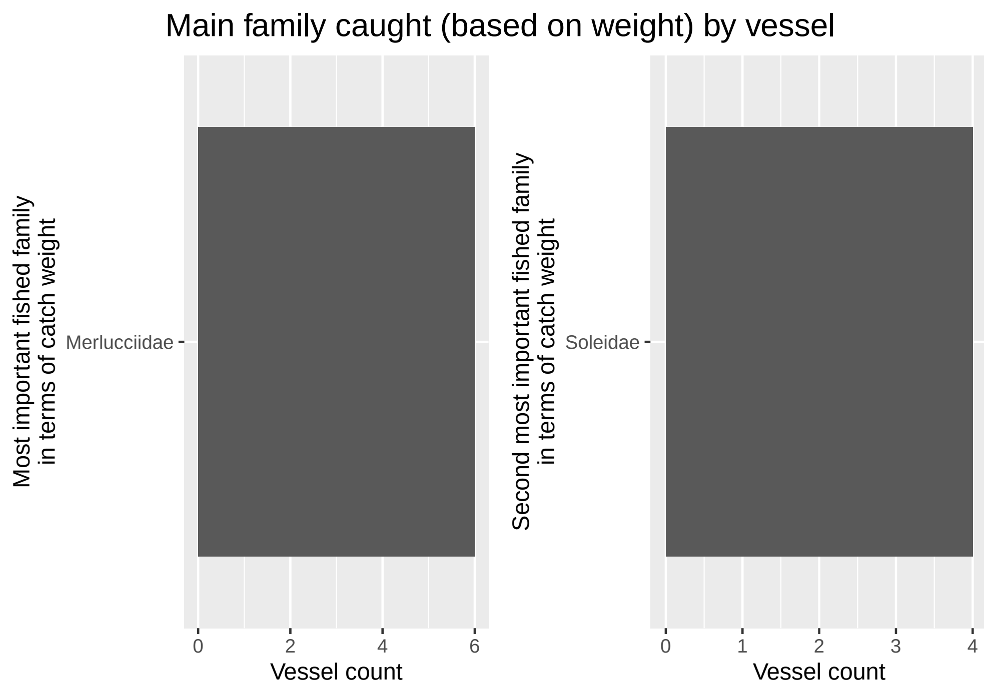


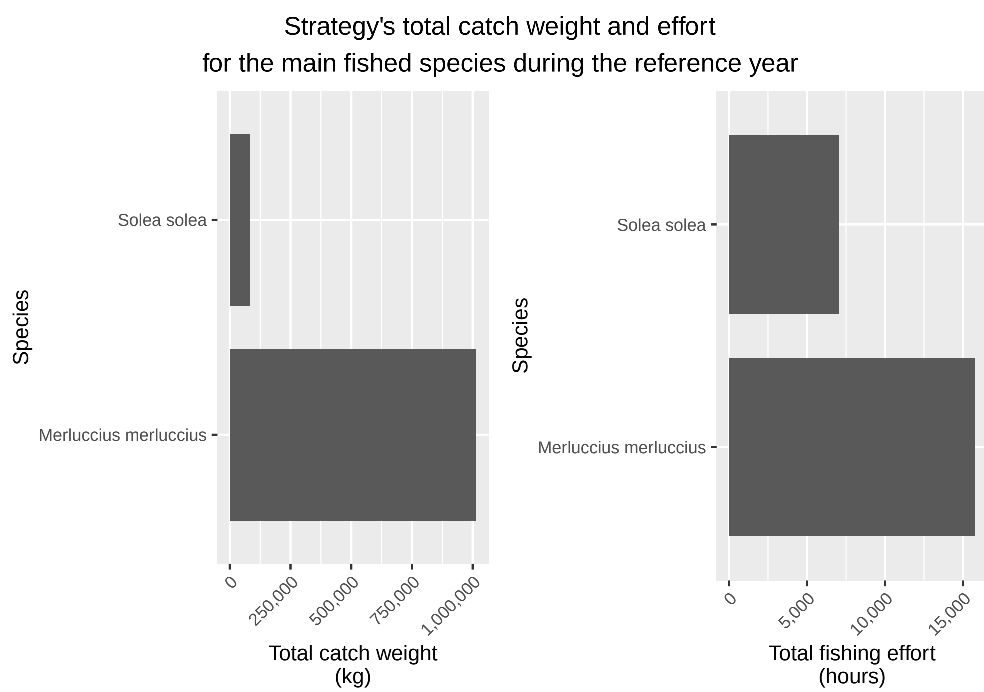


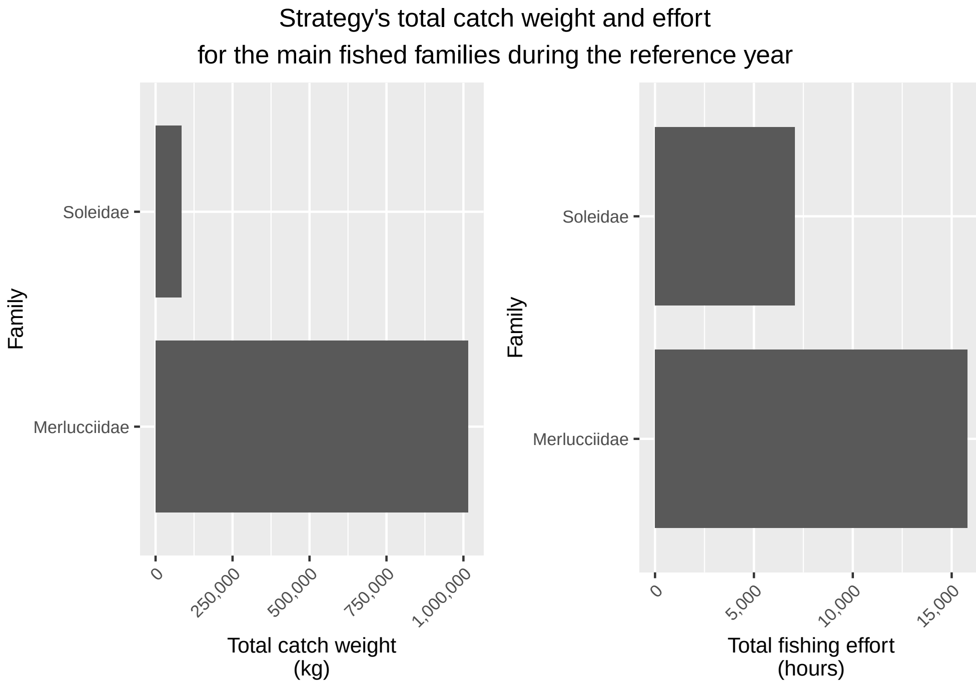
Main fished taxa and used gears during the reference year (2019)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

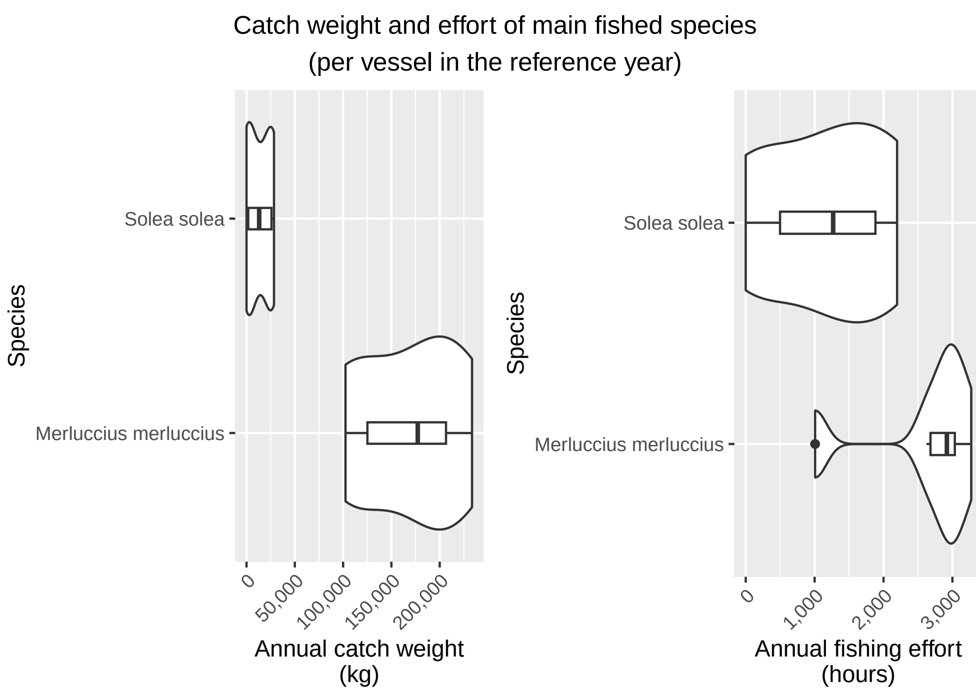


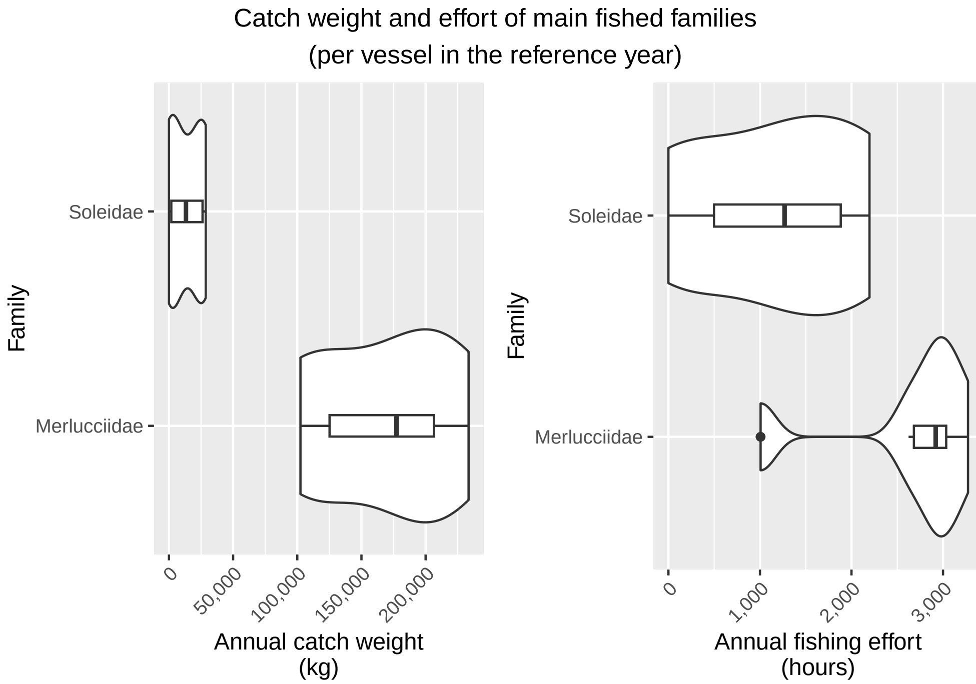

Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Merlucciidae
Vessel count
0
2
4
6
Second most important fished family in terms of catch weight
Soleidae
Vessel count
0
1
2
3
4


Strategy's total catch weight and effort for the main fished species during the reference year
Species
Solea solea
Merluccius merluccius
Total catch weight (kg)
0
250,000
500,000
750,000
1,000,000
Species
Solea solea
Merluccius merluccius
Total fishing effort (hours)
0
5,000
10,000
15,000

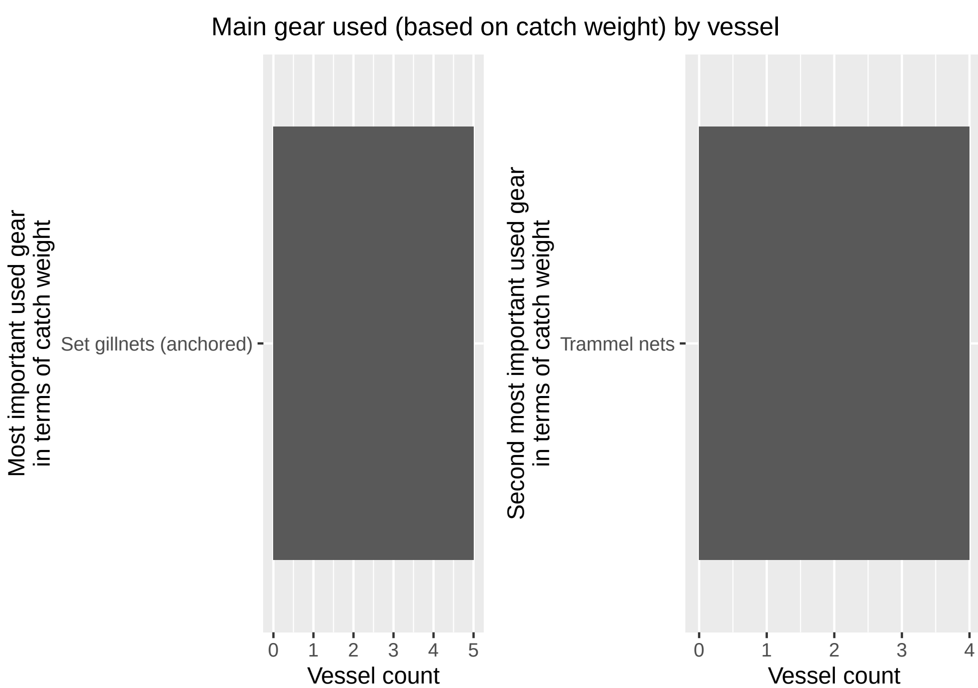


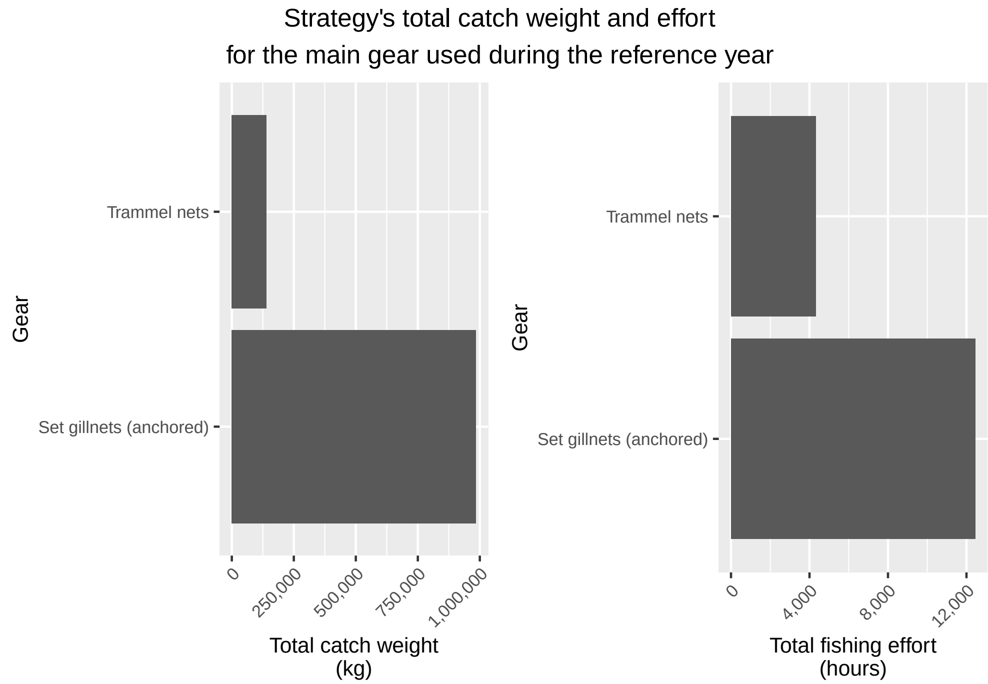
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

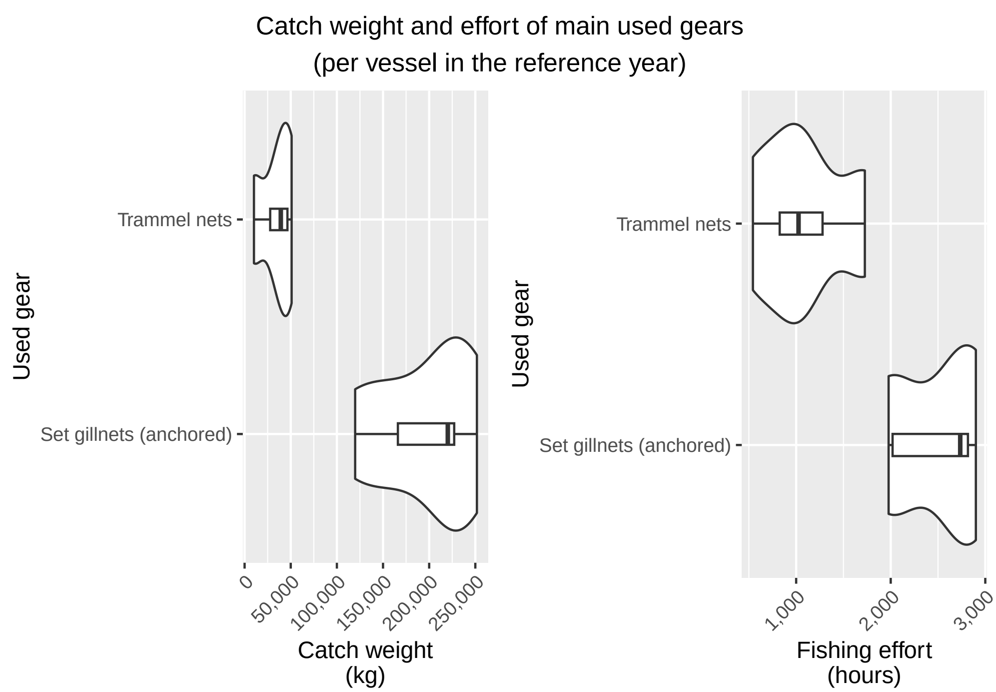




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

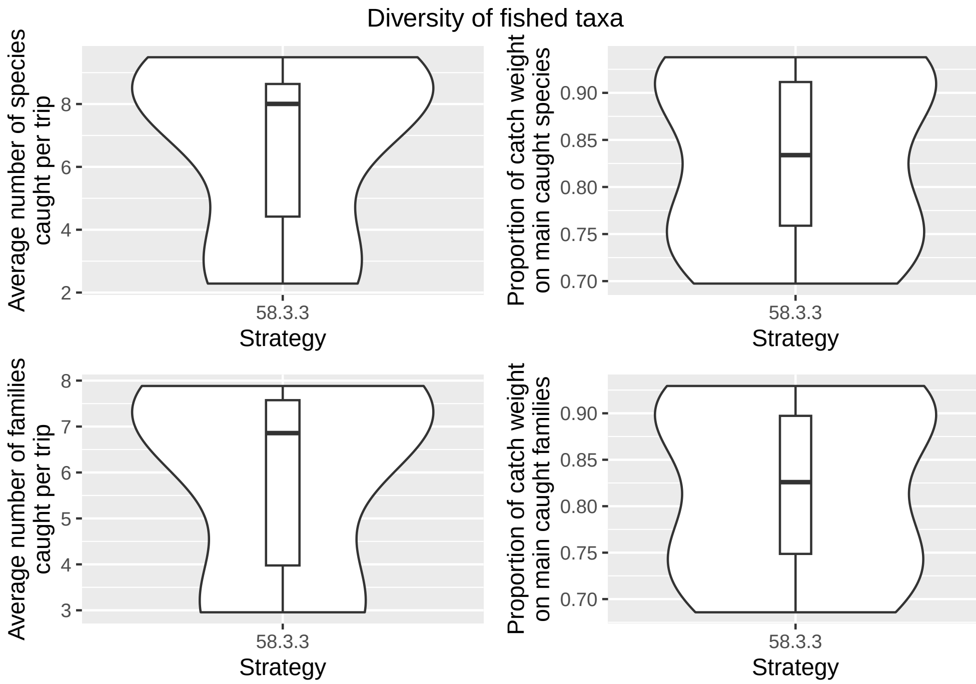




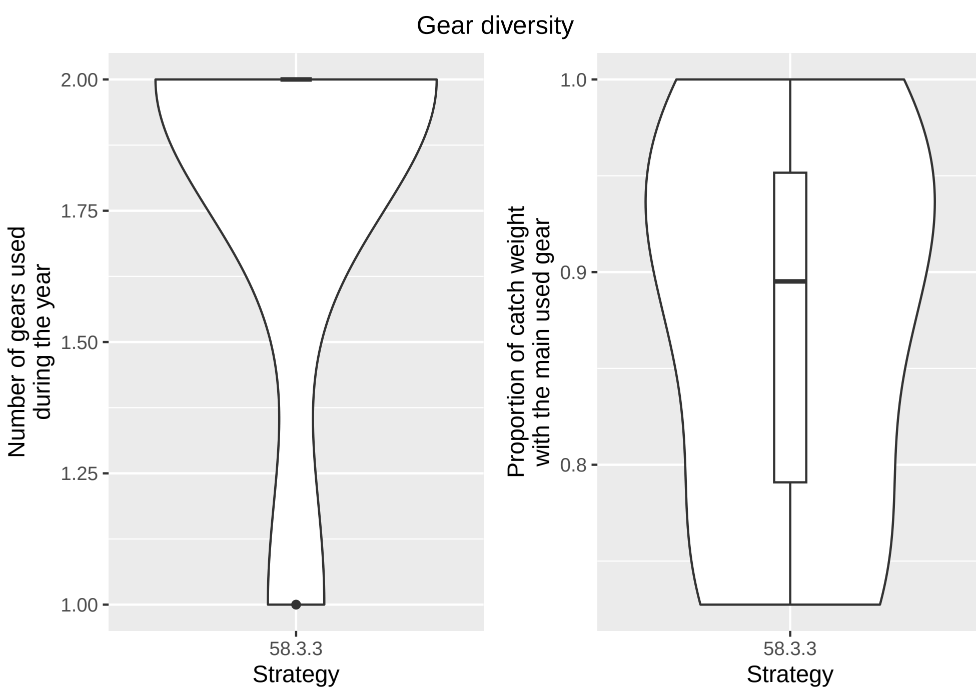


Diversity of fished taxa and used gears during the reference year (2019)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

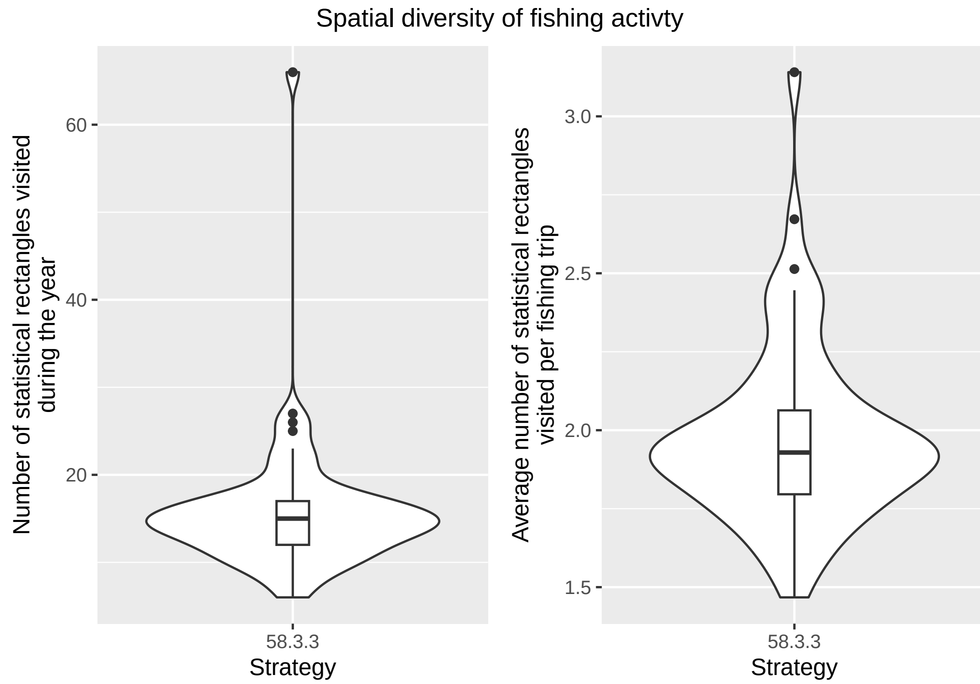


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

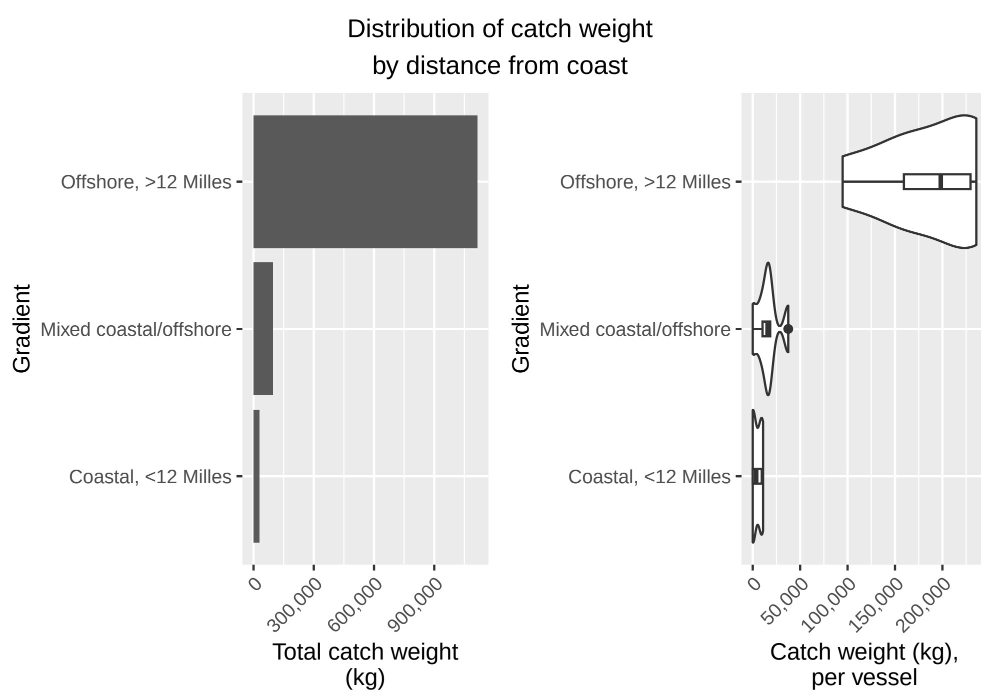


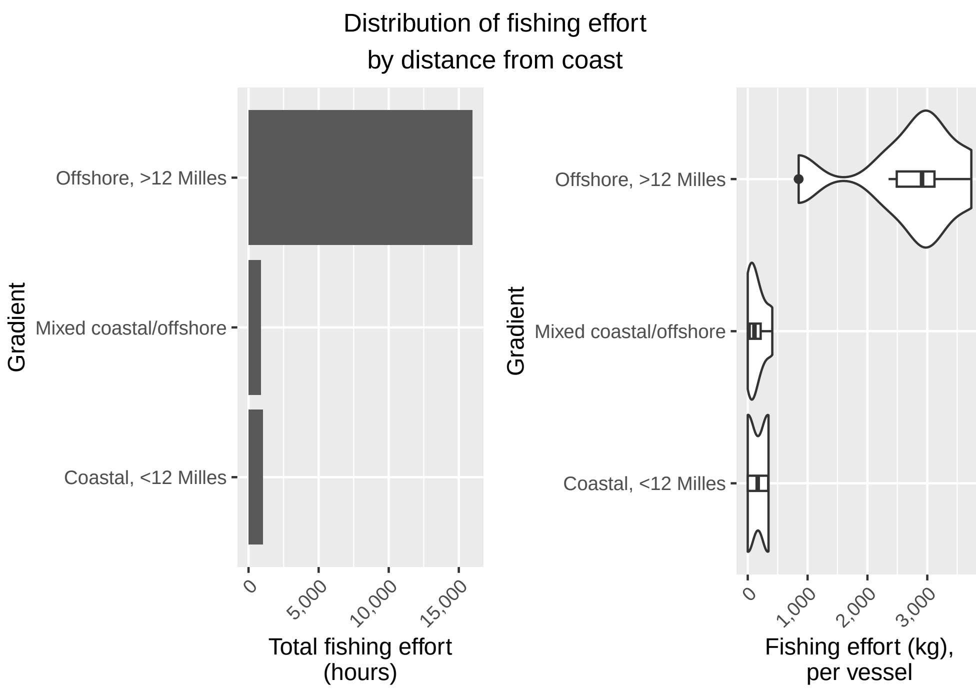
Diversity of areas visited during the reference year (2019)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



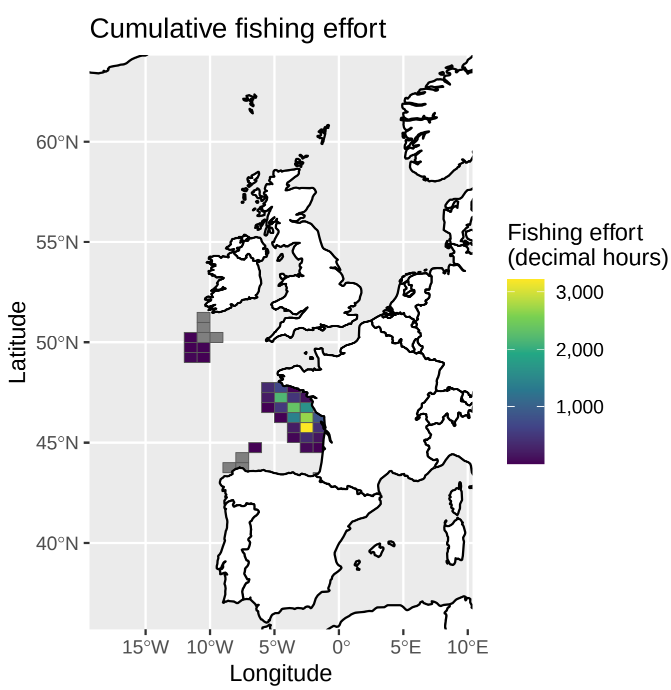
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

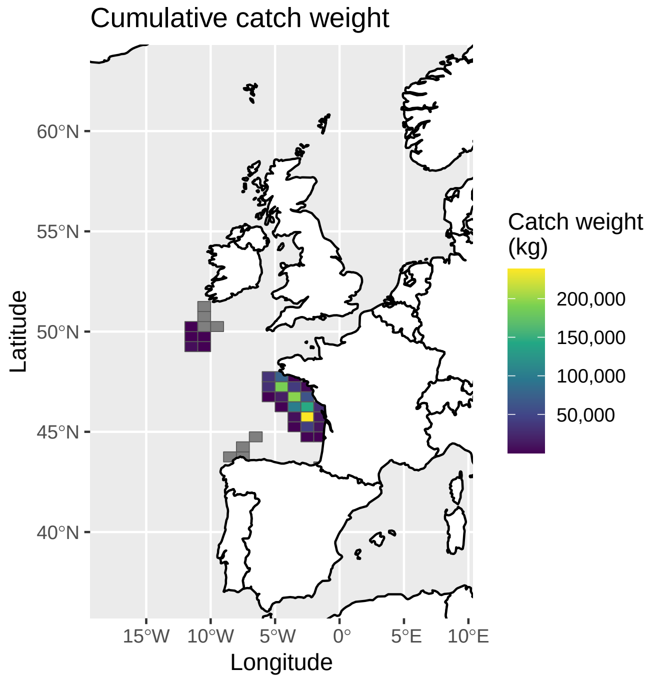




Maps of fishing activity distribution during the reference year (2019)

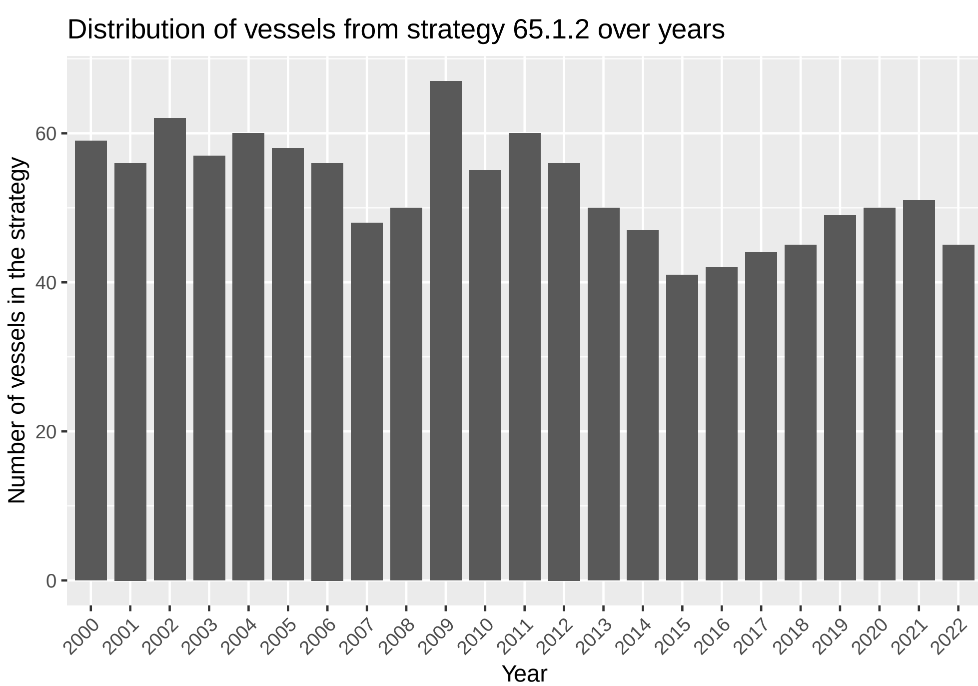
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





Strategy 65.1.2

This strategy includes N=1208 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=241. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2009.

Description table

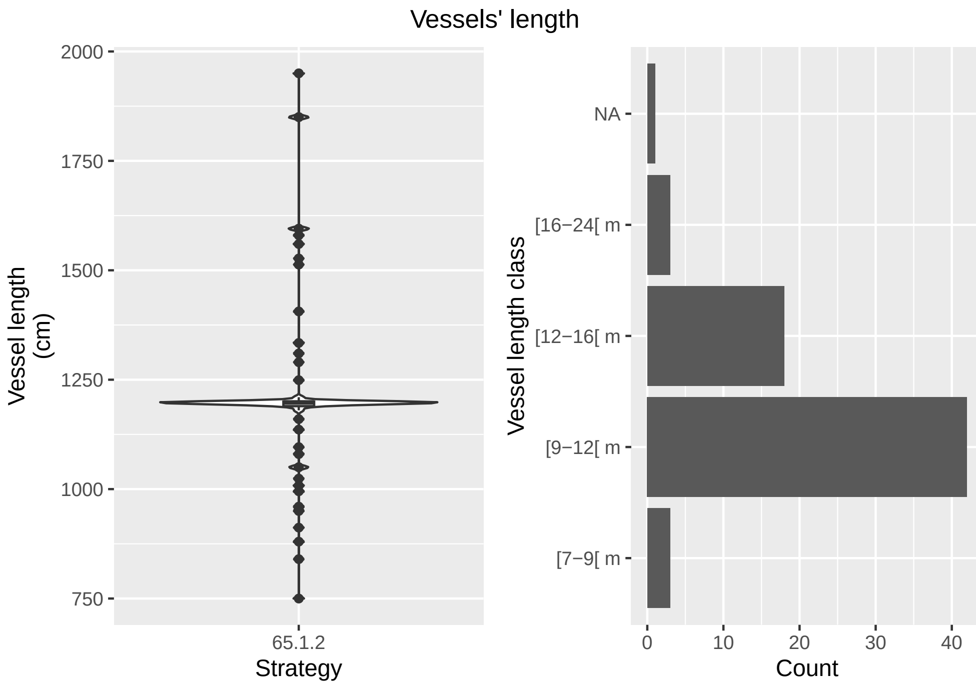
This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

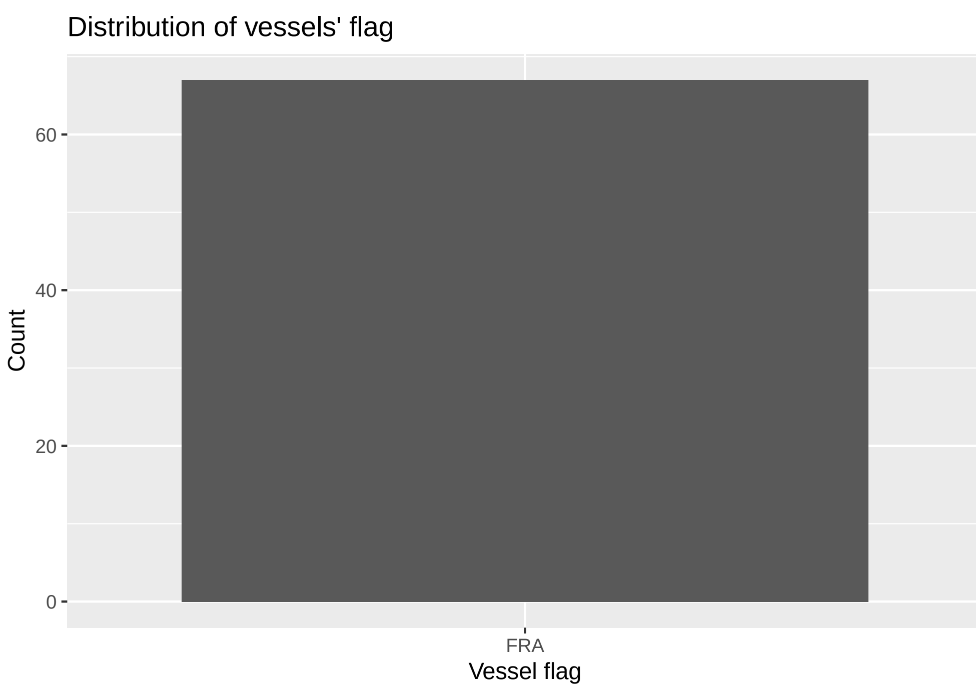
Table 15: Strategy 65.1.2

Importance	Variable	Value
	Sp.	Solea solea
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
Determinant (>95%)	ISSCAAP	31
	Gear	Trammel nets
Predominant (>65%)	Trimester	1
Major (>50%)	ICES division	27.8.a
	Sp.	Trisopterus luscus
	Family	Gadidae
Strong component (>35%)	ICES division	27.8.b
		Dicentrarchus labrax
	Sp.	Scophthalmus rhombus
	Order	Perciformes
	Gear	Set gillnets (anchored)
		01
Component (>20%)	Month	02
		Cancer pagurus
	Sp.	Maja squinado
		Majidae
		Scophthalmidae
	Family	Sparidae
		Decapoda
	Order	Gadiformes
		32
		33
	ISSCAAP	42
	Gear	Otter trawls Bottom
	ICES division	27.7.e
		03
		04
		05
		08
		10
	Month	12
		2
		3
Minor component (>5%)	Trimester	4
	value_weight	TRUE
	value_eco	TRUE
	sd_weight	TRUE
	sd_eco	TRUE
	prop_spp	TRUE
	prop_family	TRUE
	prop_order	TRUE
	prop_isscaap	TRUE
	value_nb_seq	TRUE
	sd_nb_seq	TRUE
	value_nb_marees	TRUE
	sea_year	TRUE
High values (>SD)	sd_average_sea	TRUE

Distribution of vessel length and flag during the reference year (2009)

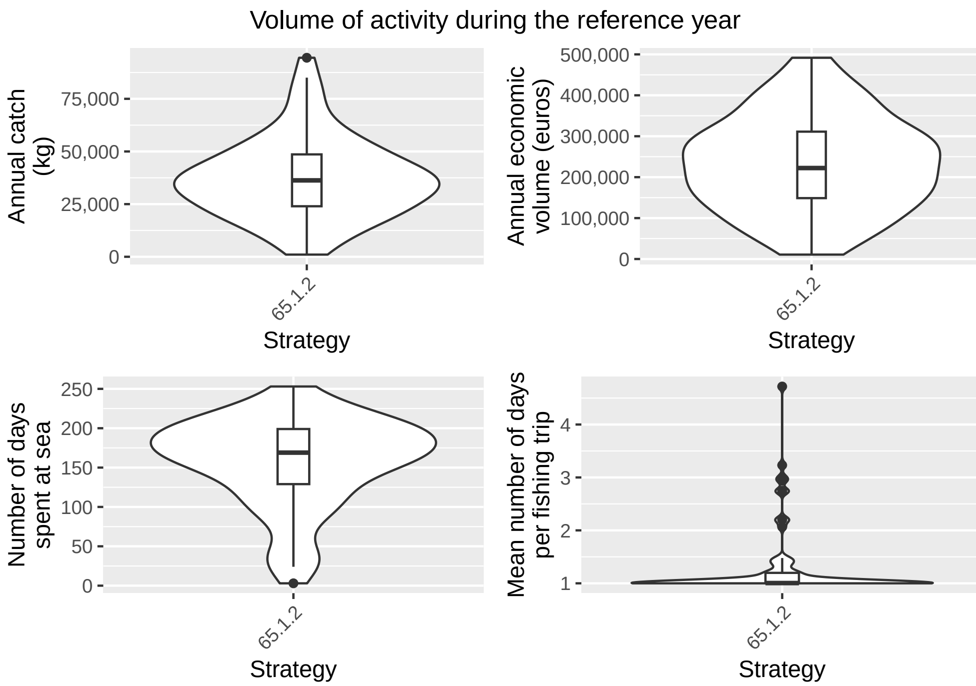
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



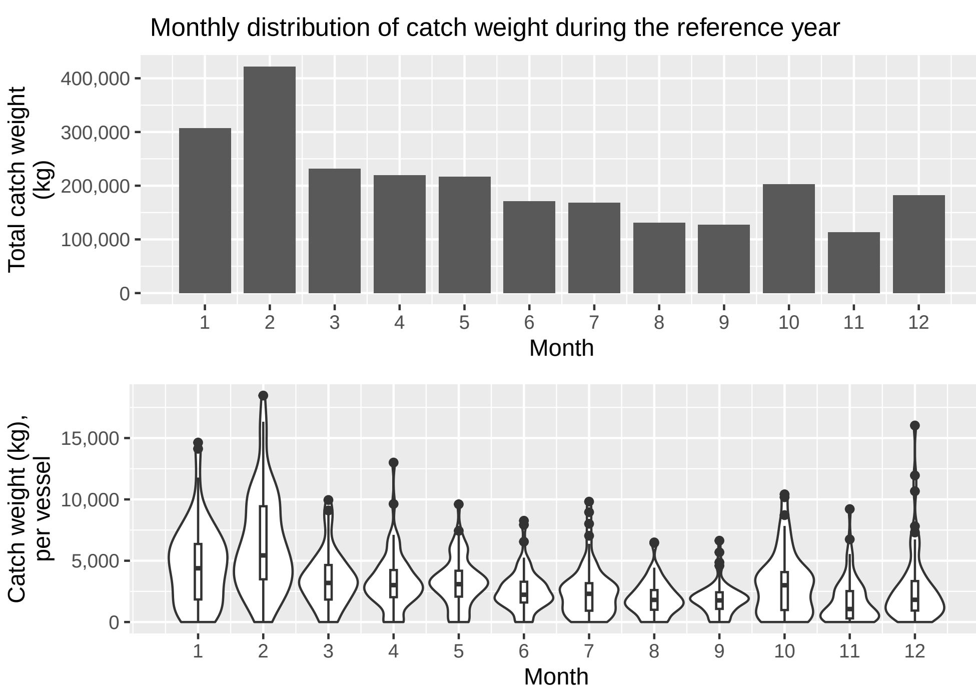


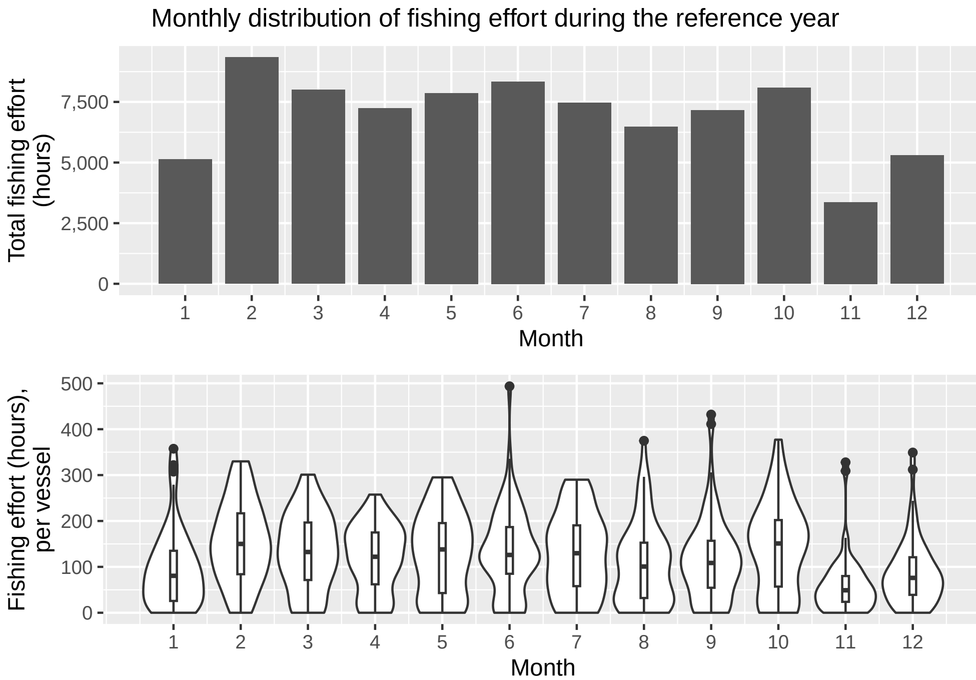
Description of the volume and pattern of fishing activities during the reference year (2009)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



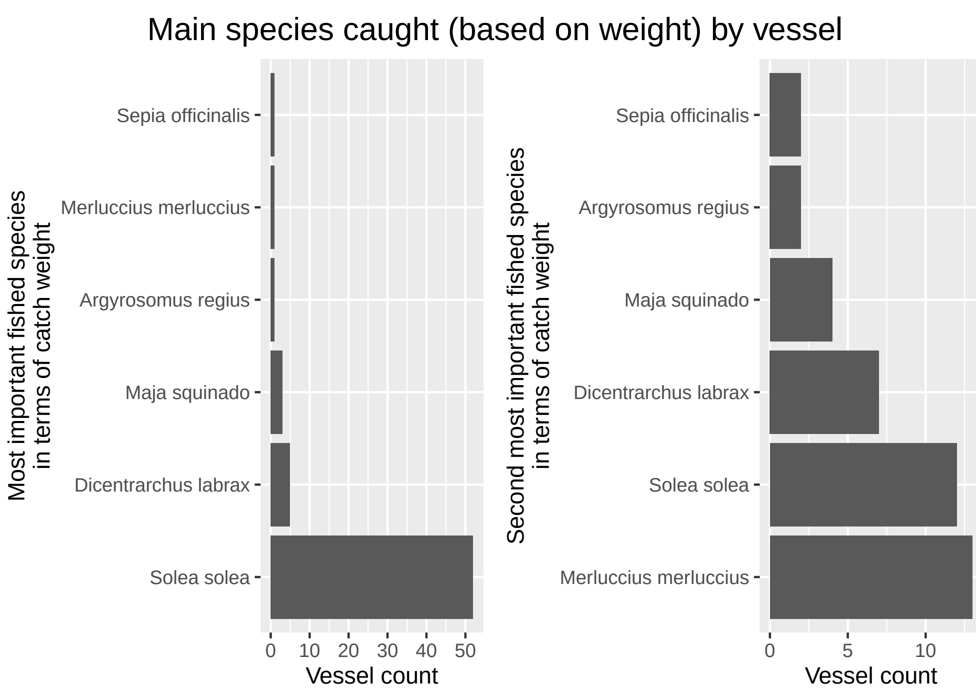
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.



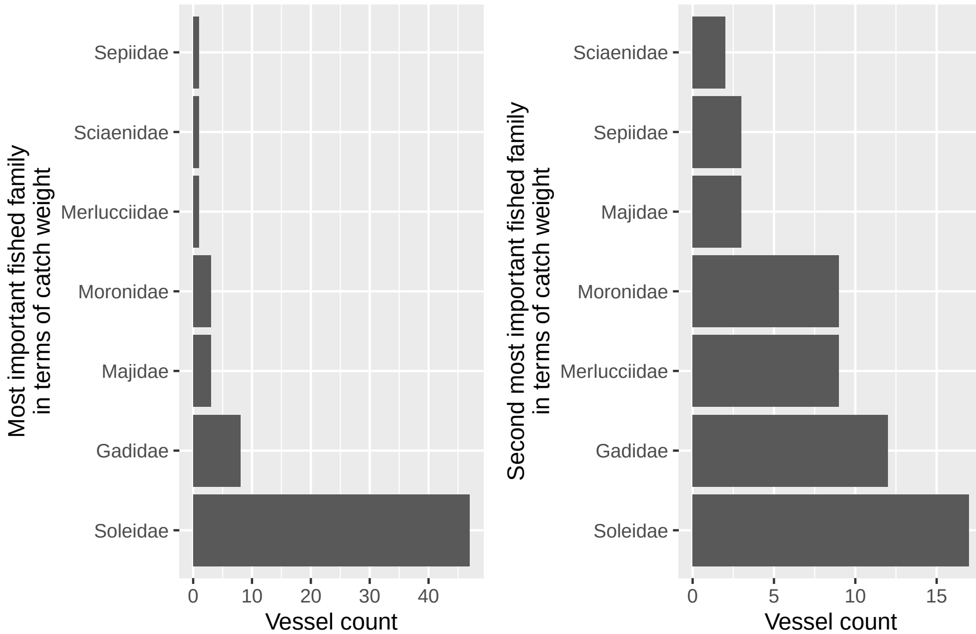


Main fished taxa and used gears during the reference year (2009)

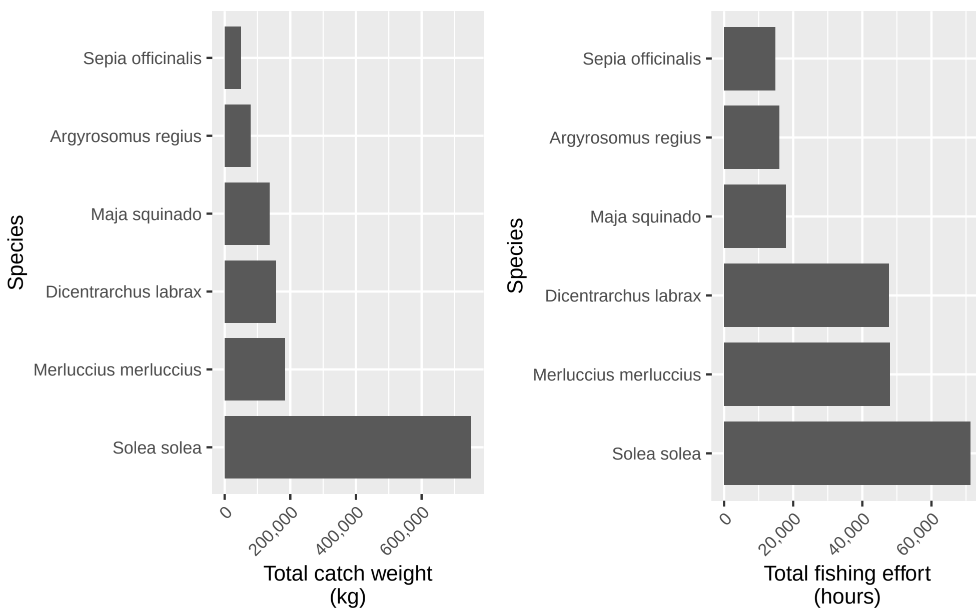
We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

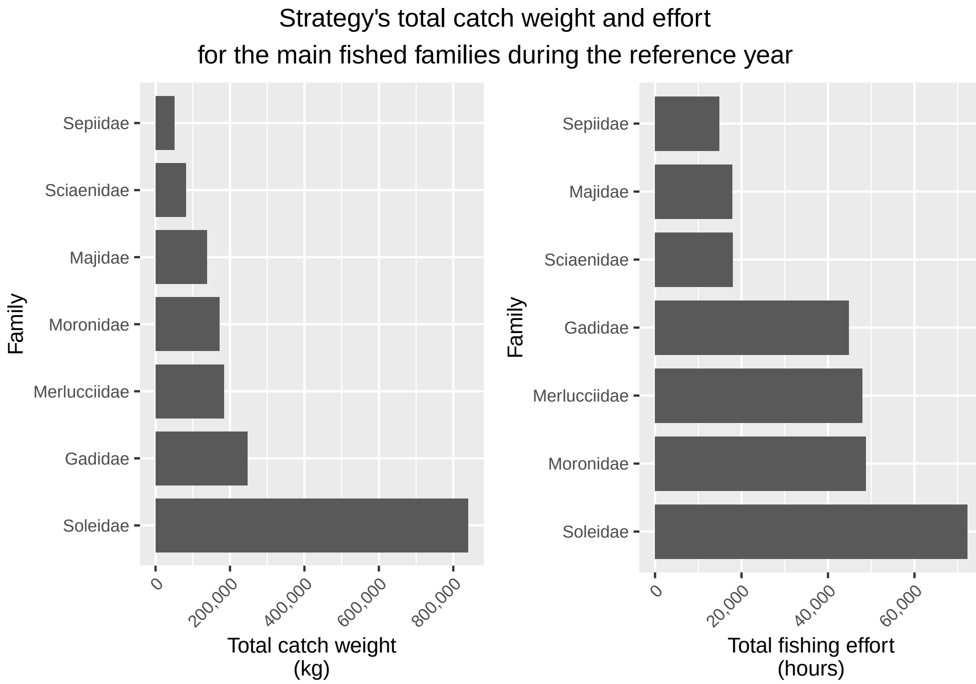


Main family caught (based on weight) by vessel

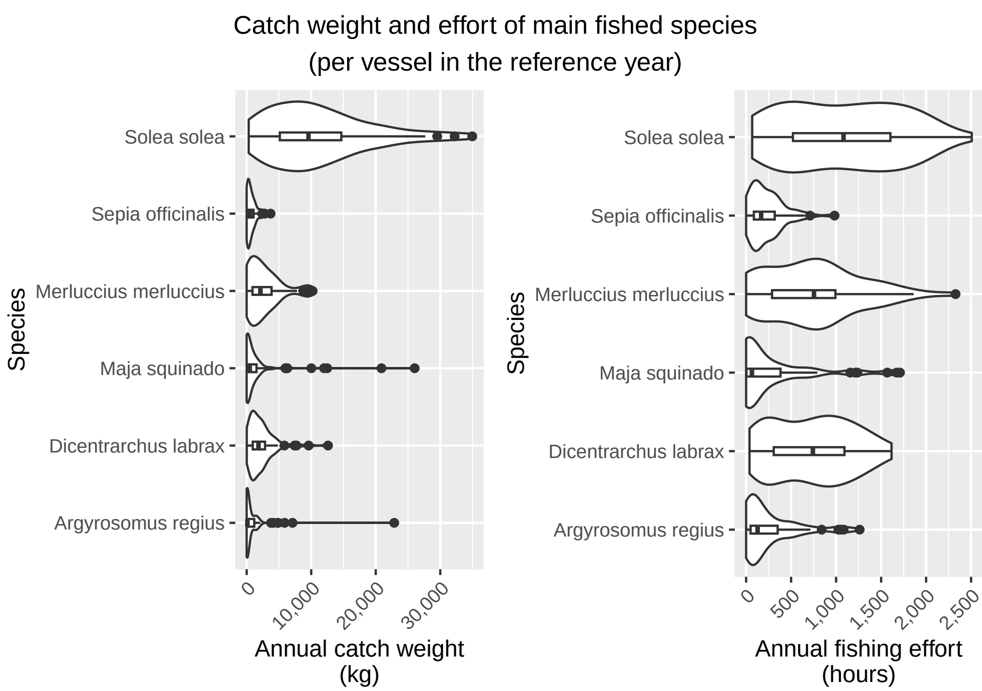


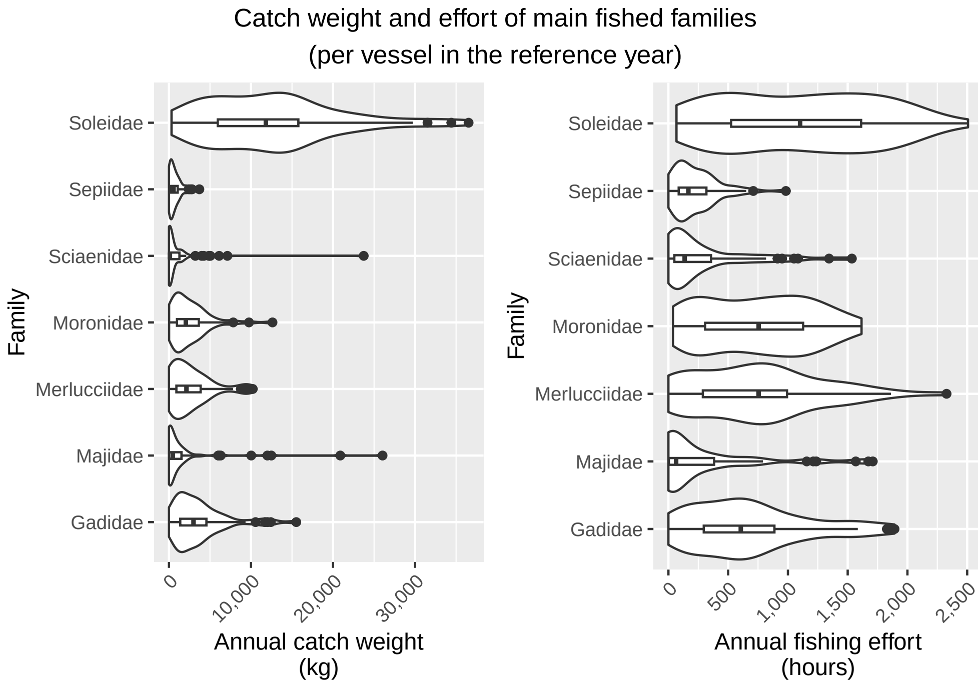
Strategy's total catch weight and effort
for the main fished species during the reference year



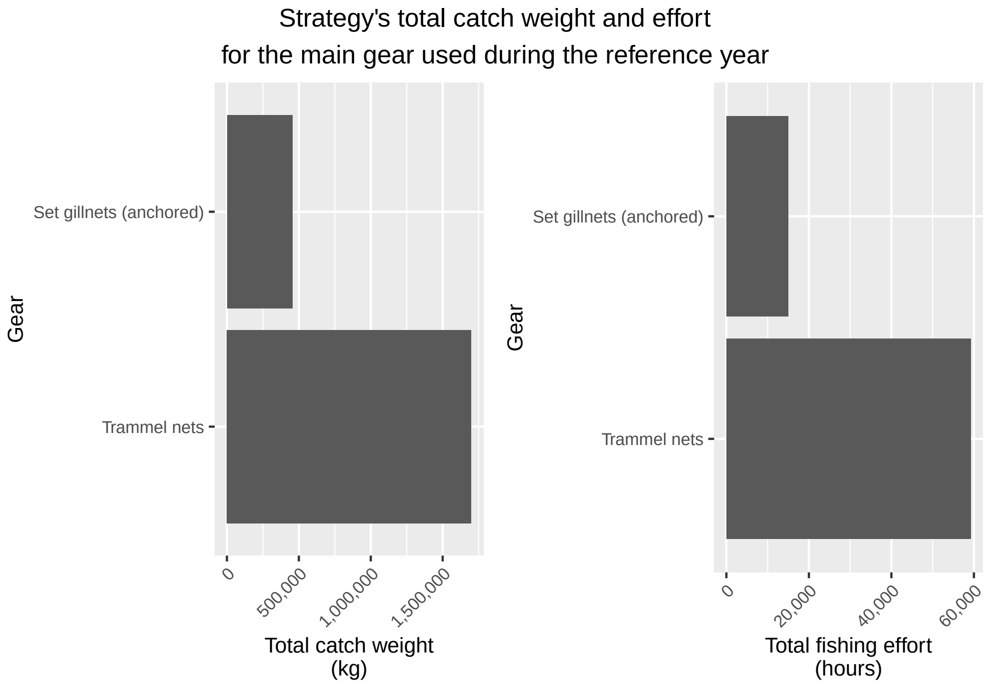


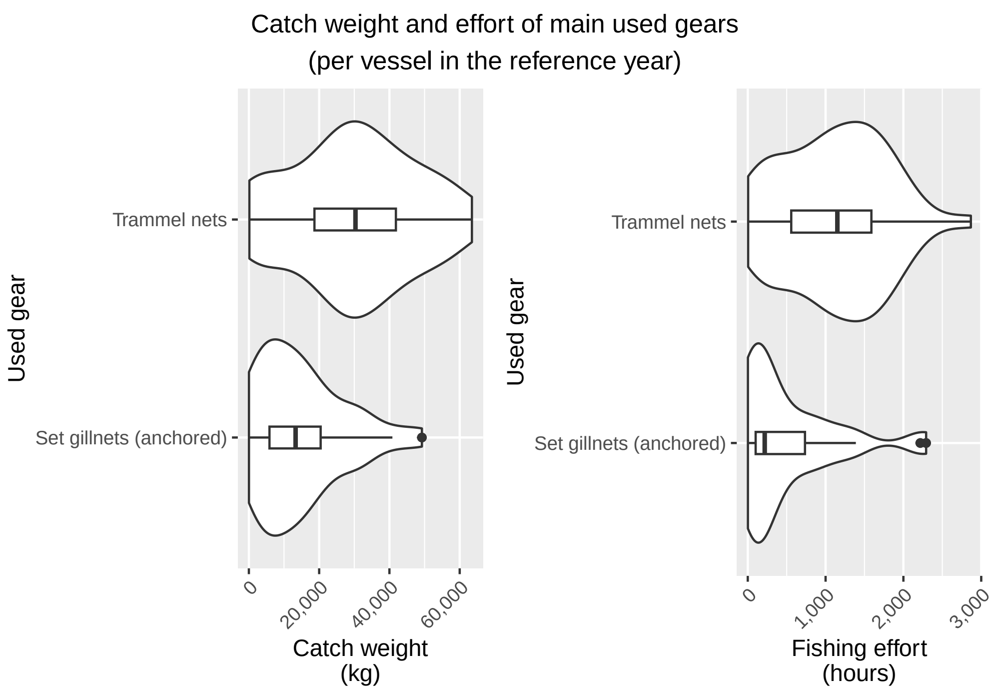
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.





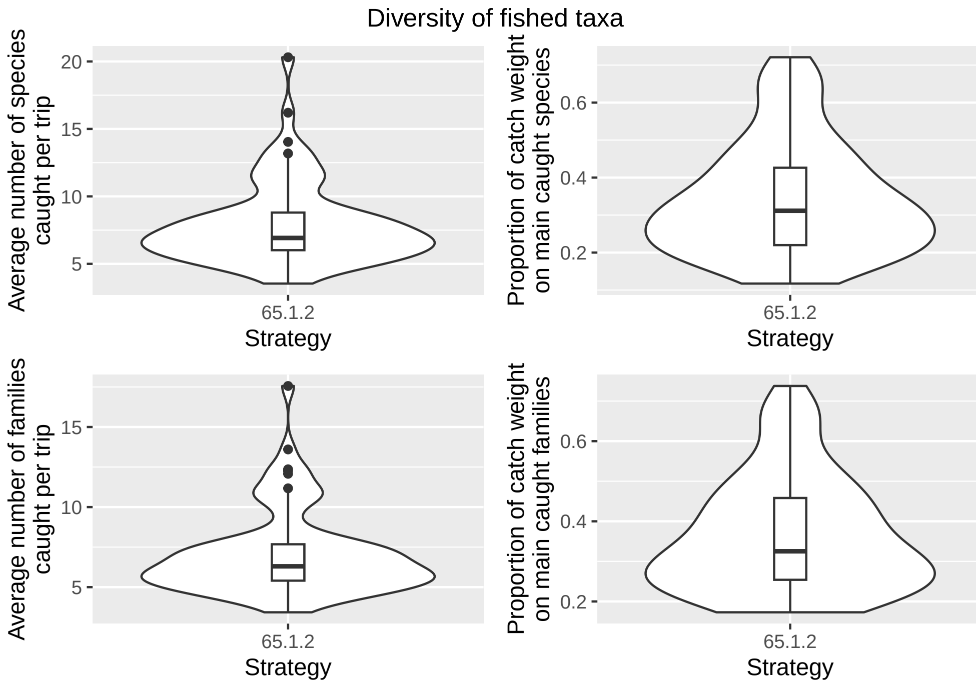
Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).



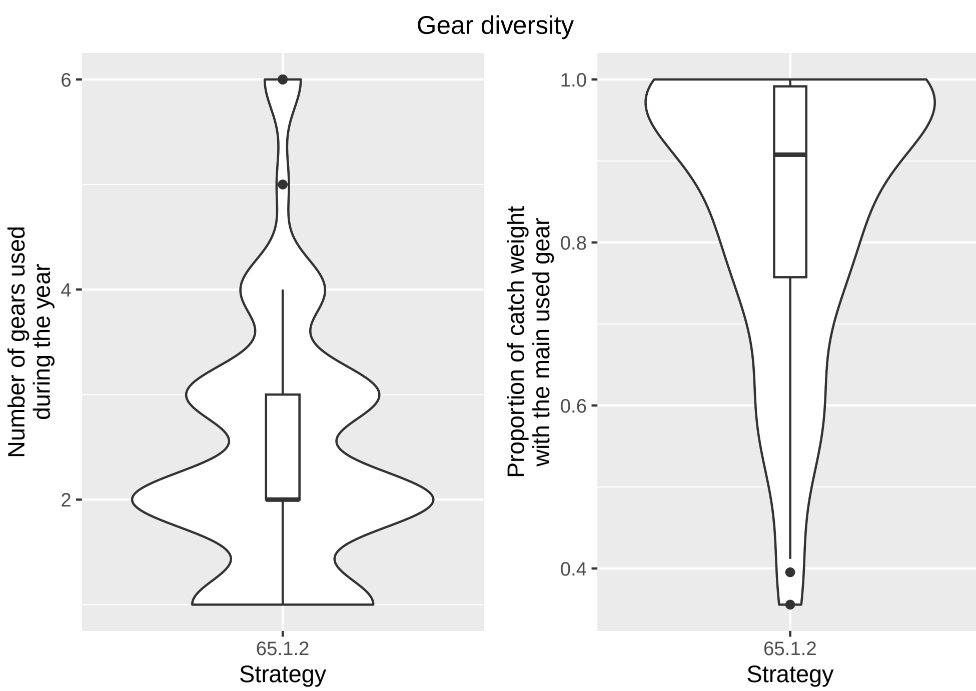


Diversity of fished taxa and used gears during the reference year (2009)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

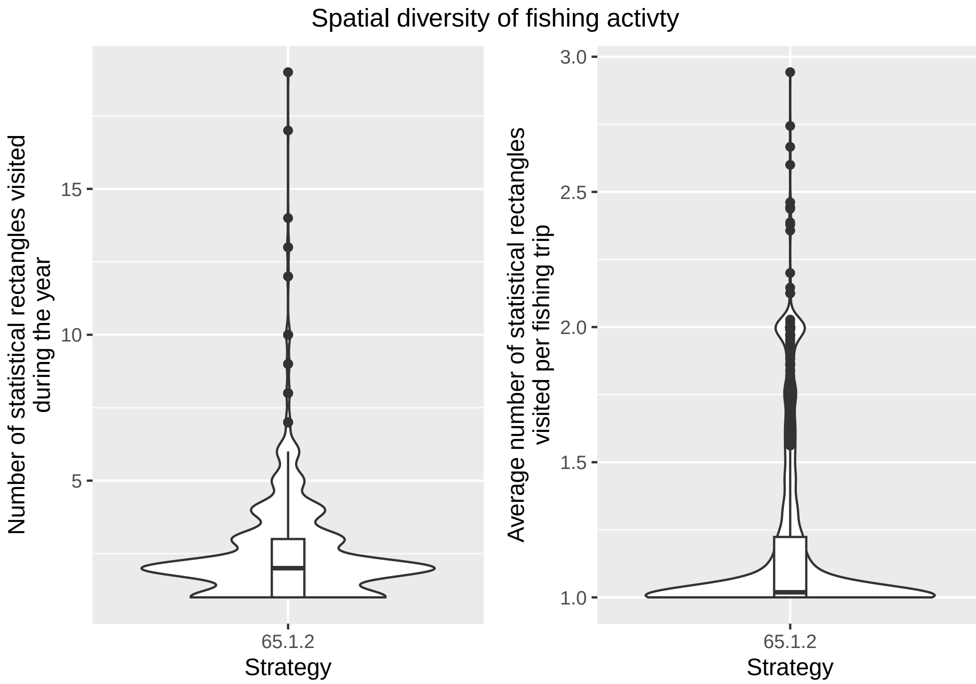


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

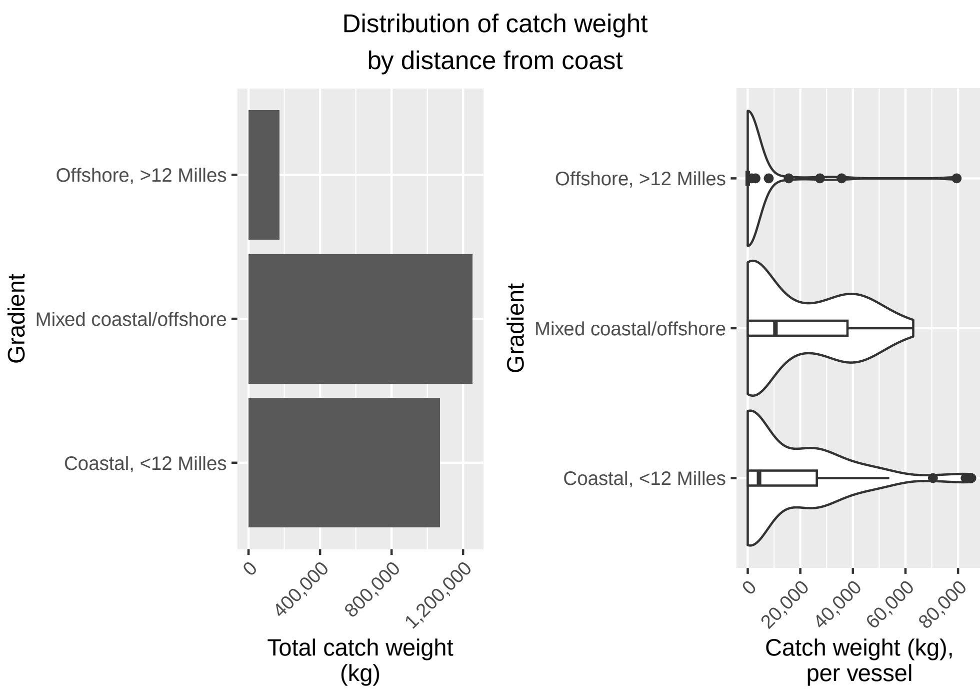


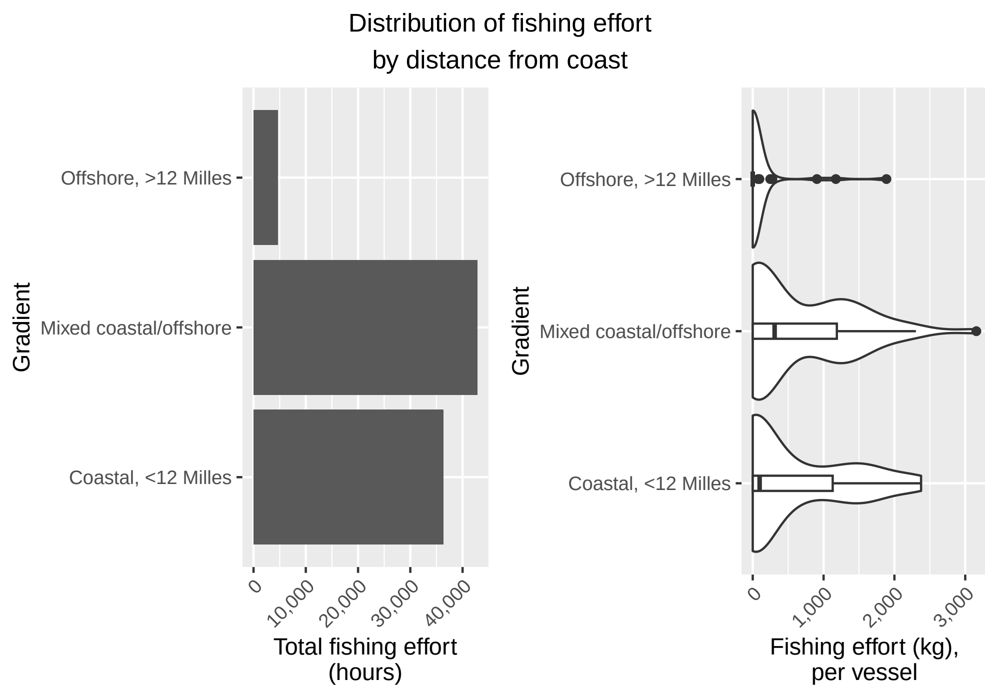
Diversity of areas visited during the reference year (2009)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



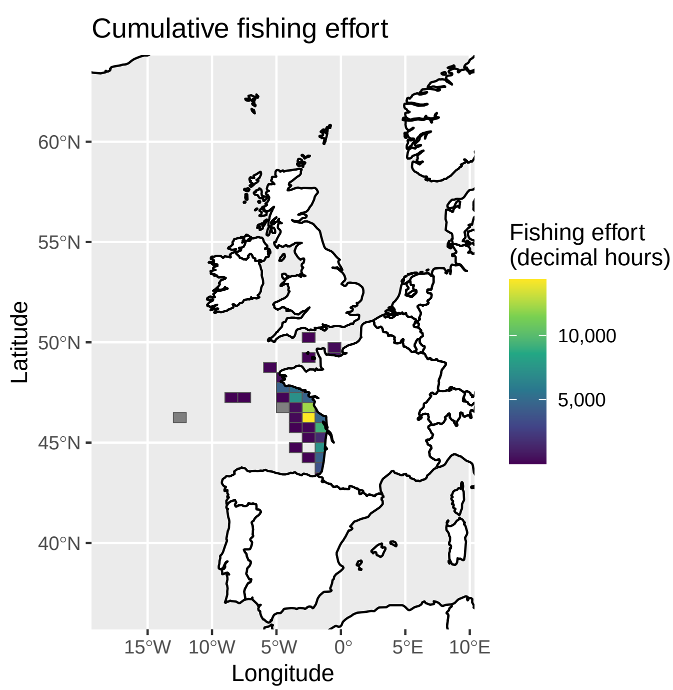
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

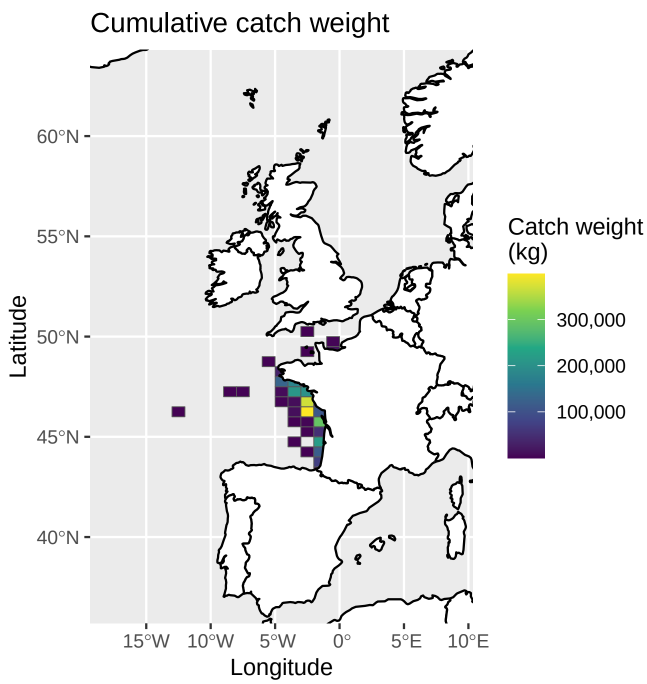




Maps of fishing activity distribution during the reference year (2009)

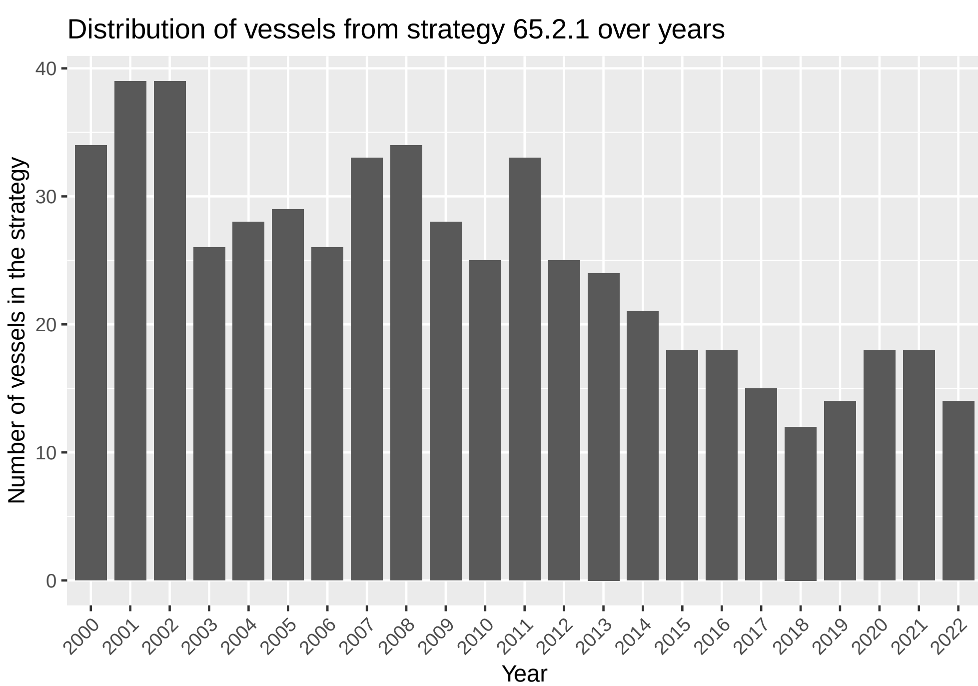
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





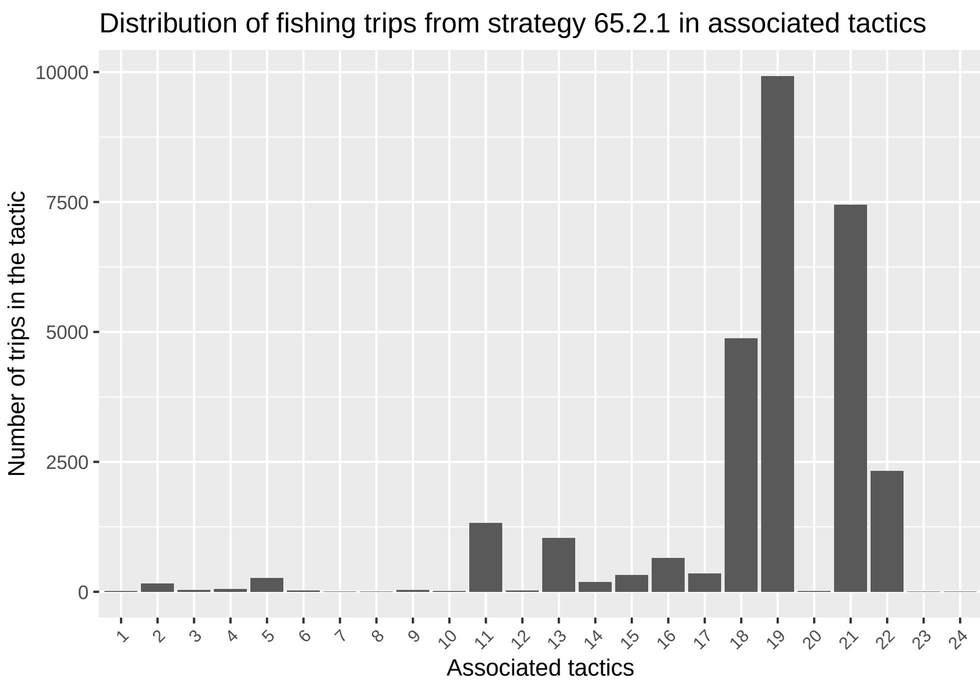
Strategy 65.2.1

This strategy includes N=571 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=92. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2002.

The distribution of fishing trips from this strategy in the corresponding tactic classification is presented below. We then described only the tactics associated with accidental bycatch (tactics: 19, 21, 22).



Description table

This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

Table 16: Strategy 65.2.1

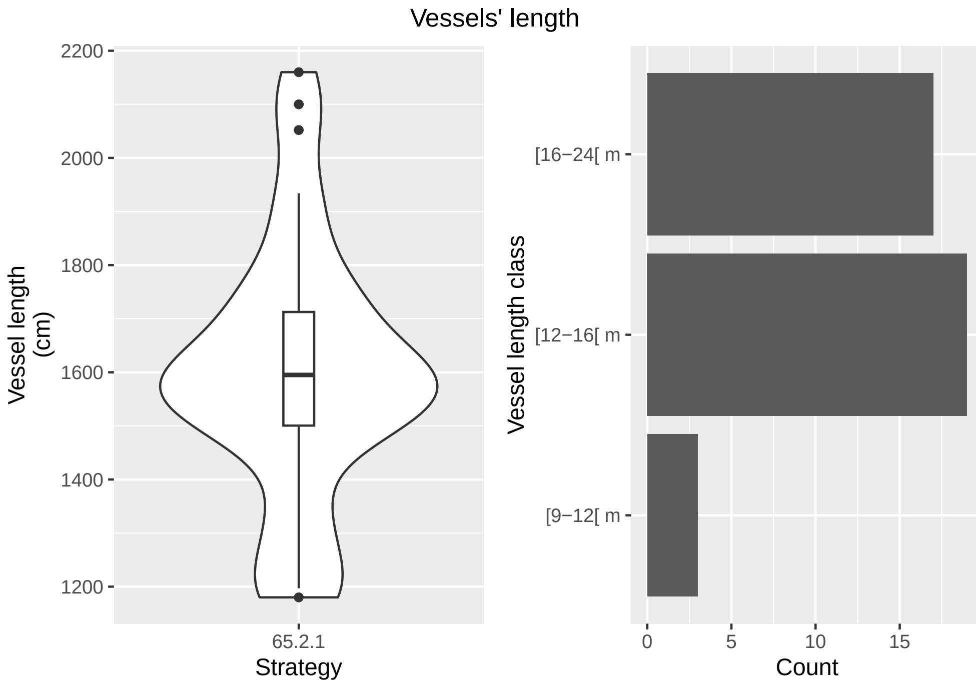
Importance	Variable	Value
	Sp.	Solea solea
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
	ISSCAAP	31
Determinant (>95%)	Stock	SOL.27.8ab
	Stock	BLL.27.8ab
	Second order	Perciformes
	Second ISSCAAP	33
	Gear	Trammel nets
Strongly predominant (>80%)	Trimester	1
	Second sp.	Dicentrarchus labrax
	Second spp.	Dicentrarchus spp
	Third order	Gadiformes
Predominant (>65%)	ICES division	27.8.b
	Sp.	Scophthalmus rhombus
		Moronidae
Major (>50%)	Second family	Scophthalmidae
	Third sp.	Scophthalmus maximus
		32
		34
	Third ISSCAAP	57
		01

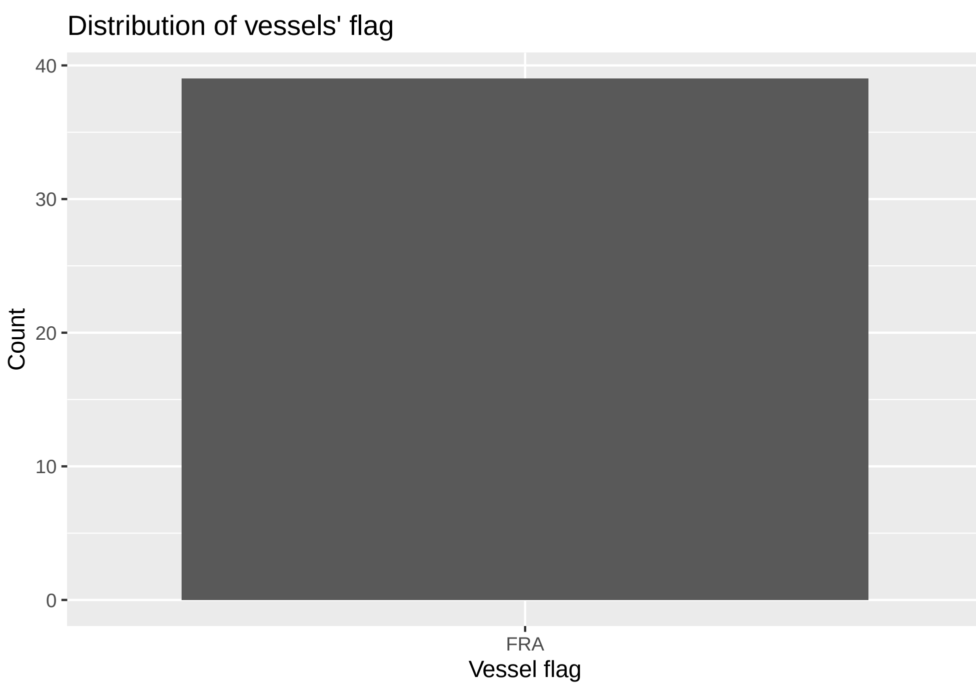
Table 16: Strategy 65.2.1 *(continued)*

Importance	Variable	Value
Strong component (>35%)	Month	02
	Sp.	Trisopterus luscus
	Second family	Sepiidae, Sepiolidae
		Merluccius merluccius
	Third sp.	Scophthalmus maximus
	Third spp.	Merluccius spp
	Third family	Gadidae
	Third order	Sepiida
Component (>20%)	ICES division	27.8.a
	Sp.	Spondyliosoma cantharus
		BSH.27
		HOM.27.2a4a5b6a7a-c7e-k8
		PLE.27.89a
	Stock	SBG.27.8ab
		Chelidonichthys cuculus
	Second sp.	Dicologlossa cuneata
	Second spp.	Chelidonichthys spp
	Second sp.	Maja squinado
	Second spp.	Sepia spp
		Sepiidae
	Second family	Sparidae
		Pegusa lascaris
		Scophthalmus rhombus
	Third sp.	Sepia officinalis
	Third spp.	Lophius spp
	Third sp.	Trachinus draco
		Lophiidae
	Third family	Triglidae
	Third order	Lophiiformes
	Third ISSCAAP	38
	Gear	Set gillnets (anchored)
		03
	Month	12
Minor component (>5%)	Trimester	4
	prop_spe	TRUE
	prop_spp	TRUE
	prop_family	TRUE
	prop_order	TRUE
	prop_isscaap	TRUE
	prop_engine	TRUE
High values (>SD)	prop_zee	TRUE

Distribution of vessel length and flag during the reference year (2002)

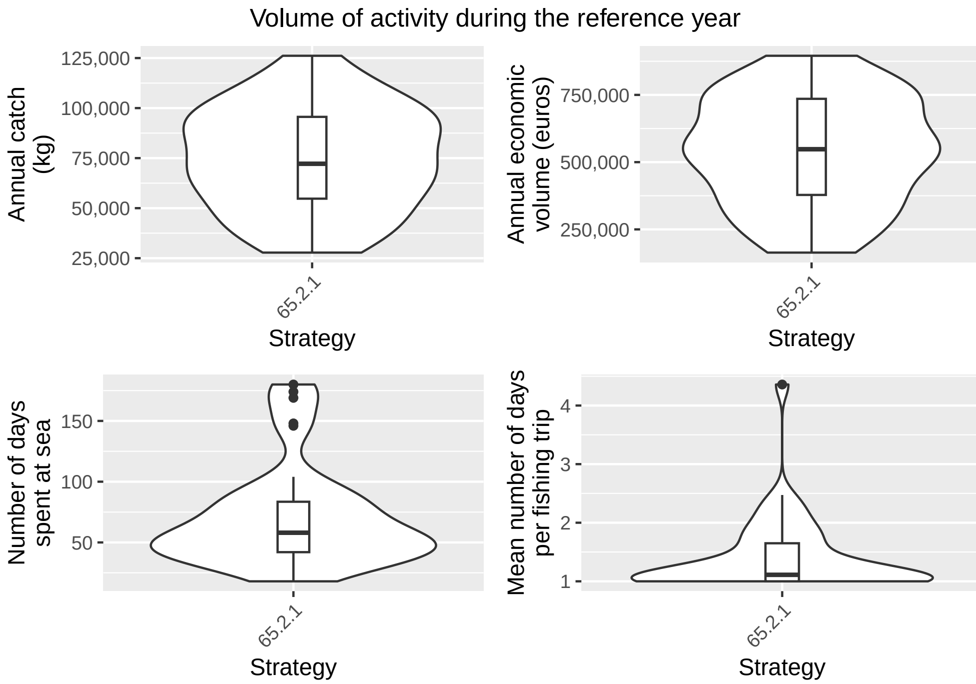
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



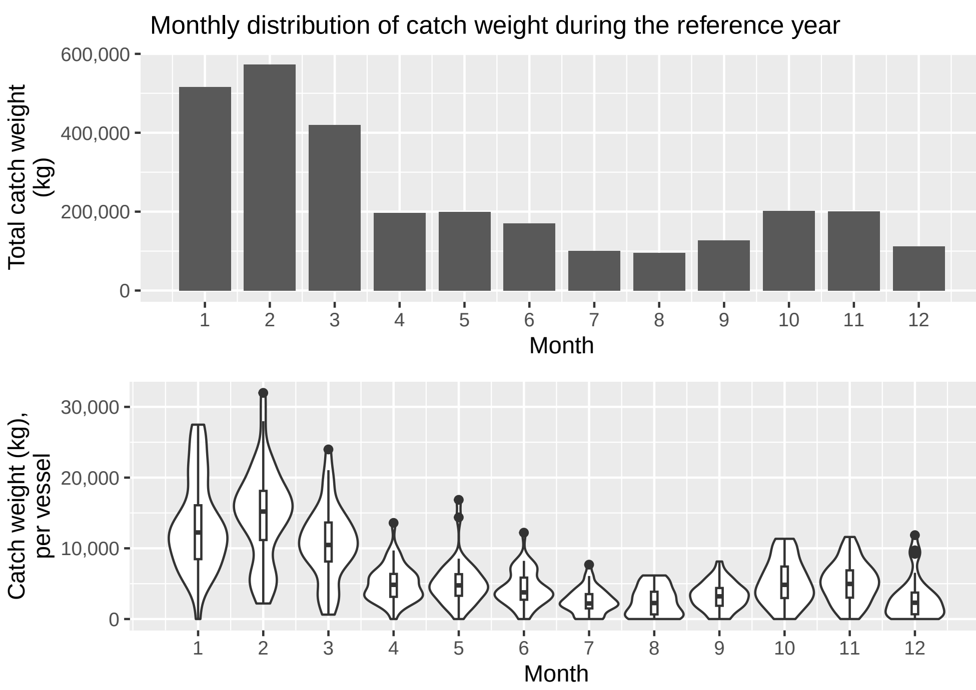


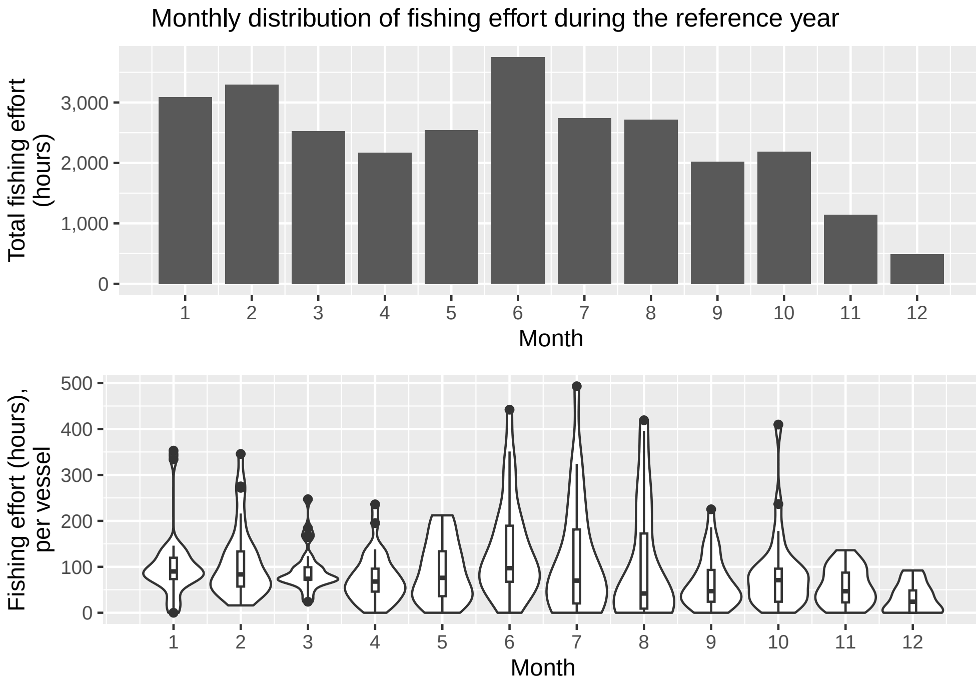
Description of the volume and pattern of fishing activities during the reference year (2002)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



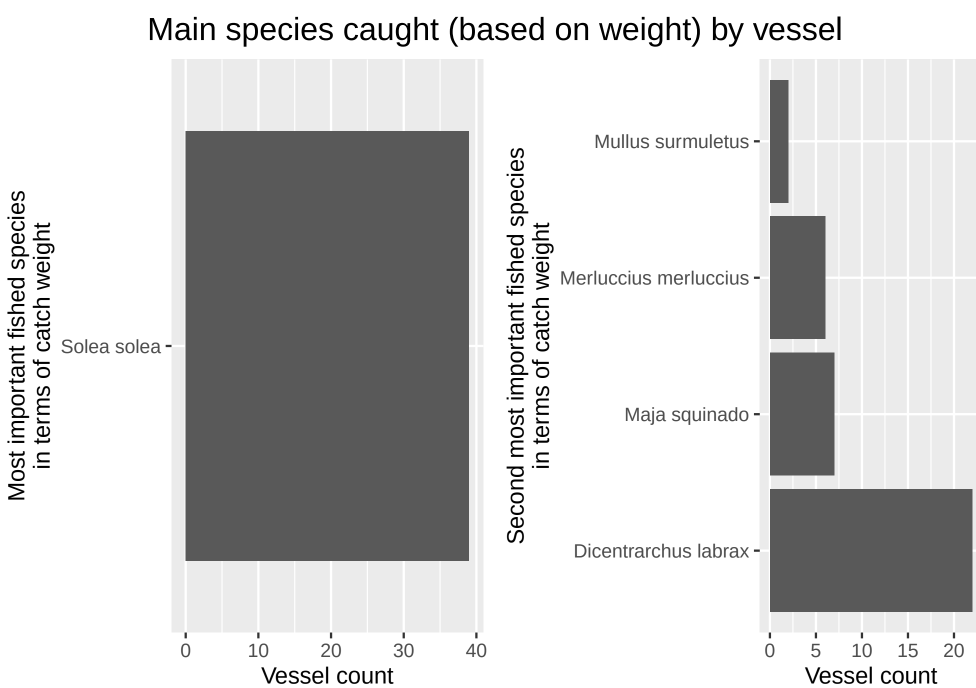
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

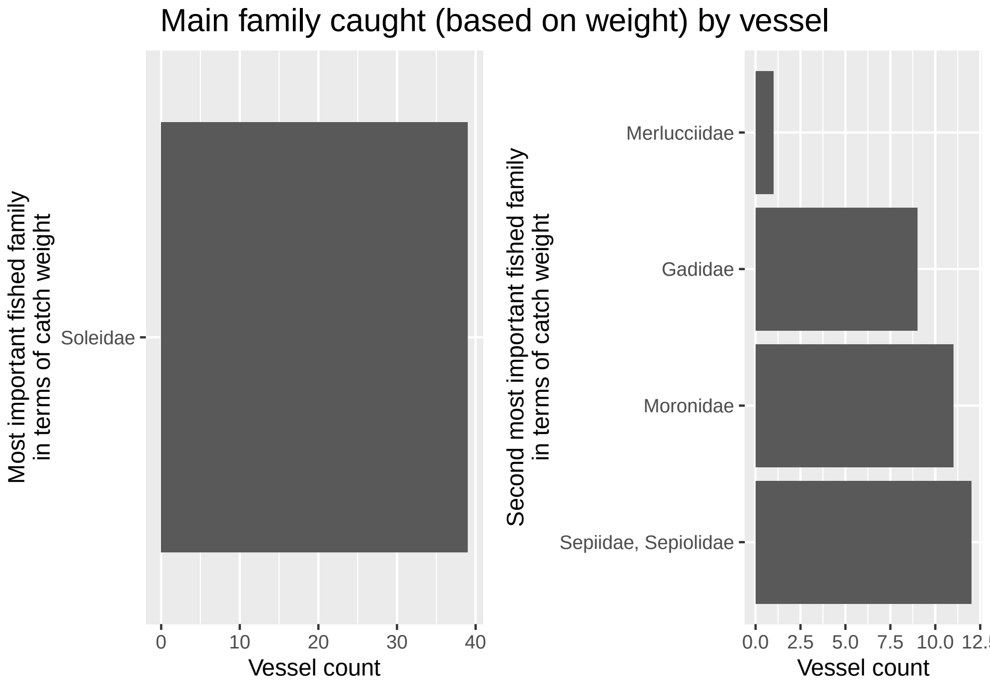


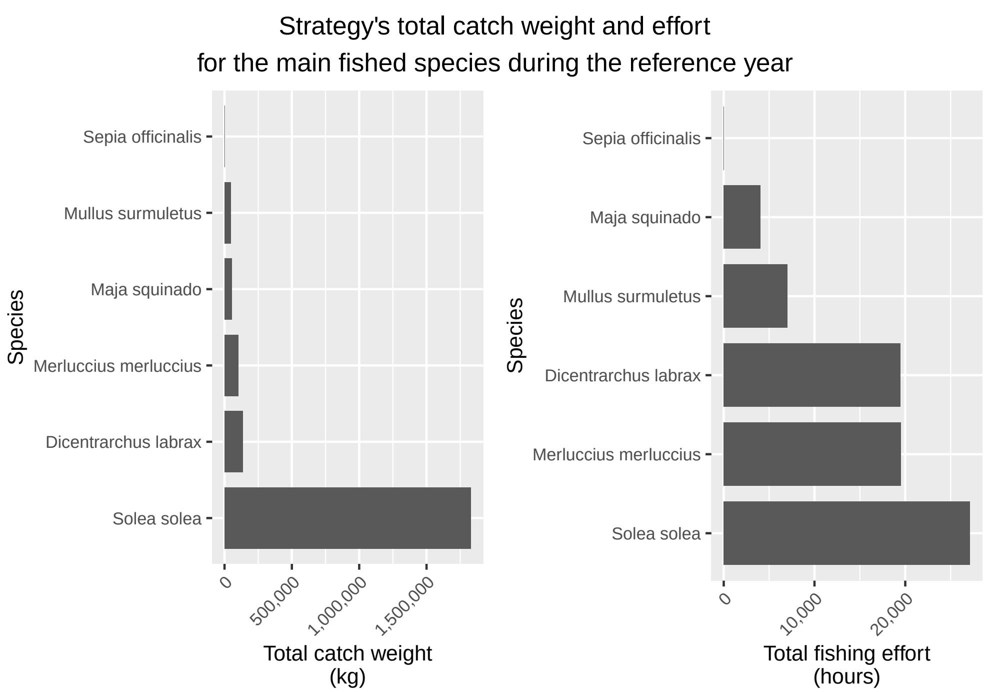


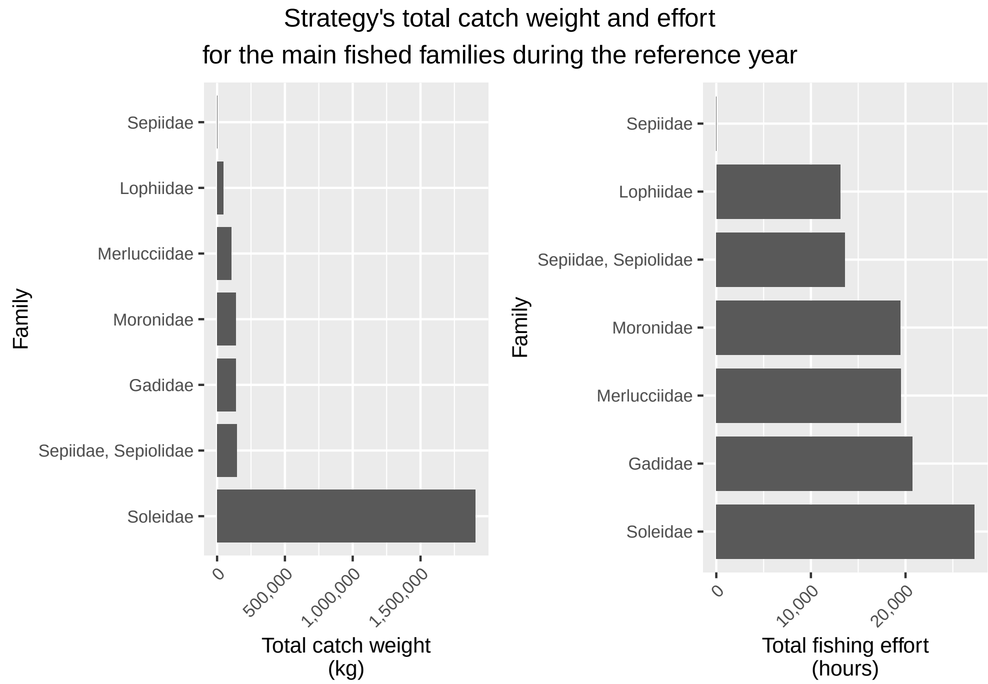
Main fished taxa and used gears during the reference year (2002)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

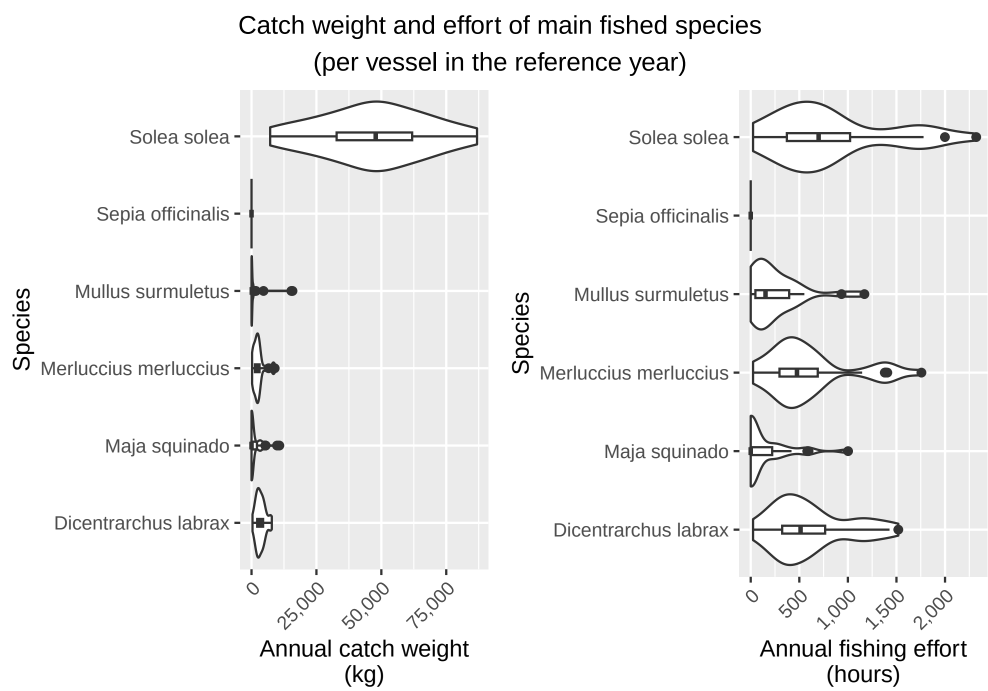


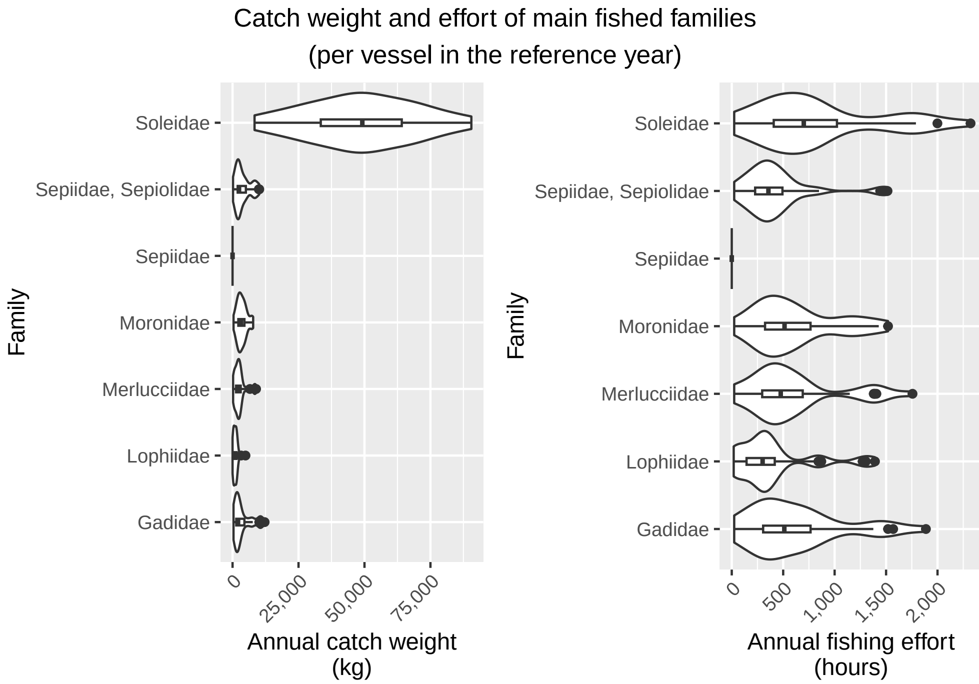

Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Soleidae
Vessel count
0
10
20
30
40
Second most important fished family in terms of catch weight
Merlucciidae
Gadidae
Moronidae
Sepiidae, Sepiolidae
0.0
2.5
5.0
7.5
10.0
Vessel count


Strategy's total catch weight and effort
for the main fished species during the reference year
Species
Sepia officinalis
Mullus surmuletus
Maja squinado
Merluccius merluccius
Dicentrarchus labrax
Solea solea
0
500,000
1,000,000
1,500,000
Total catch weight
(kg)
Species
Sepia officinalis
Maja squinado
Mullus surmuletus
Dicentrarchus labrax
Merluccius merluccius
Solea solea
0
10,000
20,000
Total fishing effort
(hours)

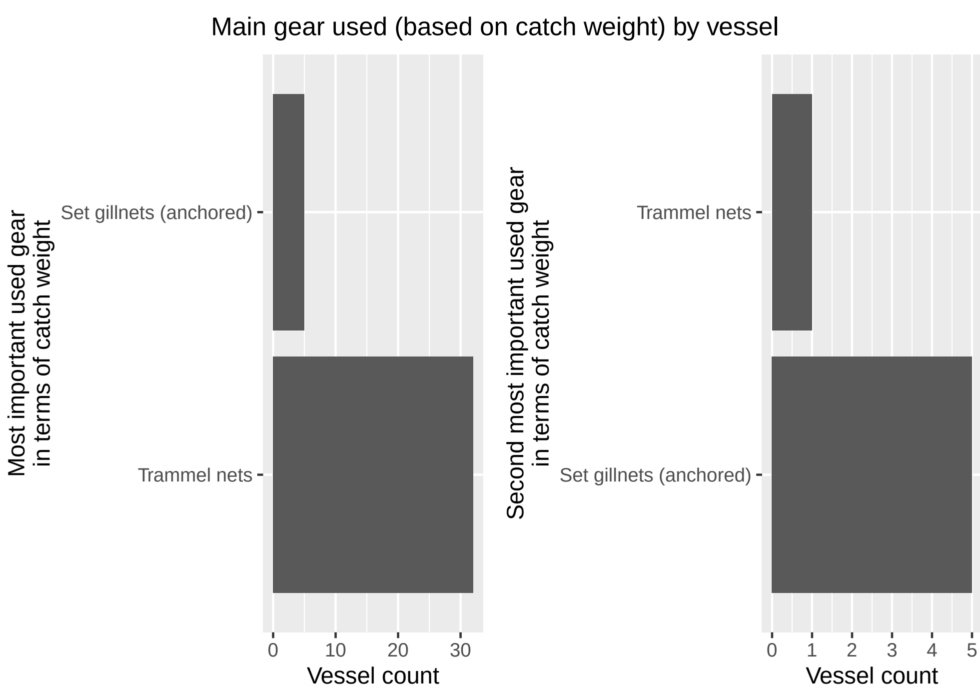


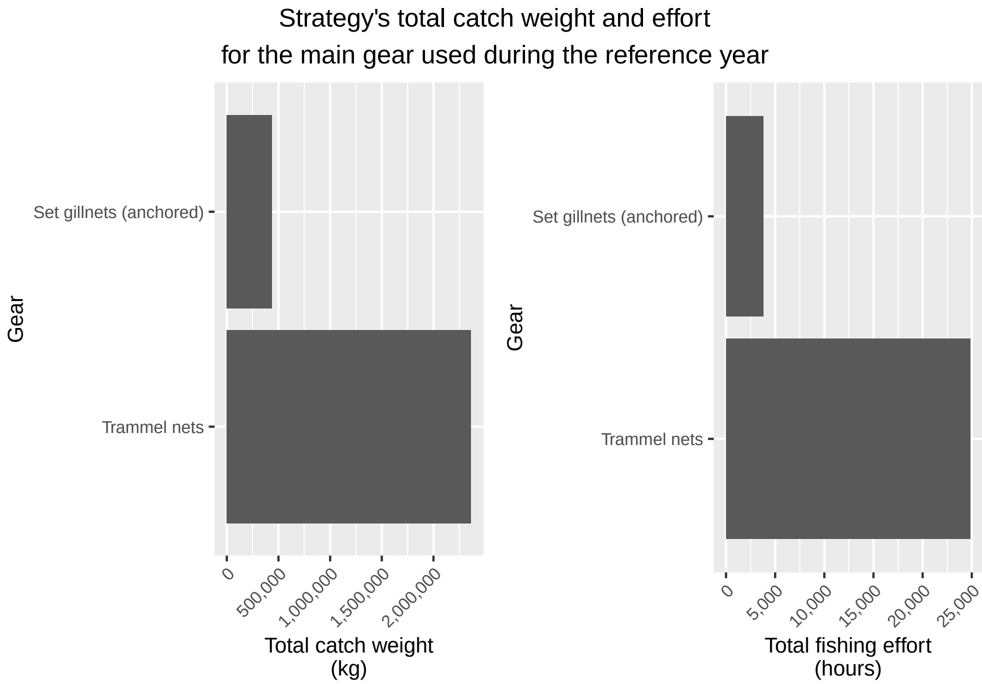
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

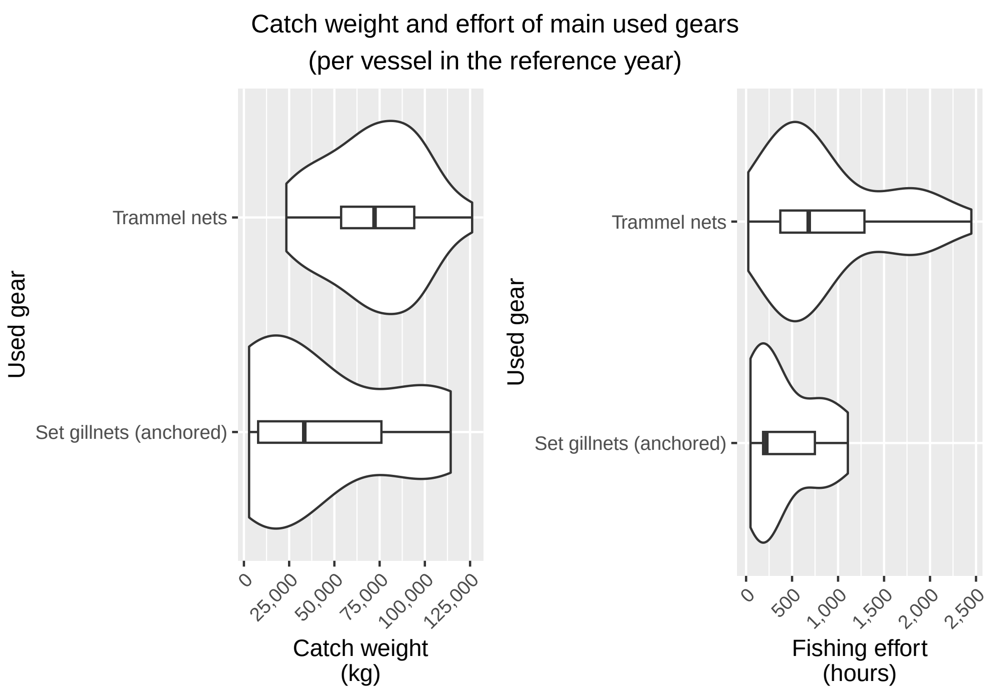




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

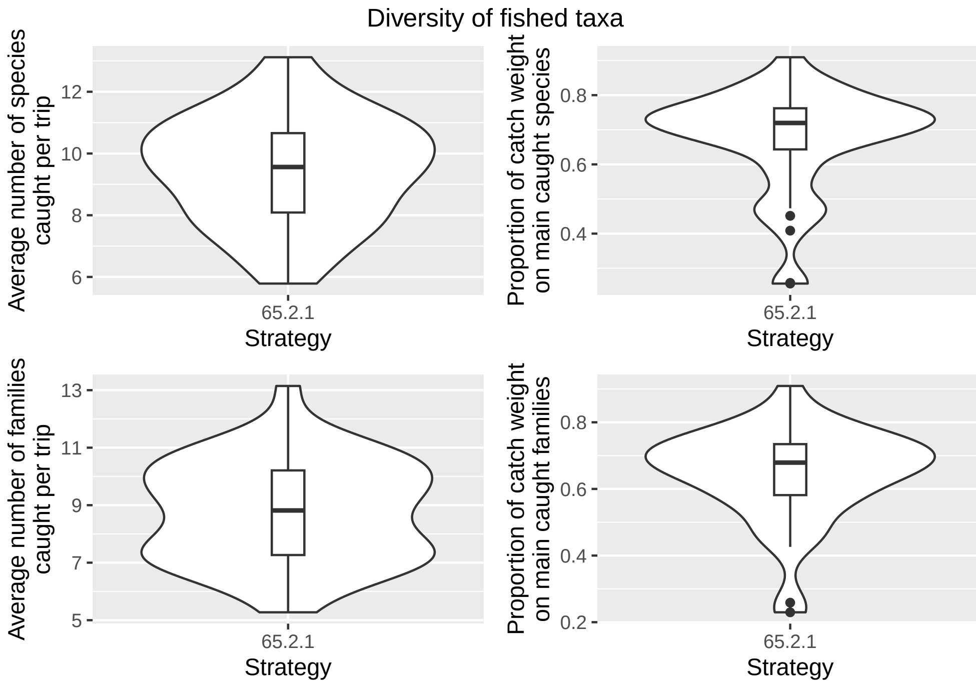




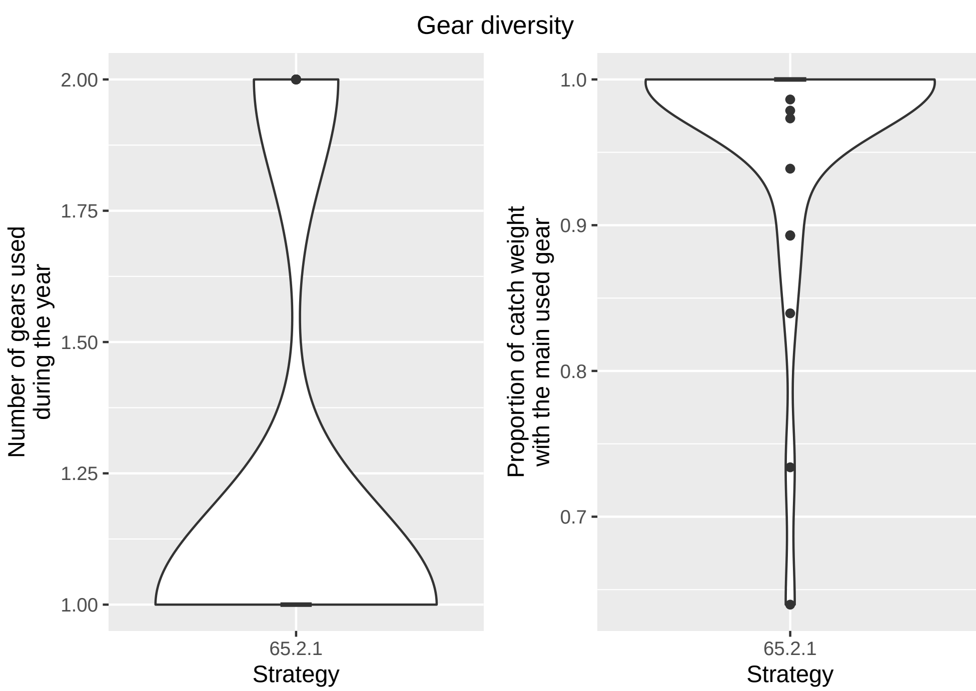


Diversity of fished taxa and used gears during the reference year (2002)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

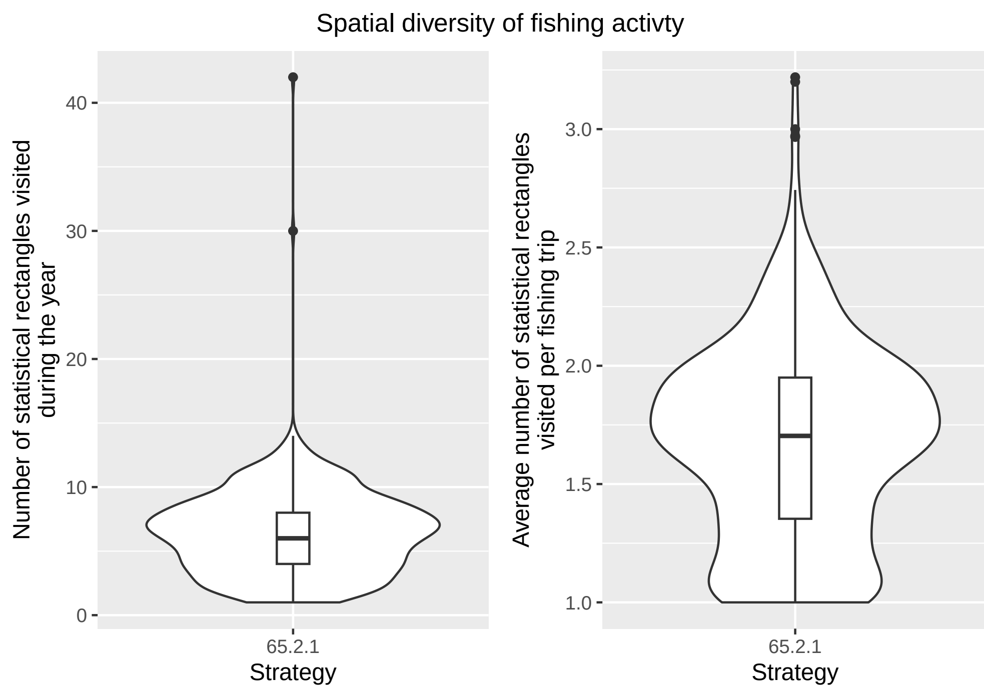


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

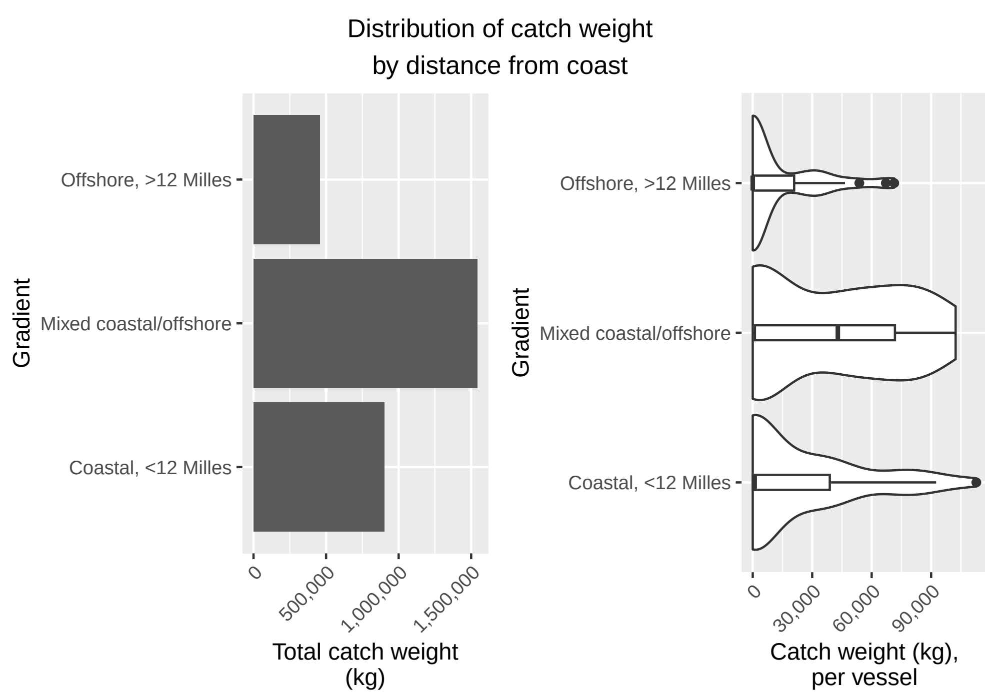


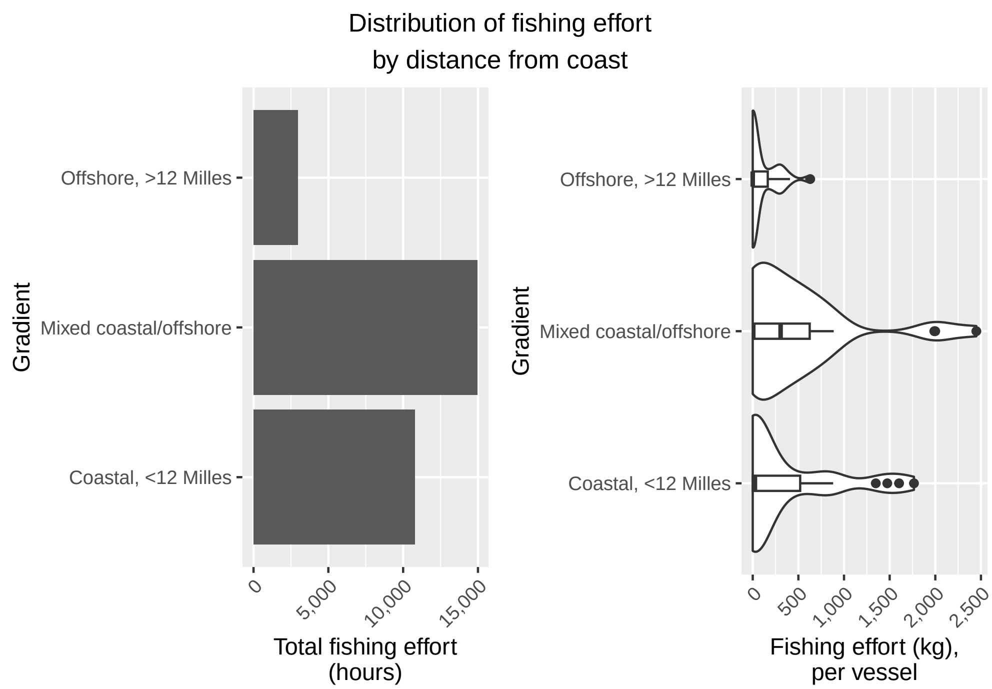
Diversity of areas visited during the reference year (2002)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



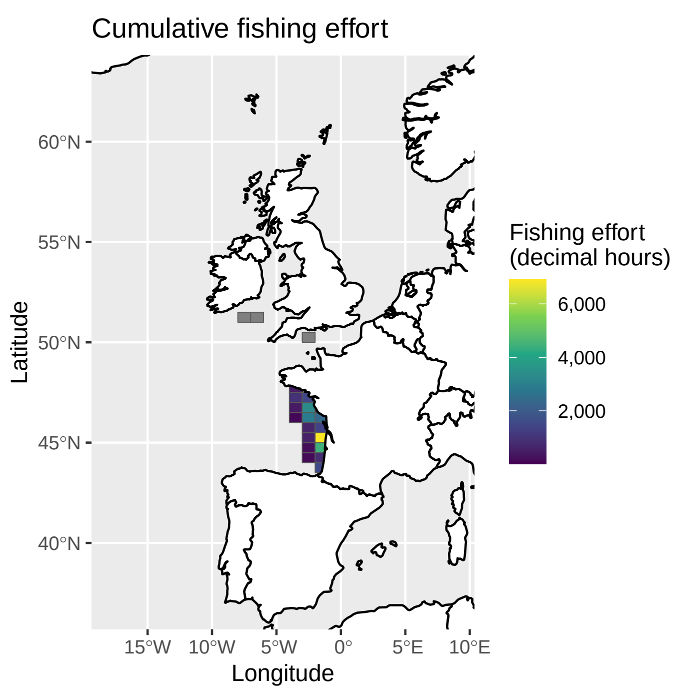
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

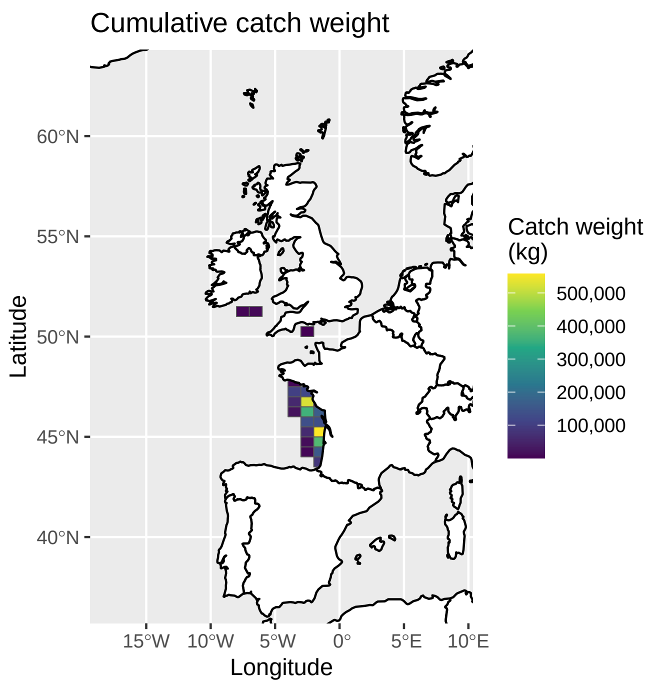




Maps of fishing activity distribution during the reference year (2002)

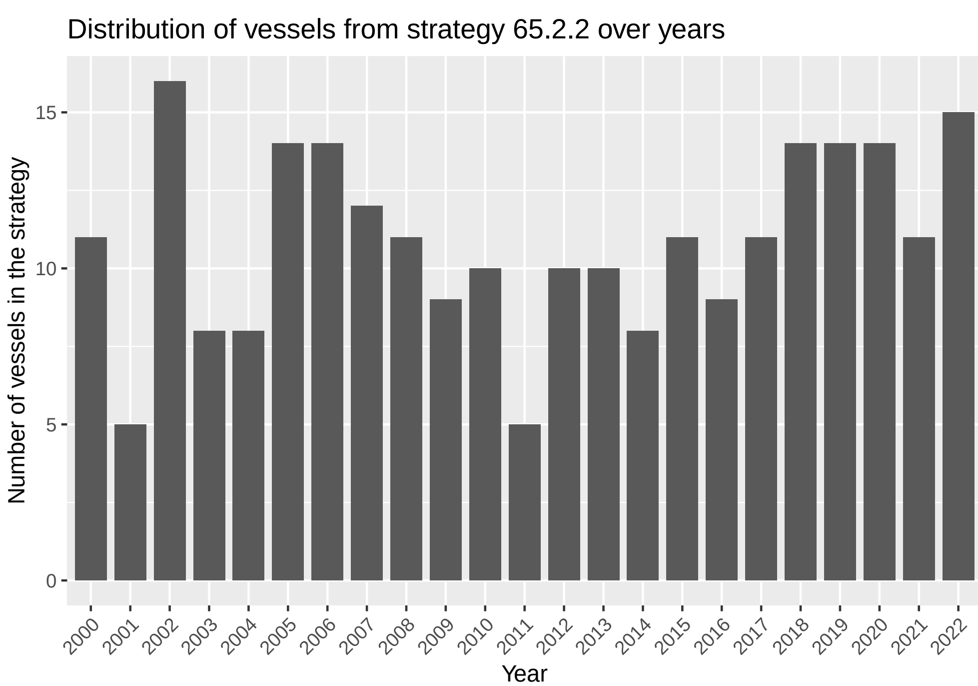
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





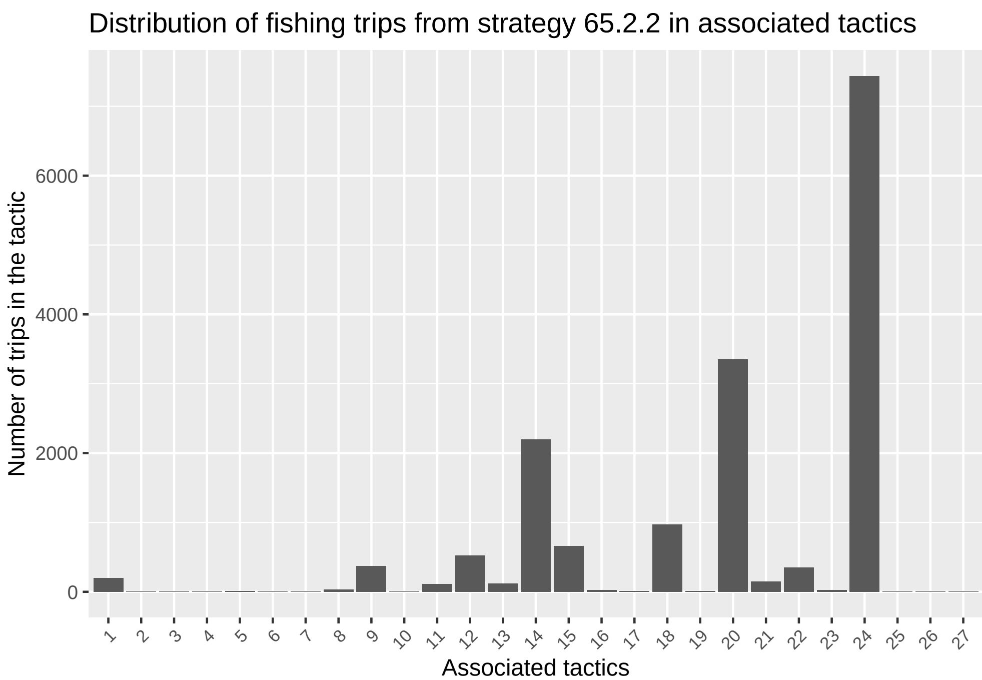
Strategy 65.2.2

This strategy includes N=250 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=76. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2002.

The distribution of fishing trips from this strategy in the corresponding tactic classification is presented below. We then described only the tactics associated with accidental bycatch (tactics: 14, 20, 22, 24).



Description table

This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

Table 17: Strategy 65.2.2

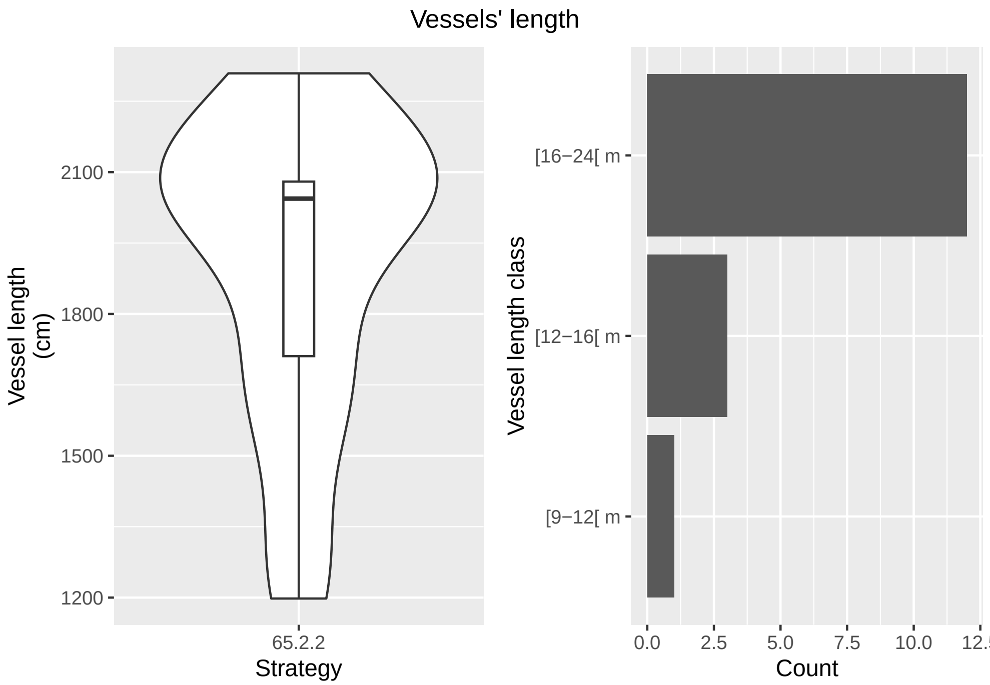
Importance	Variable	Value
	Sp.	Solea solea
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
	ISSCAAP	31
Determinant (>95%)	PAVILLON	FRA
	Stock	SOL.27.8ab
	Gear	Trammel nets
Strongly predominant (>80%)	Trimester	1
	Stock	BLL.27.8ab
Predominant (>65%)	ICES division	27.8.a
	Family	Gadidae
	ICES division	27.8.b
Major (>50%)	Month	02
		Scophthalmus rhombus
	Sp.	Trisopterus luscus
	Second spp.	Lophius spp
	Second family	Lophiidae
		Gadiformes
	Second order	Lophiiformes
	Second ISSCAAP	34
	Third sp.	Dicentrarchus labrax
	Third family	Scophthalmidae

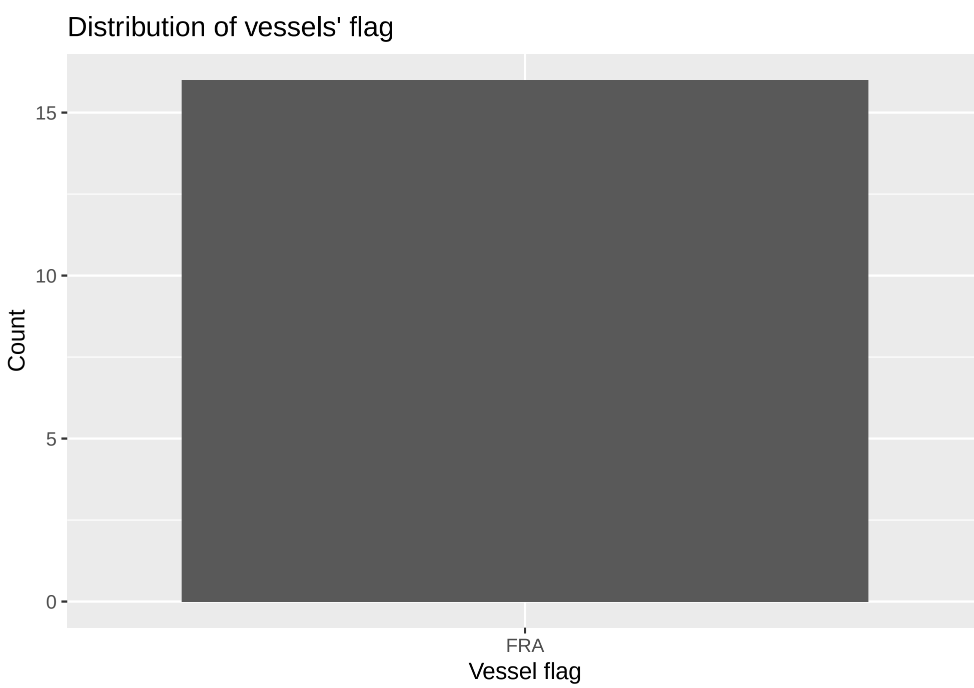
Table 17: Strategy 65.2.2 *(continued)*

Importance	Variable	Value
	Third order	Perciformes
	Third ISSCAAP	33
Strong component (>35%)	Gear	Set gillnets (anchored)
	Sp.	Merluccius merluccius
	ISSCAAP	32
		HKE.27.3a4678abd
	Stock	MNZ.27.7b-k8abd
	Second sp.	Scophthalmus maximus
	Third spp.	Dicentrarchus spp
	Third sp.	Scophthalmus maximus
	Third ISSCAAP	38
	Month	01
Component (>20%)	Trimester	2
		Cancer pagurus
	Sp.	Sparus aurata
	Spp.	Merluccius spp
	Sp.	Thunnus alalunga
	Spp.	Thunnus spp
		Merlucciidae
	Family	Scombridae
	ISSCAAP	36
		ALB.27
		CET.27.8ab
		RAJ.27.89a
	Stock	SBG.27.8ab
	Second sp.	Cancer pagurus
	Second spp.	Chelidonichthys spp
		Maja squinado
		Pollachius pollachius
	Third sp.	Scophthalmus rhombus
	Third spp.	Raja spp
	Third sp.	Sepia officinalis
	Third spp.	Sepia spp
	Third sp.	Trisopterus luscus
		Cancridae
		Moronidae
	Third family	Rajidae
		Decapoda
	Third order	Rajiformes
		42
		43
	Third ISSCAAP	57
	Gear	Drifting longlines
		27.7.e
	ICES division	27.8.d
		03
		04
		05
		06
	Month	07
		3
Minor component (>5%)	Trimester	4
	sd_weight	TRUE
	prop_spe	TRUE
	prop_spp	TRUE
	Second sp.	TRUE
	Second family	TRUE
	Second order	TRUE
	prop_isscaap	TRUE
High values (>SD)	Second ISSCAAP	TRUE

Distribution of vessel length and flag during the reference year (2002)

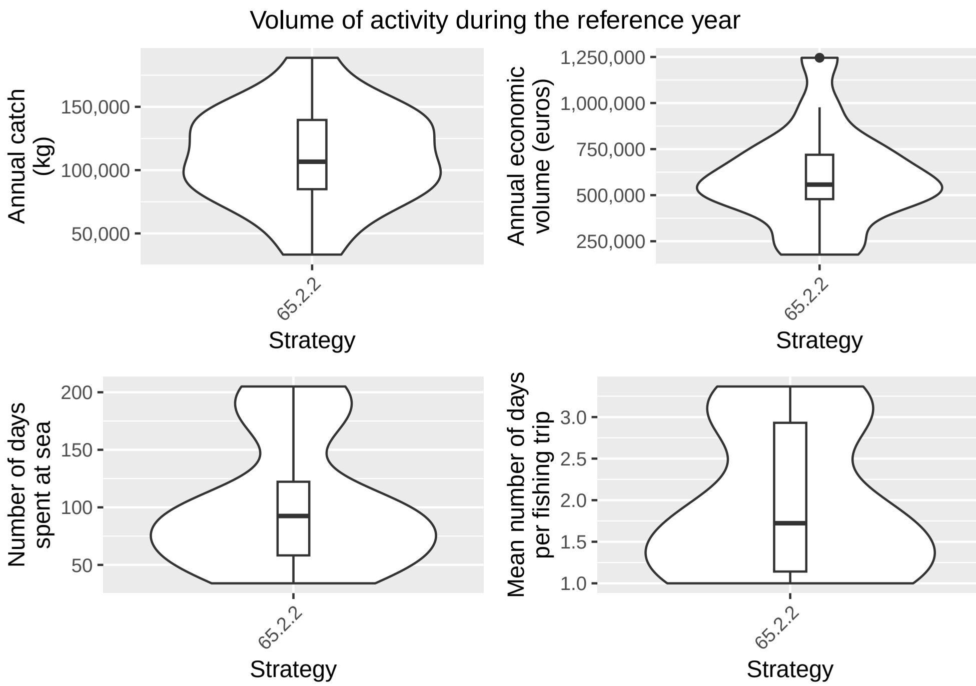
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



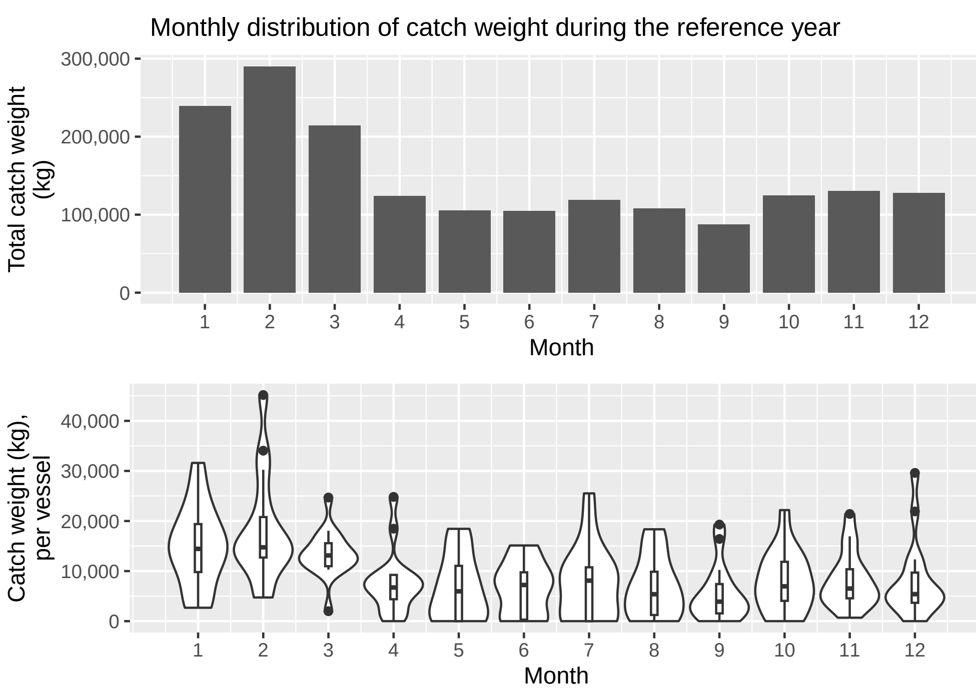


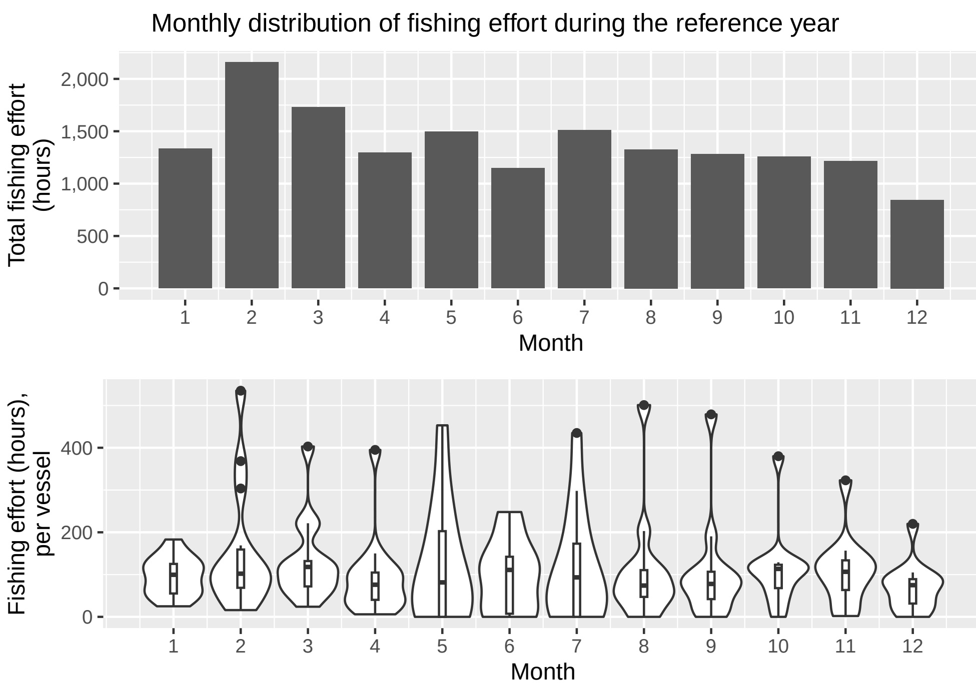
Description of the volume and pattern of fishing activities during the reference year (2002)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



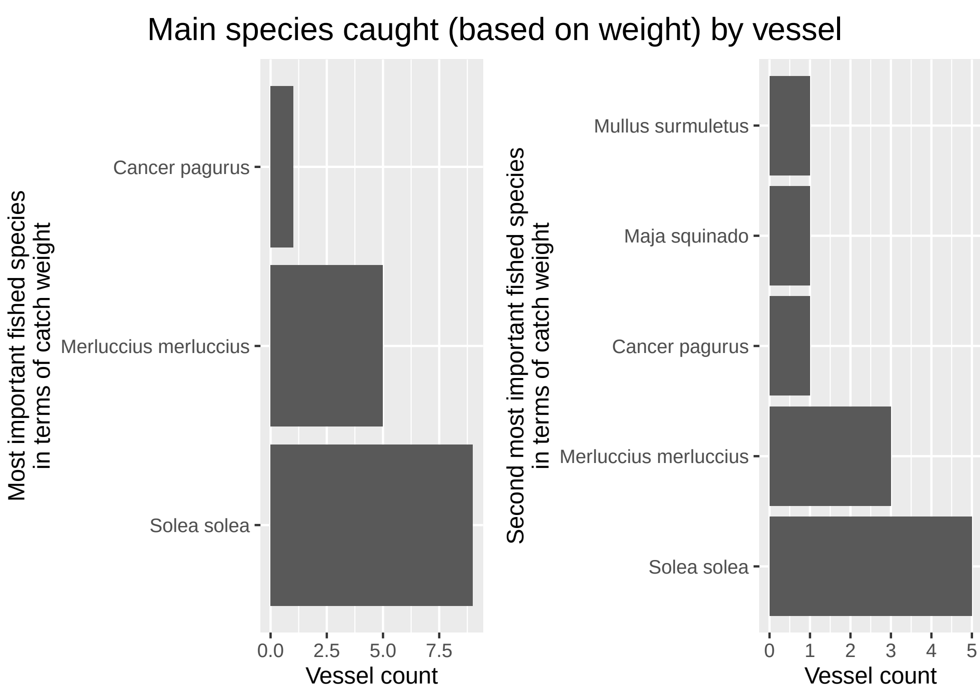
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

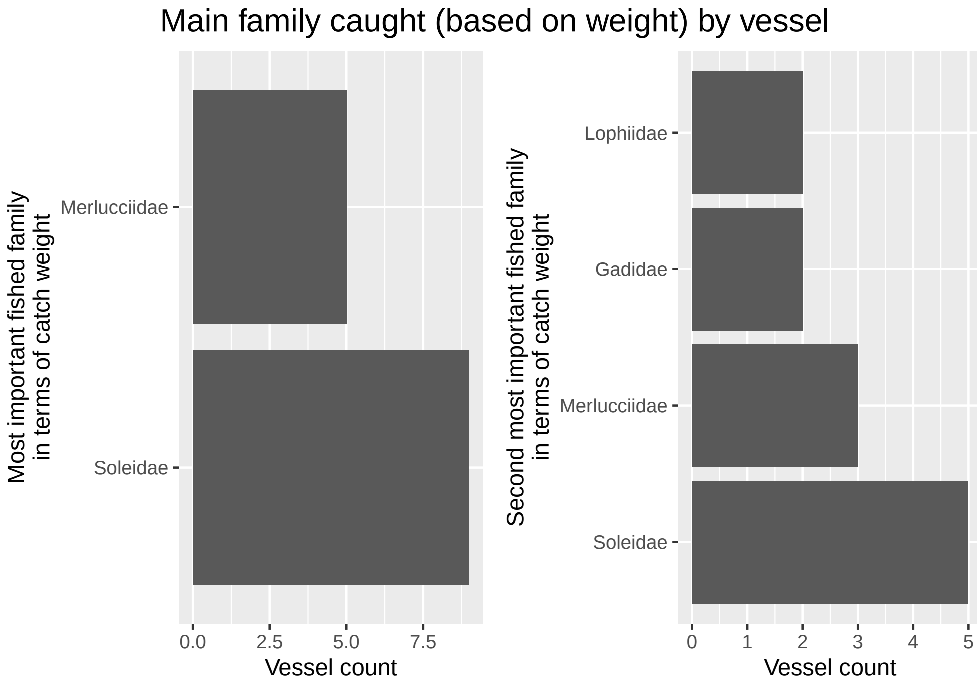


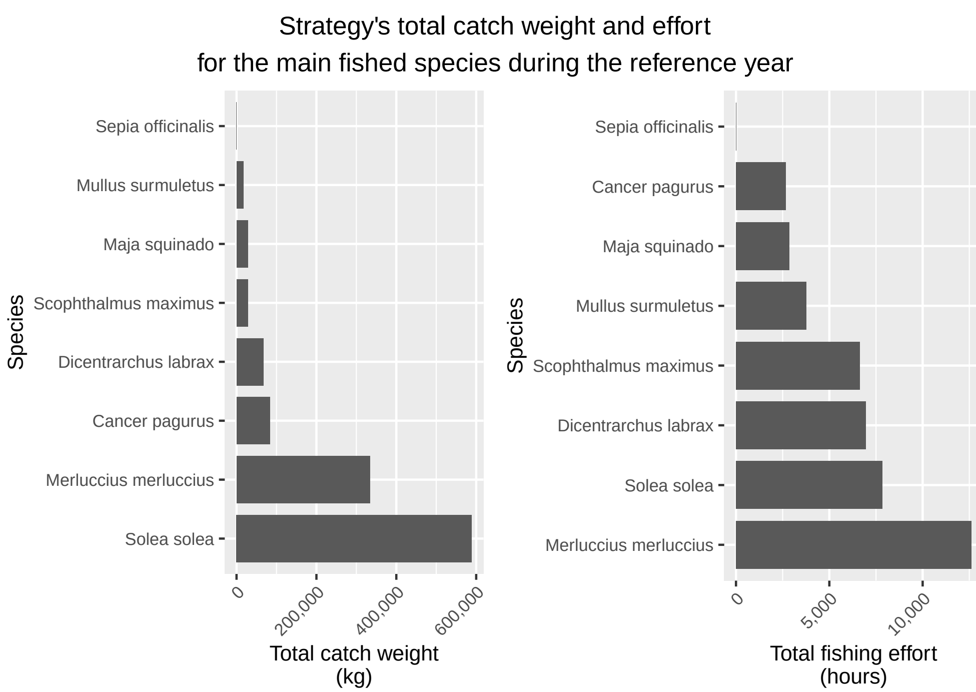


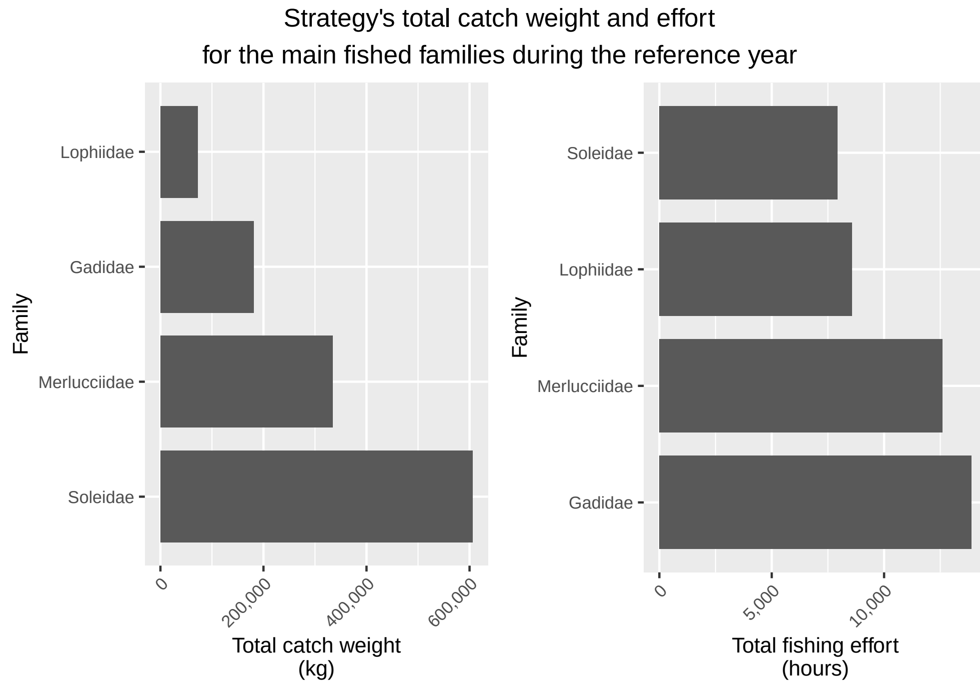
Main fished taxa and used gears during the reference year (2002)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

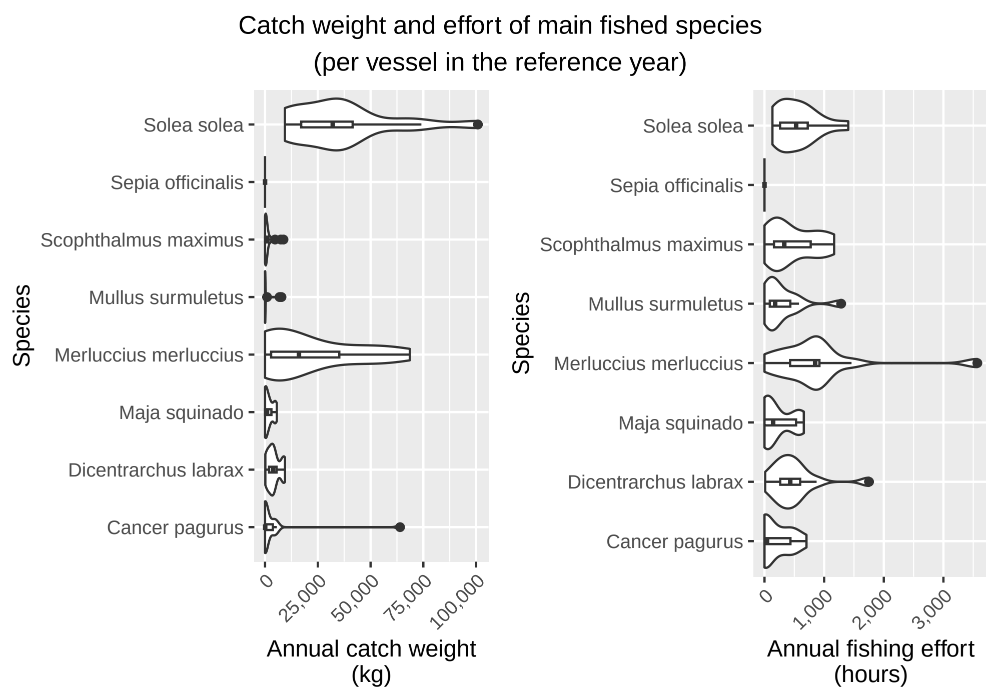


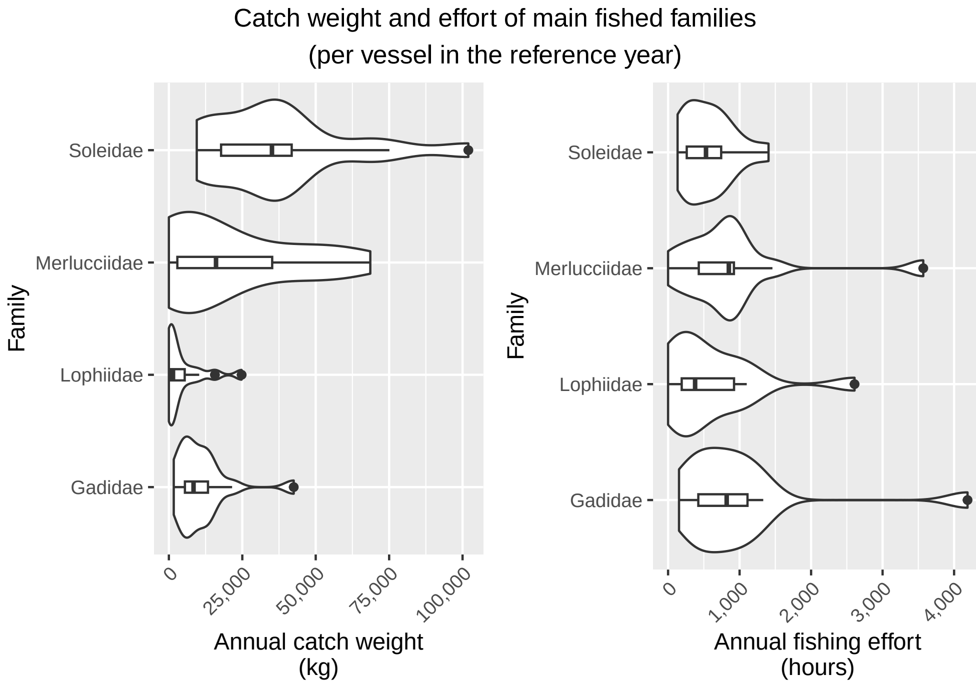

Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Merlucciidae
Soleidae
0.0
2.5
5.0
7.5
Vessel count
Second most important fished family in terms of catch weight
Lophiidae
Gadidae
Merlucciidae
Soleidae
0
1
2
3
4
5
Vessel count


Strategy's total catch weight and effort
for the main fished species during the reference year
Species
Sepia officinalis
Mullus surmuletus
Maja squinado
Scophthalmus maximus
Dicentrarchus labrax
Cancer pagurus
Merluccius merluccius
Solea solea
0
200,000
400,000
600,000
Total catch weight (kg)
Species
Sepia officinalis
Cancer pagurus
Maja squinado
Mullus surmuletus
Scophthalmus maximus
Dicentrarchus labrax
Solea solea
Merluccius merluccius
0
5,000
10,000
Total fishing effort (hours)

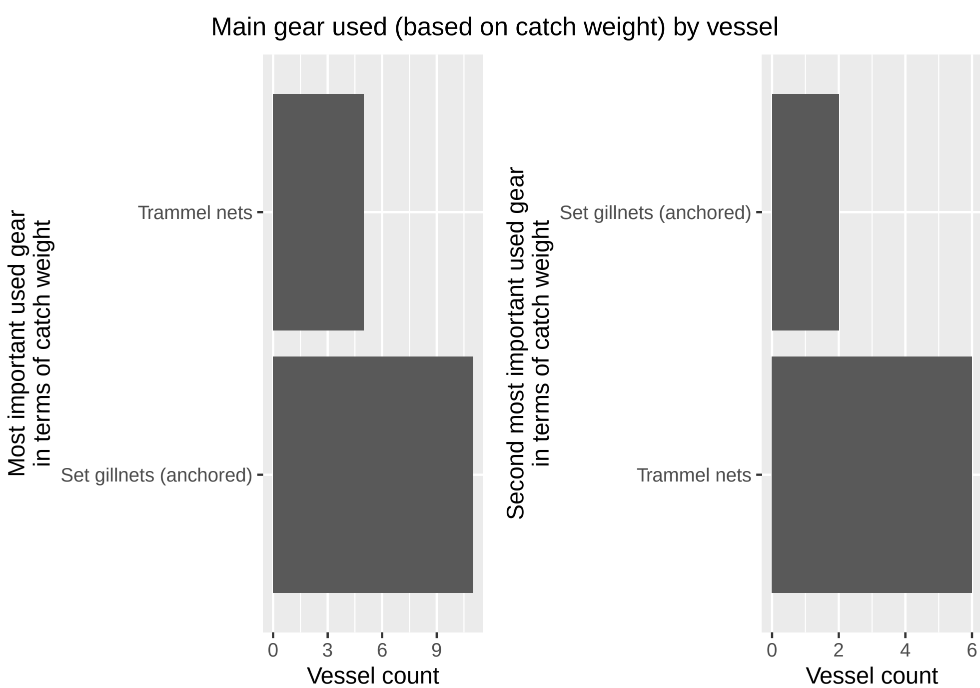


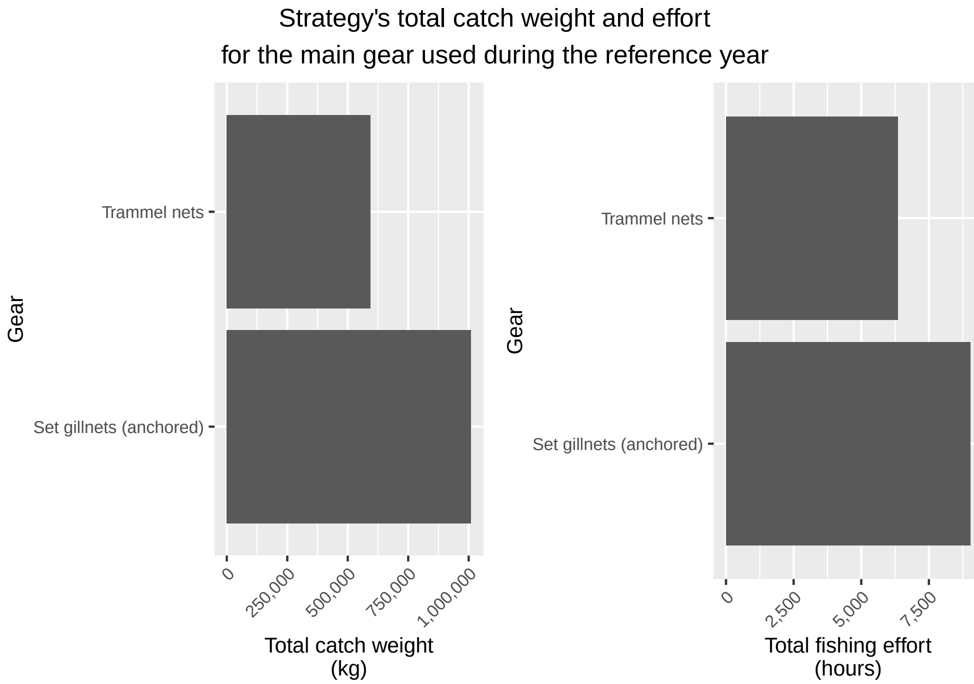
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

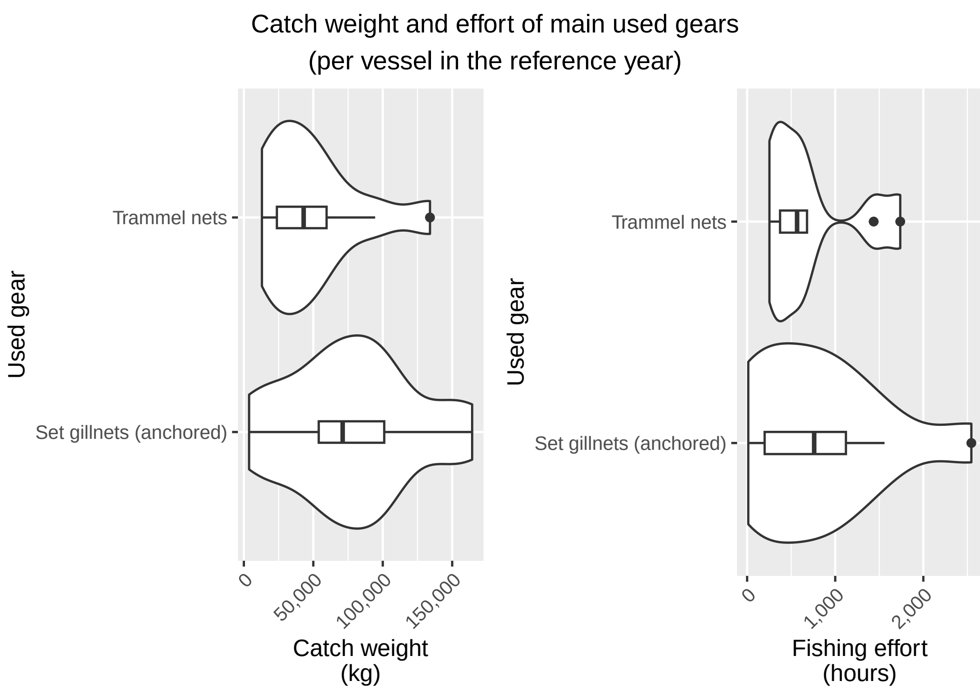




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

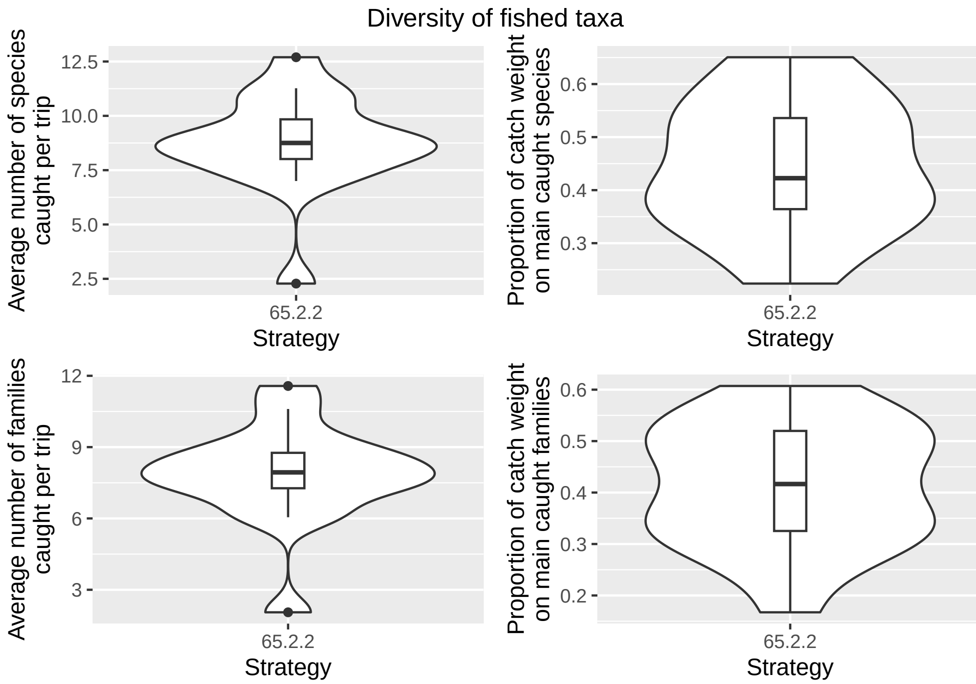




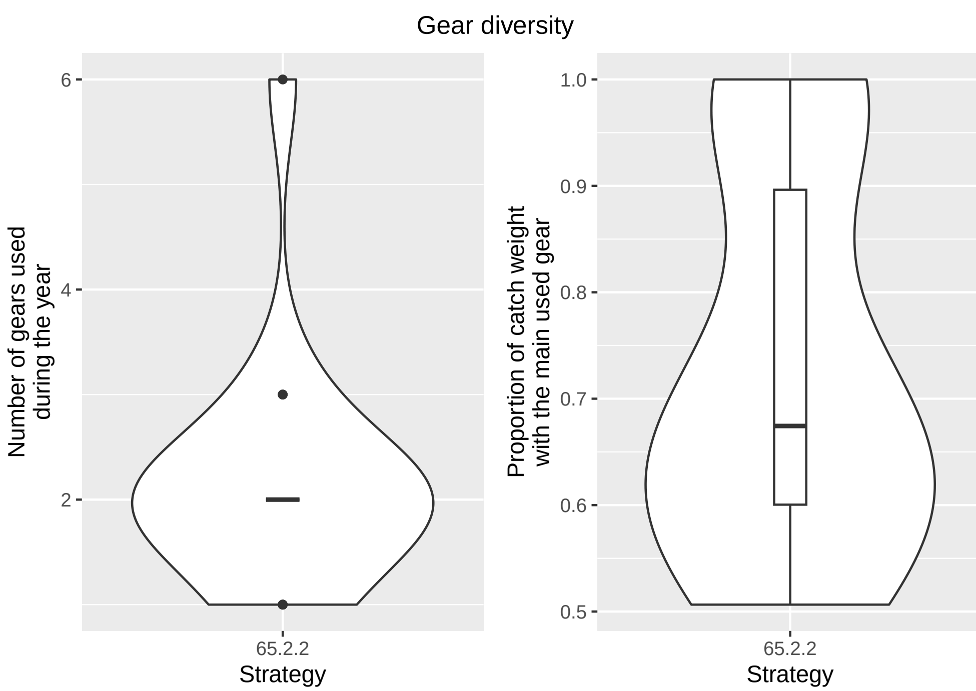


Diversity of fished taxa and used gears during the reference year (2002)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

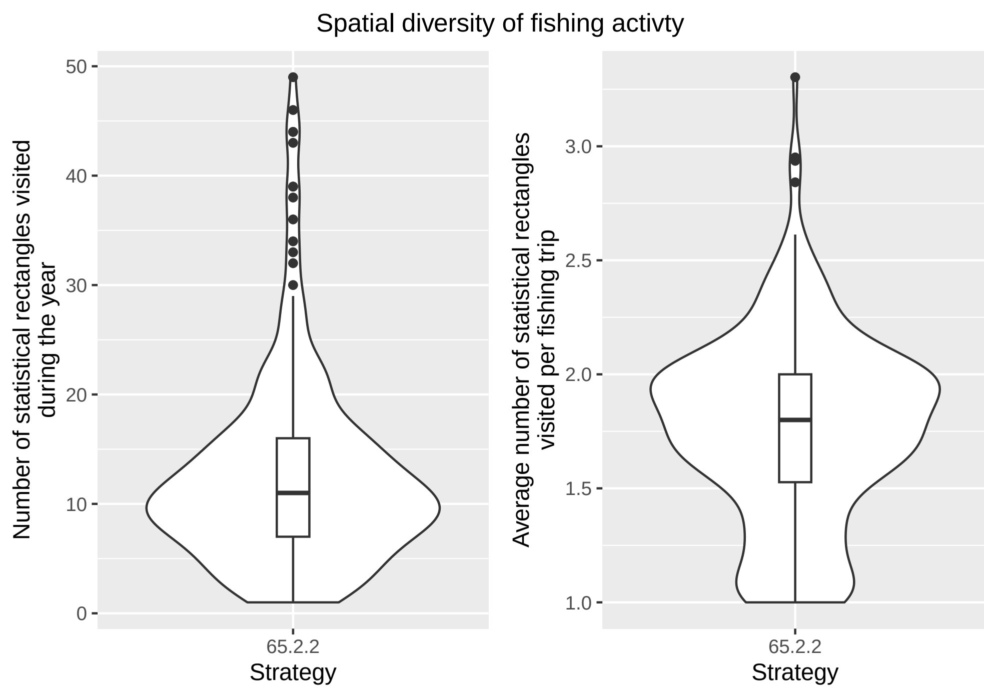


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

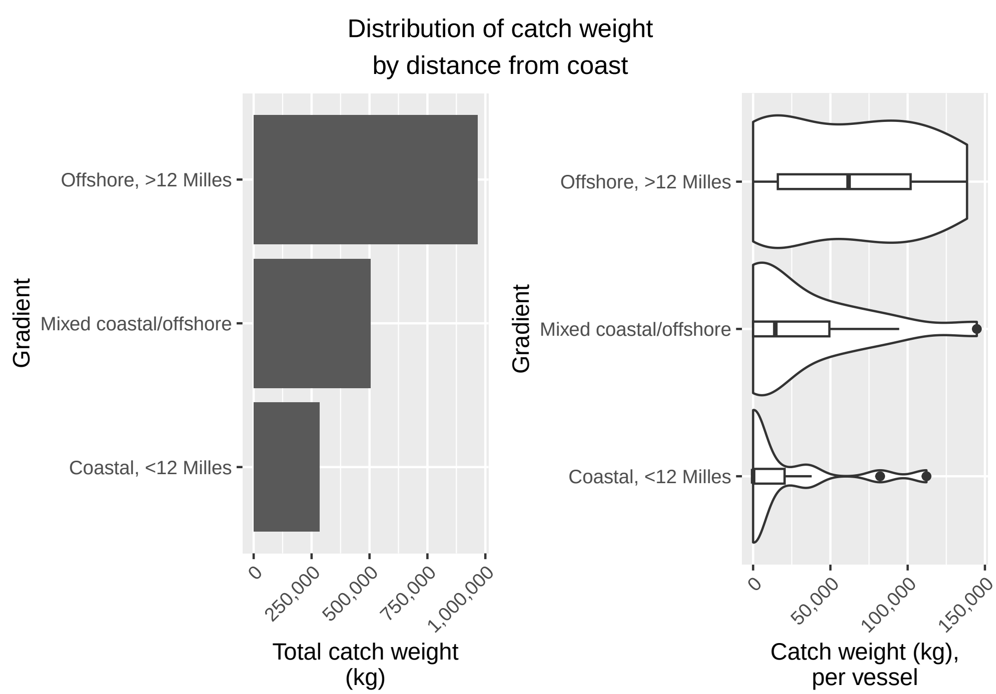


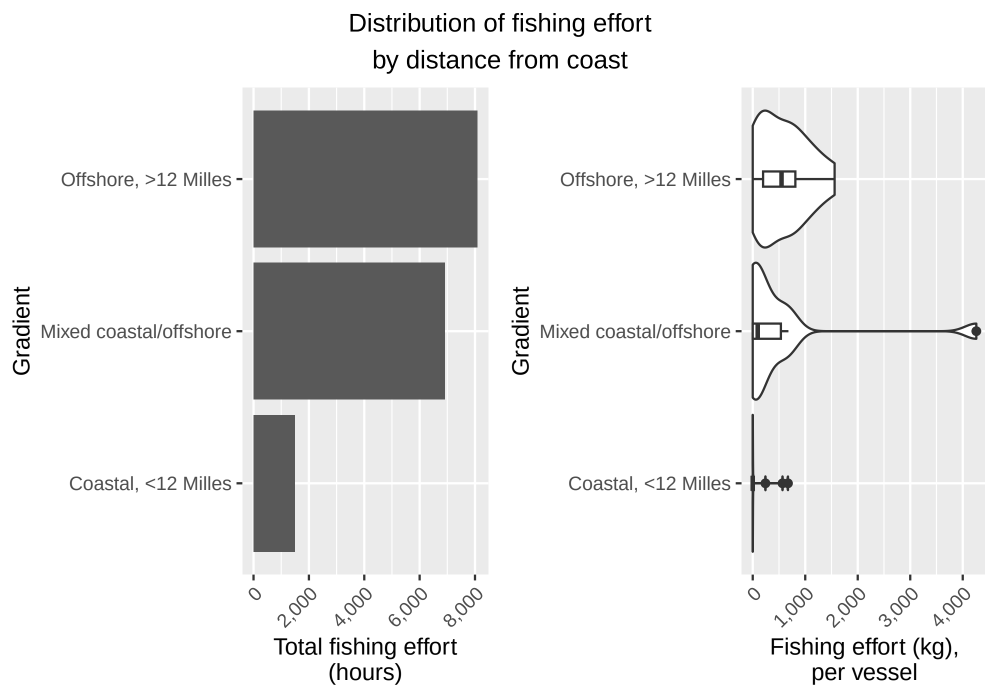
Diversity of areas visited during the reference year (2002)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



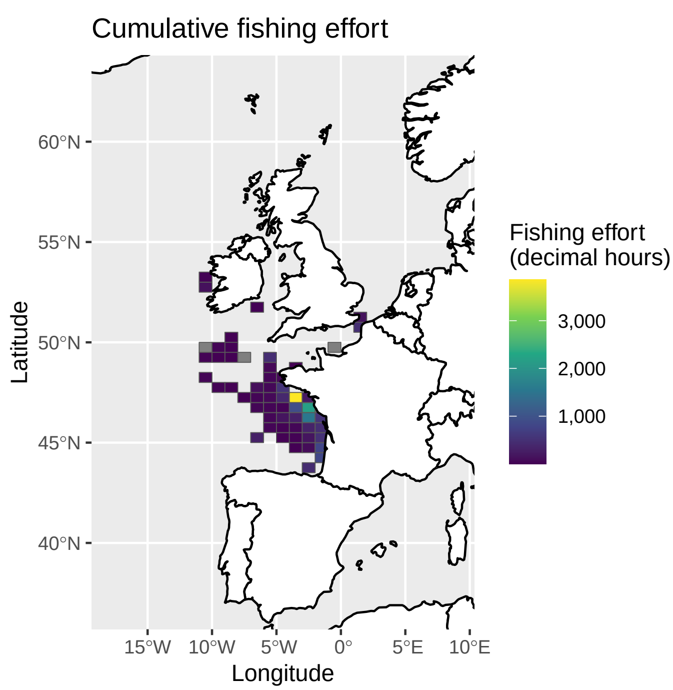
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

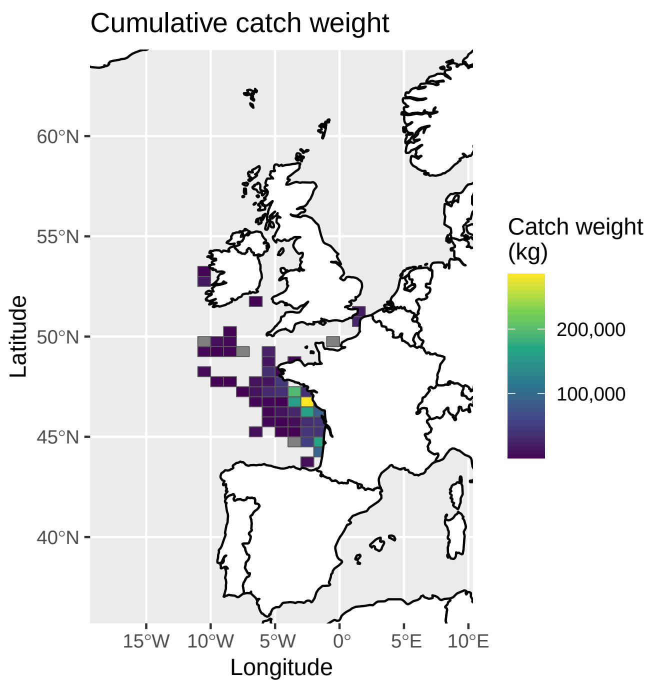




Maps of fishing activity distribution during the reference year (2002)

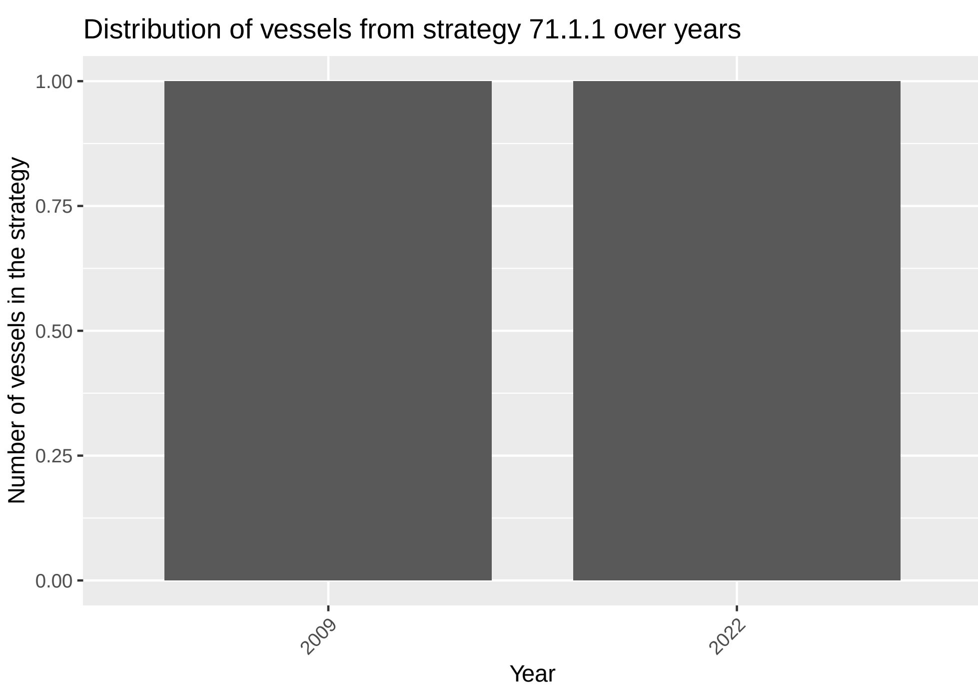
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





Strategy 71.1.1

This strategy includes N=2 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=2. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2022.

Description table

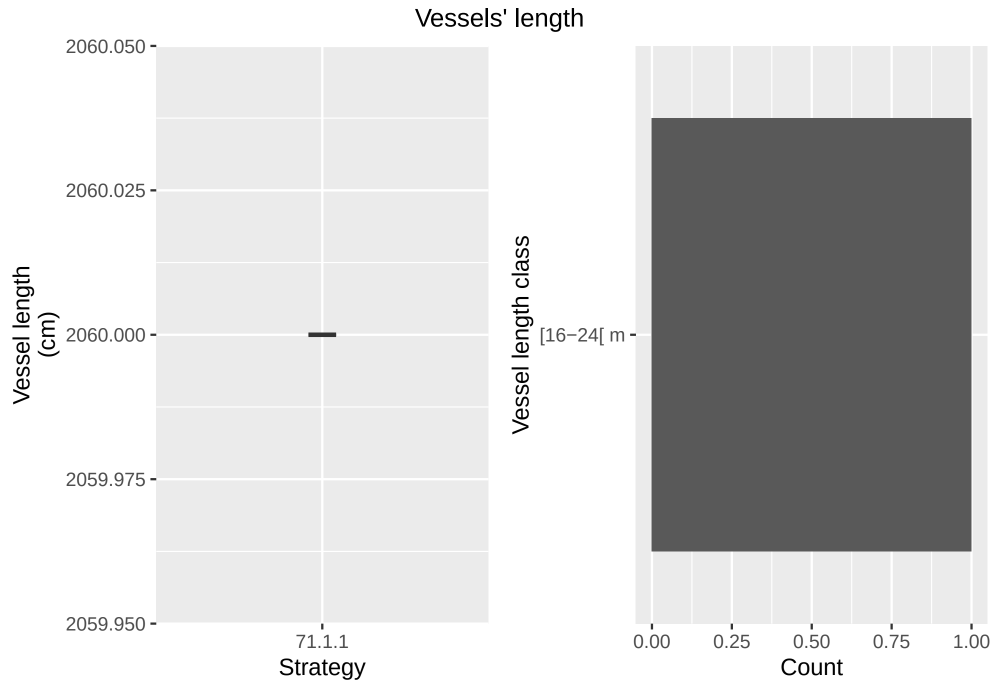
This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

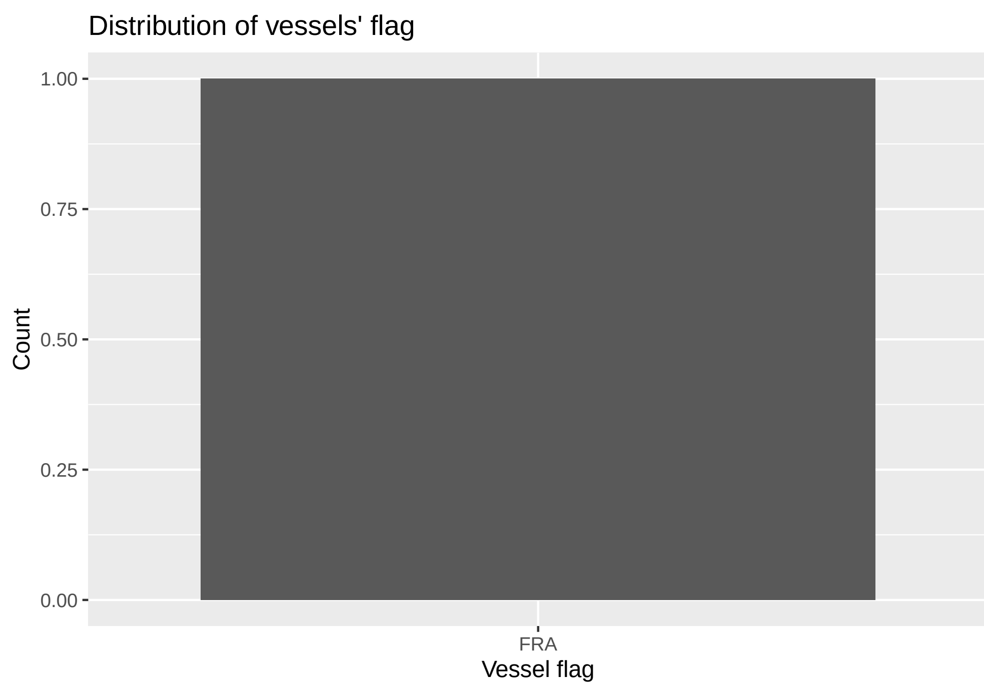
Table 18: Strategy 71.1.1

Importance	Variable	Value
	Sp.	Dicentrarchus labrax
	Spp.	Dicentrarchus spp
	Family	Moronidae
	ISSCAAP	33
Determinant (>95%)	Stock	BSS.27.8ab
	Sp.	Chelidonichthys lucerna
	Spp.	Gadus spp
	ISSCAAP	23
	Gear	Handlines and pole-lines (hand operated)
	District	Auray
Strong component (>35%)	Distance from coast	Coastal, <3 Milles
	value__weight	TRUE
	value__eco	TRUE
	sd__weight	TRUE
	sd__eco	TRUE
	prop__spe	TRUE
	prop__spp	TRUE
	prop__family	TRUE
	prop__order	TRUE
	prop__isscaap	TRUE
	prop__engine	TRUE
	prop__zee	TRUE
	prop__month	TRUE
High values (>SD)	prop__trimester	TRUE

Distribution of vessel length and flag during the reference year (2009)

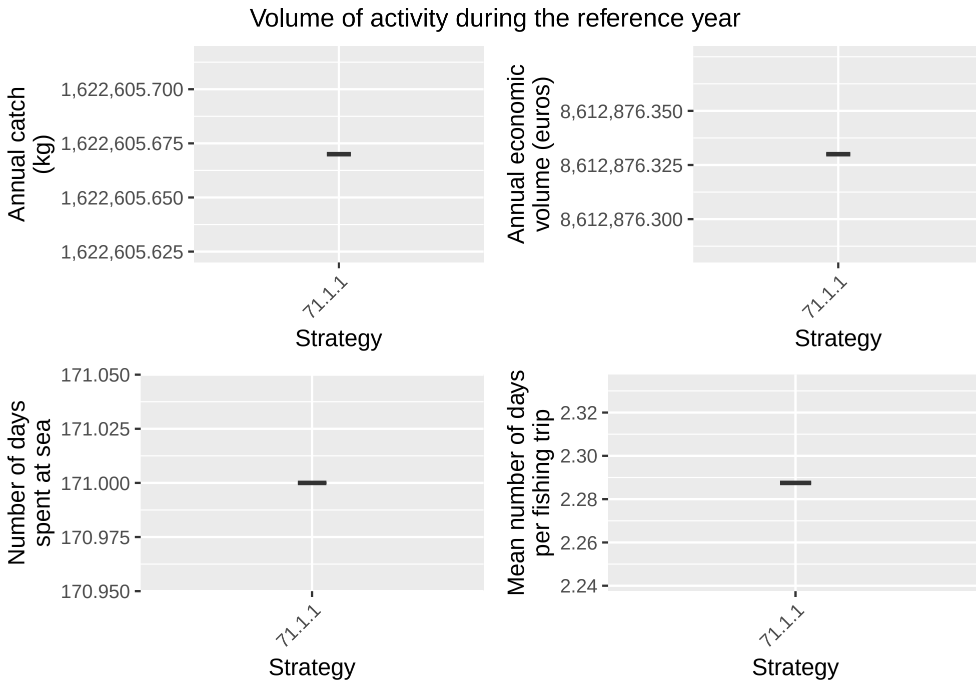
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



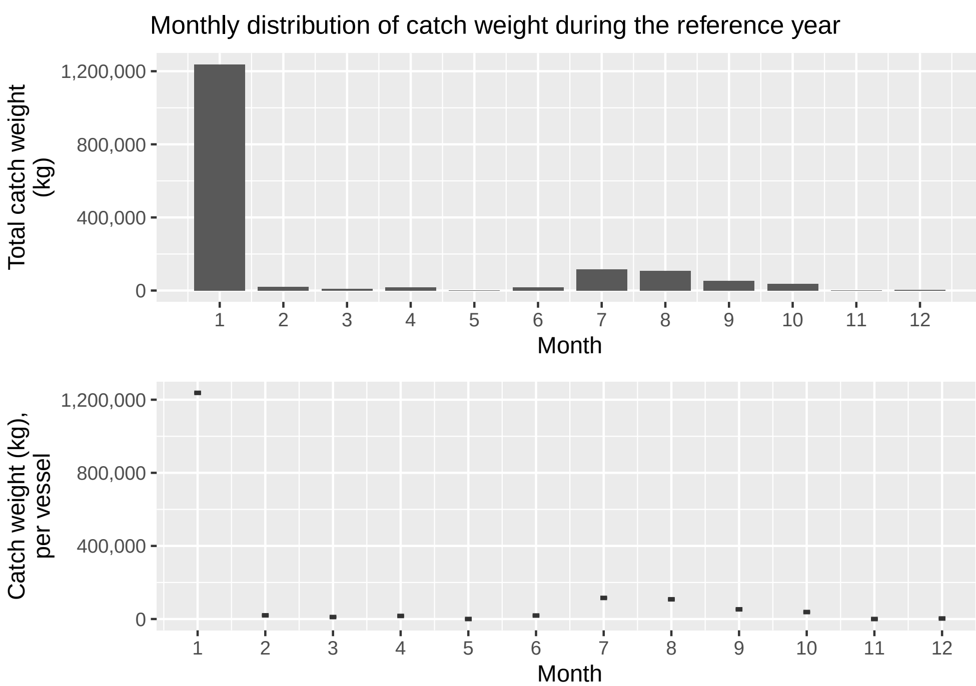


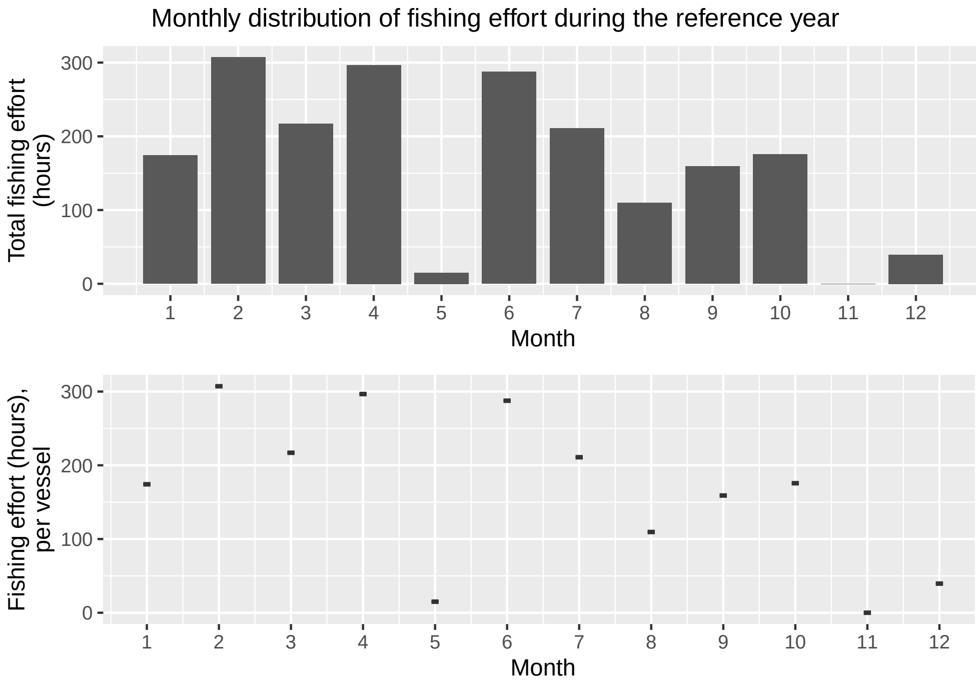
Description of the volume and pattern of fishing activities during the reference year (2009)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



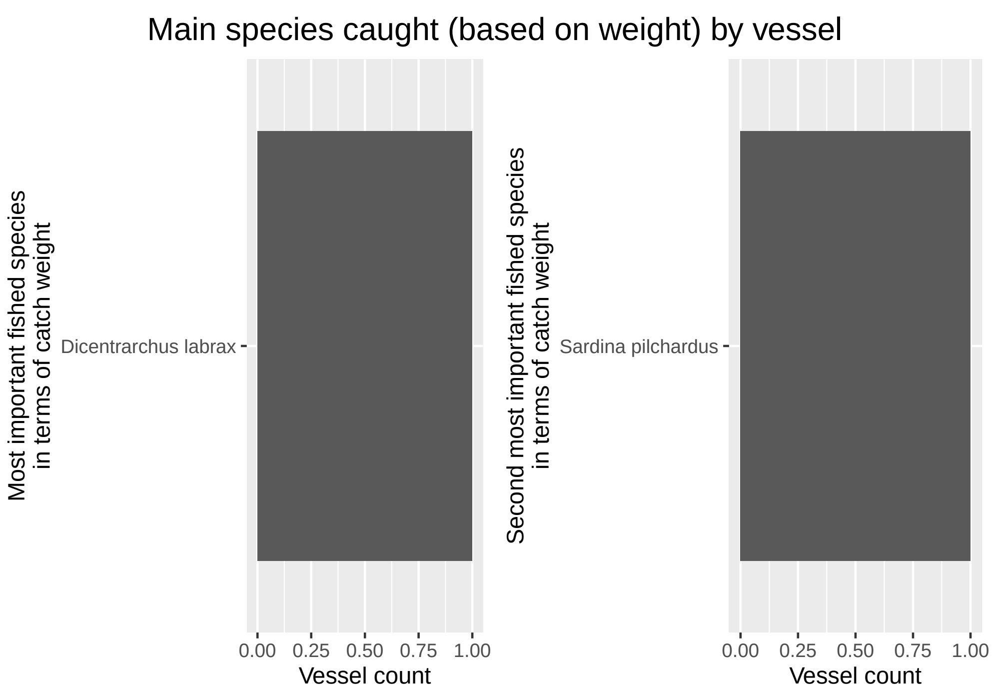
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

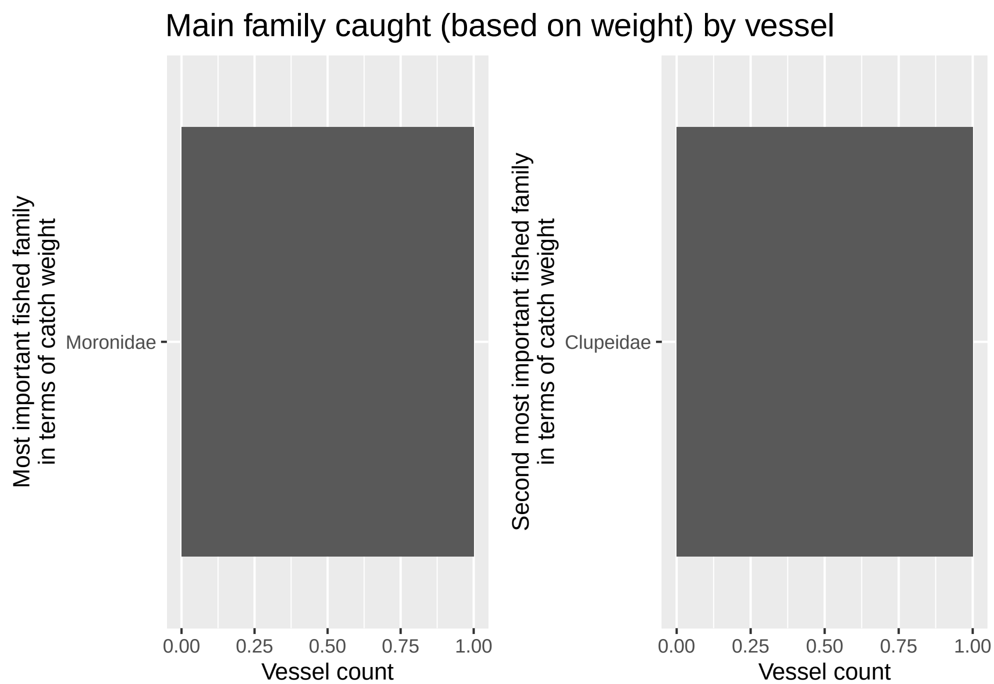


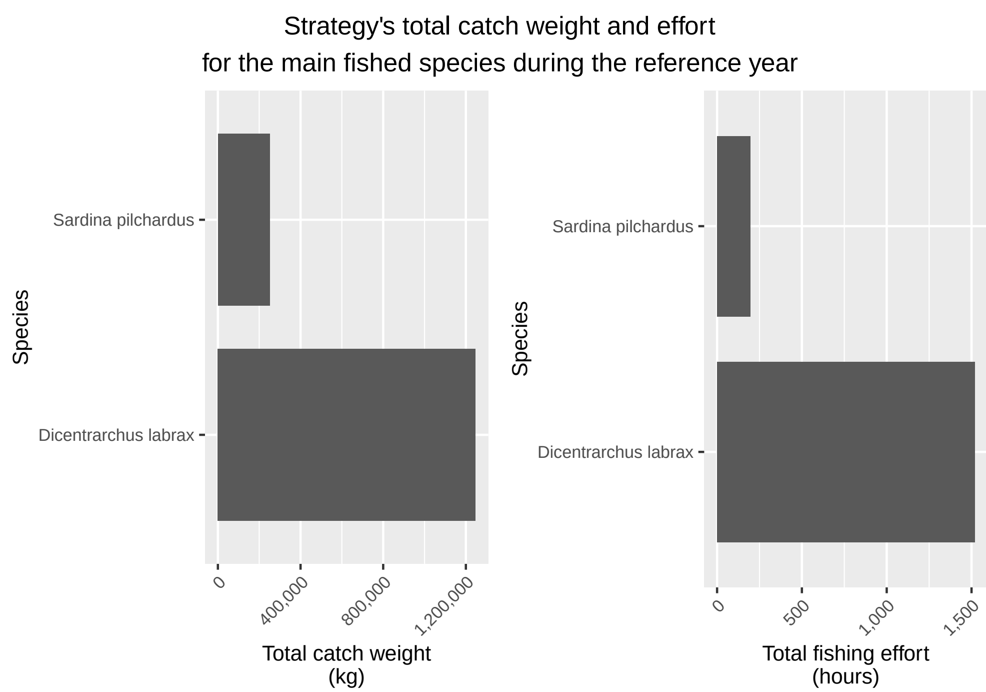


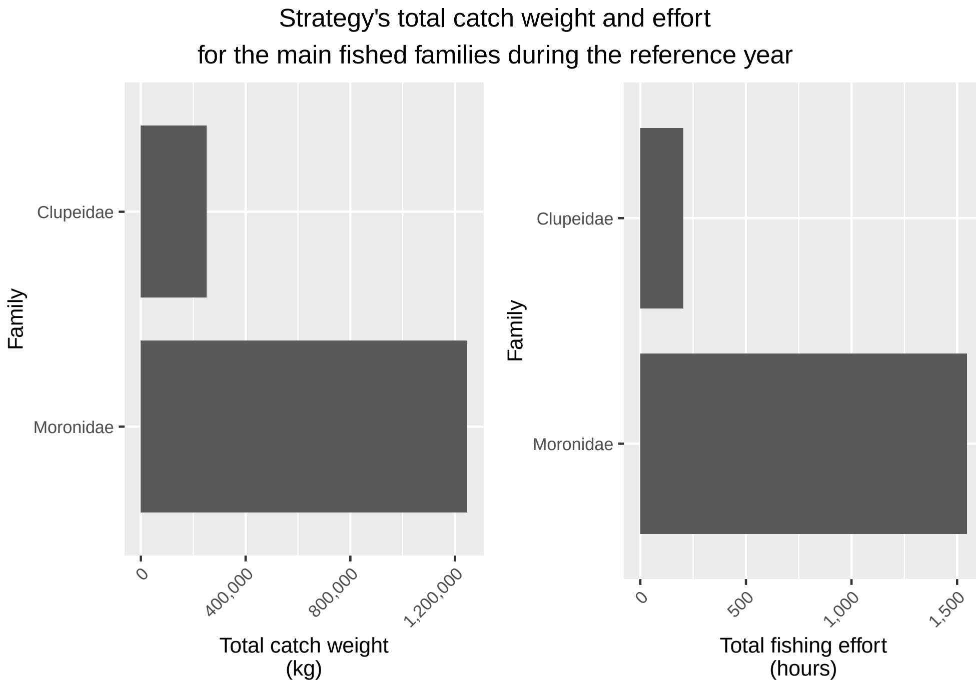
Main fished taxa and used gears during the reference year (2009)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

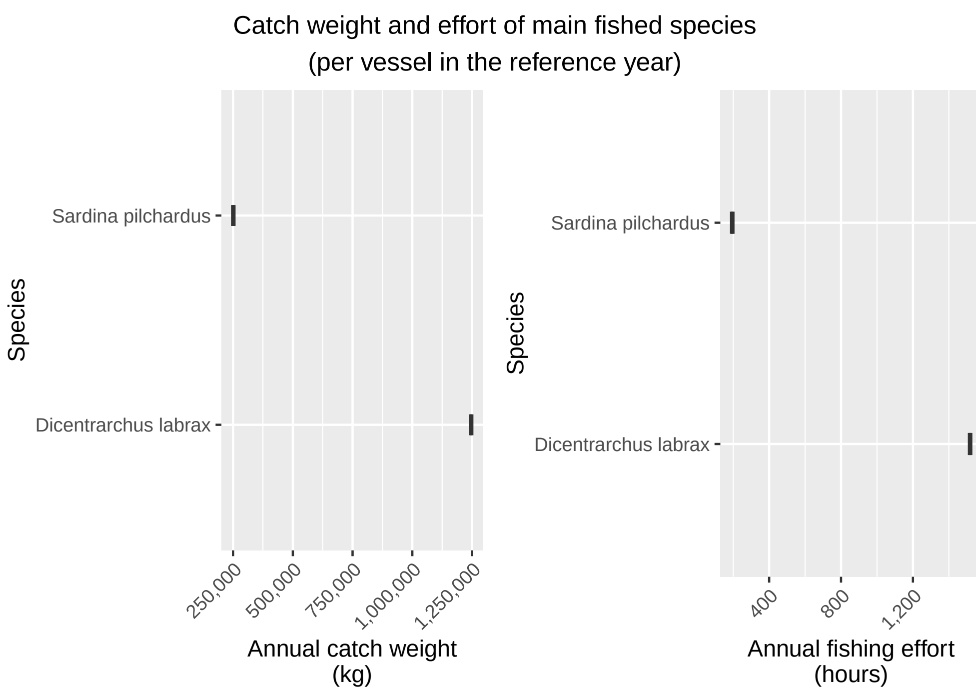


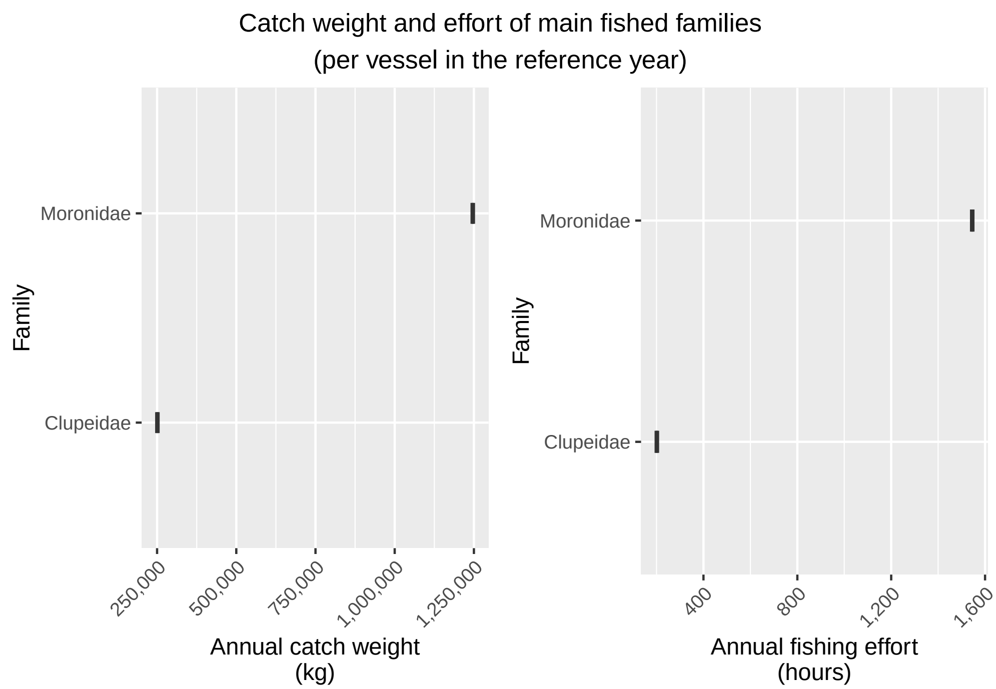

Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Moronidae
Second most important fished family in terms of catch weight
Clupeidae
0.00 0.25 0.50 0.75 1.00
Vessel count
0.00 0.25 0.50 0.75 1.00
Vessel count


Strategy's total catch weight and effort
for the main fished species during the reference year
Species
Sardina pilchardus
Dicentrarchus labrax
0 400,000 800,000 1,200,000
Total catch weight (kg)
Species
Sardina pilchardus
Dicentrarchus labrax
0 500 1,000 1,500
Total fishing effort (hours)

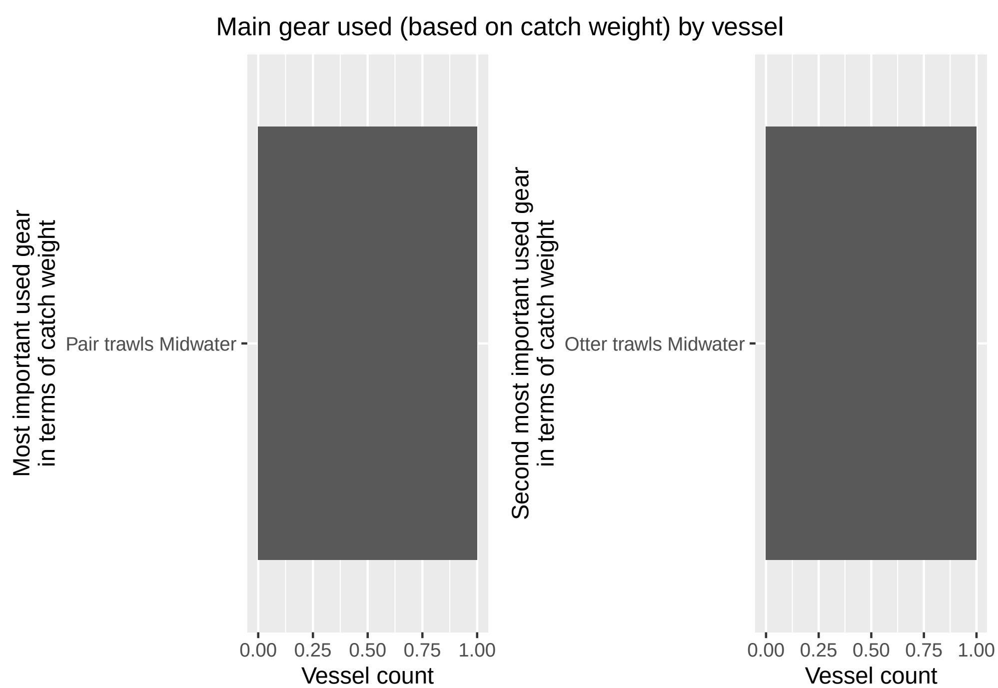


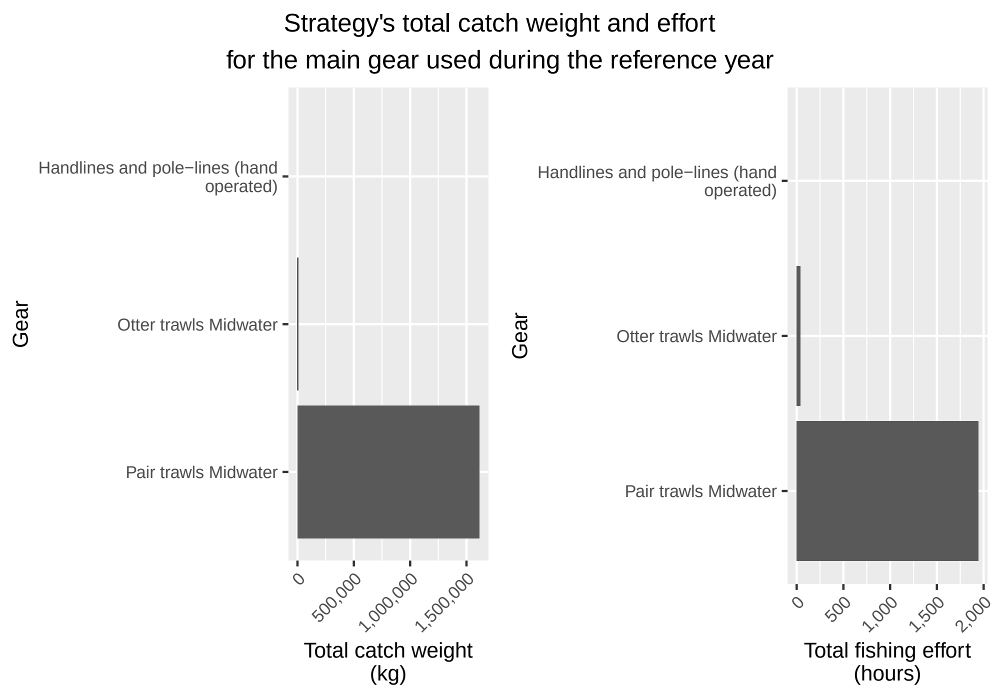
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

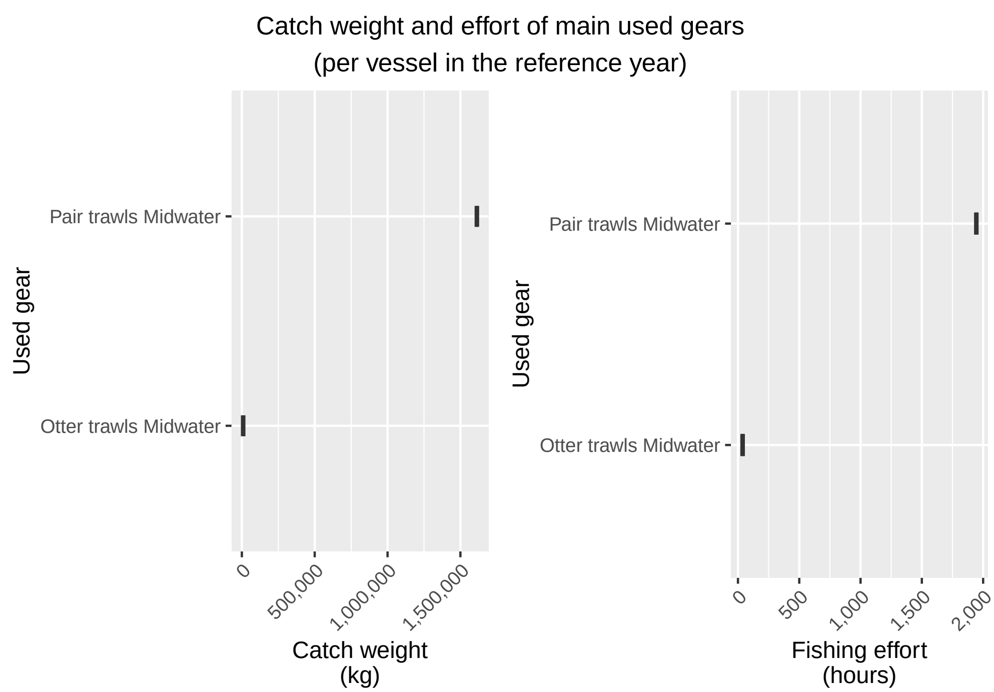




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

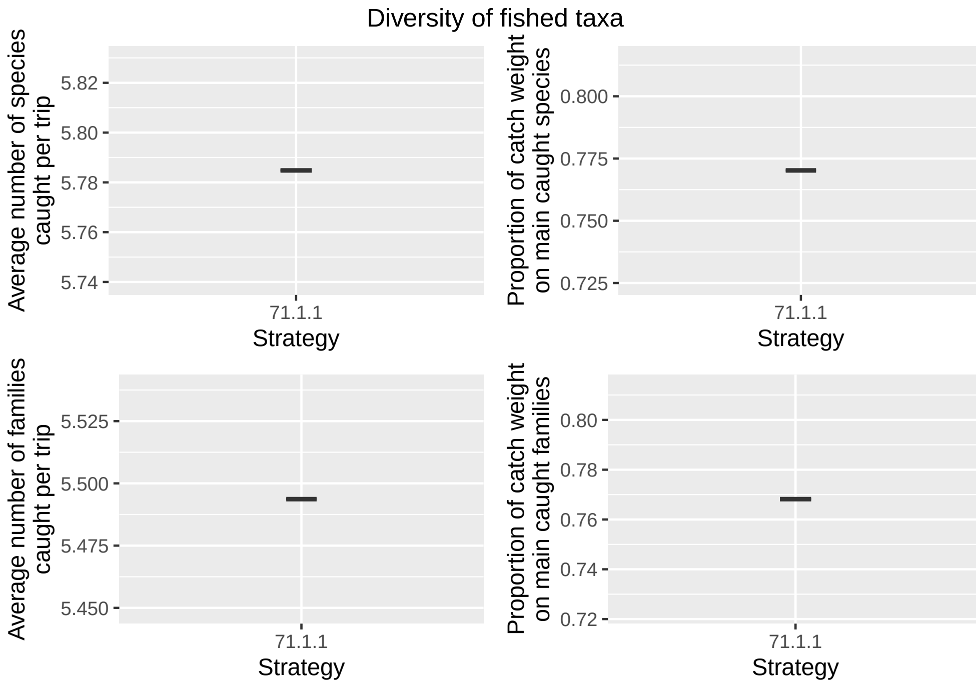




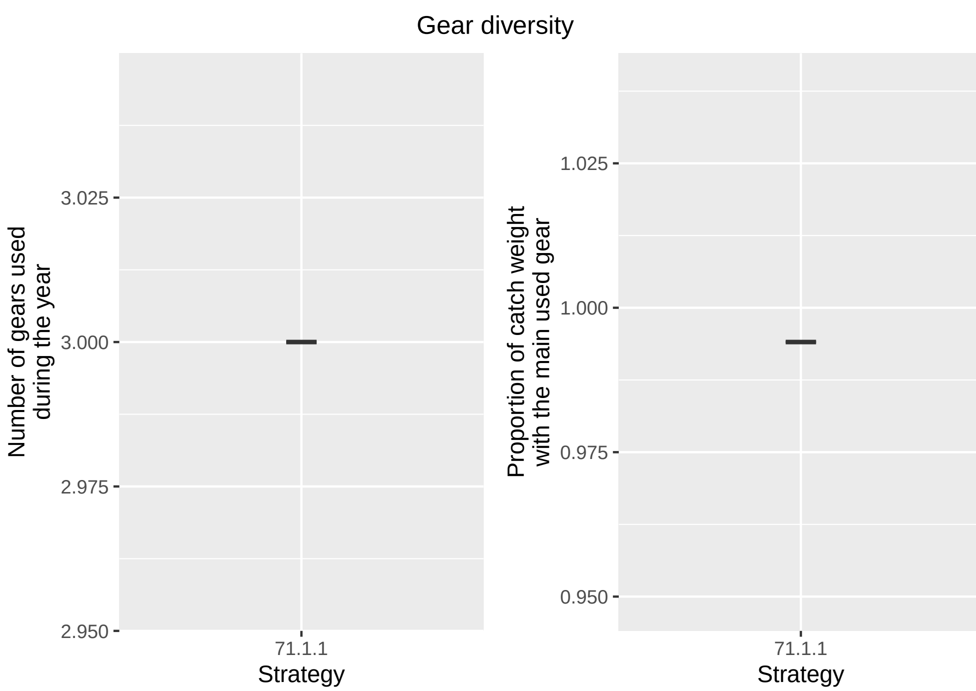


Diversity of fished taxa and used gears during the reference year (2009)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

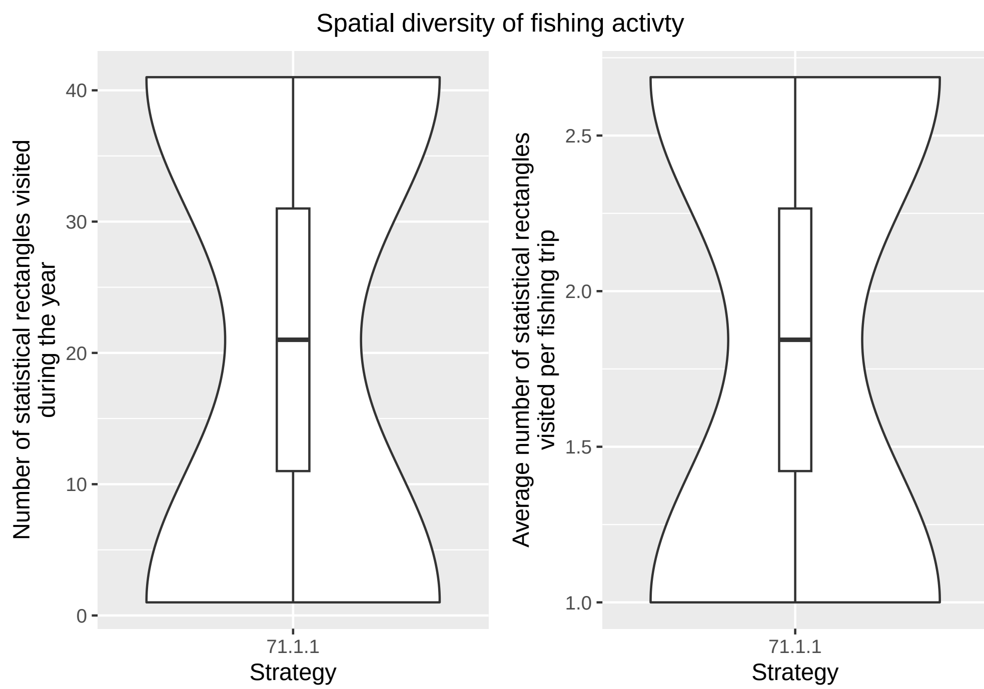


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

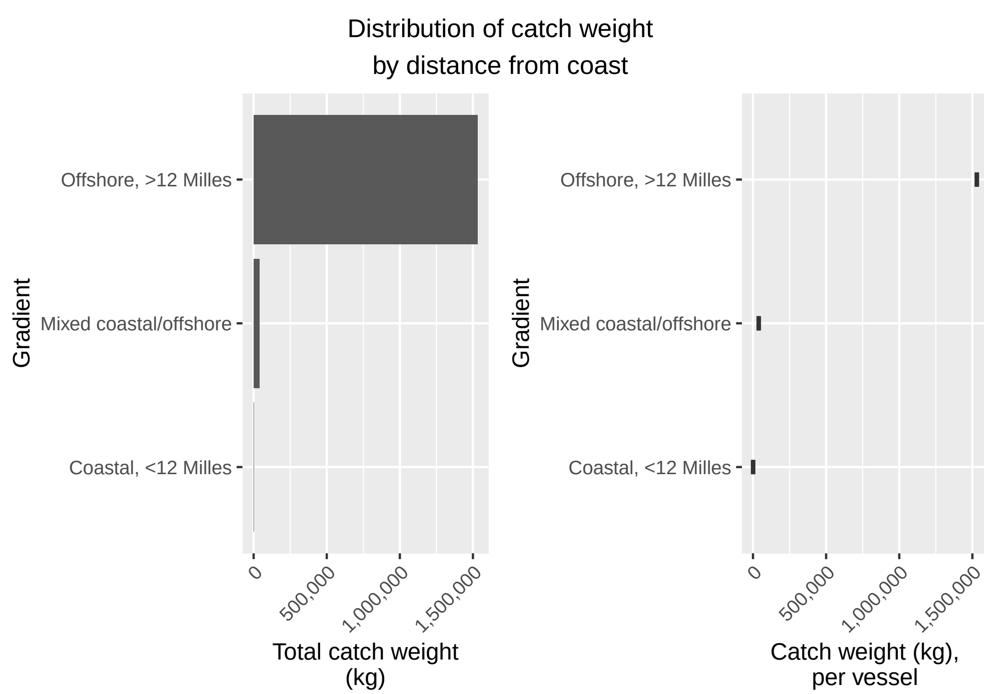


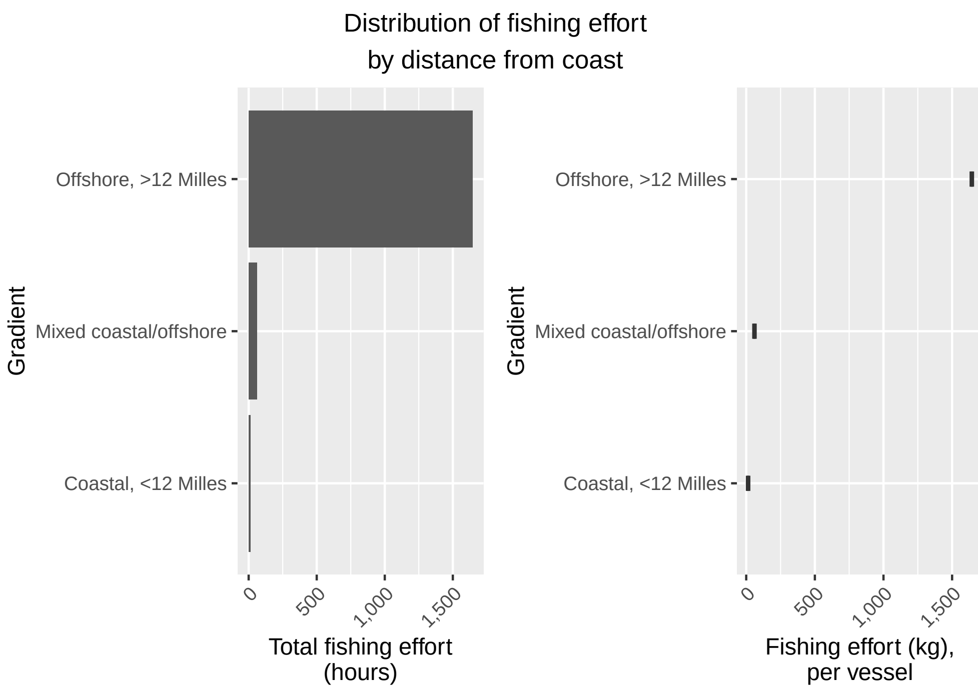
Diversity of areas visited during the reference year (2009)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



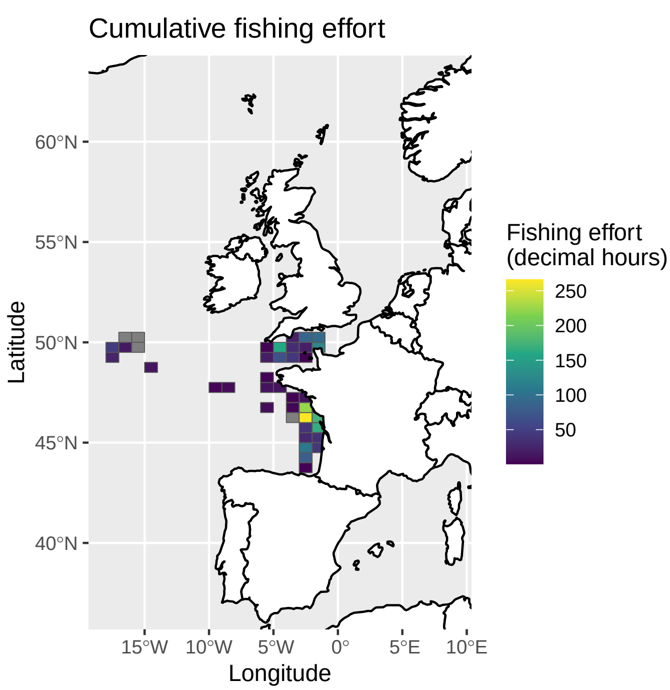
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

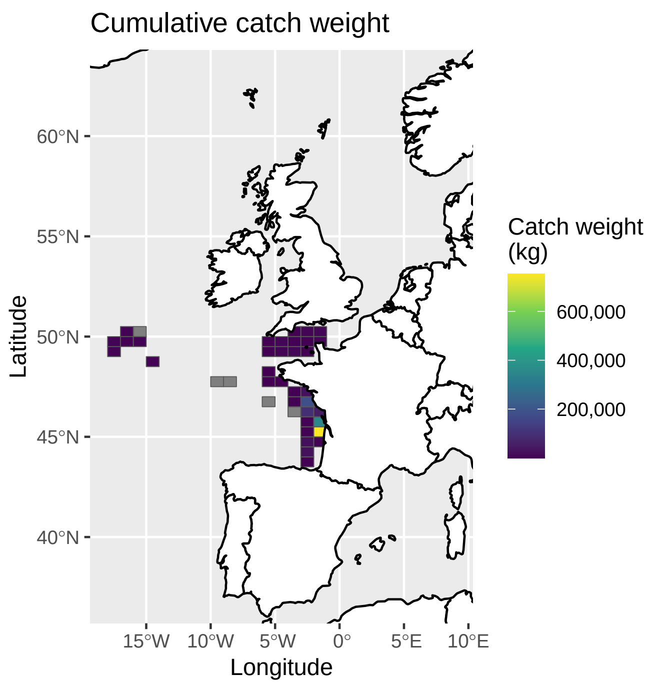




Maps of fishing activity distribution during the reference year (2009)

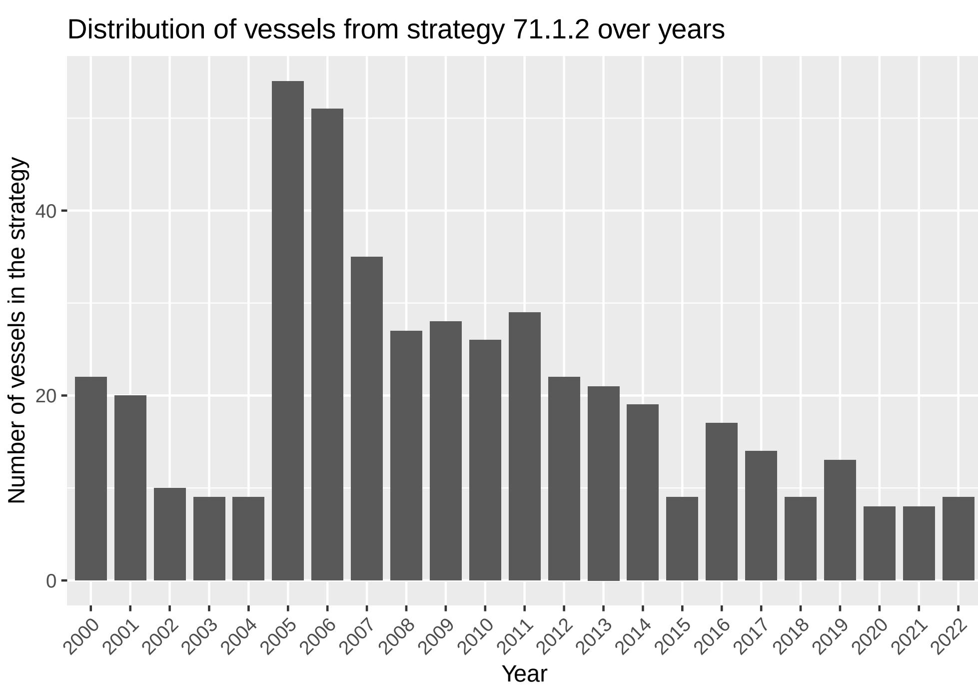
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





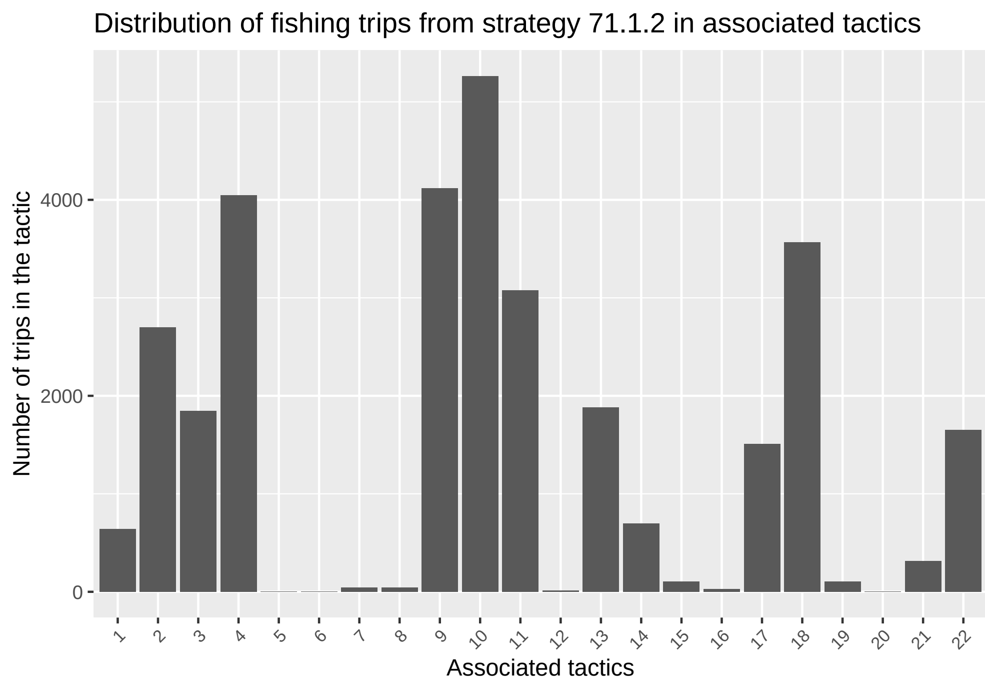
Strategy 71.1.2

This strategy includes N=469 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=102. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2005.

The distribution of fishing trips from this strategy in the corresponding tactic classification is presented below. We then described only the tactics associated with accidental bycatch (tactics: 9, 10, 11, 14, 18).



Description table

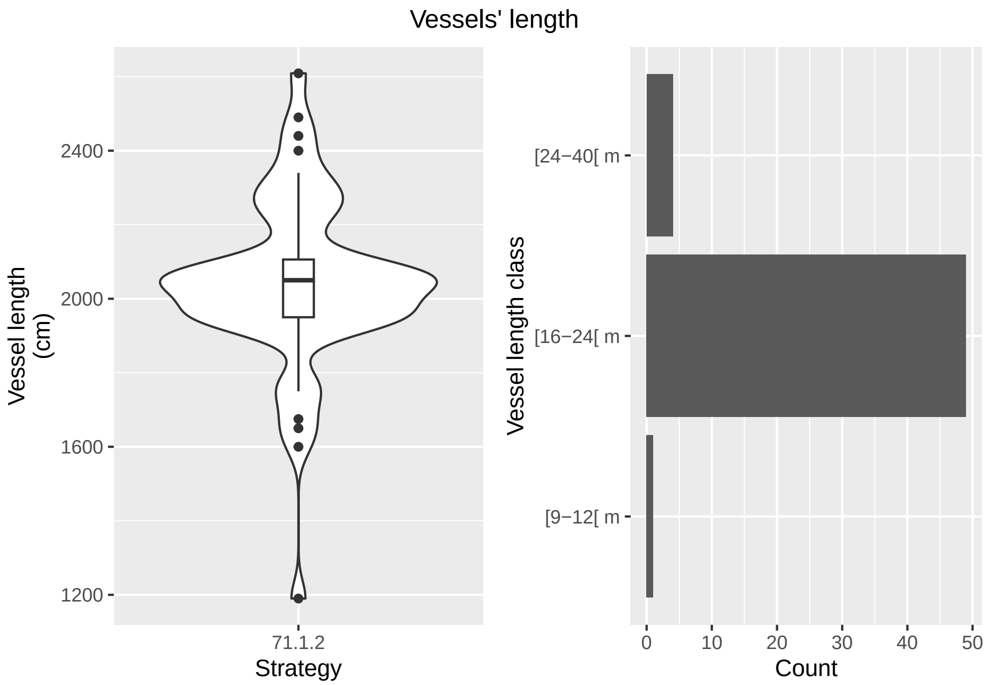
This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

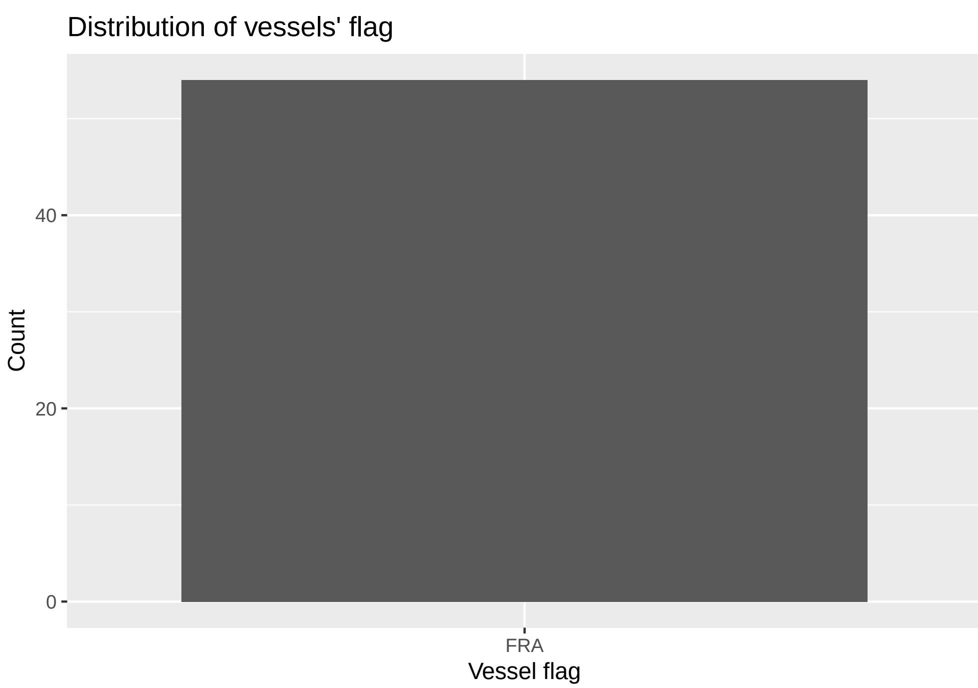
Table 19: Strategy 71.1.2

Importance	Variable	Value
Strongly predominant (>80%)	Spp.	Thunnus spp
	Sp.	Dicentrarchus labrax
	Spp.	Dicentrarchus spp
	Family	Moronidae
	ISSCAAP	33
Minor component (>5%)	Stock	BSS.27.8ab
	sd__weight	TRUE
	sd__eco	TRUE
	prop__family	TRUE
	prop__order	TRUE
	prop__isscaap	TRUE
	prop__gradient	TRUE
	sd__nb__seq	TRUE
	sea__year	TRUE
	sd__average__sea	TRUE
	prop__month	TRUE
	prop__trimester	TRUE
	sd__sea__days__marees	TRUE
High values (>SD)	NAVP	TRUE

Distribution of vessel length and flag during the reference year (2005)

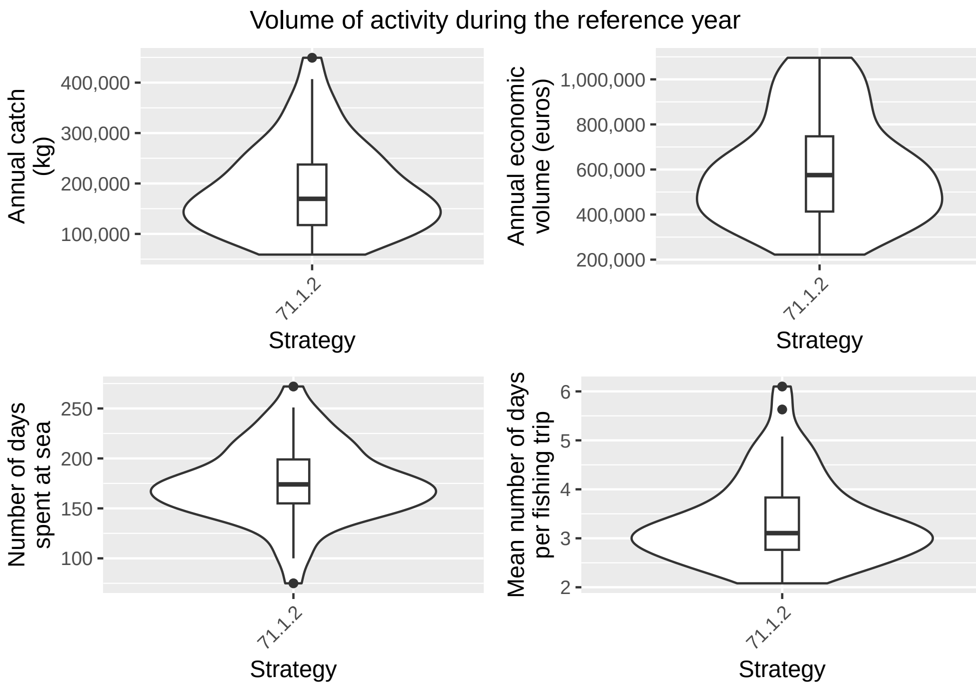
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



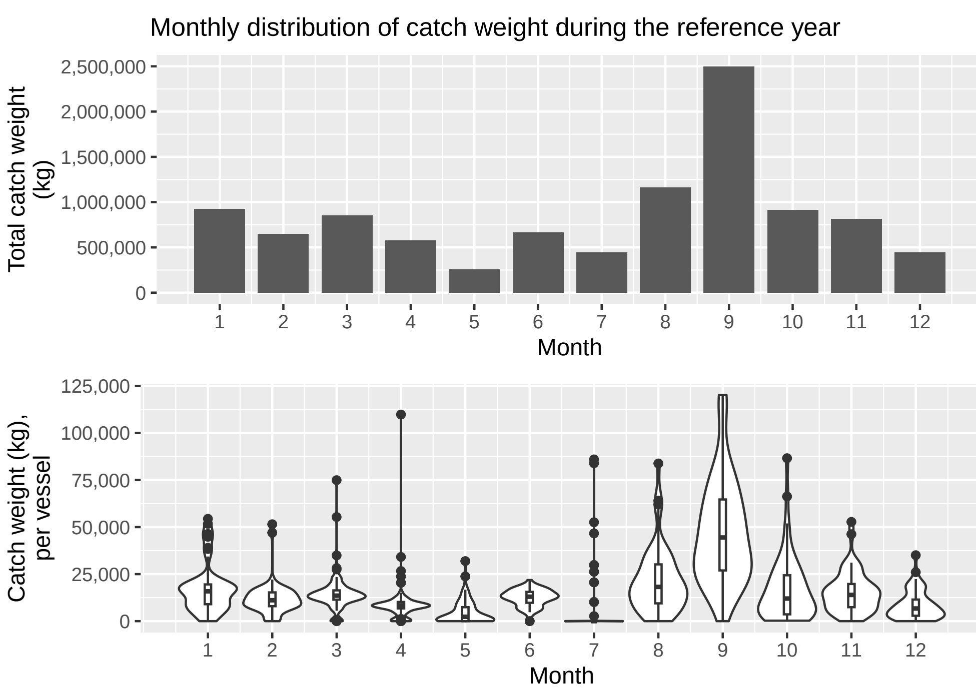


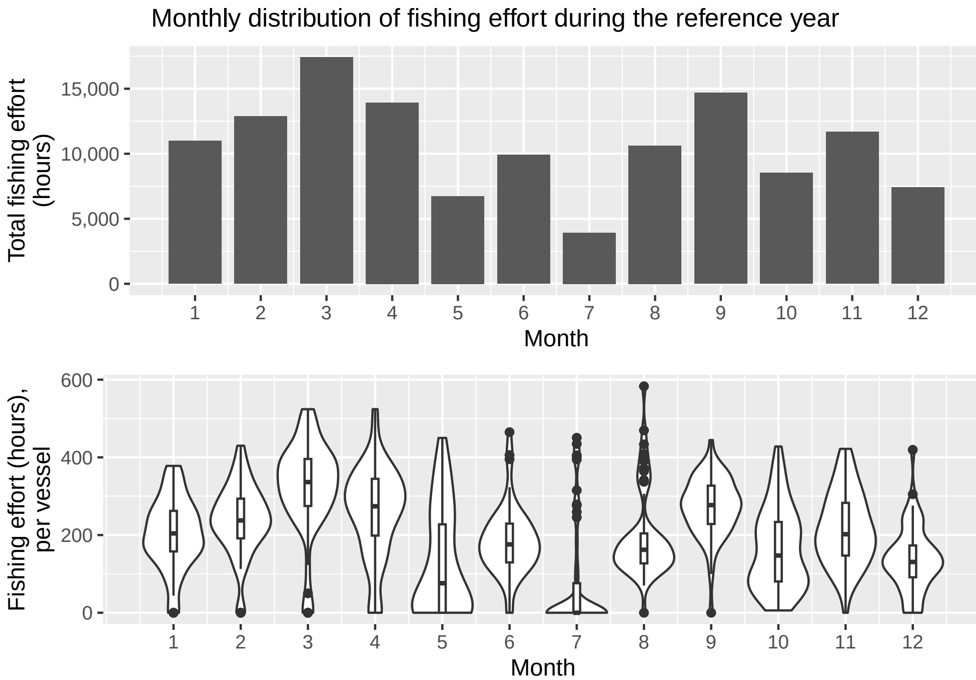
Description of the volume and pattern of fishing activities during the reference year (2005)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



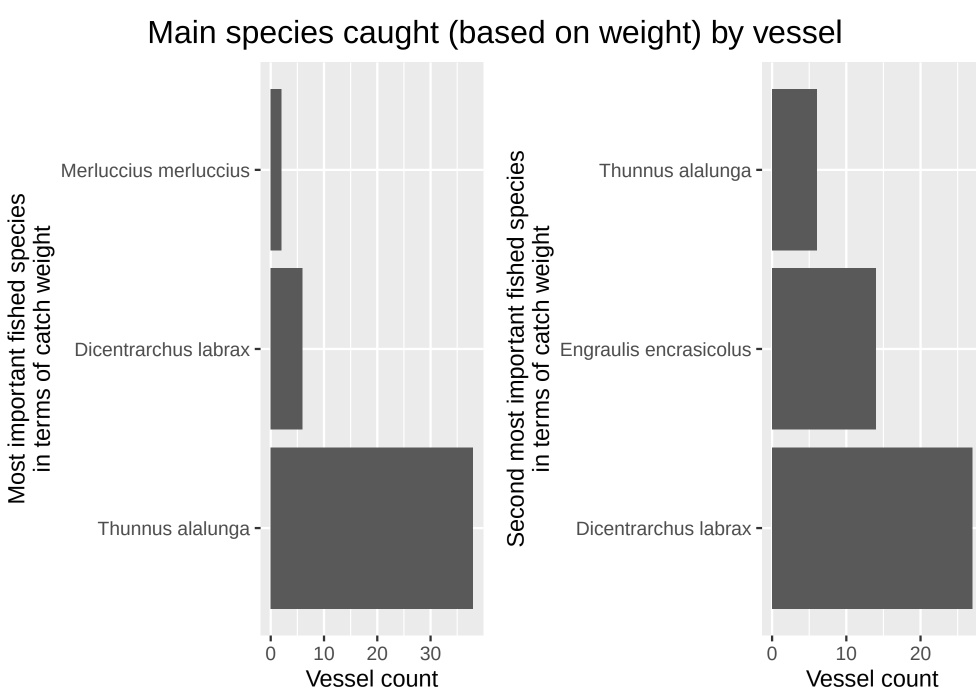
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

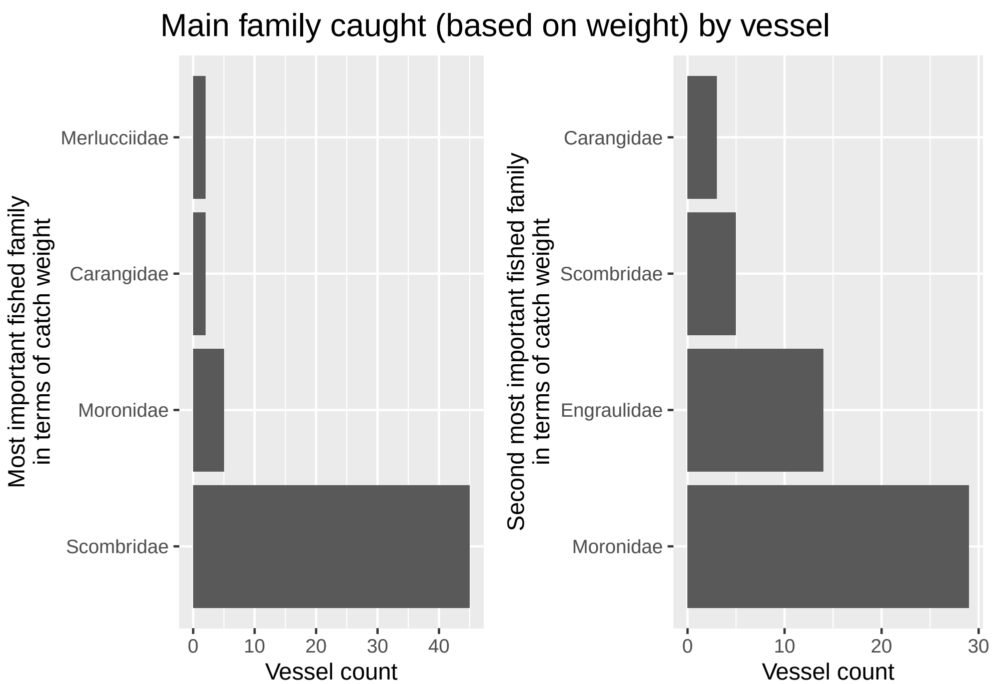




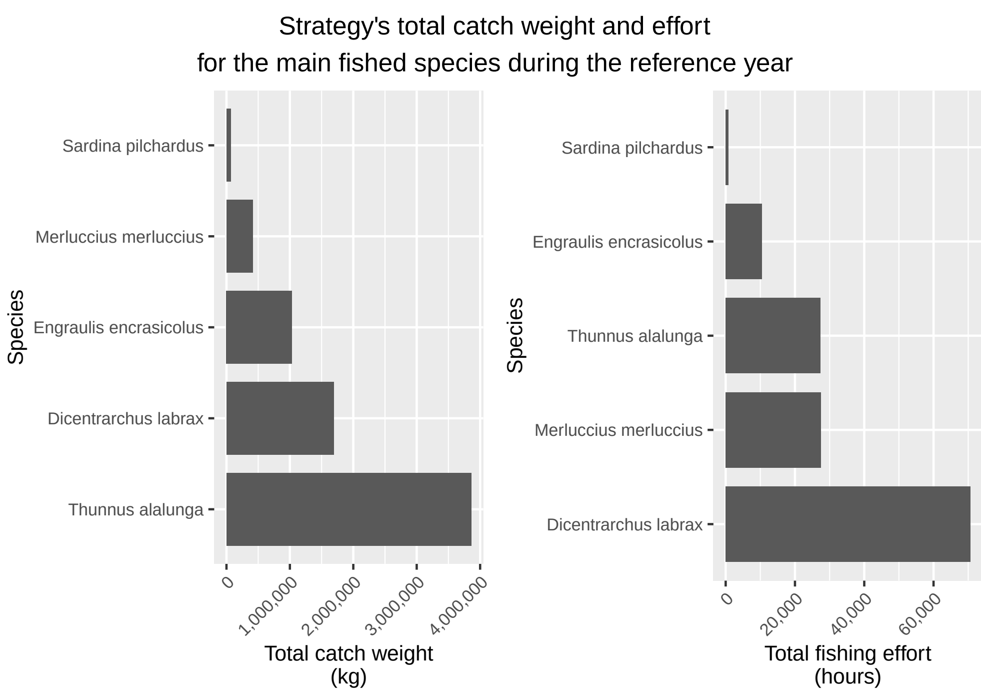
Main fished taxa and used gears during the reference year (2005)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

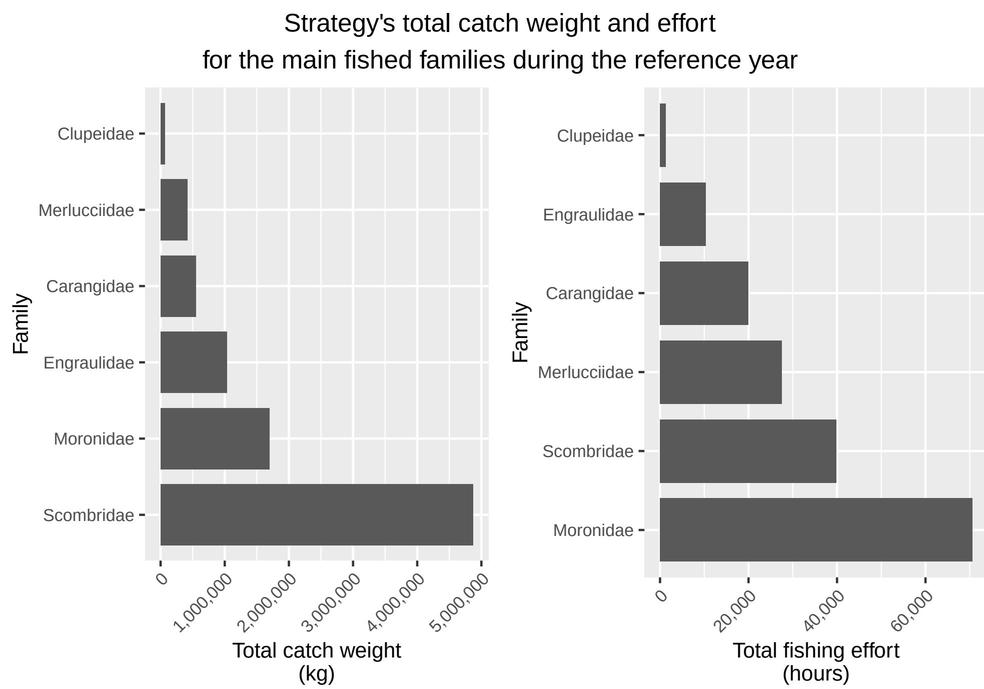




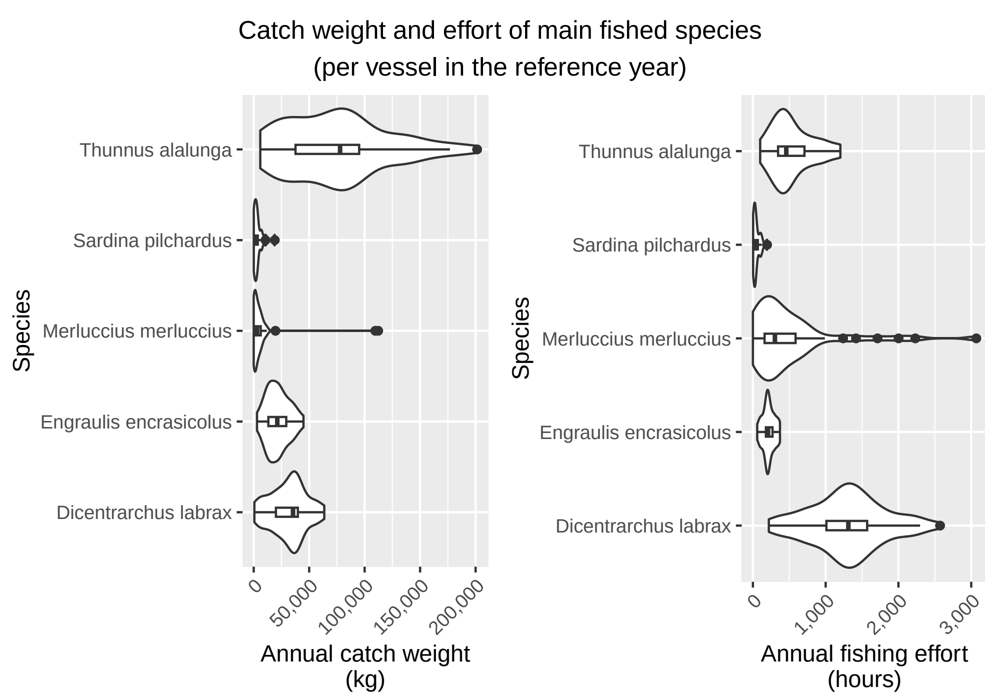
Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Merlucciidae
Carangidae
Moronidae
Scombridae
0
10
20
30
40
Vessel count
Second most important fished family in terms of catch weight
Carangidae
Scombridae
Engraulidae
Moronidae
0
10
20
30
Vessel count



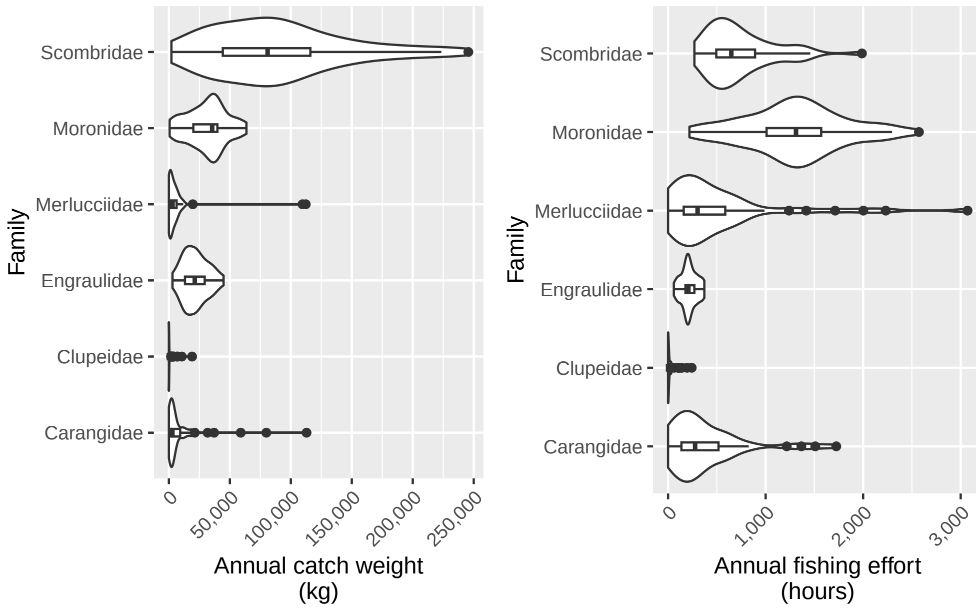
Strategy's total catch weight and effort
for the main fished species during the reference year
Species
Sardina pilchardus
Merluccius merluccius
Engraulis encrasicolus
Dicentrarchus labrax
Thunnus alalunga
0
1,000,000
2,000,000
3,000,000
4,000,000
Total catch weight
(kg)
Species
Sardina pilchardus
Engraulis encrasicolus
Thunnus alalunga
Merluccius merluccius
Dicentrarchus labrax
0
20,000
40,000
60,000
Total fishing effort
(hours)



We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

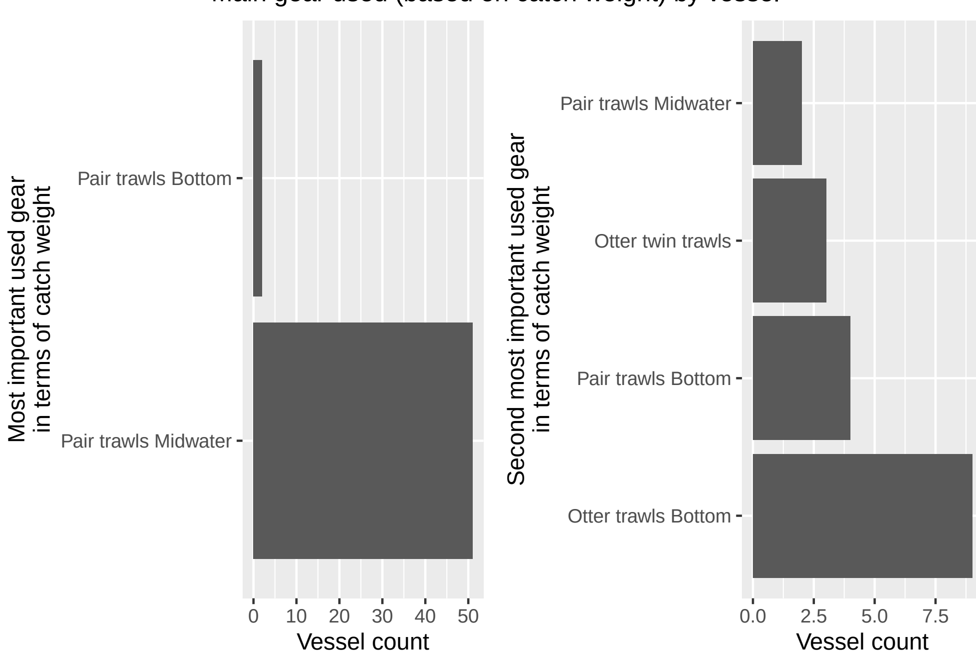


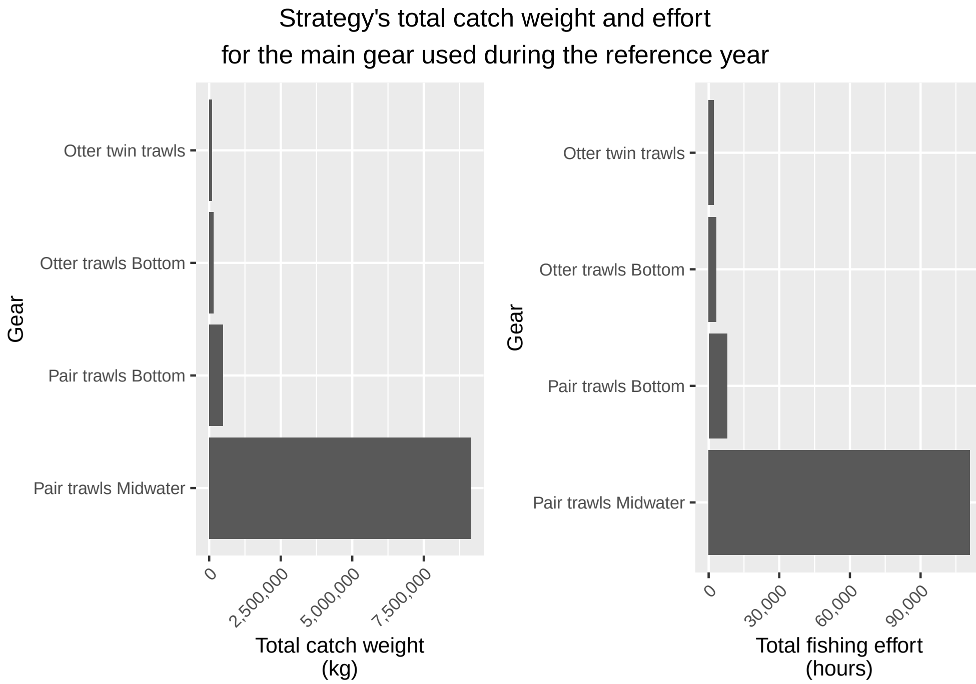
Catch weight and effort of main fished families
(per vessel in the reference year)

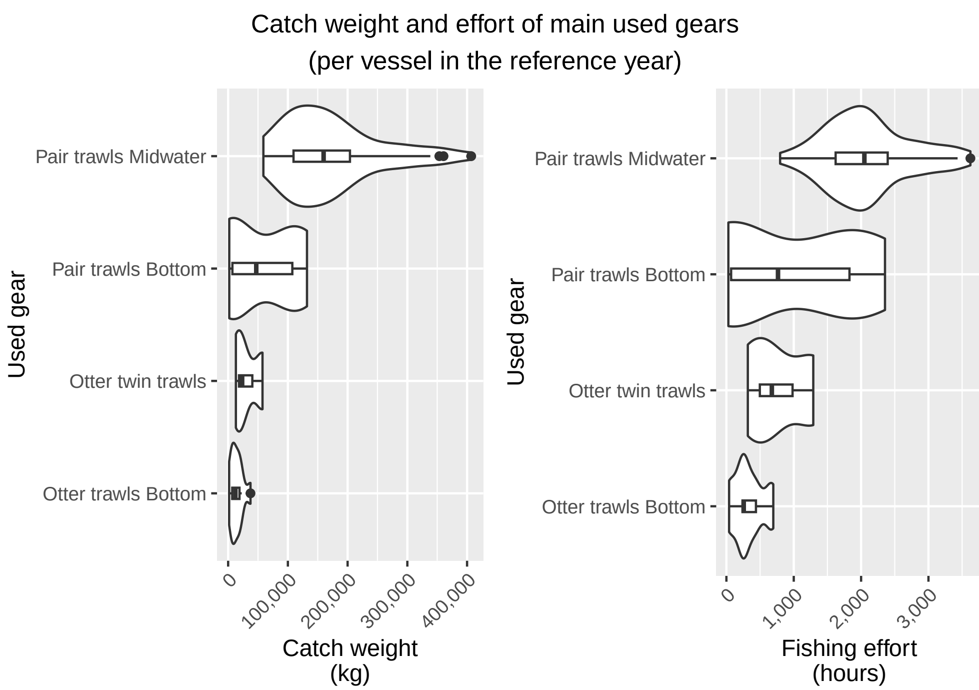


Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

Main gear used (based on catch weight) by vessel

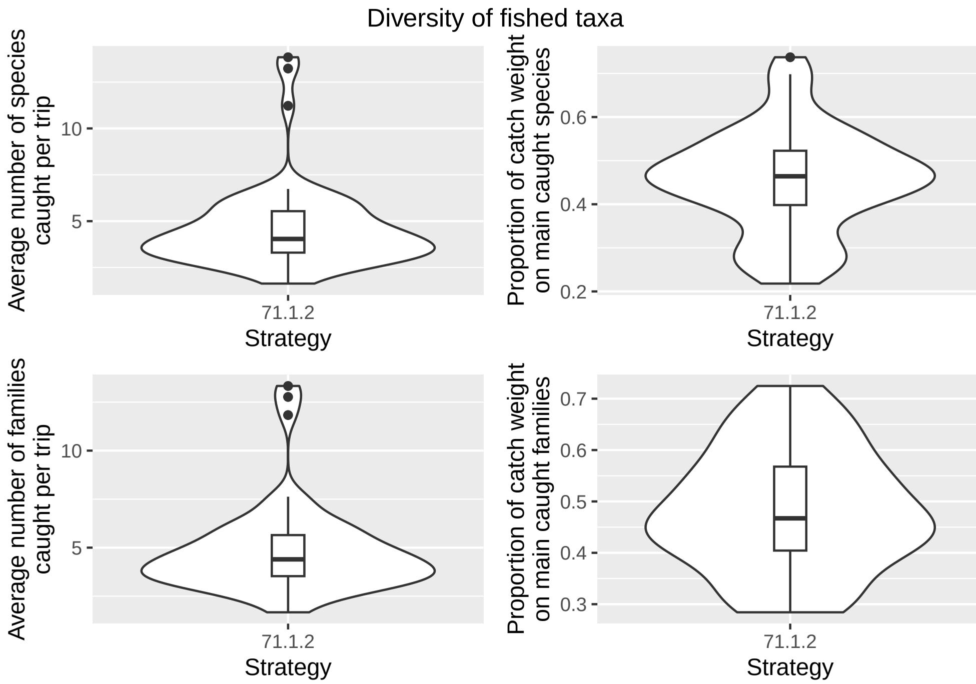




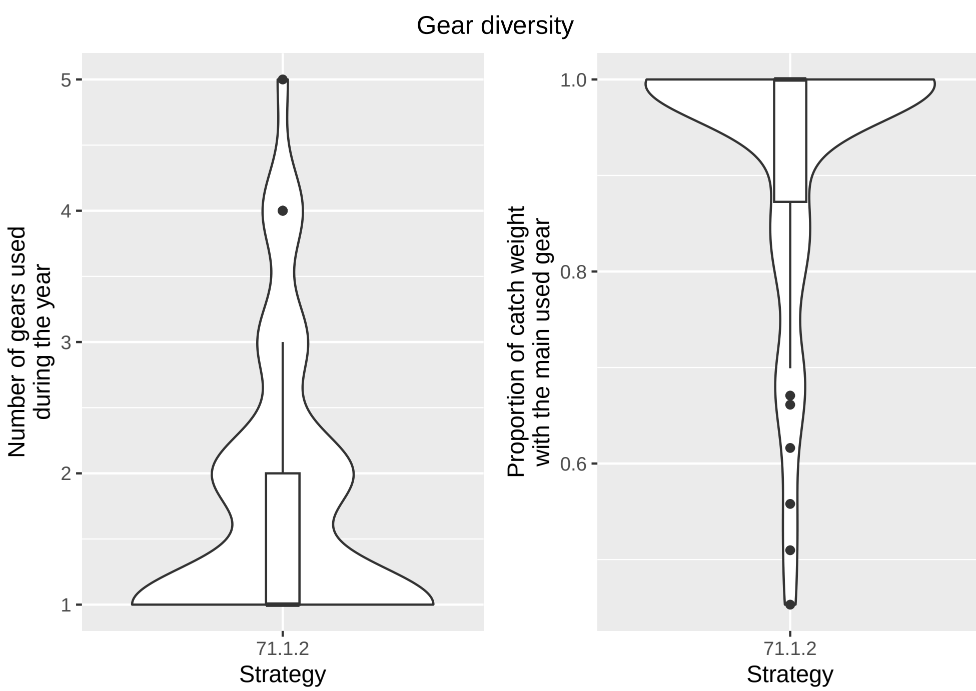


Diversity of fished taxa and used gears during the reference year (2005)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

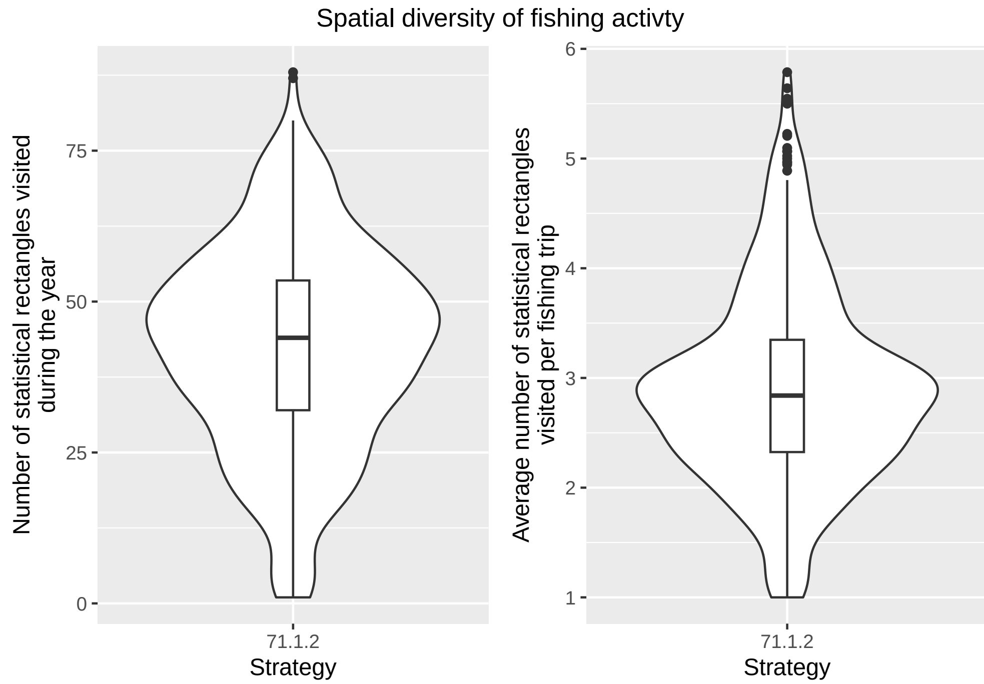


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

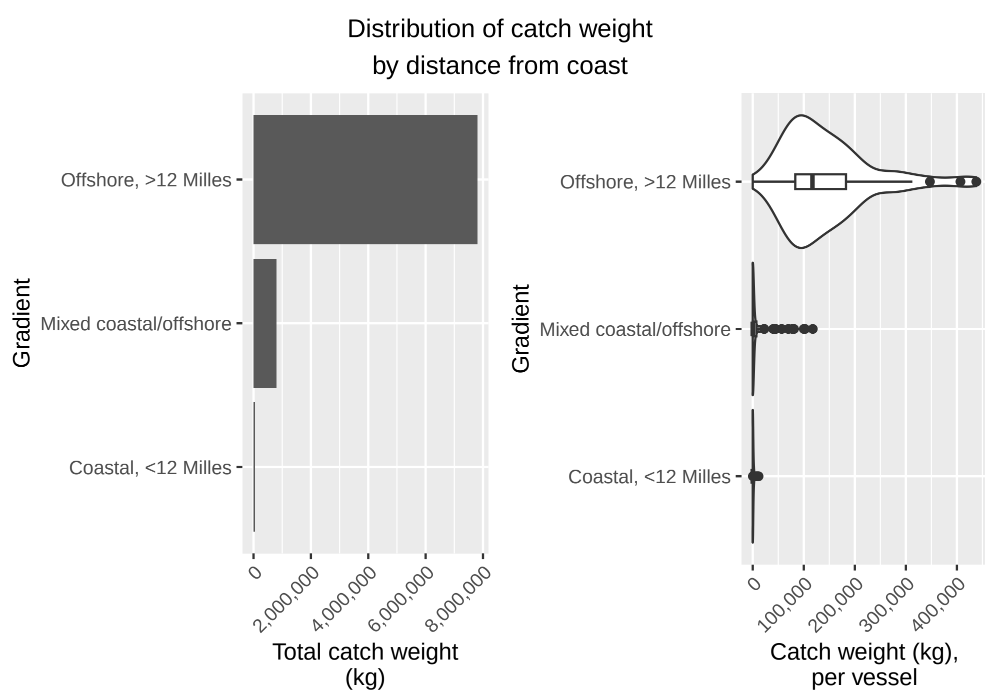


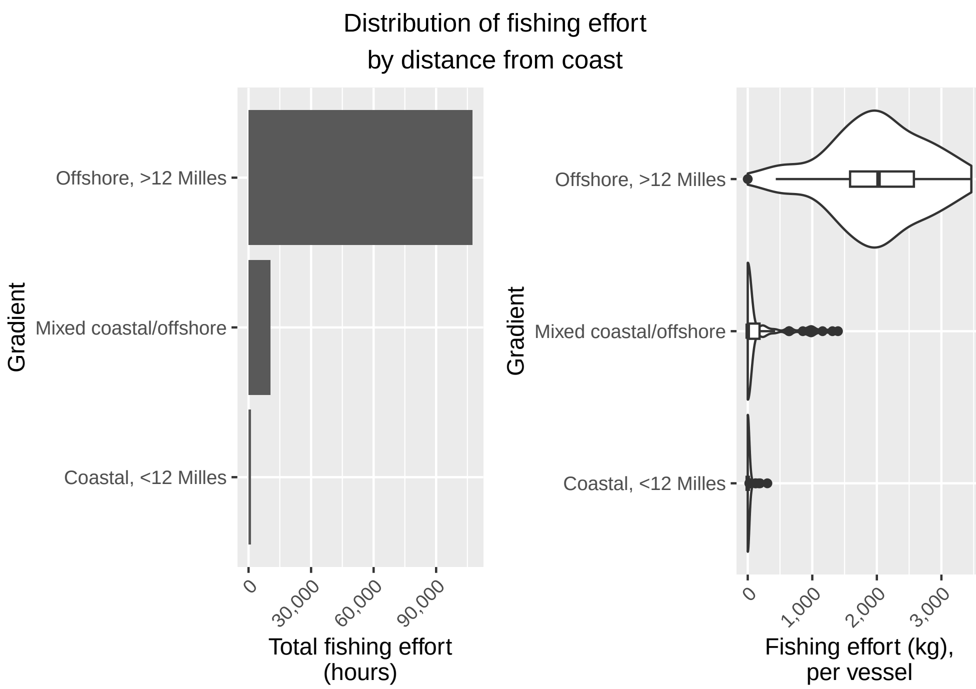
Diversity of areas visited during the reference year (2005)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



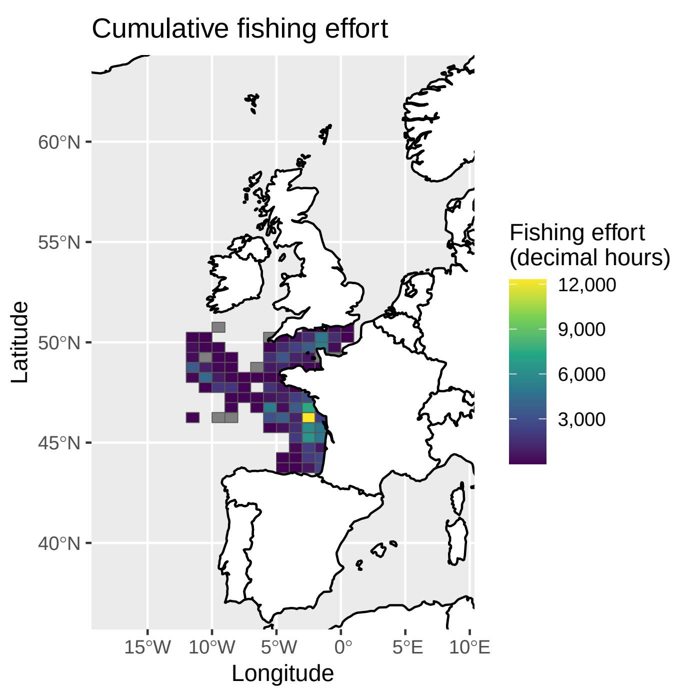
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

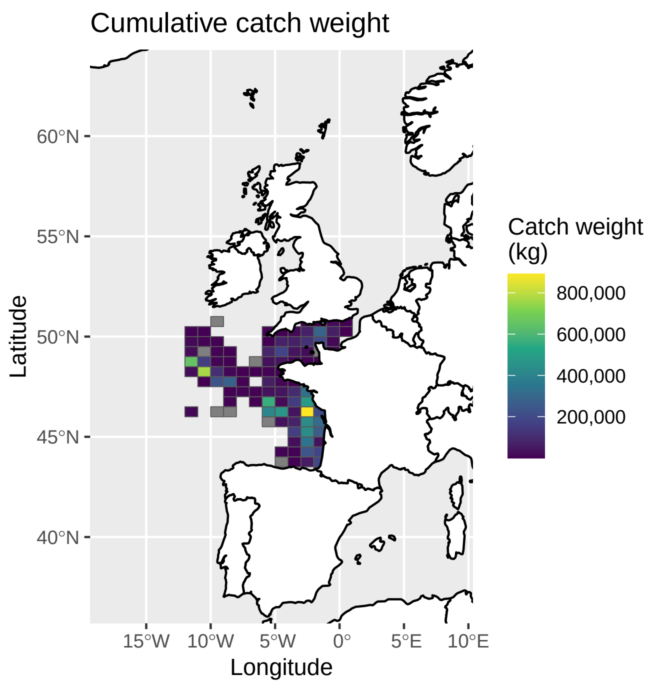




Maps of fishing activity distribution during the reference year (2005)

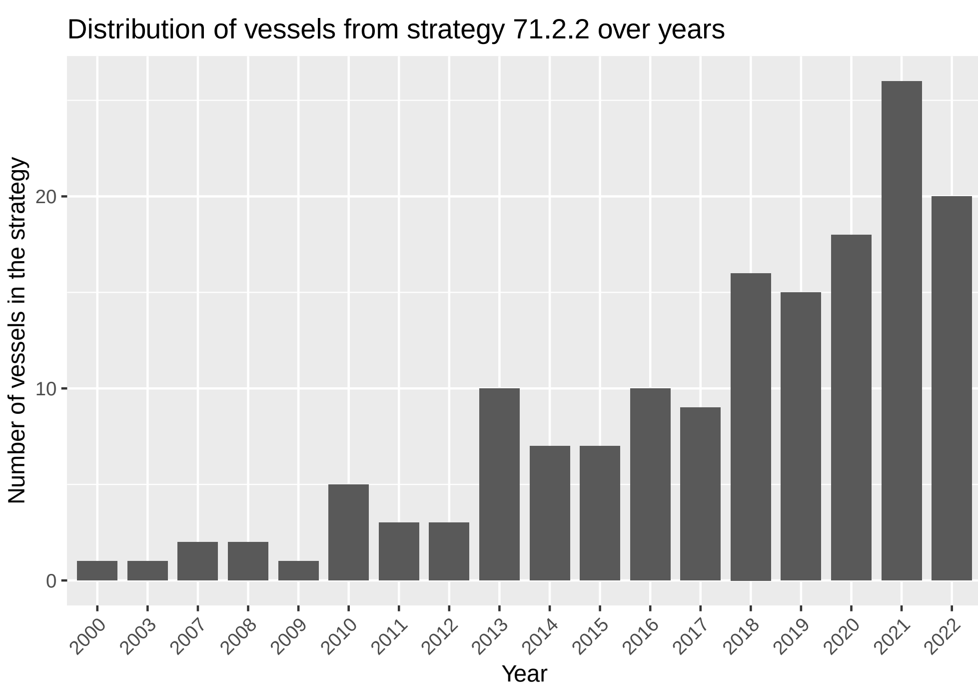
Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





Strategy 71.2.2

This strategy includes N=156 fishing vessels (per year, the same fishing vessel may be counted several times over the years). The number of fishing vessels with unique IDs (regardless of the year) in this strategy is N=38. The distribution of fishing vessels over the years is provided below.



The reference year used to illustrate this strategy (with the maximum number of vessels) is 2021.

Description table

This table describes the major categories and quantitative variable associated with the strategy of interest. The importance of the association is displayed on the left.

Table 20: Strategy 71.2.2

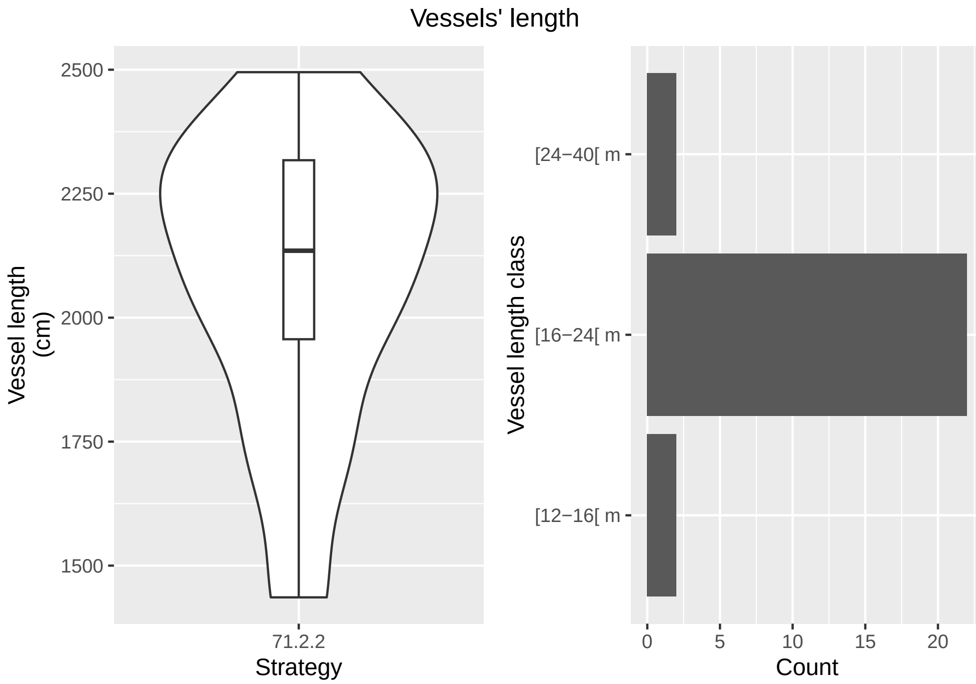
Importance	Variable	Value
	Sp.	Thunnus alalunga
Determinant (>95%)	Order	Perciformes
	Spp.	Thunnus spp
		Gadidae
	Family	Scombridae
	ISSCAAP	36
	Stock	ALB.27
	Gear	Pair trawls Midwater
	ICES division	27.8.a
Strongly predominant (>80%)	Trimester	3
Predominant (>65%)	Sp.	Trisopterus luscus
	Sp.	Merluccius merluccius
	Spp.	Chelidonichthys spp
	Stock	HKE.27.3a4678abd
Major (>50%)	Second order	Gadiformes
	Sp.	Sepia officinalis
	Spp.	Sepia spp
		33
	ISSCAAP	57
	Second spp.	Merluccius spp
		Merlucciidae
	Second family	Triglidae
		32
	Second ISSCAAP	34
	Third order	Pleuronectiformes
		27.7.j
	ICES division	27.8.c
		08
Strong component (>35%)	Month	09
		Dicentrarchus labrax
	Sp.	Nephrops norvegicus
	Spp.	Solea spp
		Engraulidae
		Nephropidae
	Family	Sepiidae
	Order	Clupeiformes
	ISSCAAP	31
		CTC.27.8ab
	Stock	NEP.27.8ab.FU23-24
		Decapoda
	Second order	Myopsida
		Loliginidae
	Third family	Scophthalmidae
	Third order	Sepiida
Component (>20%)	Gear	Danish seines
		Mullus surmuletus
	Sp.	Spondyliosoma cantharus
		Dicentrarchus spp
		Mullus spp
	Spp.	Raja spp
		Moronidae
		Mugilidae
		Mullidae
	Family	Xiphiidae
		ANE.27.8
		BRB.27.8ab

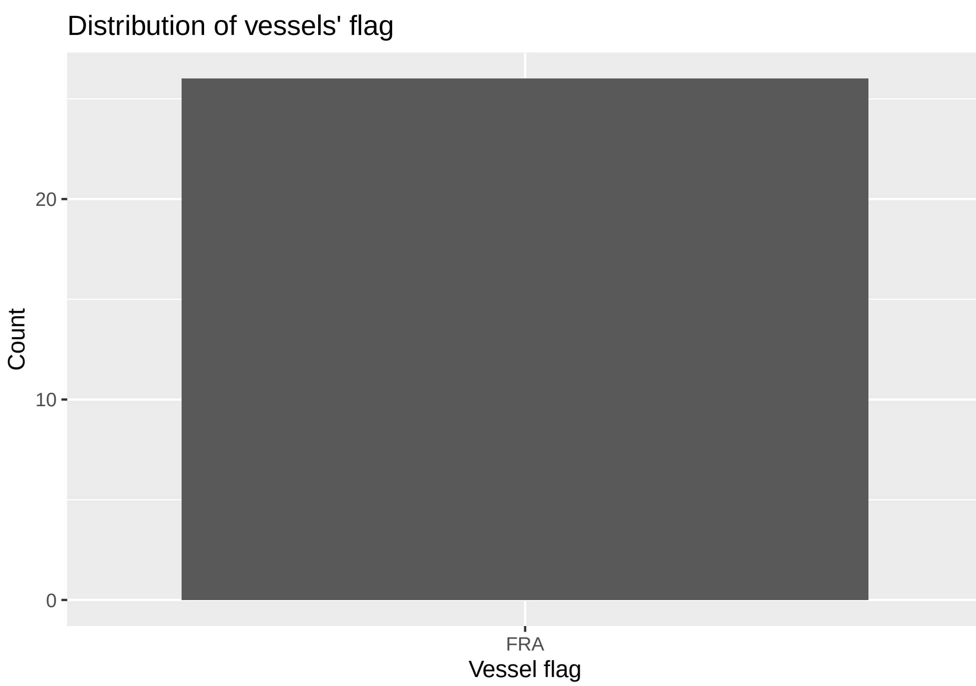
Table 20: Strategy 71.2.2 *(continued)*

Importance	Variable	Value
		BSS.27.4bc7a7d-h
		BSS.27.8ab
		MAC.27
		MNZ.27.7b-k8abd
		MUR.27.67a-c7e-k89a
	Stock	SQZ.27.8ab
	Second sp.	Scomber scombrus
	Second spp.	Scomber spp
	Second family	Sparidae
		Engraulis encrasicolus
	Third sp.	Merlangius merlangus
		Engraulis spp
		Lophius spp
		Octopus spp
	Third spp.	Trachurus spp
		Carangidae
		Lophiidae
	Third family	Octopodidae
	Third order	Lophiiformes
		35
		37
		38
	Third ISSCAAP	43
		Otter trawls Bottom
	Gear	Otter twin trawls
		27.7.k
	ICES division	27.8.d
		03
	Month	10
		1
Minor component (>5%)	Trimester	4
	sd__weight	TRUE
	prop__spe	TRUE
	prop__spp	TRUE
	prop__family	TRUE
	prop__order	TRUE
	prop__isscaap	TRUE
	sd__nb__seq	TRUE
High values (>SD)	value__nb__marees	TRUE

Distribution of vessel length and flag during the reference year (2021)

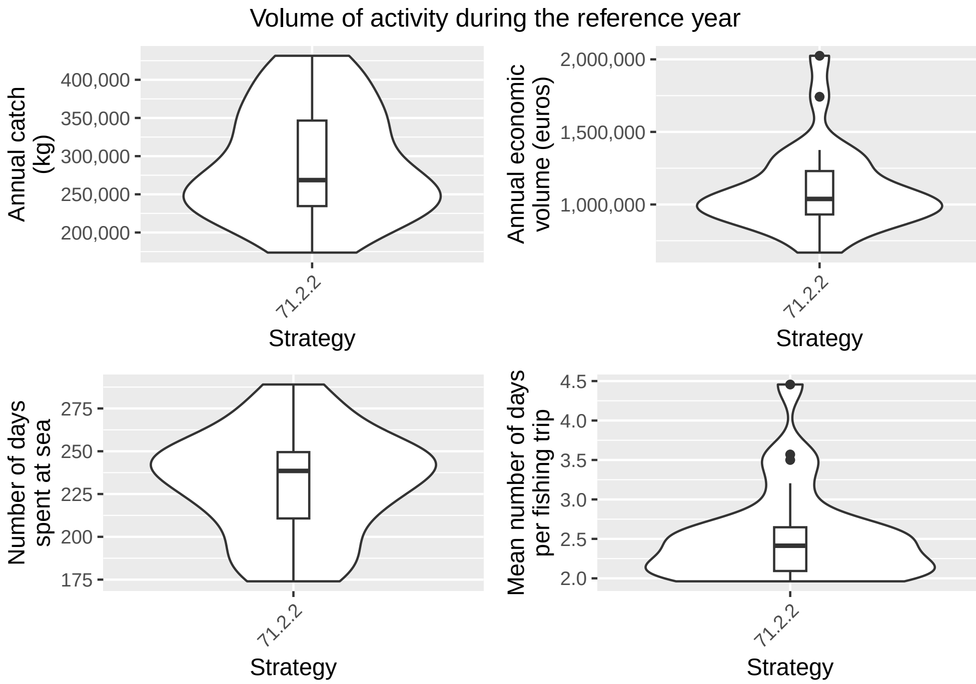
The distribution of vessel lengths is provided using the continuous length distribution or the frequency of the main length classes.



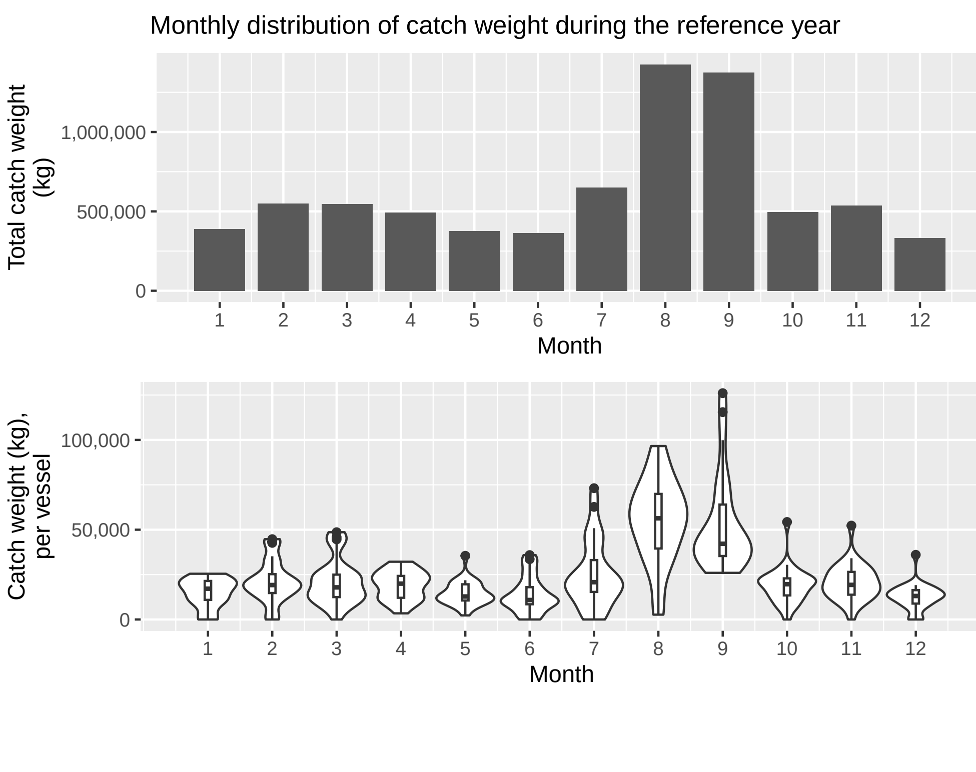


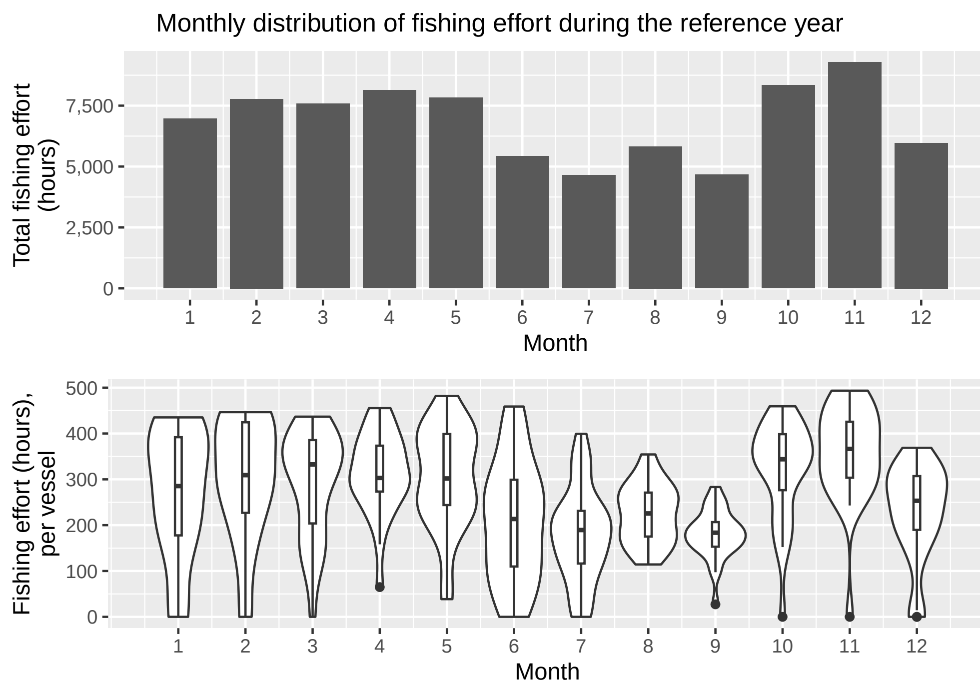
Description of the volume and pattern of fishing activities during the reference year (2021)

First, we present the main measures of annual fishing activity, i.e. total catch weight, economic value, number of days spent at sea, and average length of fishing trip (in number of days at sea) per vessel.



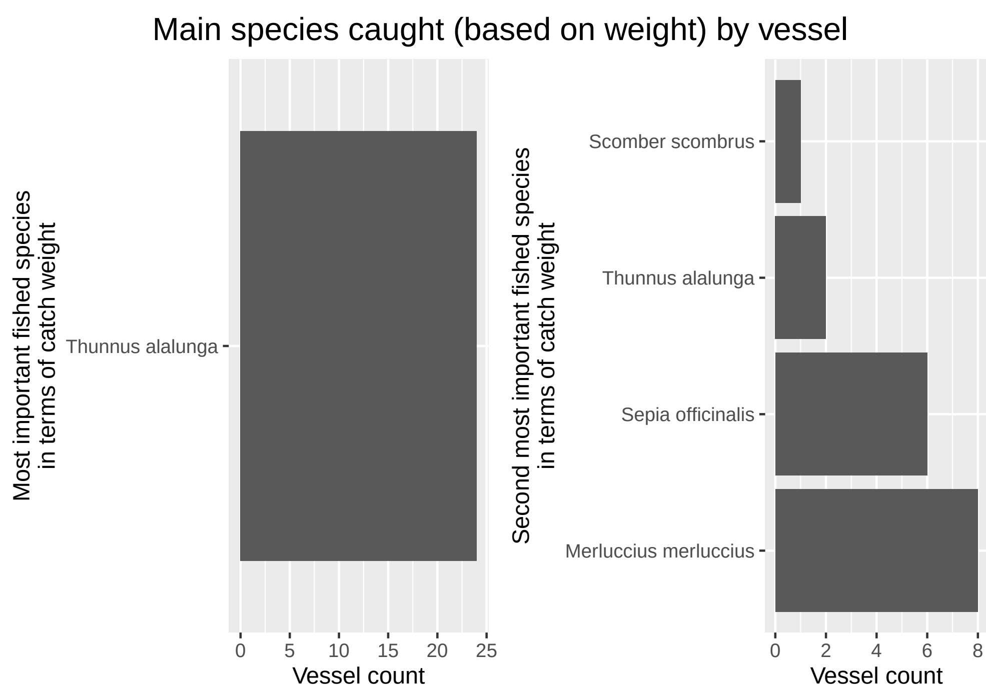
We then show how the activity is distributed over time during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catches of the taxa of interest) per month. We then display the annual catch weight and effort associated with each month, per vessel.

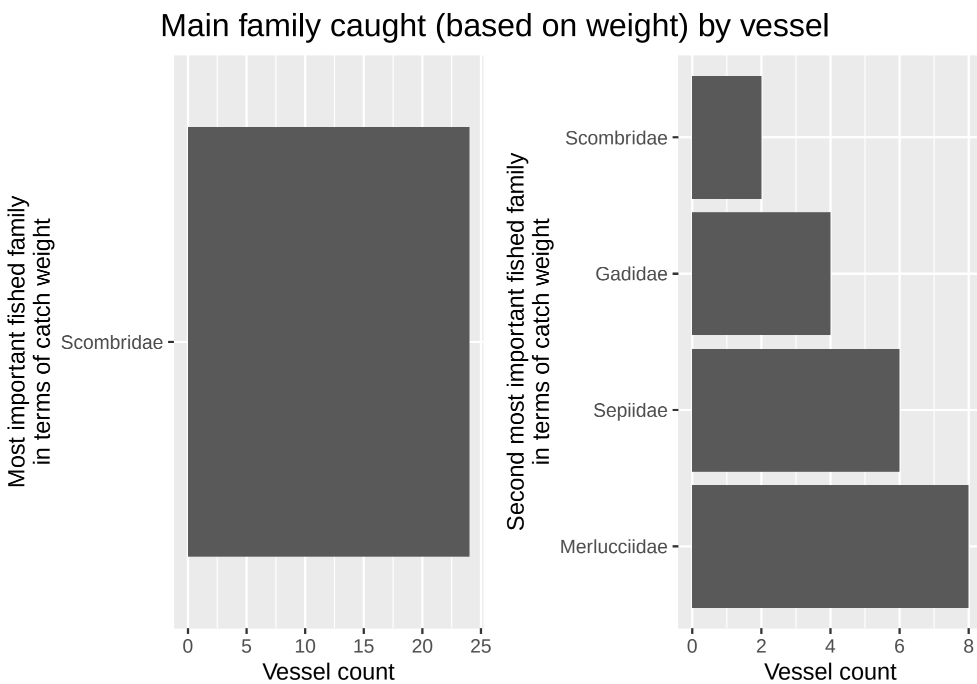


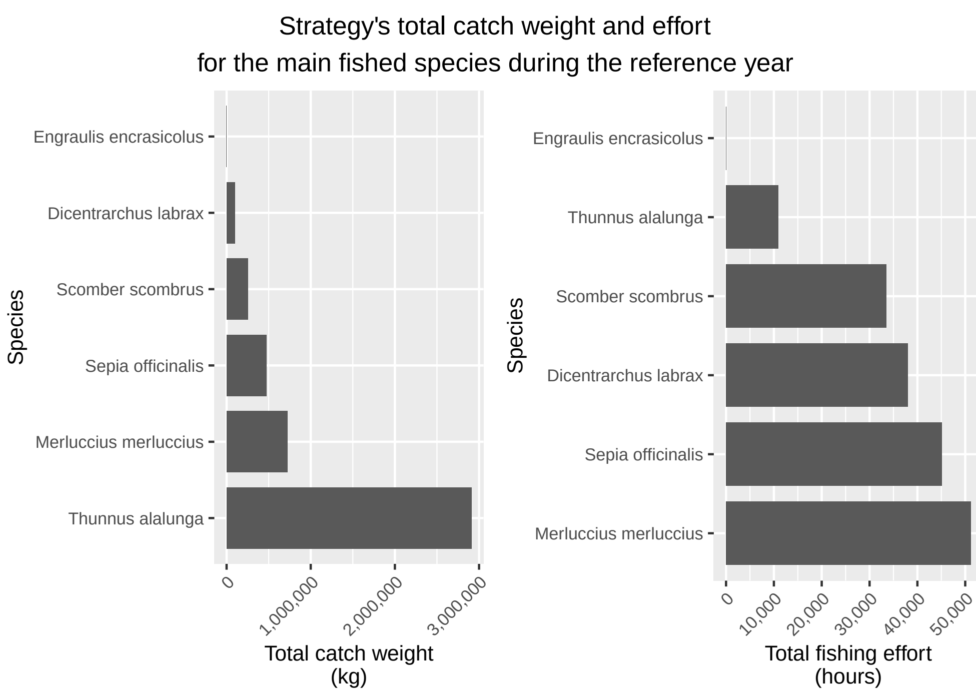


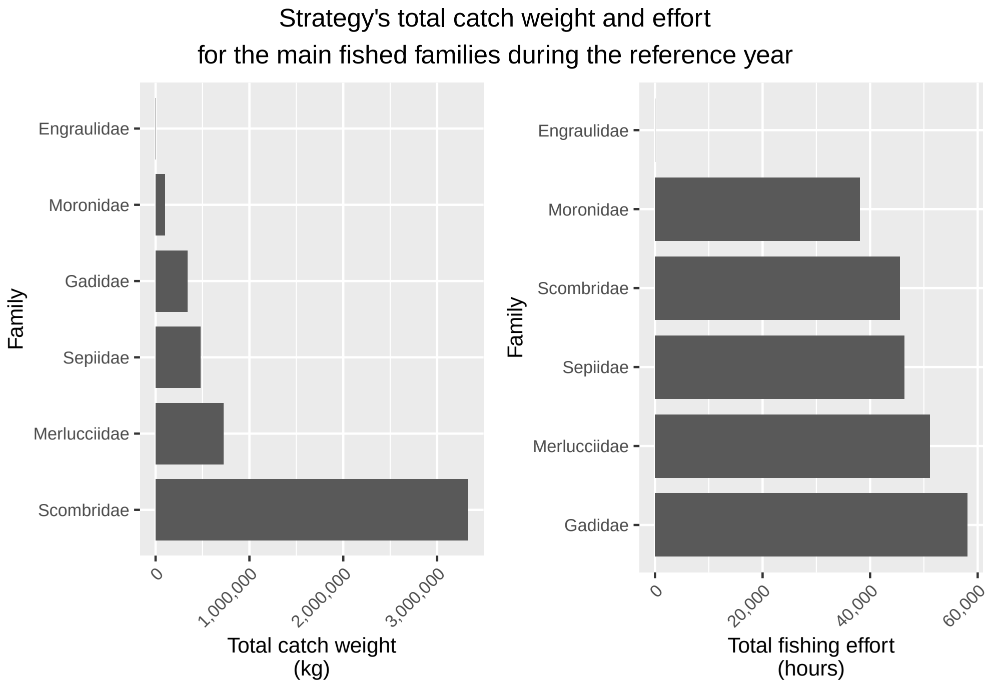
Main fished taxa and used gears during the reference year (2021)

We first illustrate which are the most important taxa caught (at species and family level) in terms of weight, and how much of the most important taxa were caught, using the annual catch weight and cumulative effort (of all fishing sequences implying the catch of the taxa of interest). We include all taxa that were determined to be the most important (or second most important) fished taxa (in terms of weight) for more than 5% of the vessels (for readability).

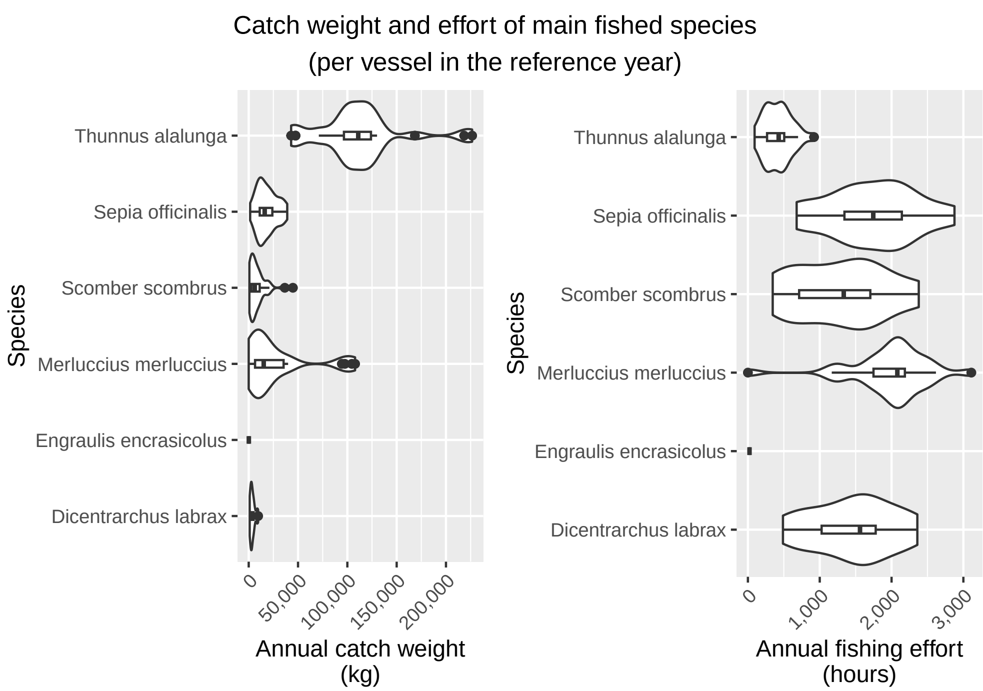


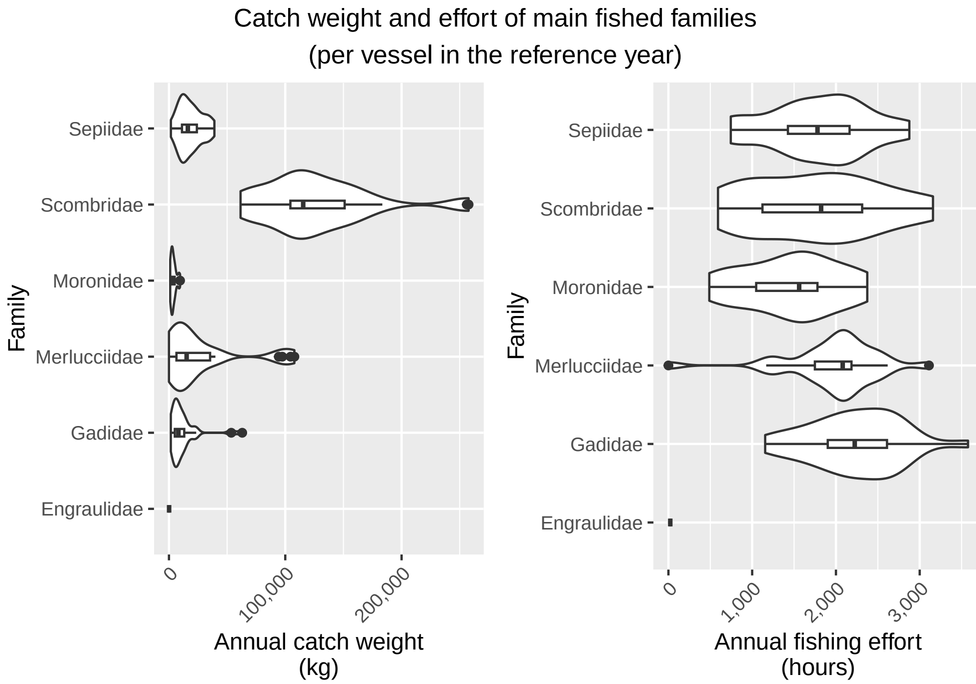

Main family caught (based on weight) by vessel
Most important fished family in terms of catch weight
Scombridae
0
5
10
15
20
25
Vessel count
Second most important fished family in terms of catch weight
Scombridae
Gadidae
Sepiidae
Merlucciidae
0
2
4
6
8
Vessel count


Strategy's total catch weight and effort
for the main fished species during the reference year
Species
Engraulis encrasicolus
Dicentrarchus labrax
Scomber scombrus
Sepia officinalis
Merluccius merluccius
Thunnus alalunga
0
1,000,000
2,000,000
3,000,000
Total catch weight (kg)
Species
Engraulis encrasicolus
Thunnus alalunga
Scomber scombrus
Dicentrarchus labrax
Sepia officinalis
Merluccius merluccius
0
10,000
20,000
30,000
40,000
50,000
Total fishing effort (hours)

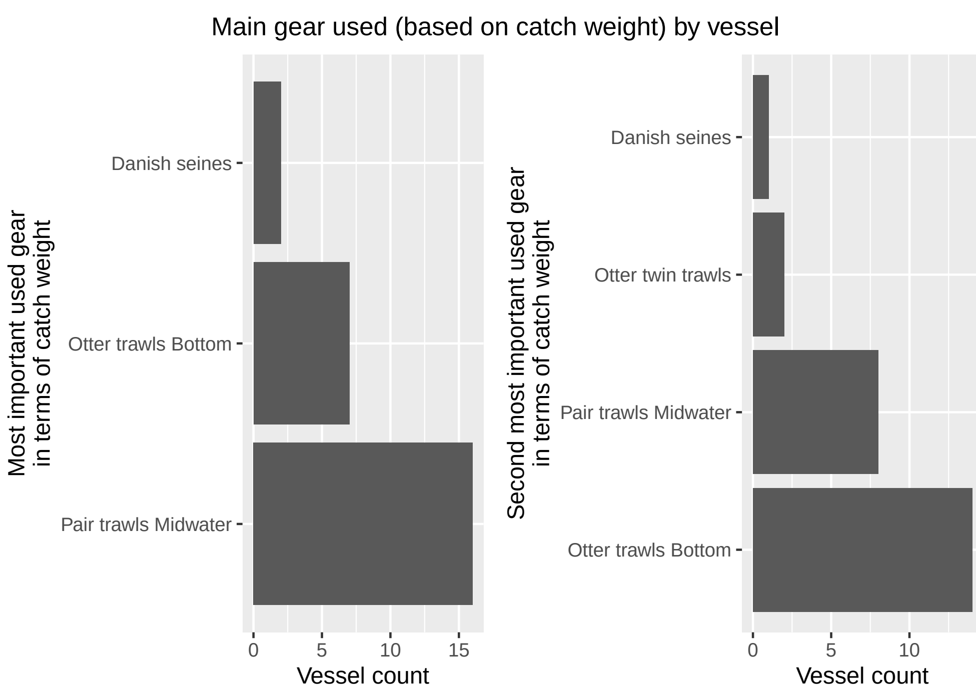


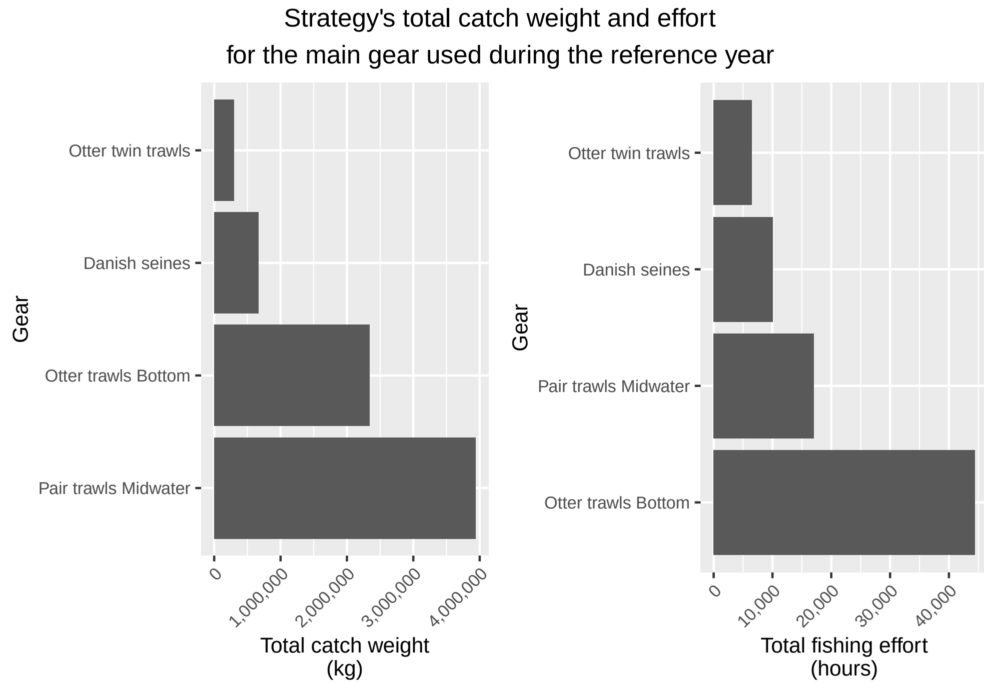
We then display the annual catch weight and effort associated with the most important fished taxa for each vessel. Again, we consider the most important taxa to be those that were the first or second most important taxa caught by weight in more than 5% of the vessels.

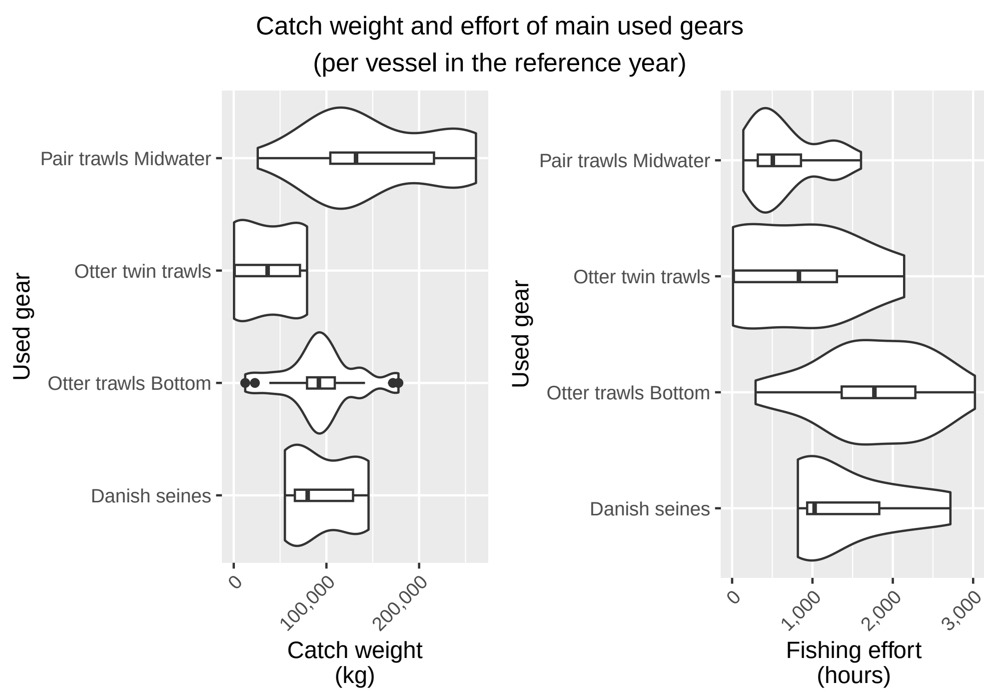




Finally, we report the most important gear used in terms of weight, as well as the total catch weight and effort for each most important gear used. We include all gears that were identified as the most important (or second most important) gear used (in terms of weight) for more than 5% of vessels (for readability).

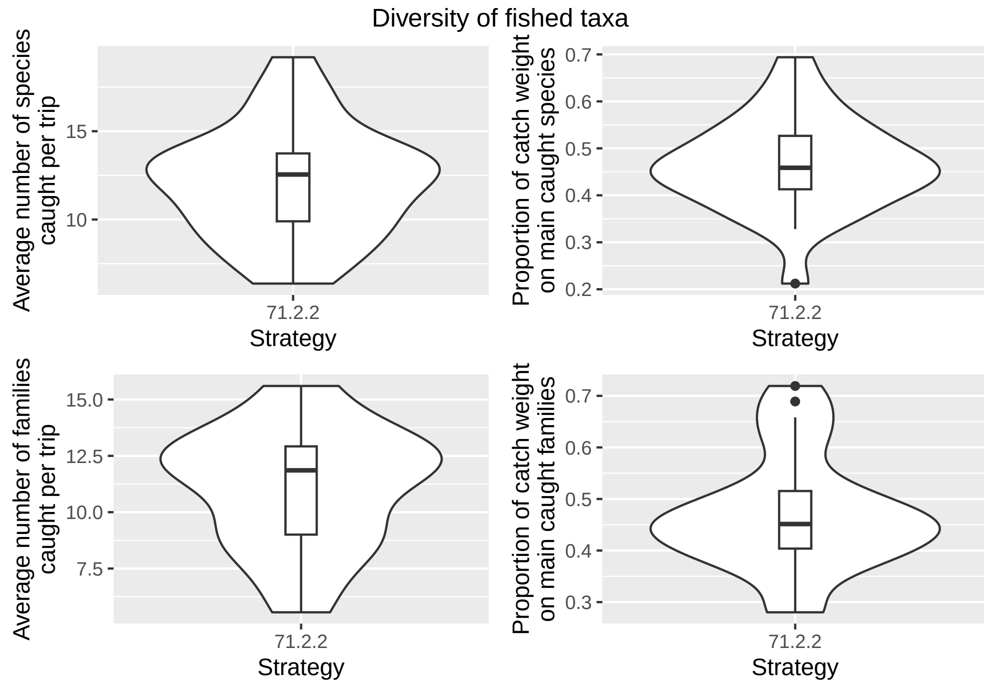




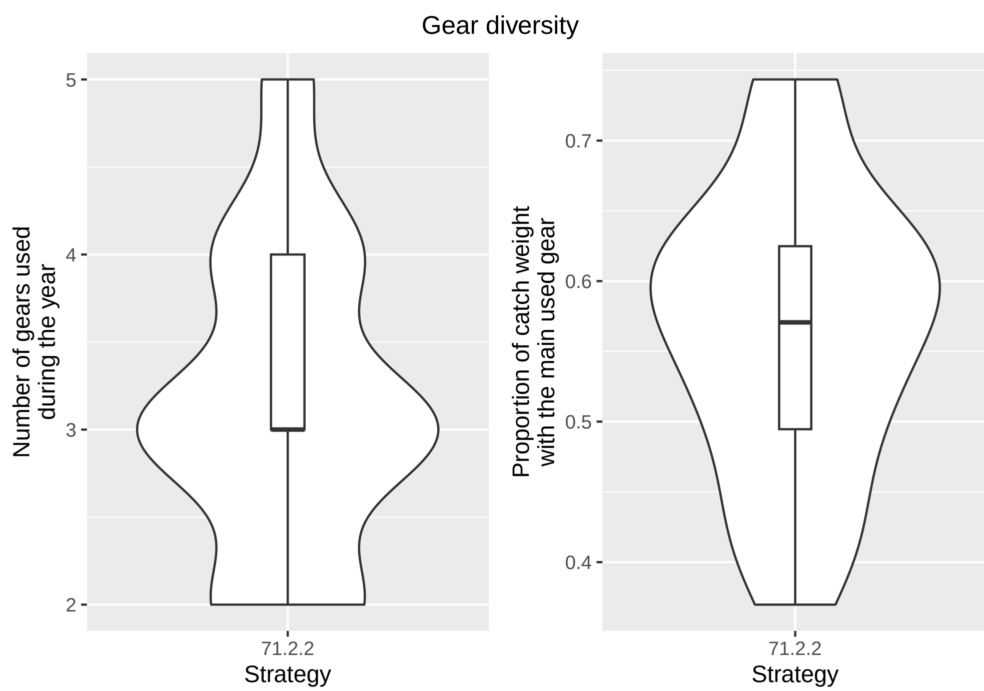


Diversity of fished taxa and used gears during the reference year (2021)

First, we present the diversity of taxa caught (average number of species and families caught during a fishing trip) and the proportion of main taxa caught (in terms of weight) during the reference year.

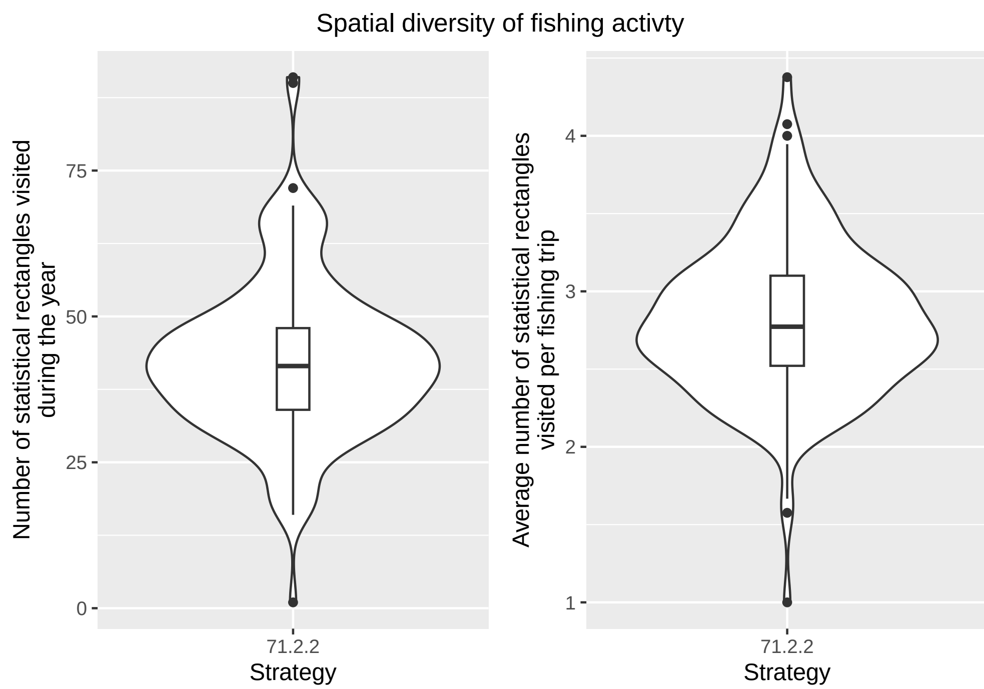


We then display the diversity of gear used (number of gears used during the year) and the proportion of catches made with the main gear used (in weight) during the reference year.

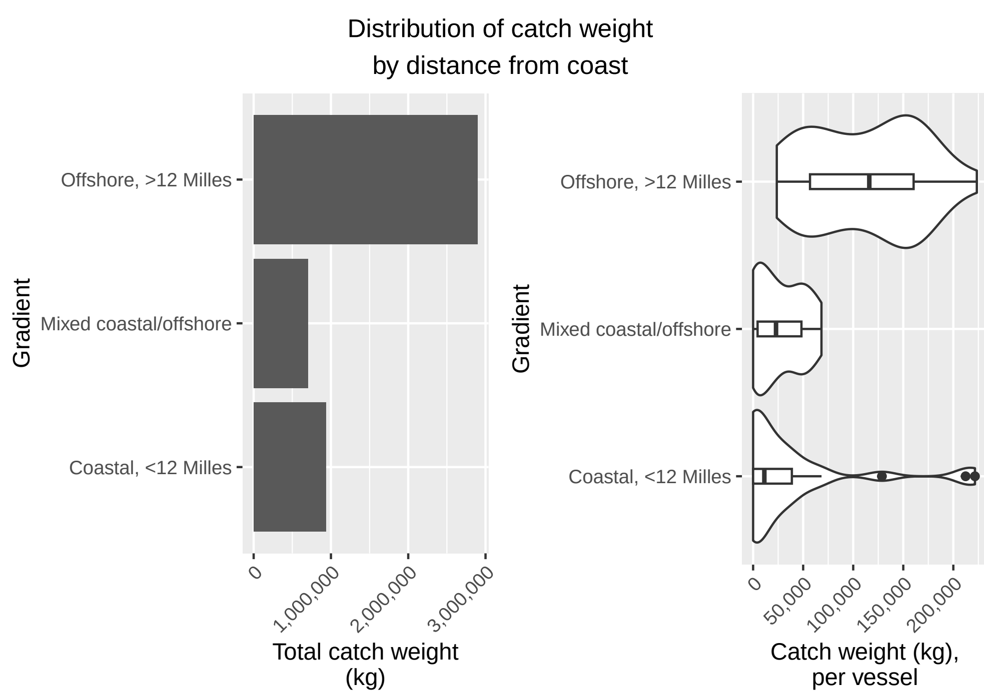


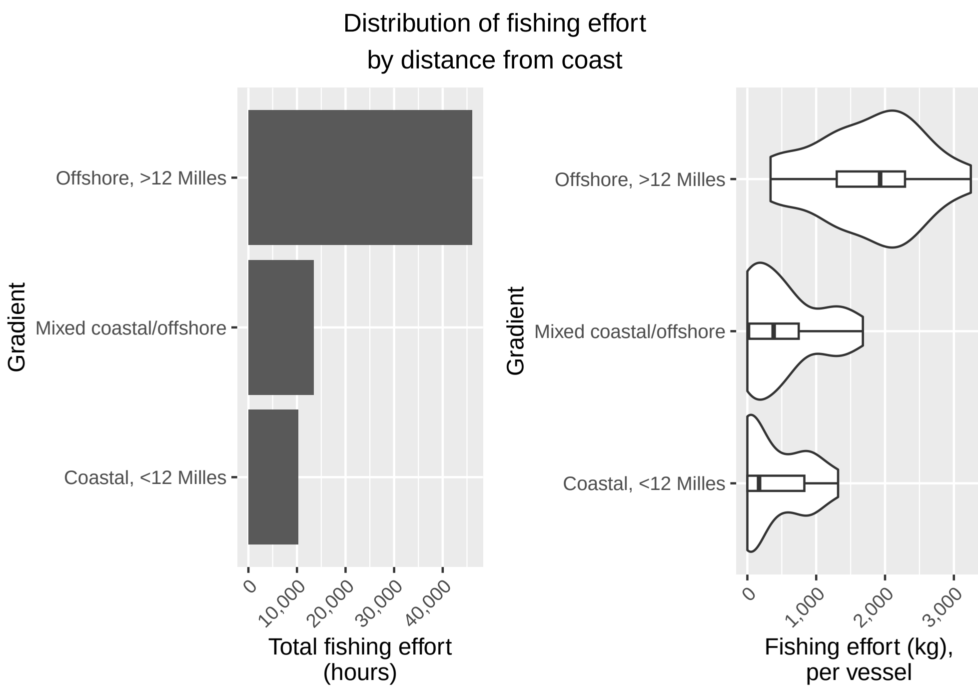
Diversity of areas visited during the reference year (2021)

We first display the diversity of areas visited (ICES statistical rectangles), using the number of areas visited in the reference year or the average number of areas visited per fishing trip.



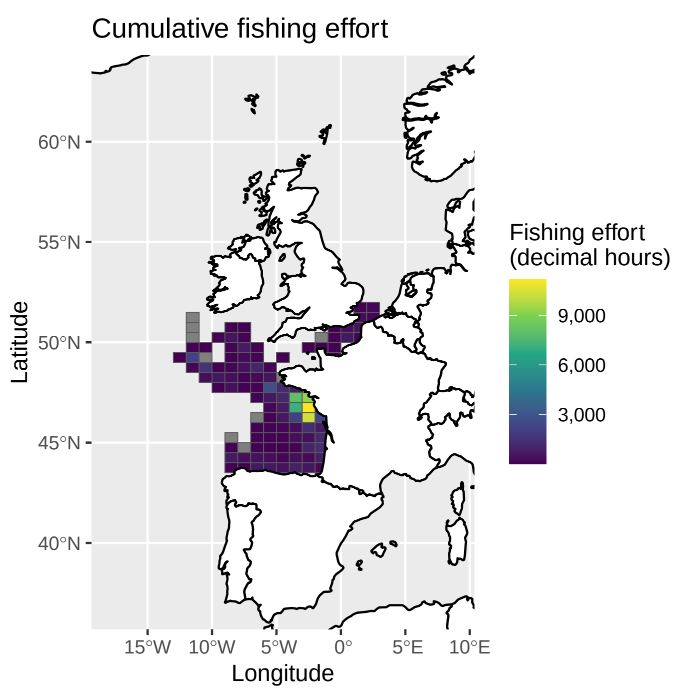
We then indicate how activity is spatially distributed across gradients (i.e., distance from shore) during the reference year by providing the annual catch weight and cumulative effort (of all fishing sequences implying catch of taxa of interest) for each major gradient (coastal, offshore, or mixed). We then display the annual catch weight and effort associated with each main gradient, per vessel.

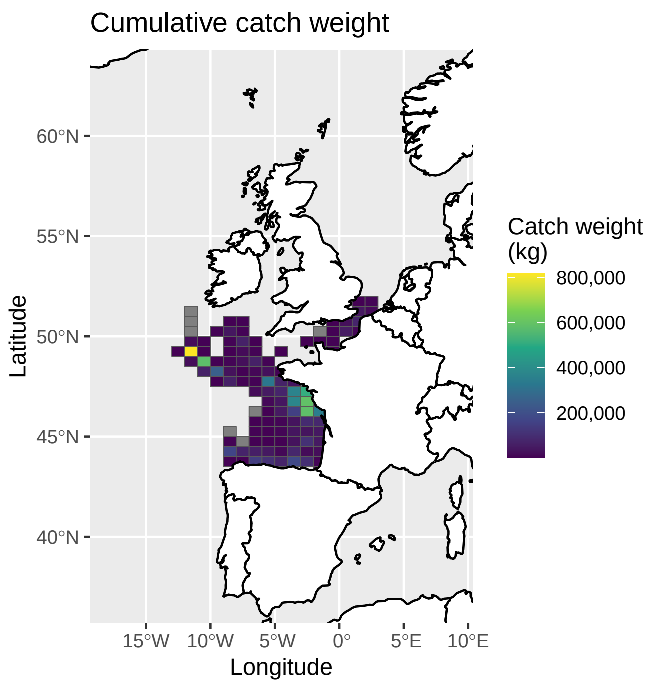




Maps of fishing activity distribution during the reference year (2021)

Here we show the distribution of fishing effort and catch weight over ICES statistical rectangles, for the strategy of interest and during the reference year. Gray squares indicate visited areas where no weight/effort data are available.





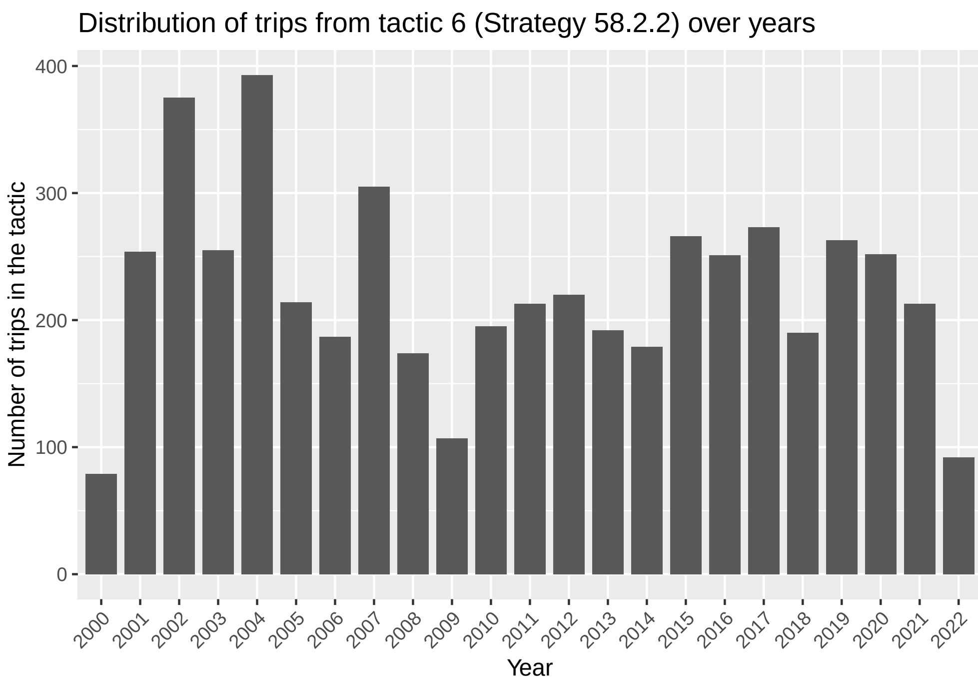
Description of tactics

We only described the tactics associated with the most high-risk third-level strategies (>70% of bycatch events / >78% of captured dolphins: 58.2.2, 58.3.3, 65.2.1, 65.2.2, 71.1.2) and with at least one associated bycatch event. Of note, we must be cautious in interpreting the effort map in the following tactic descriptions, as there is a significant amount of missing values for effort metrics (particularly in the early years of the study period), and as tactics often described small sets of vessels, with an increased risk of having sets that are predominantly associated with missing values (in contrast to strategies for which sets are generally larger).

Within strategy 58.2.2

Tactic 6 (Strategy 58.2.2)

This tactic includes N=5142 fishing trips. There are N=78 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2004.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 21: Tactic 6 (Strategy 58.2.2)

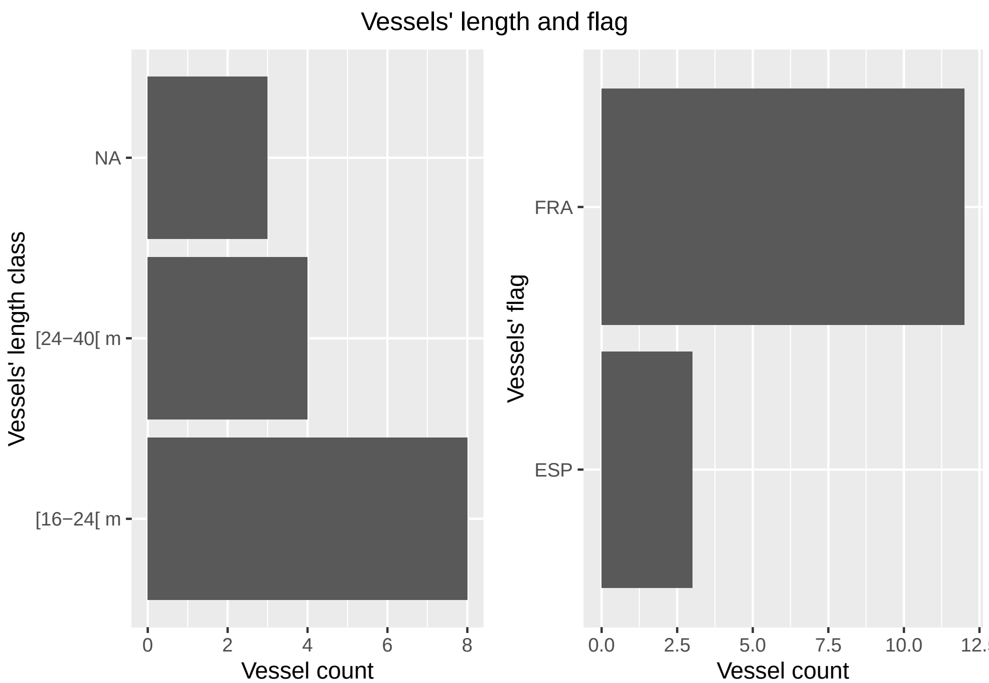
Importance	Variable	Value
	Order	Gadiformes
Determinant (>95%)	ISSCAAP	32
	Spp.	Merluccius spp
	Family	Merlucciidae
	Gear	Set gillnets (anchored)
Strongly predominant (>80%)	ICES division	27.8.a
	Sp.	Trisopterus luscus
	Family	Gadidae
Major (>50%)	Statistic rectangle	24E5
		1
		3
Component (>20%)	Trimester	4
		Pollachius pollachius
	Sp.	Prionace glauca
	Family	Carcharhinidae
	Order	Carcharhiniformes
	ISSCAAP	38
	ICES division	27.8.b
		21E7
	Statistic rectangle	23E5
		01
		02
		03
		08
		09

Table 21: Tactic 6 (Strategy 58.2.2) *(continued)*

Importance	Variable	Value
Minor component (>5%)	Month	10
	prop_ICES_divis	TRUE
High values (>SD)	prop_stat_rect	TRUE

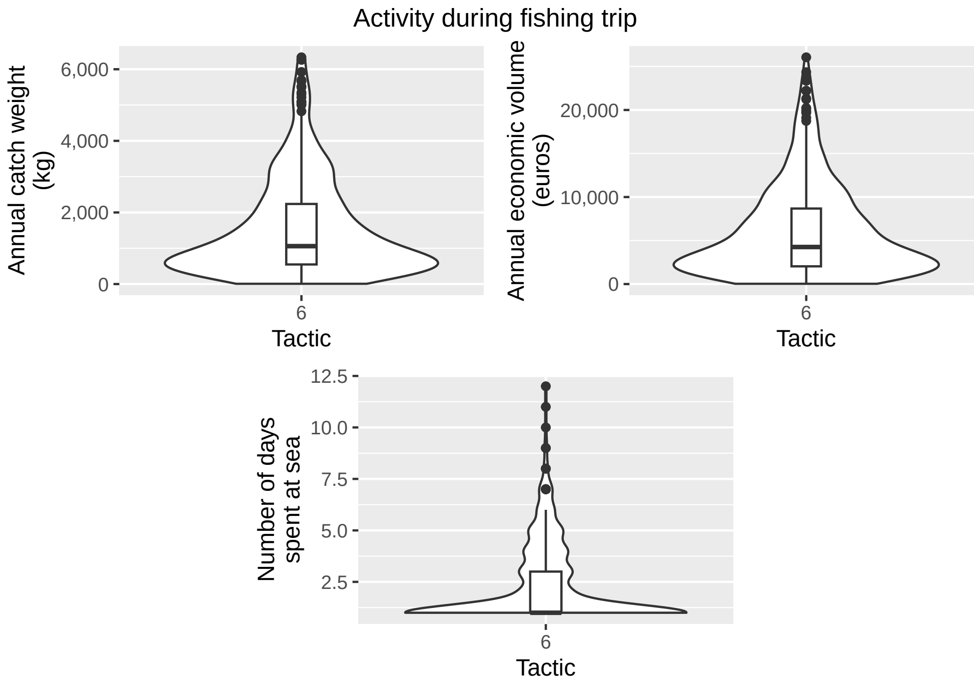
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2004)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

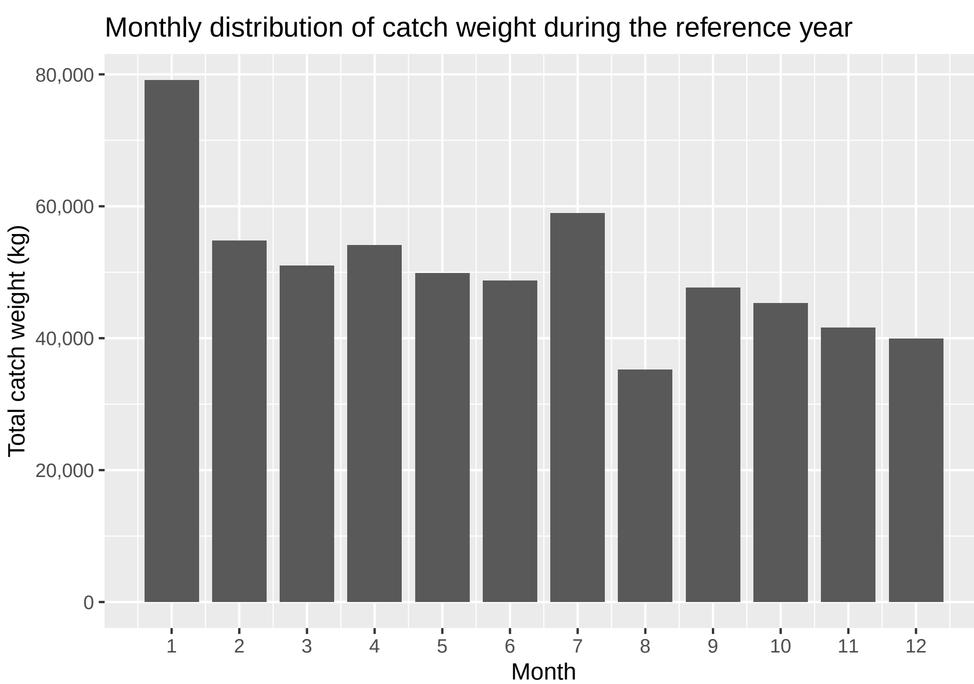


Description of the volume and pattern of fishing activities during the reference year (2004)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



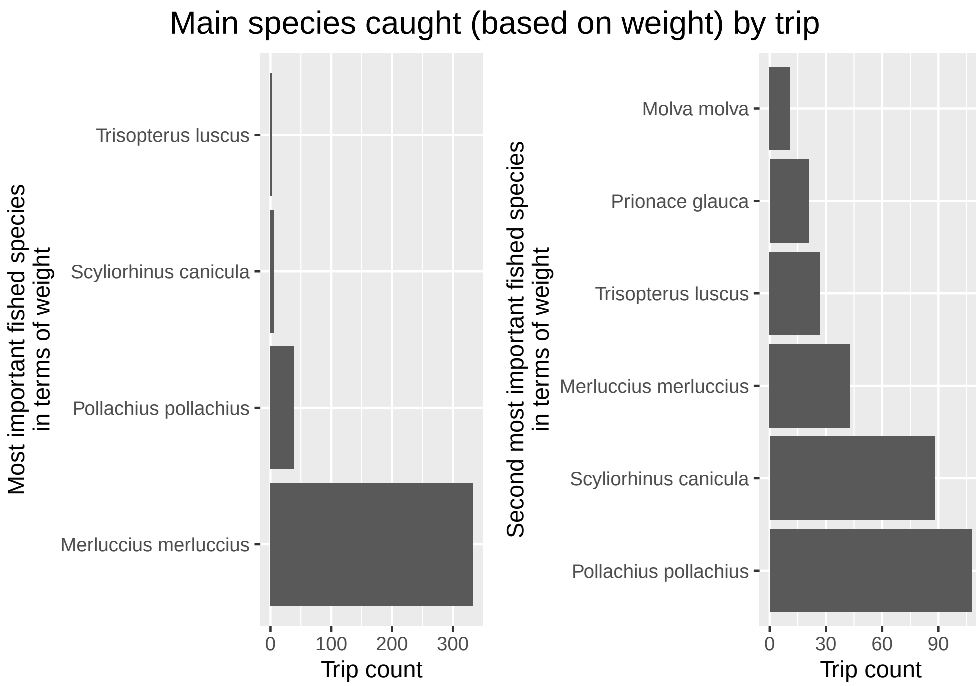
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

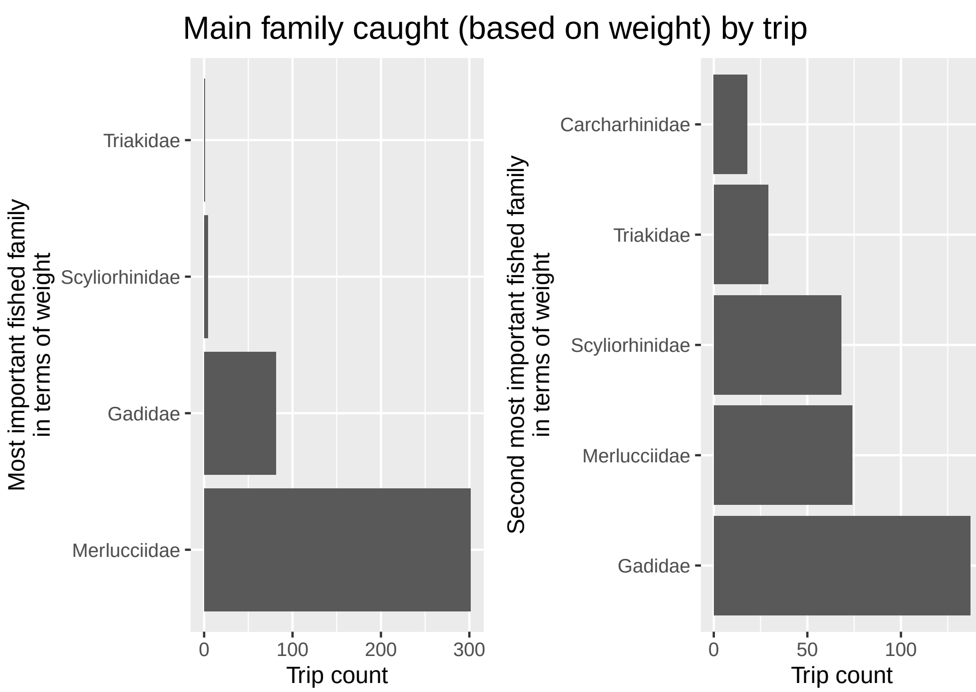


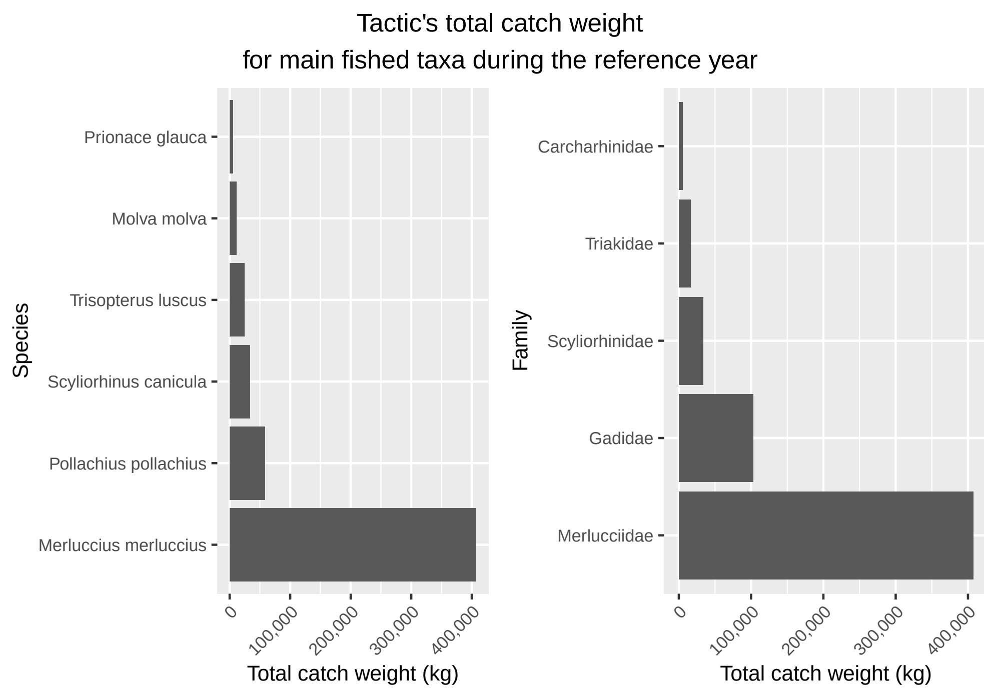
Main fished taxa and used gears during the reference year (2004)

We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

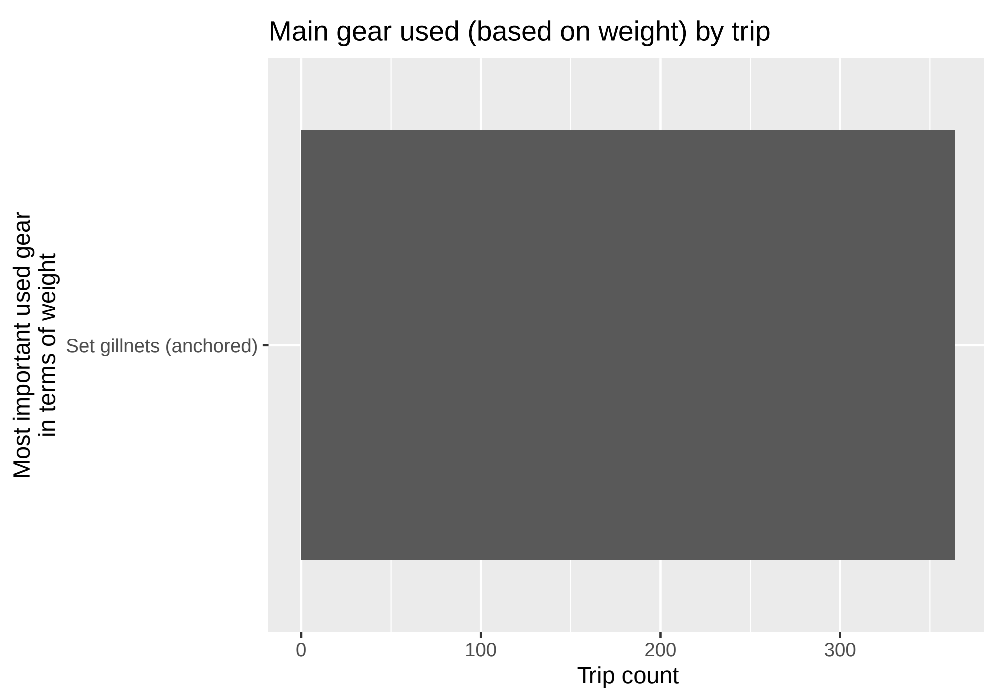
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

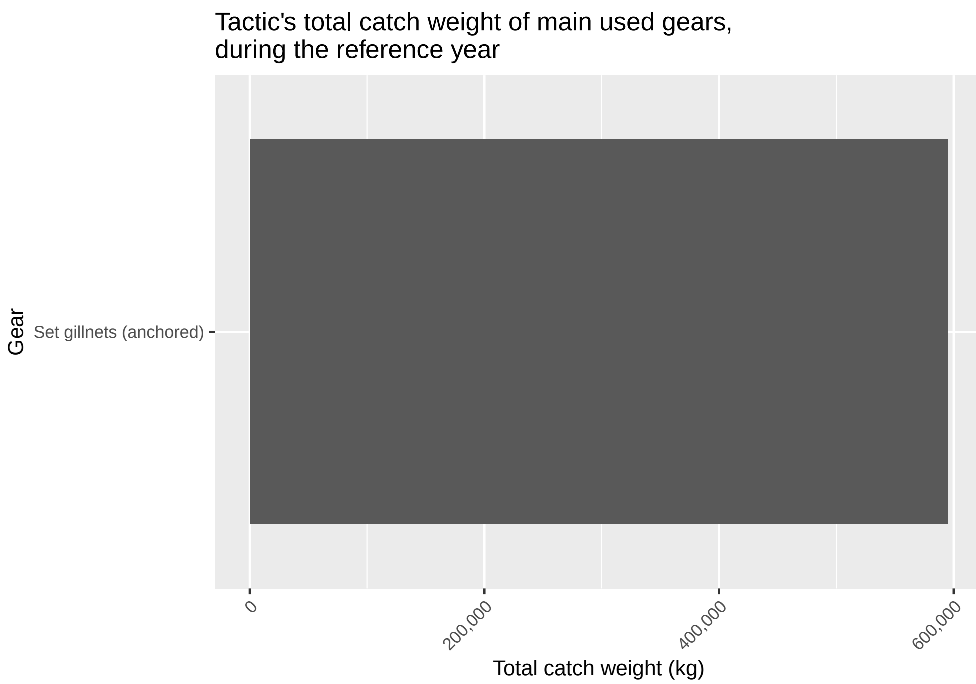






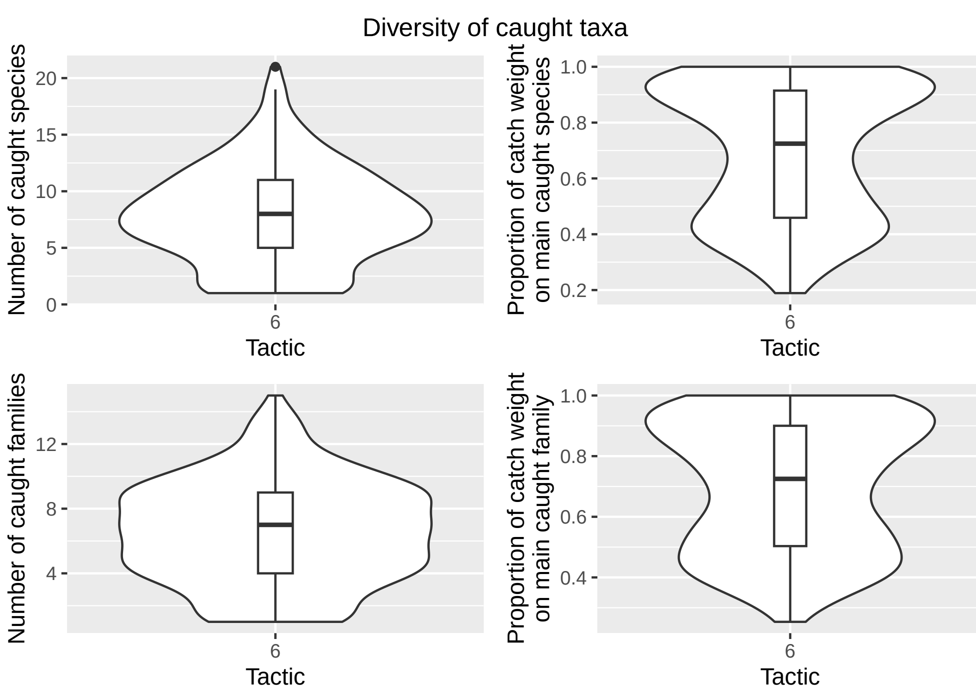
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



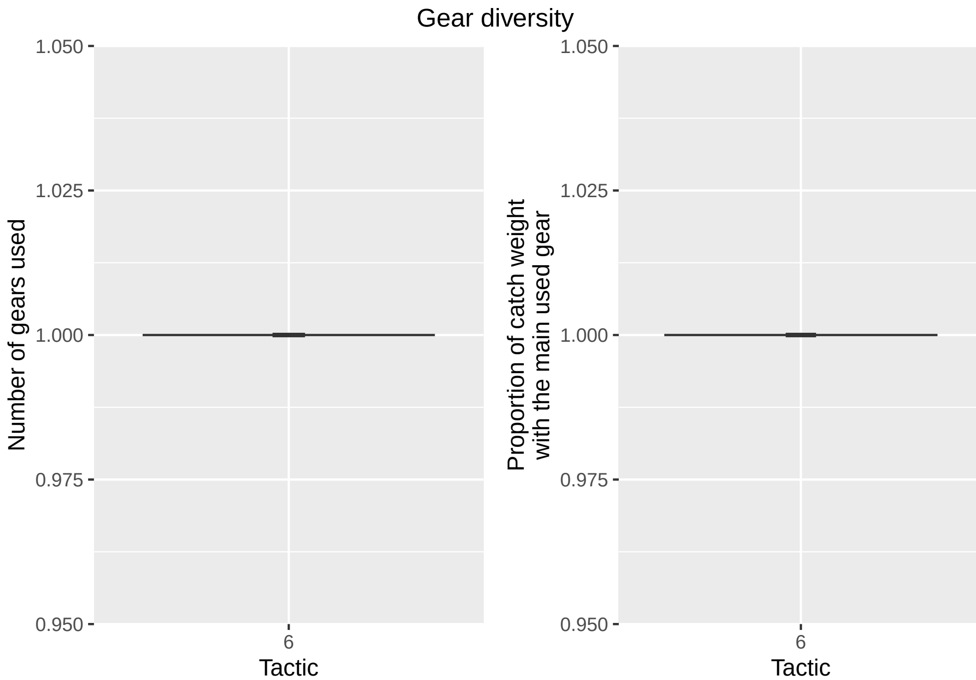


Diversity of fished taxa and used gears during the reference year (2004)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

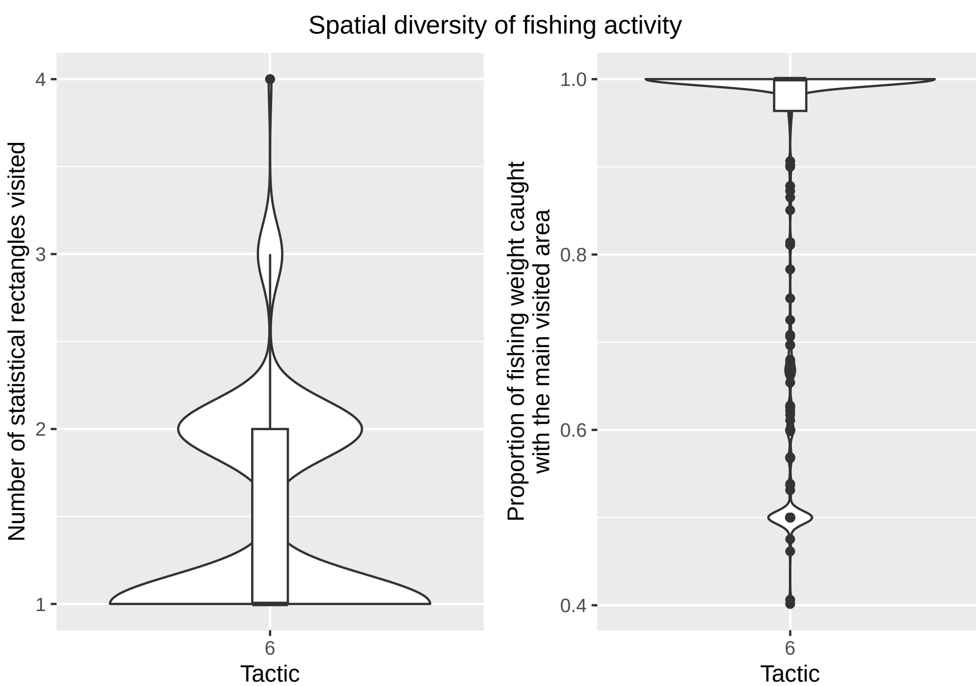


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

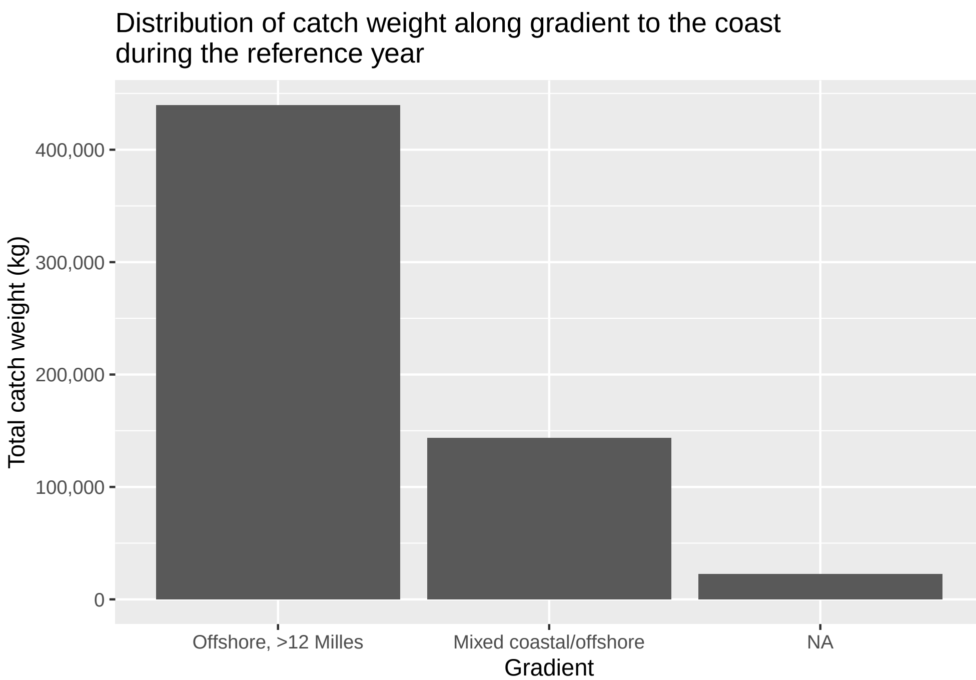


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

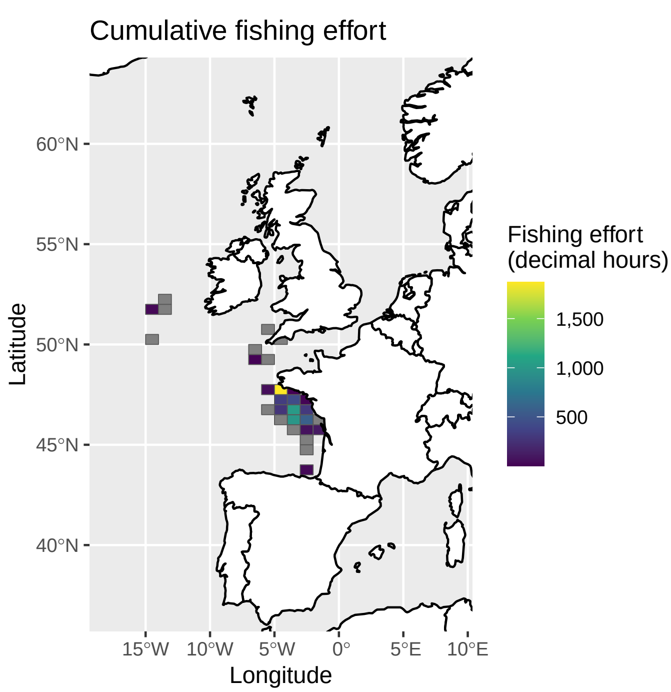


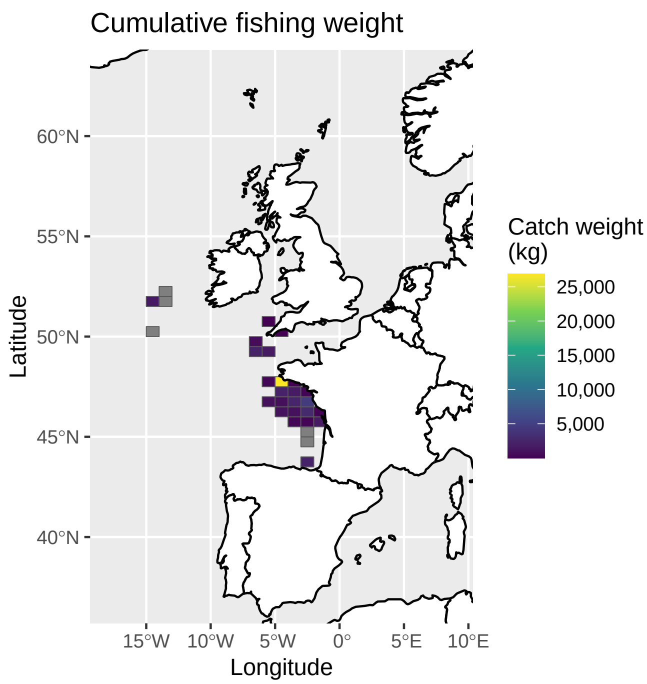
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2004)

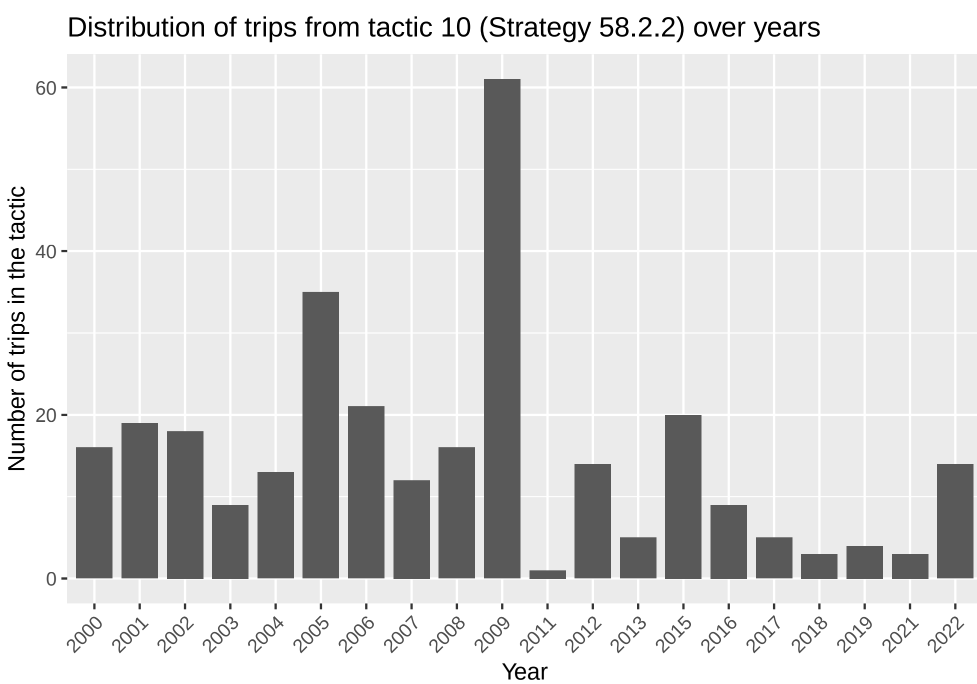
Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.





Tactic 10 (Strategy 58.2.2)

This tactic includes N=298 fishing trips. There are N=31 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2009.

Description table

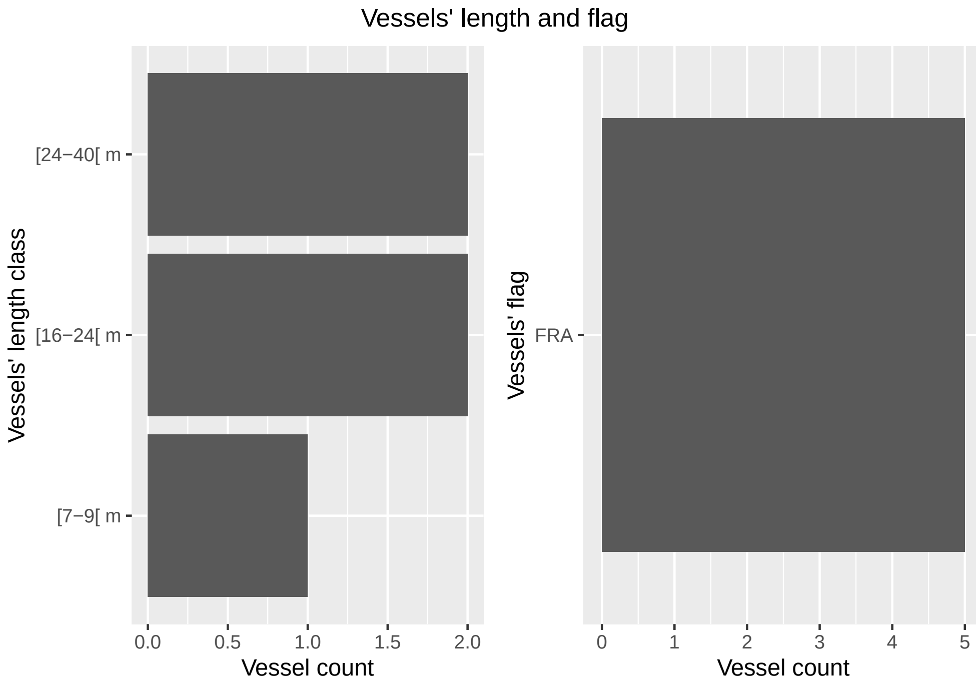
This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 22: Tactic 10 (Strategy 58.2.2)

Importance	Variable	Value
	Order	Perciformes
Determinant (>95%)	ISSCAAP	33
Strongly predominant (>80%)	Gear	Set gillnets (anchored)
	Order	Gadiformes
Predominant (>65%)	ISSCAAP	32
	ICES division	27.8.a
Major (>50%)	Trimester	4
	Spp.	Dicentrarchus spp
	Sp.	Trisopterus luscus
	Family	Moronidae
Strong component (>35%)	ICES division	27.8.b
	Sp.	Argyrosomus regius
	Family	Sciaenidae
	Statistic rectangle	19E8
		11
	Month	12
Component (>20%)	Trimester	1
	Spp.	Merluccius spp
	Sp.	Spondyliosoma cantharus
	Spp.	Mullus spp
		Gadidae
		Merlucciidae
		Mullidae
	Family	Sparidae
	Gear	Pair trawls Bottom
		20E8
		21E7
		21E8
	Statistic rectangle	24E6
	Month	02
		2
Minor component (>5%)	Trimester	3
	div_val_spp	TRUE
	div_val_family	TRUE
	div_val_order	TRUE
	div_val_isscaap	TRUE
High values (>SD)	prop_trimester	TRUE

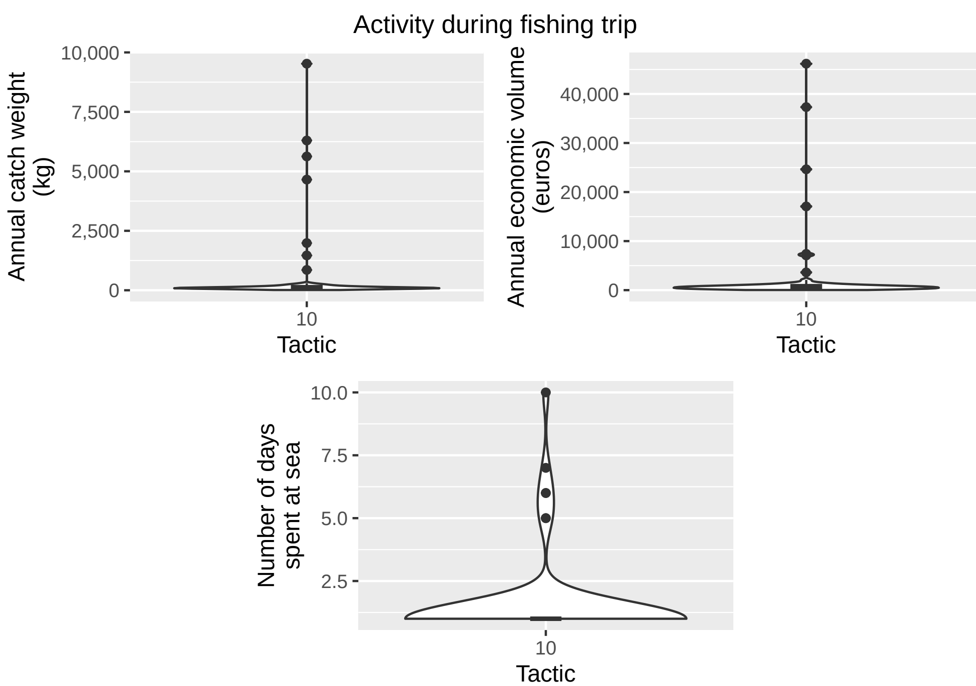
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2009)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

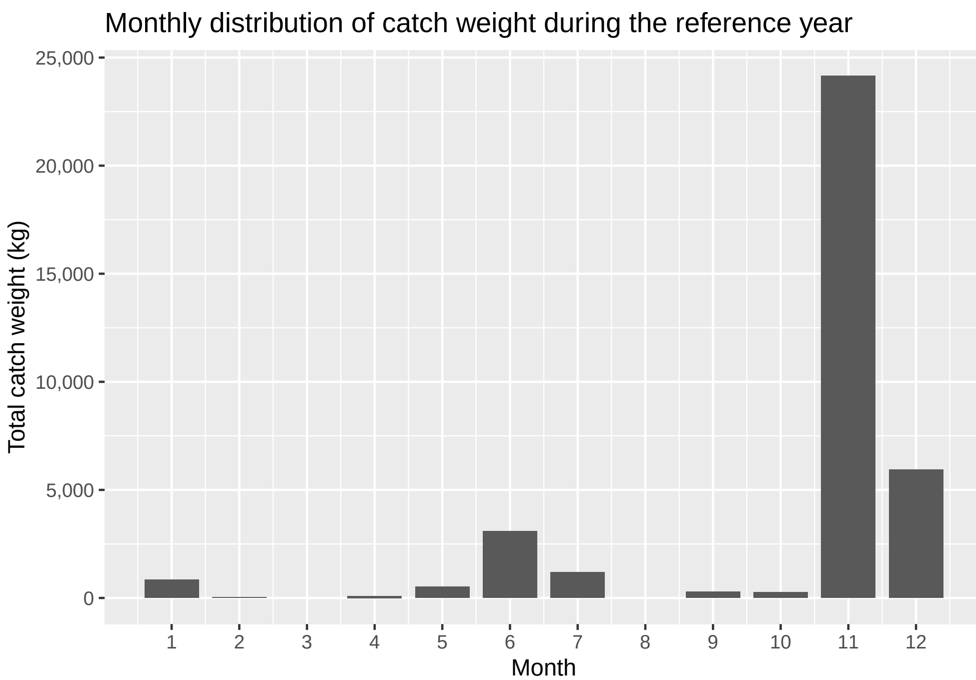


Description of the volume and pattern of fishing activities during the reference year (2009)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.

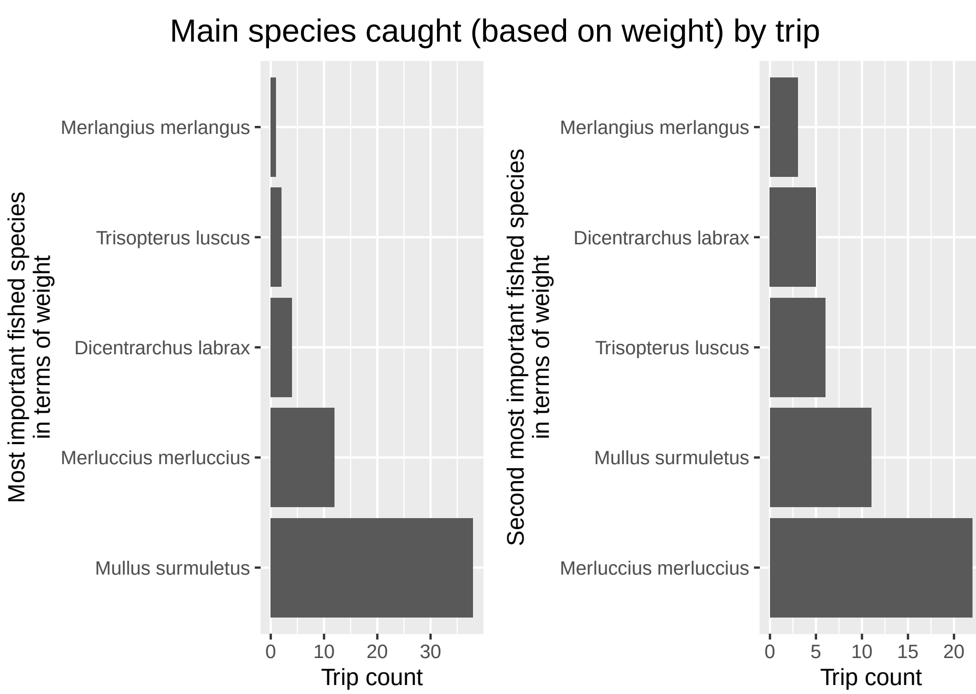


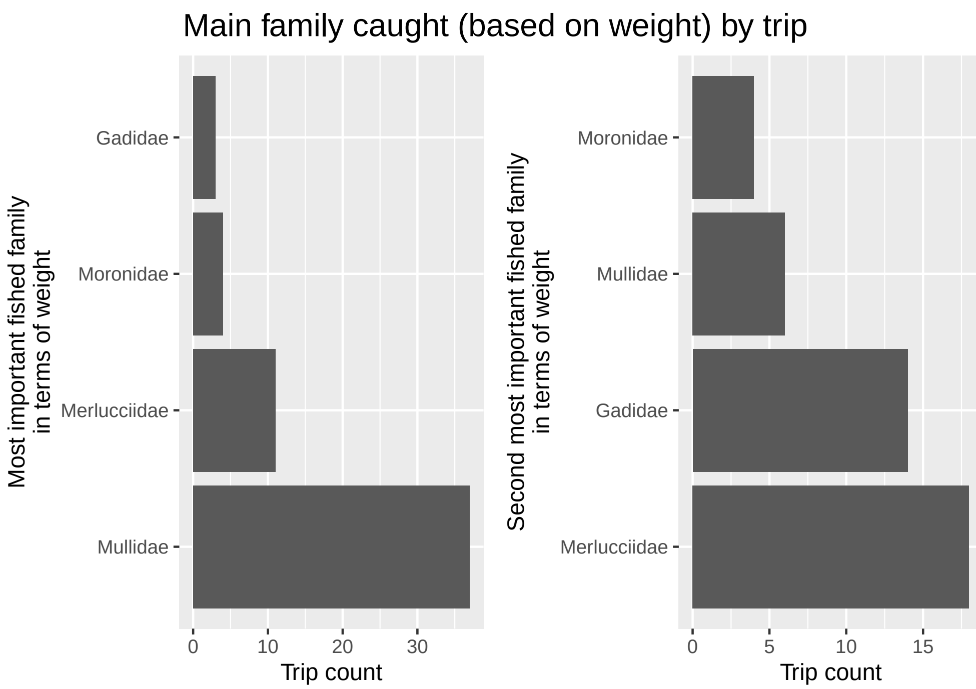
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

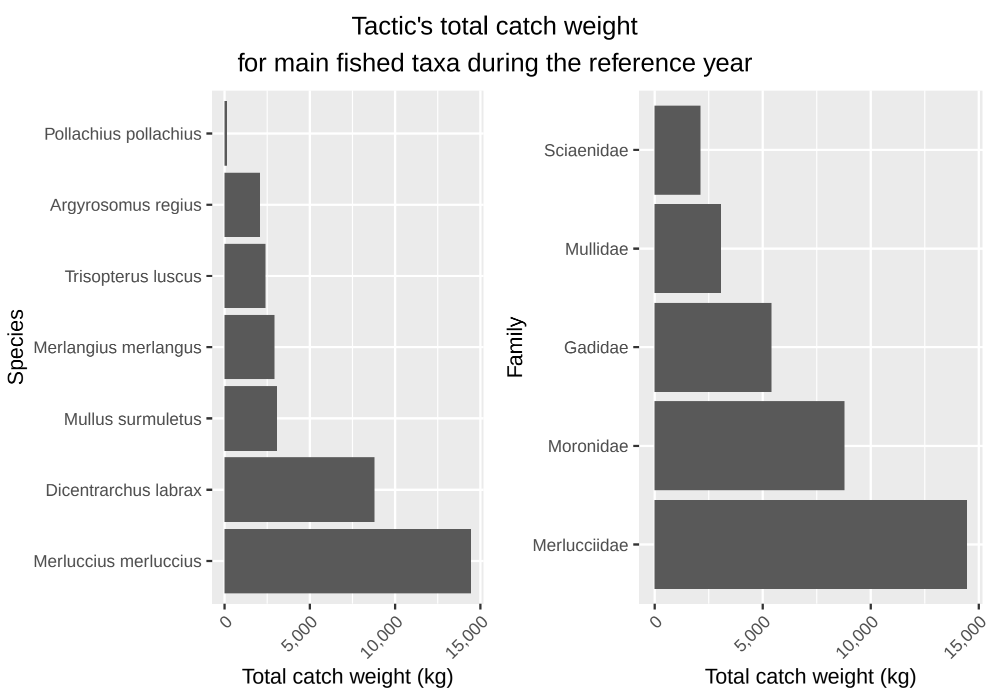


Main fished taxa and used gears during the reference year (2009)

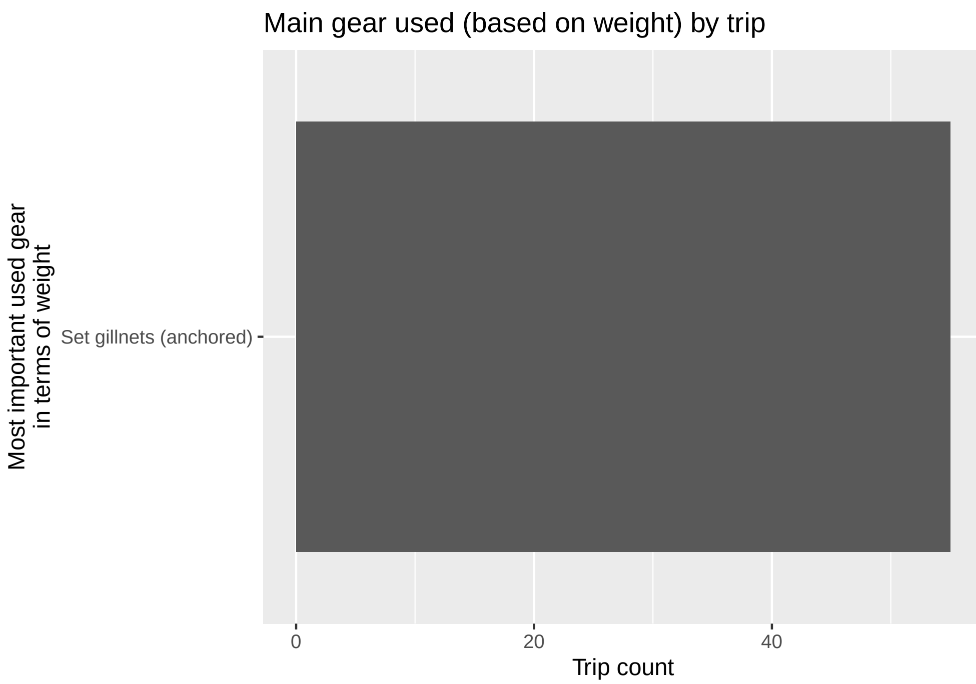
We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

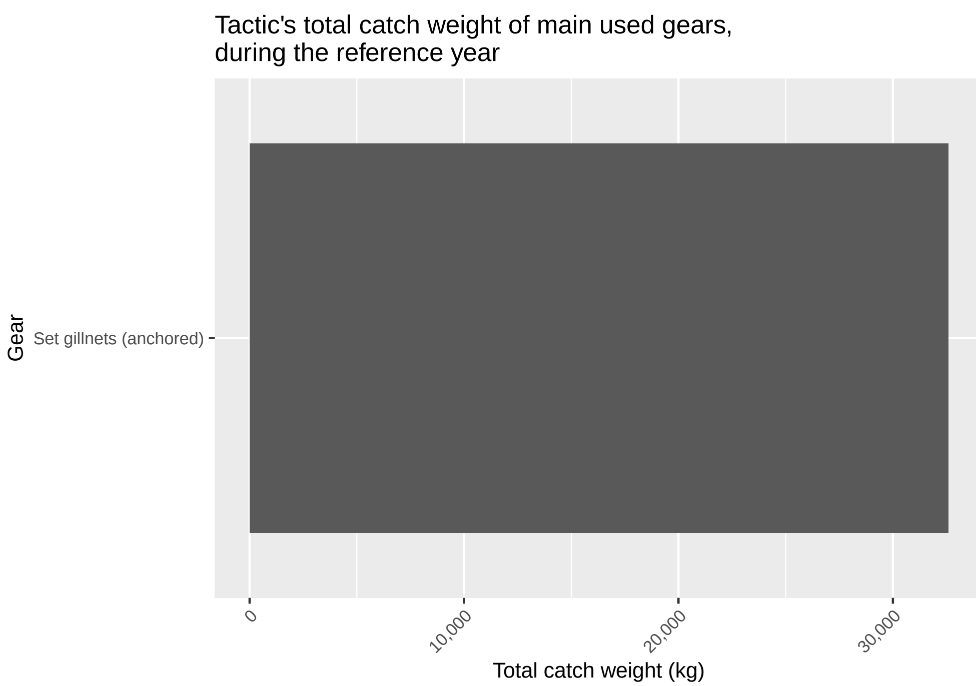






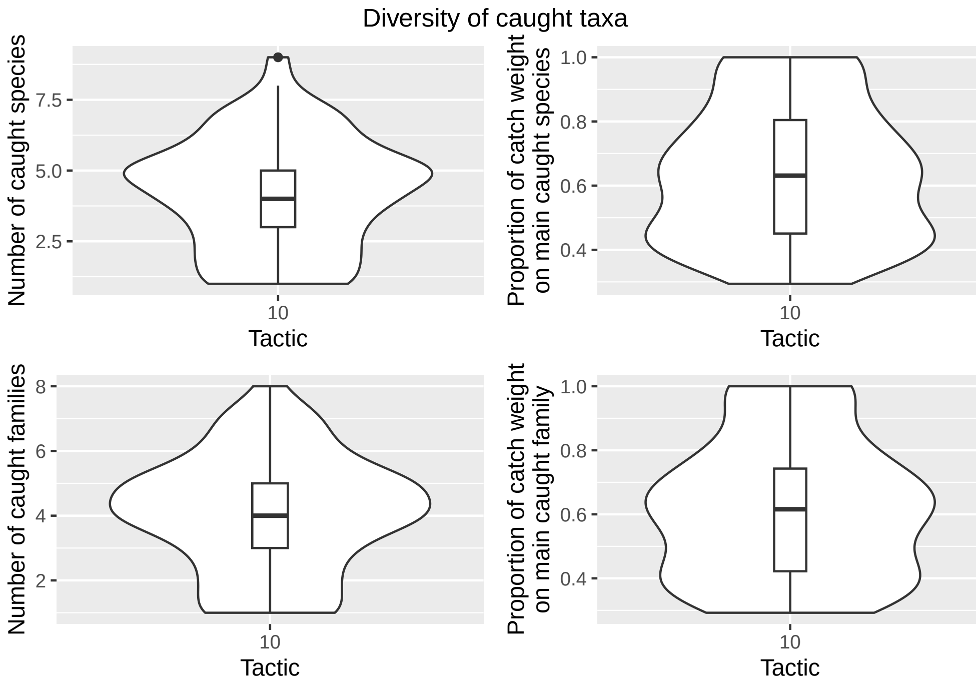
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



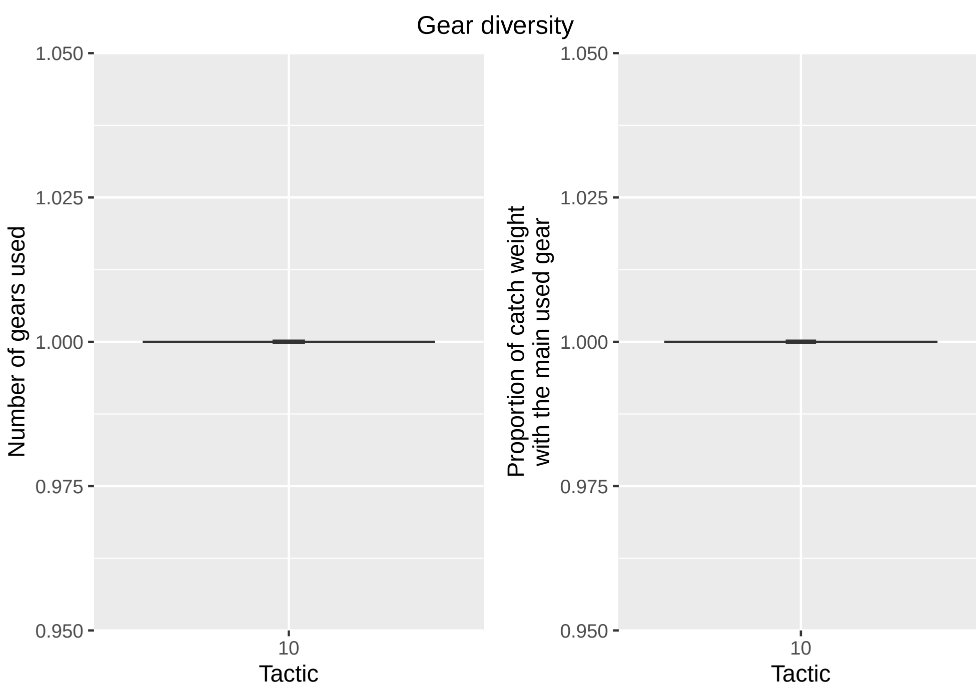


Diversity of fished taxa and used gears during the reference year (2009)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

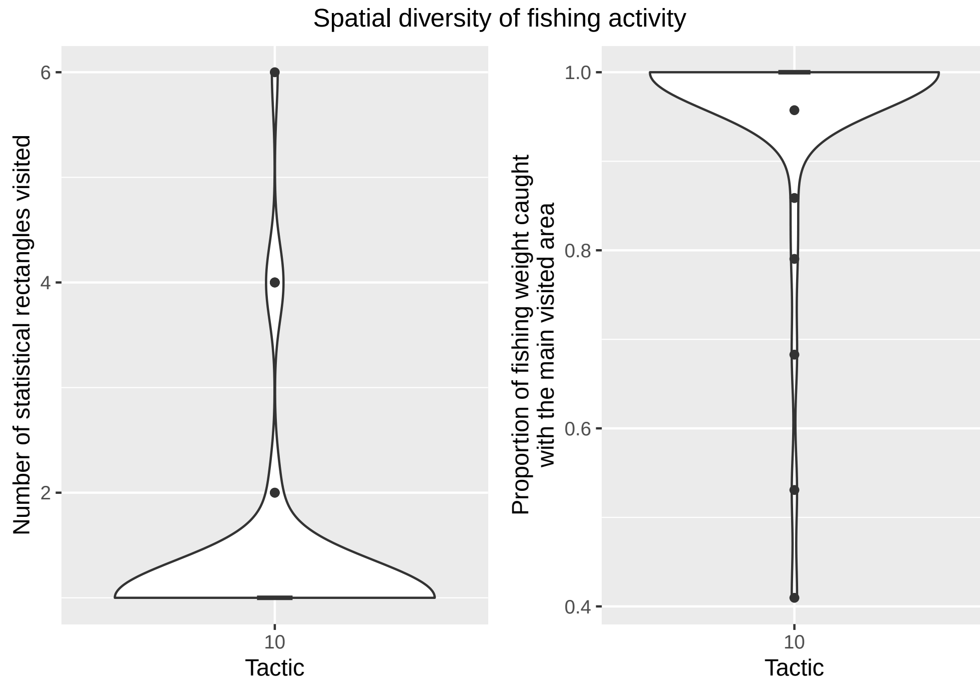


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

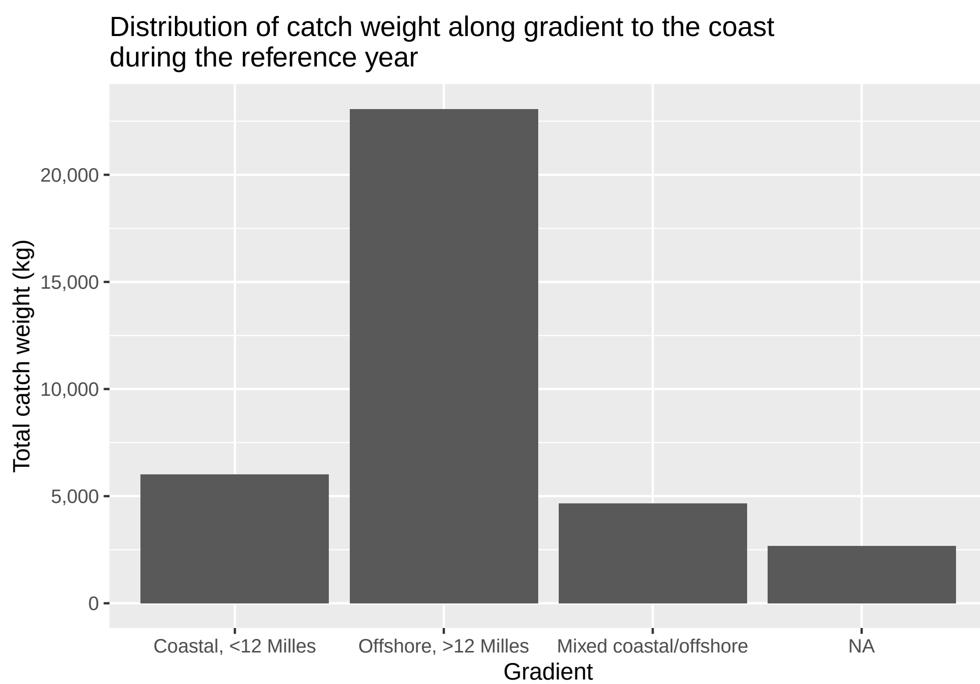


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.



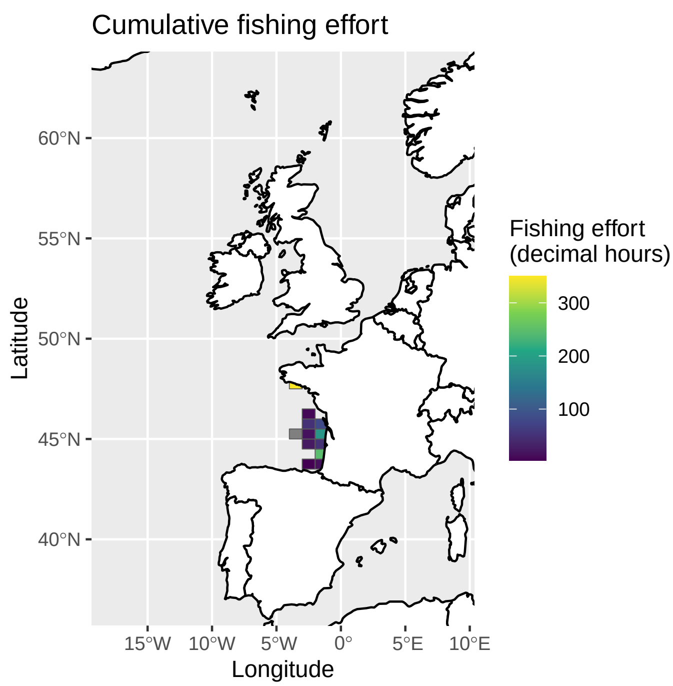
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.

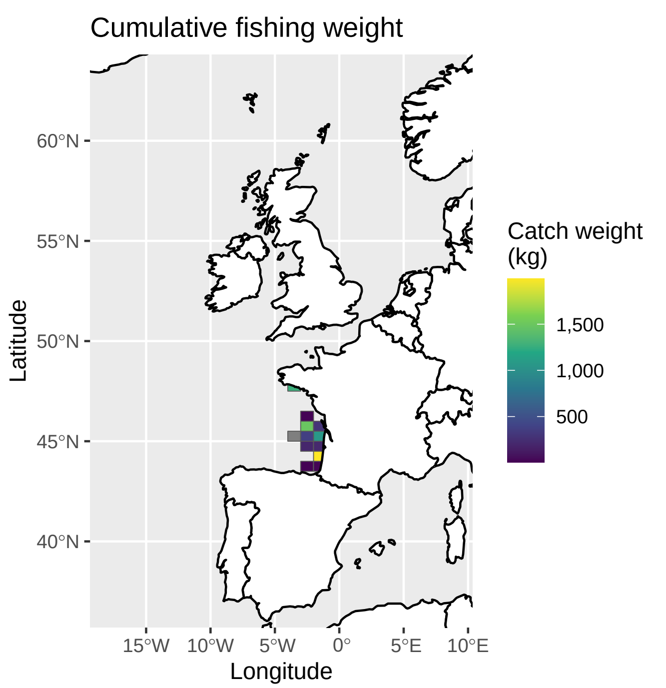


Maps of fishing activity distribution during the reference year (2009)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing

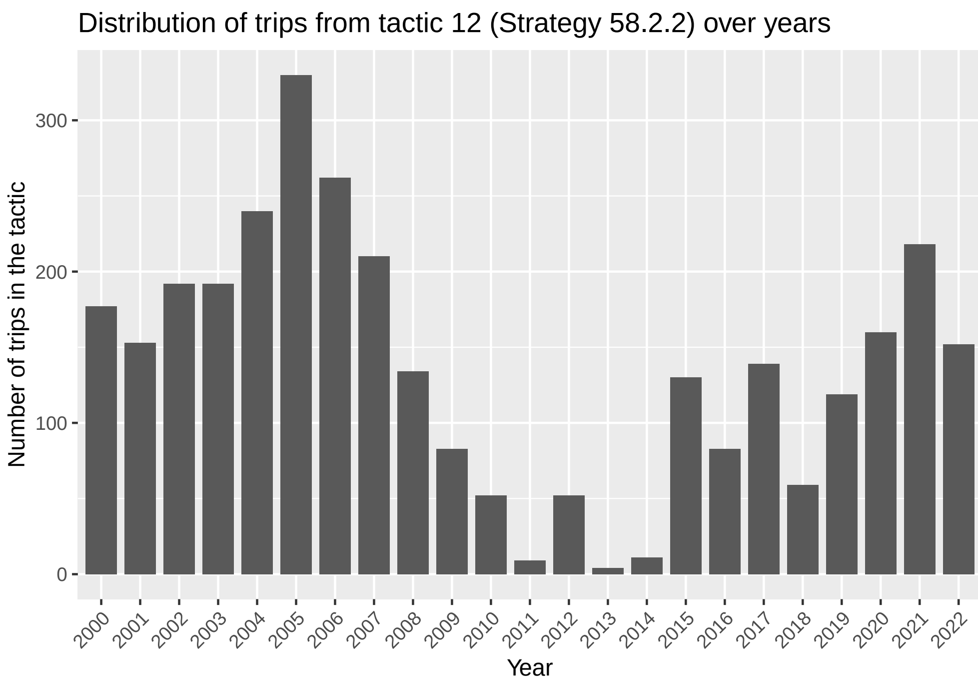
weight/effort are available.





Tactic 12 (Strategy 58.2.2)

This tactic includes N=3161 fishing trips. There are N=110 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2005.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 23: Tactic 12 (Strategy 58.2.2)

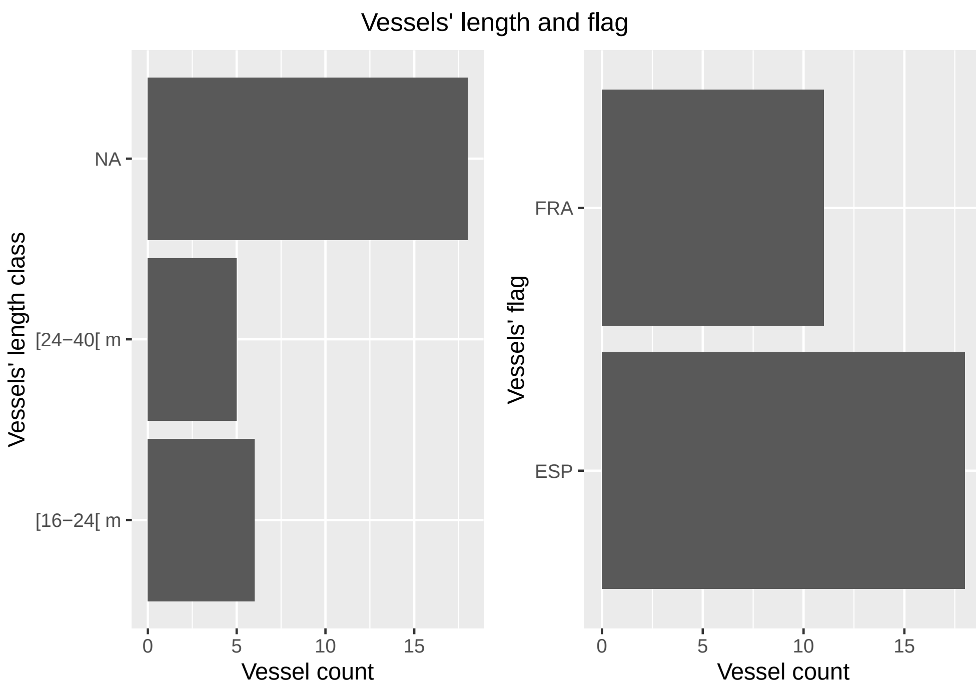
Importance	Variable	Value
	Spp.	Merluccius spp
	Family	Merlucciidae
	Order	Gadiformes
Determinant (>95%)	ISSCAAP	32
Major (>50%)	Gear	Set gillnets (anchored)
	Family	Gadidae
Strong component (>35%)	ICES division	27.8.a
	Sp.	Trisopterus luscus
	Gear	Pair trawls Bottom
	ICES division	27.8.b
		2
Component (>20%)	Trimester	3
	ISSCAAP	34
	Gear	Set longlines
	ICES division	27.7.j
		18E7
		19E7
		20E7
		21E6
		21E7
	Statistic rectangle	22E6
		01
		04
		05
		08

Table 23: Tactic 12 (Strategy 58.2.2) *(continued)*

Importance	Variable	Value
Minor component (>5%)	Month	09
	value__effort	TRUE
	div__sde__spp	TRUE
	div__sde__family	TRUE
	div__sde__order	TRUE
	div__val__stat__rect	TRUE
High values (>SD)	div__nb__day	TRUE

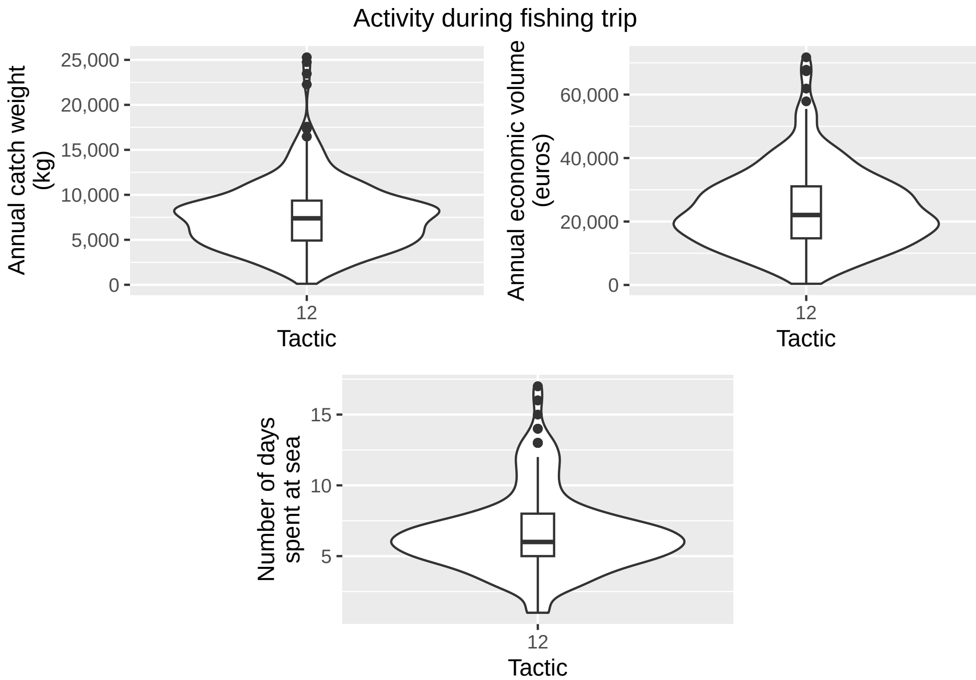
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2005)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

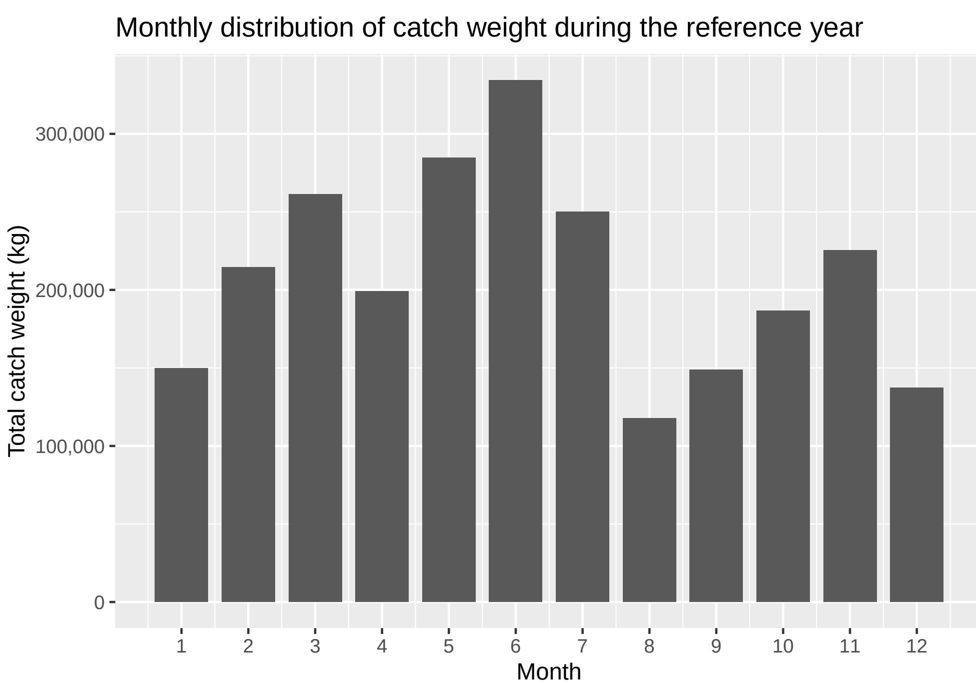


Description of the volume and pattern of fishing activities during the reference year (2005)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



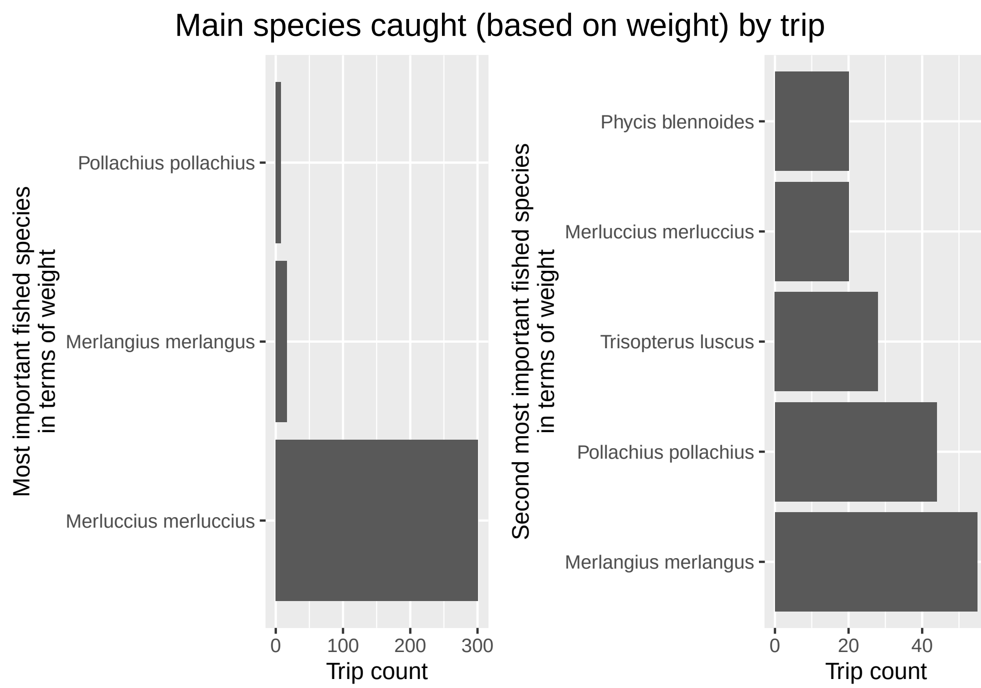
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

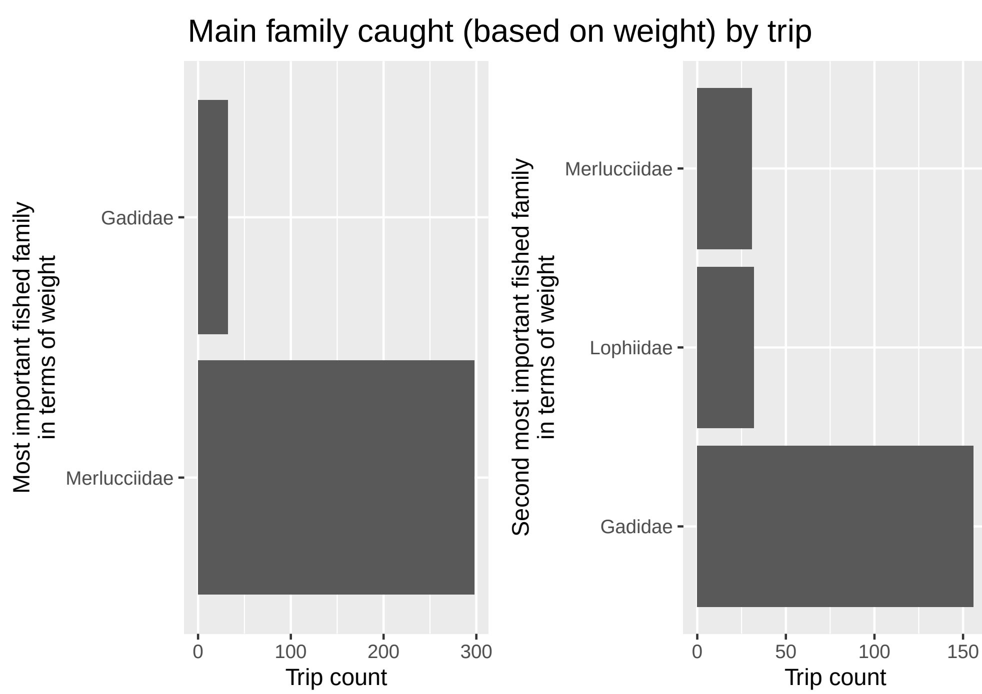


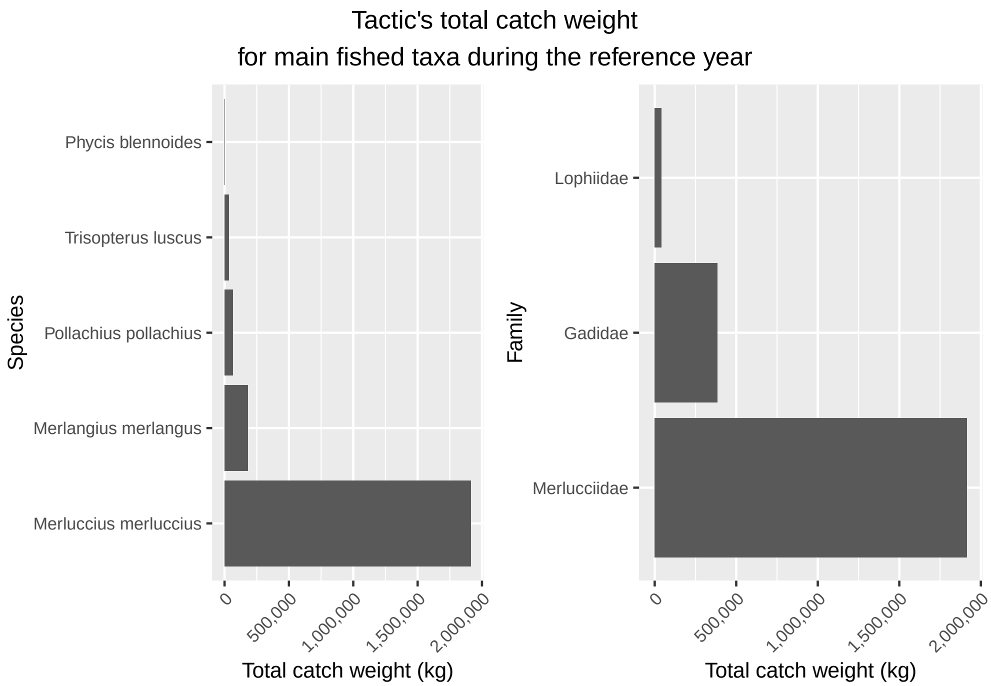
Main fished taxa and used gears during the reference year (2005)

We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

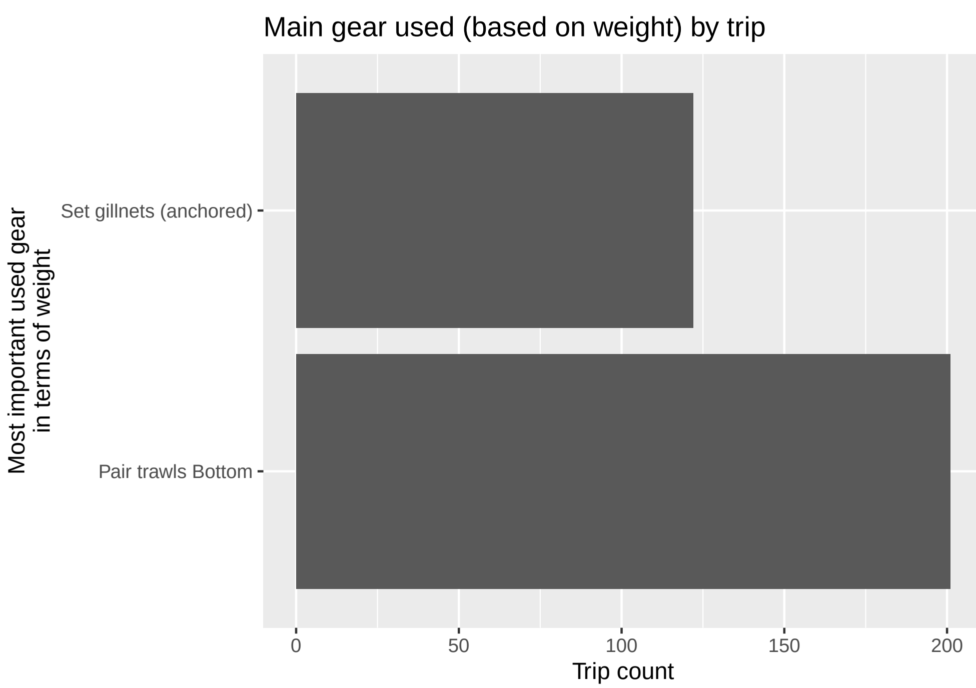
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

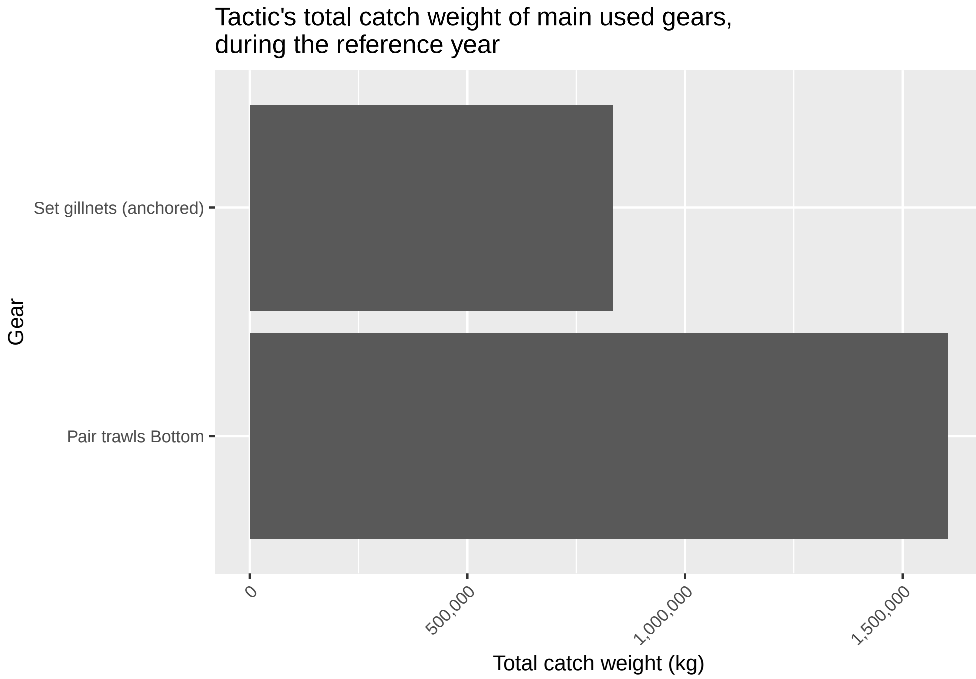






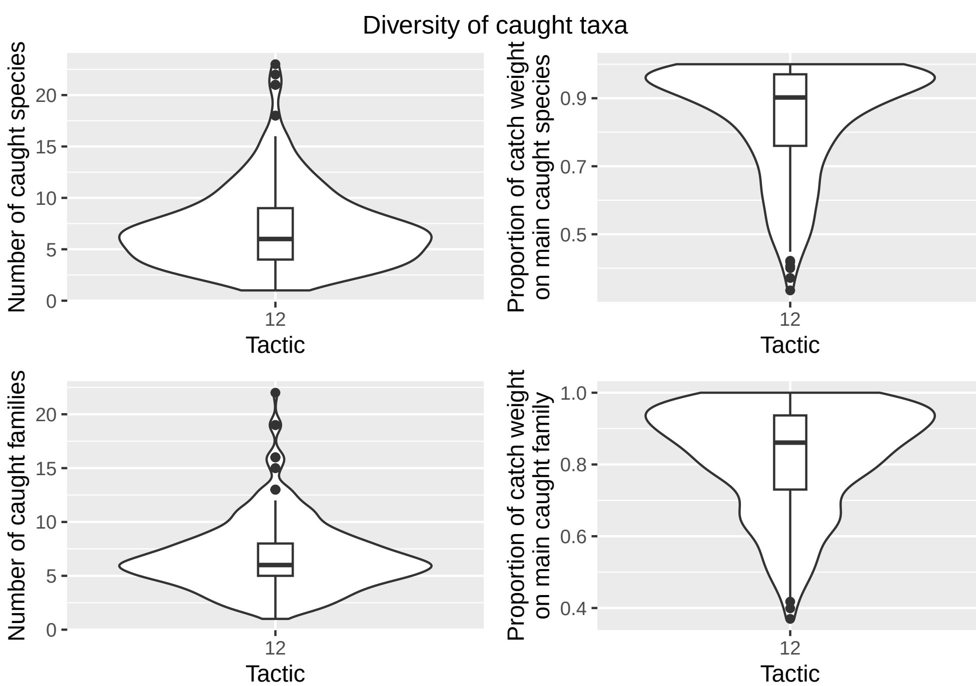
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



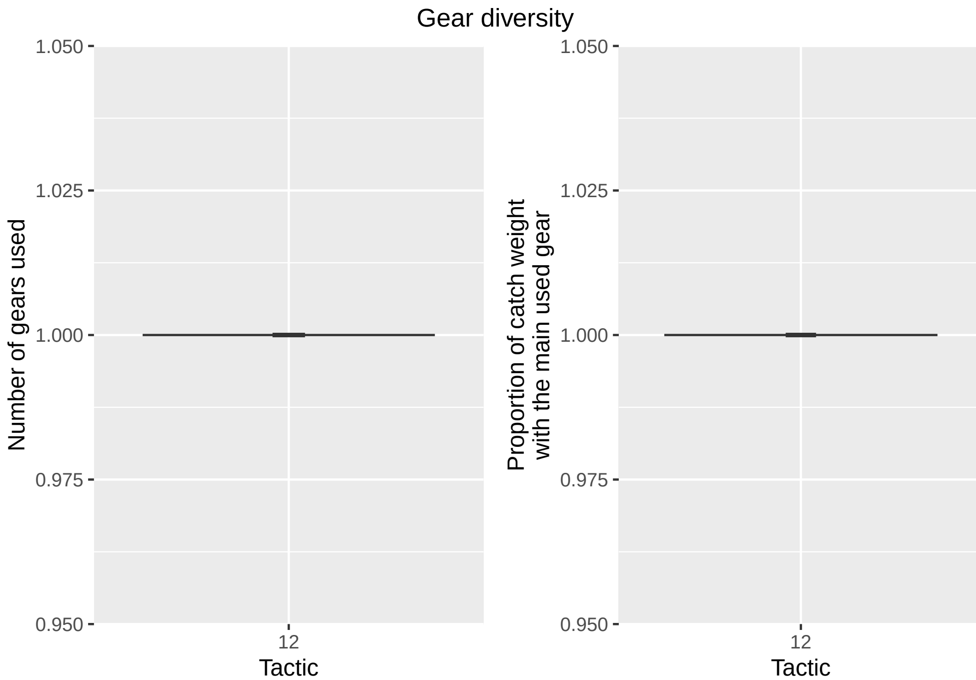


Diversity of fished taxa and used gears during the reference year (2005)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

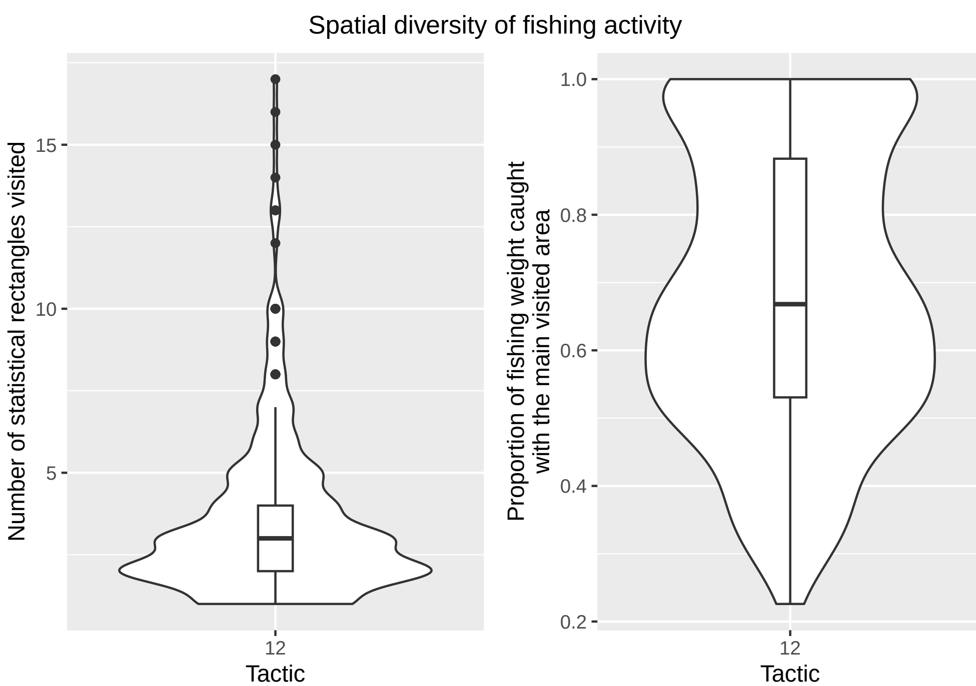


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

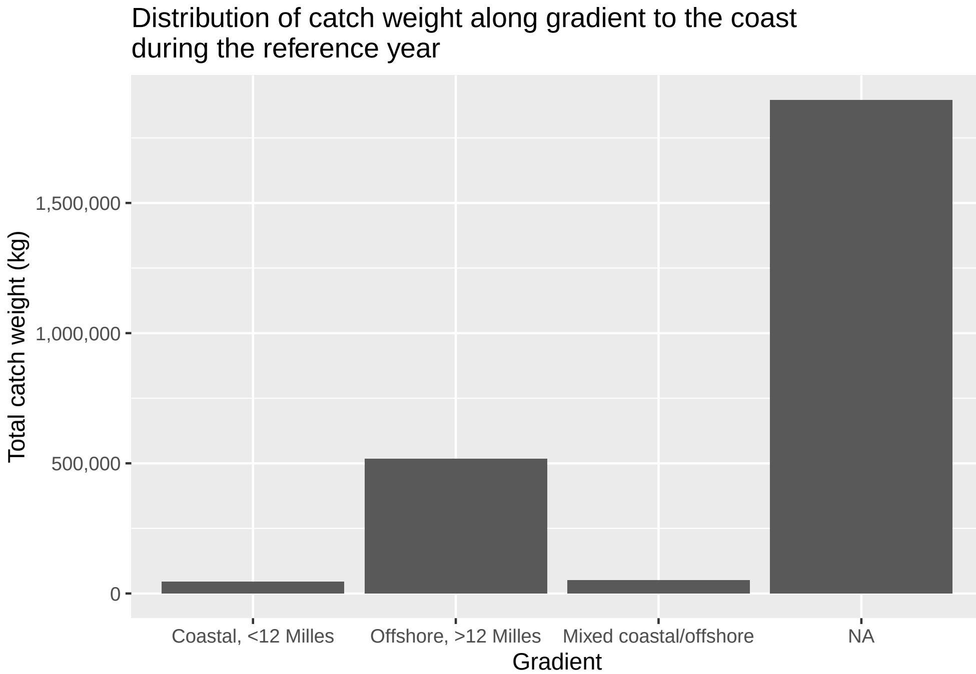


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

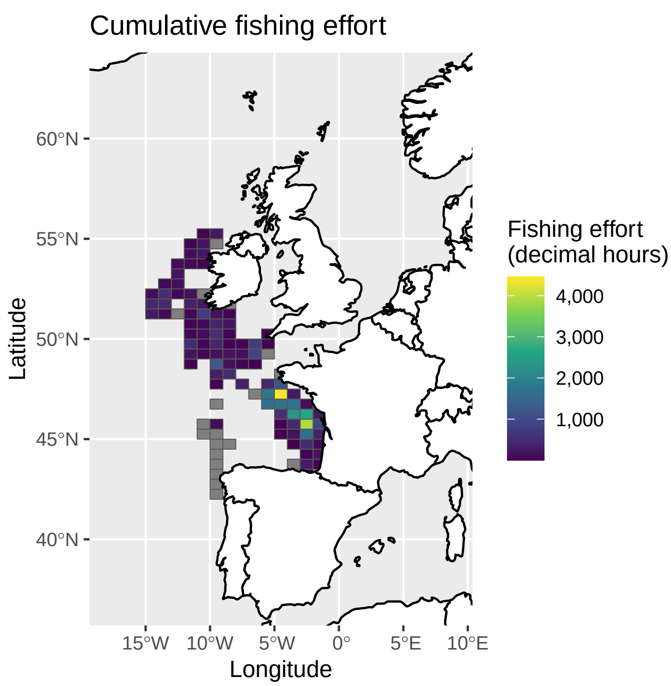


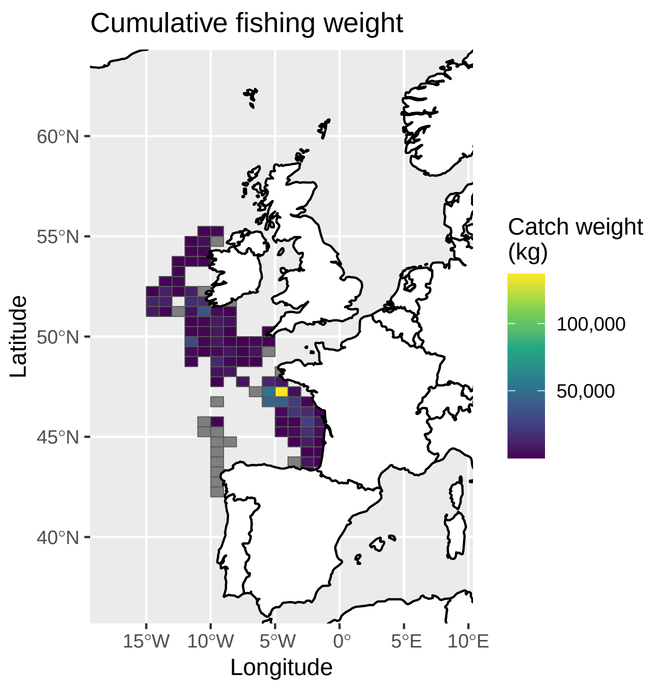
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2005)

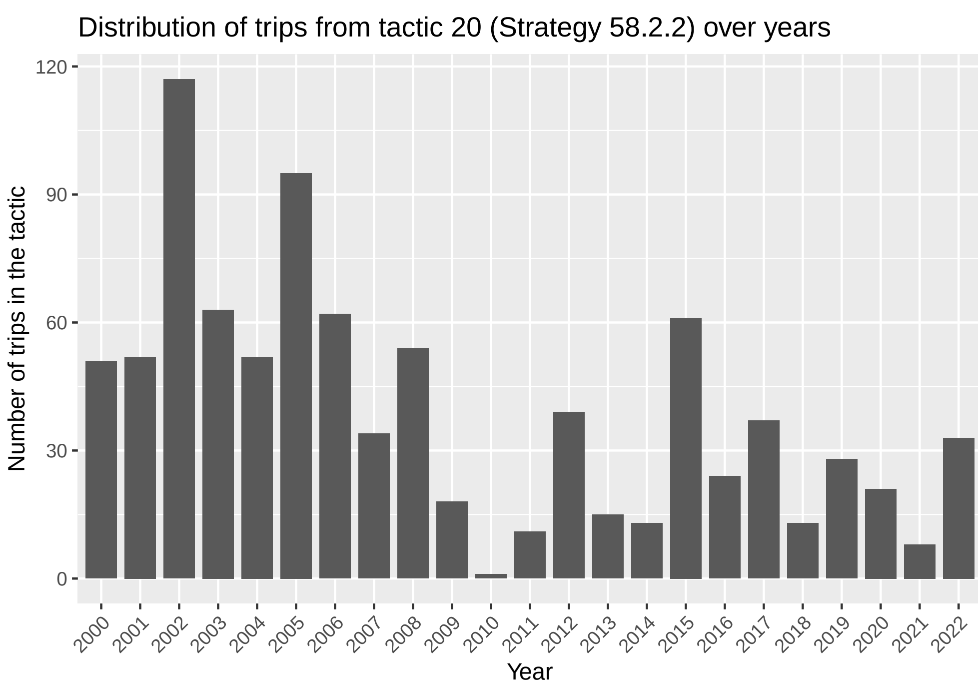
Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.





Tactic 20 (Strategy 58.2.2)

This tactic includes N=902 fishing trips. There are N=86 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2002.

Description table

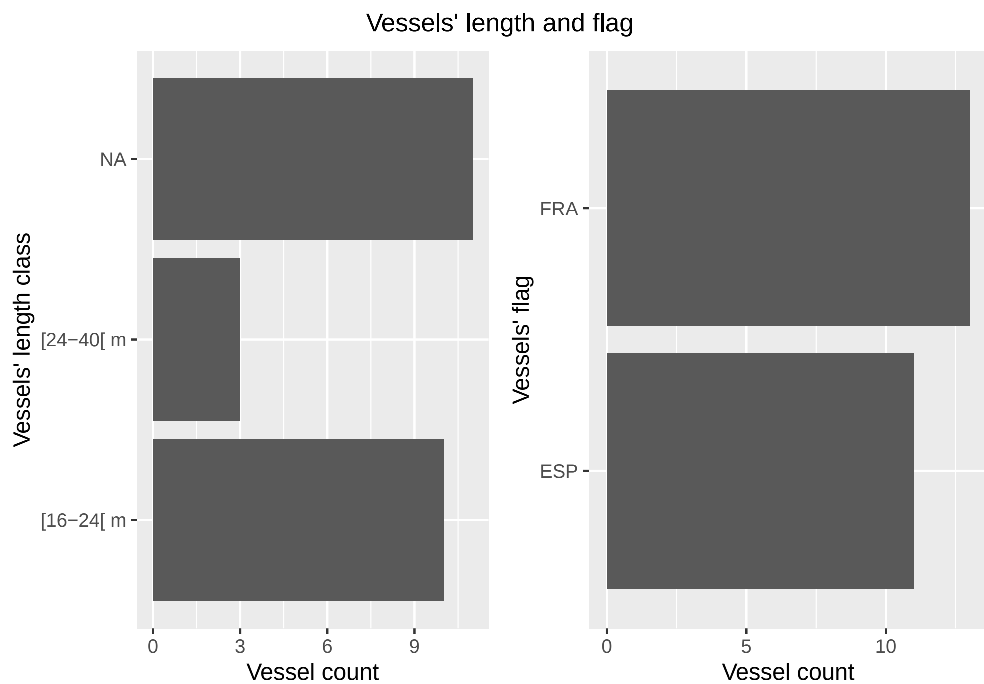
This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 24: Tactic 20 (Strategy 58.2.2)

Importance	Variable	Value
	Spp.	Merluccius spp
	Family	Merlucciidae
	Order	Gadiformes
Determinant (>95%)	ISSCAAP	32
	Gear	Set gillnets (anchored)
	ICES division	27.8.a
Major (>50%)	Trimester	1
Strong component (>35%)	Family	Gadidae
	Sp.	Trisopterus luscus
	Gear	Pair trawls Bottom
	ICES division	27.8.b
Component (>20%)	Month	02
	Spp.	Phycis spp
	ISSCAAP	34
	Gear	Pair trawls Midwater
		27.7.j
	ICES division	27.8.d
		18E7
		20E7
		21E6
		22E4
		22E5
		23E4
		23E5
	Statistic rectangle	24E5
		01
		03
		06
		07
	Month	08
		2
		3
Minor component (>5%)	Trimester	4
	value_weight	TRUE
	value_eco	TRUE
	sd_weight	TRUE
	sd_eco	TRUE
	main_prop_spp	TRUE
	main_prop_family	TRUE
	main_prop_order	TRUE
	main_prop_isscaap	TRUE
High values (>SD)	value_temp	TRUE

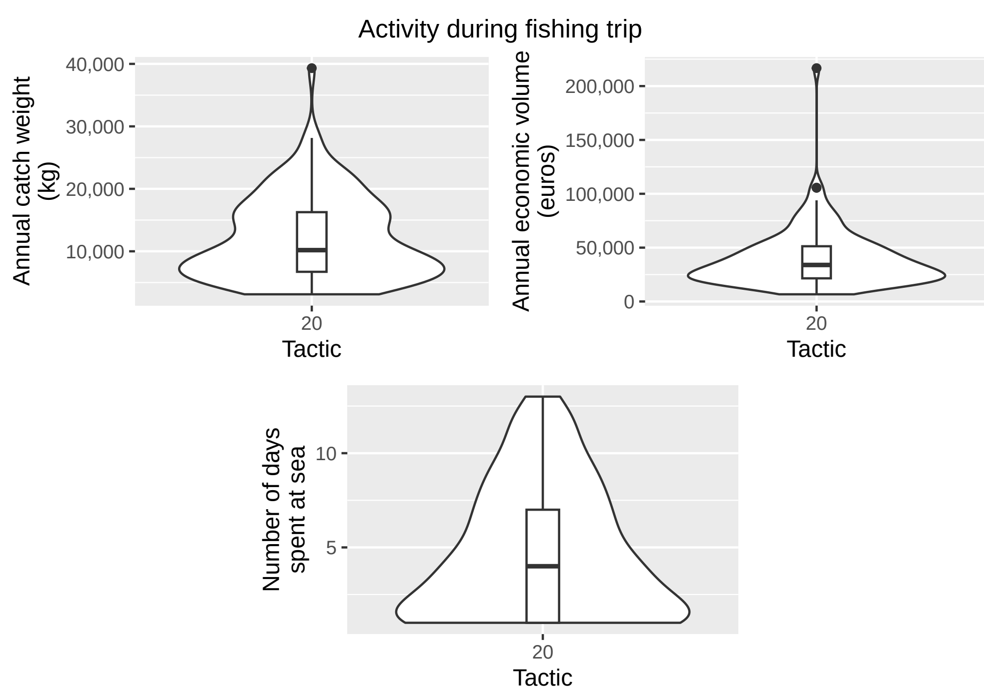
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2002)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

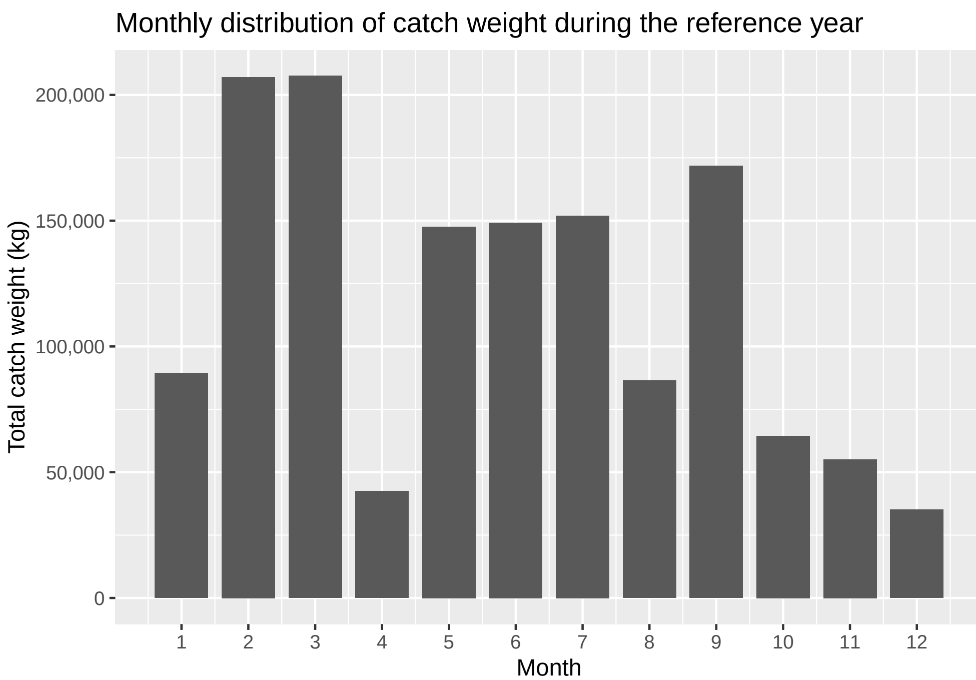


Description of the volume and pattern of fishing activities during the reference year (2002)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.

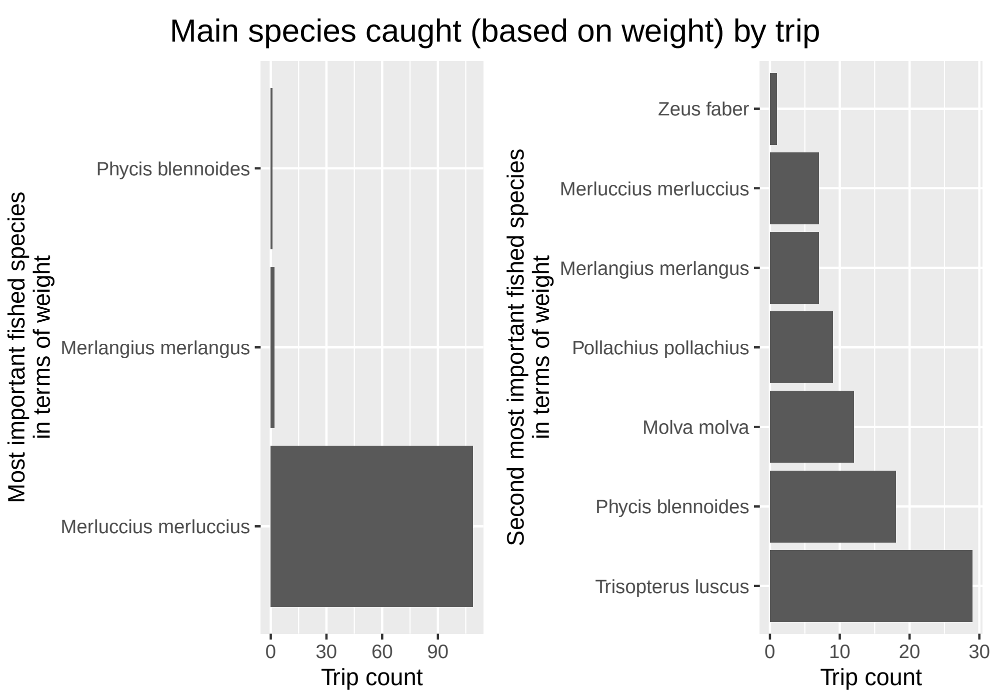


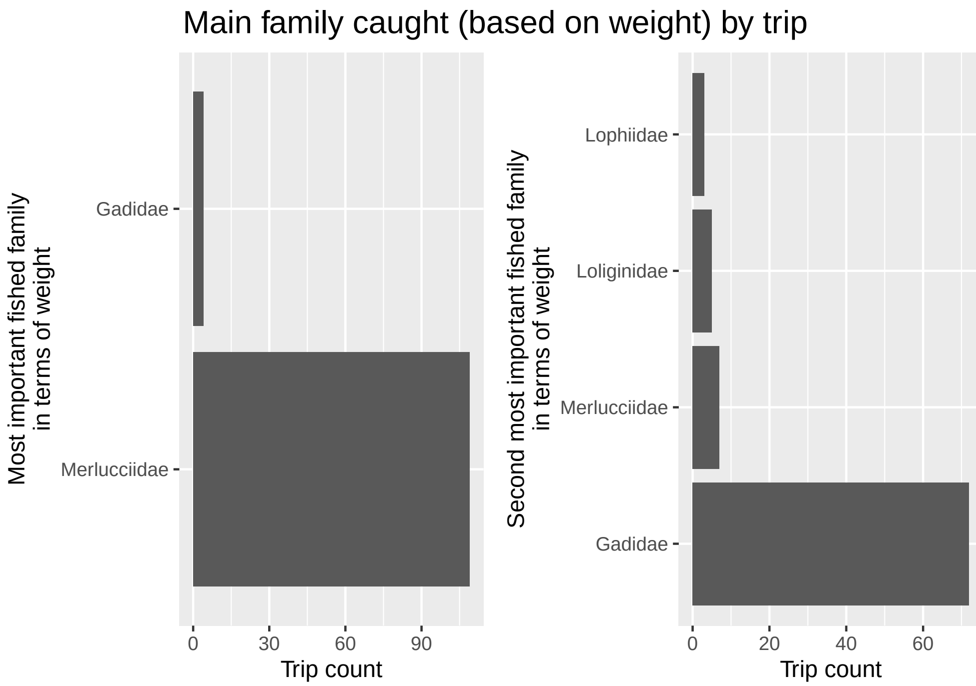
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

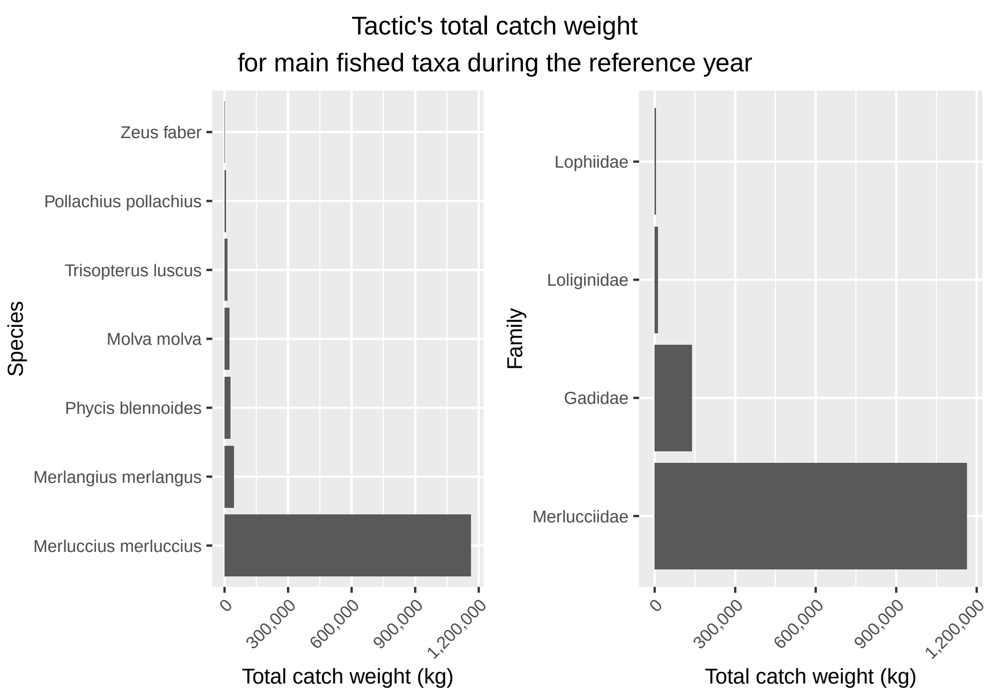


Main fished taxa and used gears during the reference year (2002)

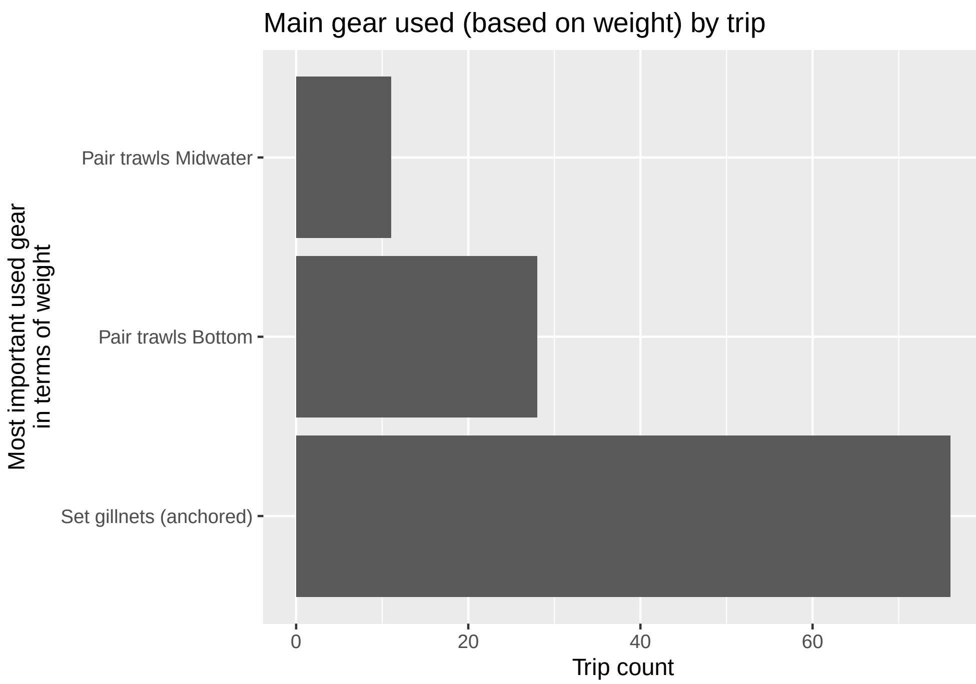
We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

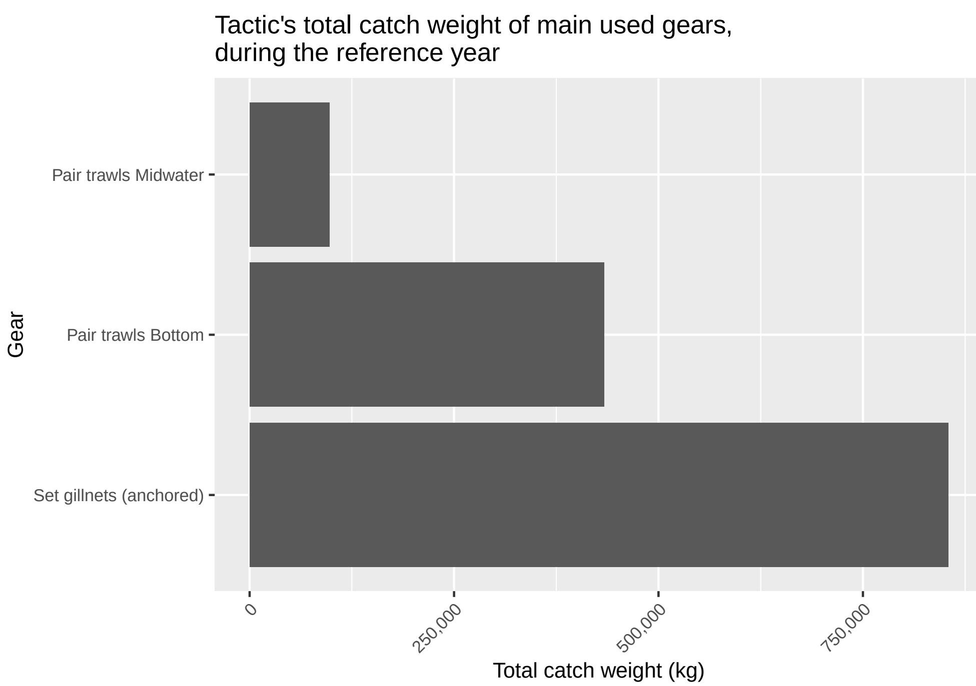






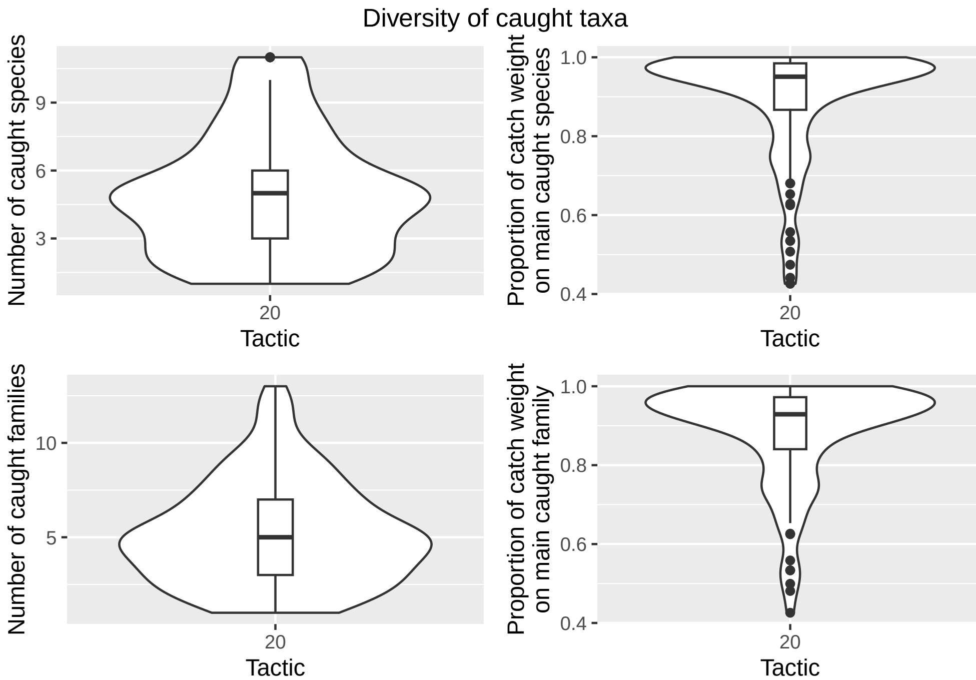
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



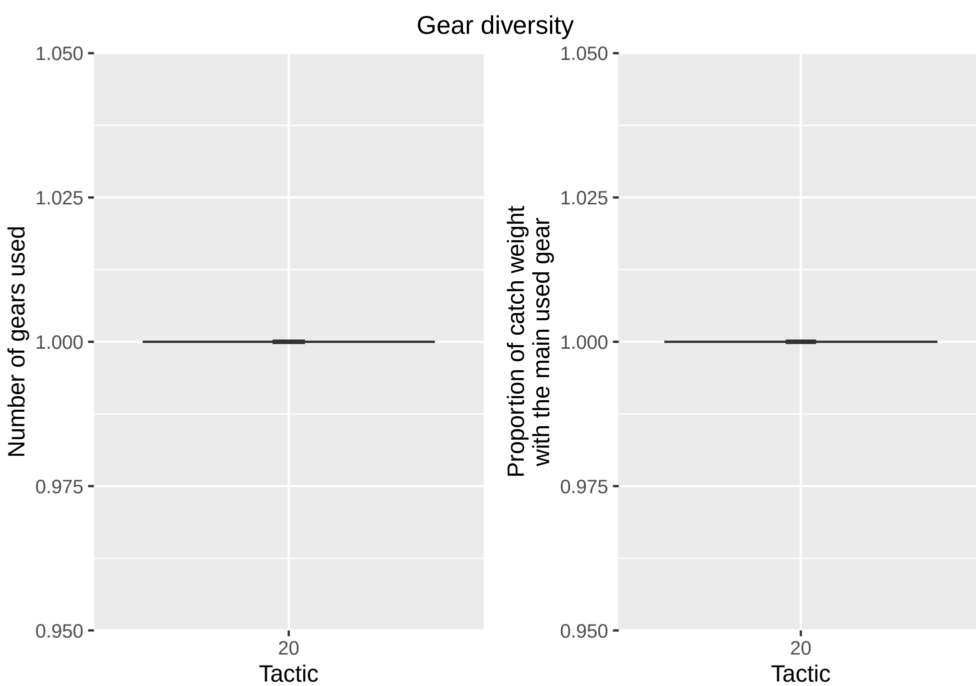


Diversity of fished taxa and used gears during the reference year (2002)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

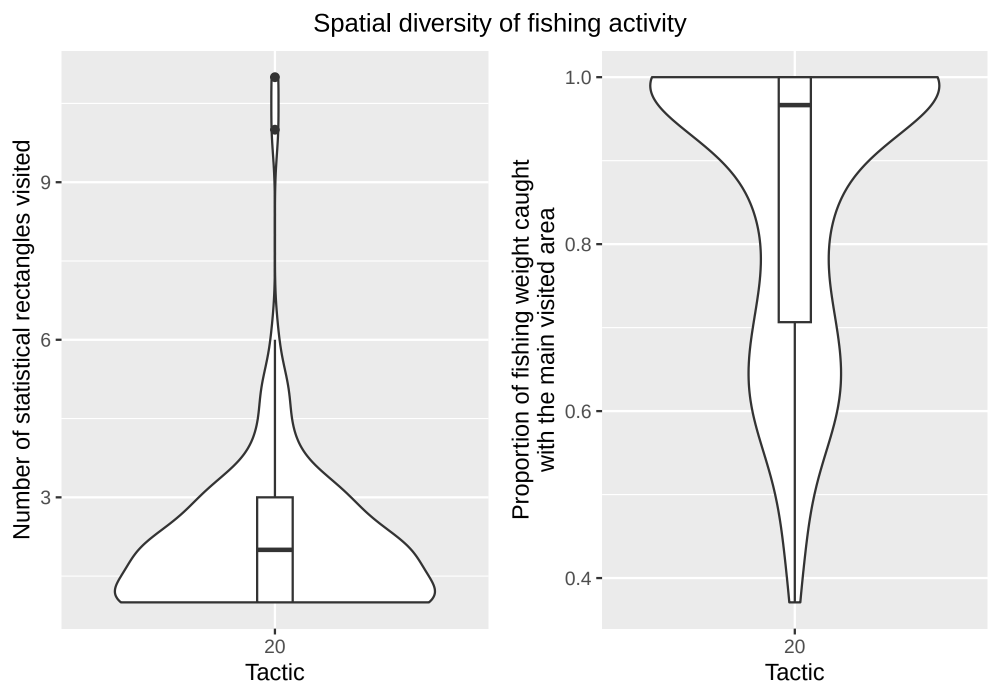


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

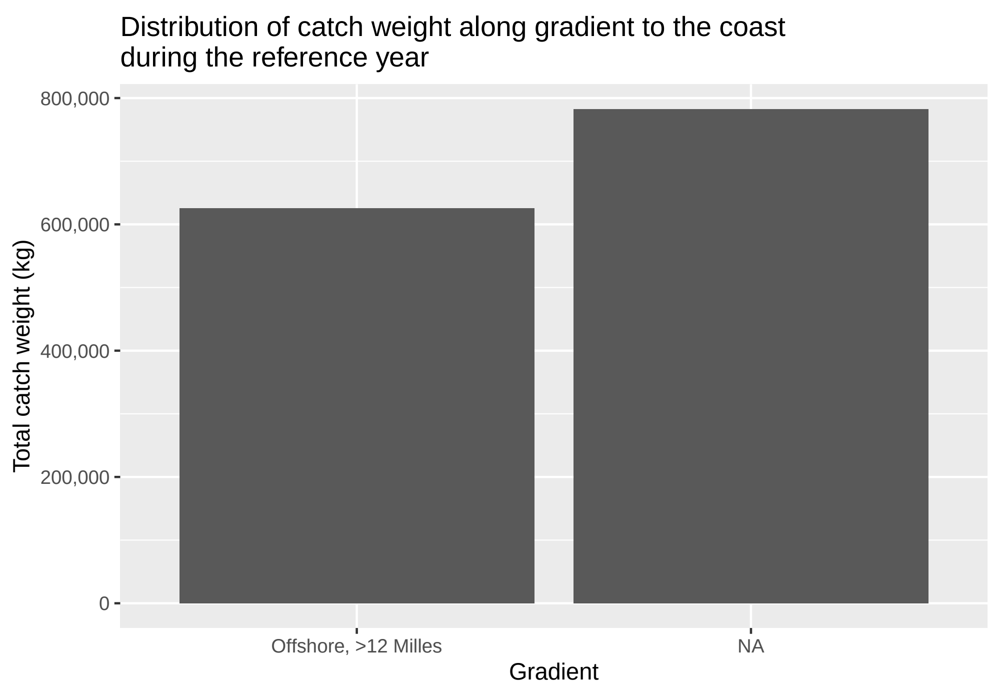


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.



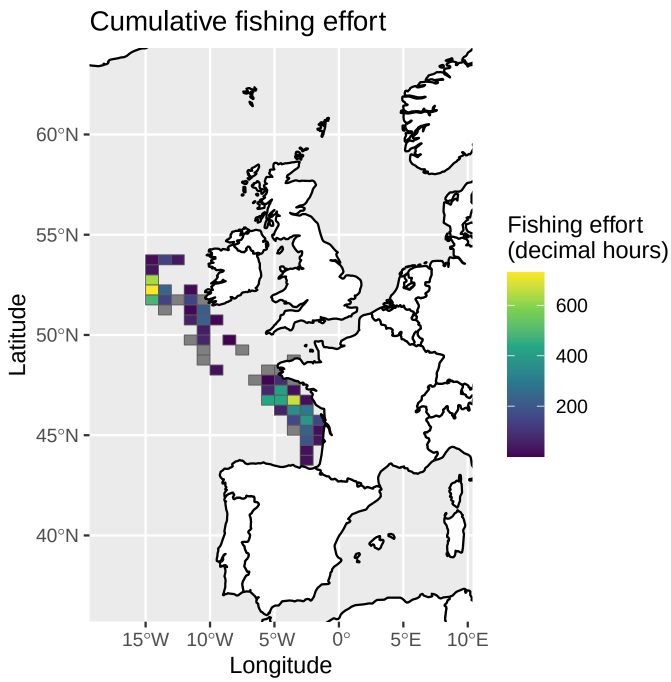
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.

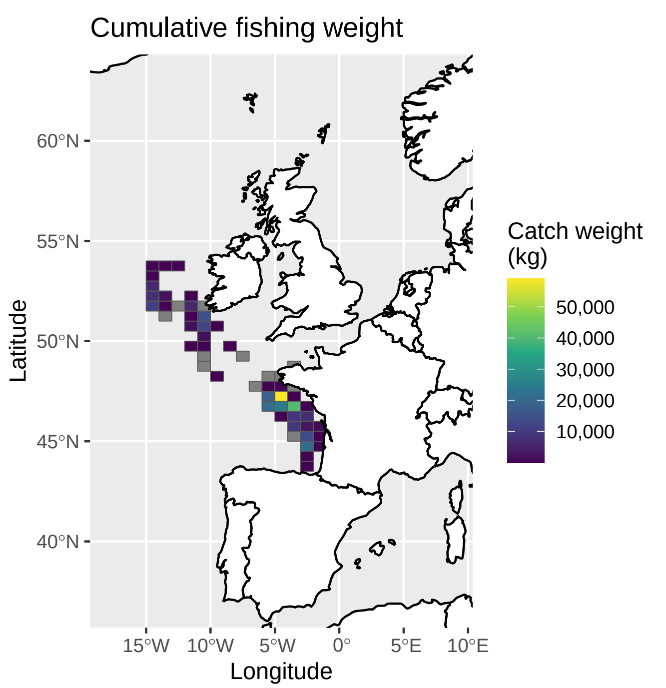


Maps of fishing activity distribution during the reference year (2002)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing

weight/effort are available.

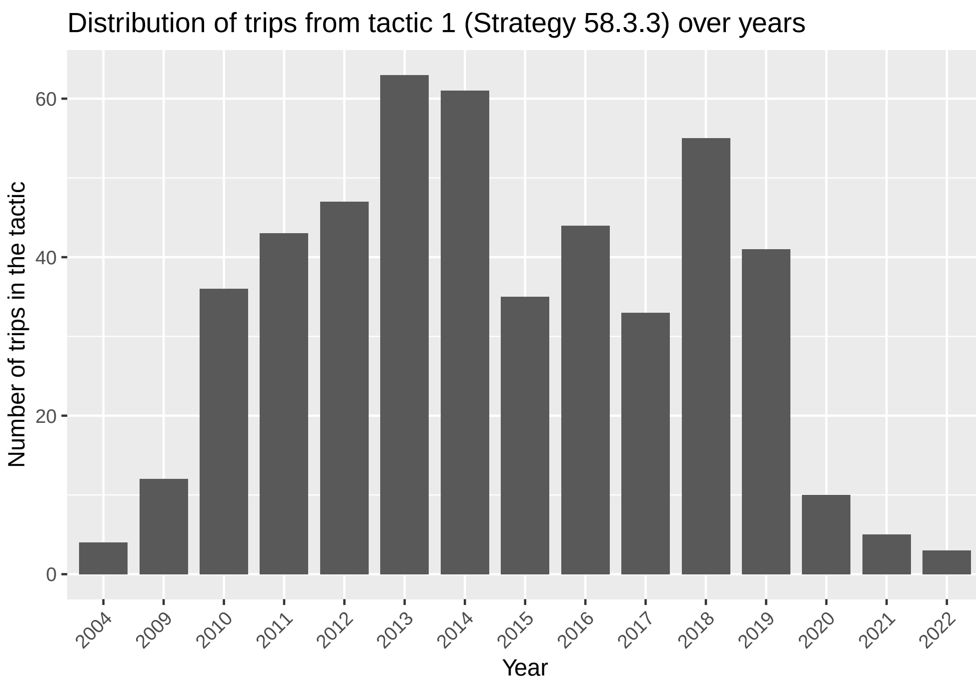




Within strategy 58.3.3

Tactic 1 (Strategy 58.3.3)

This tactic includes N=492 fishing trips. There are N=14 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2013.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 25: Tactic 1 (Strategy 58.3.3)

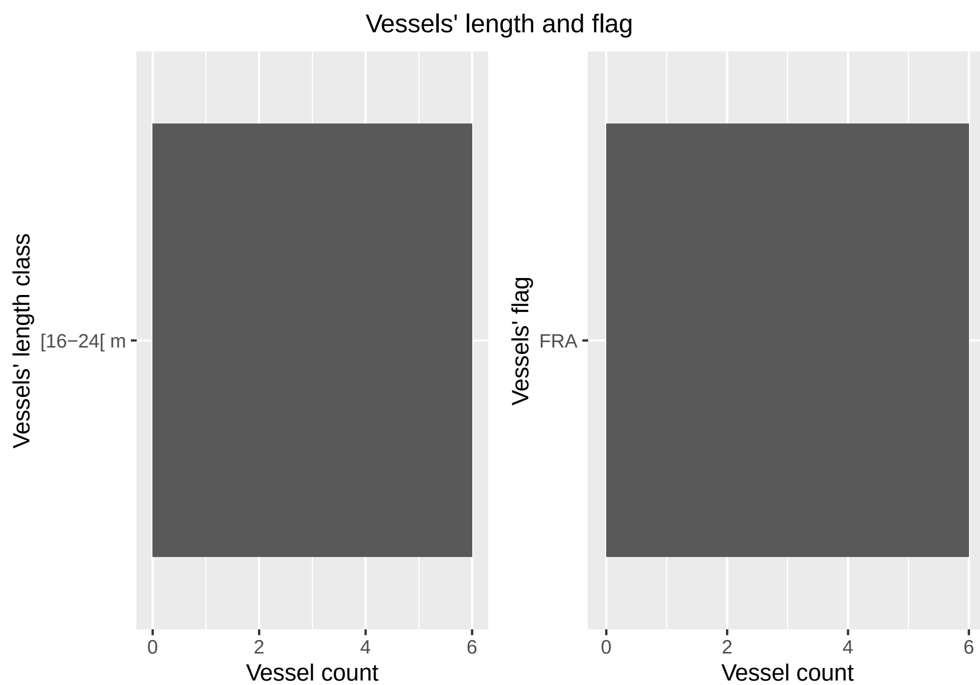
Importance	Variable	Value
	Spp.	Merluccius spp
	Family	Merlucciidae
	Order	Gadiformes
	ISSCAAP	32
Determinant (>95%)	Gear	Set gillnets (anchored)
Predominant (>65%)	ICES division	27.8.a
Major (>50%)	Family	Gadidae
	Sp.	Trisopterus luscus
Strong component (>35%)	Trimester	3
Component (>20%)	ICES division	27.8.b
		Eutrigla gurnardus
	Sp.	Prionace glauca
		Carcharhinidae
	Family	Triglidae
		Carcharhiniformes
	Order	Scorpaeniformes
		34
	ISSCAAP	38
		20E7
		21E6
		21E7
		22E6
	Statistic rectangle	24E5
		04
		07

Table 25: Tactic 1 (Strategy 58.3.3) *(continued)*

Importance	Variable	Value
	Month	08
		1
Minor component (>5%)	Trimester	4
	value_weight	TRUE
	value_eco	TRUE
	sd_weight	TRUE
	sd_eco	TRUE
	main_prop_spp	TRUE
	main_prop_family	TRUE
	main_prop_order	TRUE
	main_prop_isscaap	TRUE
	value_temp	TRUE
High values (>SD)	sd_temp	TRUE

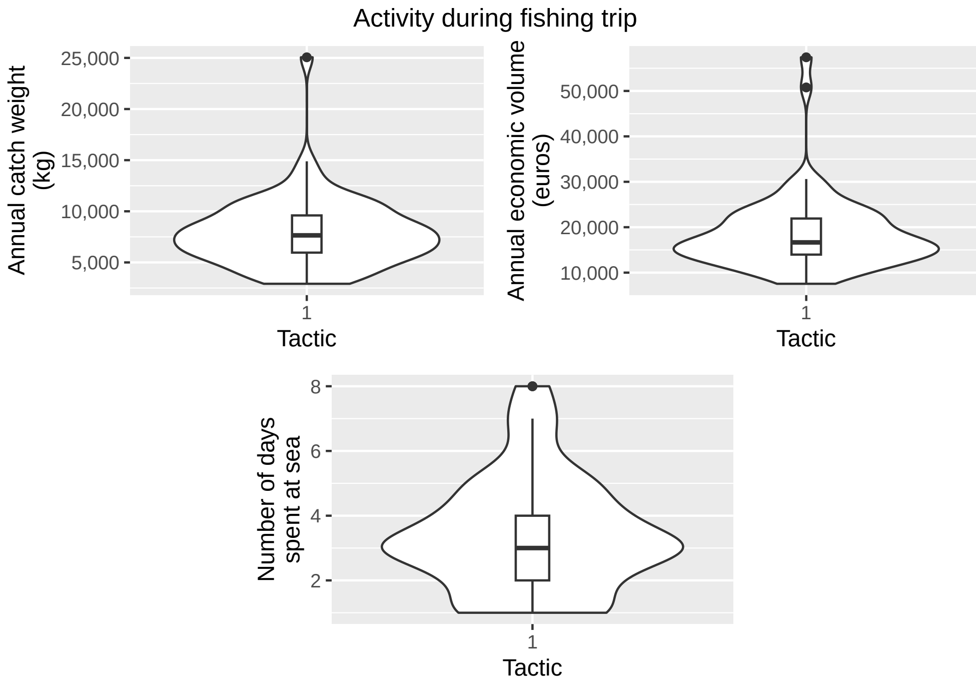
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2013)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

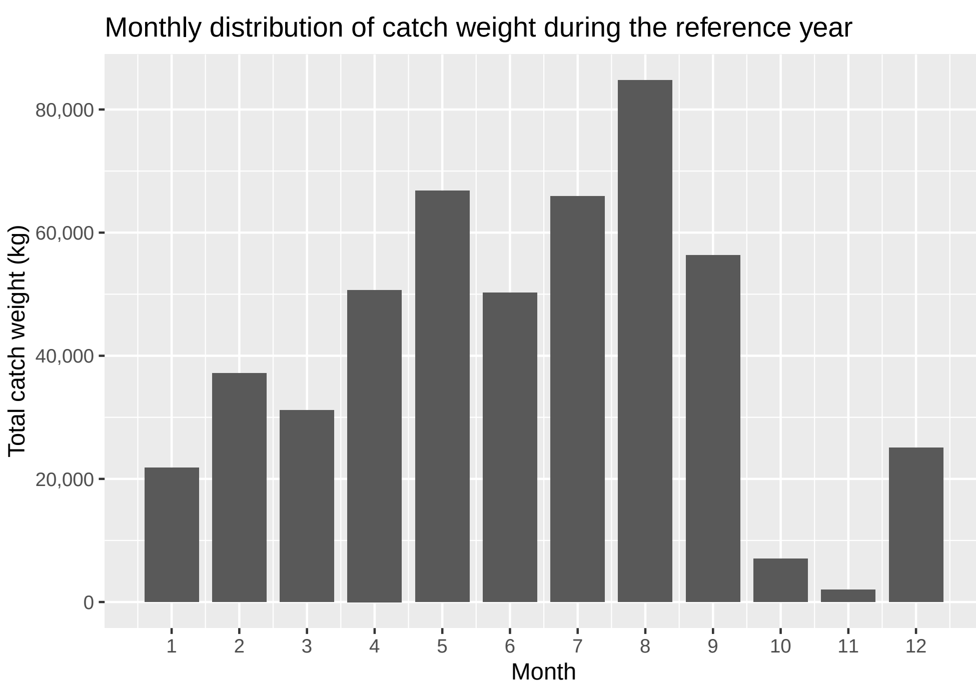


Description of the volume and pattern of fishing activities during the reference year (2013)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



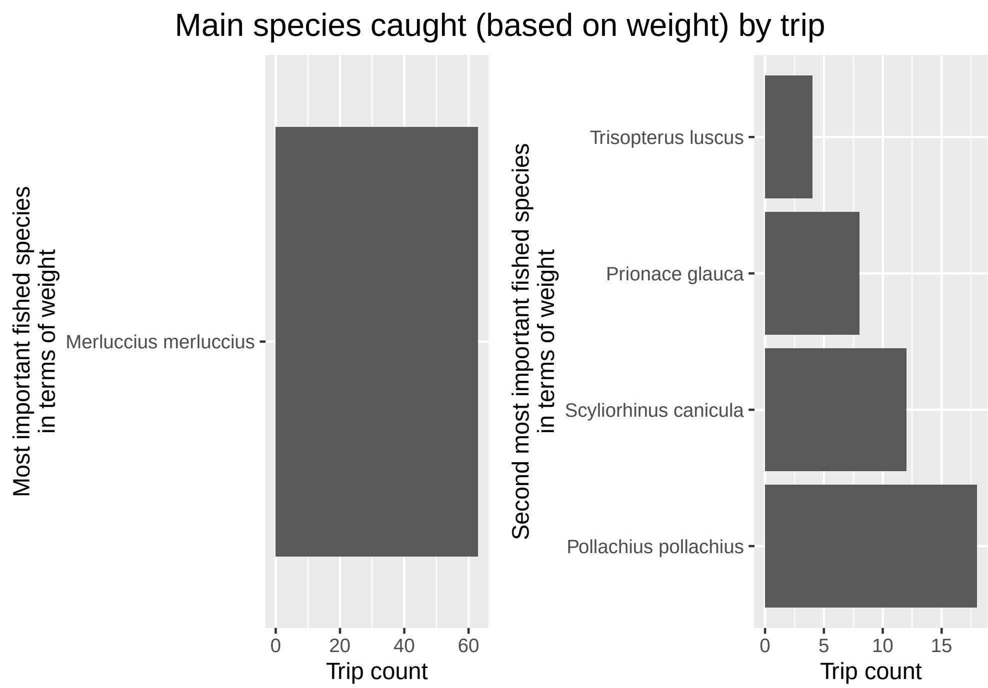
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

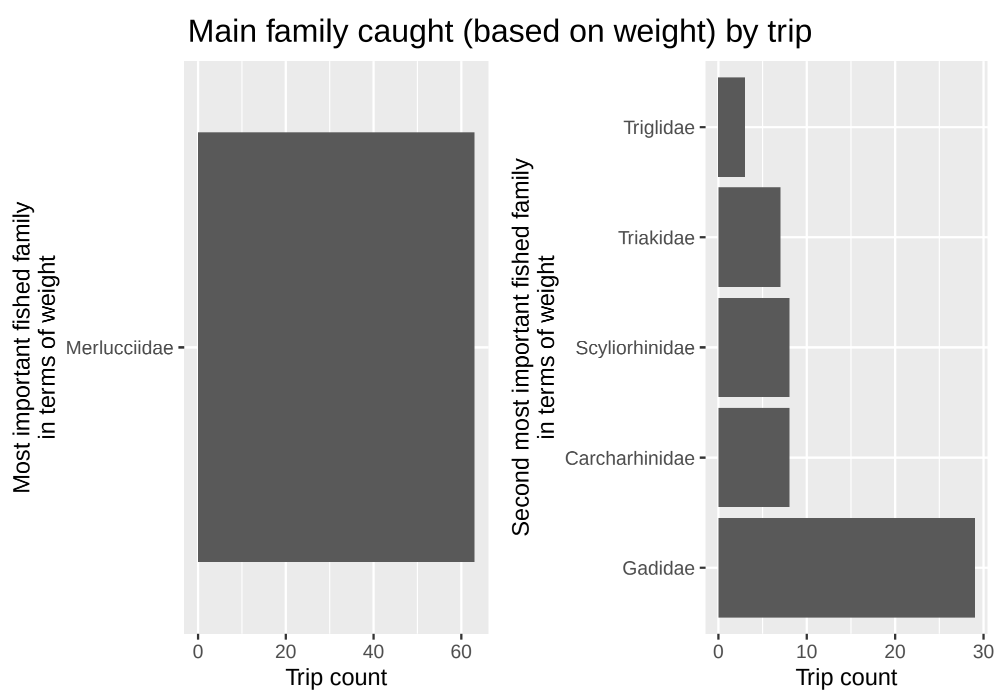


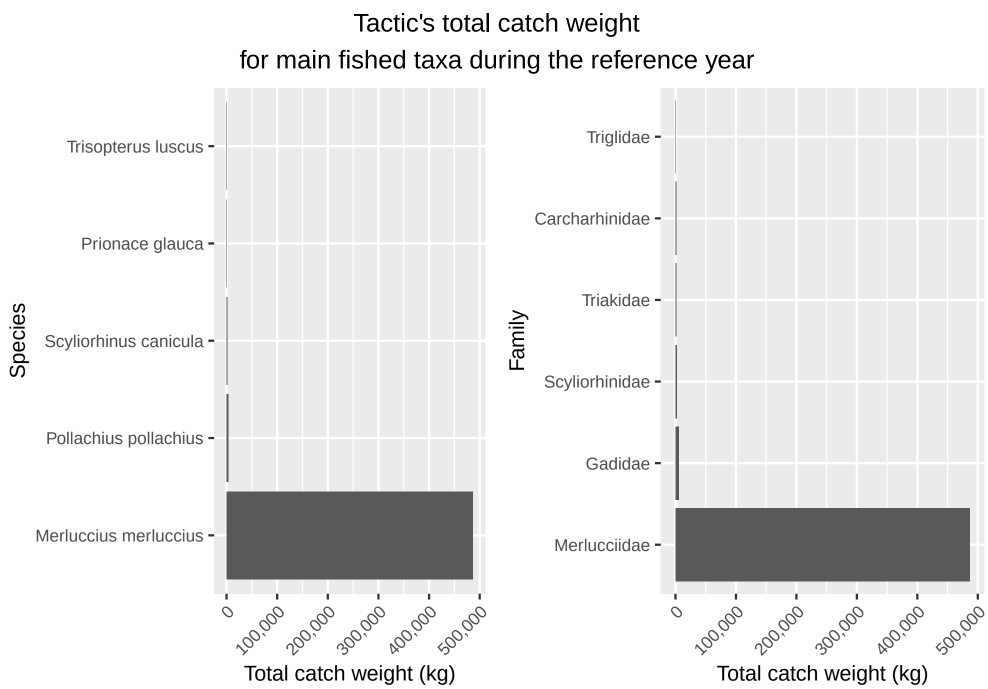
Main fished taxa and used gears during the reference year (2013)

We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

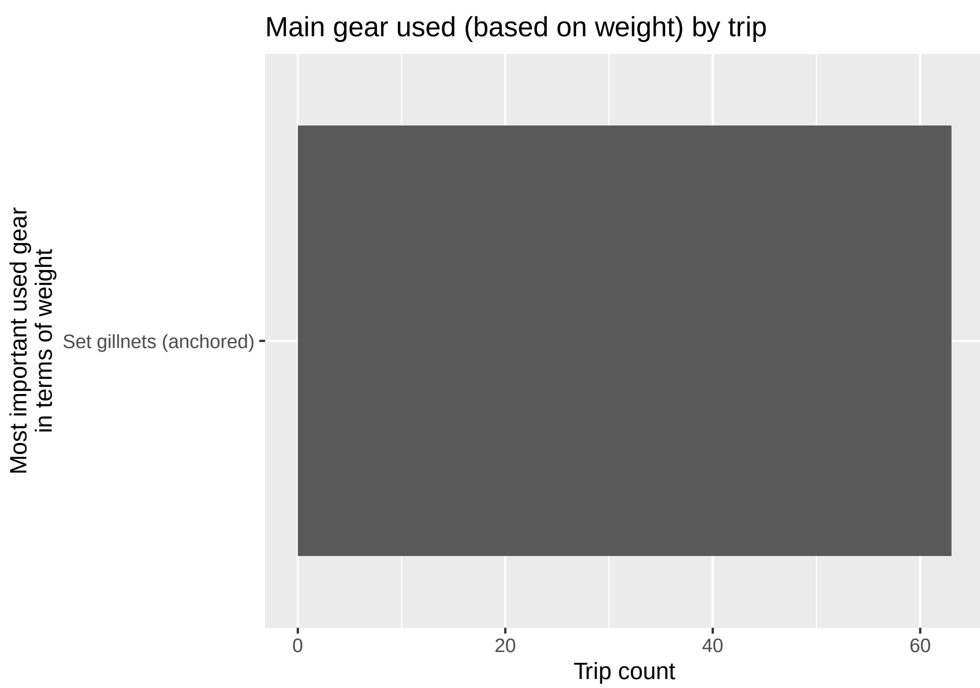
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

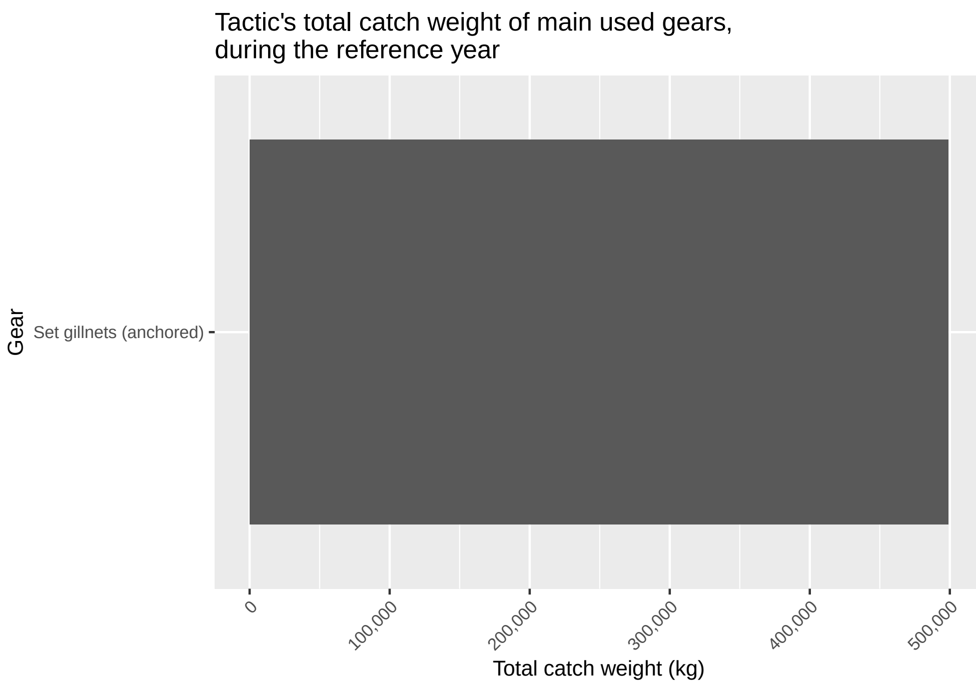






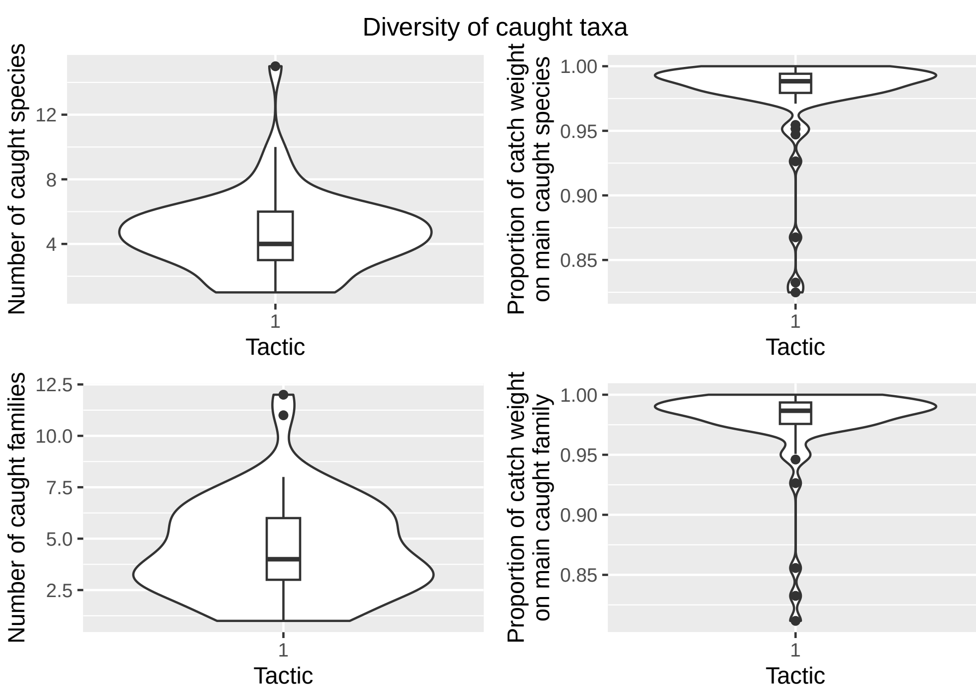
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



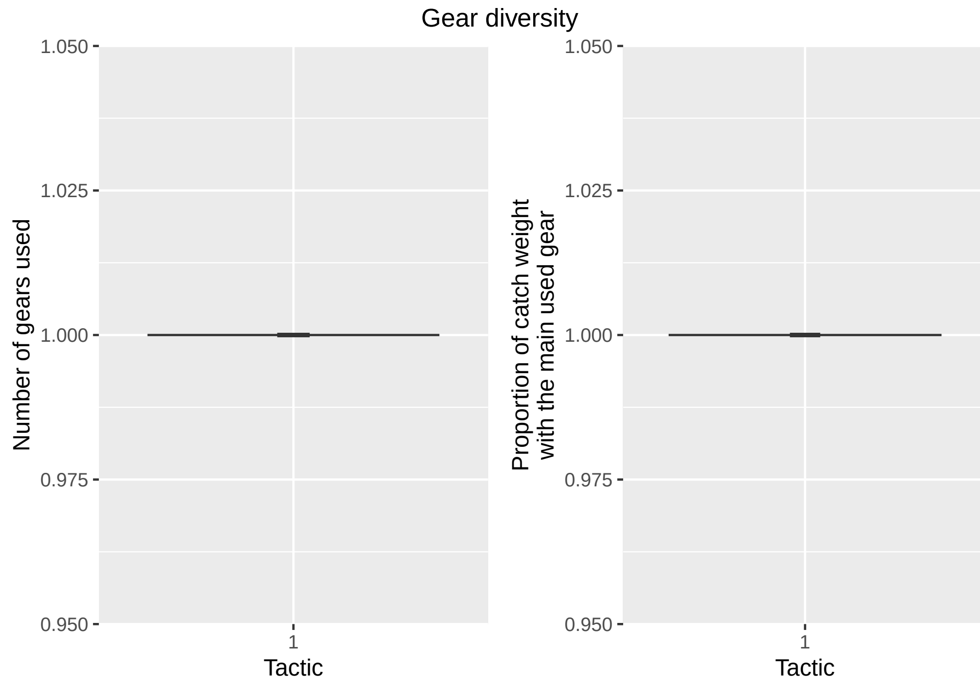


Diversity of fished taxa and used gears during the reference year (2013)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

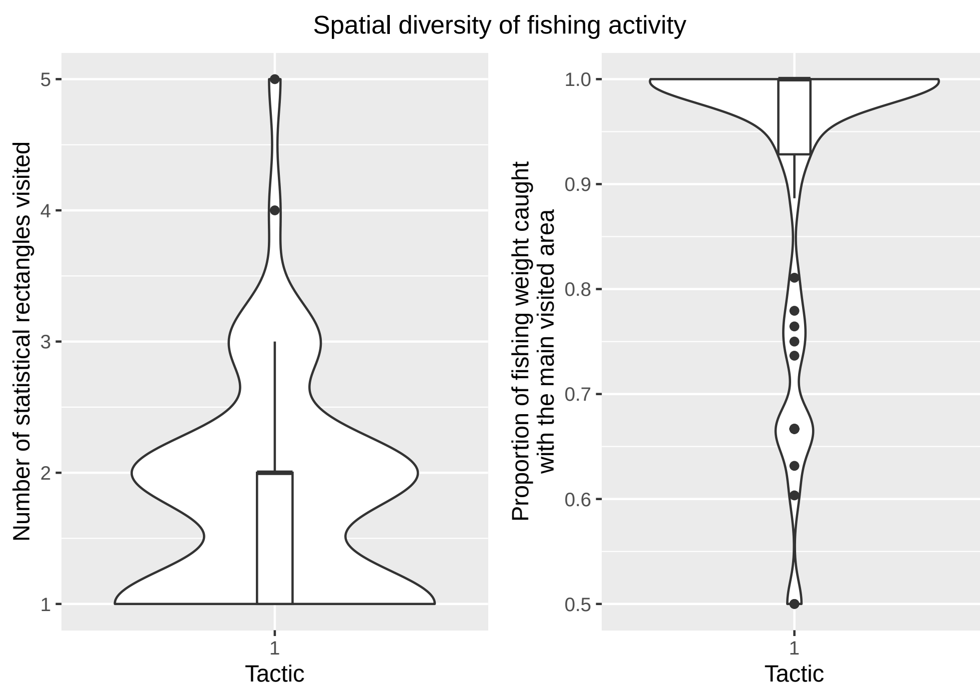


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

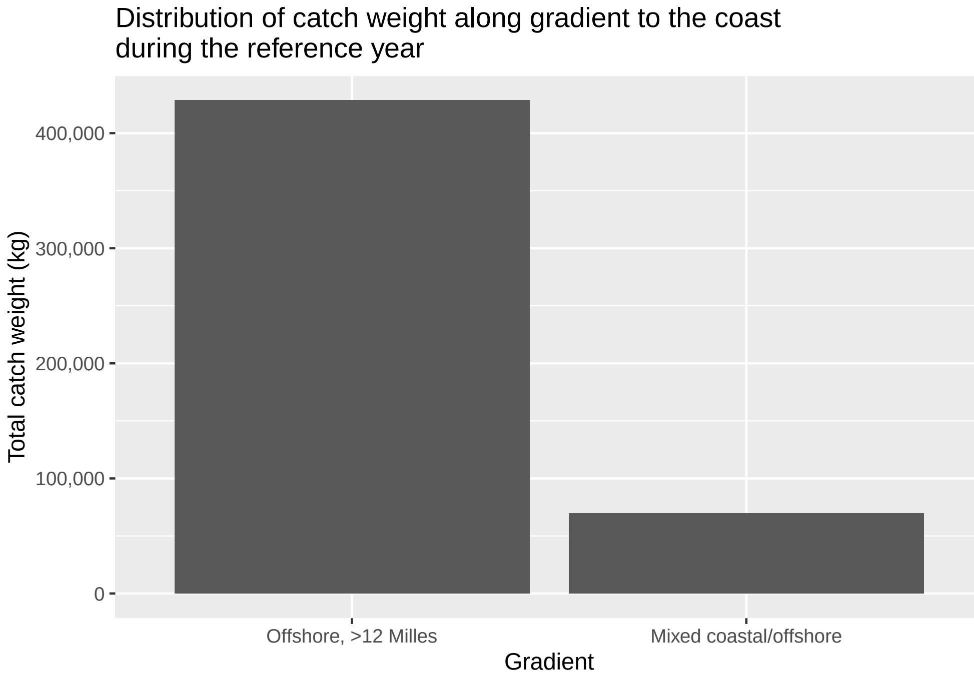


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

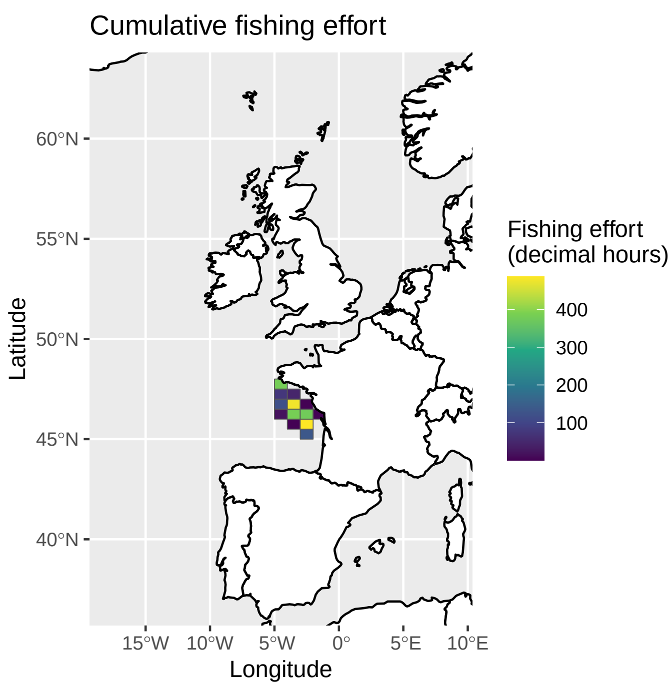


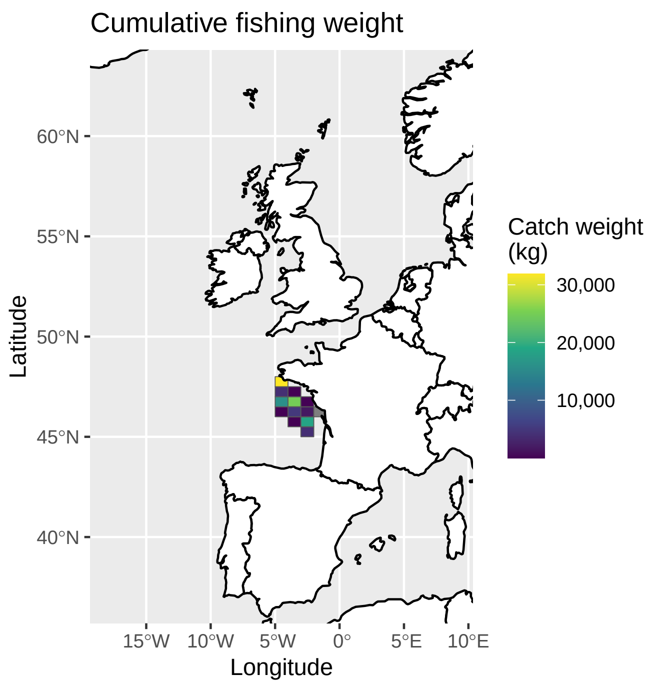
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2013)

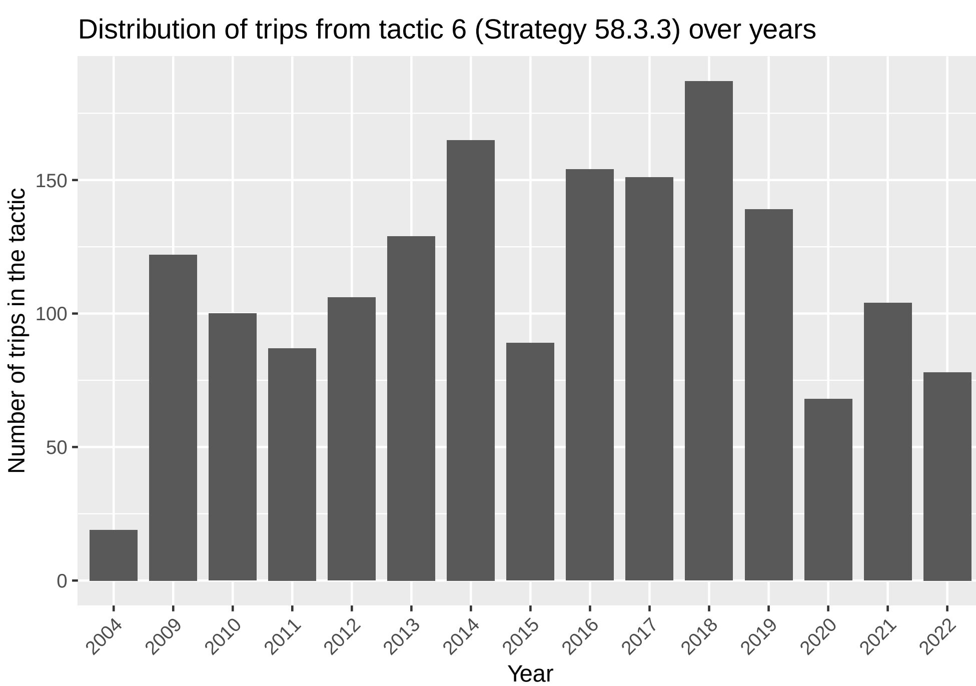
Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.





Tactic 6 (Strategy 58.3.3)

This tactic includes N=1698 fishing trips. There are N=14 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2018.

Description table

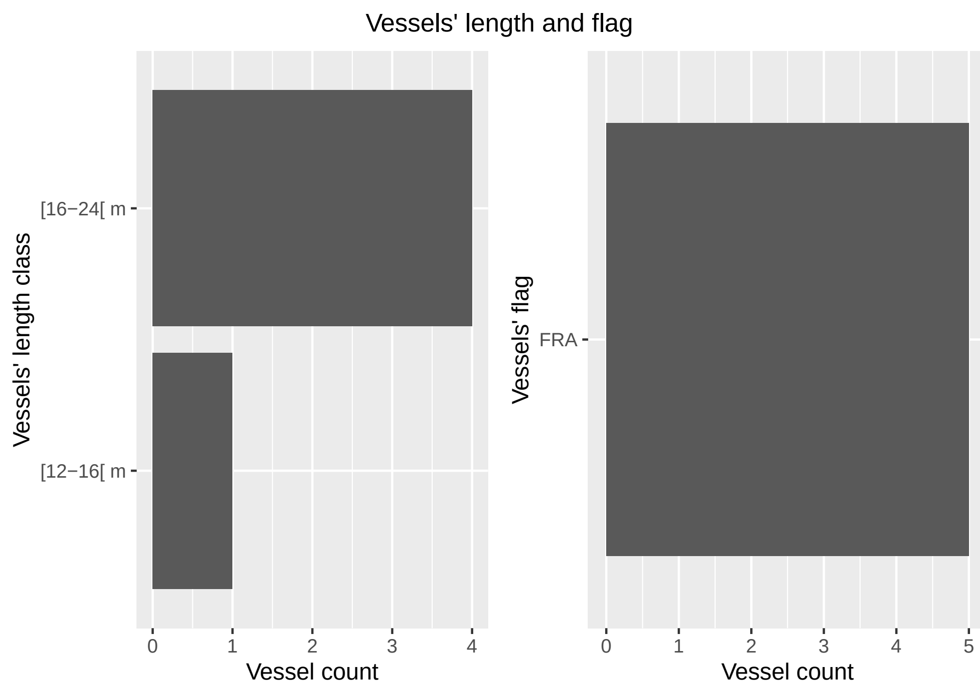
This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 26: Tactic 6 (Strategy 58.3.3)

Importance	Variable	Value
	Spp.	Merluccius spp
	Family	Merlucciidae
	Order	Gadiformes
	ISSCAAP	32
Determinant (>95%)	Gear	Set gillnets (anchored)
Strongly predominant (>80%)	ICES division	27.8.a
Predominant (>65%)	Family	Gadidae
Major (>50%)	Sp.	Trisopterus luscus
Strong component (>35%)	Trimester	3
	ICES division	27.8.b
		21E7
	Statistic rectangle	22E6
Component (>20%)	Trimester	2
		Eutrigla gurnardus
	Sp.	Prionace glauca
		Carcharhinidae
	Family	Triglidae
		Carcharhiniformes
		Perciformes
	Order	Scorpaeniformes
		34
	ISSCAAP	38
		20E7
		21E6
		23E5
		23E6
	Statistic rectangle	24E5
		04
		05
		06
		07
		08
		09
	Month	11
		1
Minor component (>5%)	Trimester	4
	div_val_spp	TRUE
	div_val_family	TRUE
	div_val_order	TRUE
	div_val_isscaap	TRUE
	main_prop_spp	TRUE
	main_prop_family	TRUE
	main_prop_order	TRUE
High values (>SD)	main_prop_isscaap	TRUE

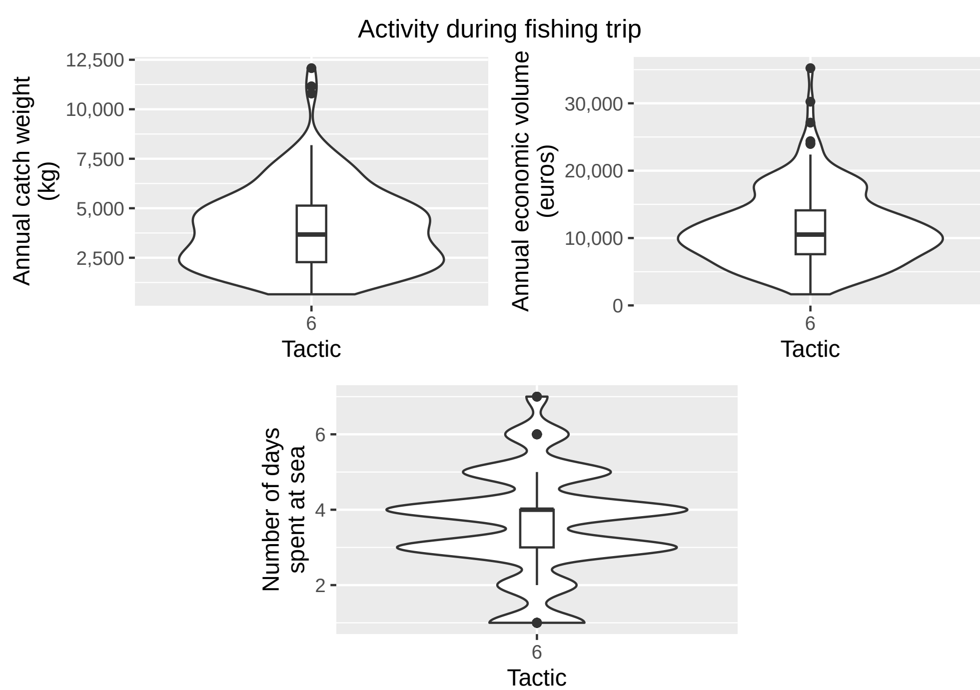
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2018)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

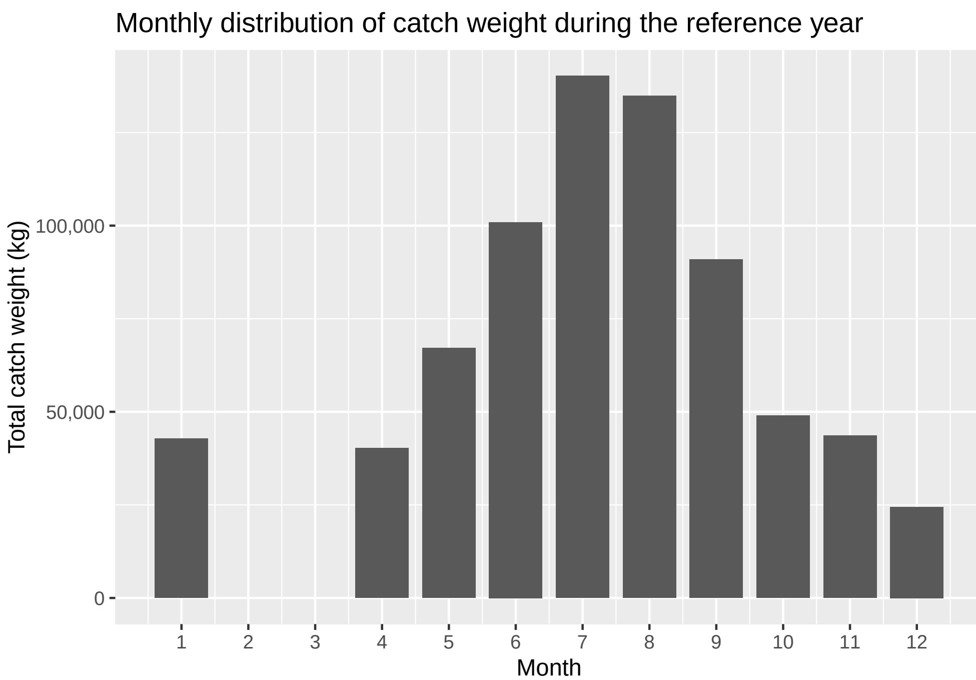


Description of the volume and pattern of fishing activities during the reference year (2018)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.

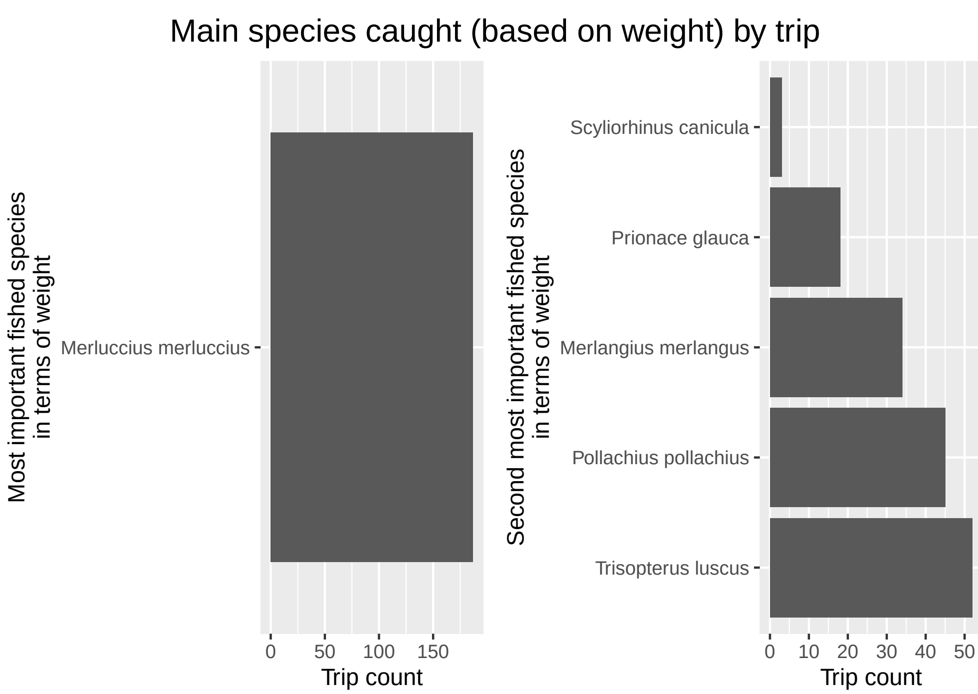


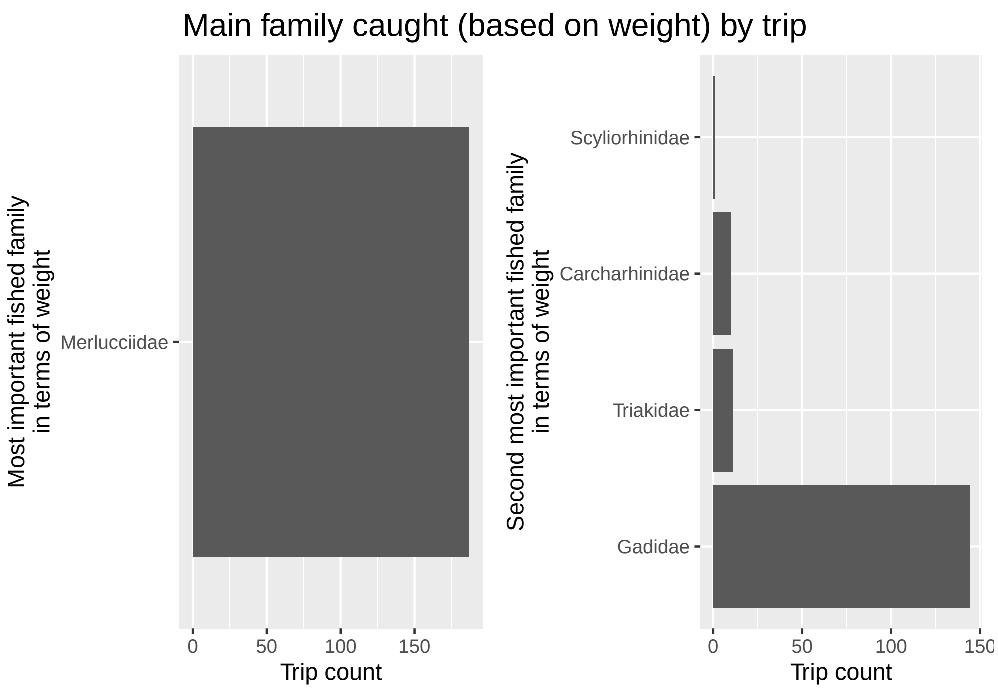
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

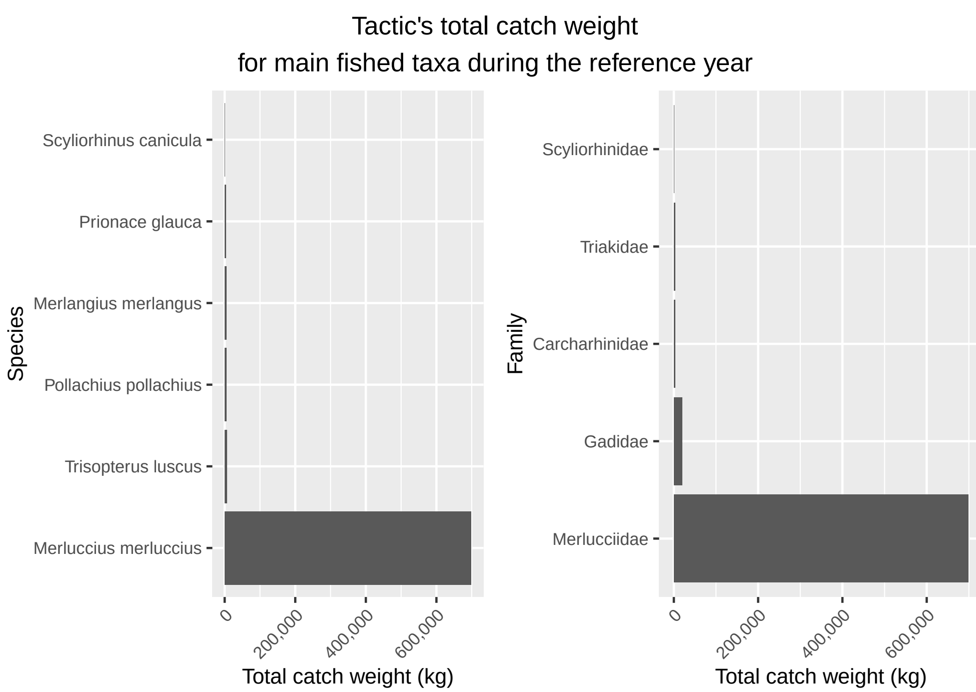


Main fished taxa and used gears during the reference year (2018)

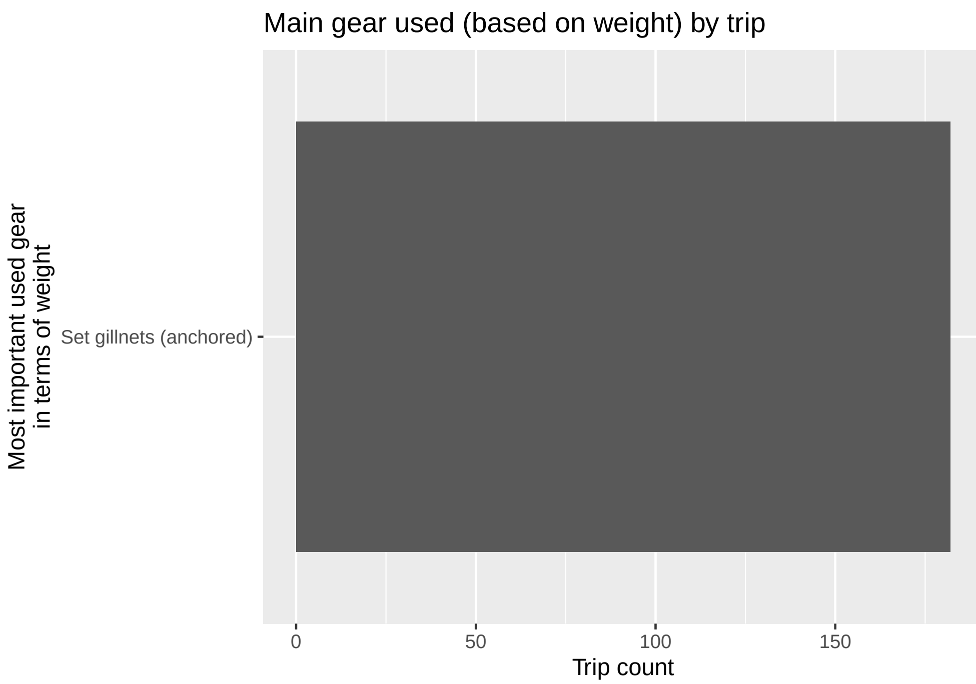
We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

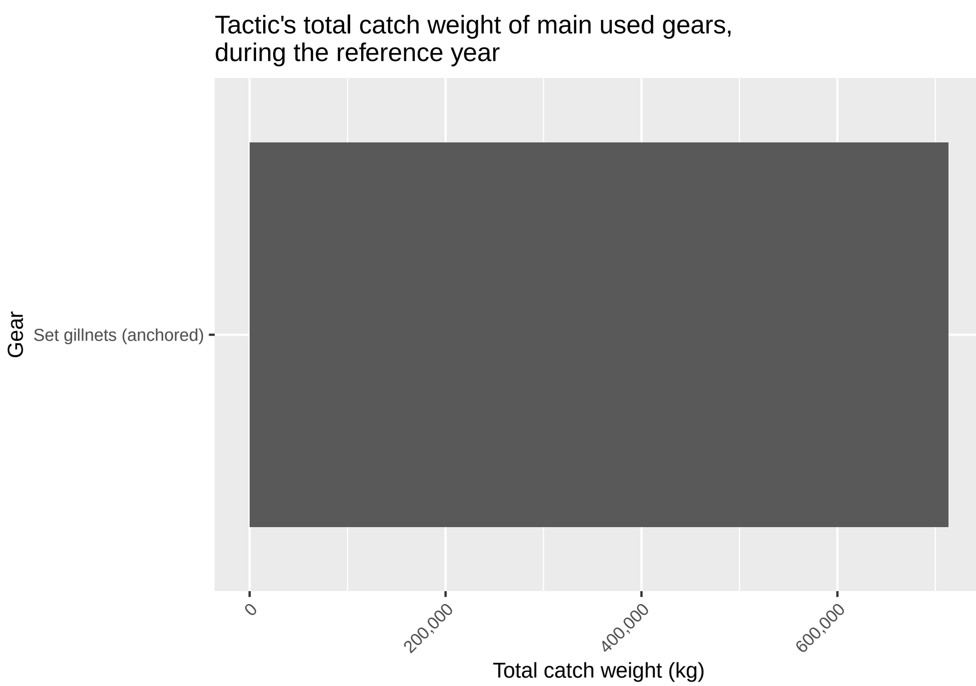






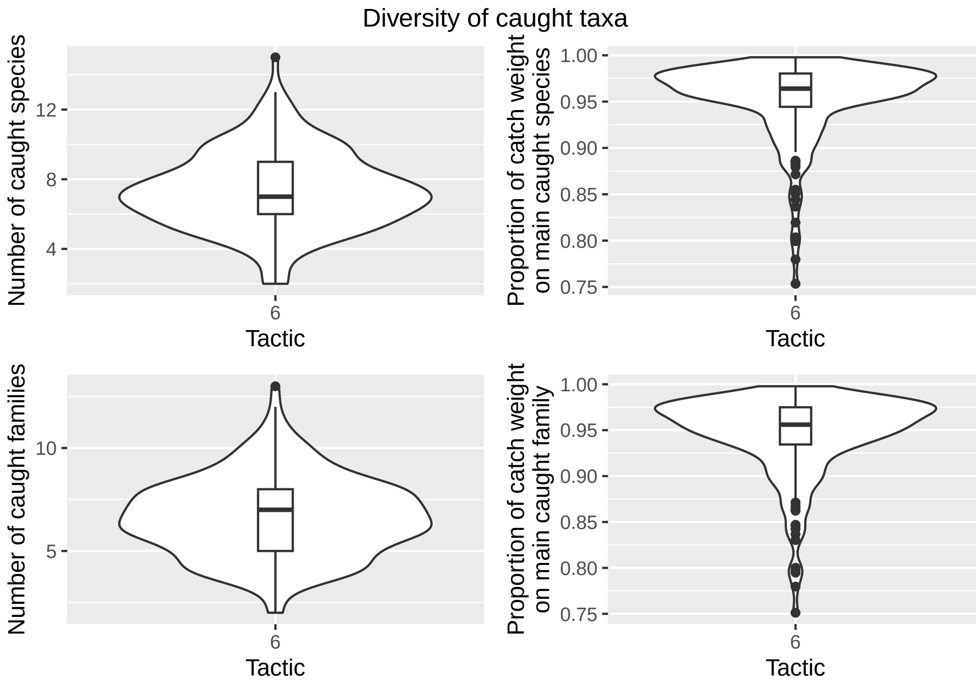
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



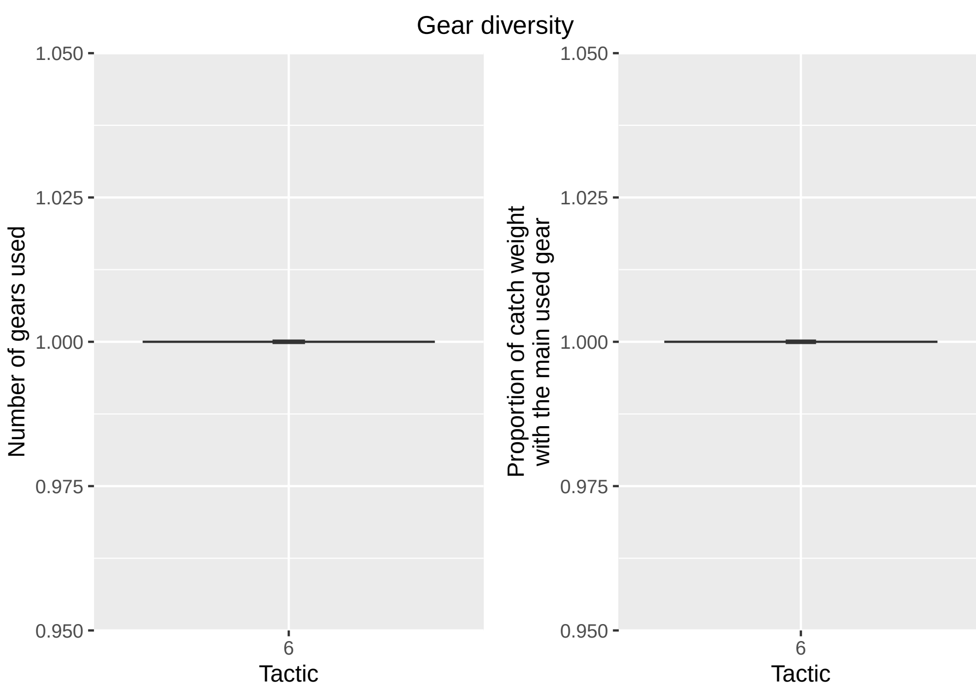


Diversity of fished taxa and used gears during the reference year (2018)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

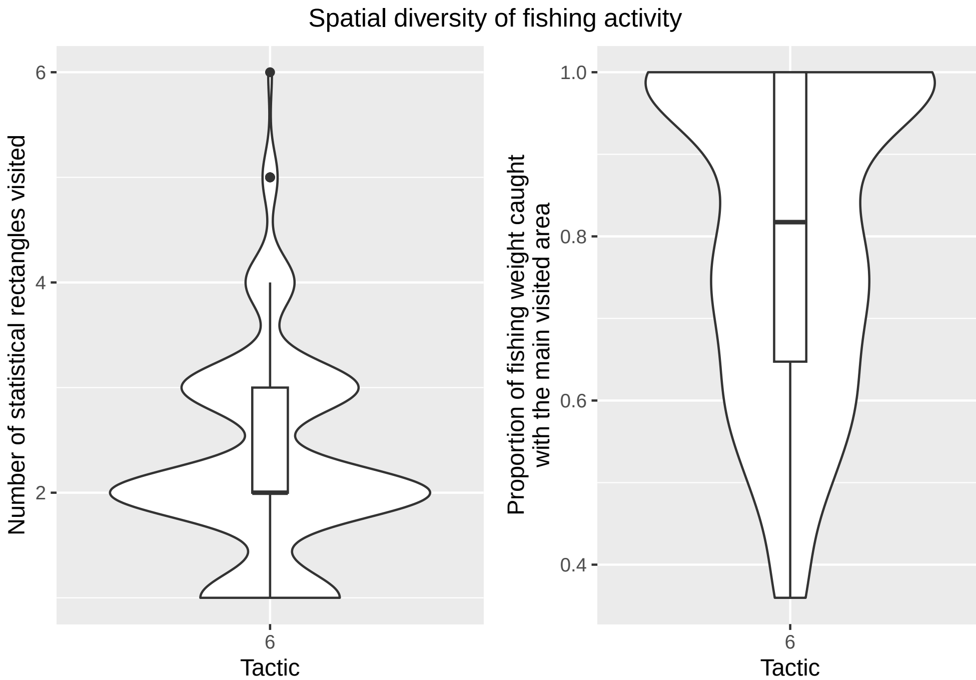


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

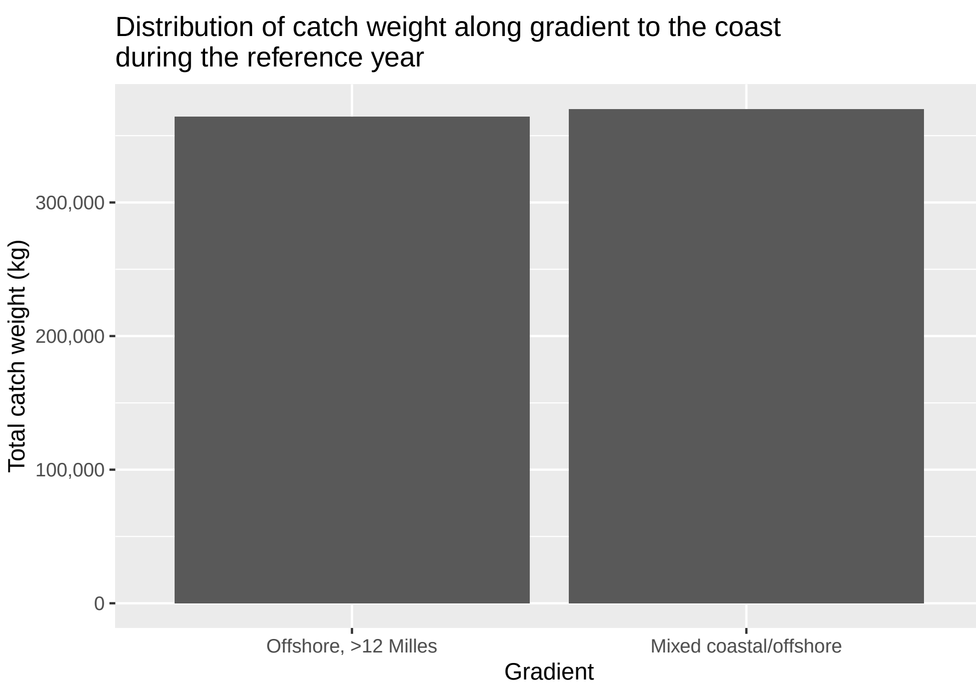


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.



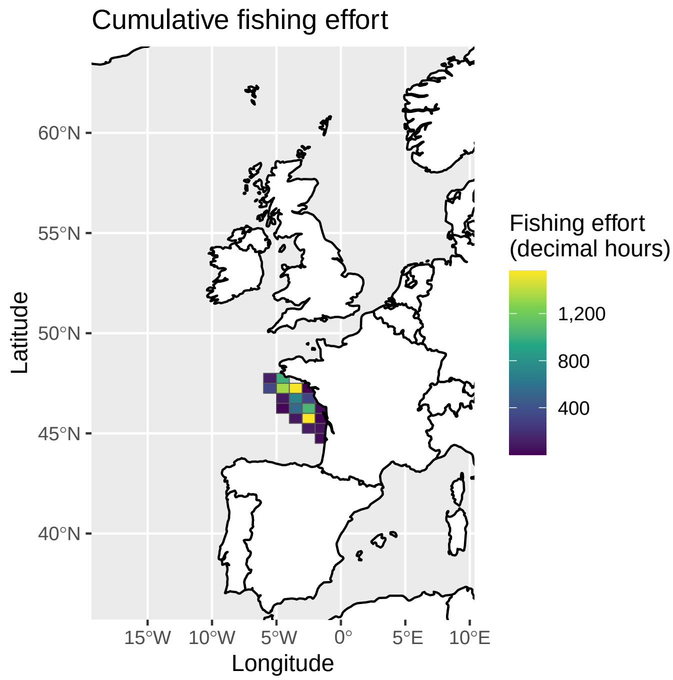
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.

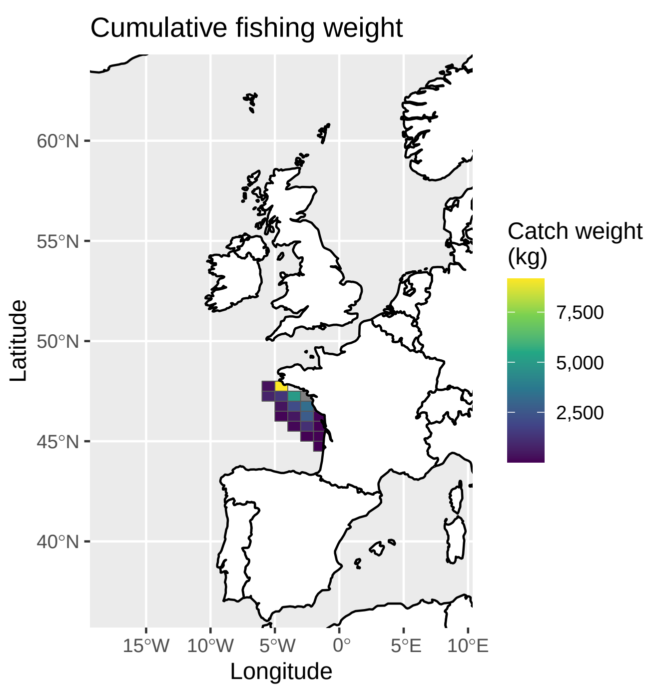


Maps of fishing activity distribution during the reference year (2018)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing

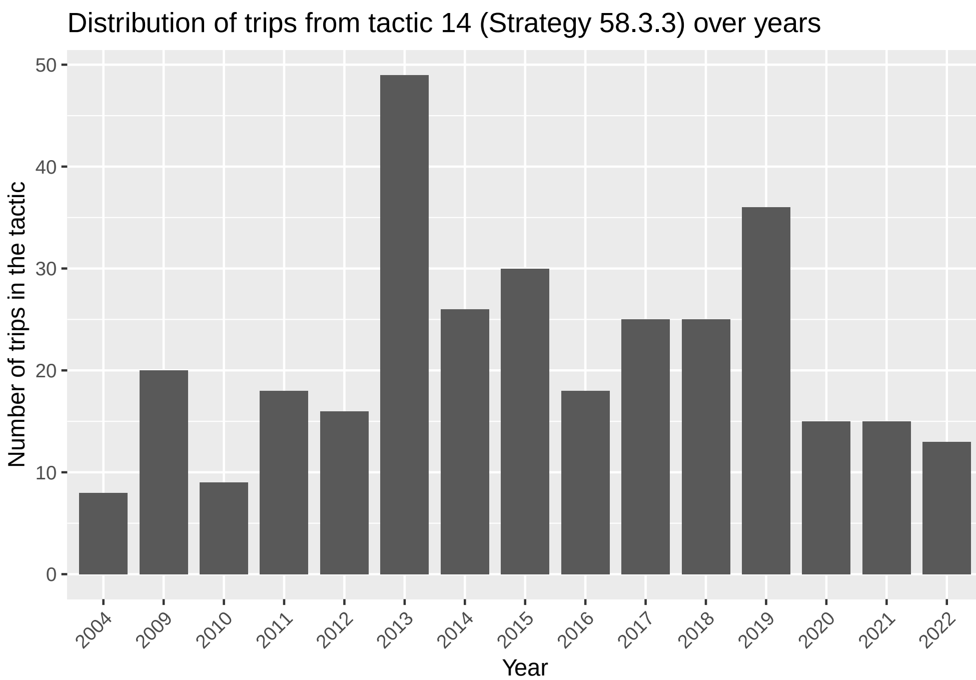
weight/effort are available.





Tactic 14 (Strategy 58.3.3)

This tactic includes N=323 fishing trips. There are N=14 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2013.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 27: Tactic 14 (Strategy 58.3.3)

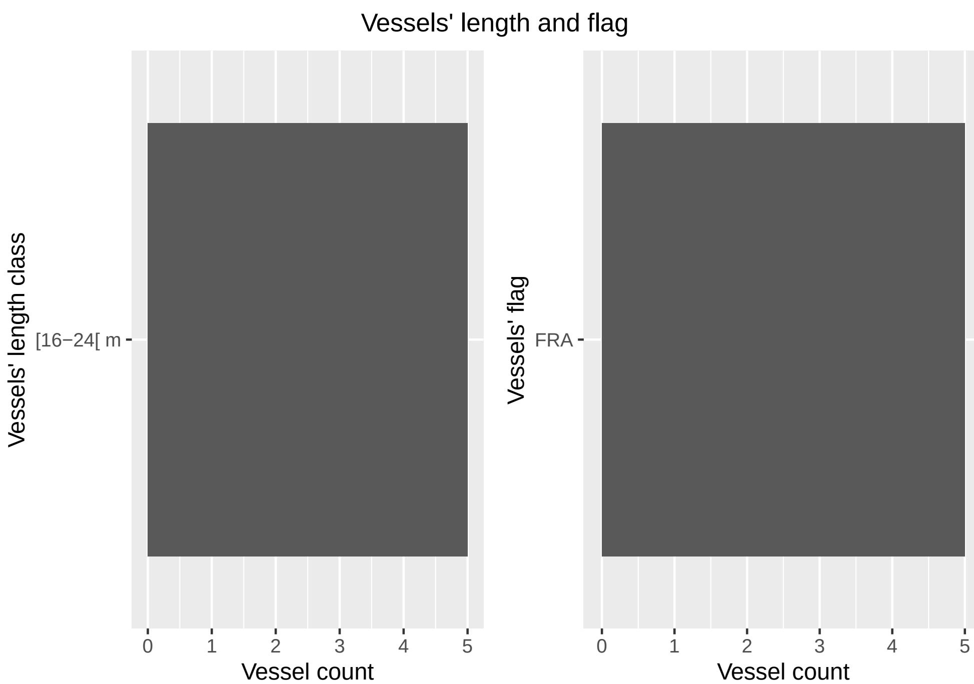
Importance	Variable	Value
	ISSCAAP	32
Determinant (>95%)	Gear	Set gillnets (anchored)
Strongly predominant (>80%)	Order	Gadiformes
	Spp.	Merluccius spp
		Gadidae
	Family	Merlucciidae
Major (>50%)	Trimester	4
		Pollachius pollachius
Strong component (>35%)	Sp.	Trisopterus luscus
	Order	Perciformes
	Statistic rectangle	21E7
		10
Component (>20%)	Month	11
		Dicentrarchus spp
		Mullus spp
	Spp.	Sarda spp
	Sp.	Spondyliosoma cantharus
		Moronidae
		Mullidae
		Scombridae
	Family	Sparidae
		33
		34
	ISSCAAP	36
	Gear	Trammel nets

Table 27: Tactic 14 (Strategy 58.3.3) *(continued)*

Importance	Variable	Value
	Statistic rectangle	22E7
	Month	05
		1
Minor component (>5%)	Trimester	3
	div__val__spp	TRUE
	div__val__family	TRUE
	div__val__order	TRUE
High values (>SD)	div__val__isscaap	TRUE
Categories with high values (>SD)	Family	Gadidae

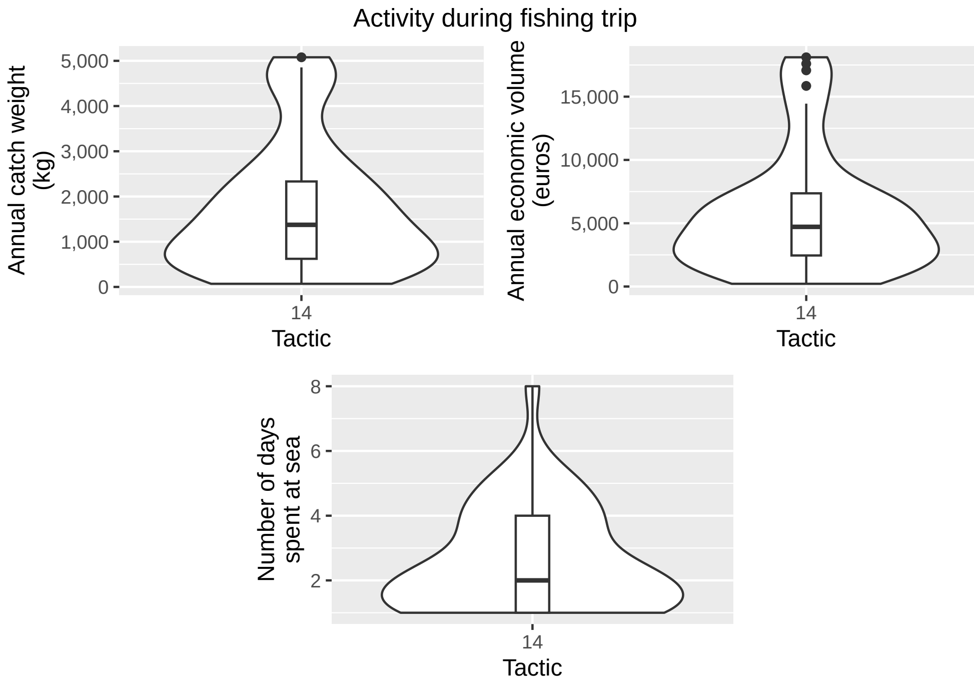
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2013)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

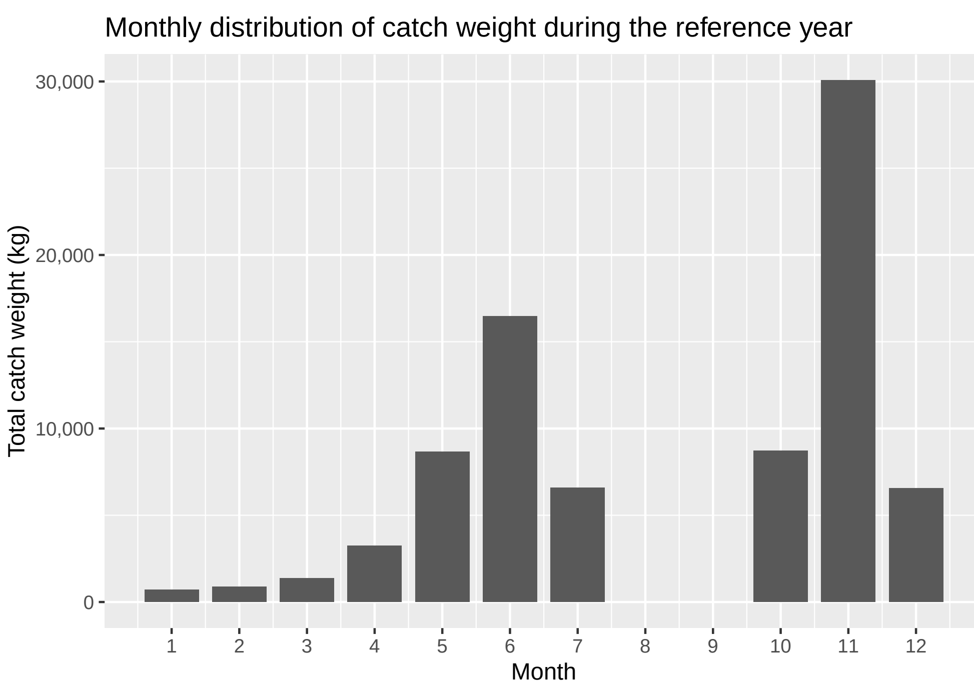


Description of the volume and pattern of fishing activities during the reference year (2013)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



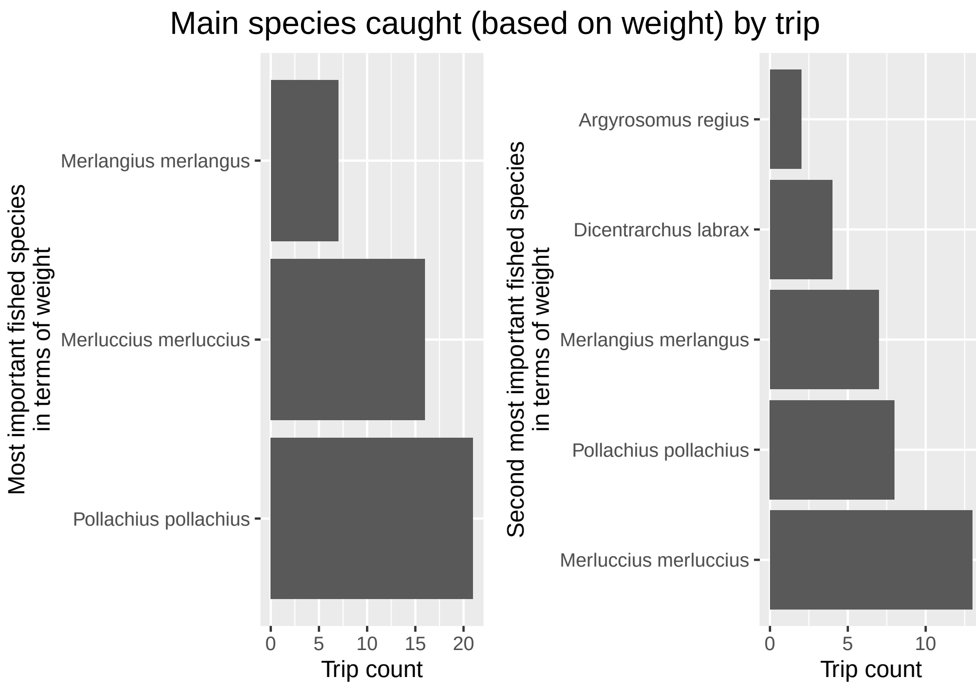
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

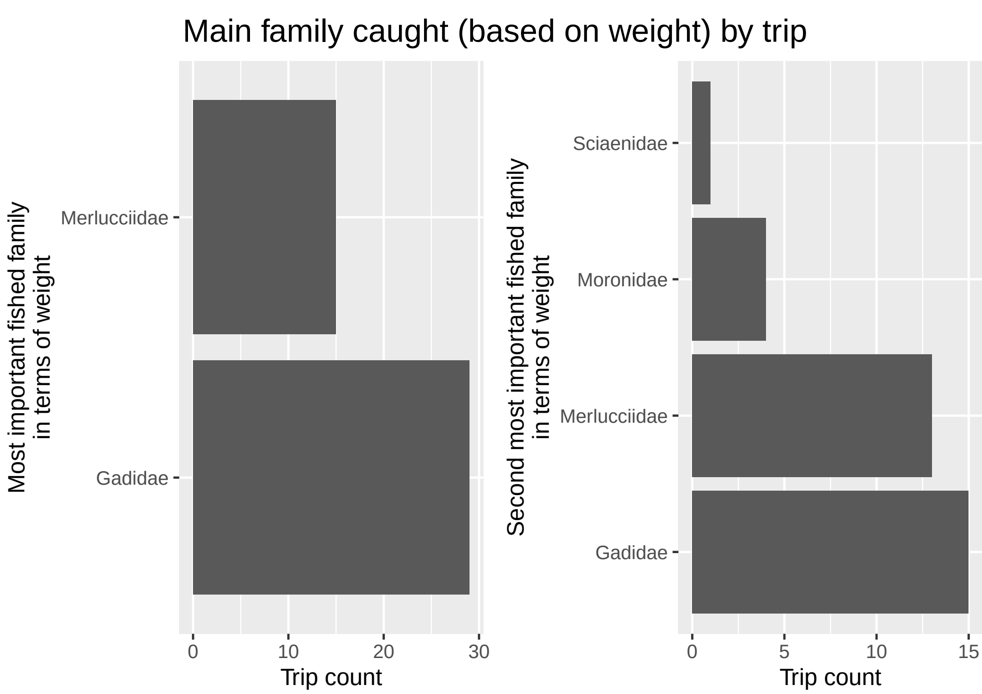


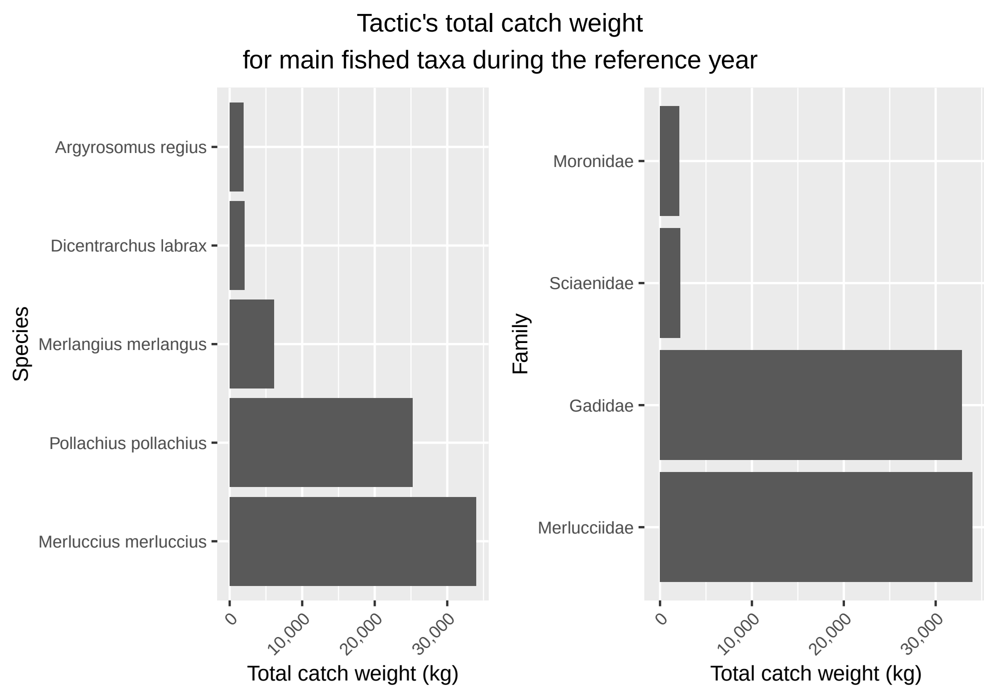
Main fished taxa and used gears during the reference year (2013)

We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

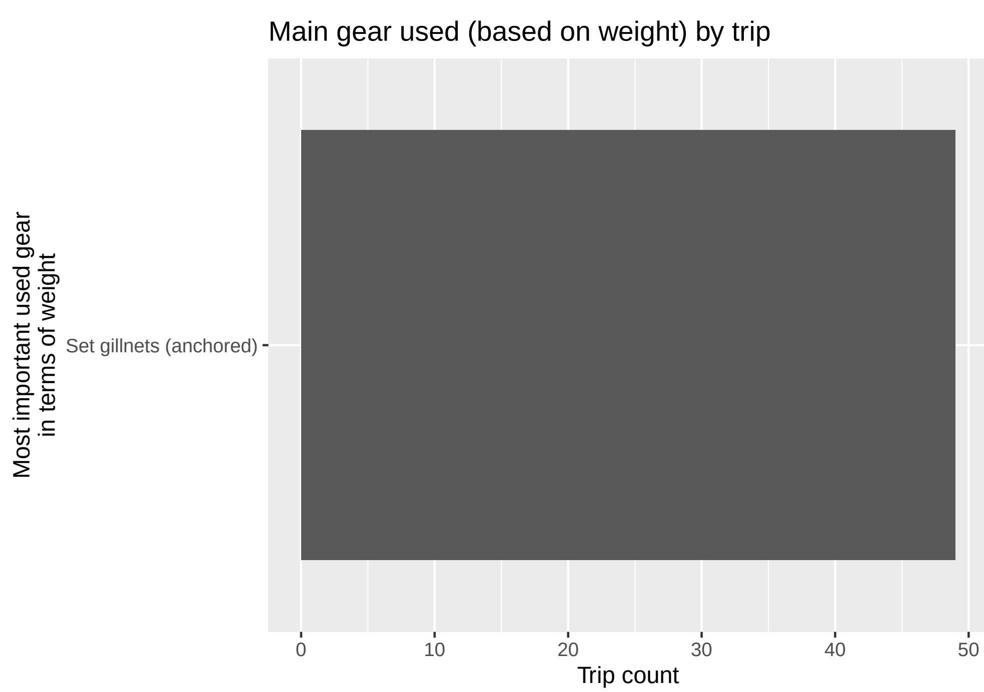
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

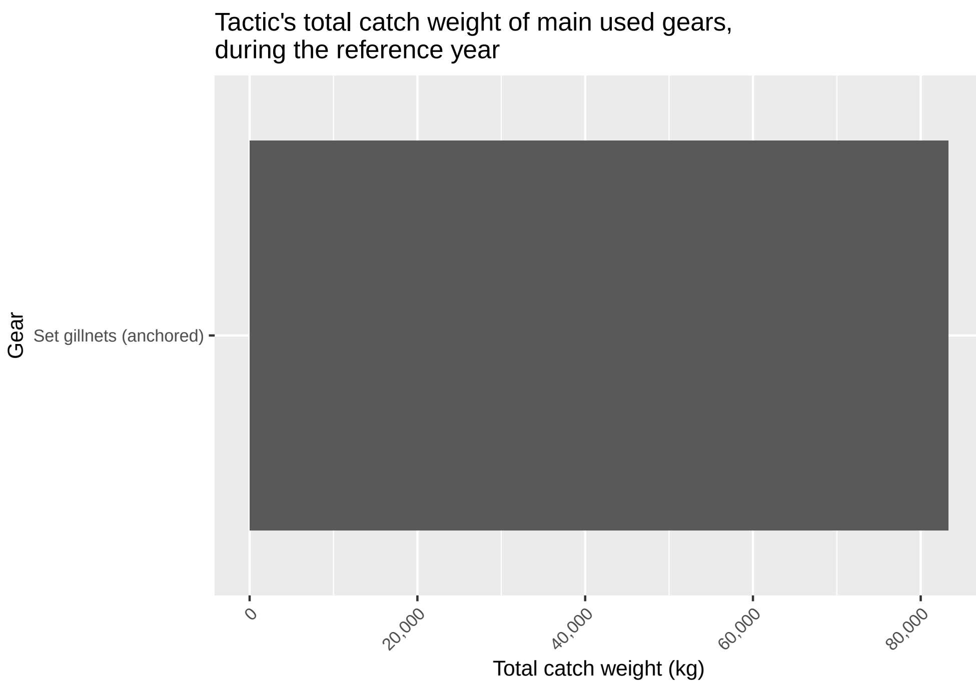






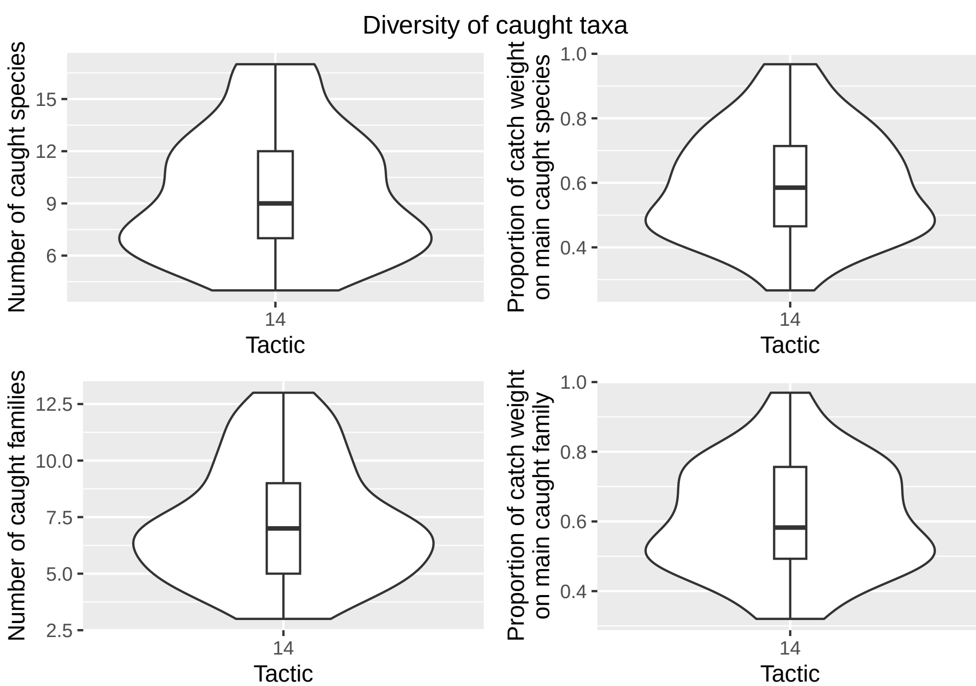
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



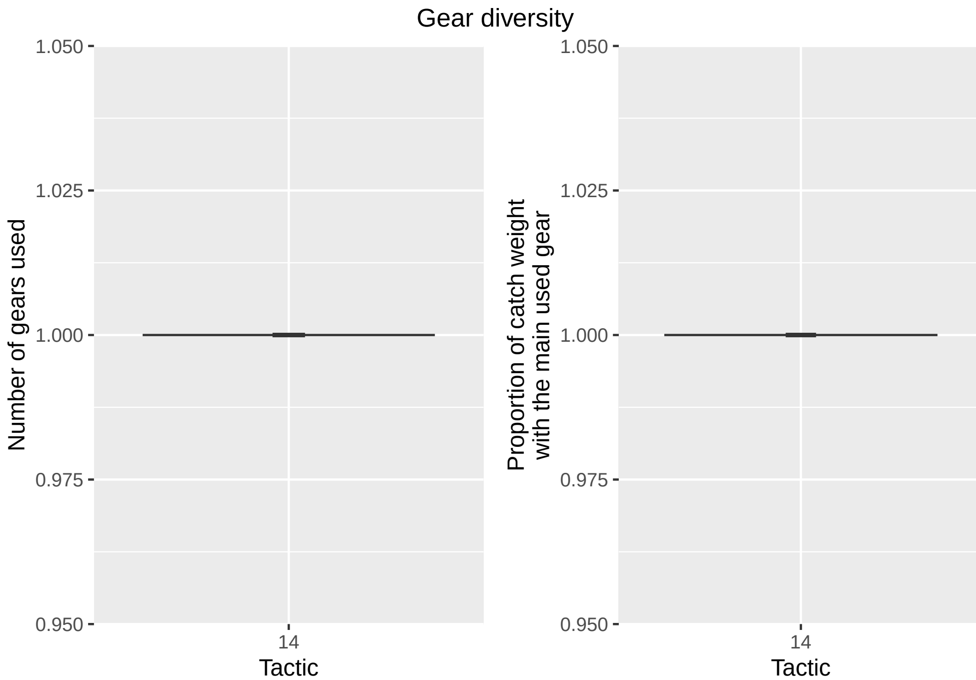


Diversity of fished taxa and used gears during the reference year (2013)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

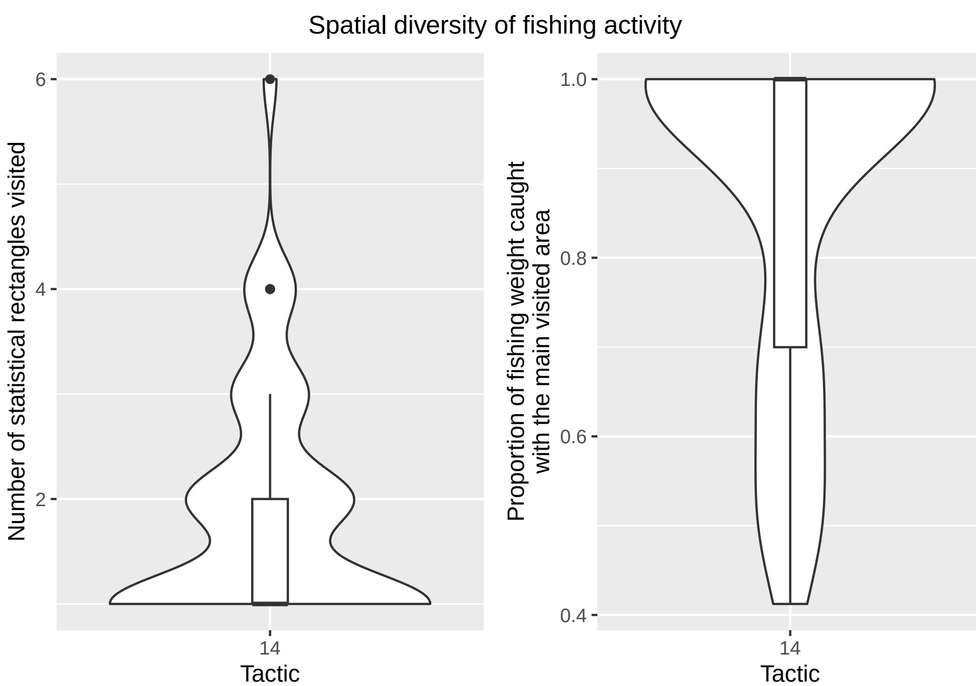


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

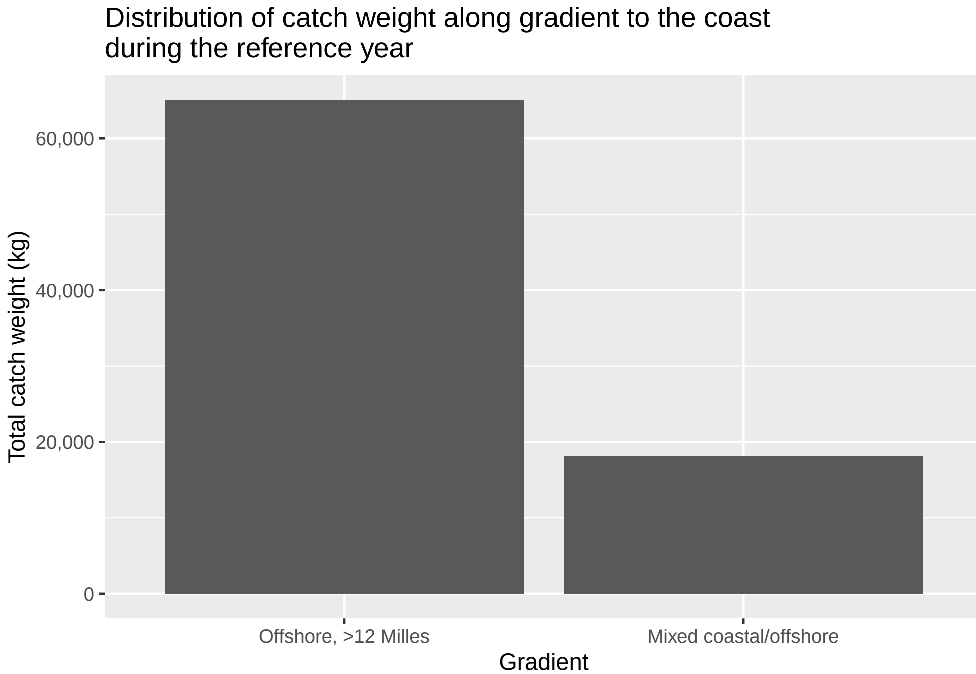


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

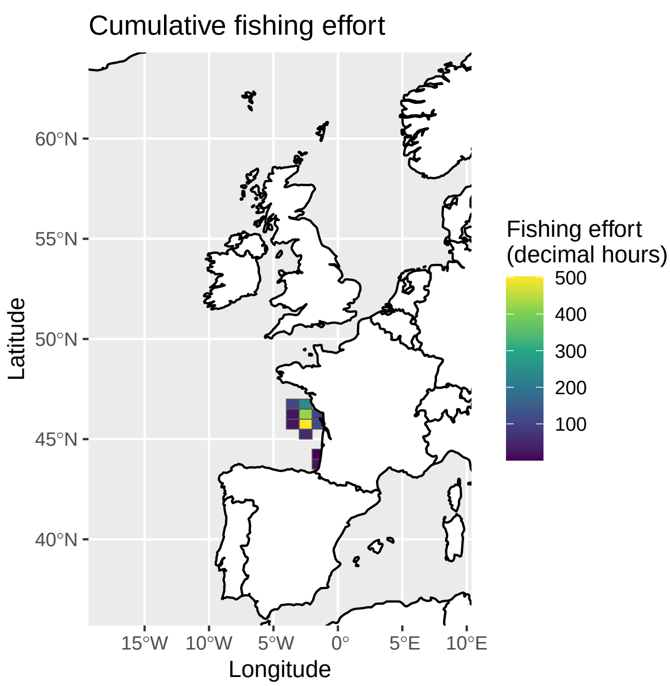


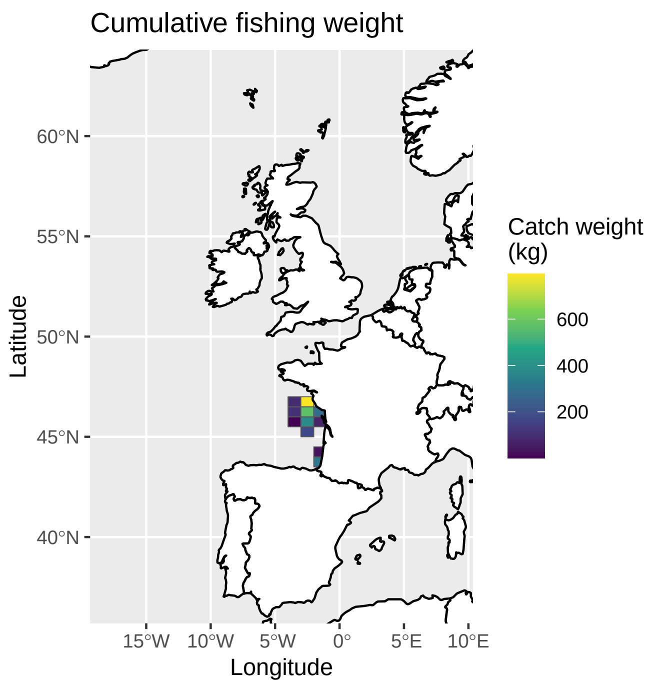
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2013)

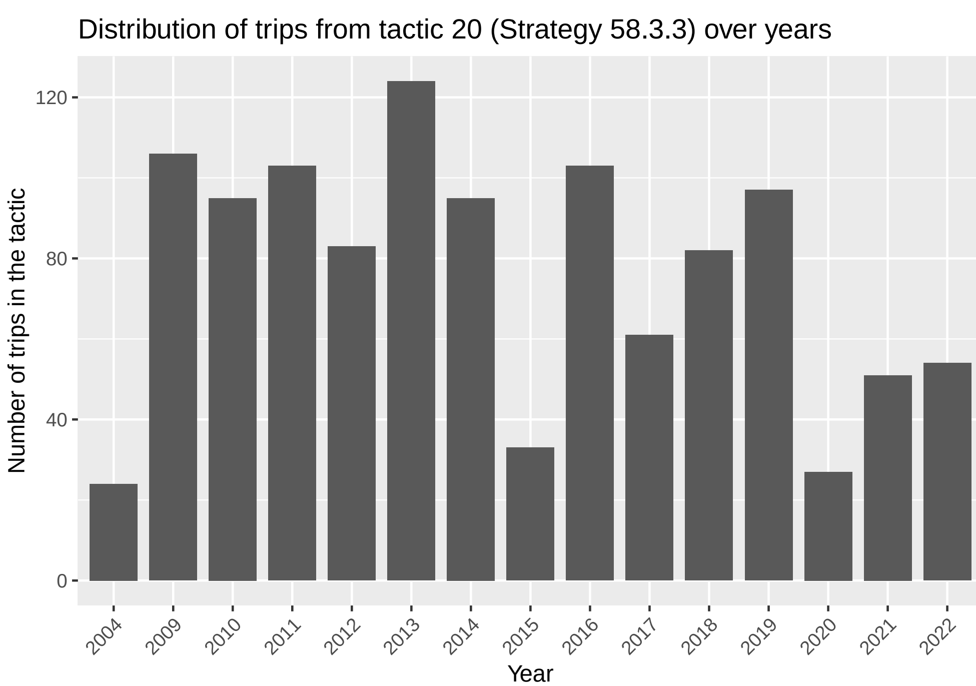
Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.





Tactic 20 (Strategy 58.3.3)

This tactic includes N=1138 fishing trips. There are N=12 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2013.

Description table

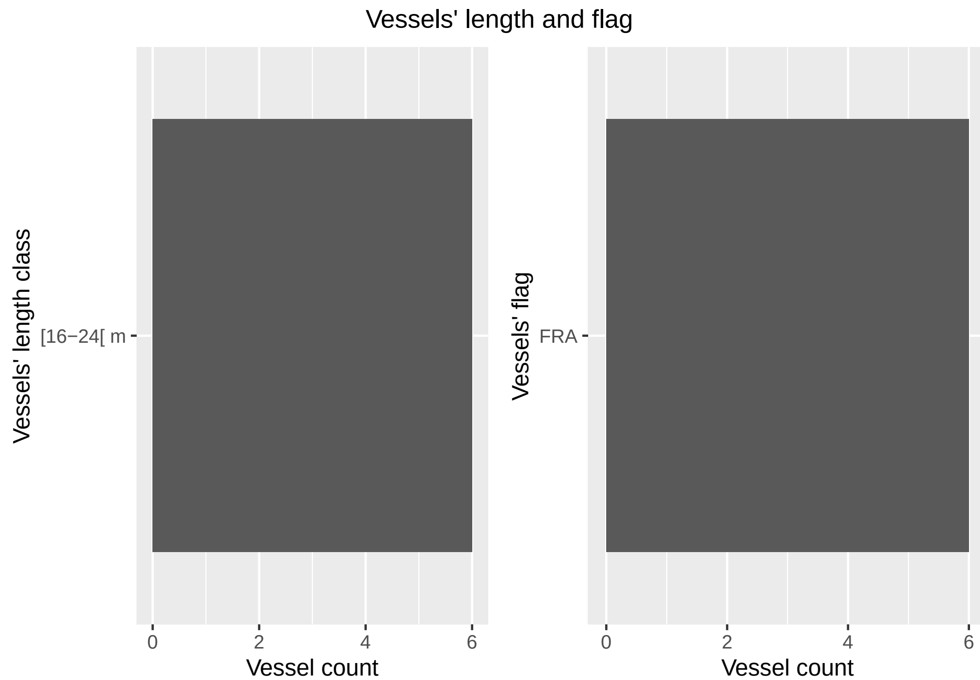
This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 28: Tactic 20 (Strategy 58.3.3)

Importance	Variable	Value
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
Determinant (>95%)	ISSCAAP	31
	Gear	Trammel nets
Strongly predominant (>80%)	ICES division	27.8.a
Predominant (>65%)	Trimester	1
Major (>50%)	Family	Scophthalmidae
	Sp.	Scophthalmus rhombus
		21E7
Strong component (>35%)	Statistic rectangle	22E7
	Sp.	Trisopterus luscus
	Family	Gadidae
	Order	Gadiformes
	ISSCAAP	32
		01
Component (>20%)	Month	02
	Sp.	Spondyliosoma cantharus
	Spp.	Dicentrarchus spp
		Moronidae
	Family	Sparidae
	ISSCAAP	33
	Gear	Set gillnets (anchored)
	ICES division	27.8.b
		20E7
	Statistic rectangle	21E8
		03
Minor component (>5%)	Month	12
	div_val_spp	TRUE
	div_val_family	TRUE
	div_val_order	TRUE
	div_val_isscaap	TRUE
High values (>SD)	prop_zee	TRUE
	Spp.	Dicentrarchus spp
		Pleuronectes platessa
		Scophthalmus maximus
	Sp.	Scophthalmus rhombus
		Sepia spp
	Spp.	Solea spp
		Moronidae
		Pleuronectidae
		Scophthalmidae
		Sepiidae
	Family	Soleidae
		Perciformes
		Pleuronectiformes
	Order	Sepiida
		31
		33
Categories with high values (>SD)	ISSCAAP	57

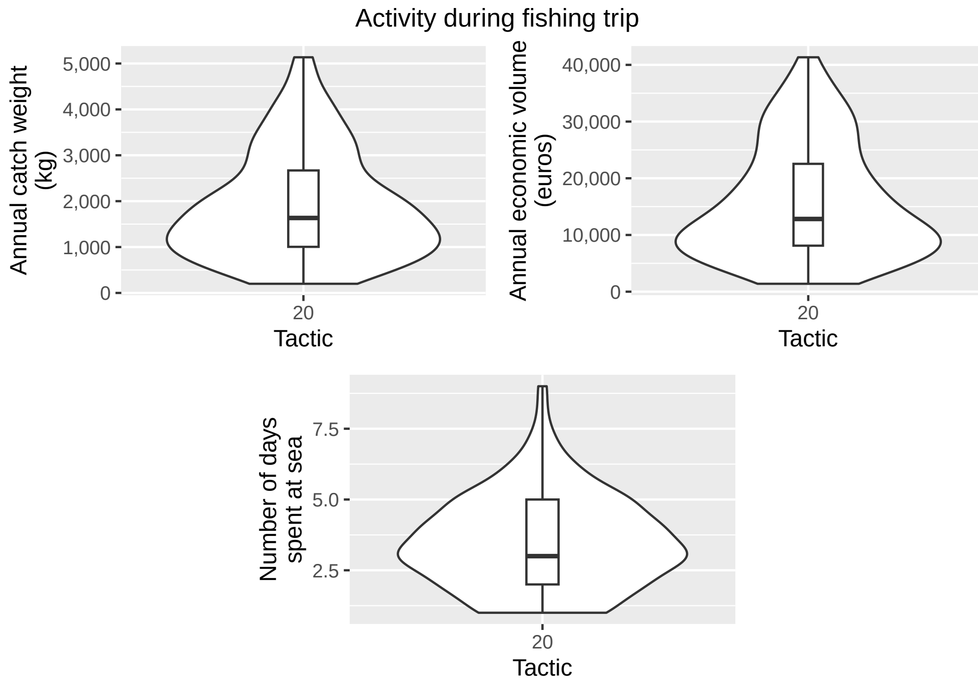
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2013)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

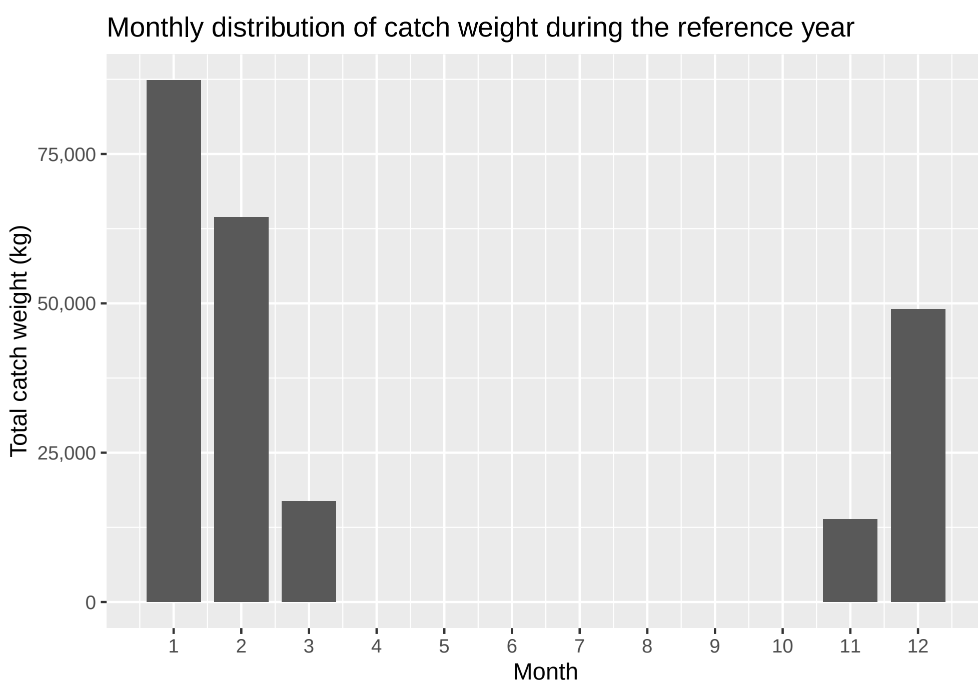


Description of the volume and pattern of fishing activities during the reference year (2013)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



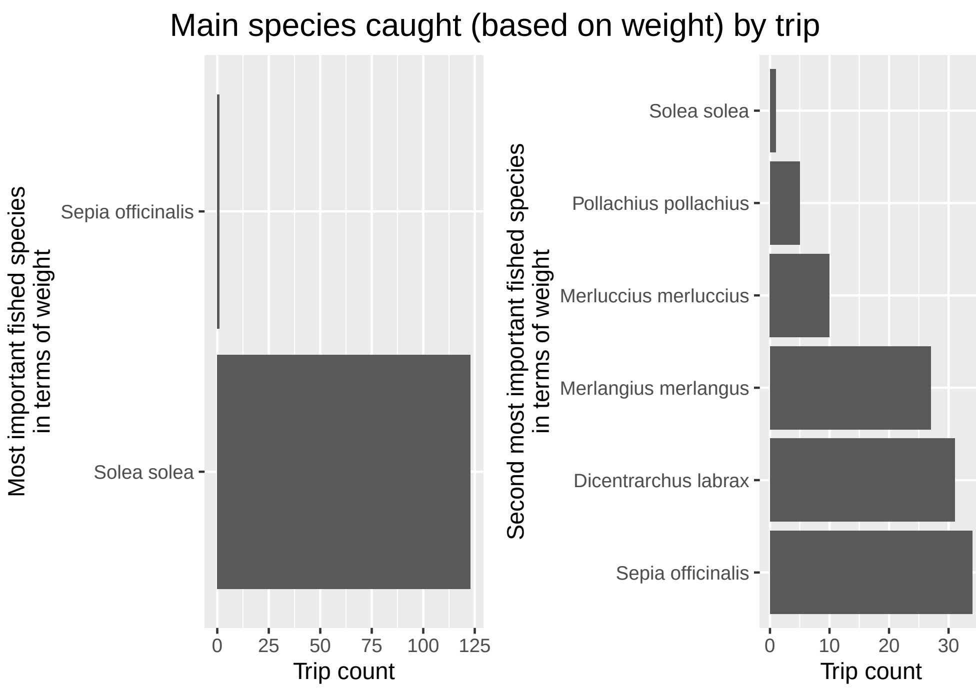
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

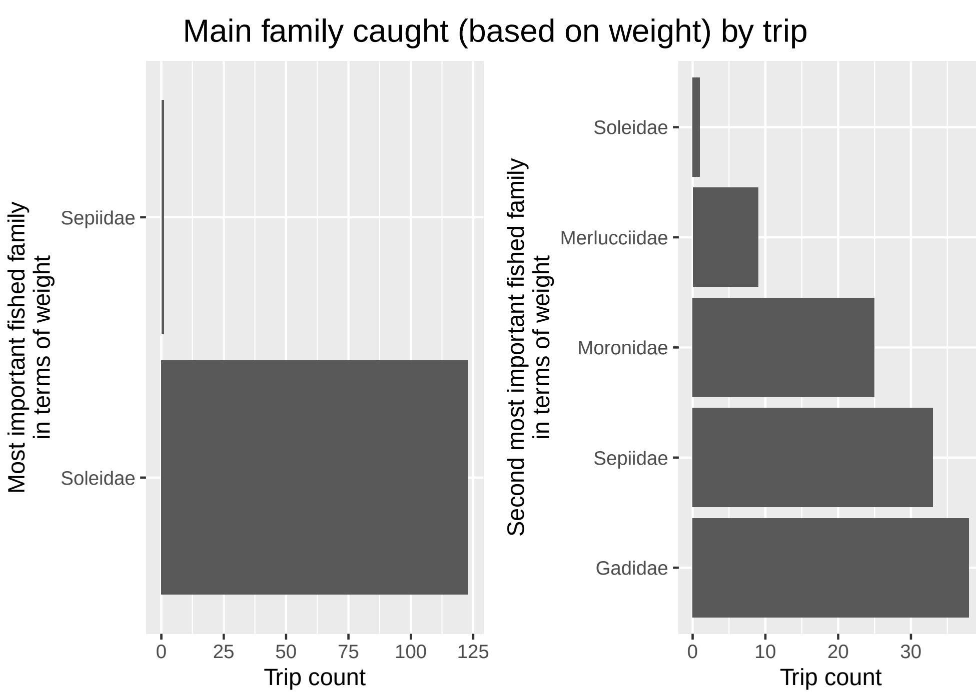


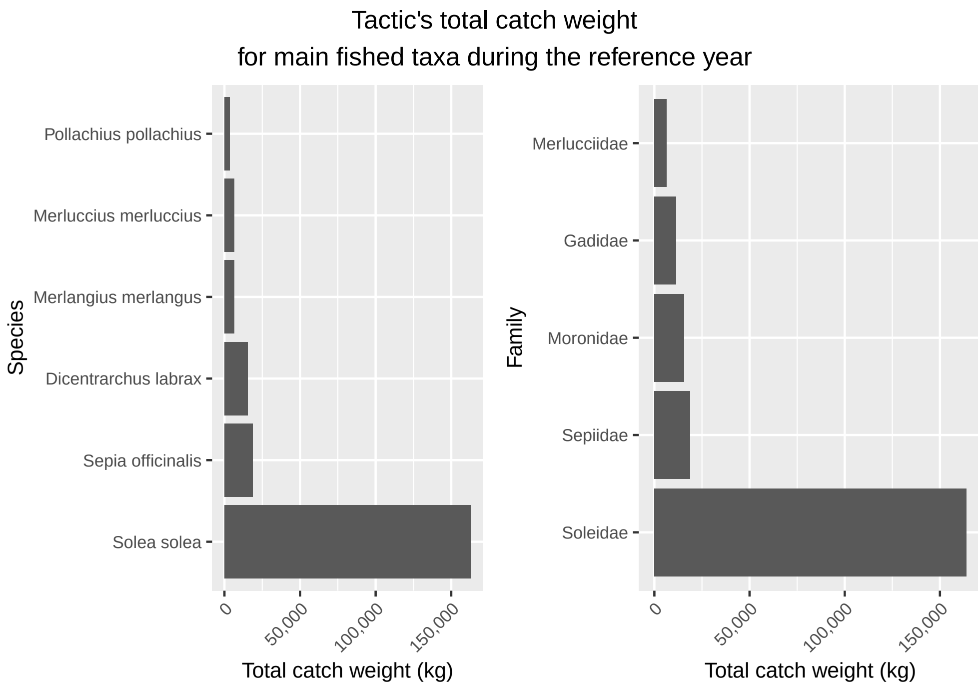
Main fished taxa and used gears during the reference year (2013)

We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

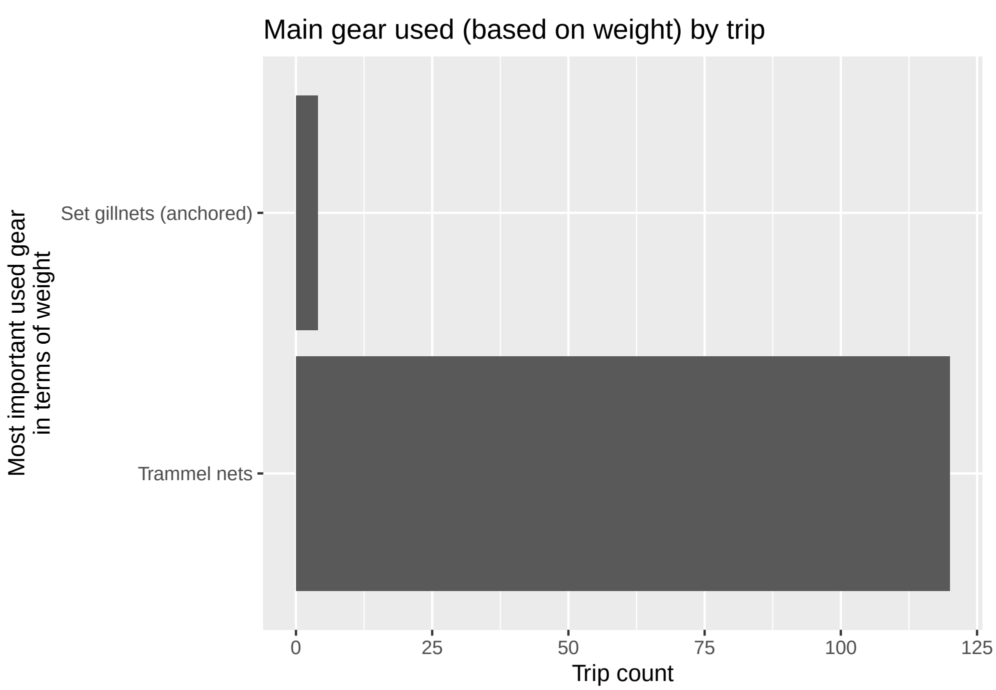
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

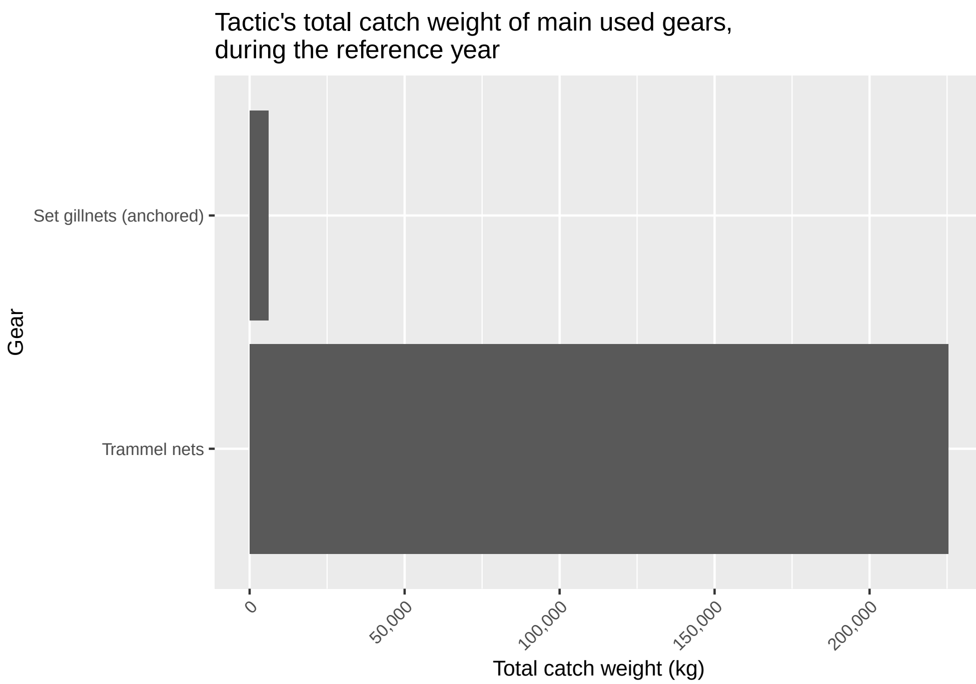






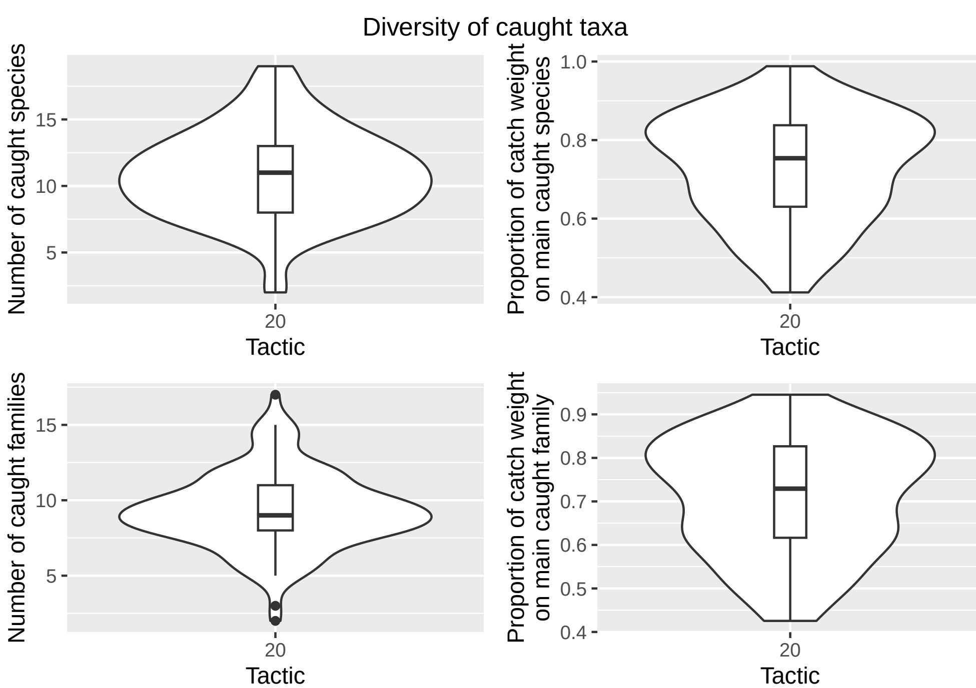
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



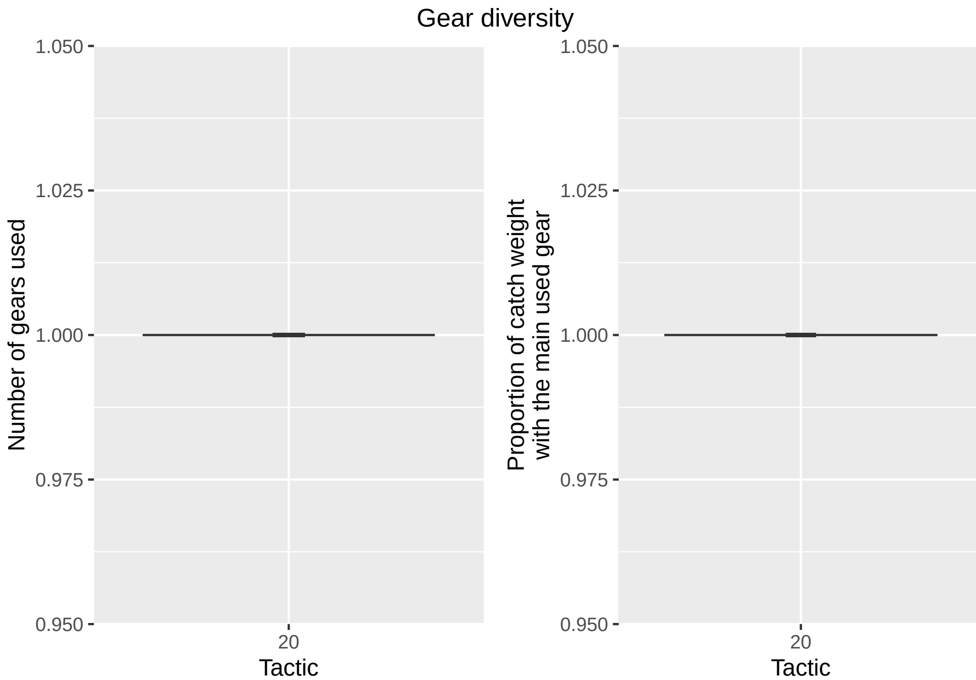


Diversity of fished taxa and used gears during the reference year (2013)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

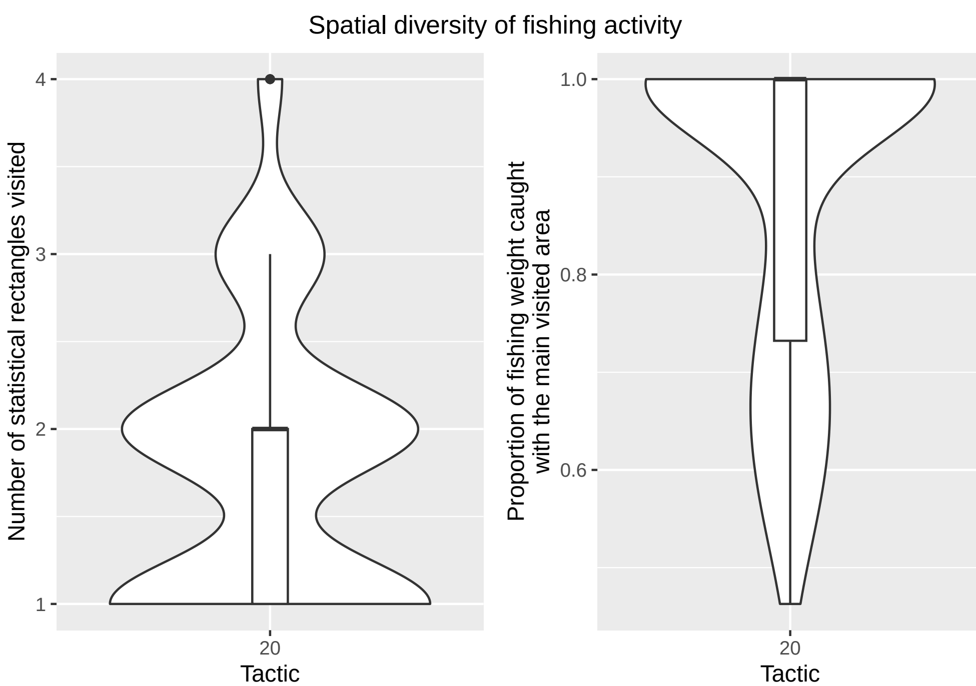


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

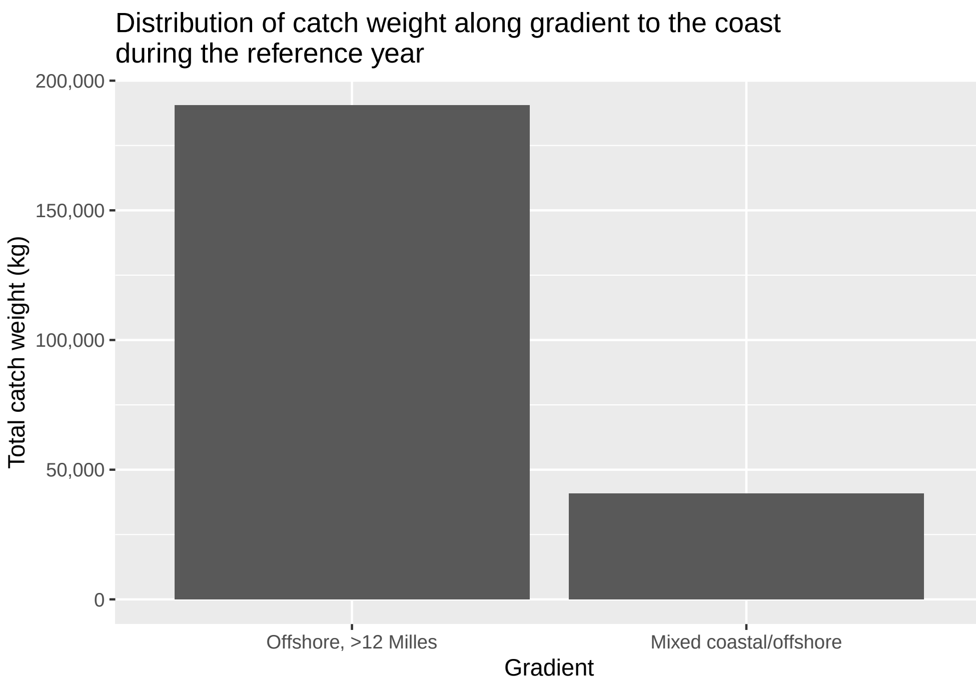


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

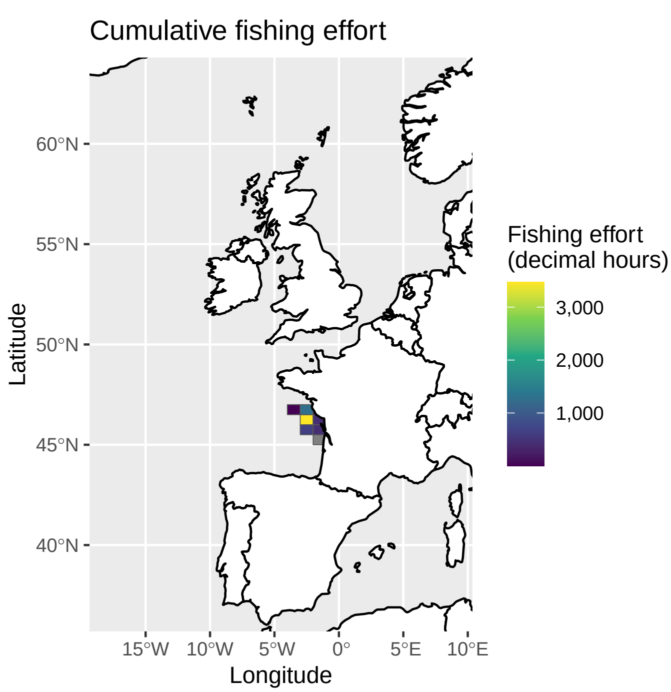


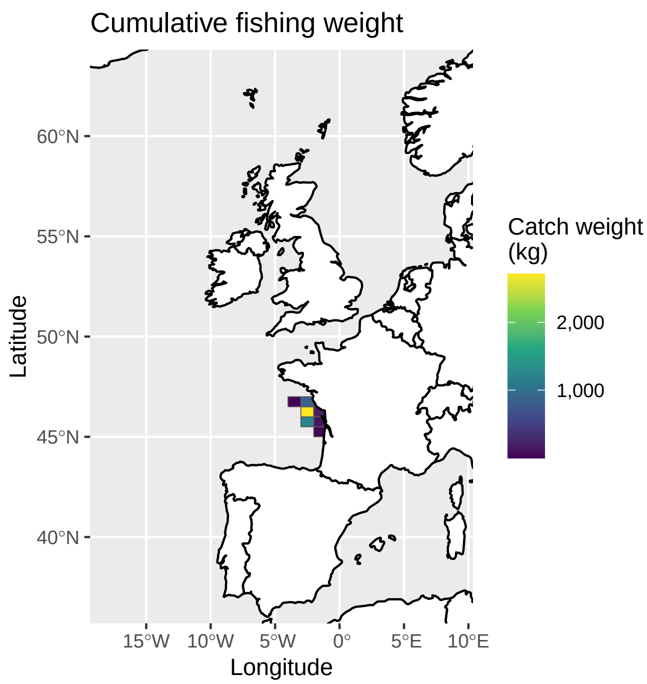
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2013)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.

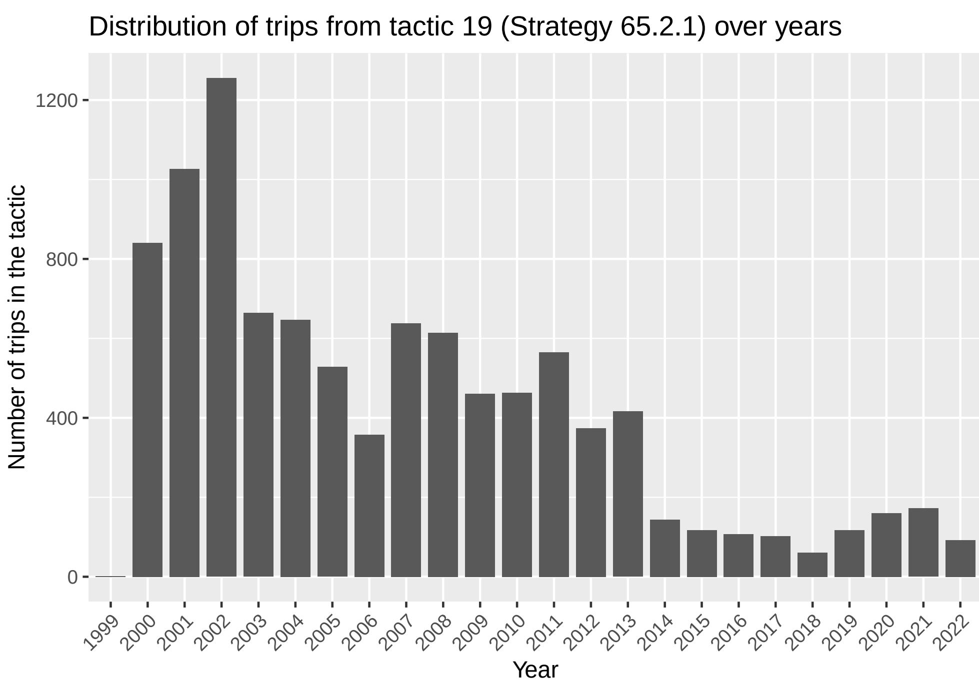




Within strategy 65.2.1

Tactic 19 (Strategy 65.2.1)

This tactic includes N=9925 fishing trips. There are N=89 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2002.

Description table

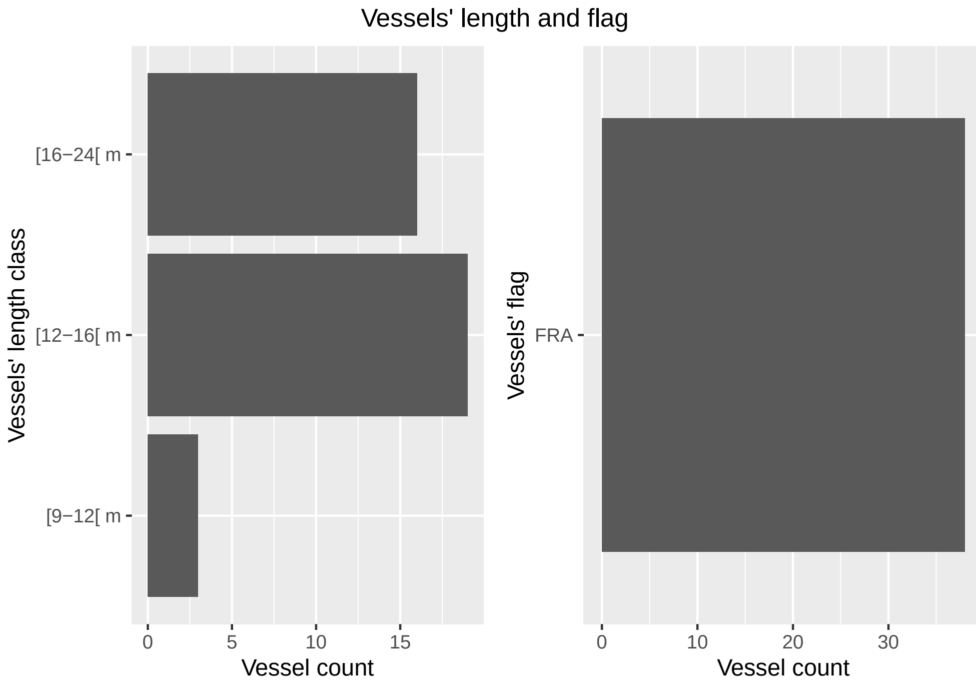
This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 29: Tactic 19 (Strategy 65.2.1)

Importance	Variable	Value
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
Determinant (>95%)	ISSCAAP	31
Major (>50%)	ICES division	27.8.a
	Sp.	Scophthalmus rhombus
	Family	Scophthalmidae
Strong component (>35%)	ICES division	27.8.b
	Sp.	Trisopterus luscus
	Family	Gadidae
	Order	Gadiformes
	ISSCAAP	32
		1
Component (>20%)	Trimester	3
	Family	Moronidae
	Order	Perciformes
	ISSCAAP	33
	Gear	Set gillnets (anchored)
		18E8
		19E8
		21E7
		21E8
		22E7
	Statistic rectangle	23E7
		01
		02
		03
		05
		06
		07
		08
		10
		11
	Month	12
Minor component (>5%)	Trimester	4
	div_val_spp	TRUE
	div_val_family	TRUE
	div_val_isscaap	TRUE
	main_prop_spp	TRUE
	main_prop_family	TRUE
	main_prop_order	TRUE
High values (>SD)	main_prop_isscaap	TRUE
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
Categories with high values (>SD)	ISSCAAP	31

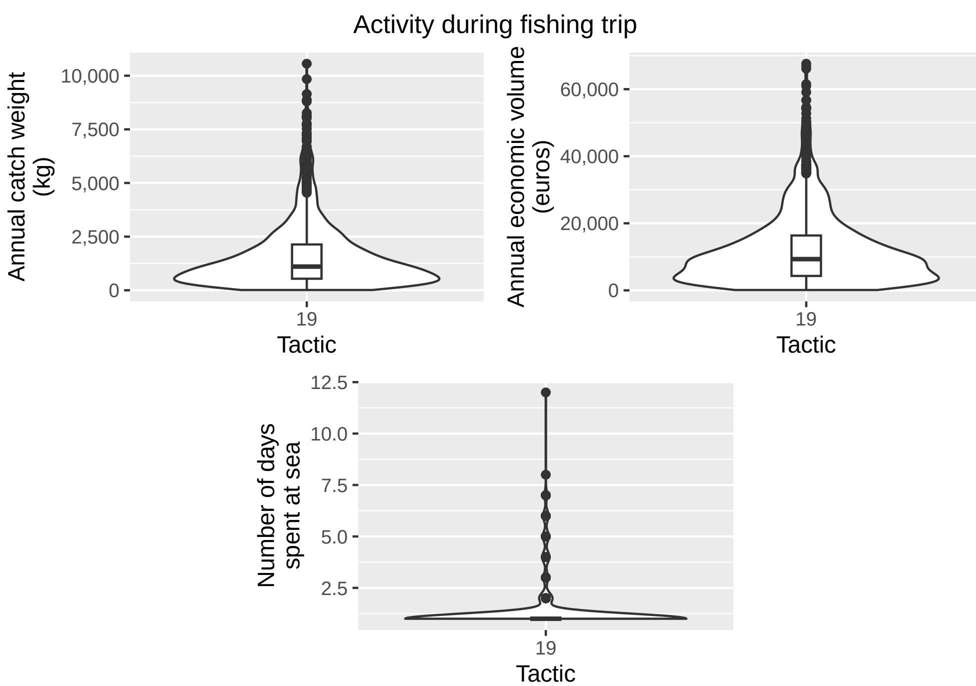
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2002)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

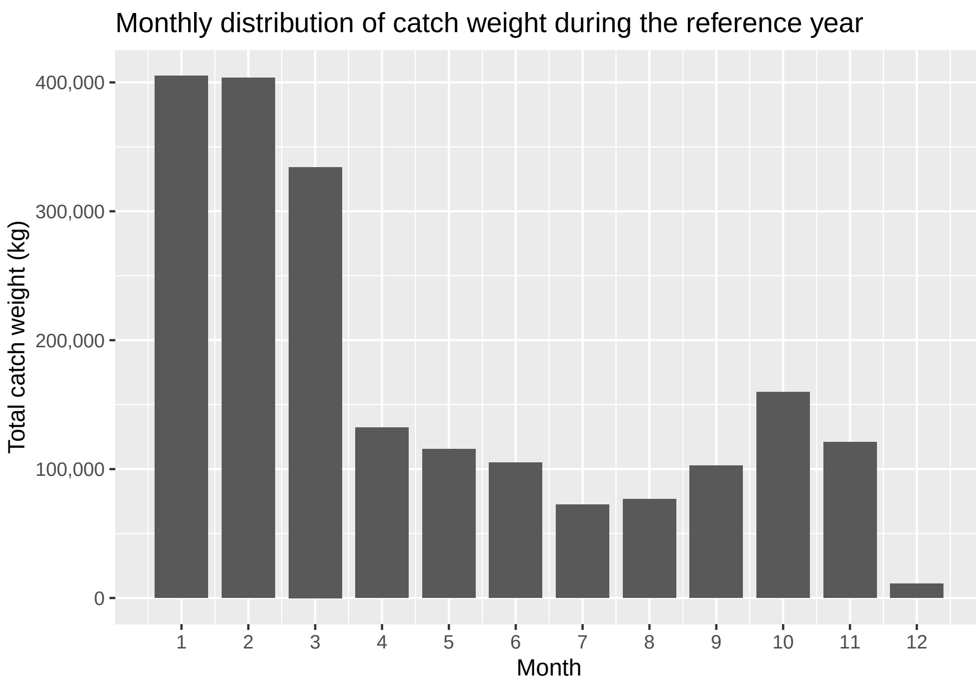


Description of the volume and pattern of fishing activities during the reference year (2002)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.

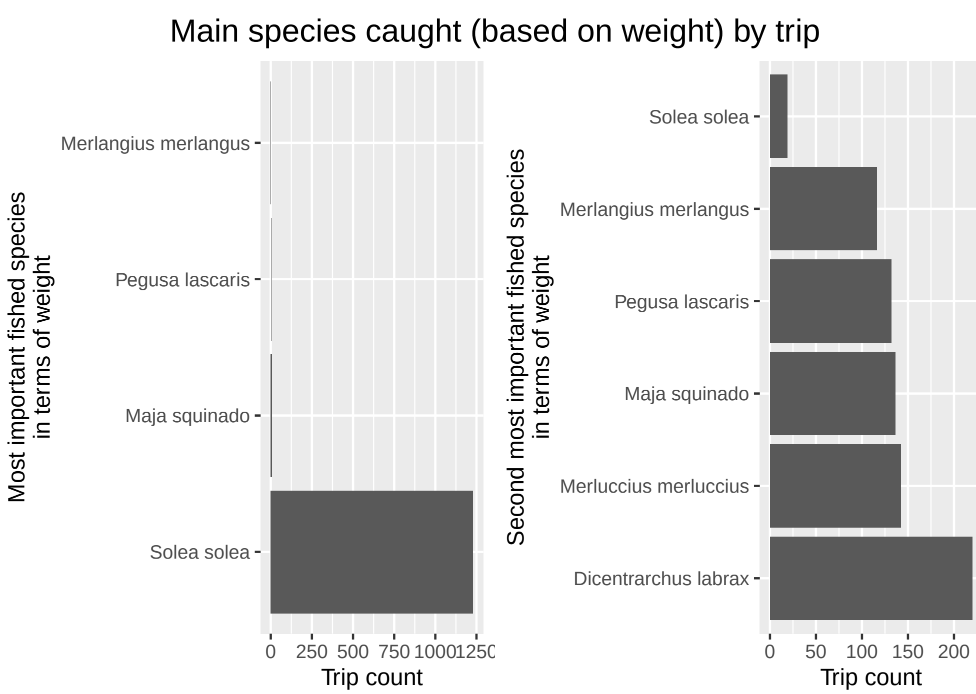


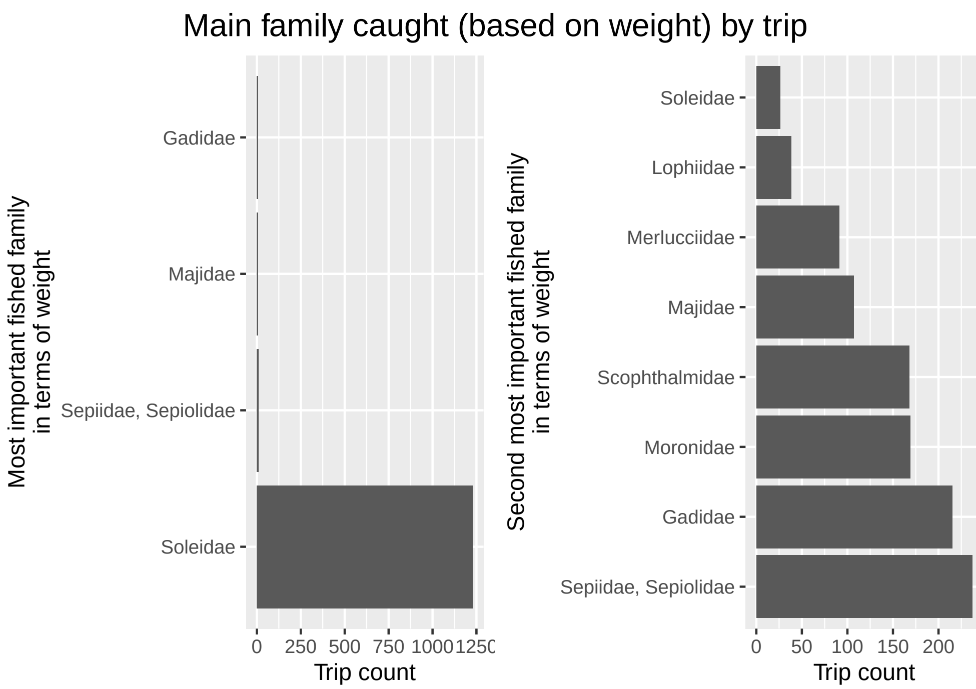
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

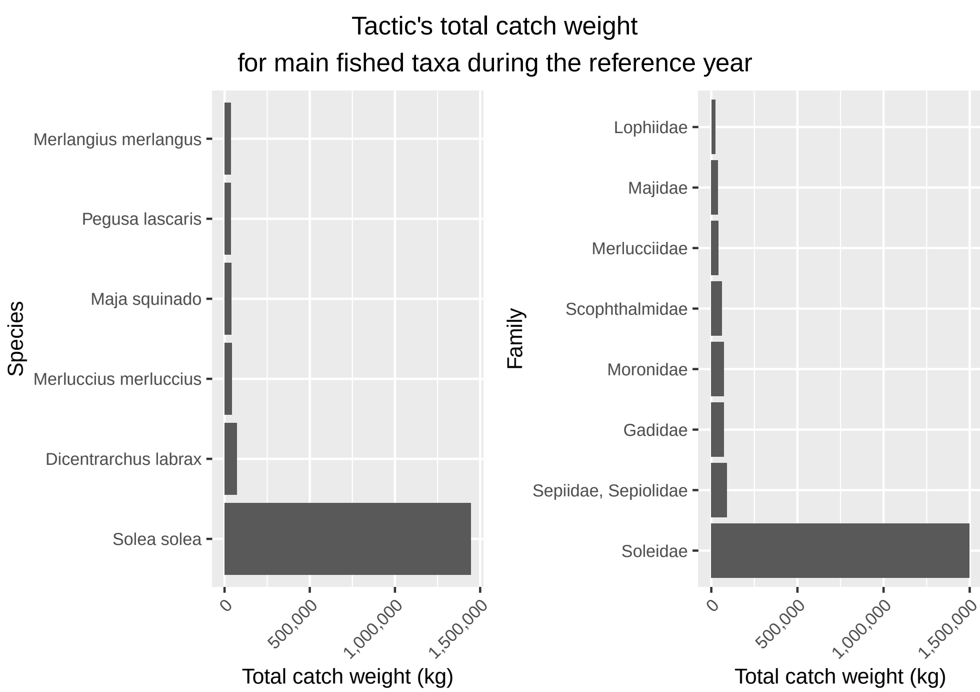


Main fished taxa and used gears during the reference year (2002)

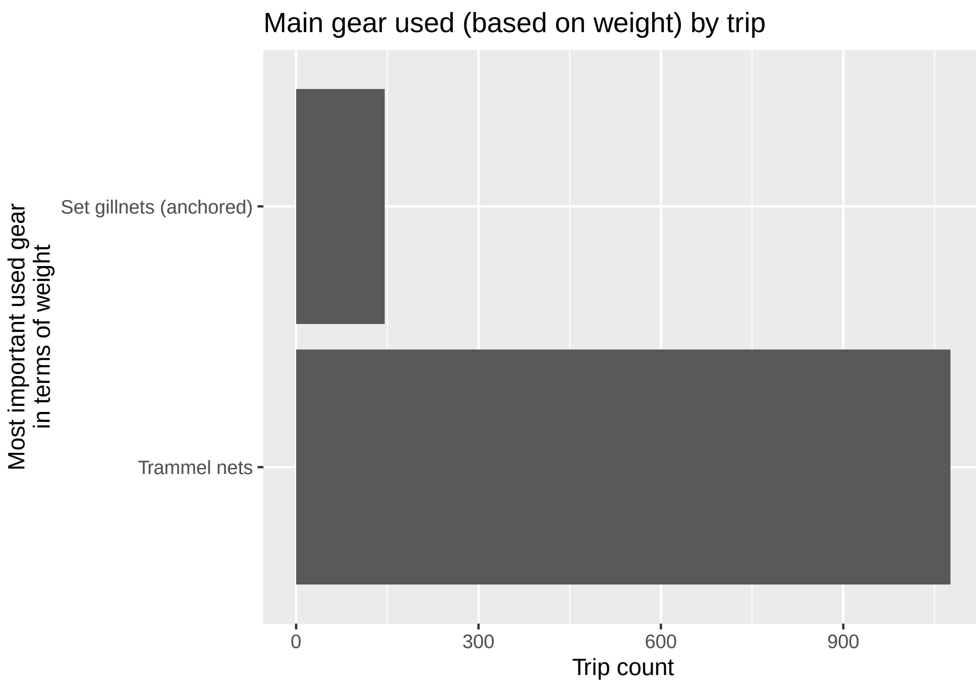
We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

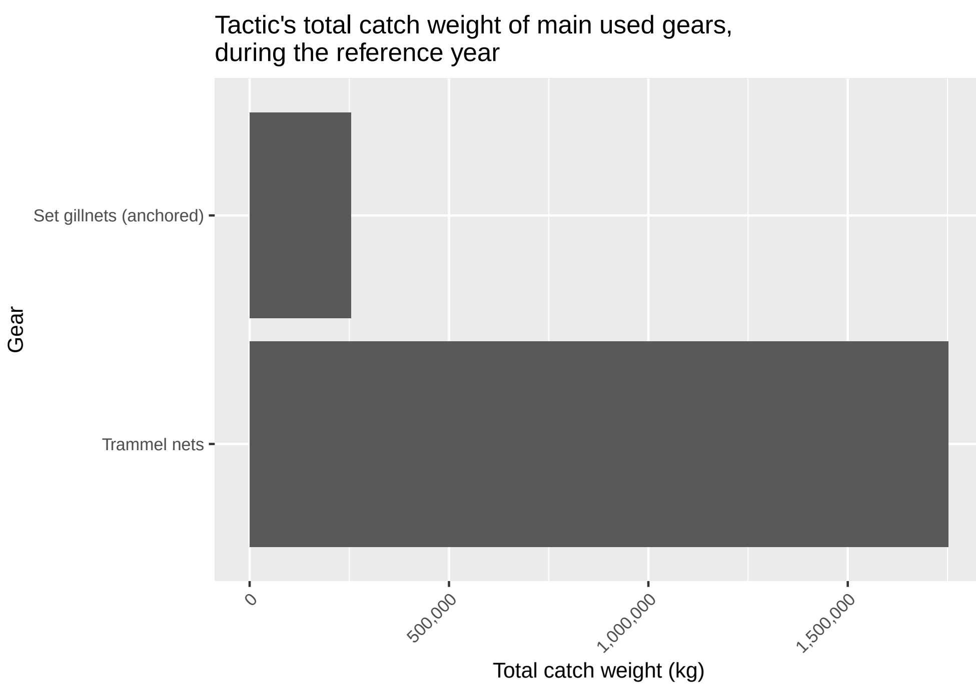






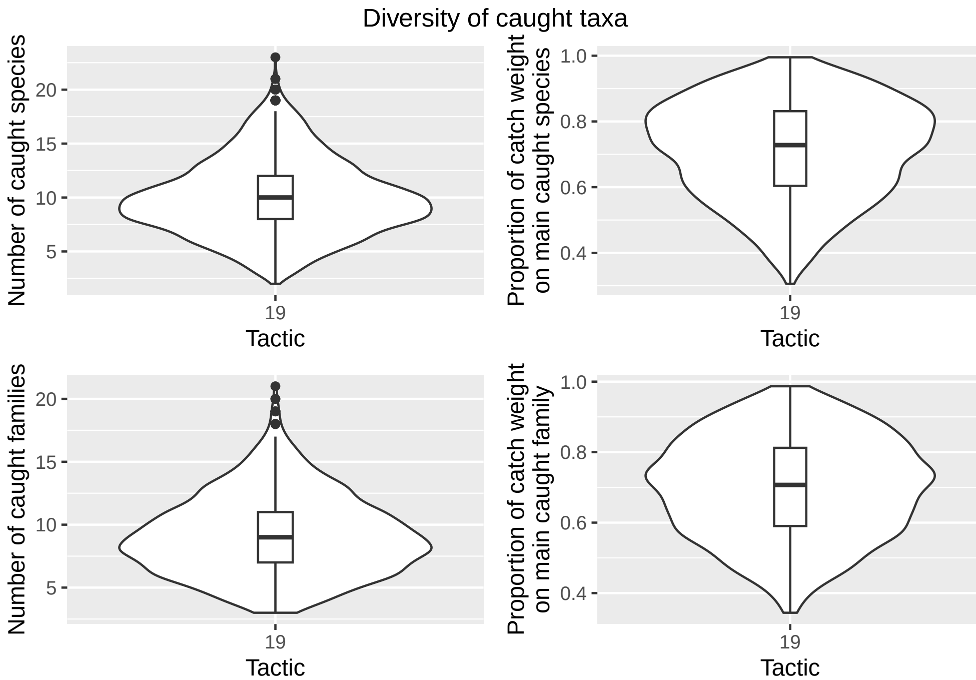
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



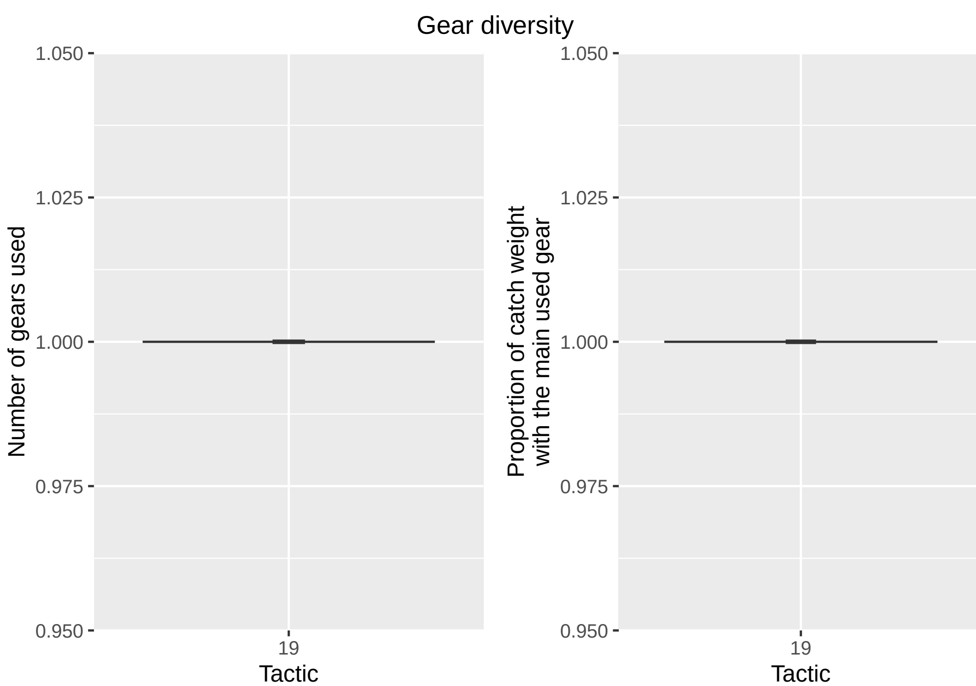


Diversity of fished taxa and used gears during the reference year (2002)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

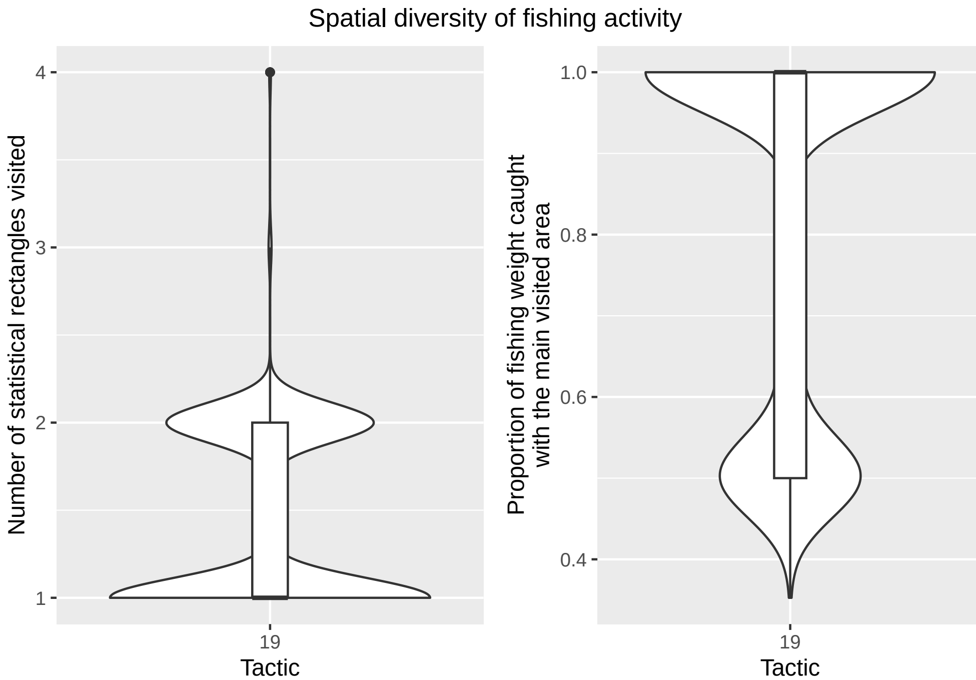


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

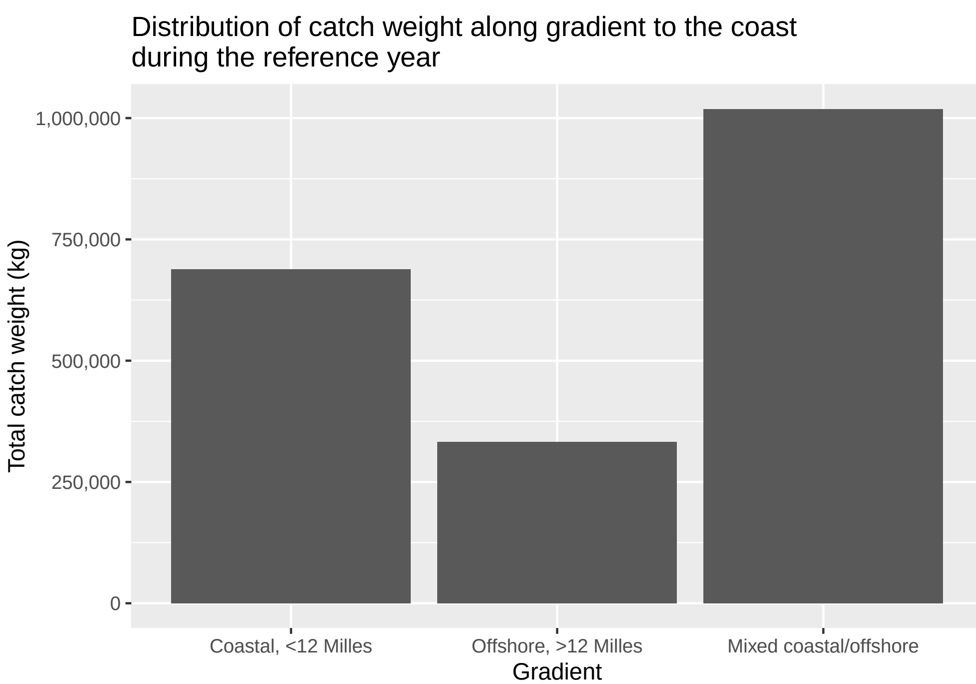


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.



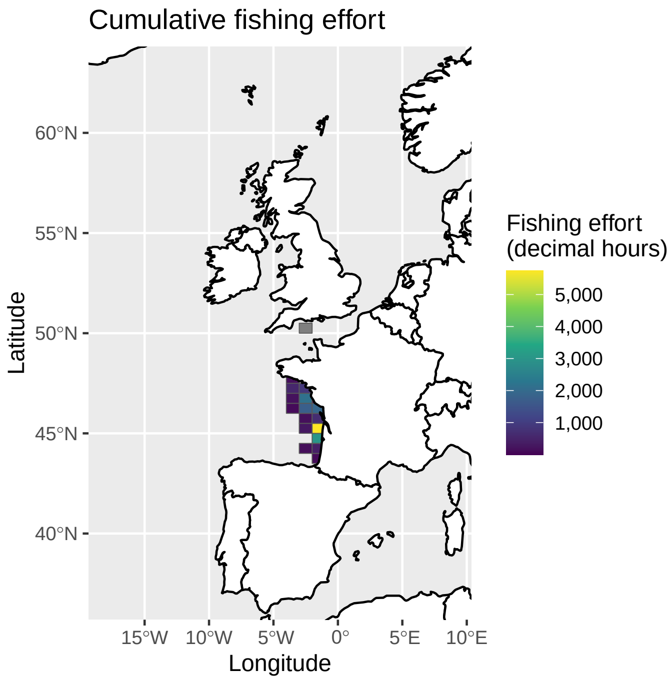
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.

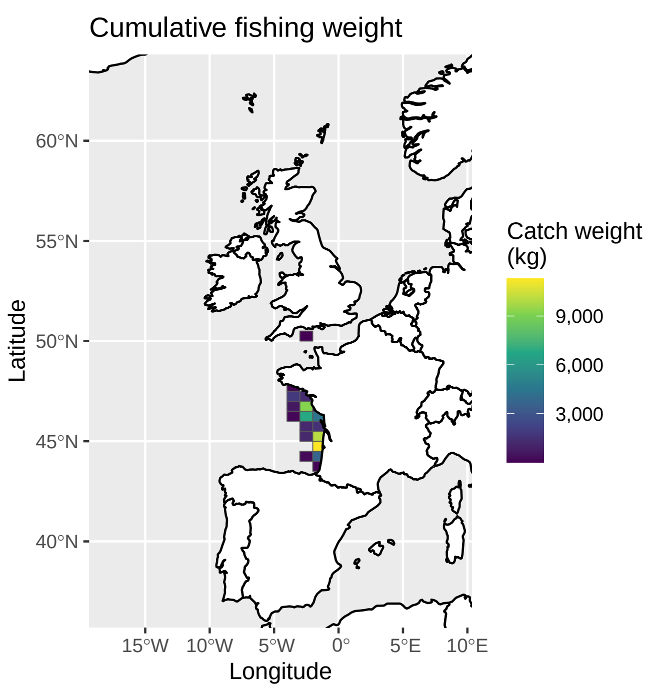


Maps of fishing activity distribution during the reference year (2002)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing

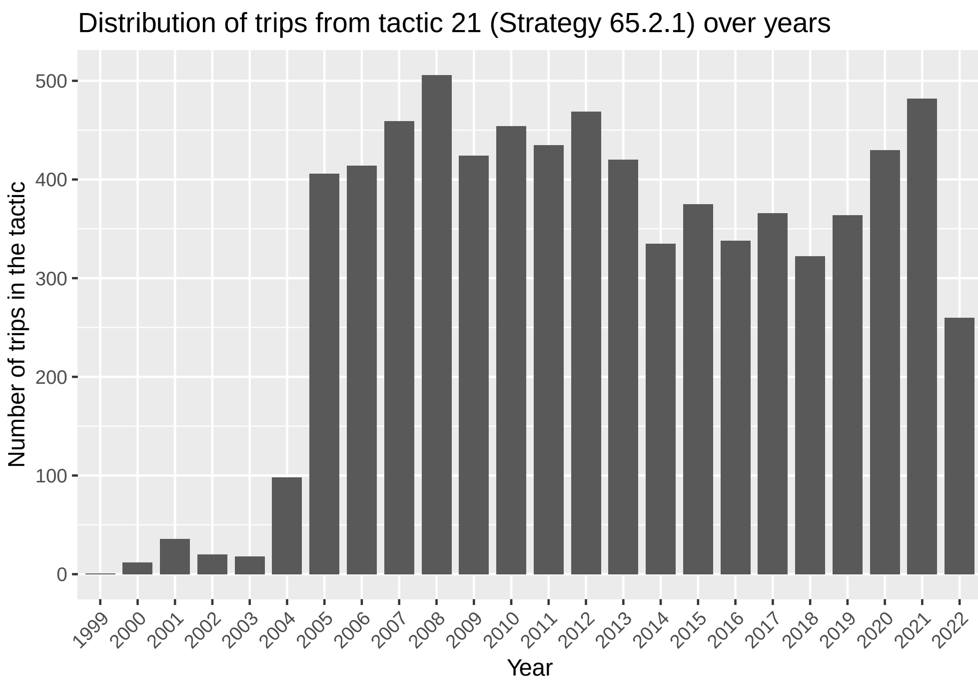
weight/effort are available.





Tactic 21 (Strategy 65.2.1)

This tactic includes N=7444 fishing trips. There are N=63 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2008.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 30: Tactic 21 (Strategy 65.2.1)

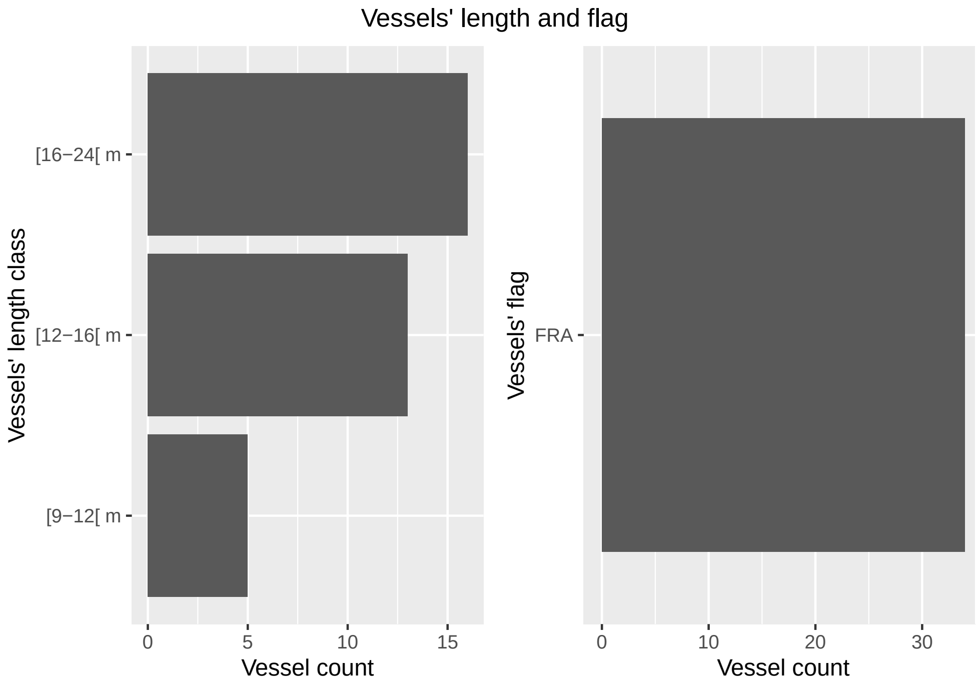
Importance	Variable	Value
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
	ISSCAAP	31
Determinant (>95%)	Gear	Trammel nets
Strongly predominant (>80%)	ICES division	27.8.b
	Family	Scophthalmidae
Strong component (>35%)	Statistic rectangle	19E8
	Order	Gadiformes
	ISSCAAP	32
	Statistic rectangle	18E8
		1
		2
		3
Component (>20%)	Trimester	4
		Spondyliosoma cantharus
	Sp.	Trisopterus luscus
		Gadidae
		Moronidae
	Family	Sparidae
	Order	Perciformes
	ISSCAAP	33
	ICES division	27.8.a
		20E8
		21E7

Table 30: Tactic 21 (Strategy 65.2.1) *(continued)*

Importance	Variable	Value
	Statistic rectangle	21E8
		01
		02
		03
		04
		05
		06
		07
		08
		09
		10
		11
Minor component (>5%)	Month	12
	value_effort	TRUE
	div_val_spp	TRUE
	div_sde_spp	TRUE
	div_val_family	TRUE
	div_sde_family	TRUE
	div_val_order	TRUE
	div_sde_order	TRUE
	div_val_isscaap	TRUE
	div_sde_isscaap	TRUE
	div_nb_effort	TRUE
	div_nb_day	TRUE
High values (>SD)	value_temp	TRUE
		Merluccius spp
	Spp.	Solea spp
		Merlucciidae
		Scophthalmidae
	Family	Soleidae
		Gadiformes
		Perciformes
	Order	Pleuronectiformes
		31
		32
		33
Categories with high values (>SD)	ISSCAAP	34

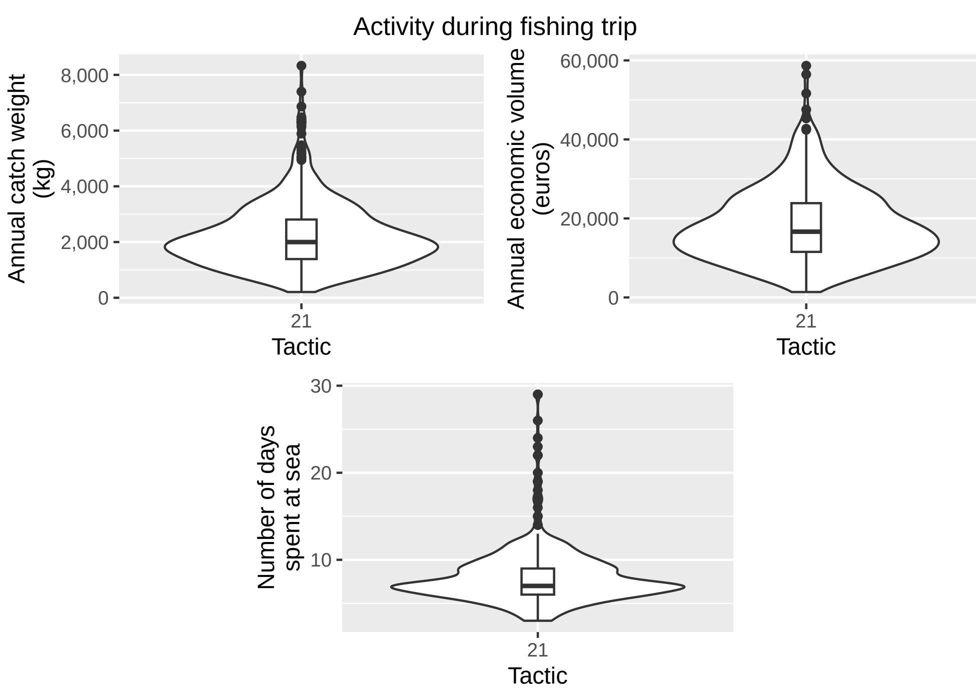
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2008)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

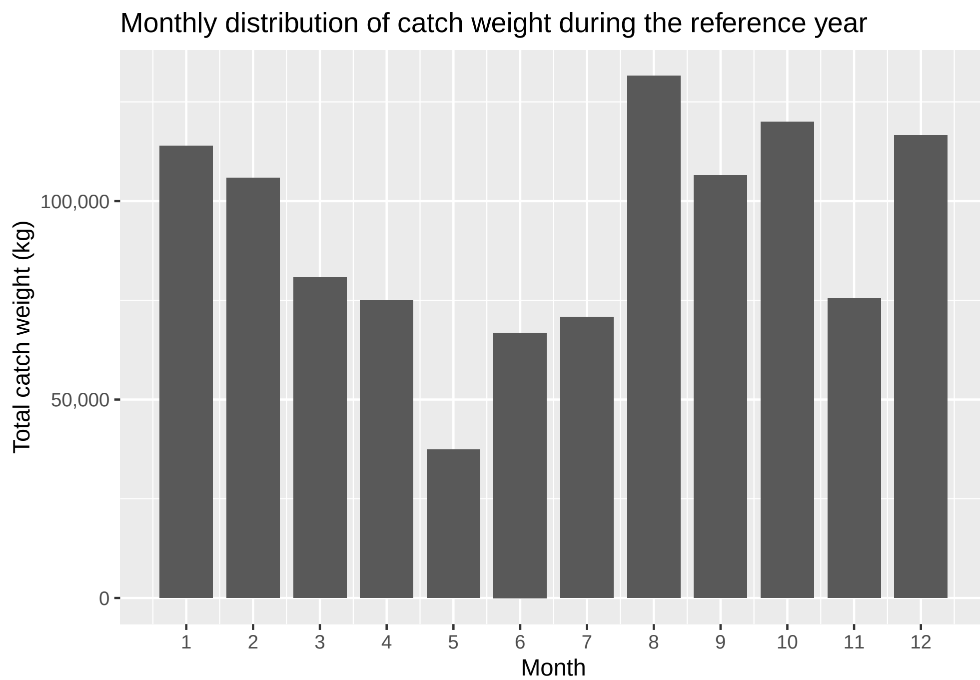


Description of the volume and pattern of fishing activities during the reference year (2008)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.

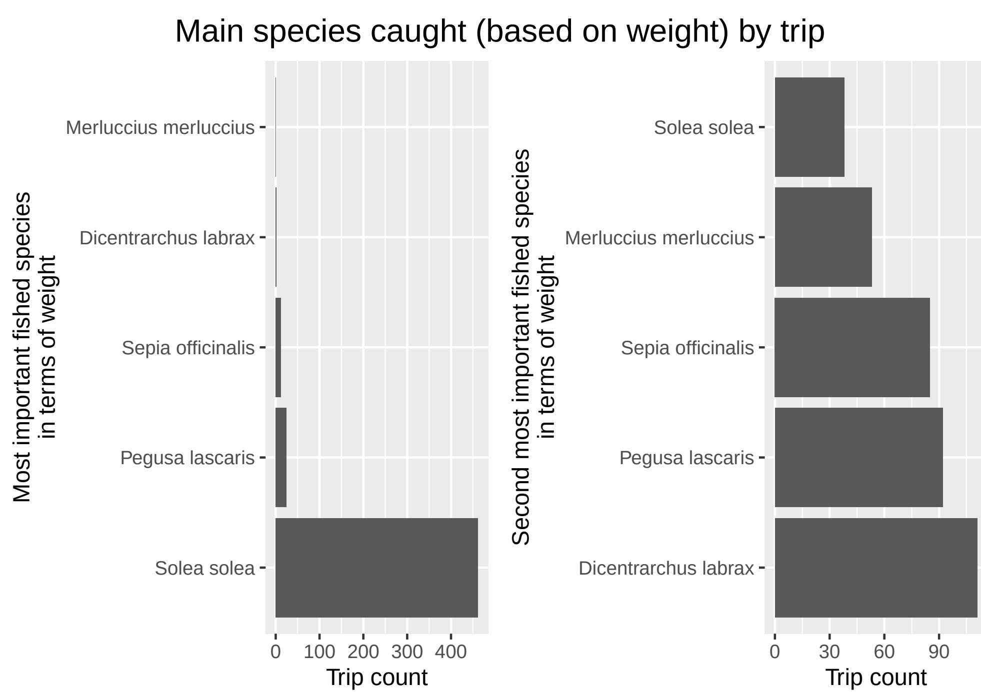


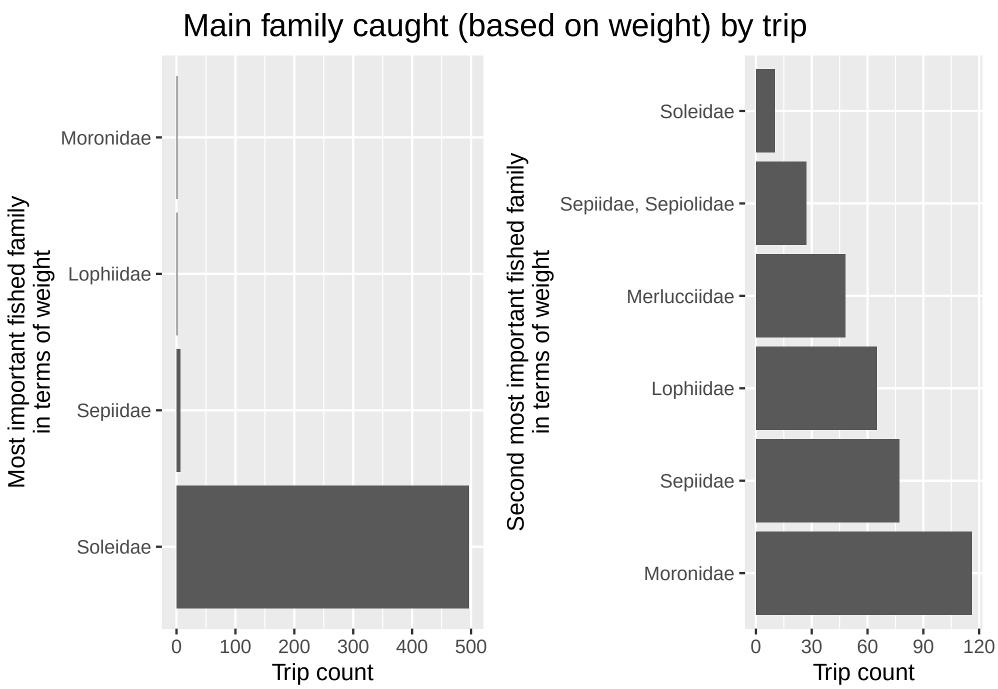
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

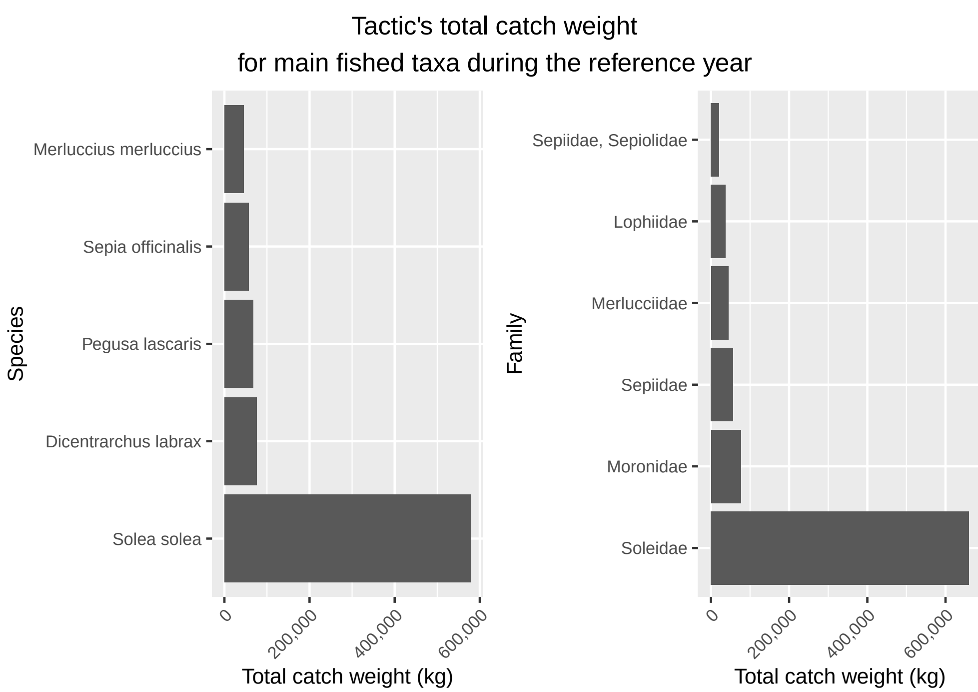


Main fished taxa and used gears during the reference year (2008)

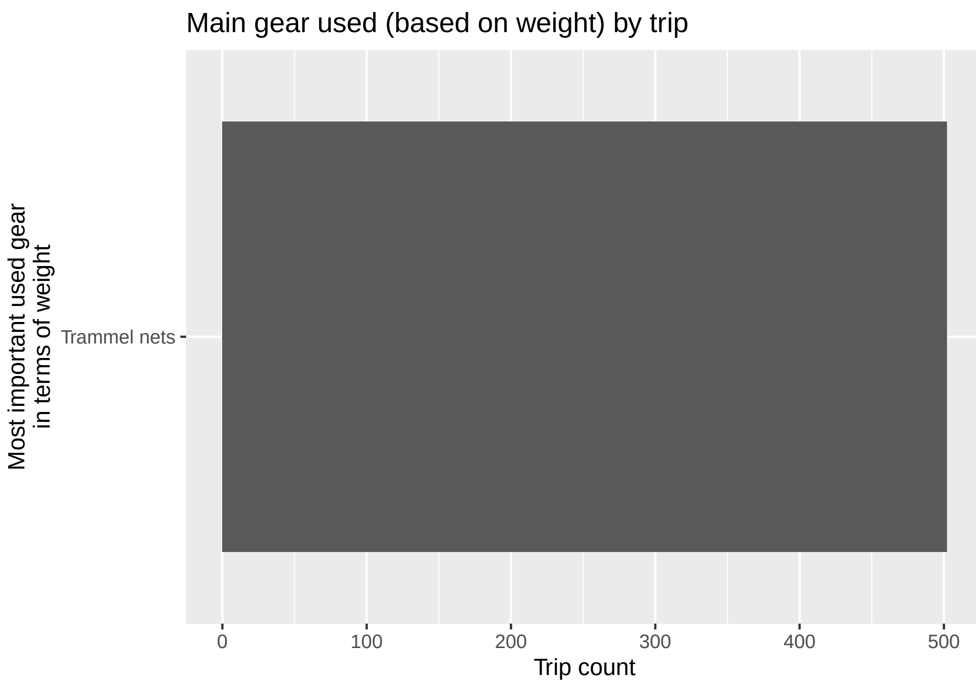
We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

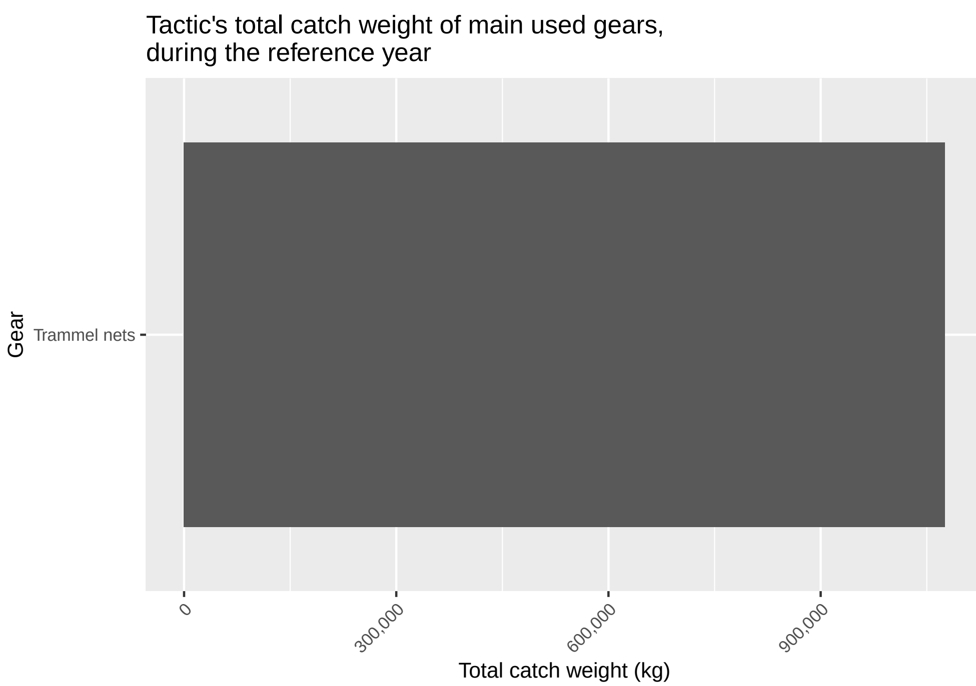






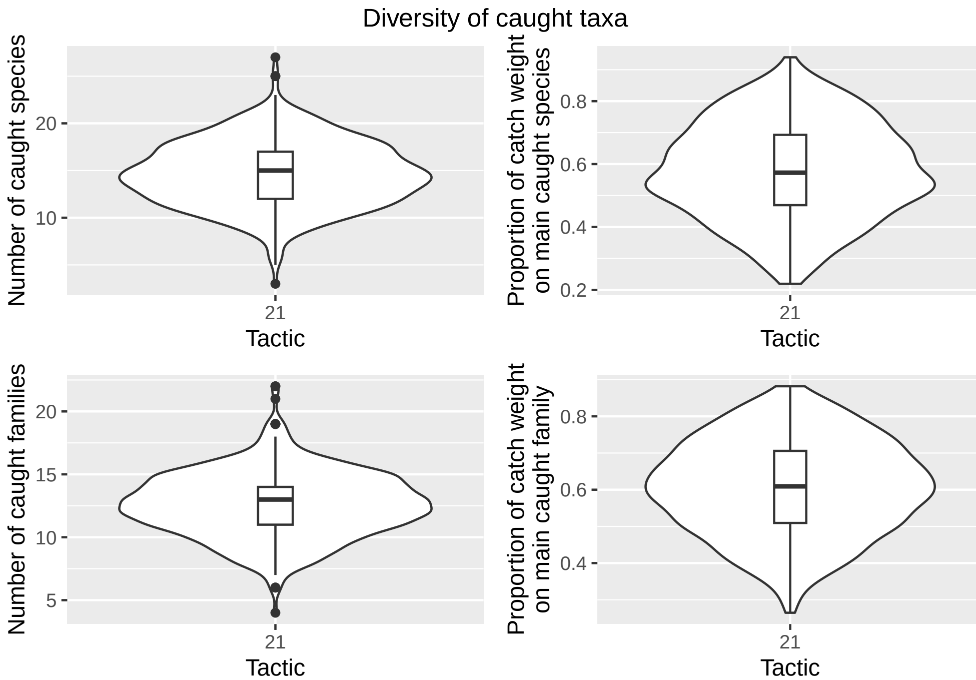
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



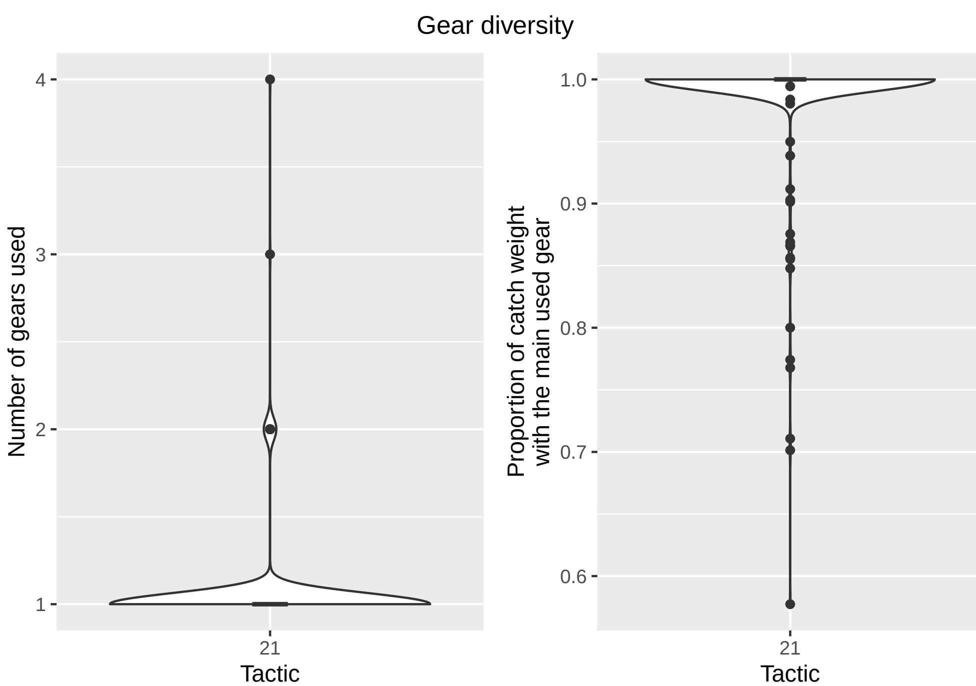


Diversity of fished taxa and used gears during the reference year (2008)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

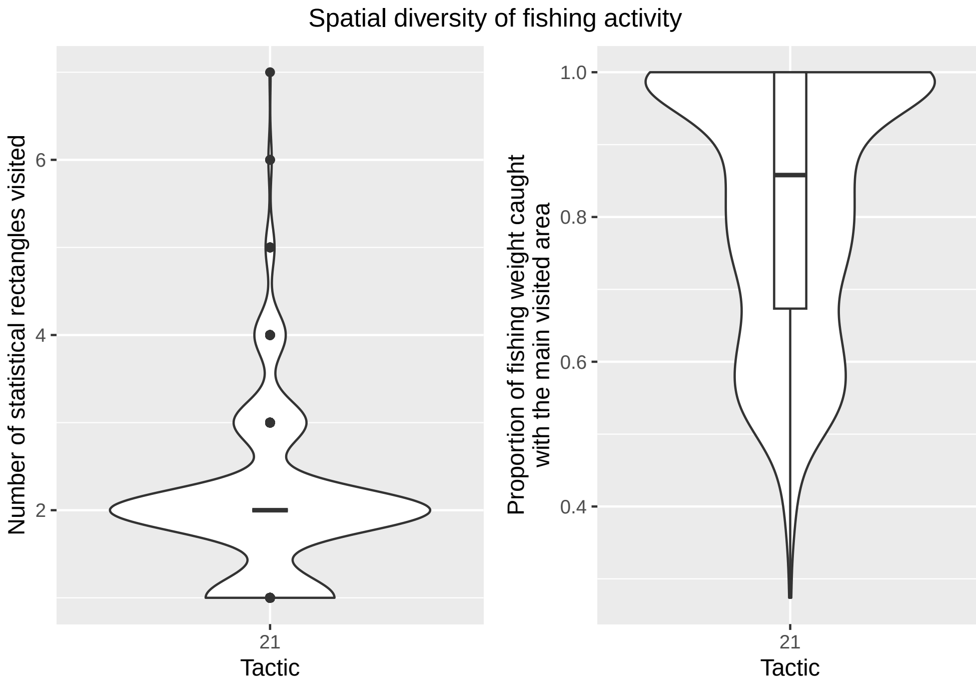


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

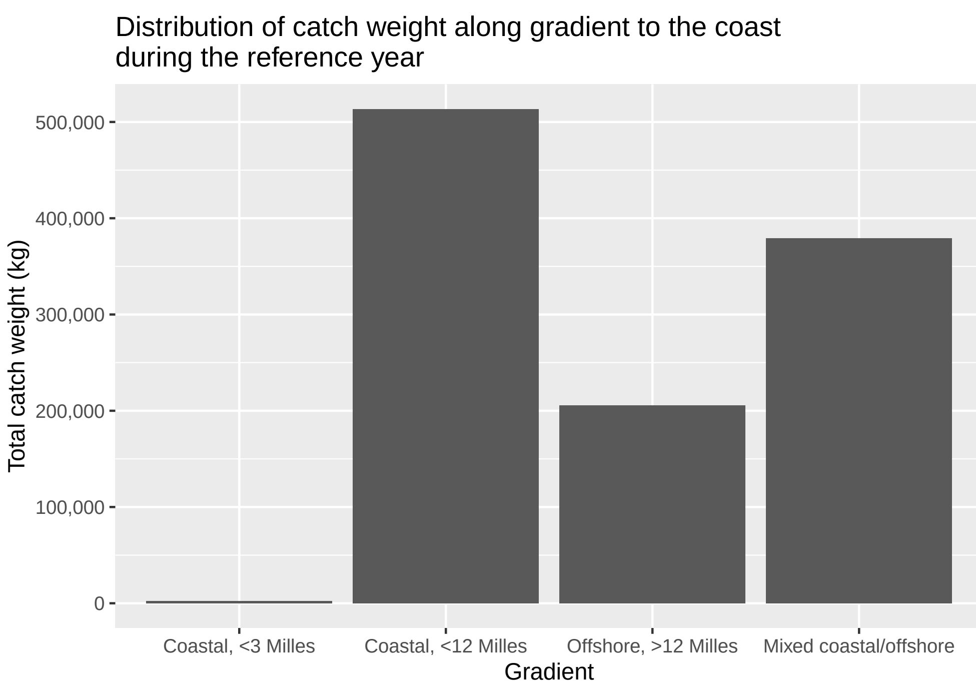


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.



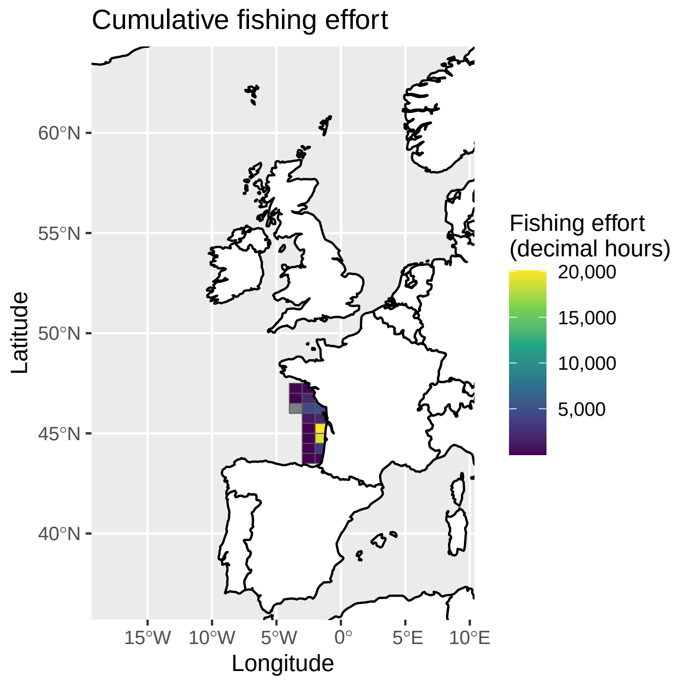
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.

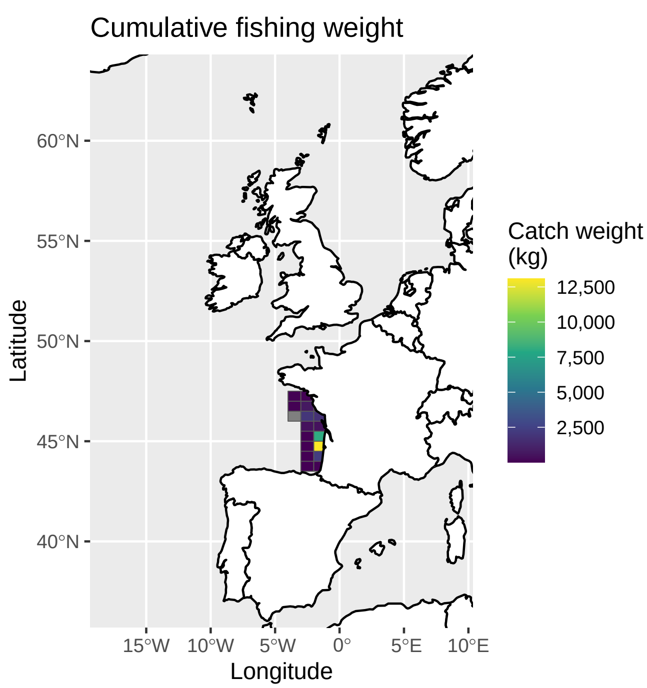


Maps of fishing activity distribution during the reference year (2008)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing

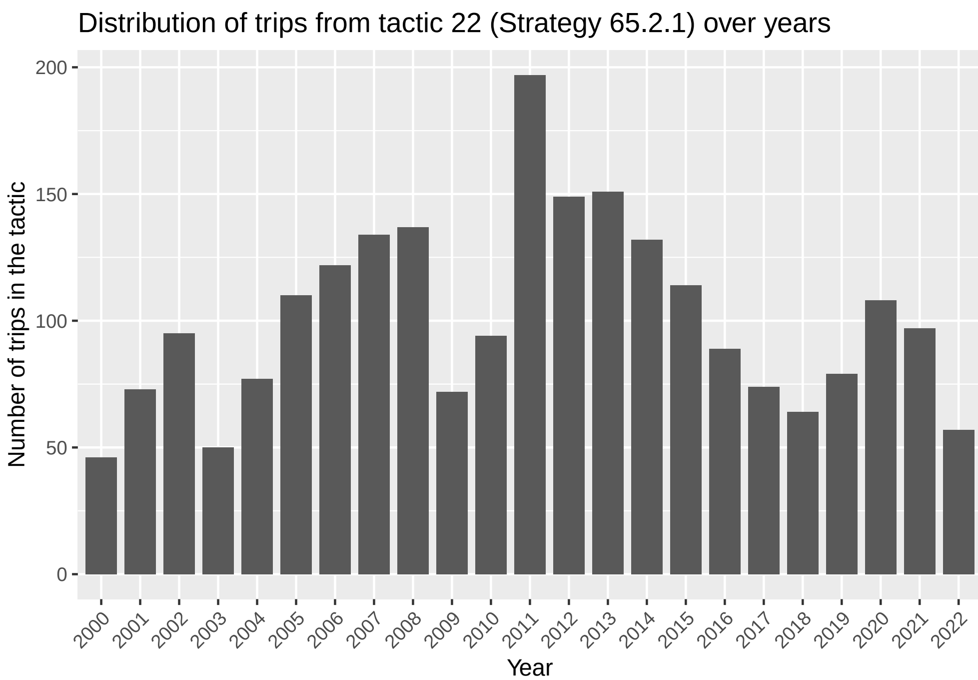
weight/effort are available.





Tactic 22 (Strategy 65.2.1)

This tactic includes N=2321 fishing trips. There are N=72 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2011.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 31: Tactic 22 (Strategy 65.2.1)

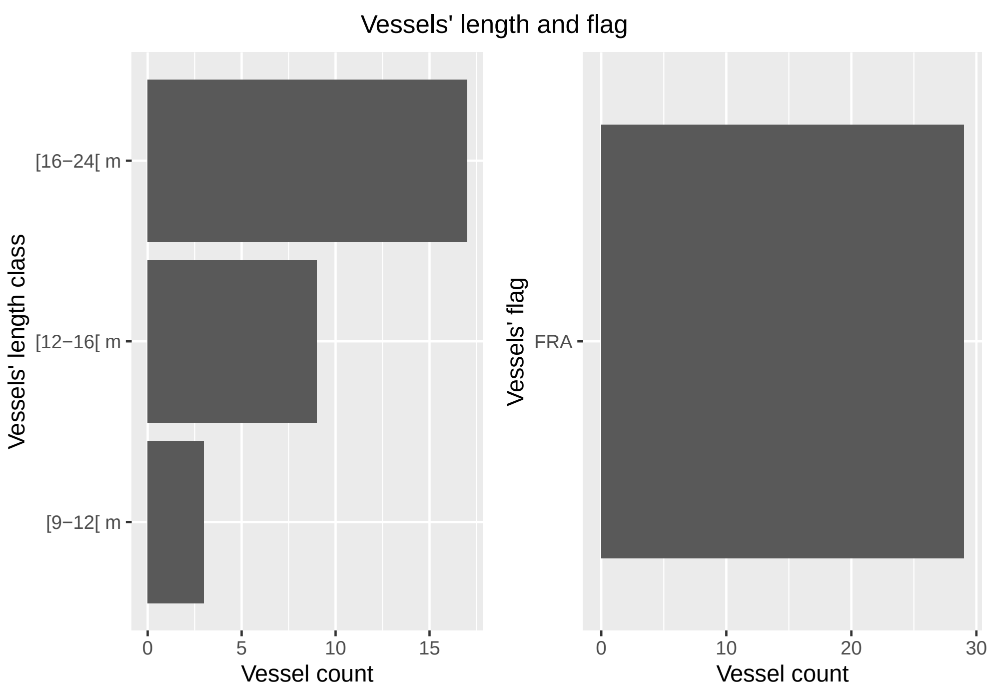
Importance	Variable	Value
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
	ISSCAAP	31
Determinant (>95%)	Gear	Trammel nets
	ICES division	27.8.b
Predominant (>65%)	Trimester	1
	Family	Scophthalmidae
Strong component (>35%)	Statistic rectangle	19E8
	Family	Gadidae
	Order	Gadiformes
	ISSCAAP	32
	ICES division	27.8.a
		01
Component (>20%)	Month	02
	Sp.	Spondyliosoma cantharus
	Spp.	Dicentrarchus spp
	Family	Sparidae
	Order	Perciformes
		18E8
		20E7
	Statistic rectangle	20E8
		03
	Month	12
		3

Table 31: Tactic 22 (Strategy 65.2.1) *(continued)*

Importance	Variable	Value
Minor component (>5%)	Trimester	4
	value__weight	TRUE
	value__eco	TRUE
	sd__weight	TRUE
	sd__eco	TRUE
	div__val__spp	TRUE
	div__val__family	TRUE
	div__val__order	TRUE
	div__val__isscaap	TRUE
	value__temp	TRUE
High values (>SD)	sd__temp	TRUE
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
Categories with high values (>SD)	ISSCAAP	31

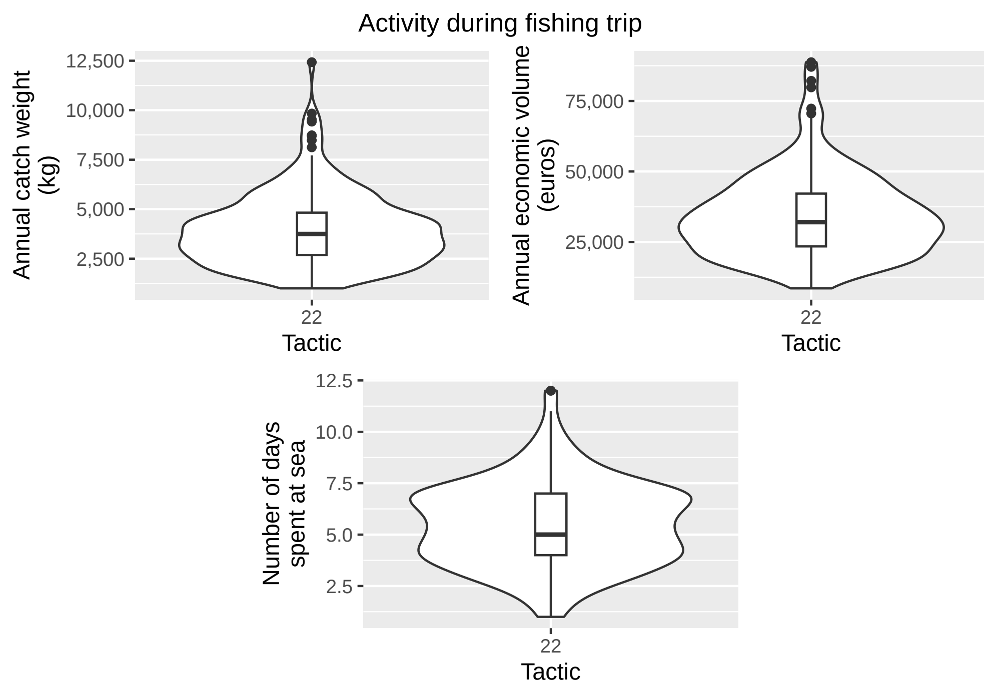
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2011)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

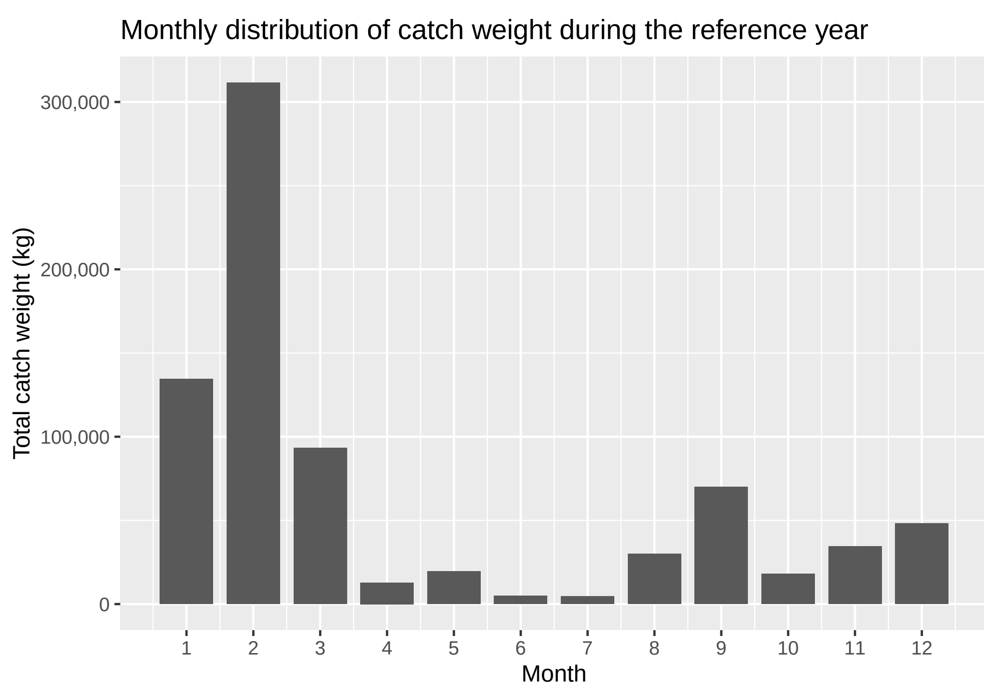


Description of the volume and pattern of fishing activities during the reference year (2011)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



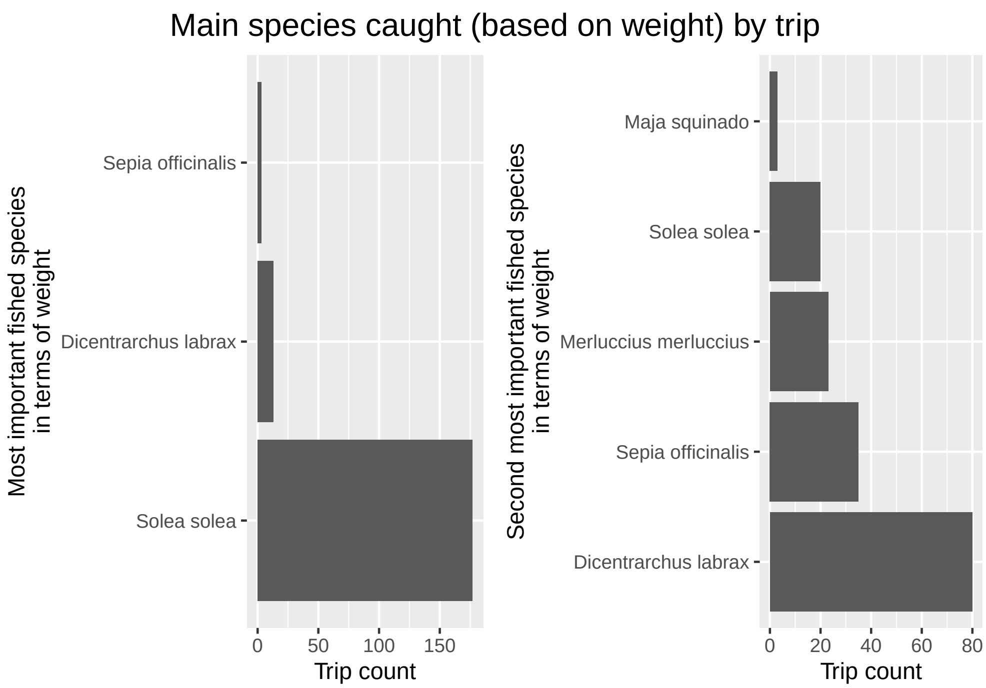
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

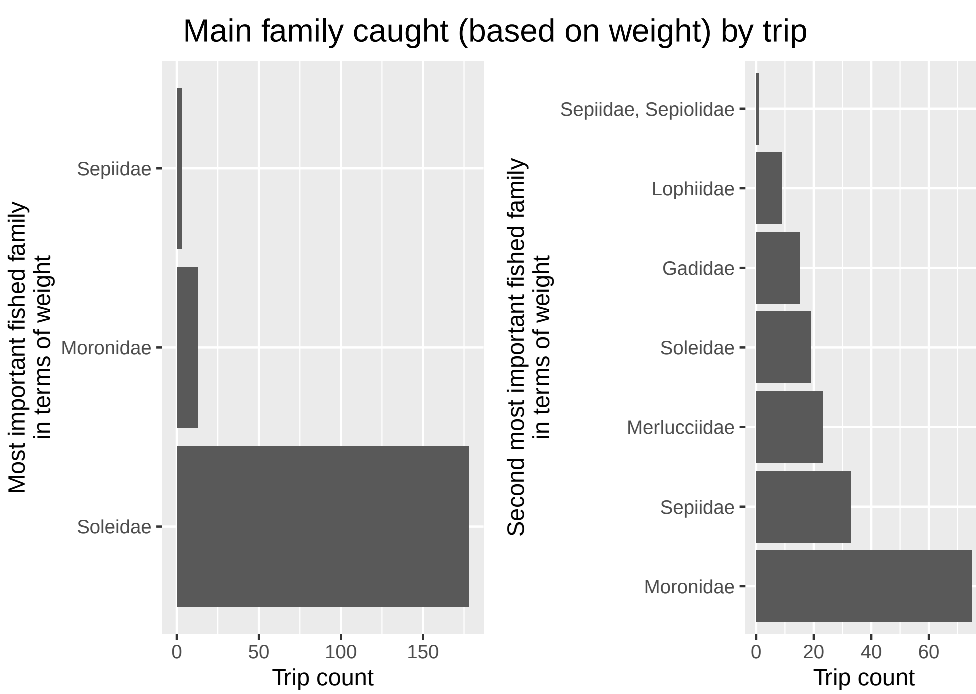


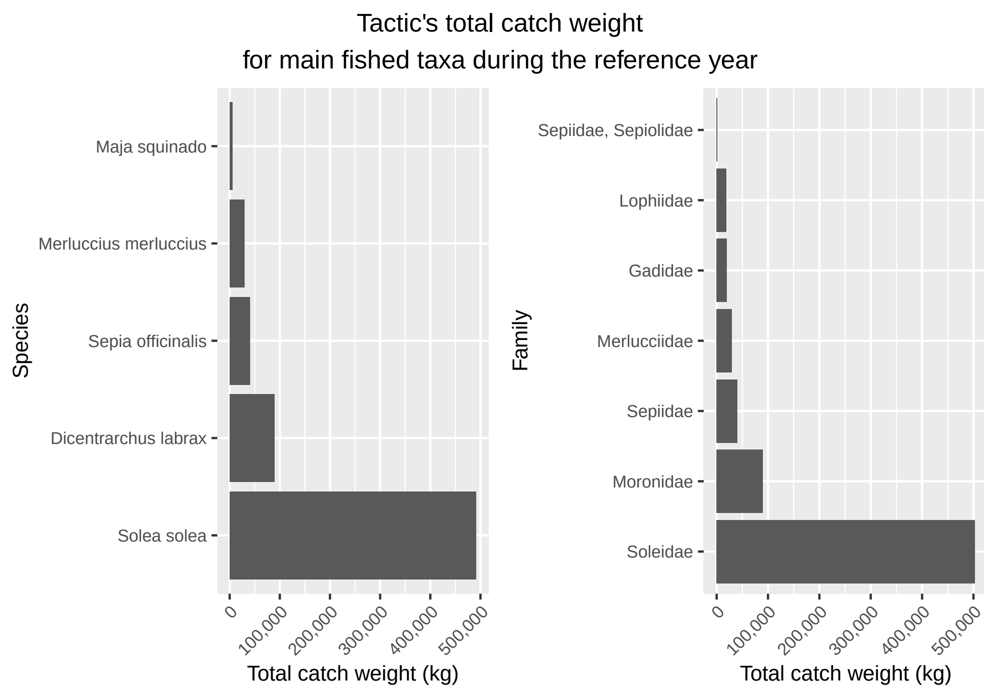
Main fished taxa and used gears during the reference year (2011)

We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

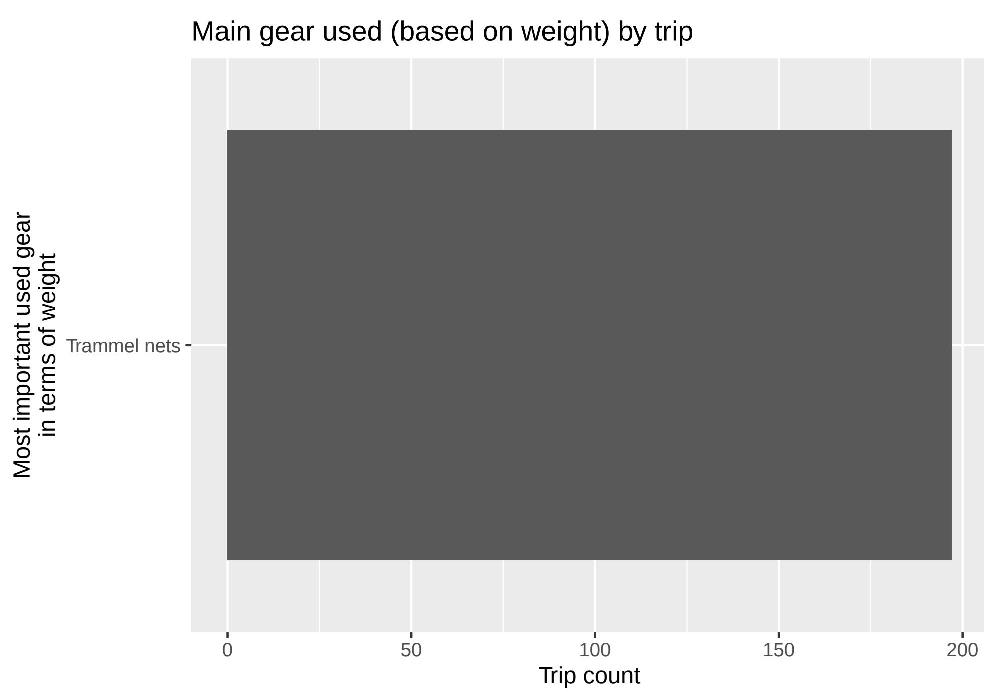
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

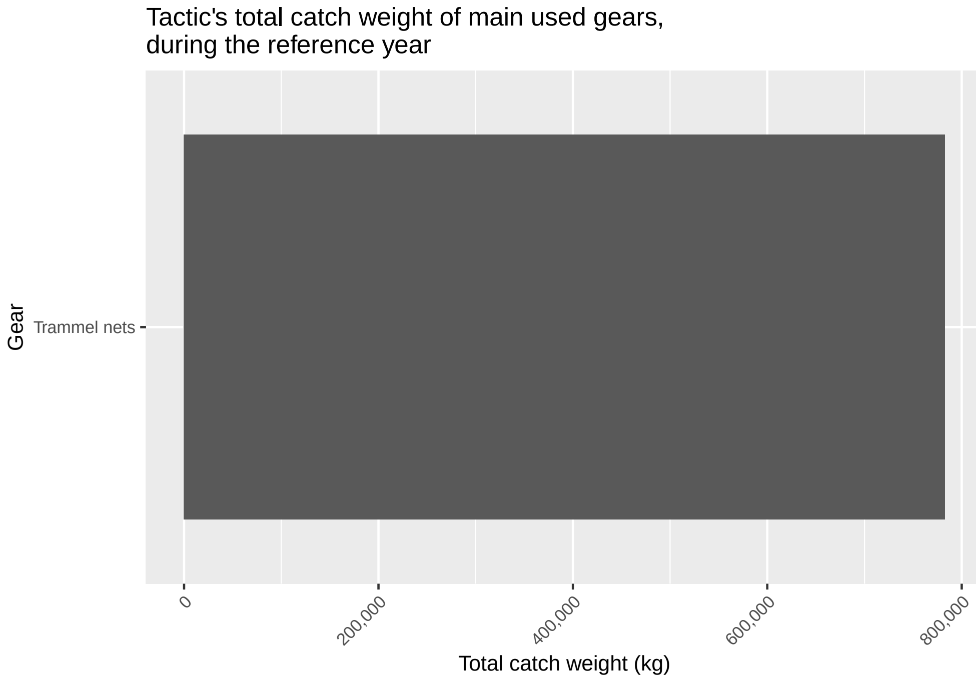






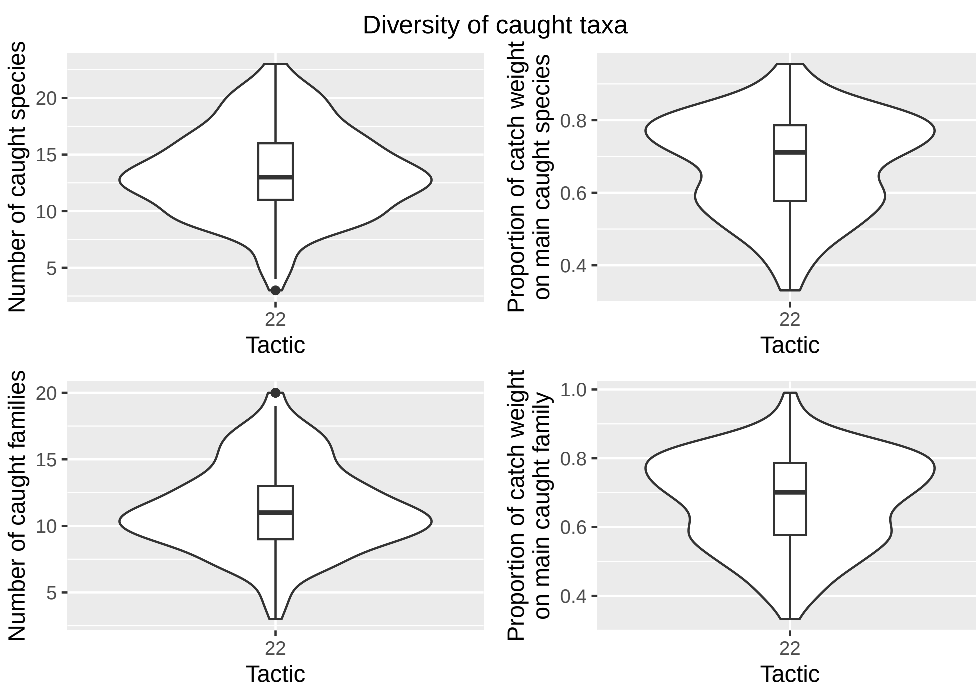
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



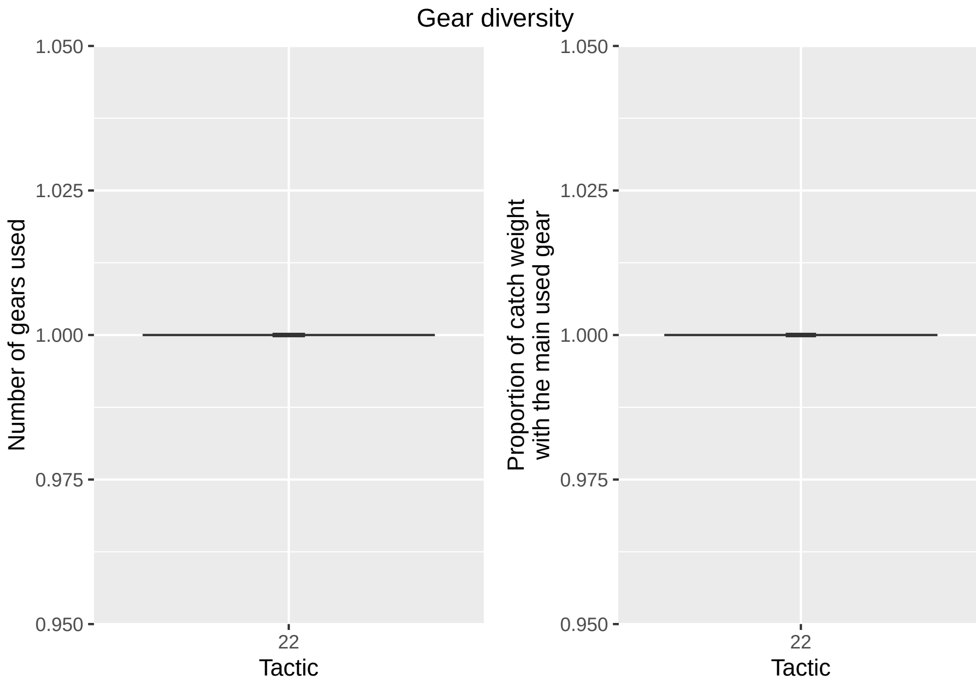


Diversity of fished taxa and used gears during the reference year (2011)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

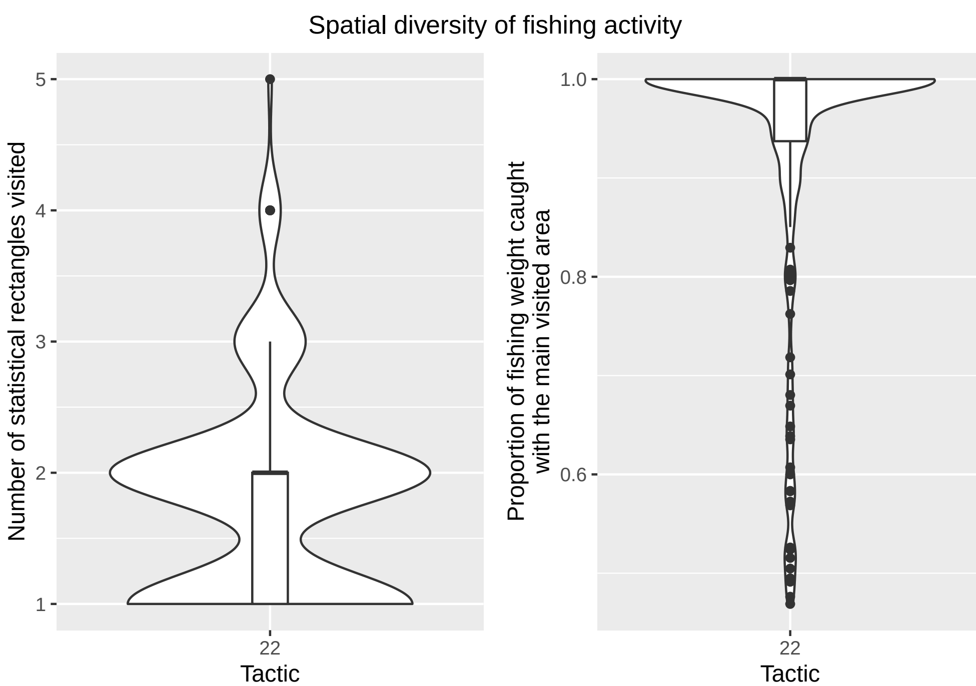


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

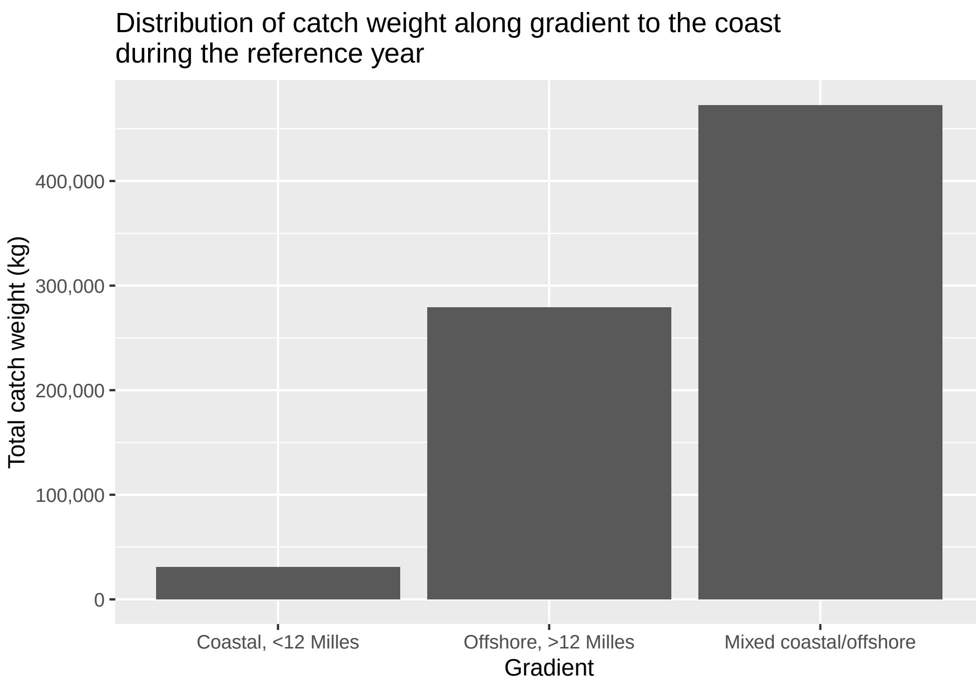


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

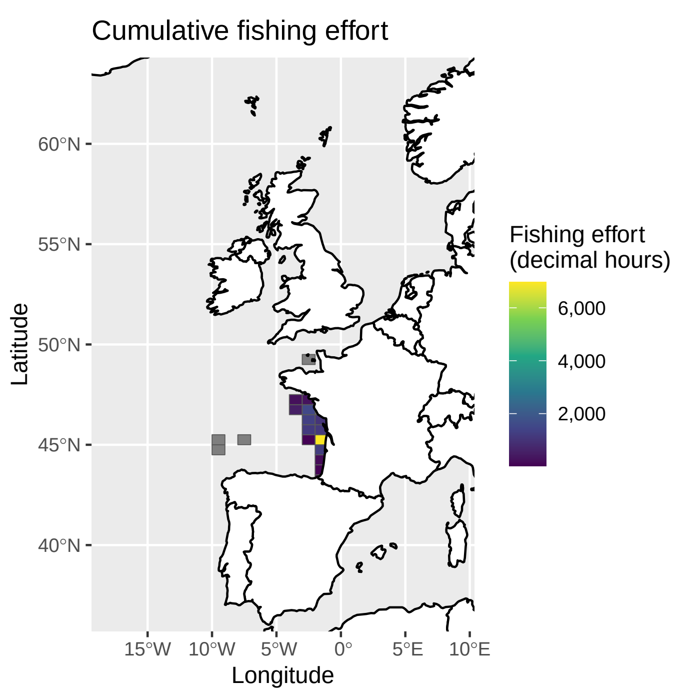


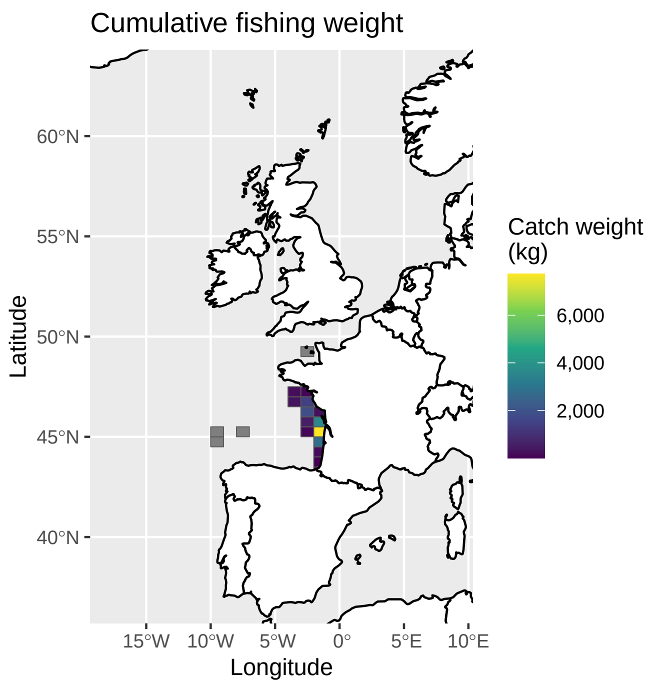
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2011)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.

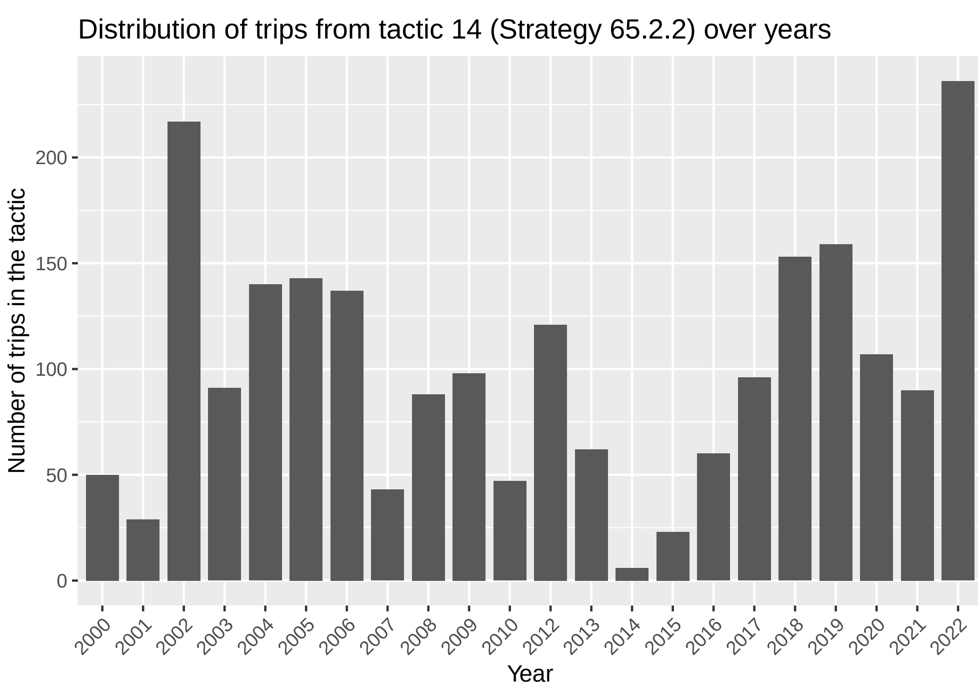




Within strategy 65.2.2

Tactic 14 (Strategy 65.2.2)

This tactic includes N=2196 fishing trips. There are N=61 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2022.

Description table

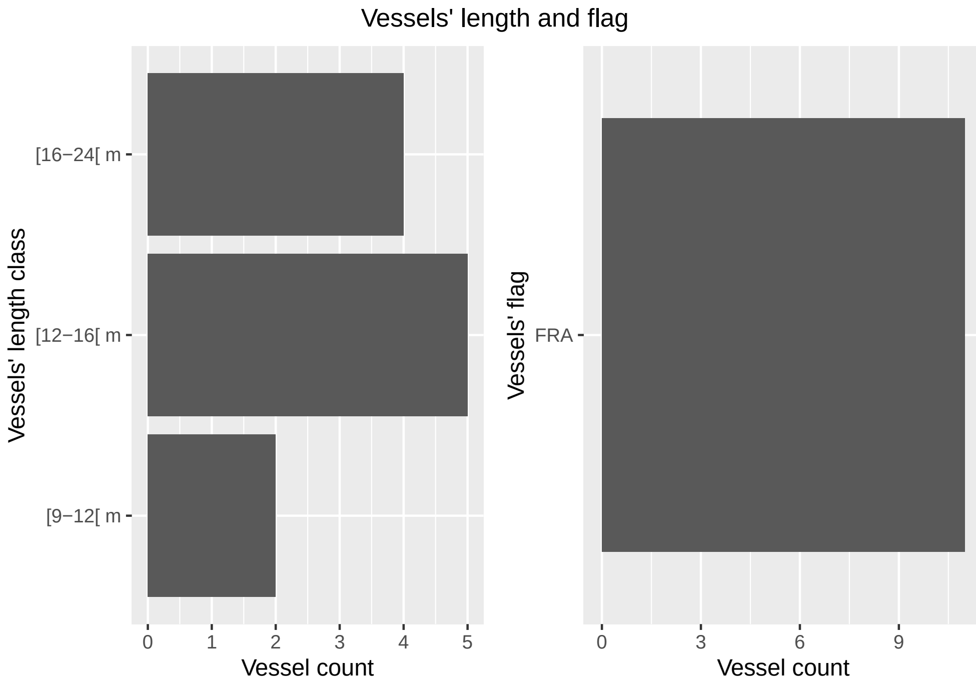
This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 32: Tactic 14 (Strategy 65.2.2)

Importance	Variable	Value
	Order	Gadiformes
Determinant (>95%)	ISSCAAP	32
	Spp.	Merluccius spp
	Family	Merlucciidae
	Gear	Set gillnets (anchored)
Predominant (>65%)	ICES division	27.8.a
Major (>50%)	Family	Gadidae
	Sp.	Trisopterus luscus
Strong component (>35%)	Trimester	3
	Sp.	Pollachius pollachius
	ICES division	27.8.b
	Statistic rectangle	23E6
		2
Component (>20%)	Trimester	4
		Carcharhiniformes
	Order	Perciformes
	ISSCAAP	38
		Set longlines
	Gear	Trammel nets
		16E8
		21E7
		22E6
		22E7
		23E5
	Statistic rectangle	24E5
		04
		05
		06
		07
		08
		09
		10
	Month	11
Minor component (>5%)	Trimester	1
	main__prop__order	TRUE
High values (>SD)	main__prop__isscaap	TRUE
	Family	Merlucciidae
	Order	Gadiformes
Categories with high values (>SD)	ISSCAAP	32

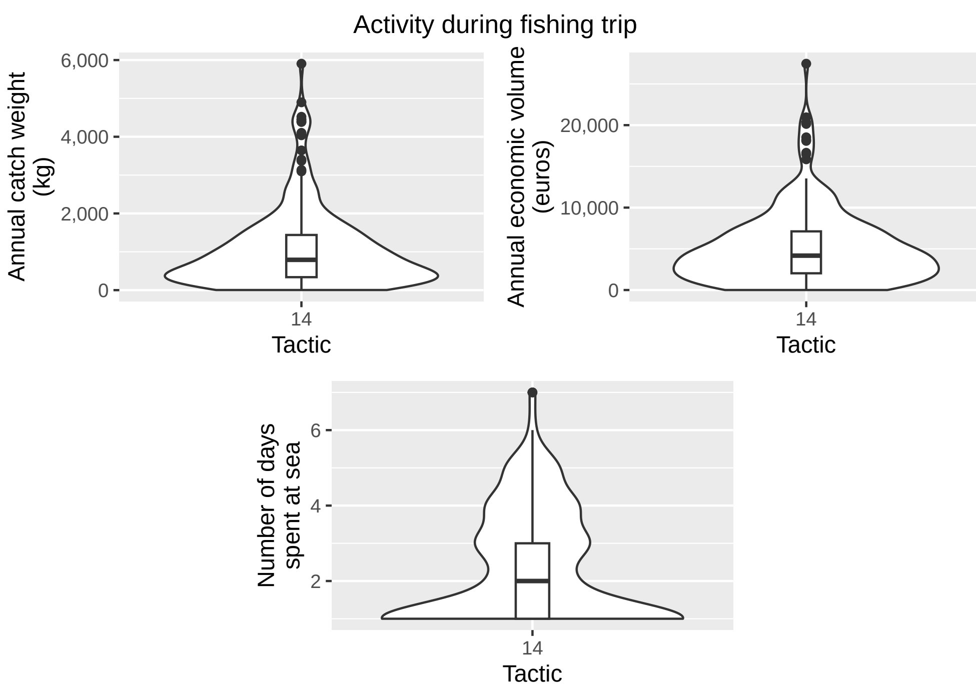
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2022)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

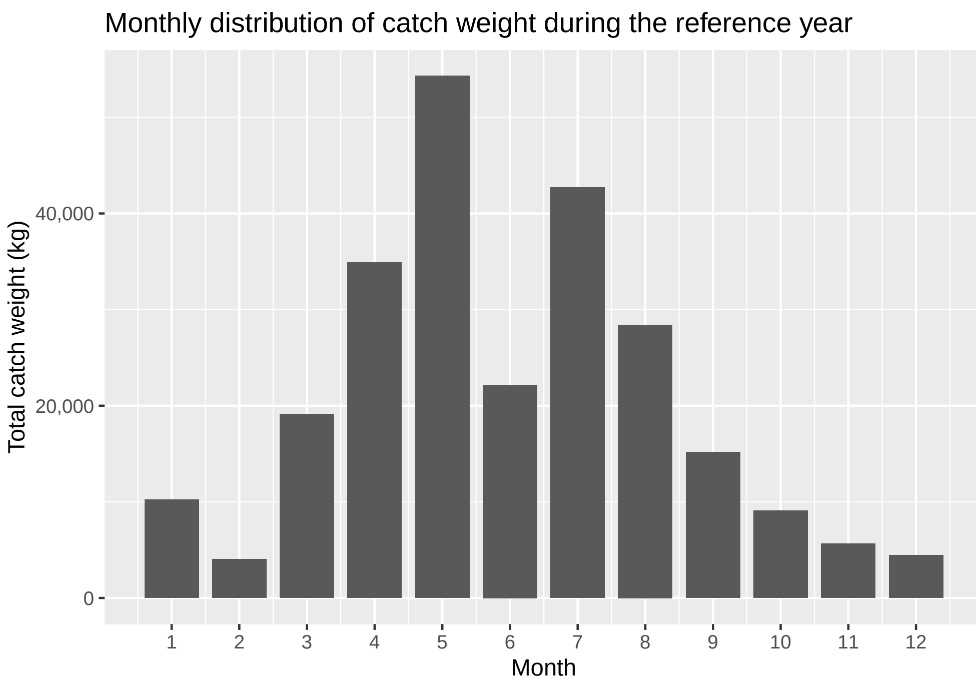


Description of the volume and pattern of fishing activities during the reference year (2022)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.

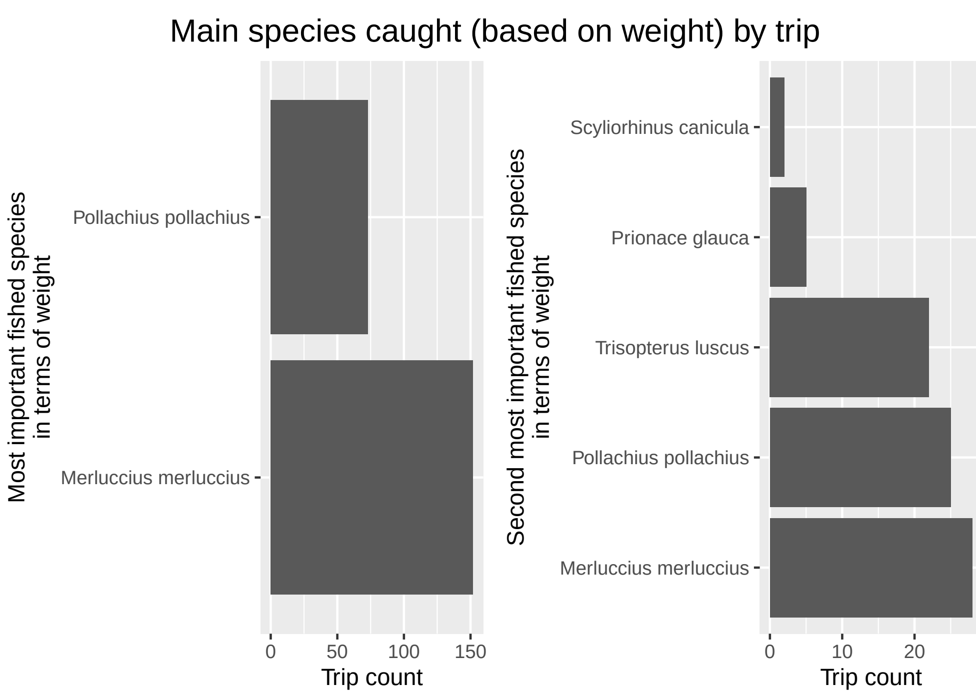


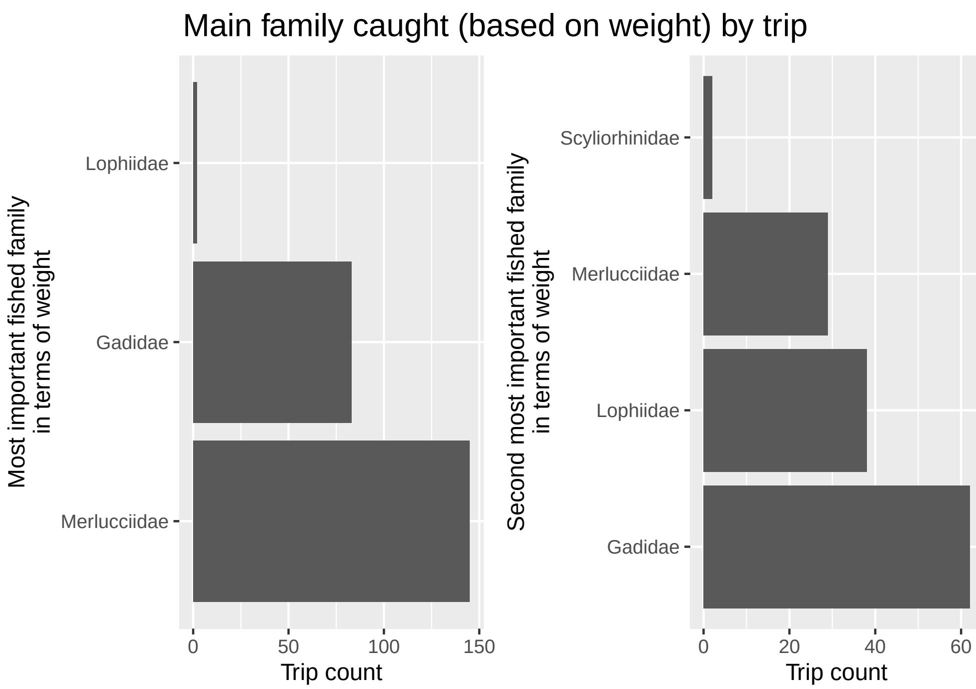
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

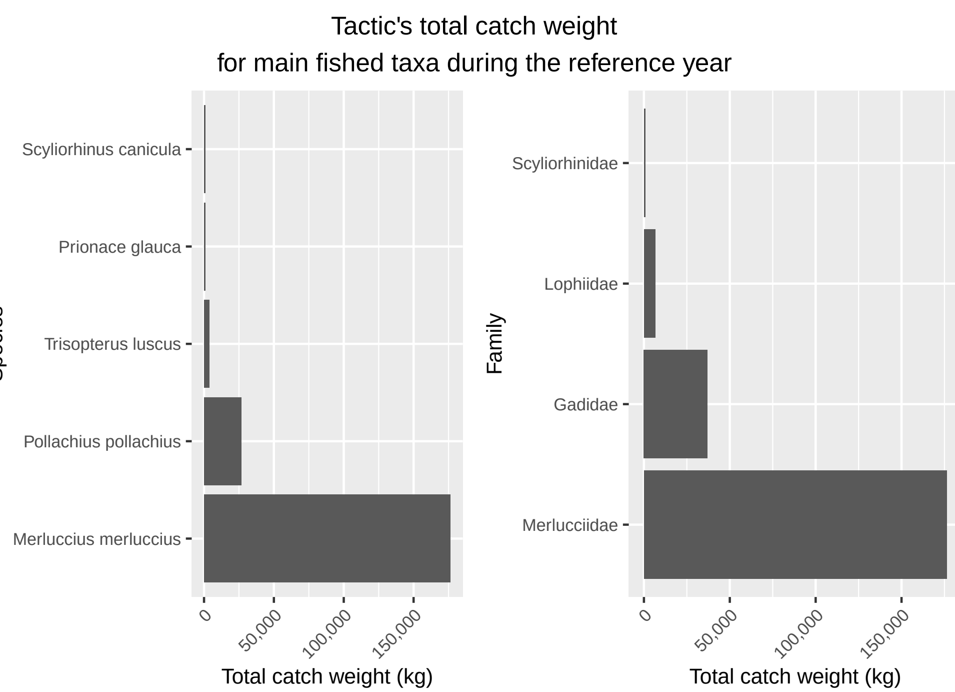


Main fished taxa and used gears during the reference year (2022)

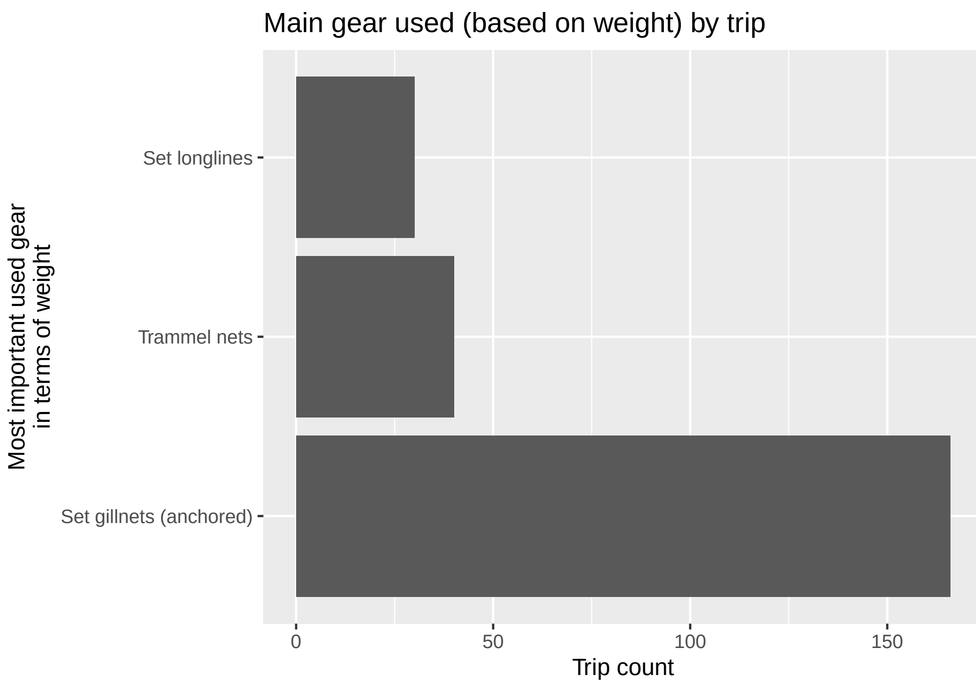
We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

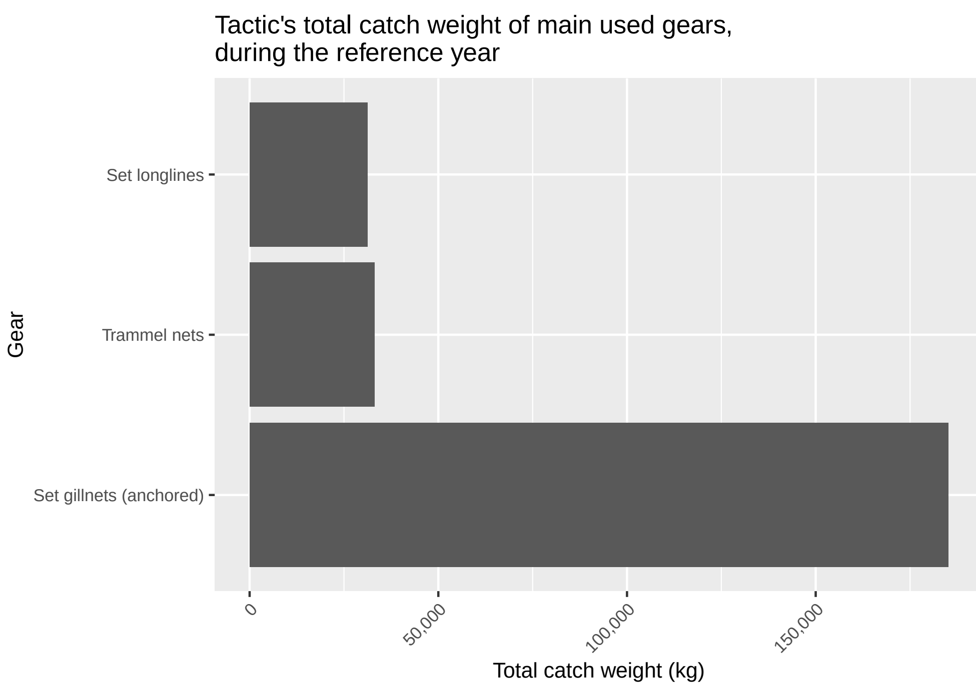






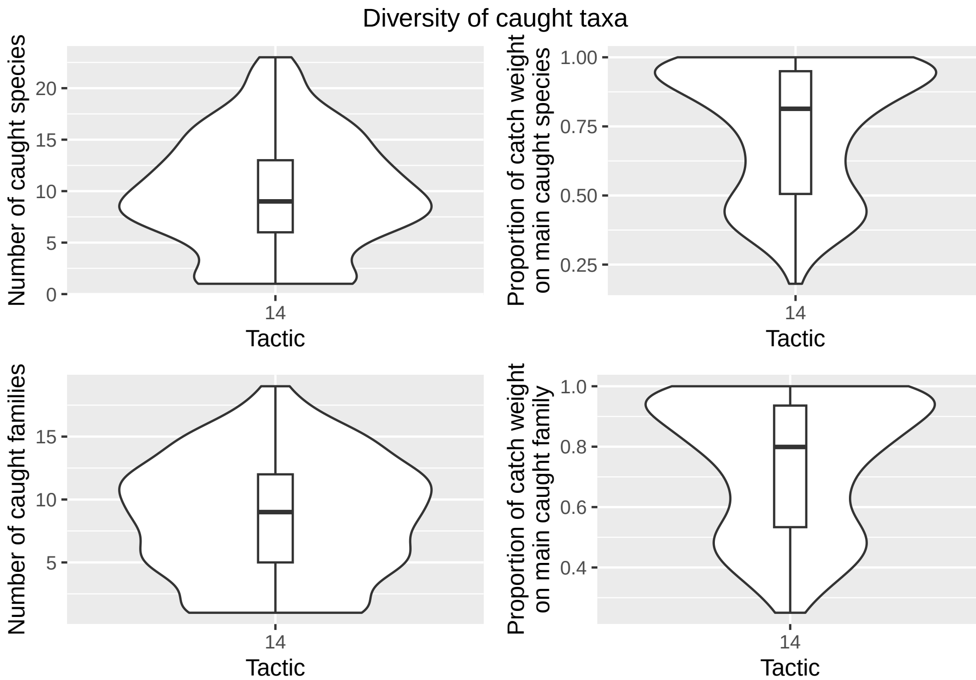
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



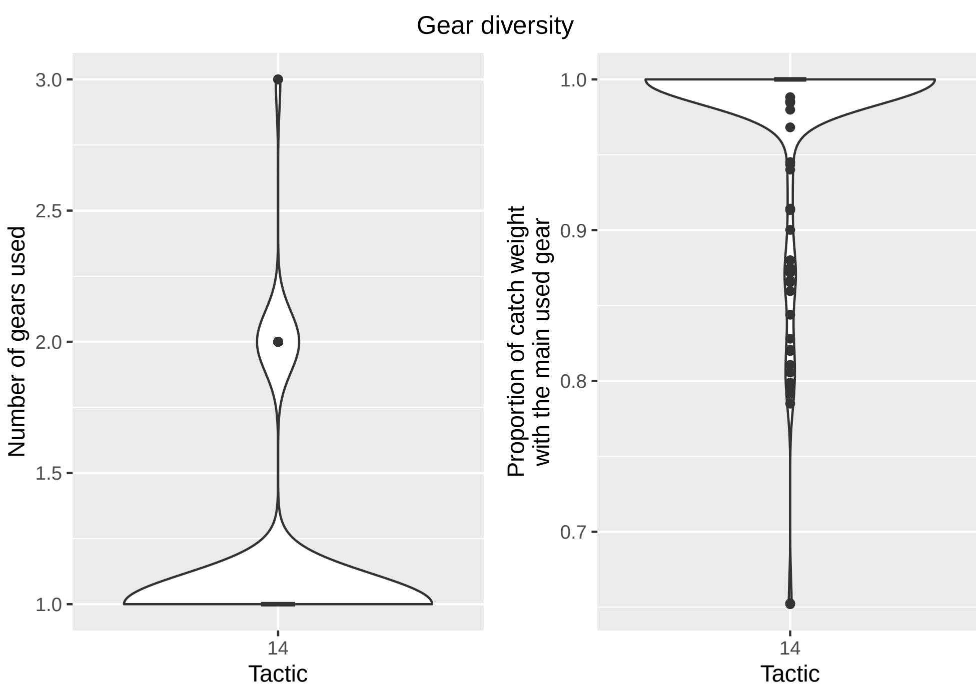


Diversity of fished taxa and used gears during the reference year (2022)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

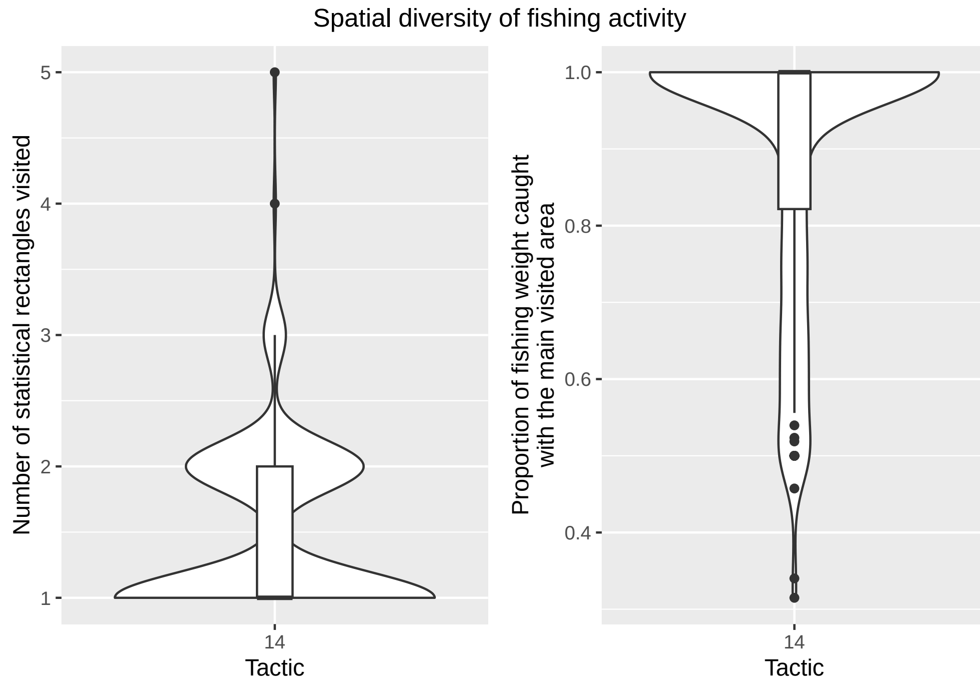


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

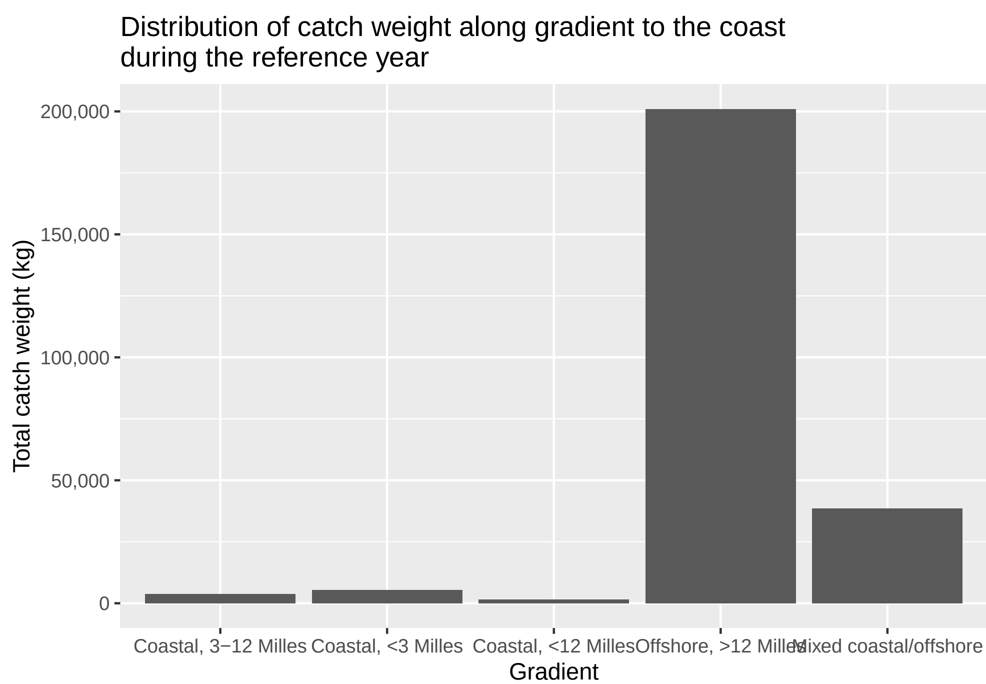


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.



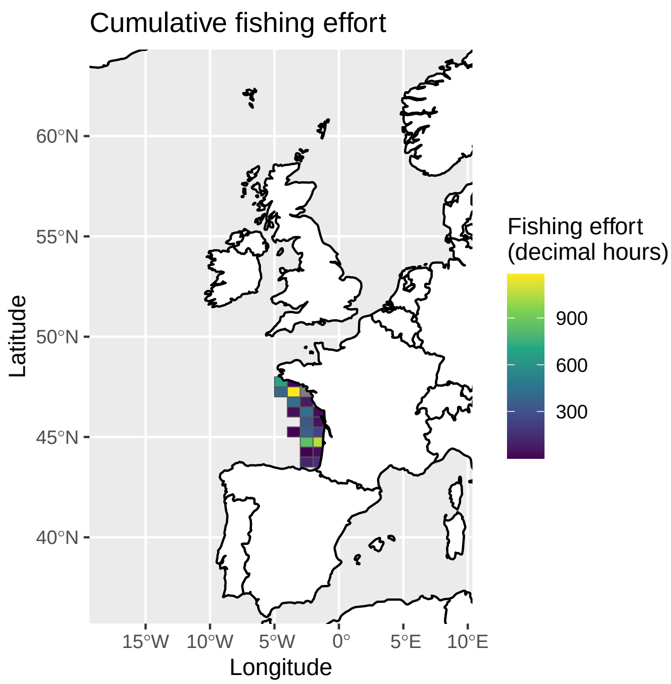
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.

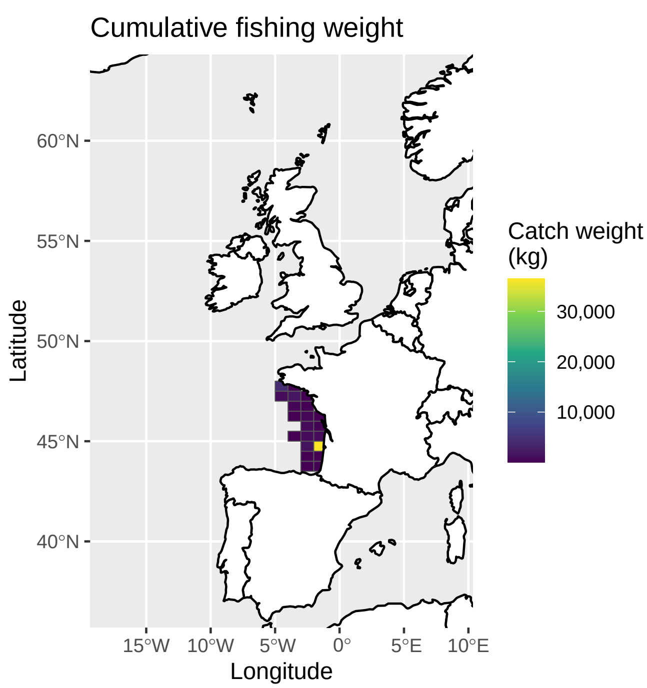


Maps of fishing activity distribution during the reference year (2022)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing

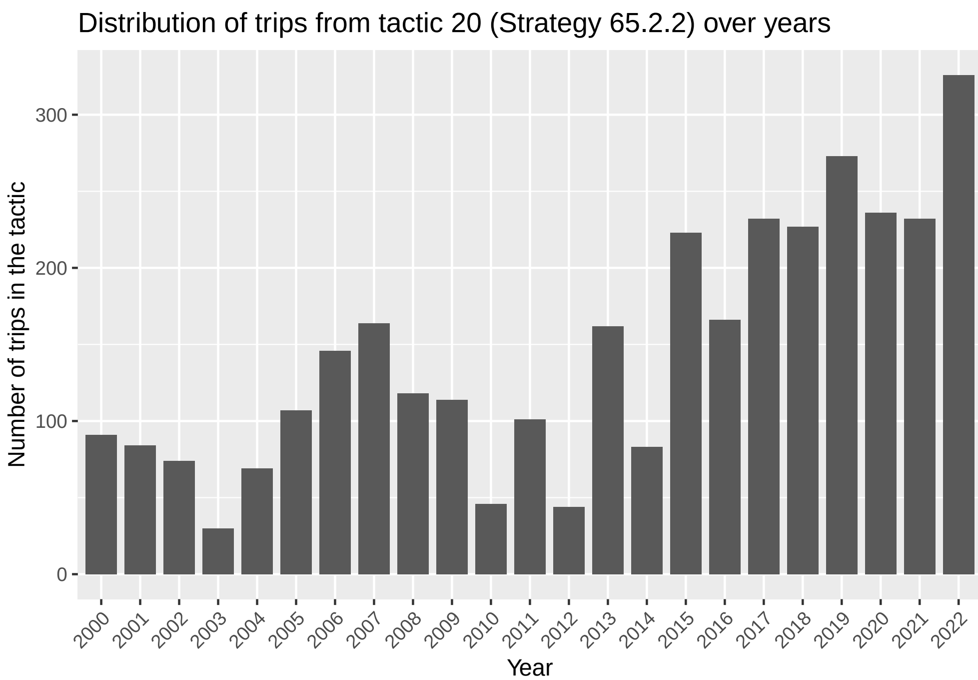
weight/effort are available.





Tactic 20 (Strategy 65.2.2)

This tactic includes N=3348 fishing trips. There are N=54 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2022.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 33: Tactic 20 (Strategy 65.2.2)

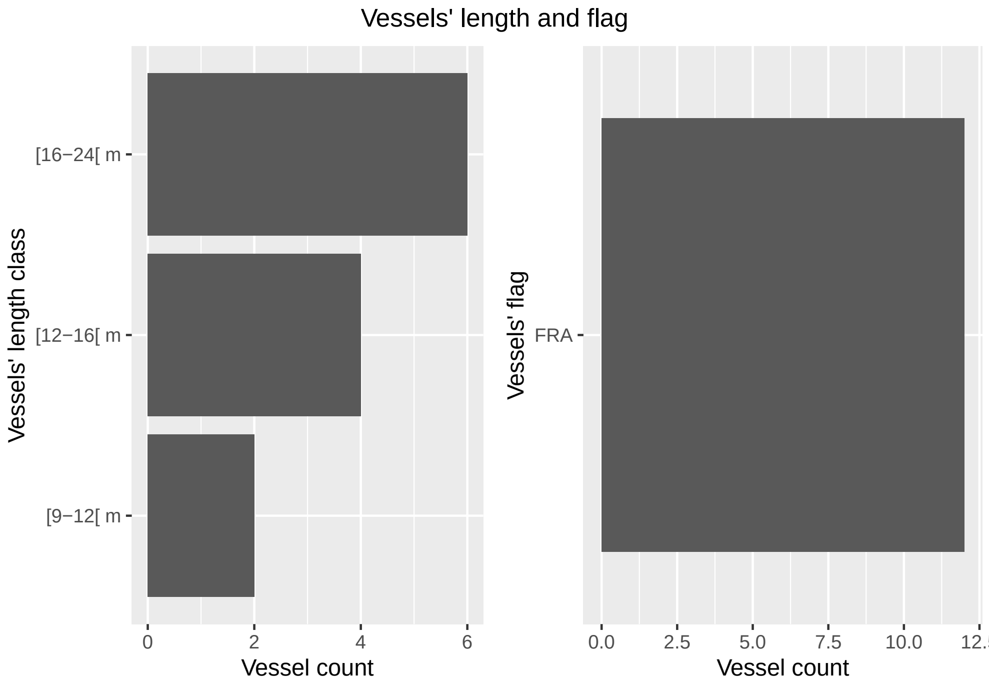
Importance	Variable	Value
	Spp.	Lophius spp
	Family	Lophiidae
	Order	Lophiiformes
	ISSCAAP	34
Predominant (>65%)	Gear	Trammel nets
	ICES division	27.8.a
Major (>50%)	Trimester	2
	Family	Scophthalmidae
	Order	Pleuronectiformes
	ISSCAAP	31
Strong component (>35%)	Trimester	3
	Sp.	Scophthalmus rhombus
	Order	Decapoda
	Gear	Set gillnets (anchored)
Component (>20%)	Month	06
		Cancer pagurus
	Sp.	Scophthalmus maximus
		Palinurus spp
	Spp.	Raja spp
	Sp.	Trisopterus luscus
	Spp.	Solea spp
		Cancridae
		Gadidae
		Palinuridae
		Rajidae

Table 33: Tactic 20 (Strategy 65.2.2) *(continued)*

Importance	Variable	Value
	Family	Soleidae
	Order	Gadiformes
		Perciformes
		Rajiformes
	ISSCAAP	32
		38
		42
		43
	ICES division	27.7.e
		27.8.b
	Statistic rectangle	19E7
		20E8
		21E7
		22E6
		22E7
		23E6
		27E5
Minor component (>5%)	Month	04
		05
		07
		08
		09
	Spp.	Lophius spp
	Sp.	Cancer pagurus
	Family	Cancridae
		Lophiidae
		Rajidae
	Order	Decapoda
		Lophiiformes
		Rajiformes
Categories with high values (>SD)	ISSCAAP	34

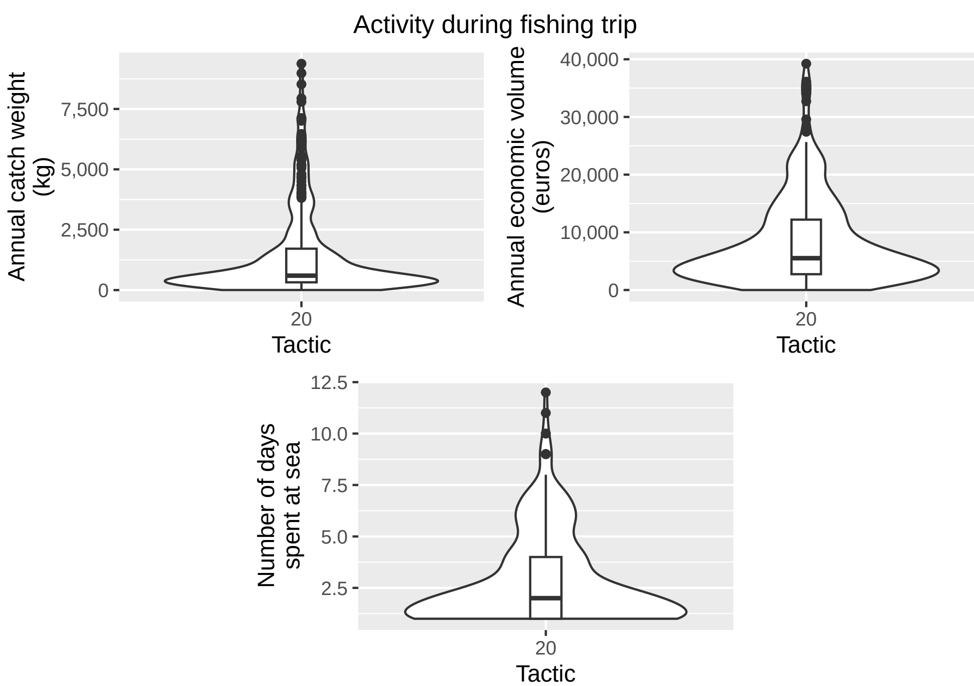
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2022)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

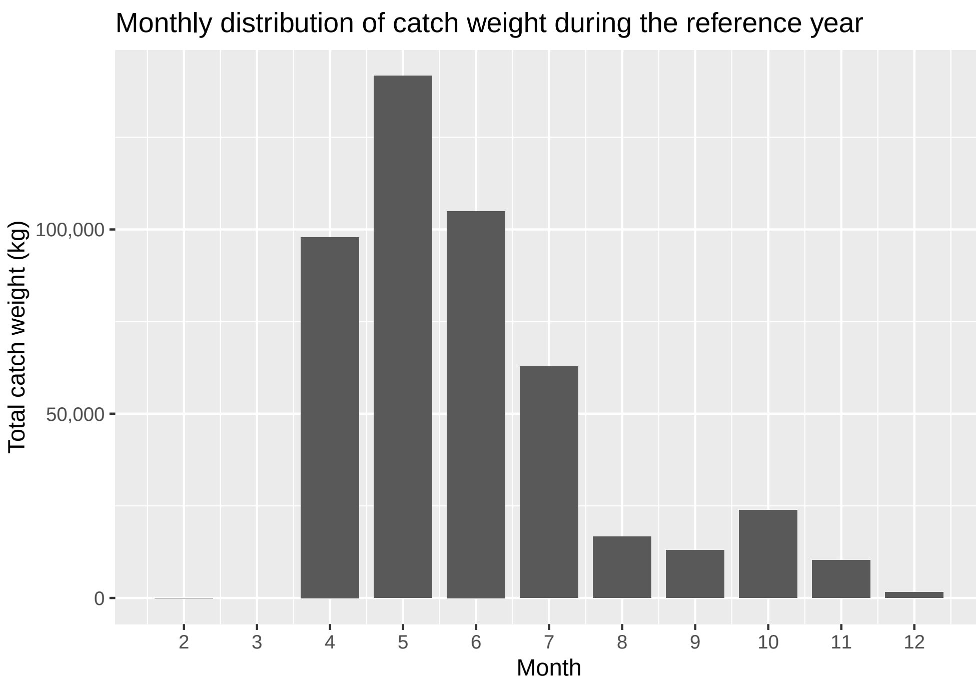


Description of the volume and pattern of fishing activities during the reference year (2022)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.

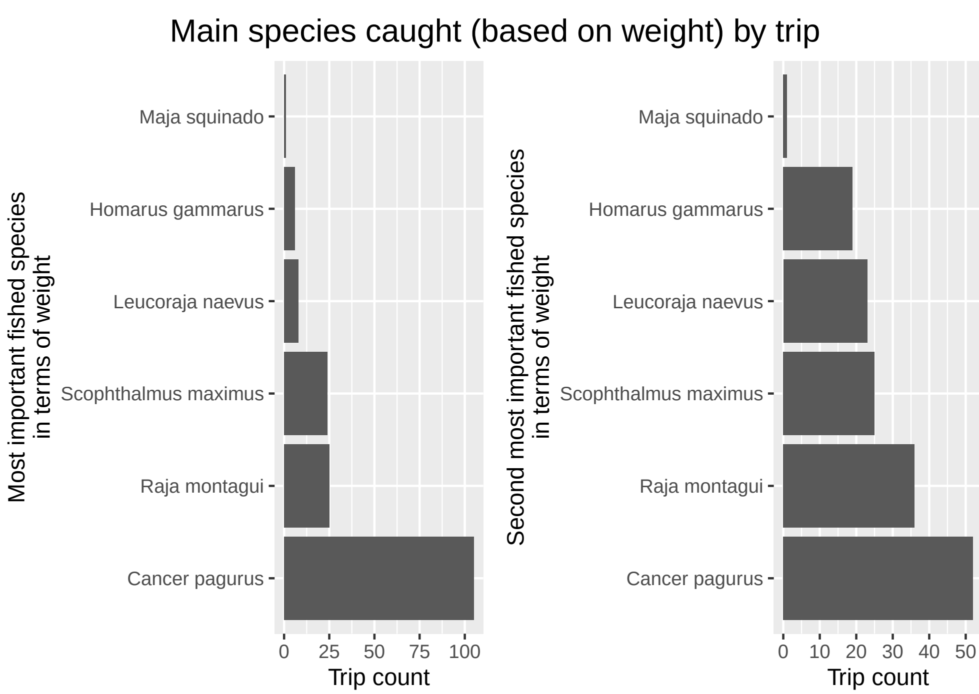


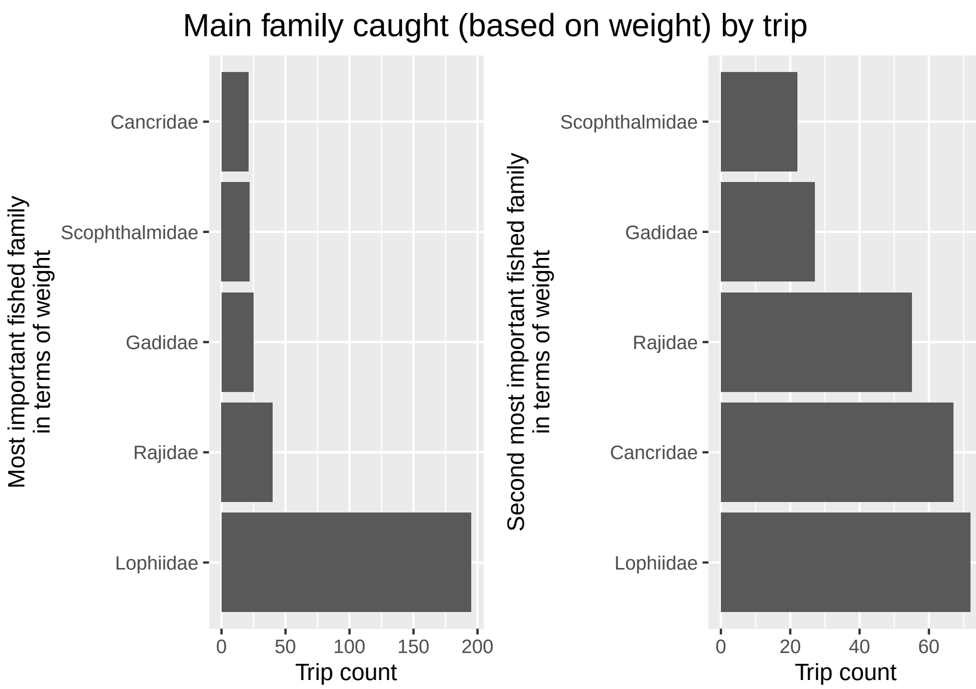
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

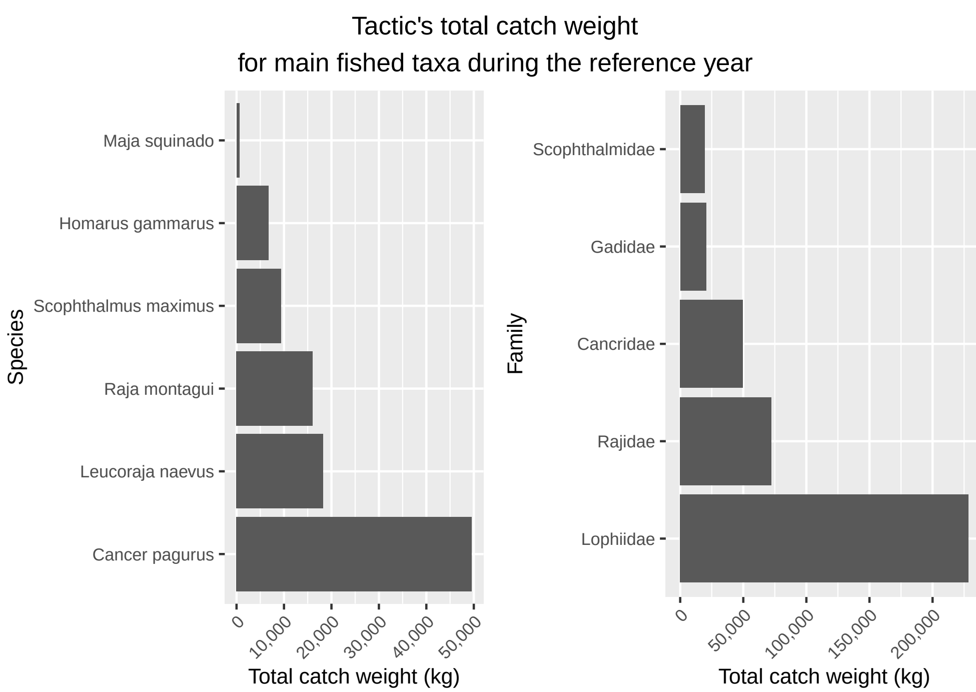


Main fished taxa and used gears during the reference year (2022)

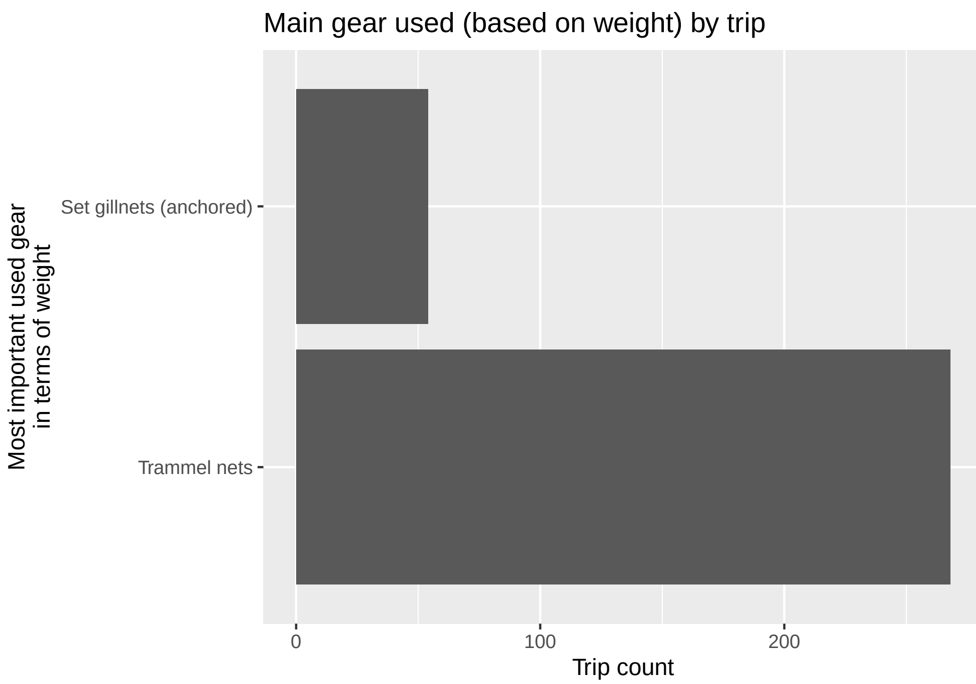
We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

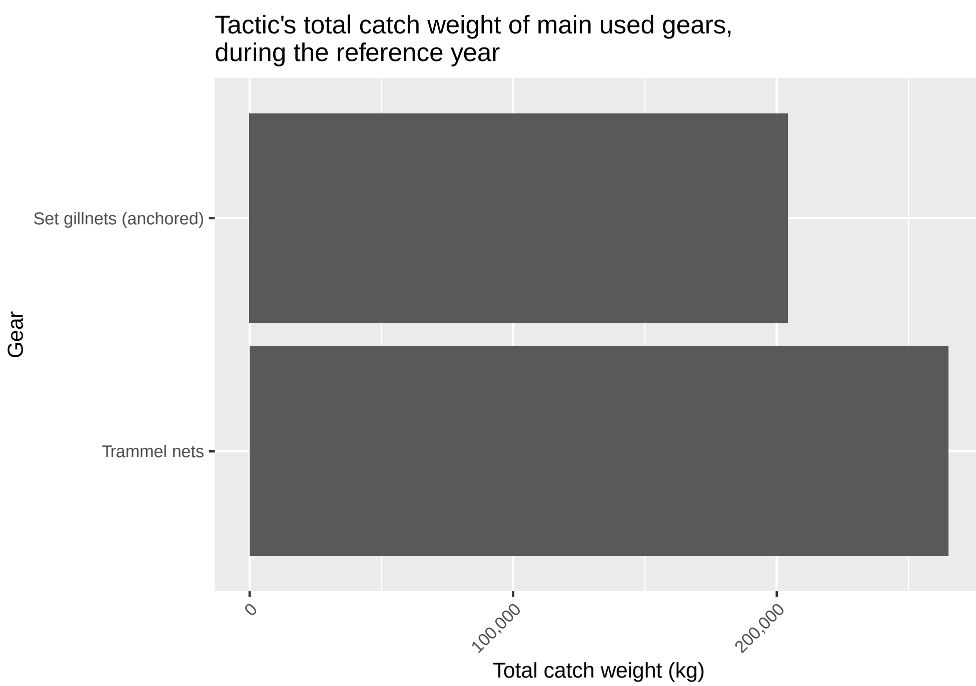






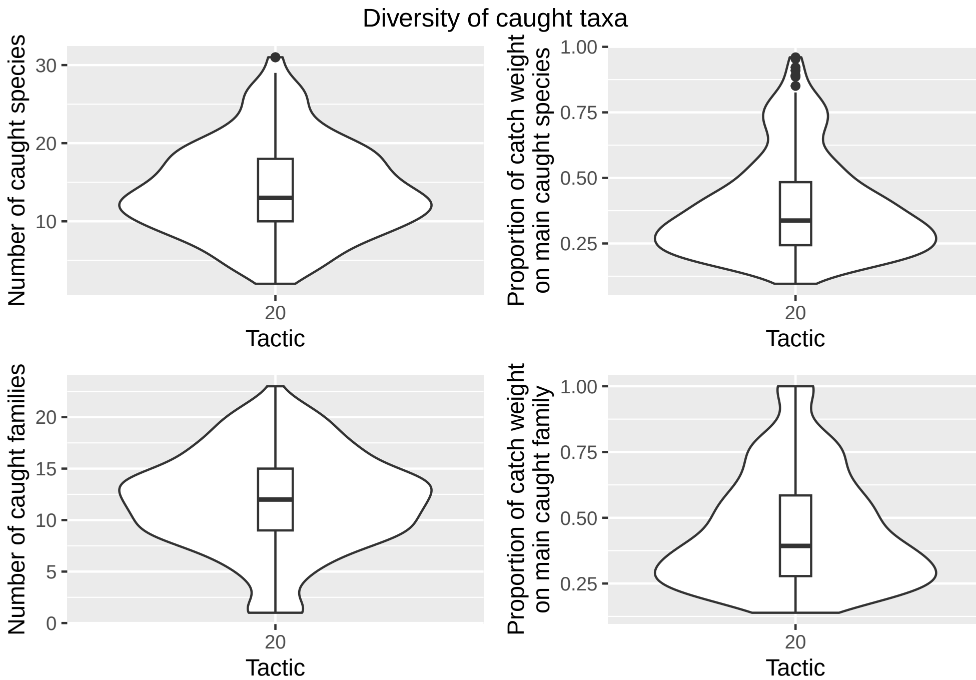
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



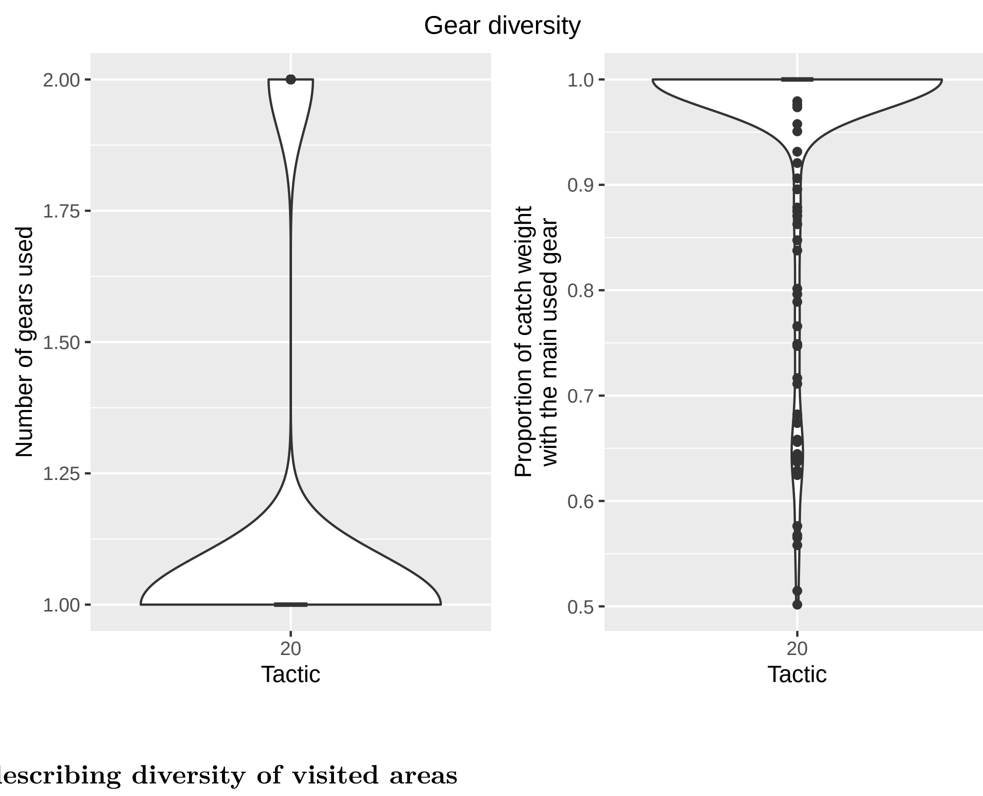


Diversity of fished taxa and used gears during the reference year (2022)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

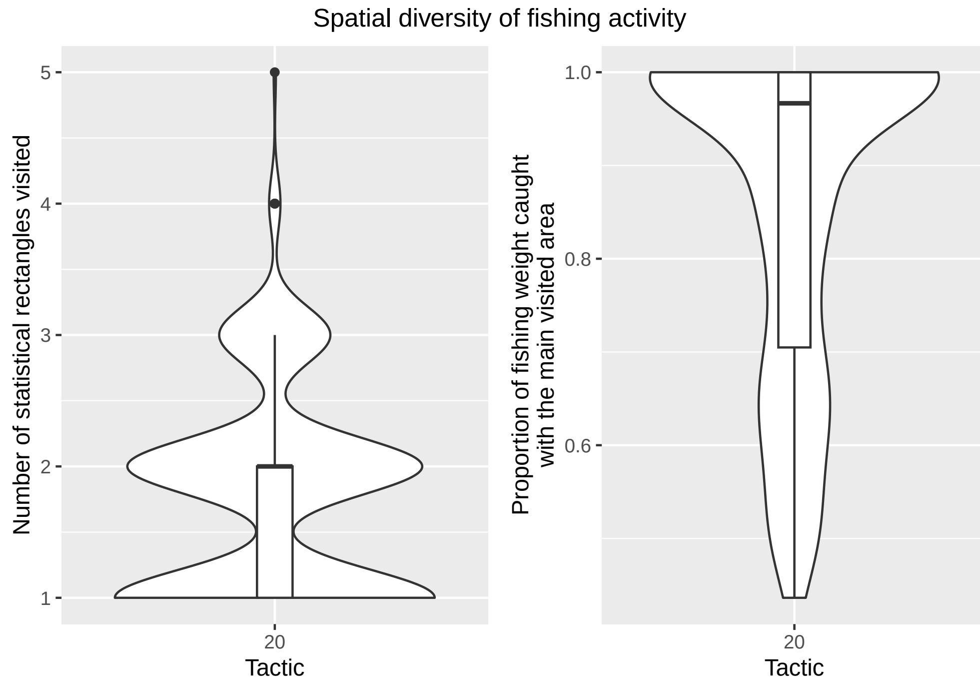


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

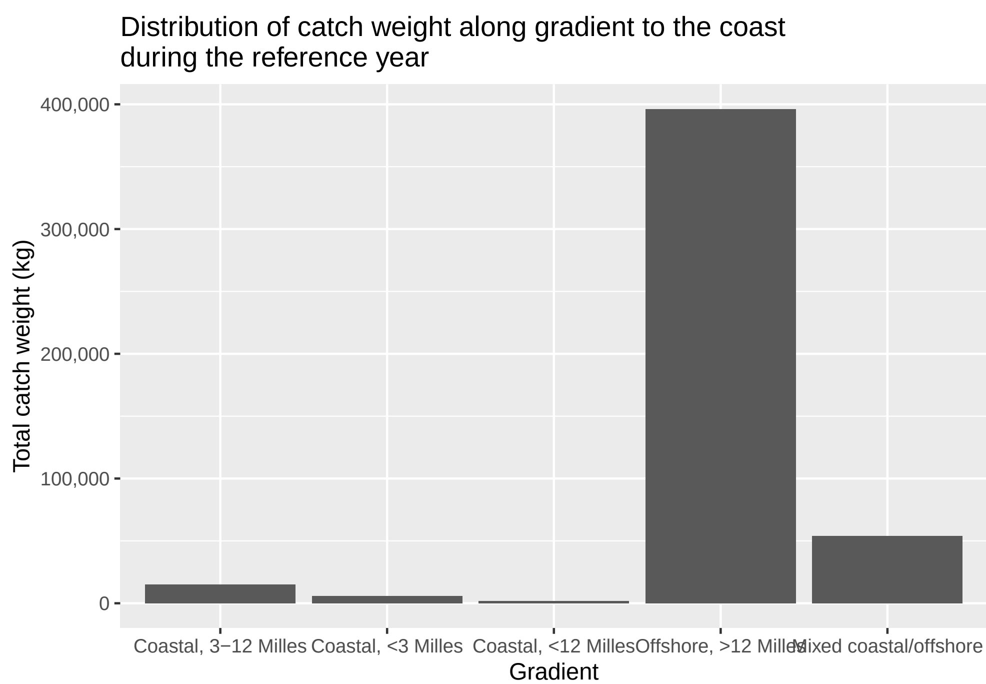


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.



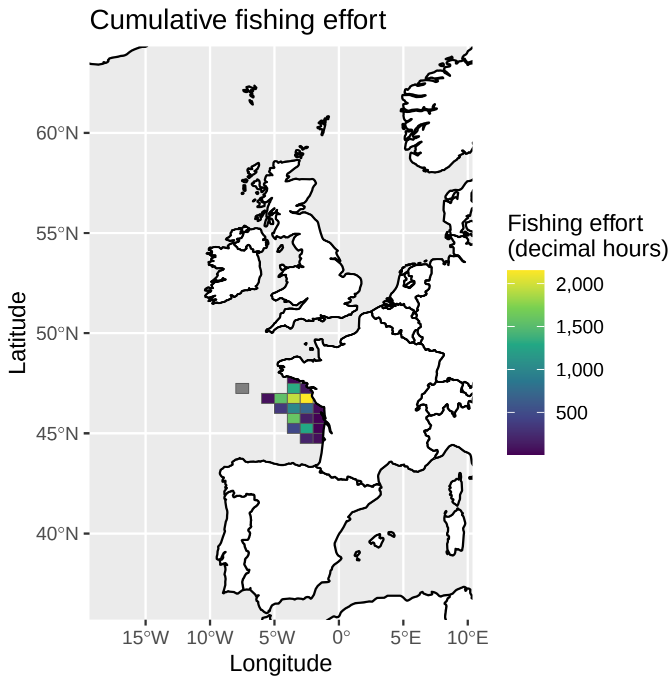
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.

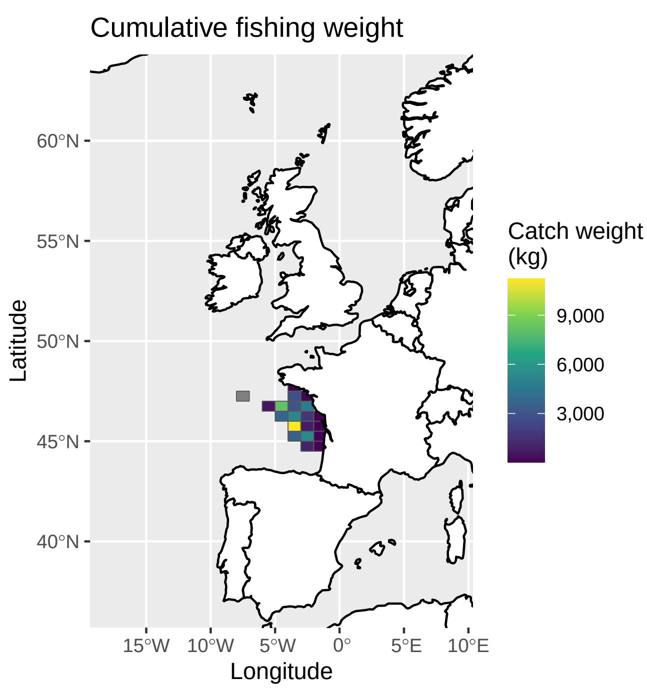


Maps of fishing activity distribution during the reference year (2022)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing

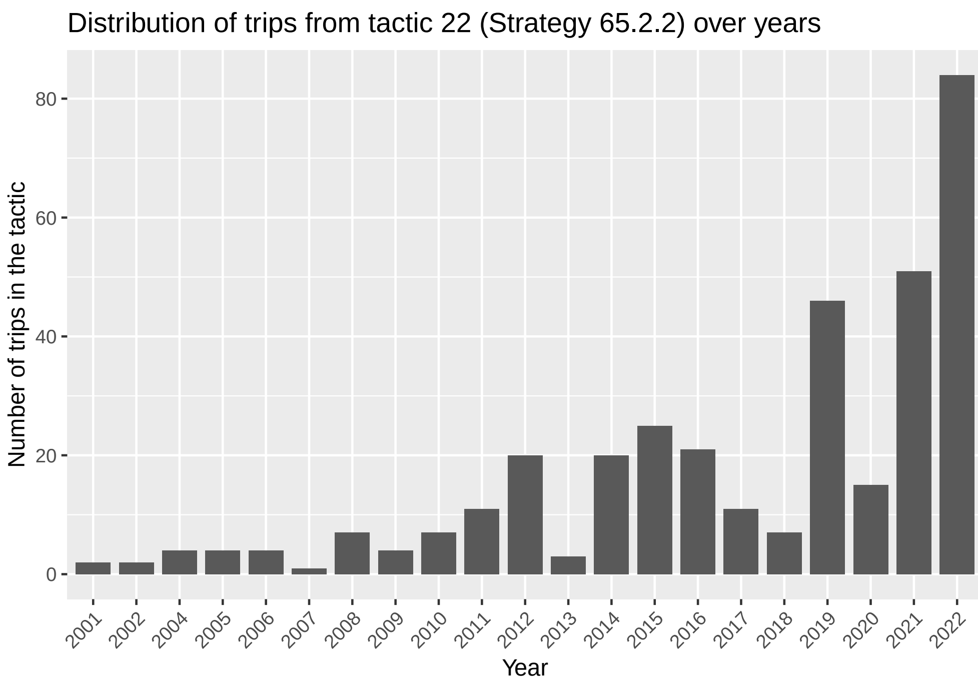
weight/effort are available.





Tactic 22 (Strategy 65.2.2)

This tactic includes N=349 fishing trips. There are N=42 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2022.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 34: Tactic 22 (Strategy 65.2.2)

Importance	Variable	Value
Strongly predominant (>80%)	Gear	Trammel nets
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
		31
	ISSCAAP	57
Predominant (>65%)	Trimester	4
	Spp.	Sepia spp
	Family	Sepiidae
Major (>50%)	Order	Sepiida
	Family	Scophthalmidae
	ICES division	27.8.b
Strong component (>35%)	Statistic rectangle	21E7
	Sp.	Scophthalmus rhombus
Component (>20%)	Month	10
		Spondyliosoma cantharus
	Sp.	Trisopterus luscus
		Gadidae
		Octopodidae
		Sepiidae, Sepiolidae
	Family	Sparidae
		Gadiformes
	Order	Octopoda
	ISSCAAP	32
		Pots

Table 34: Tactic 22 (Strategy 65.2.2) *(continued)*

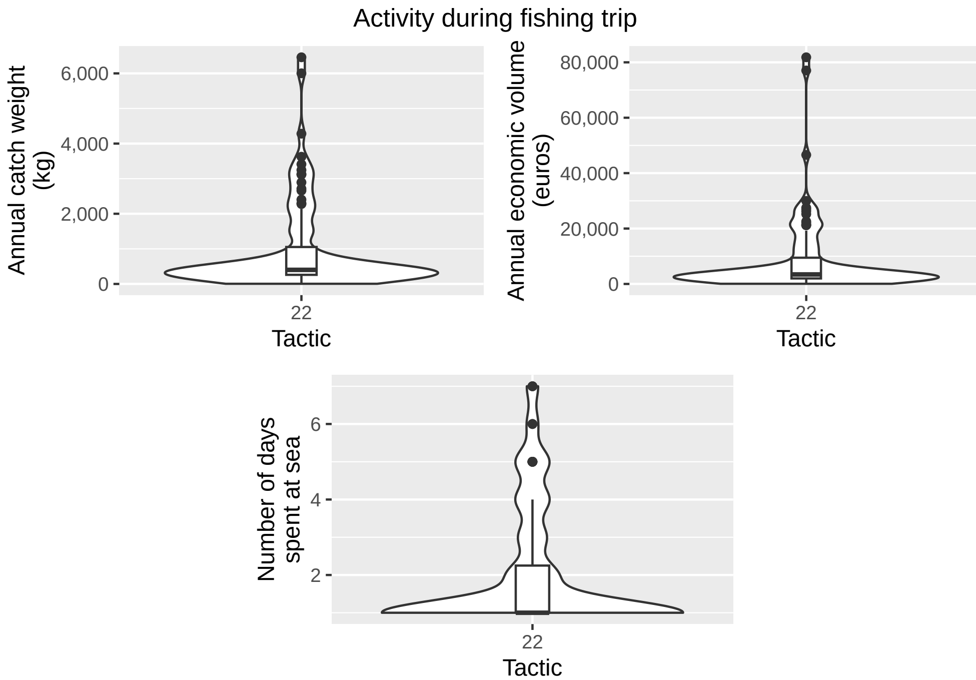
Importance	Variable	Value
	Gear	Set gillnets (anchored)
		18E8
	Statistic rectangle	19E8
		01
		11
	Month	12
		1
Minor component (>5%)	Trimester	3
	Spp.	Sepia spp
	Family	Sepiidae
	Order	Sepiida
Categories with high values (>SD)	ISSCAAP	57

Distribution of length and flag of vessels using the tactic, at least once during the reference year (2022)

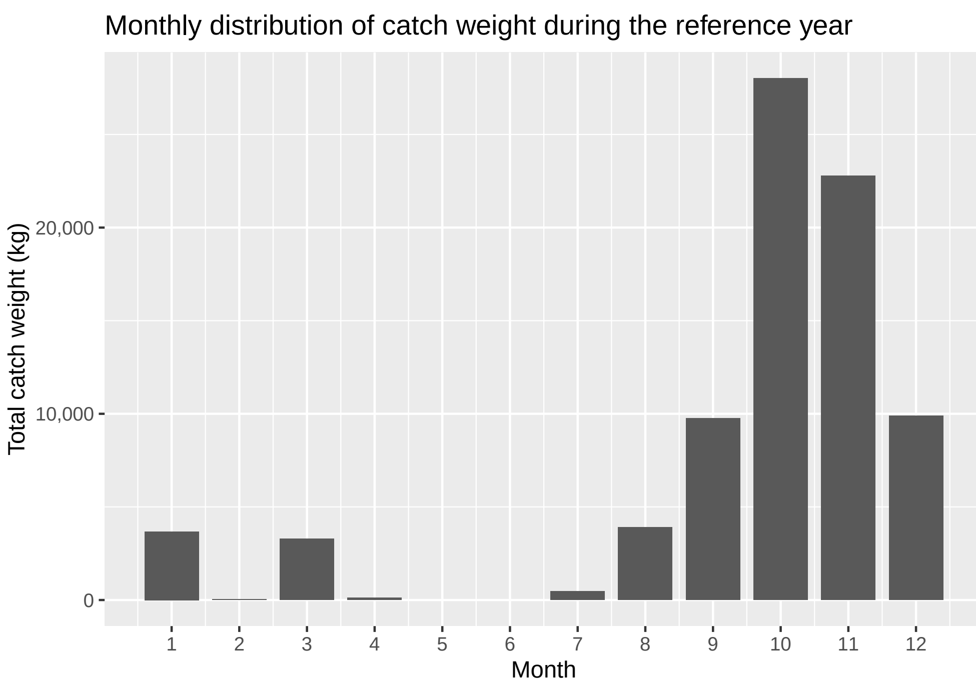
Vessel length and flag distributions are provided using the frequency of each flag and main length class.

Description of the volume and pattern of fishing activities during the reference year (2022)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



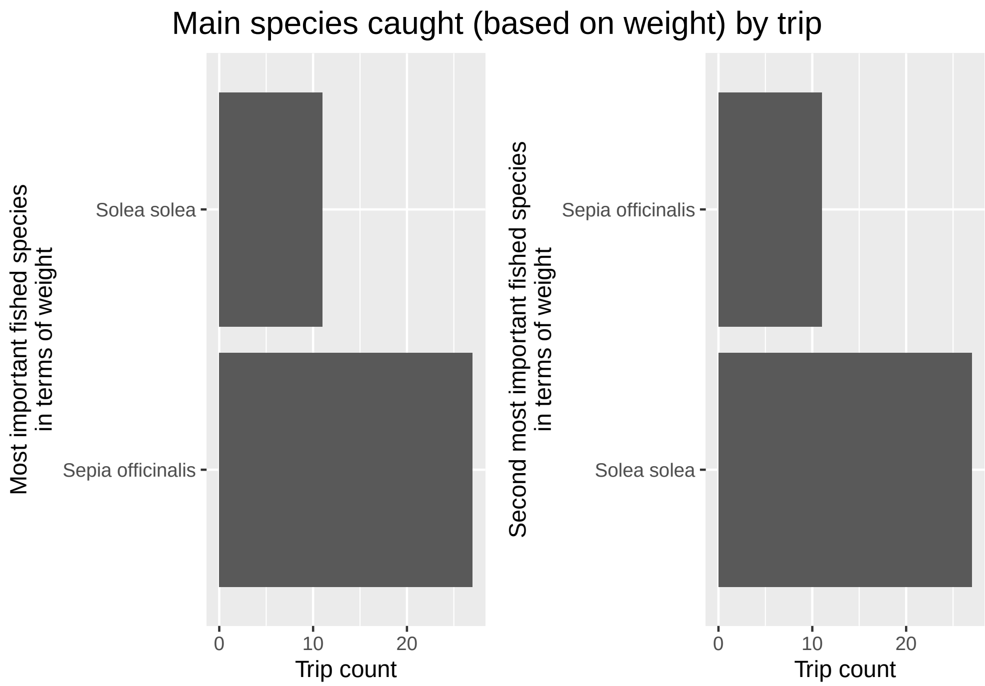
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

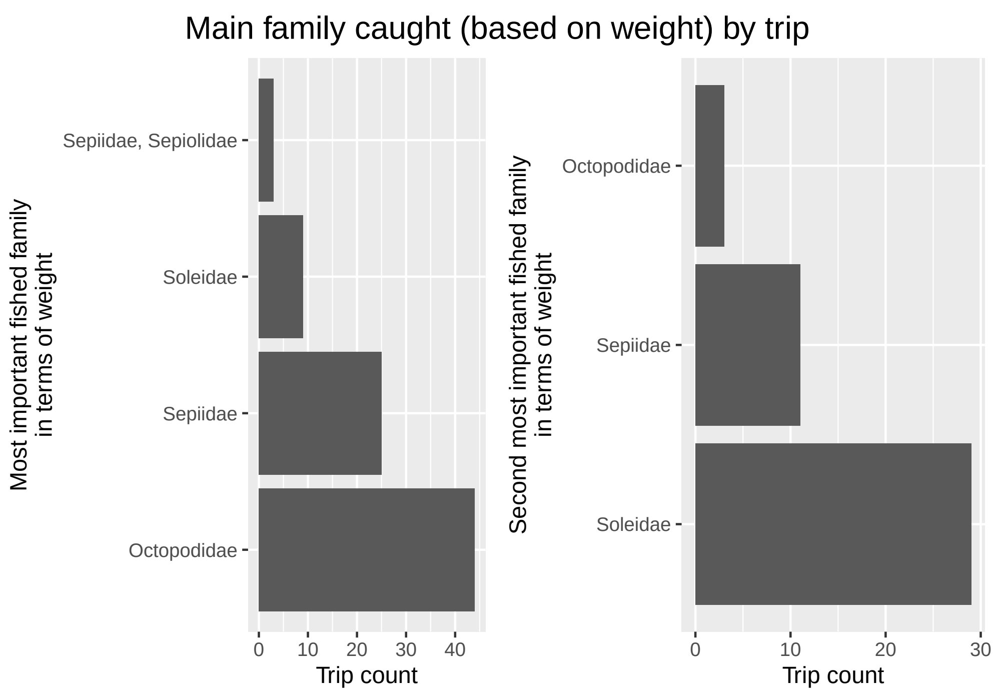


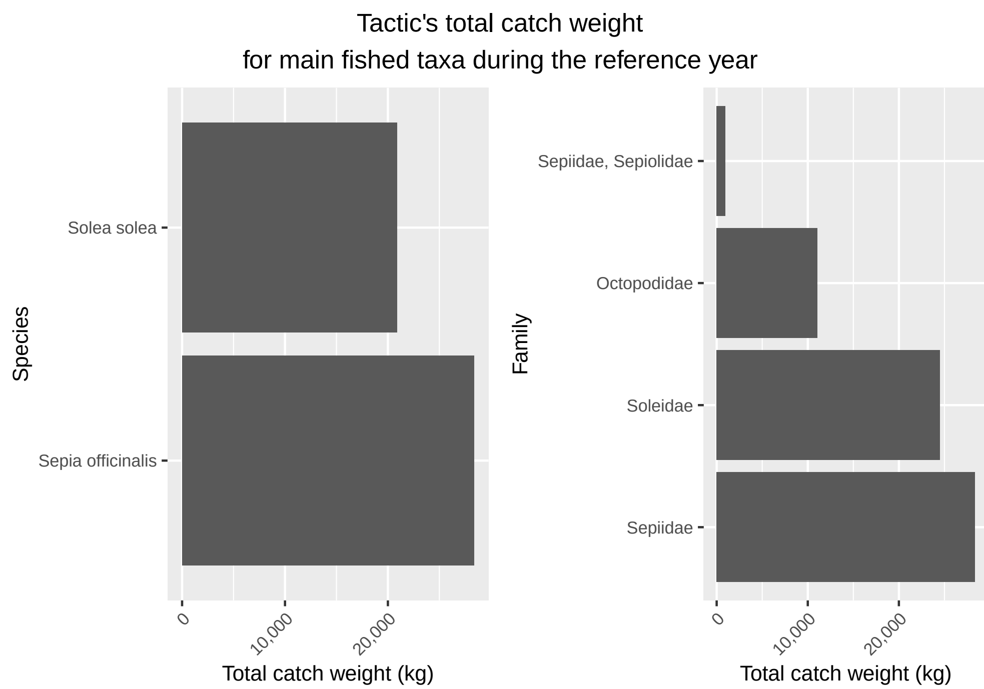
Main fished taxa and used gears during the reference year (2022)

We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

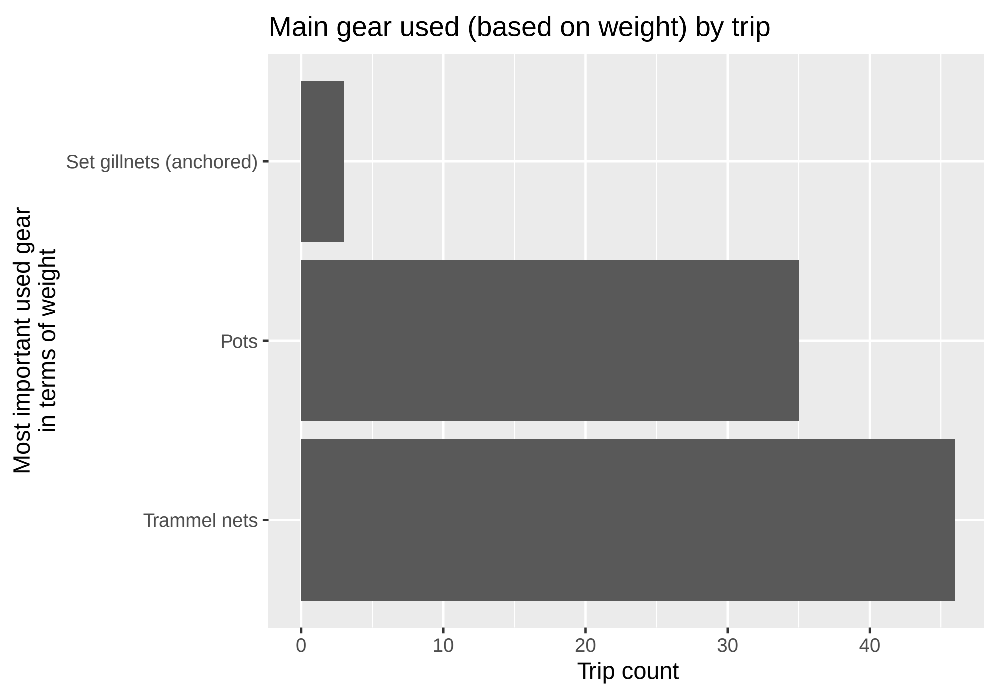
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

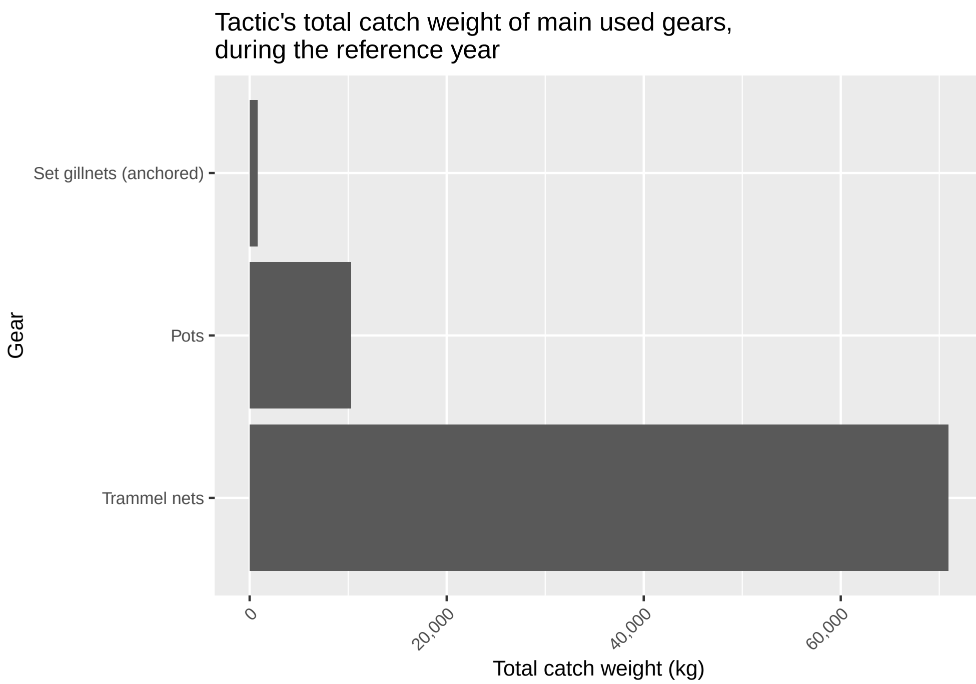






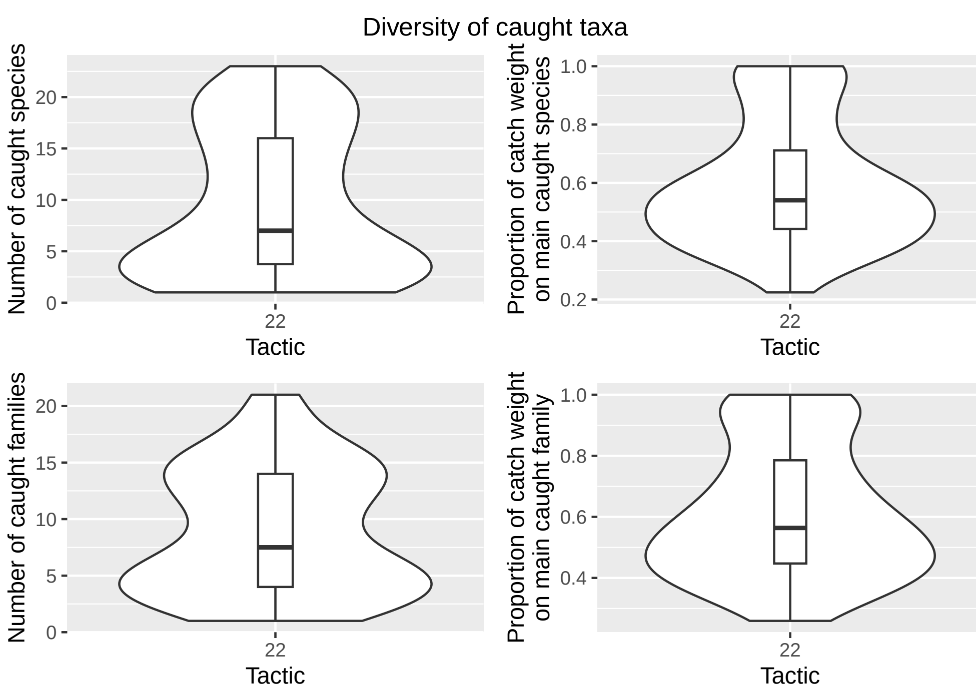
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).





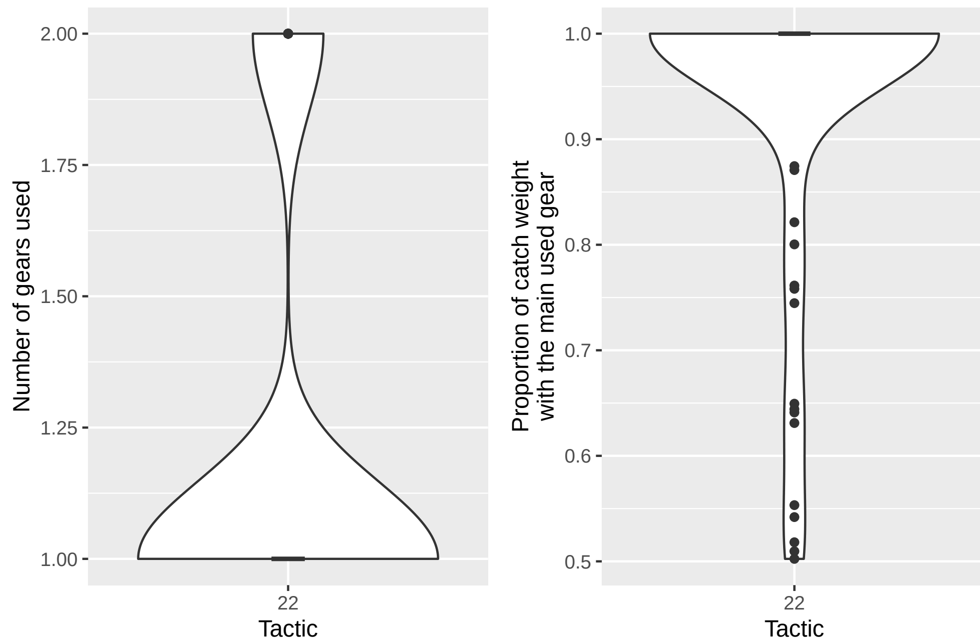
Diversity of fished taxa and used gears during the reference year (2022)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.



We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

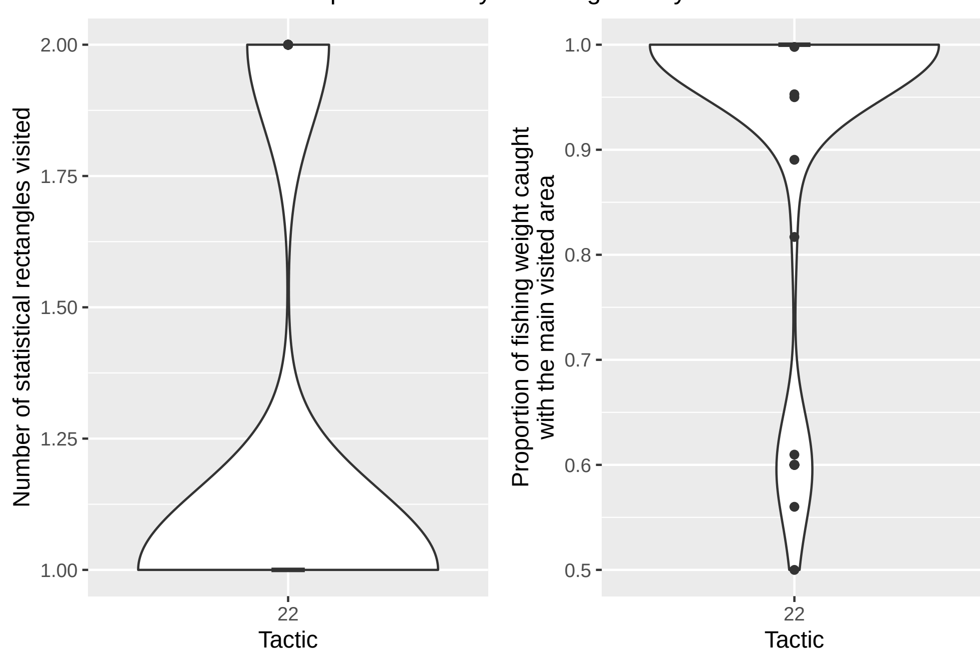
Gear diversity



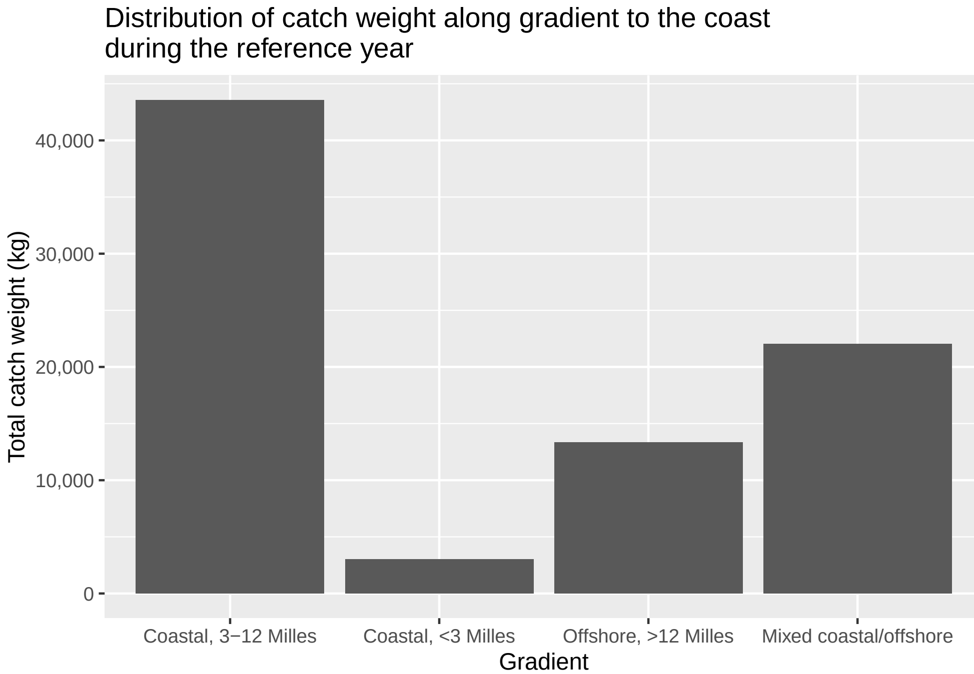
Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

Spatial diversity of fishing activity

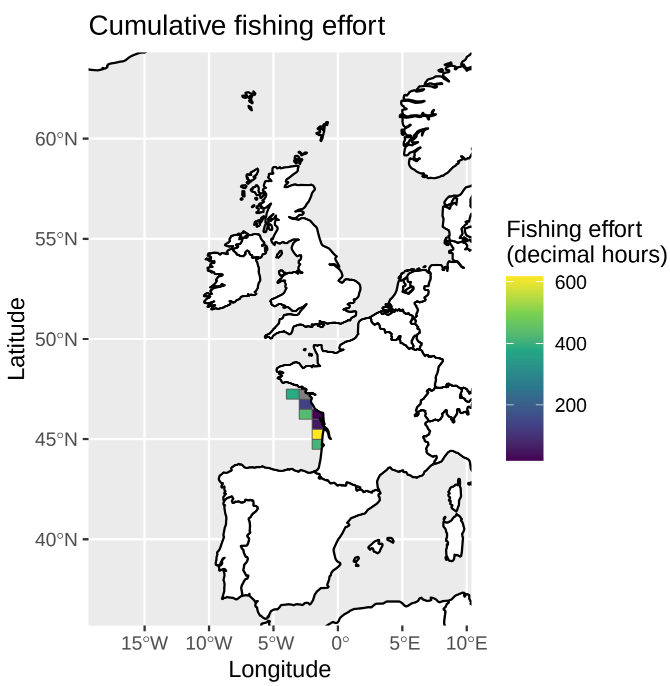


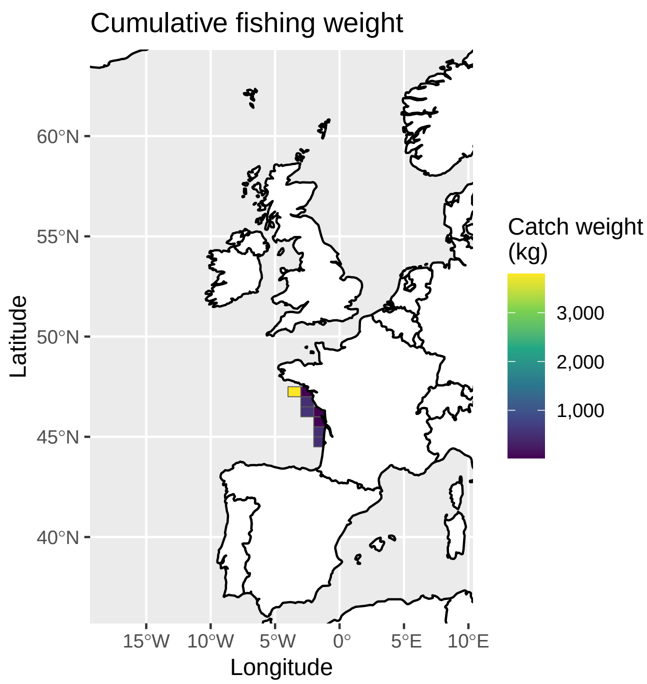
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2022)

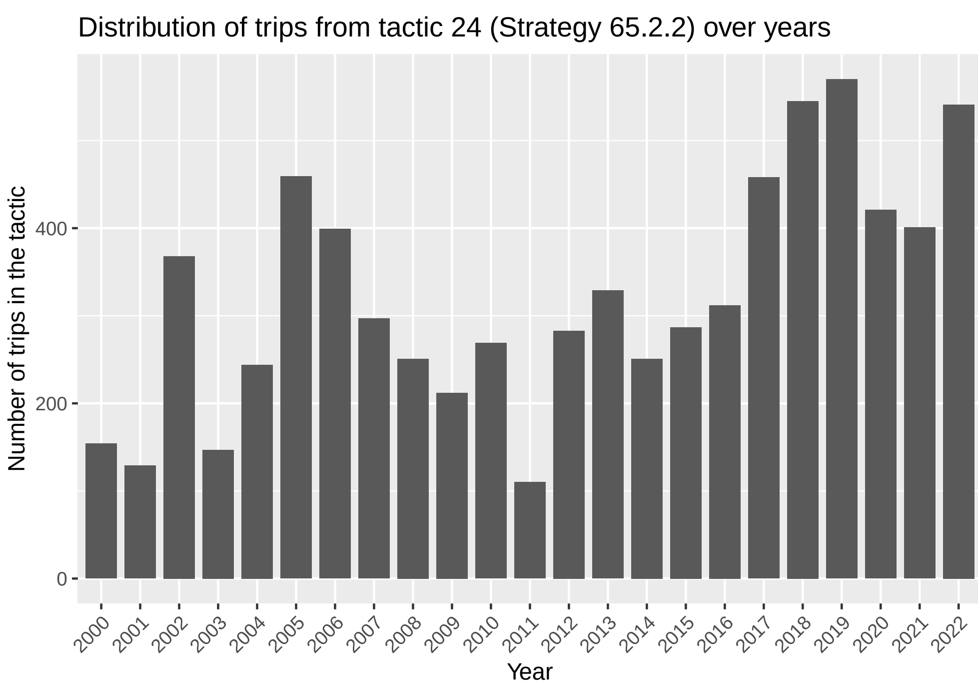
Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.





Tactic 24 (Strategy 65.2.2)

This tactic includes N=7437 fishing trips. There are N=75 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2019.

Description table

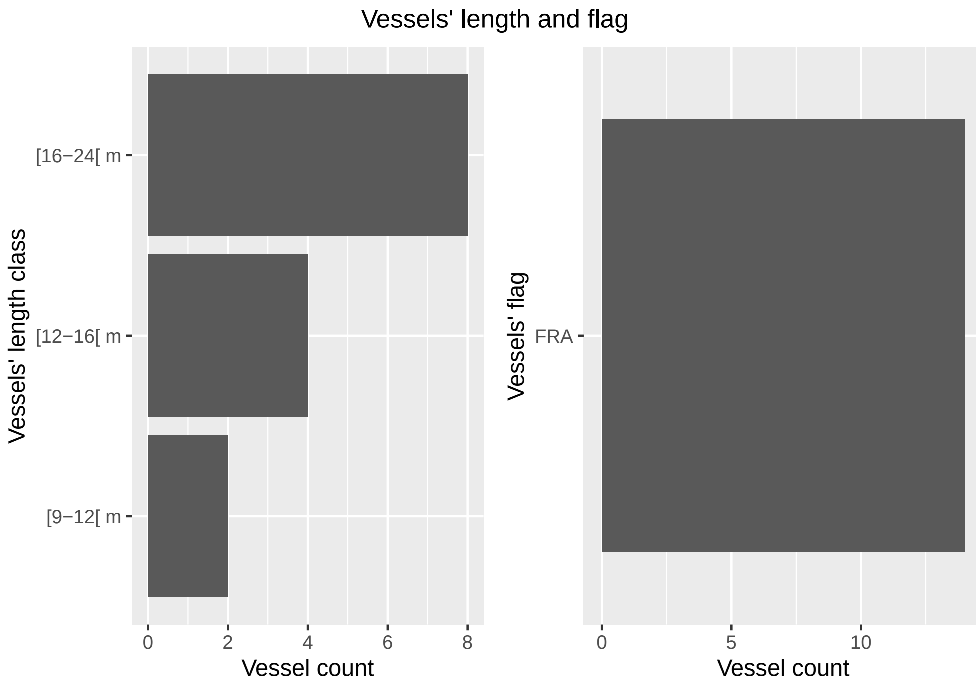
This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 35: Tactic 24 (Strategy 65.2.2)

Importance	Variable	Value
	Spp.	Solea spp
	Family	Soleidae
	Order	Pleuronectiformes
Determinant (>95%)	ISSCAAP	31
Strongly predominant (>80%)	Gear	Trammel nets
	ICES division	27.8.a
Major (>50%)	Trimester	1
	Family	Scophthalmidae
Strong component (>35%)	ICES division	27.8.b
		Scophthalmus rhombus
	Sp.	Trisopterus luscus
	Family	Gadidae
	Order	Gadiformes
	ISSCAAP	32
	Statistic rectangle	21E7
Component (>20%)	Trimester	4
	Sp.	Spondyliosoma cantharus
	Spp.	Dicentrarchus spp
		Moronidae
	Family	Sparidae
	Order	Perciformes
	ISSCAAP	33
	Gear	Set gillnets (anchored)
		18E8
		19E8
		20E7
		20E8
		21E8
		22E7
	Statistic rectangle	23E6
		01
		02
		03
		04
		09
		10
		11
	Month	12
		2
Minor component (>5%)	Trimester	3
	div_val_spp	TRUE
	div_val_family	TRUE
	div_val_order	TRUE
High values (>SD)	div_val_isscaap	TRUE
		Dicentrarchus spp
	Spp.	Solea spp
	Sp.	Scophthalmus rhombus
		Moronidae
		Scophthalmidae
	Family	Soleidae
		Perciformes
		Pleuronectiformes
	Order	Sepiida
		31
		33
Categories with high values (>SD)	ISSCAAP	57

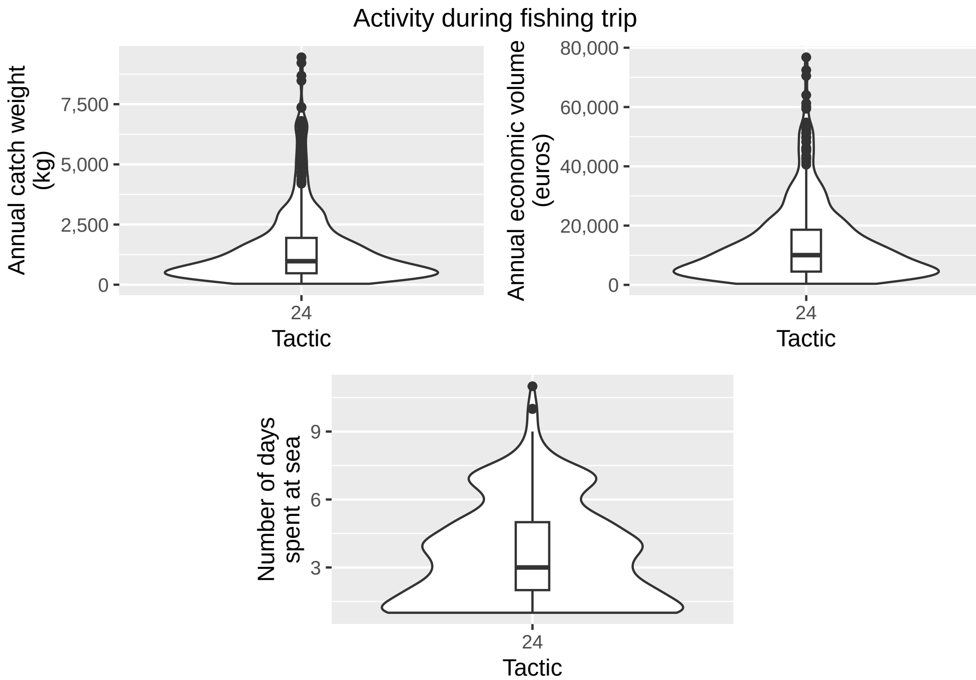
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2019)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

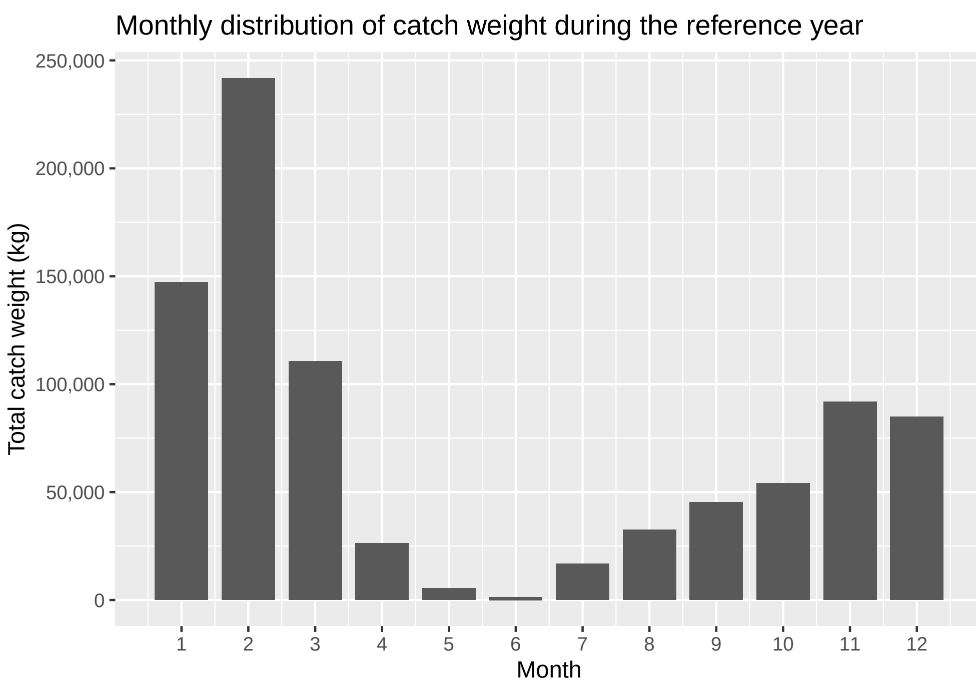


Description of the volume and pattern of fishing activities during the reference year (2019)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



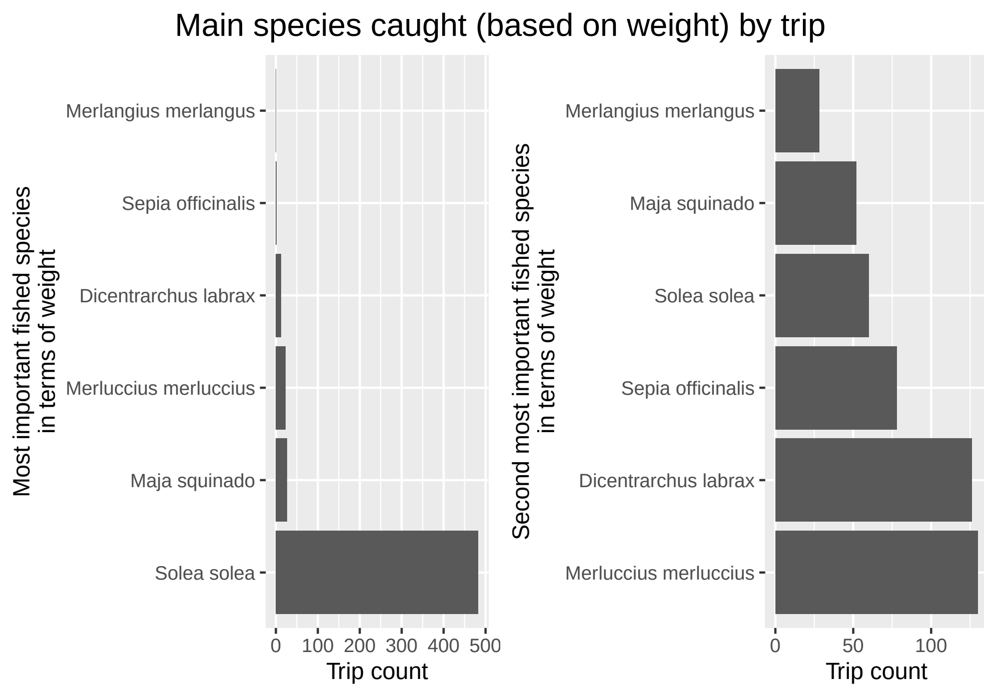
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

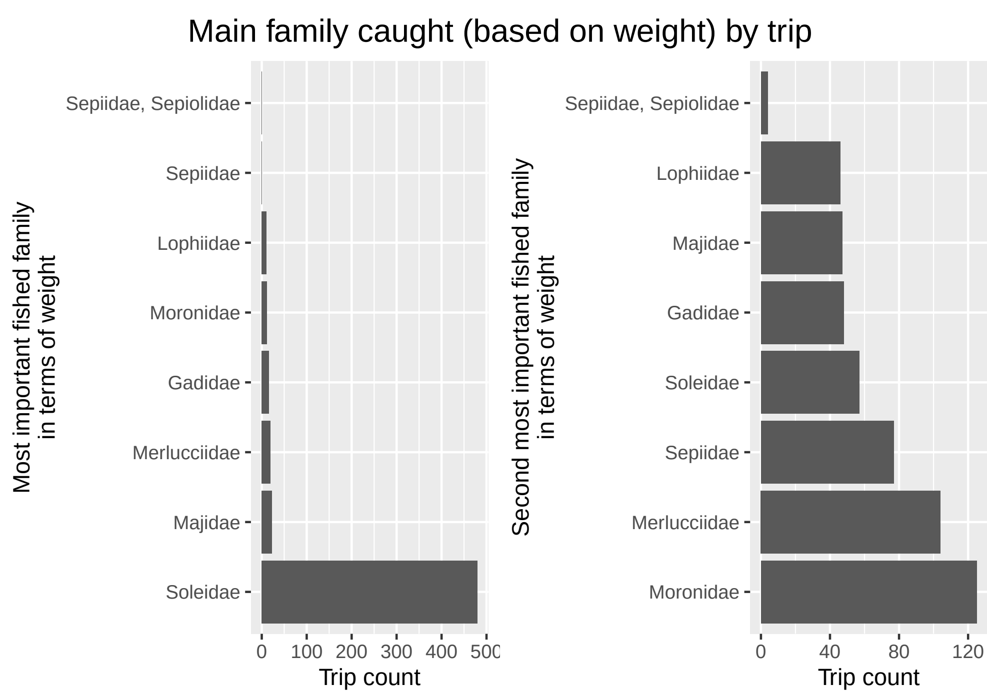


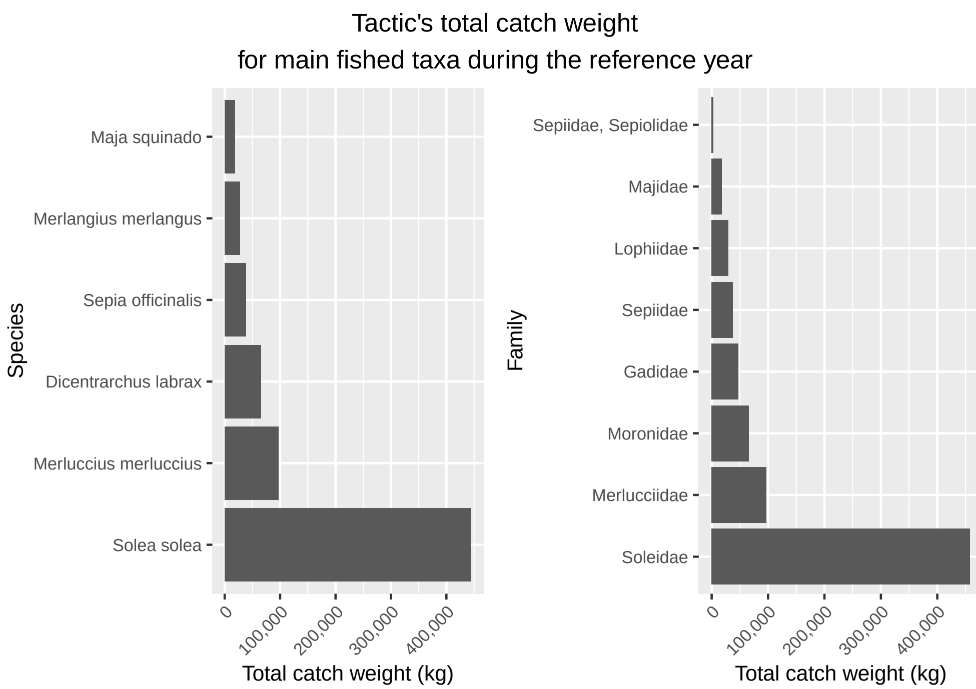
Main fished taxa and used gears during the reference year (2019)

We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

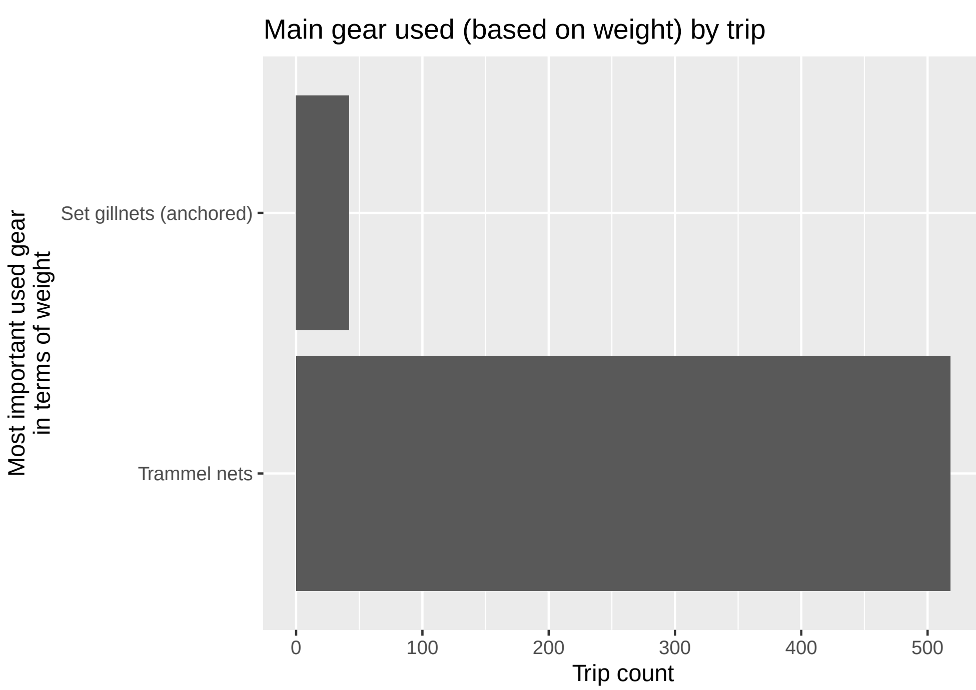
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

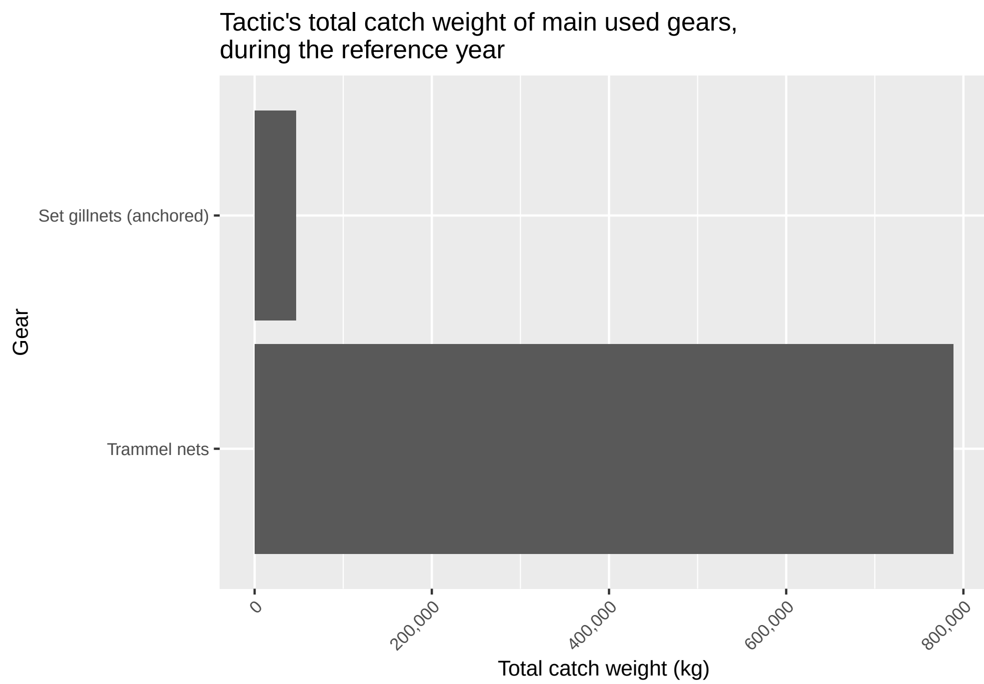






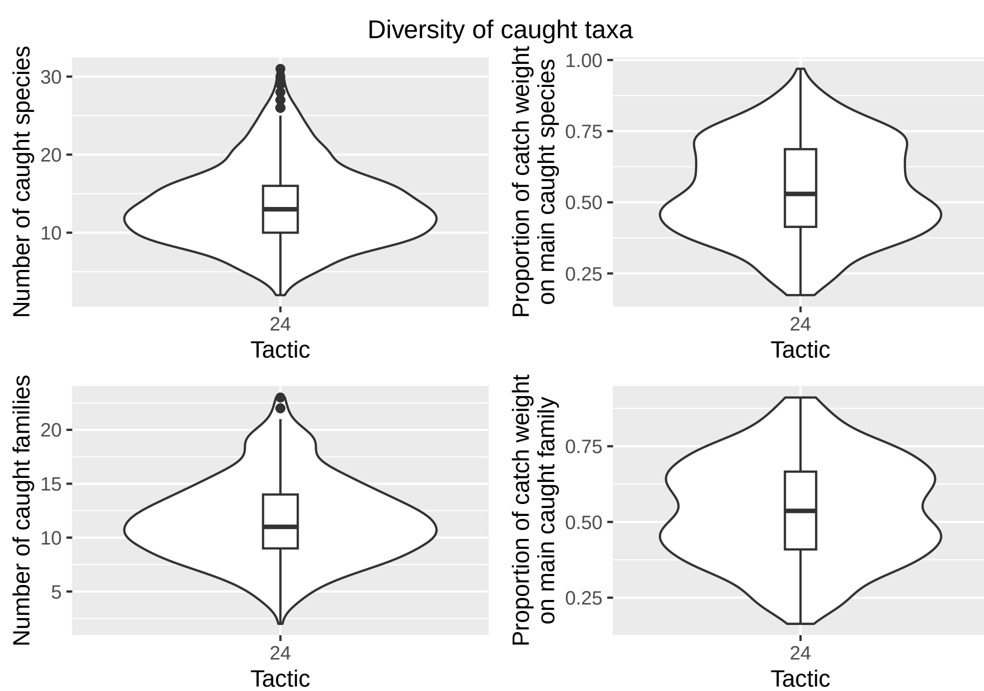
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



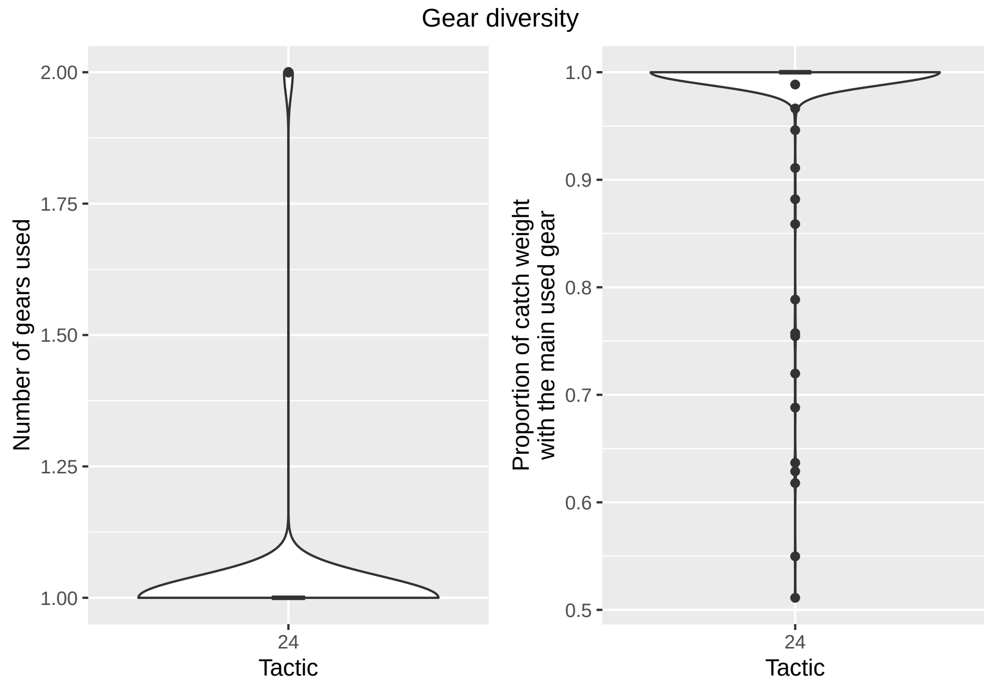


Diversity of fished taxa and used gears during the reference year (2019)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

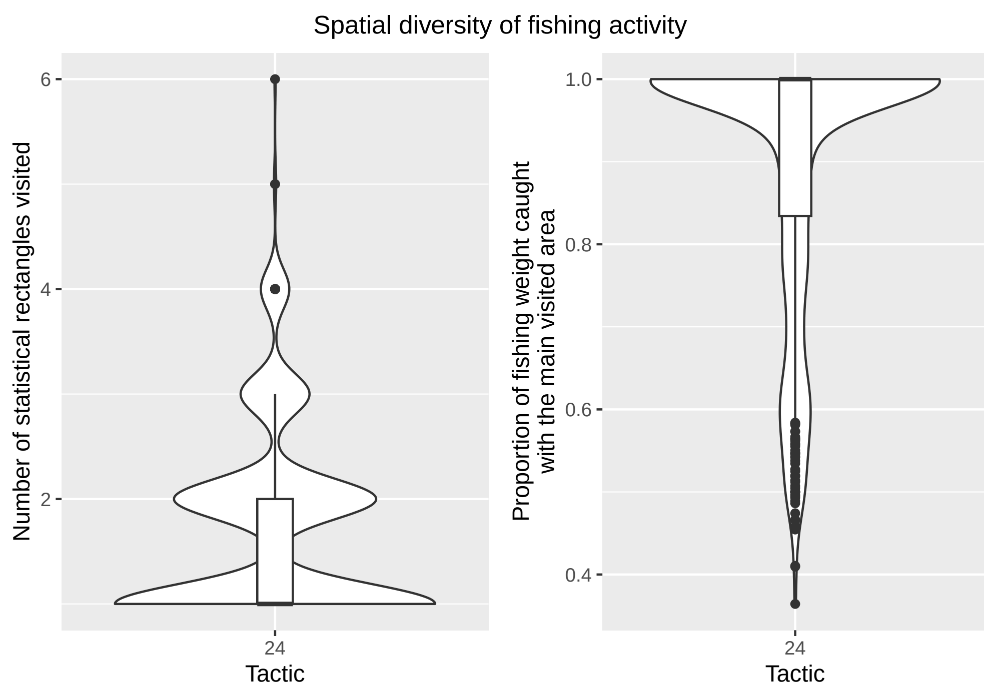


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

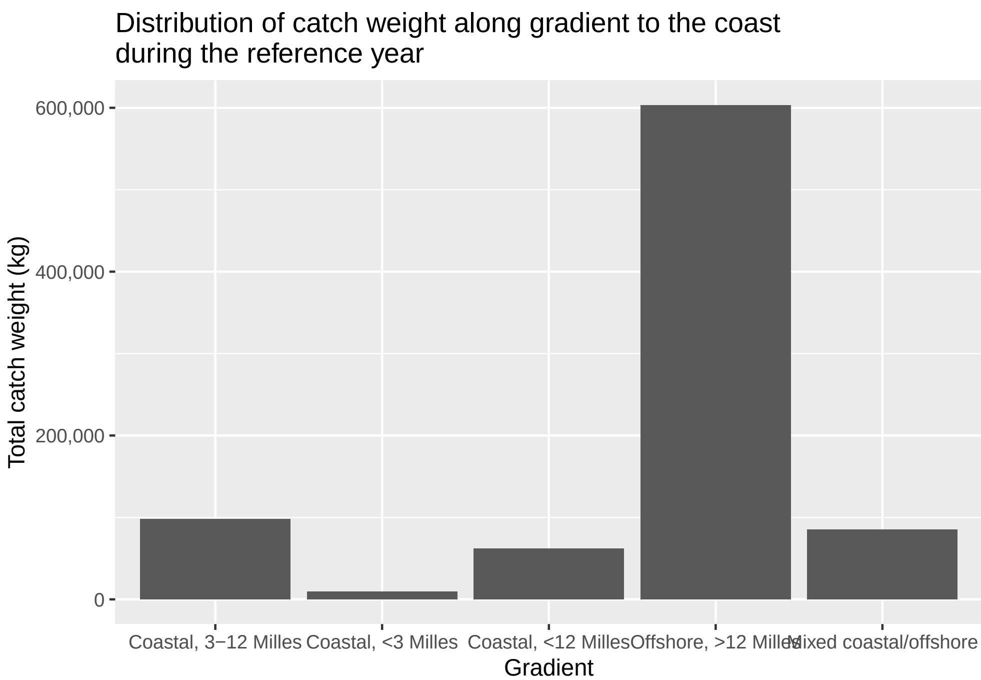


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

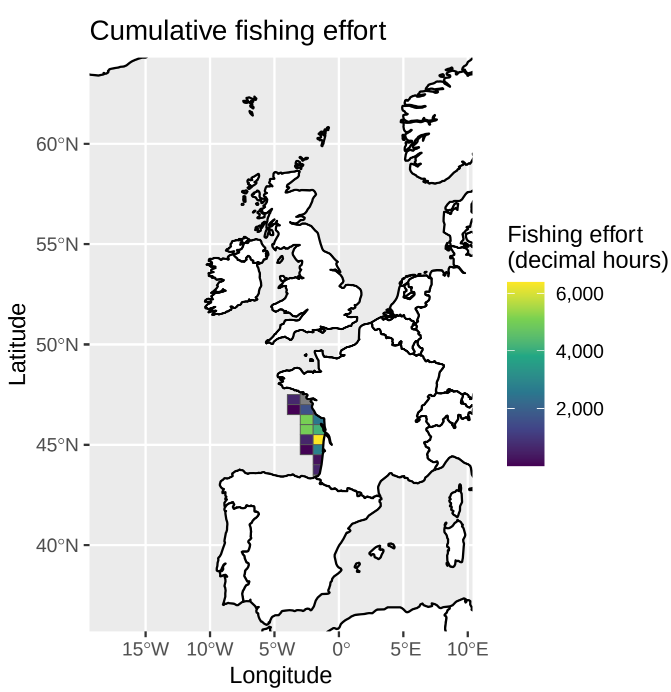


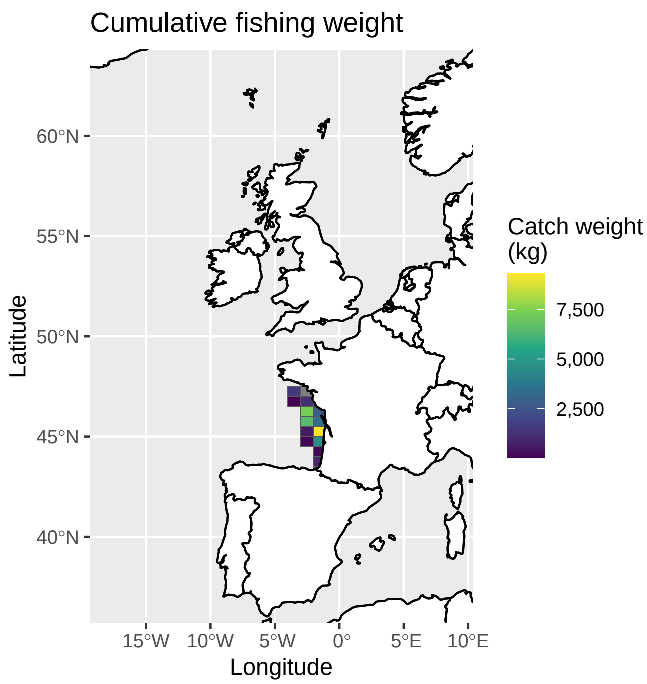
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2019)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.

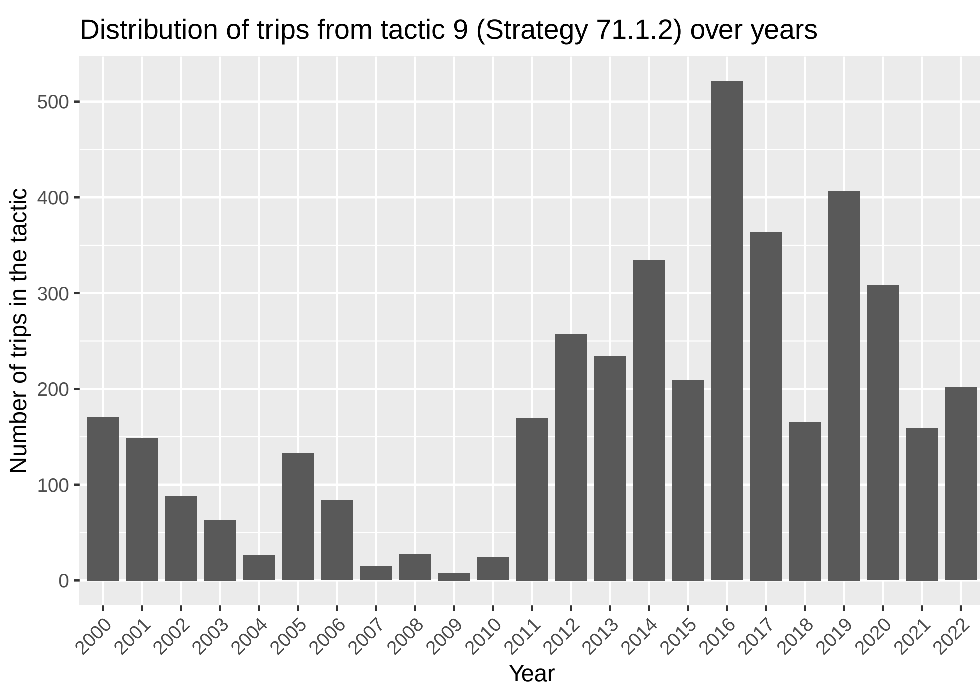




Within strategy 71.1.2

Tactic 9 (Strategy 71.1.2)

This tactic includes N=4119 fishing trips. There are N=84 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2016.

Description table

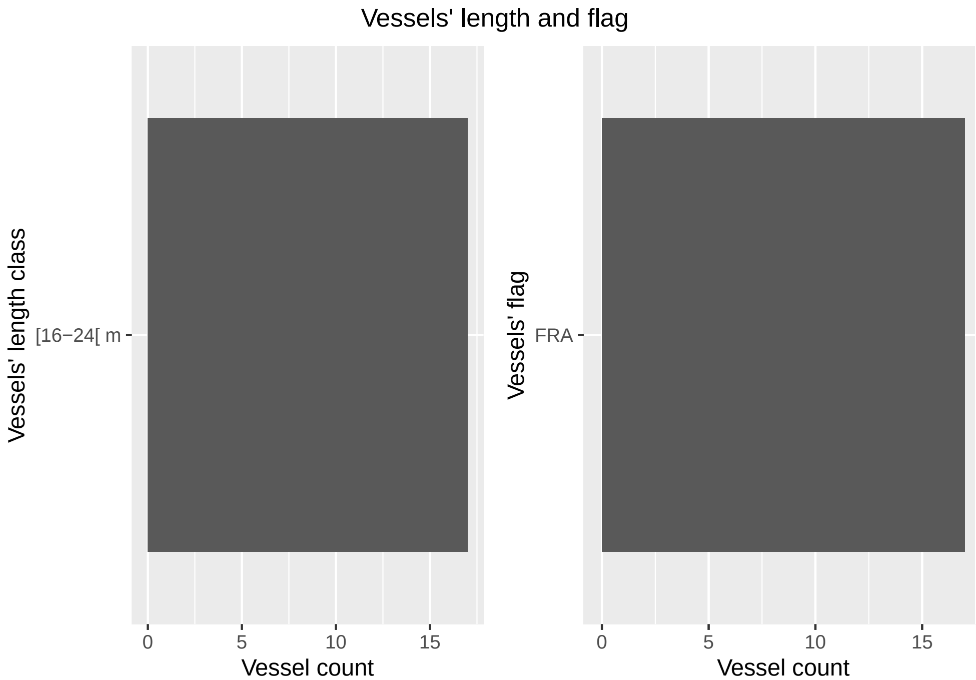
This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 36: Tactic 9 (Strategy 71.1.2)

Importance	Variable	Value
	Spp.	Merluccius spp
	Family	Merlucciidae
	Order	Gadiformes
Determinant (>95%)	ISSCAAP	32
Strongly predominant (>80%)	ICES division	27.8.a
Predominant (>65%)	Gear	Pair trawls Midwater
Major (>50%)	Trimester	2
Strong component (>35%)	Trimester	1
	Statistic rectangle	23E5
		04
Component (>20%)	Month	05
		Eutrigla gurnardus
	Sp.	Trisopterus luscus
	Spp.	Dicentrarchus spp
		Gadidae
		Moronidae
	Family	Triglidae
		Perciformes
	Order	Scorpaeniformes
		33
		34
	ISSCAAP	38
		Pair trawls Bottom
		Set gillnets (anchored)
	Gear	Set longlines
	ICES division	27.8.b
		16E8
		23E4
		24E4
	Statistic rectangle	24E5
		01
		02
		03
		06
	Month	11
Minor component (>5%)	Trimester	4
	main_prop_spp	TRUE
	main_prop_family	TRUE
	main_prop_order	TRUE
High values (>SD)	main_prop_isscaap	TRUE
	Spp.	Merluccius spp
	Family	Merlucciidae
	Order	Gadiformes
Categories with high values (>SD)	ISSCAAP	32

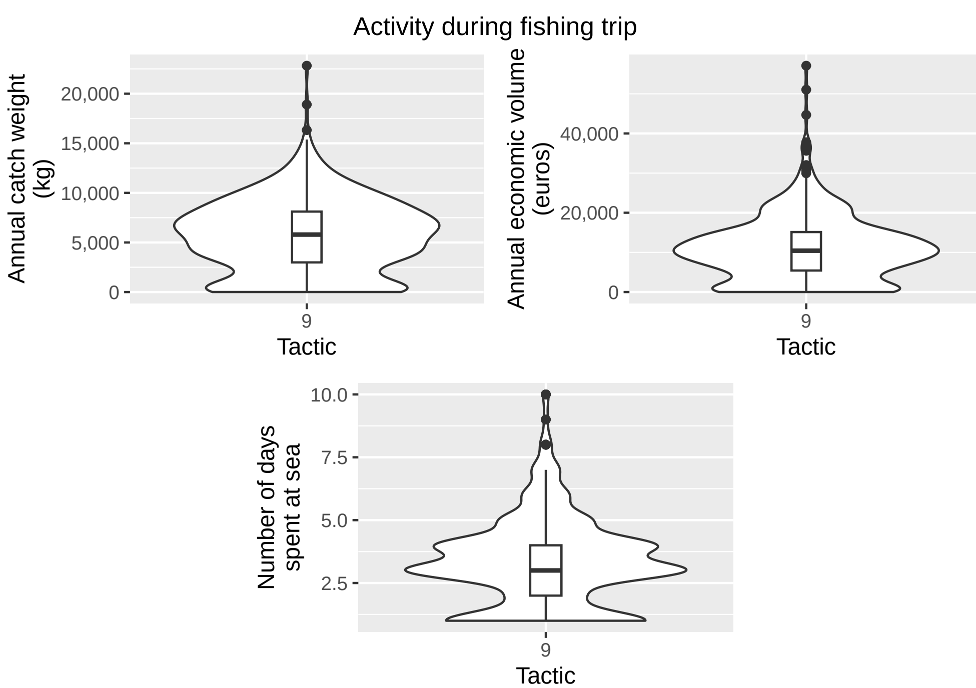
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2016)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

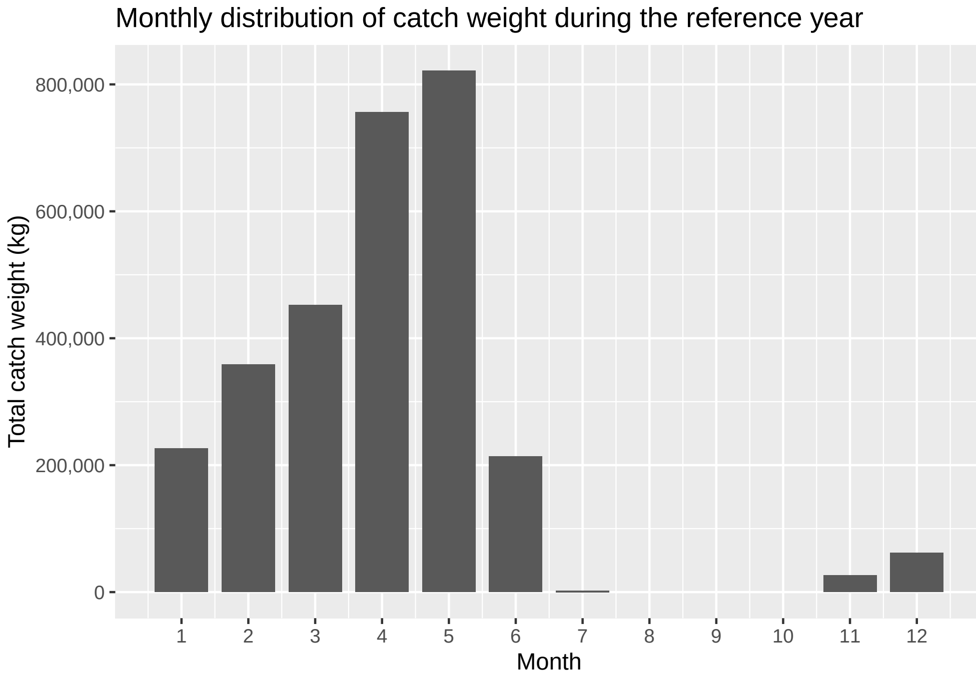


Description of the volume and pattern of fishing activities during the reference year (2016)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.

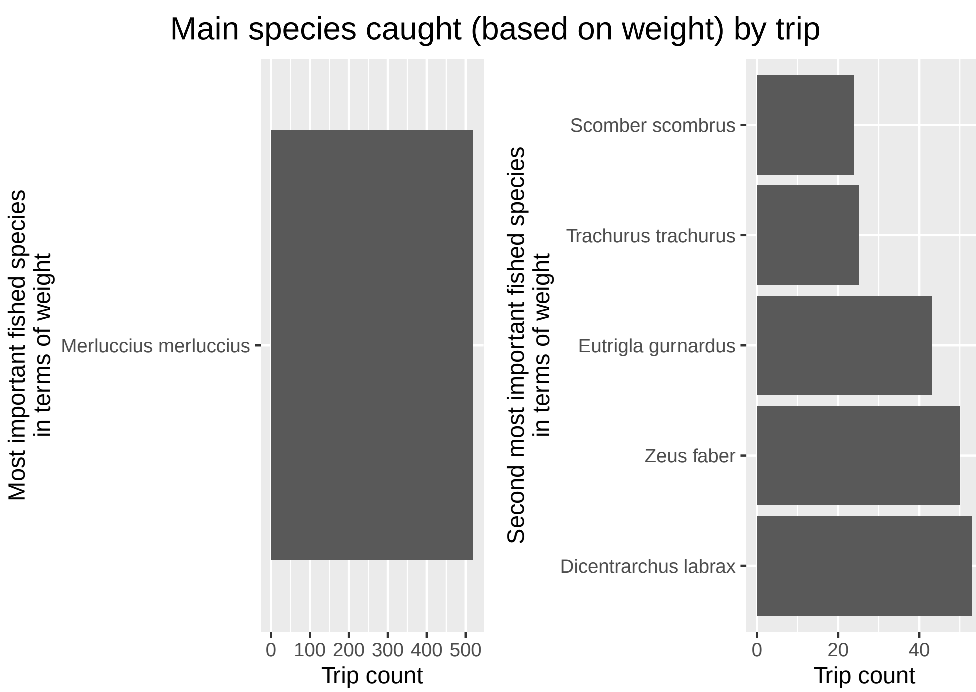


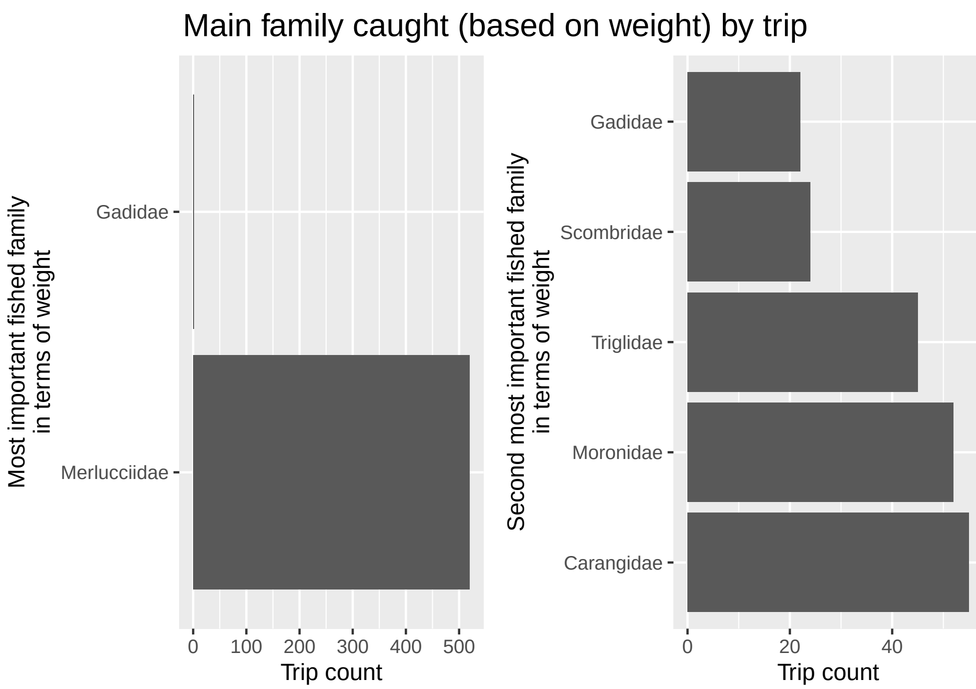
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

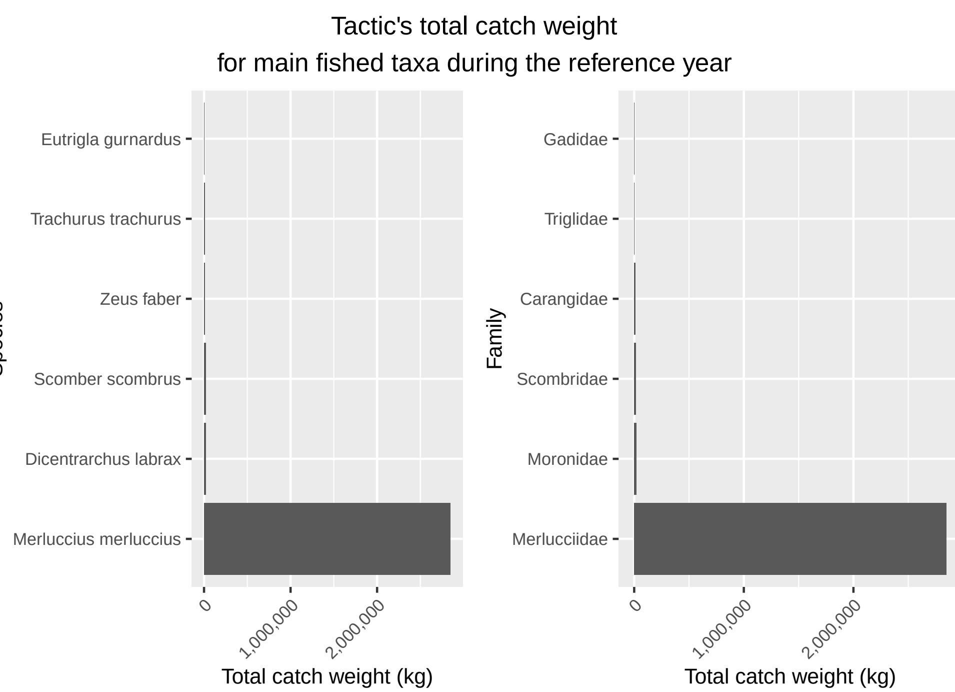


Main fished taxa and used gears during the reference year (2016)

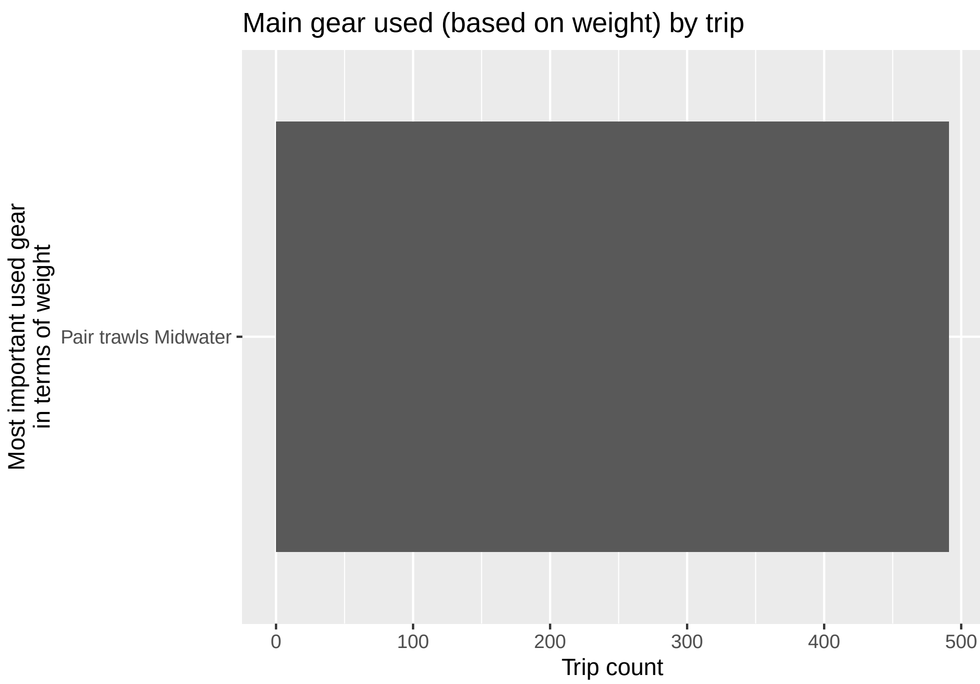
We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

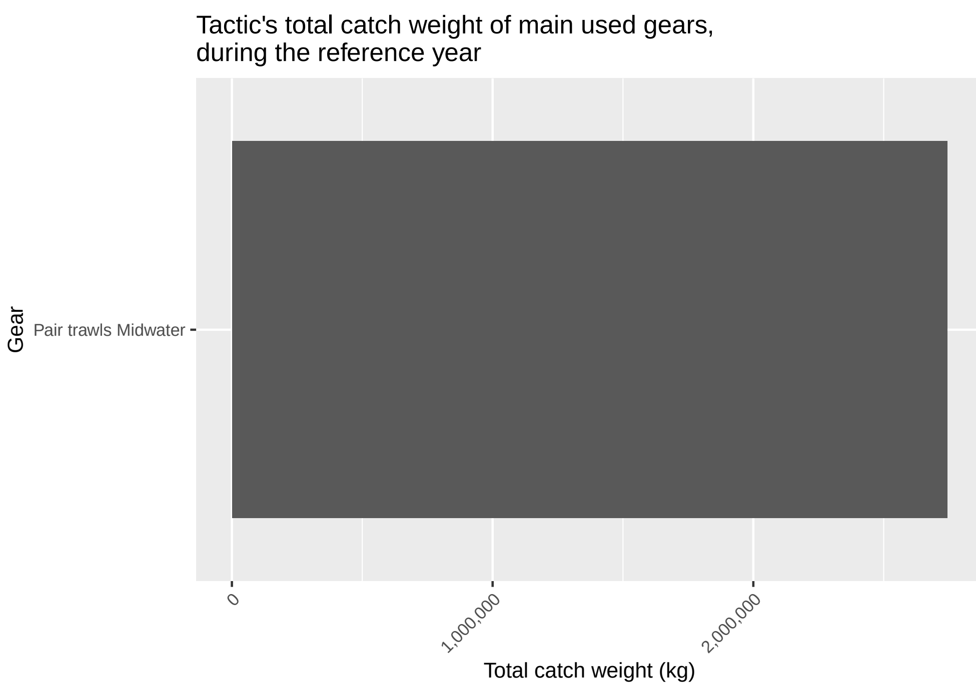






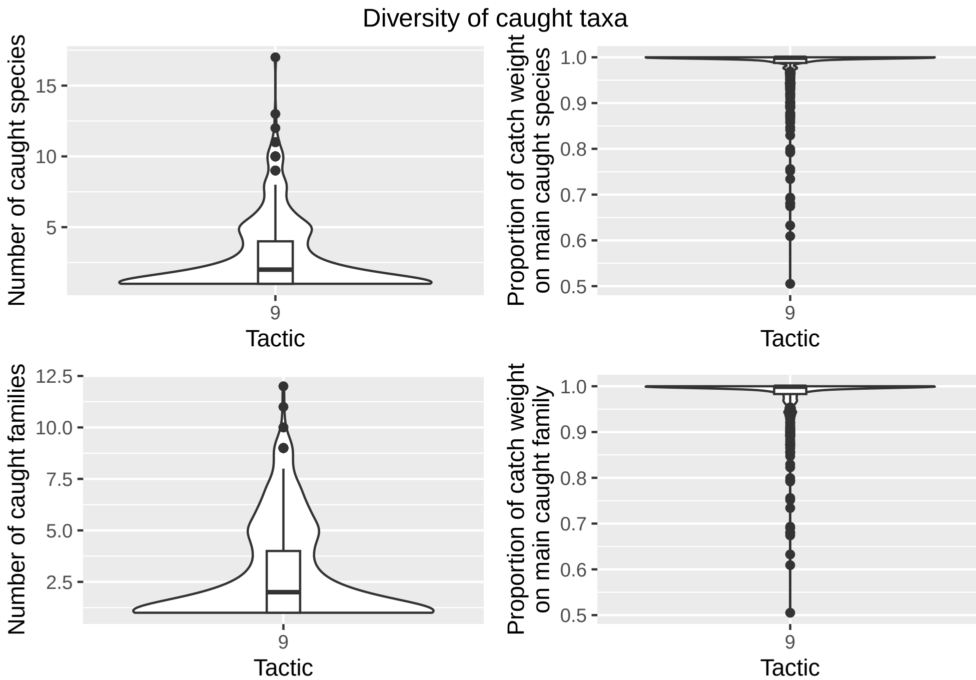
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



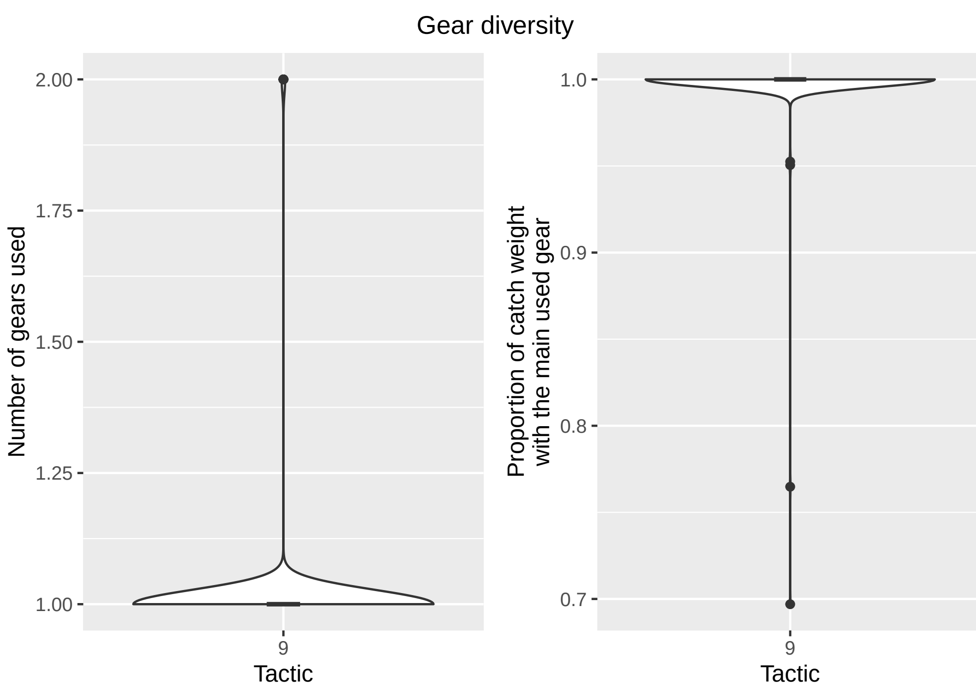


Diversity of fished taxa and used gears during the reference year (2016)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

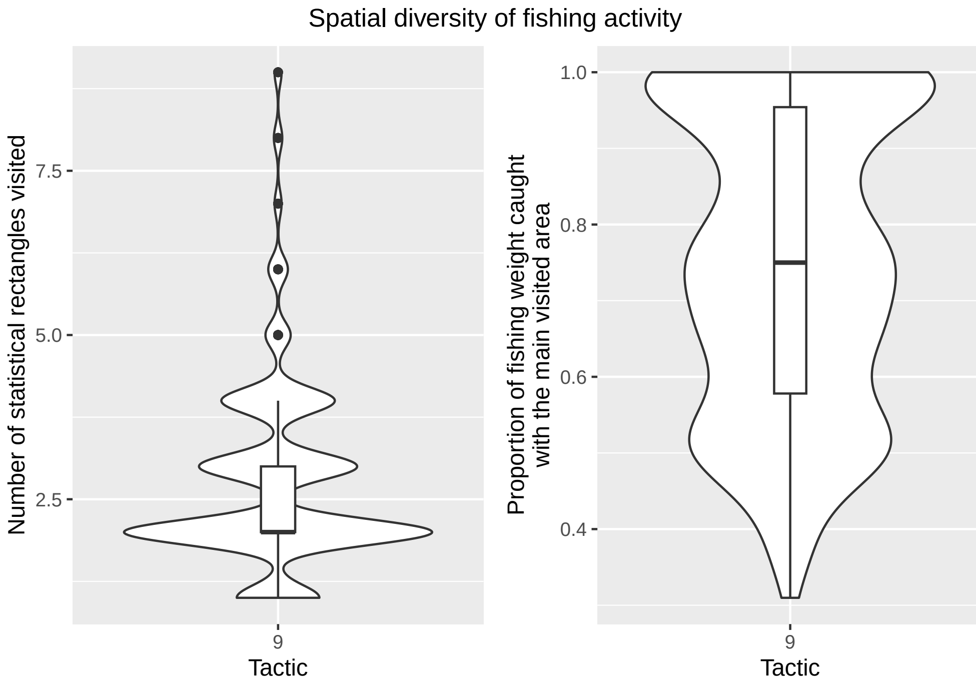


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

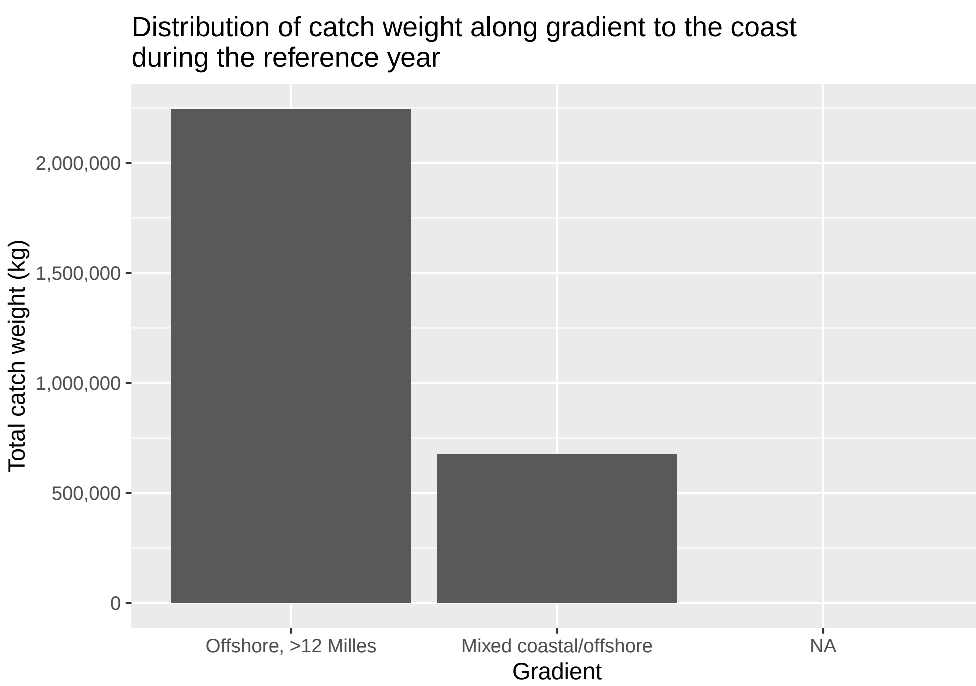


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.



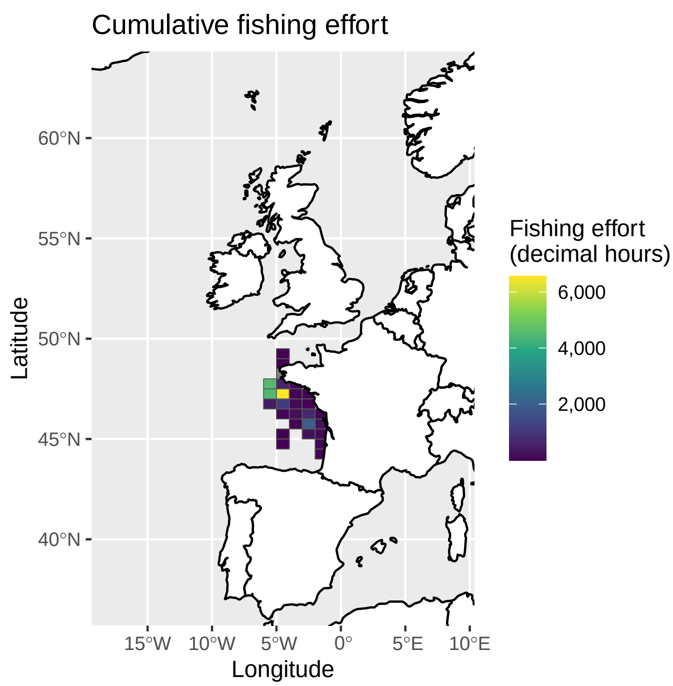
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.

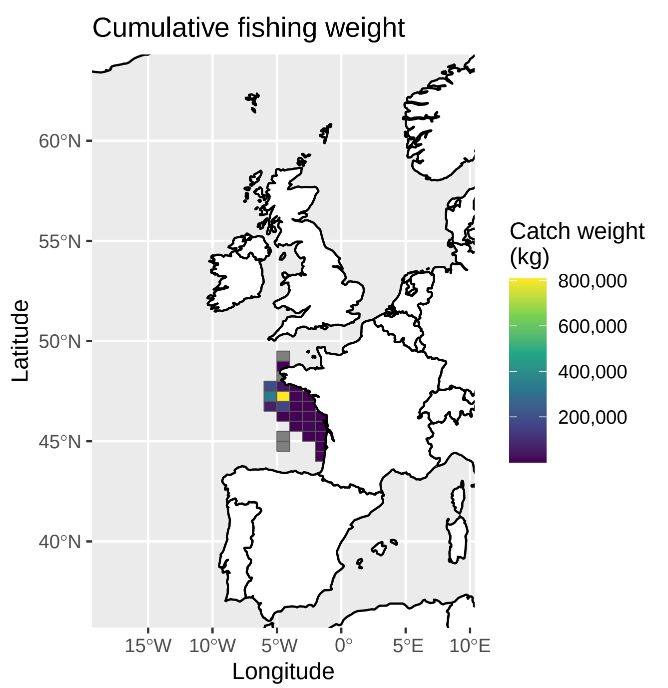


Maps of fishing activity distribution during the reference year (2016)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing

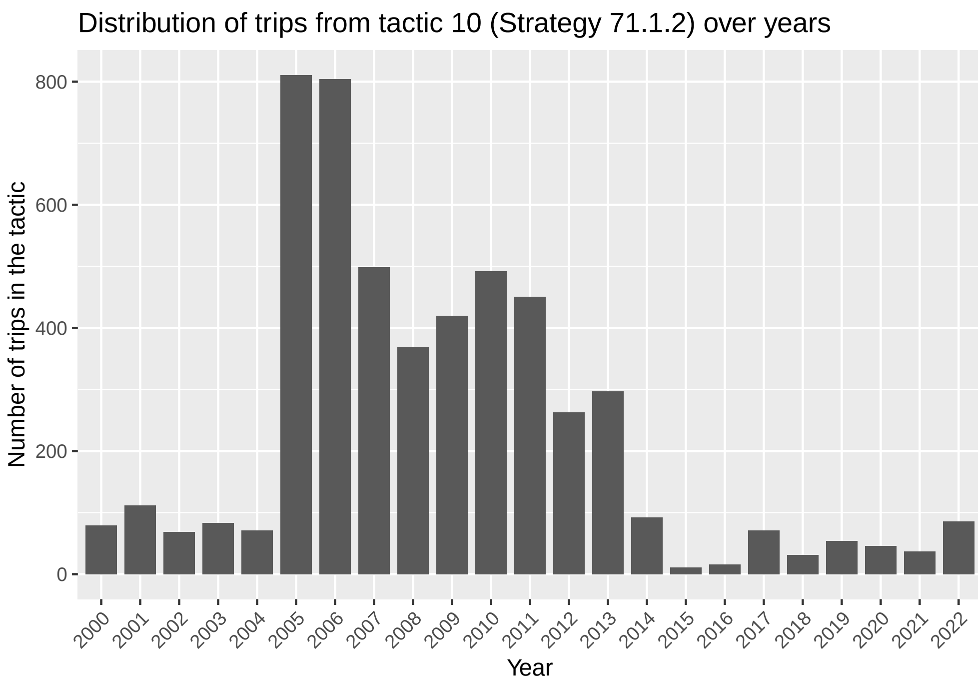
weight/effort are available.





Tactic 10 (Strategy 71.1.2)

This tactic includes N=5264 fishing trips. There are N=92 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2005.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 37: Tactic 10 (Strategy 71.1.2)

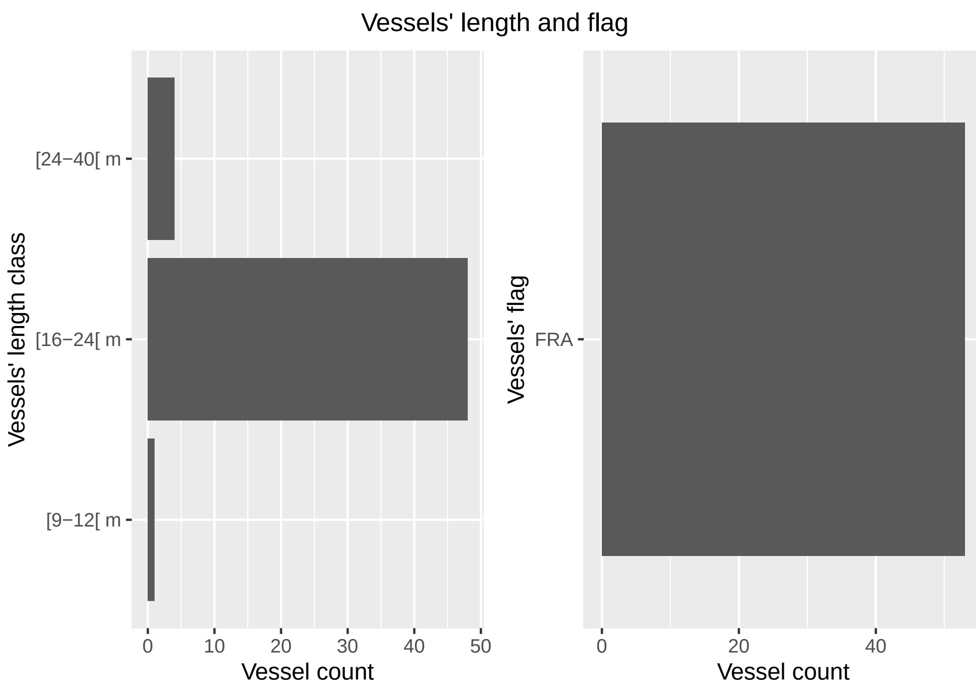
Importance	Variable	Value
	Spp.	Dicentrarchus spp
	Family	Moronidae
	Order	Perciformes
Determinant (>95%)	ISSCAAP	33
Strongly predominant (>80%)	Gear	Pair trawls Midwater
Predominant (>65%)	Trimester	1
Strong component (>35%)	ICES division	27.7.e
	Sp.	Spondyliosoma cantharus
	Family	Sparidae
		27.8.a
	ICES division	27.8.b
		02
	Month	03
Component (>20%)	Trimester	2
	ICES division	27.7.d
		20E8
		21E7
		22E7
		27E5
		27E6
		28E5
		28E6
		28E7
		28E8
	Statistic rectangle	29E8

Table 37: Tactic 10 (Strategy 71.1.2) *(continued)*

Importance	Variable	Value
		01
	Month	04
Minor component (>5%)	Trimester	4
	main_prop_spp	TRUE
	main_prop_family	TRUE
	main_prop_order	TRUE
High values (>SD)	main_prop_isscaap	TRUE
	Spp.	Dicentrarchus spp
	Family	Moronidae
Categories with high values (>SD)	ISSCAAP	33

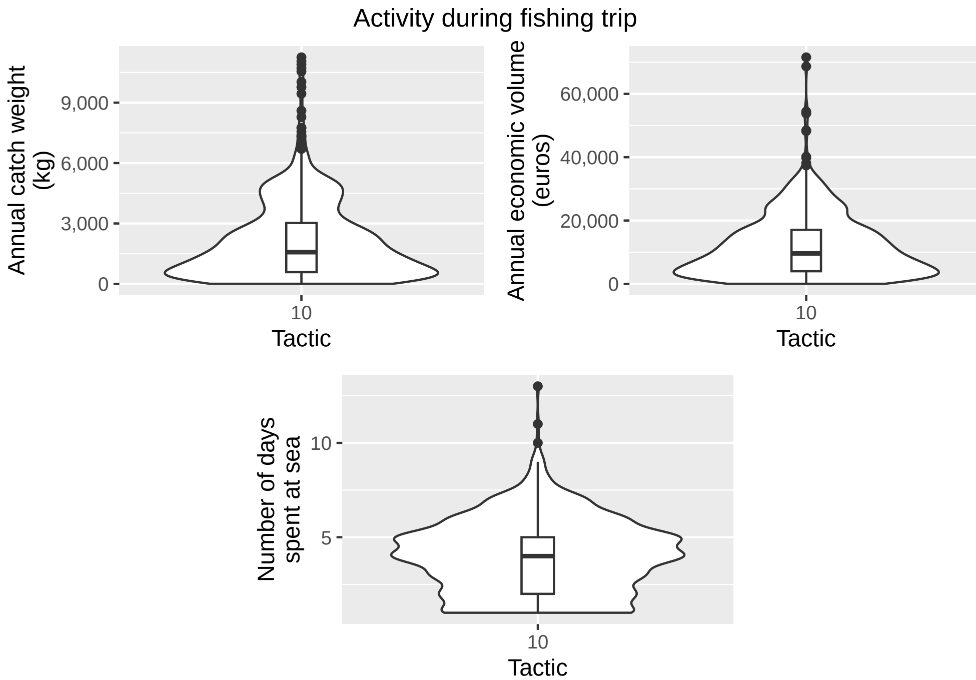
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2005)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

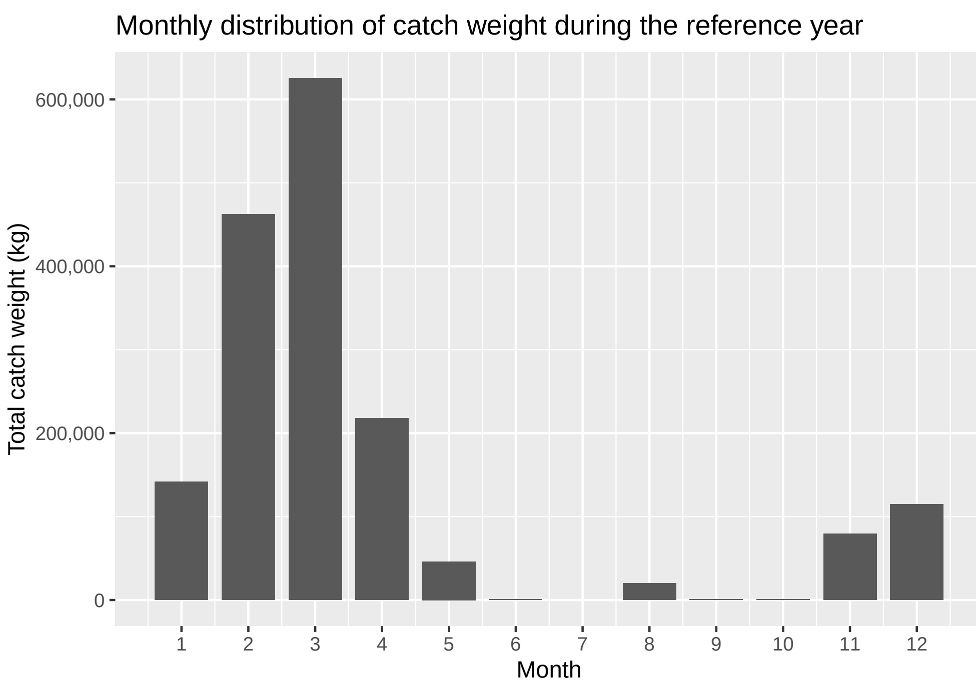


Description of the volume and pattern of fishing activities during the reference year (2005)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



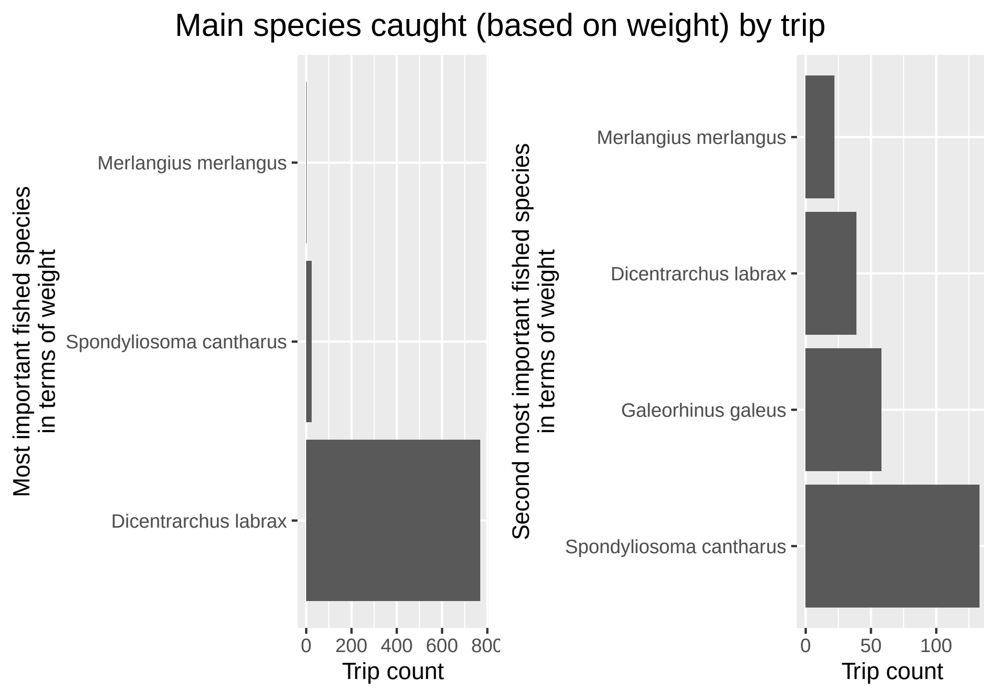
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

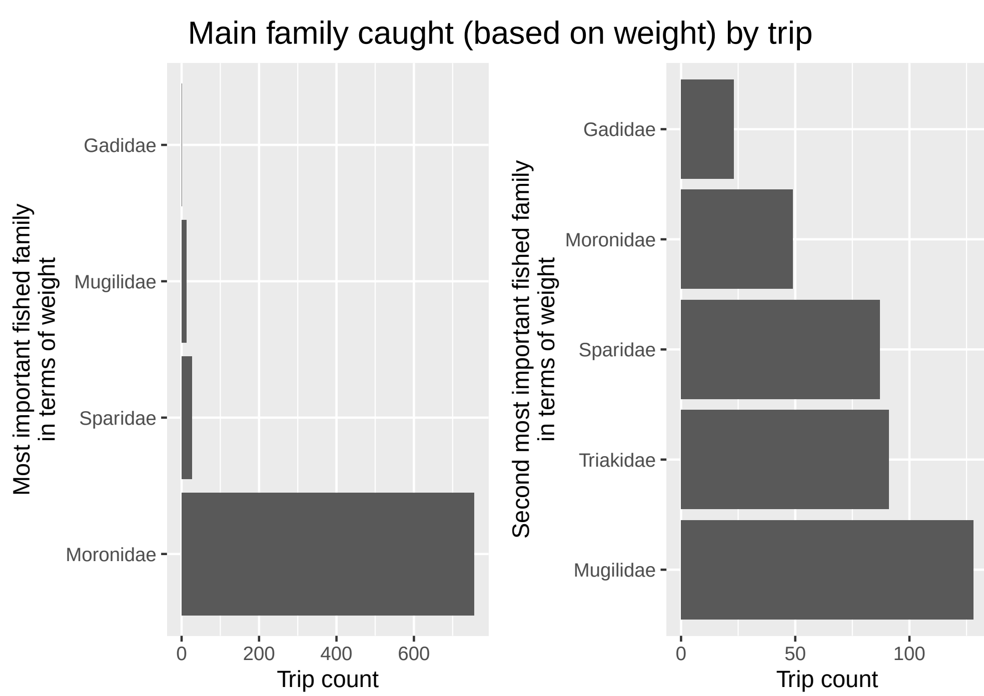


Main fished taxa and used gears during the reference year (2005)

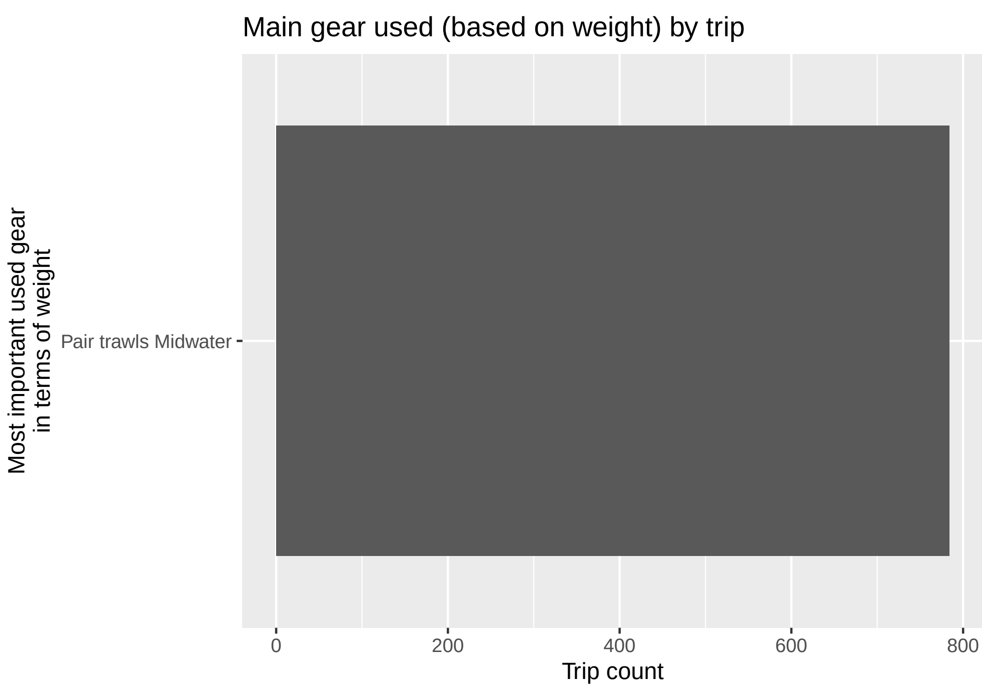
We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

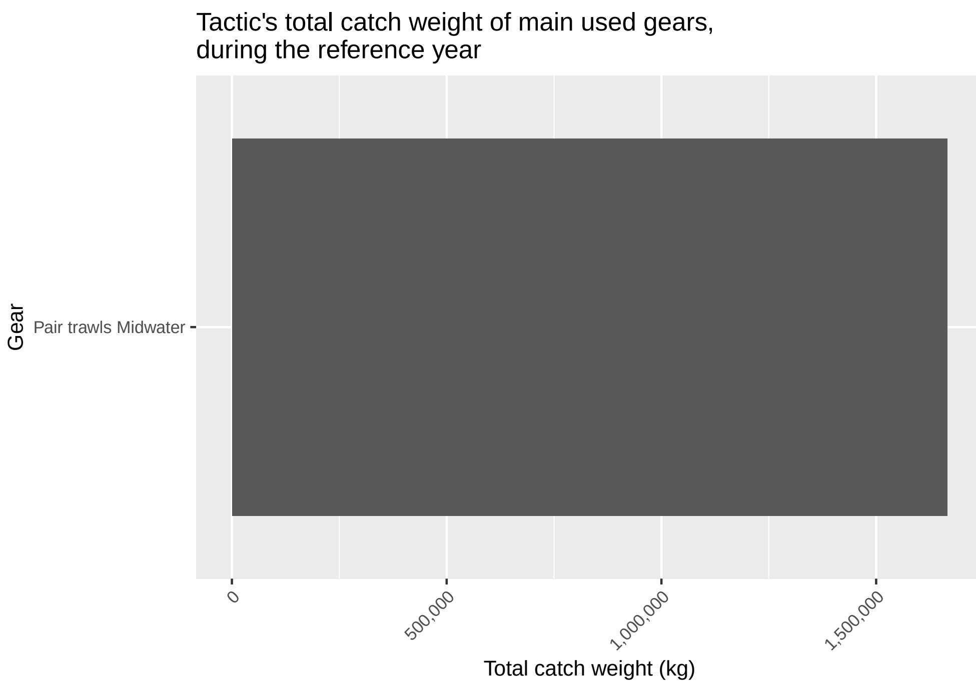
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).





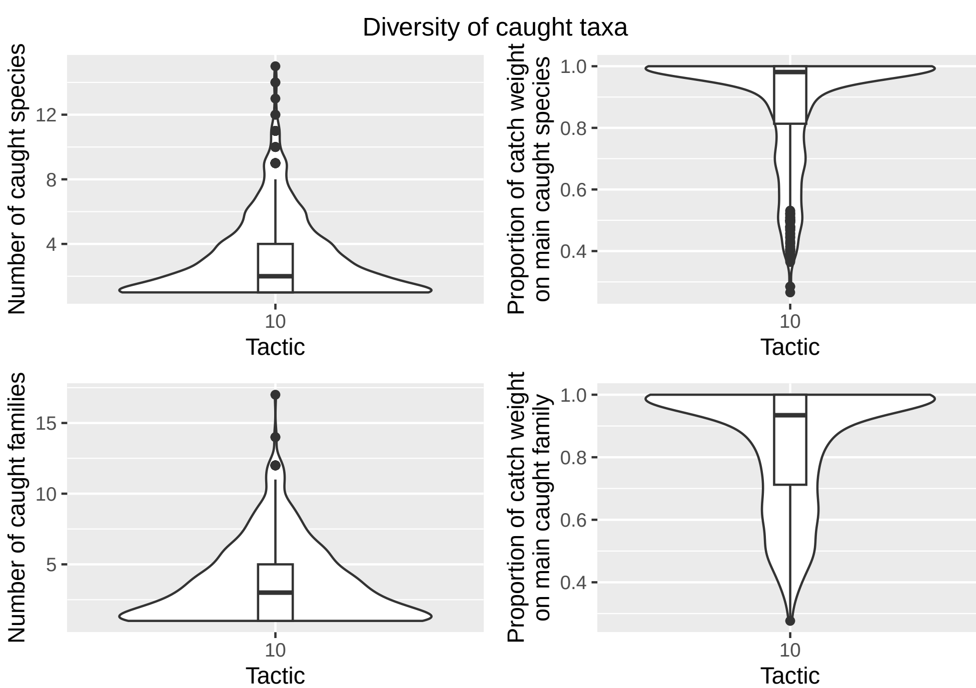
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



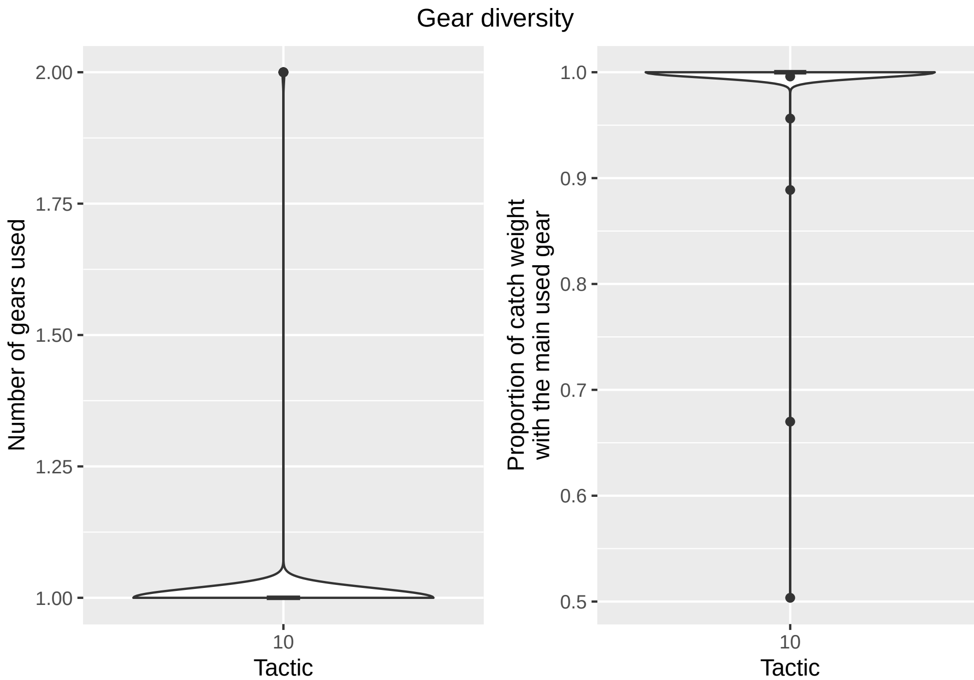


Diversity of fished taxa and used gears during the reference year (2005)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

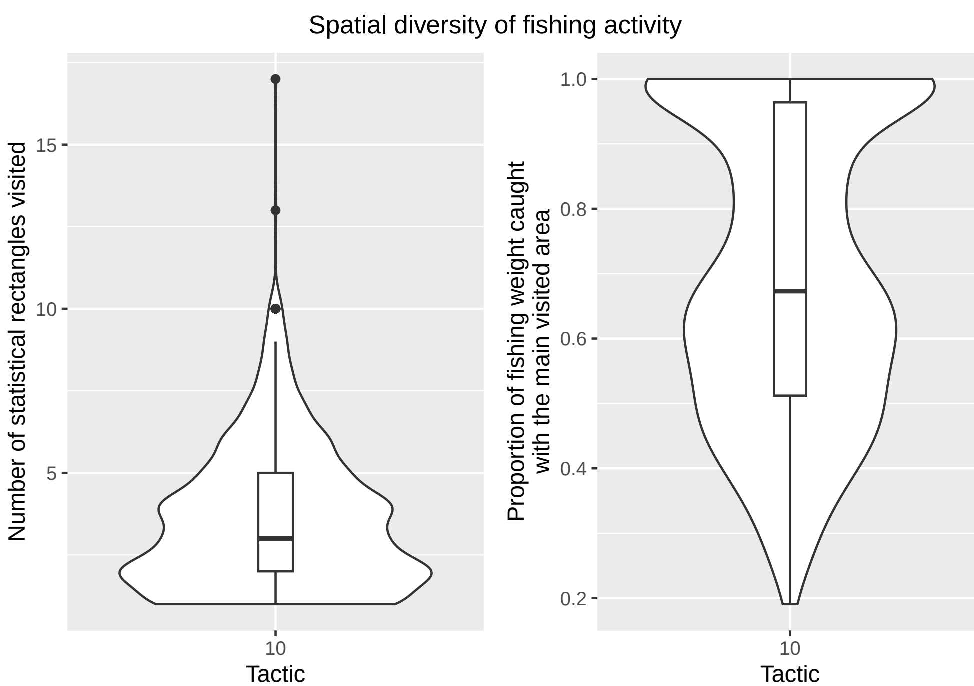


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

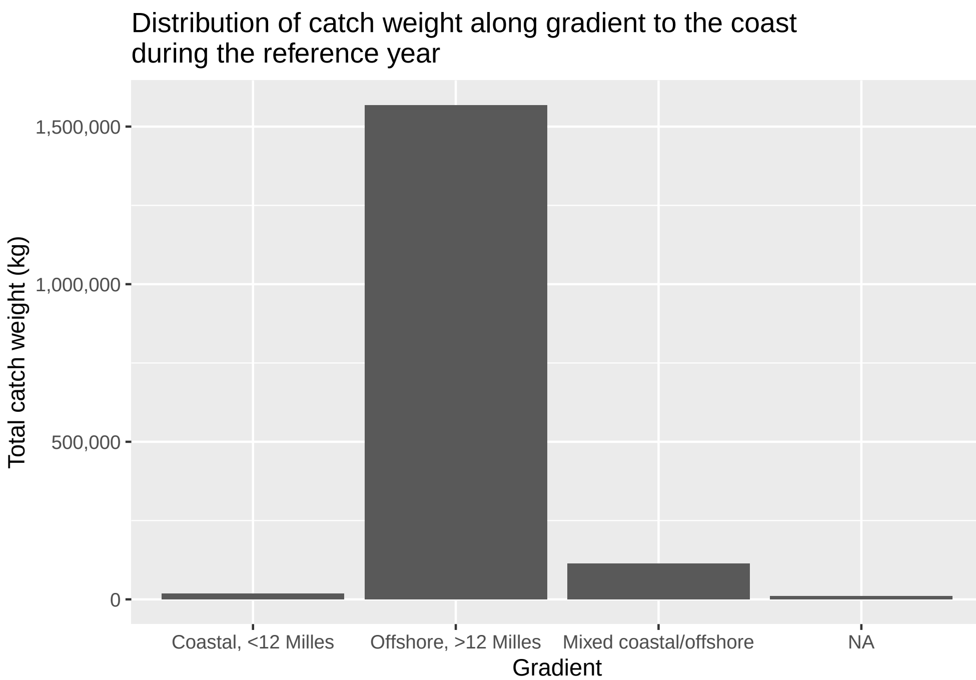


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

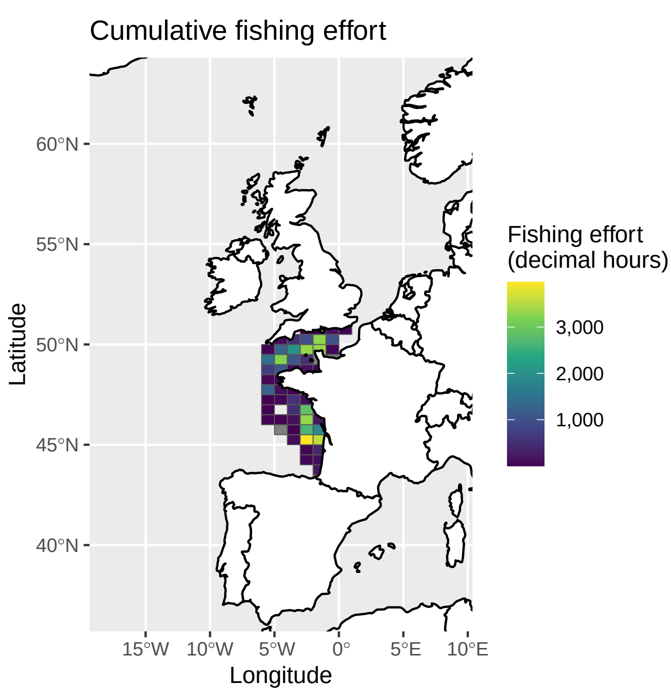


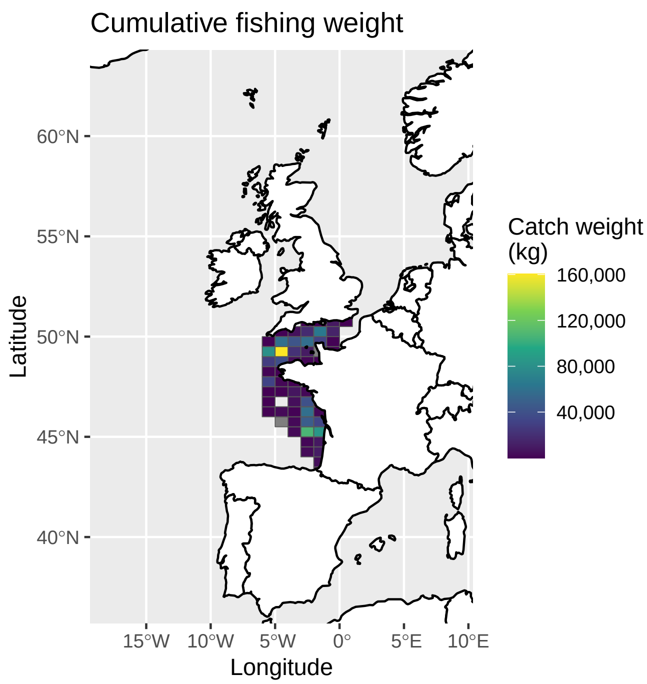
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2005)

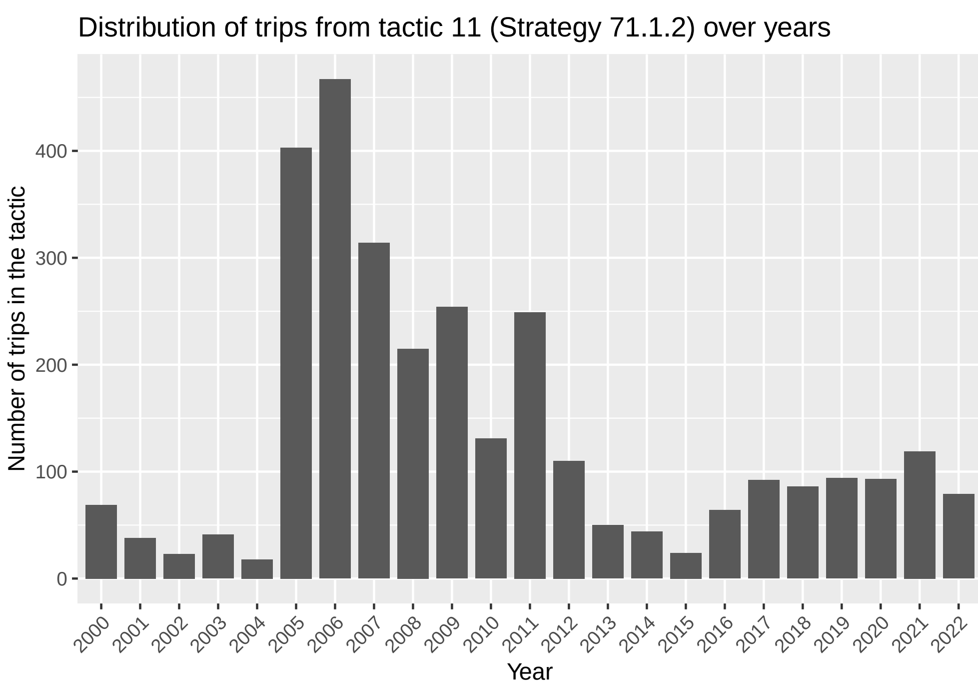
Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.





Tactic 11 (Strategy 71.1.2)

This tactic includes N=3077 fishing trips. There are N=86 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2006.

Description table

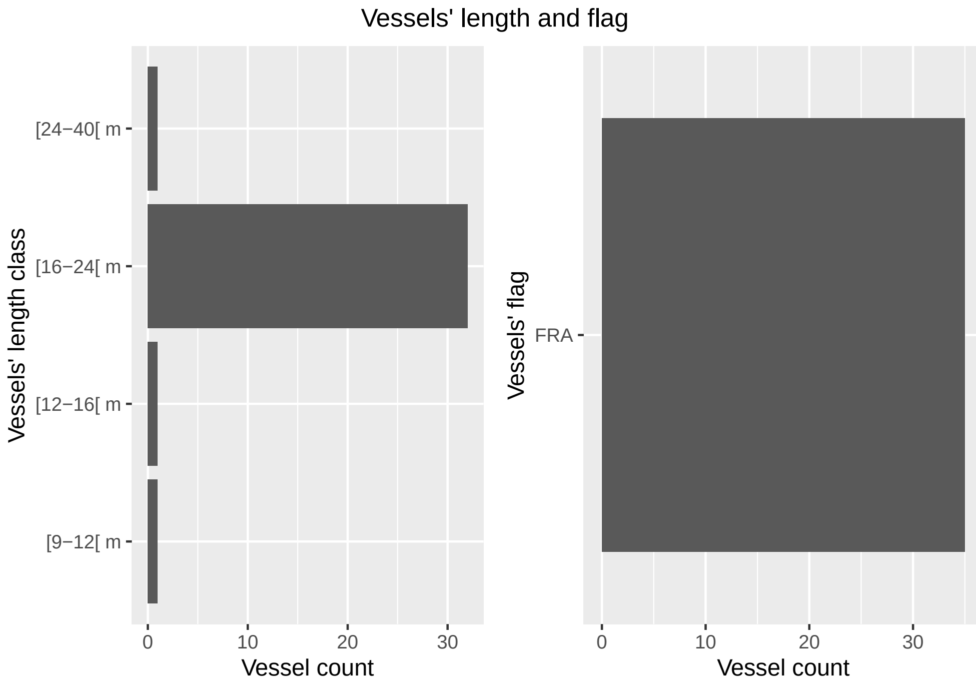
This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 38: Tactic 11 (Strategy 71.1.2)

Importance	Variable	Value
Determinant (>95%)	Order	Perciformes
	ISSCAAP	37
Strongly predominant (>80%)	Gear	Pair trawls Midwater
Predominant (>65%)	ICES division	27.8.a
Major (>50%)	ISSCAAP	33
		Scomber spp
	Spp.	Trachurus spp
		Carangidae
Strong component (>35%)	Family	Scombridae
	Sp.	Spondyliosoma cantharus
	Family	Sparidae
	ICES division	27.8.b
	Statistic rectangle	23E7
		2
Component (>20%)	Trimester	3
		Dicentrarchus spp
		Mugil spp
	Spp.	Sarda spp
		Moronidae
	Family	Mugilidae
		36
	ISSCAAP	38
		16E8
		20E8
		21E7
	Statistic rectangle	22E7
		01
		02
		03
		04
		05
		06
		07
		08
		09
		10
	Month	11
Minor component (>5%)	Trimester	1
Categories with high values (>SD)	ISSCAAP	37

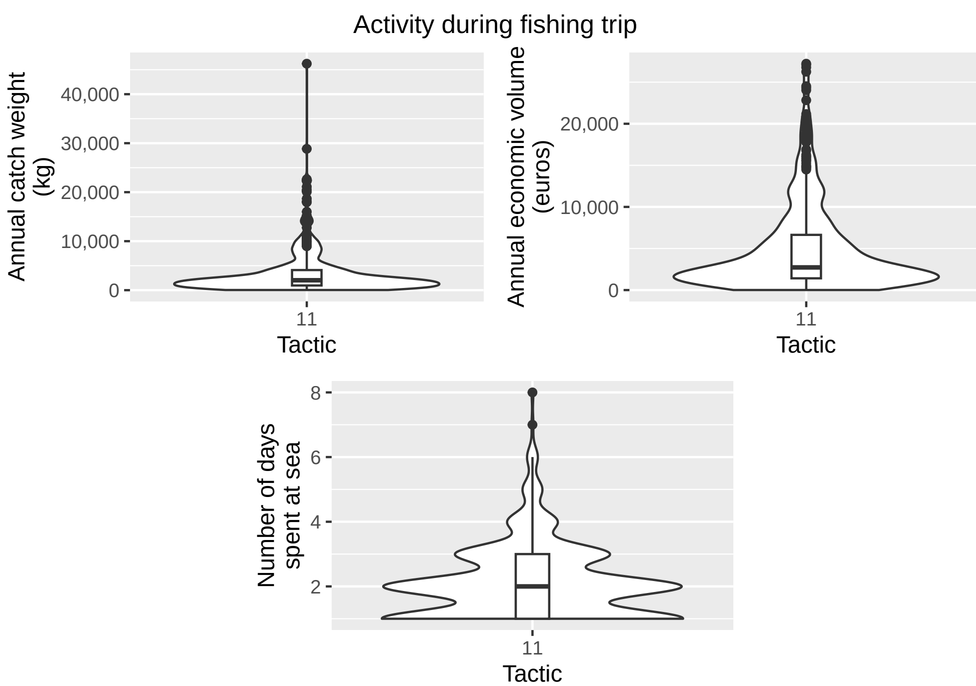
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2006)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

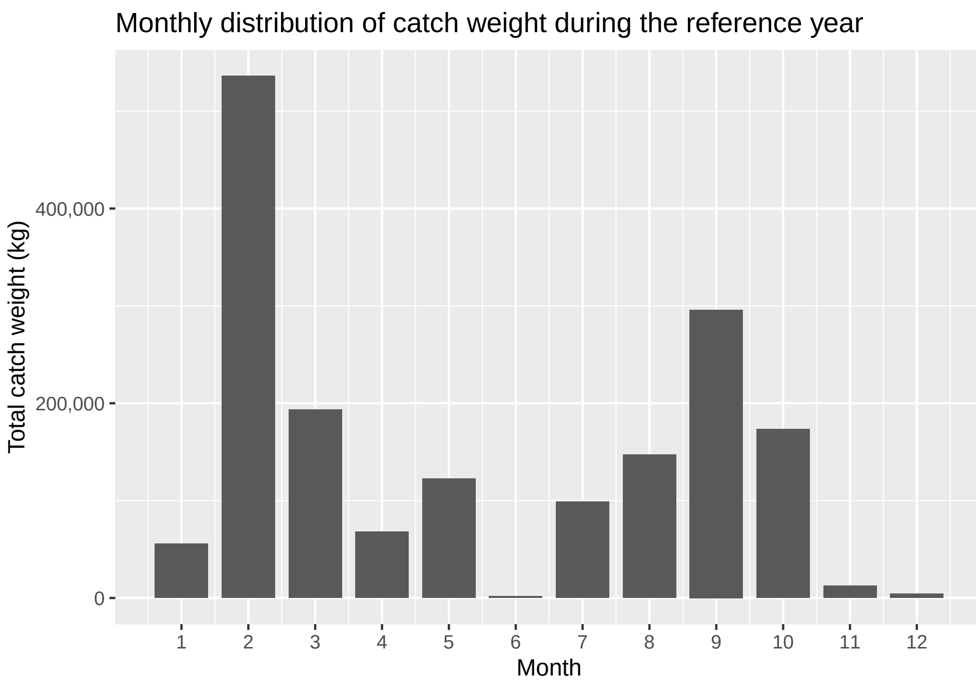


Description of the volume and pattern of fishing activities during the reference year (2006)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.

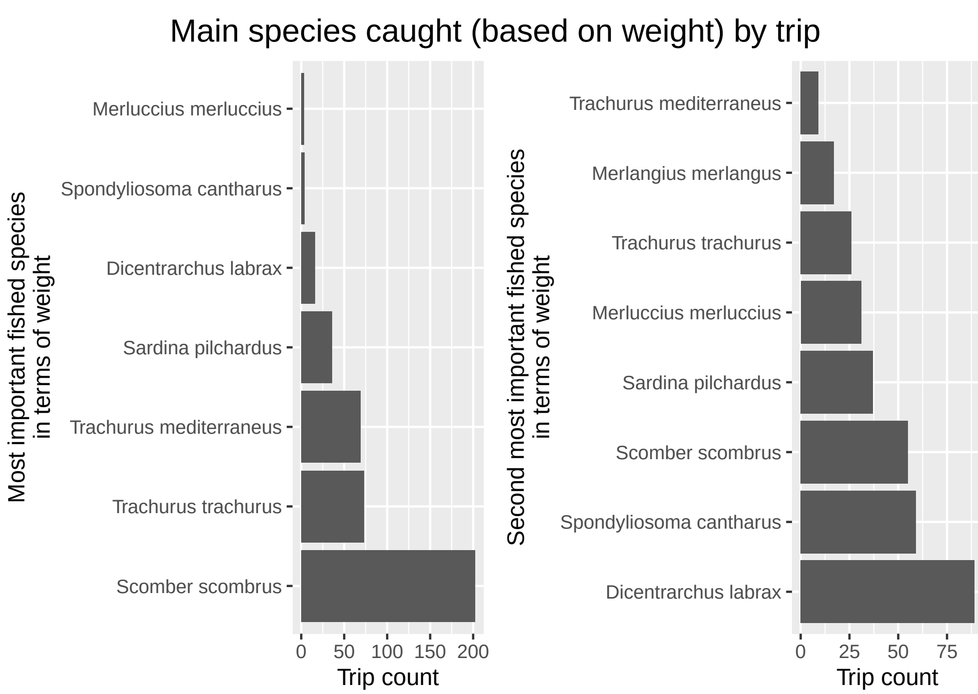


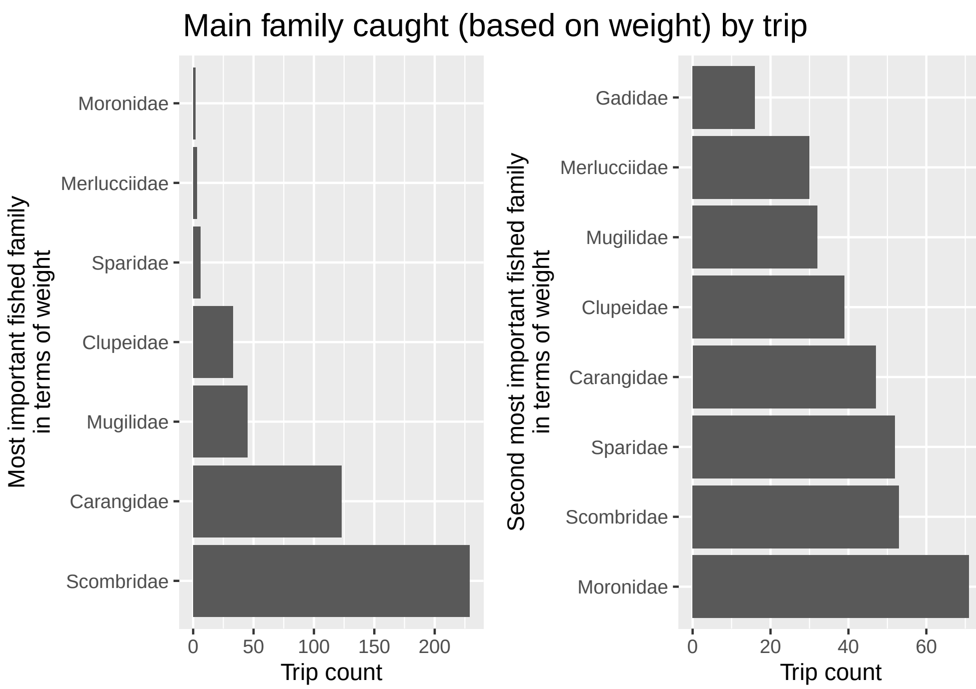
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

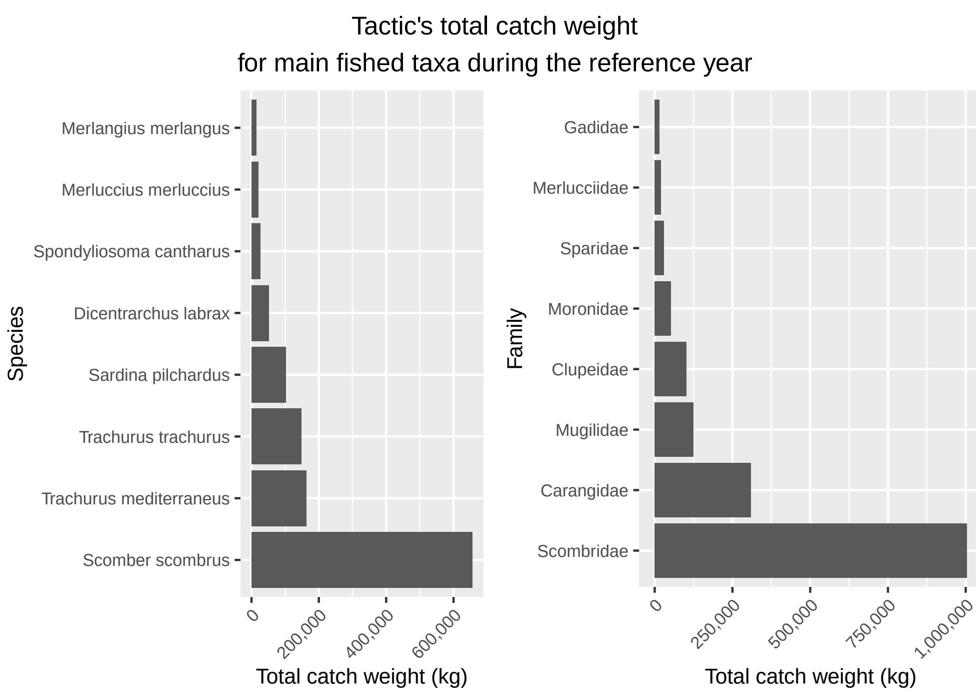


Main fished taxa and used gears during the reference year (2006)

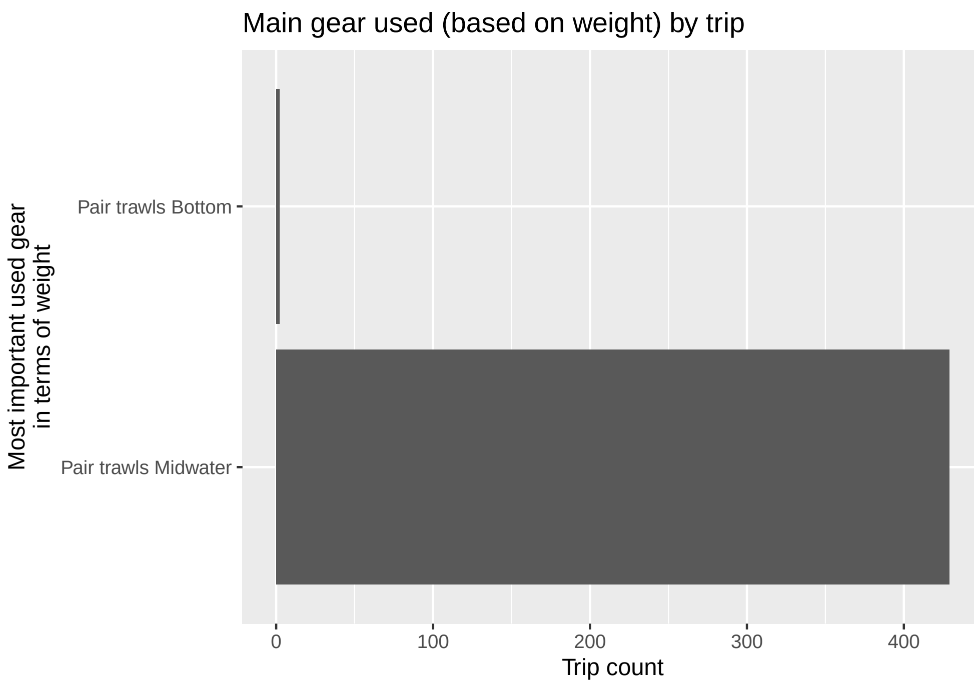
We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

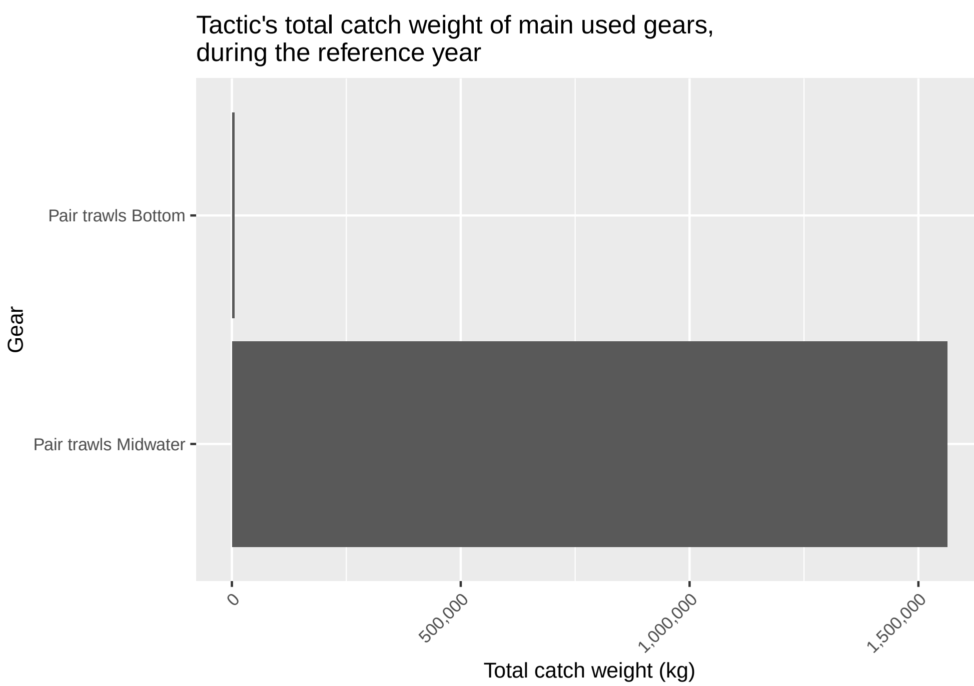






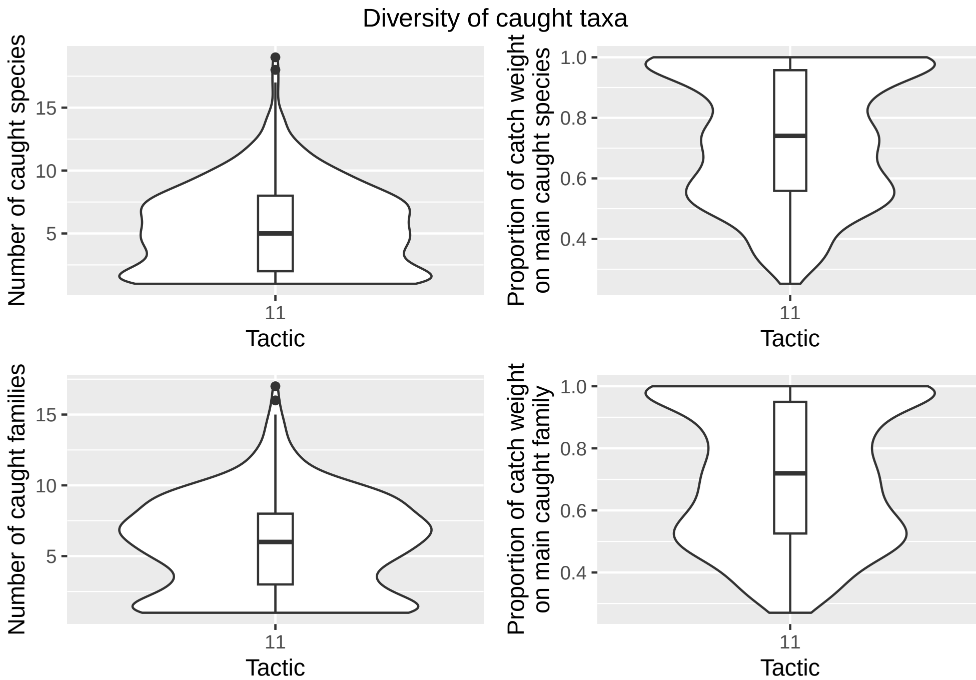
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



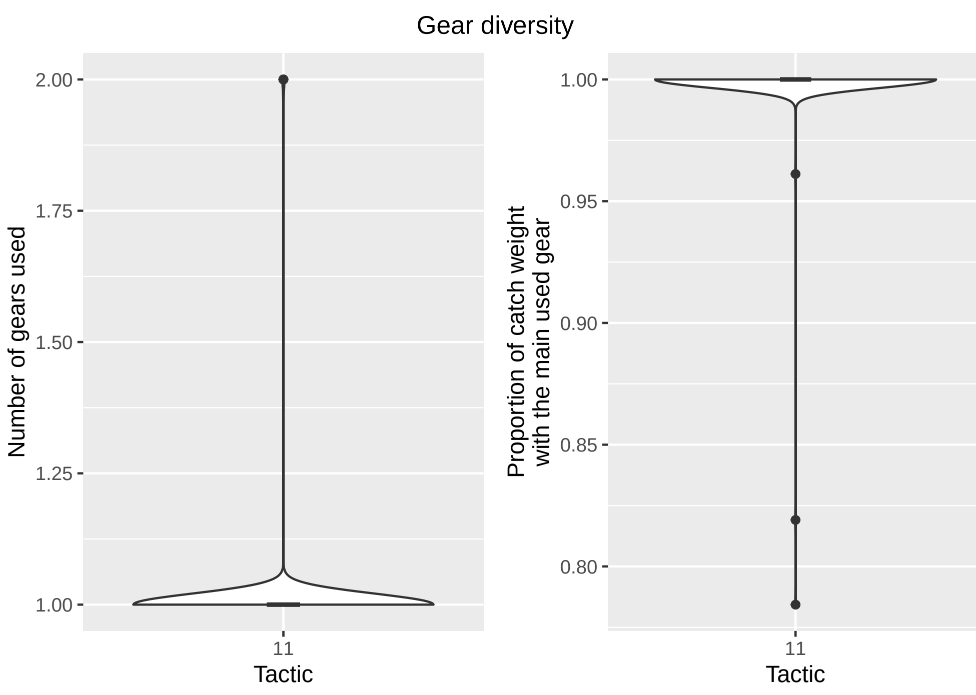


Diversity of fished taxa and used gears during the reference year (2006)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

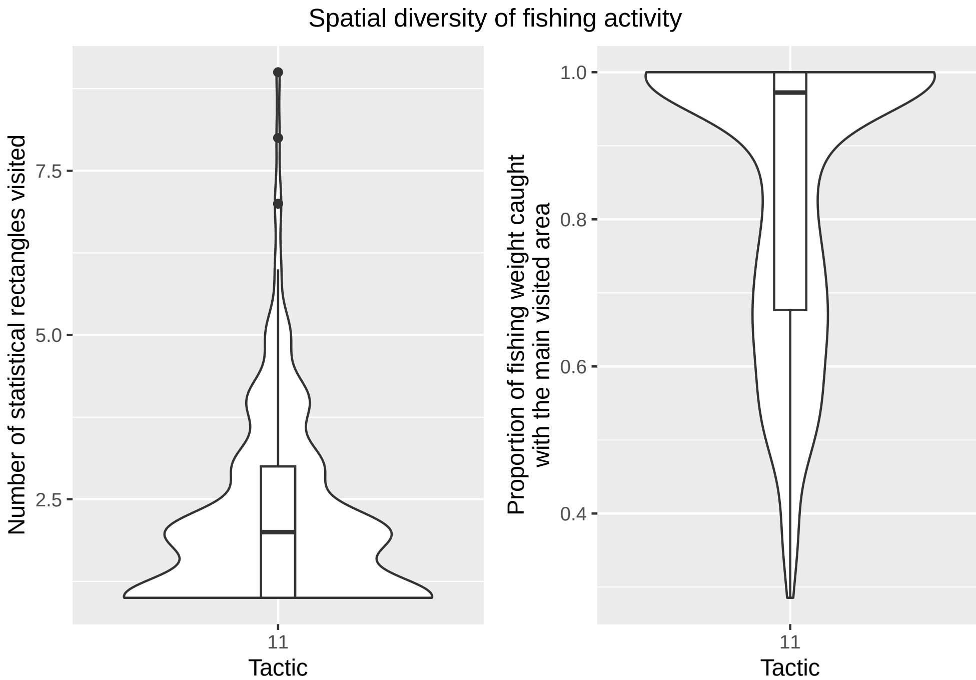


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

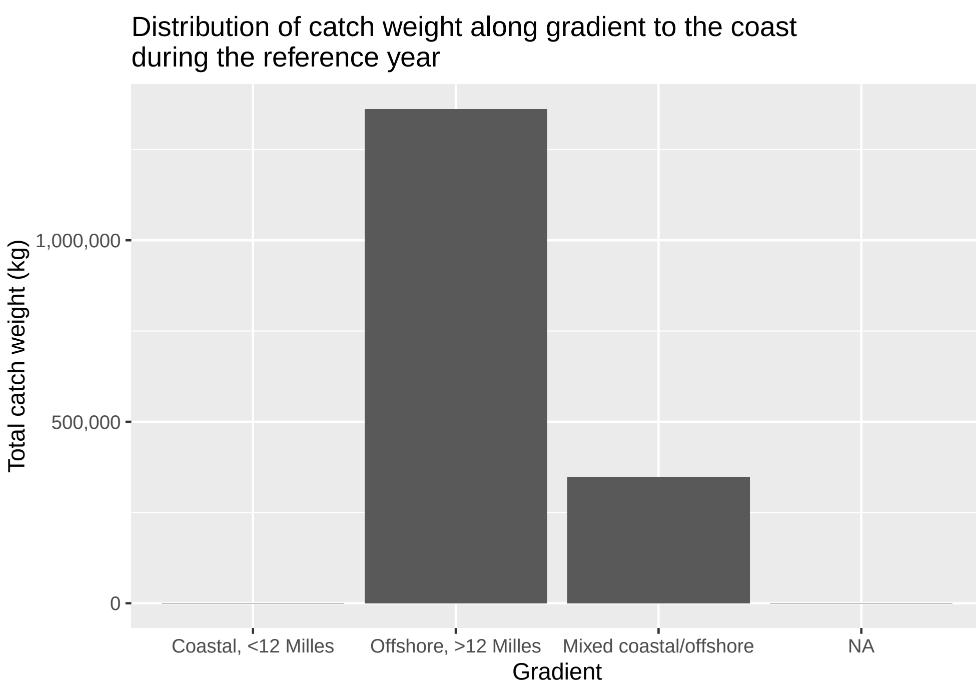


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.



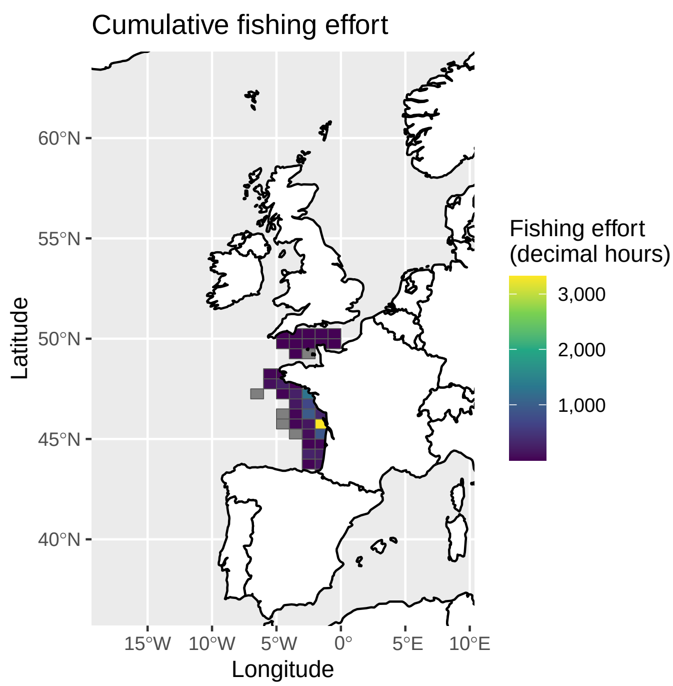
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.

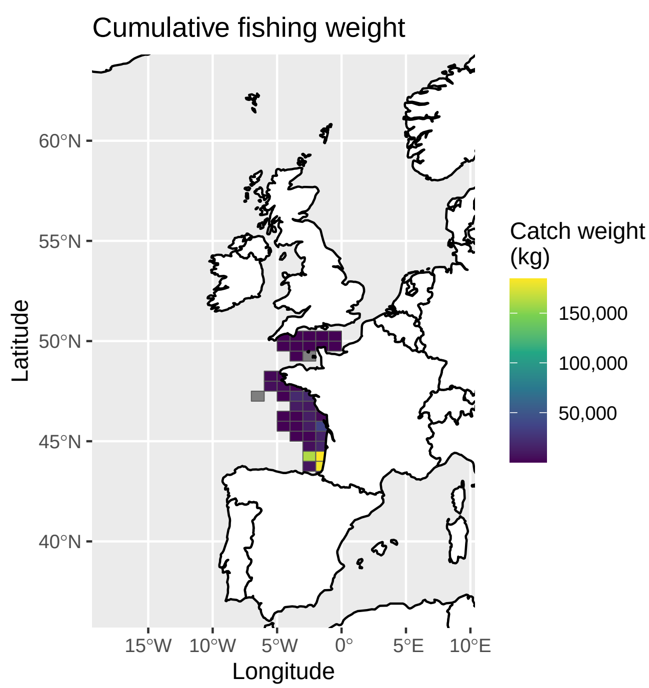


Maps of fishing activity distribution during the reference year (2006)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing

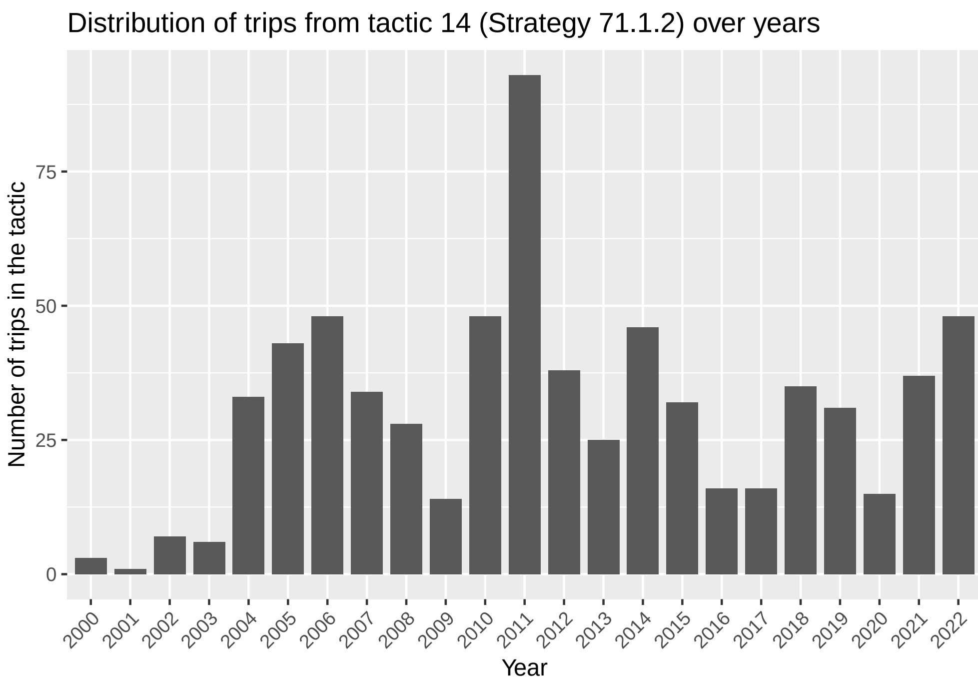
weight/effort are available.





Tactic 14 (Strategy 71.1.2)

This tactic includes N=697 fishing trips. There are N=58 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2011.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 39: Tactic 14 (Strategy 71.1.2)

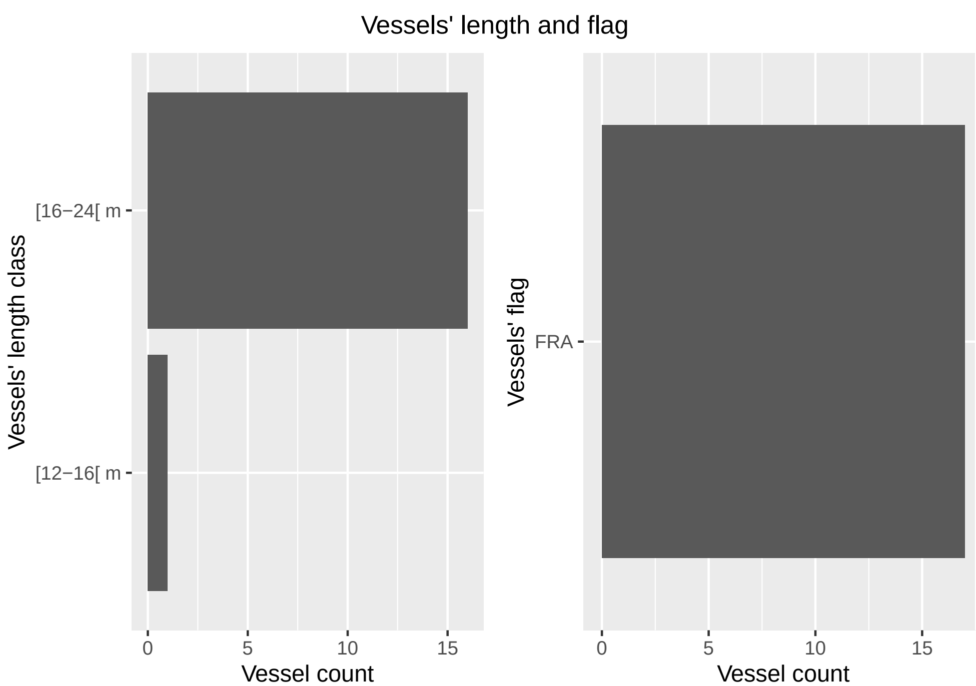
Importance	Variable	Value
	Order	Carcharhiniformes
	ISSCAAP	38
Strongly predominant (>80%)	Gear	Pair trawls Midwater
	Spp.	Mustelus spp
Predominant (>65%)	Family	Triakidae
	Order	Perciformes
Major (>50%)	ISSCAAP	33
	Sp.	Spondyliosoma cantharus
	Family	Sparidae
	ICES division	27.7.d
	Statistic rectangle	28E8
Strong component (>35%)	Trimester	4
	ICES division	27.7.e
	Month	11
Component (>20%)	Trimester	1
	Sp.	Prionace glauca
	Spp.	Alopias spp
	Sp.	Zeus faber
	Spp.	Dicentrarchus spp
		Alopiidae
		Carcharhinidae
		Gadidae
		Moronidae
	Family	Zeidae
		Gadiformes

Table 39: Tactic 14 (Strategy 71.1.2) *(continued)*

Importance	Variable	Value
		Lamniformes
	Order	Zeiformes
		32
	ISSCAAP	34
	Gear	Set longlines
		27.8.a
	ICES division	27.8.b
		20E8
		28E7
	Statistic rectangle	29E8
		01
		02
		07
	Month	12
		2
Minor component (>5%)	Trimester	3
High values (>SD)	div_val_order	TRUE
	Order	Carcharhiniformes
Categories with high values (>SD)	ISSCAAP	38

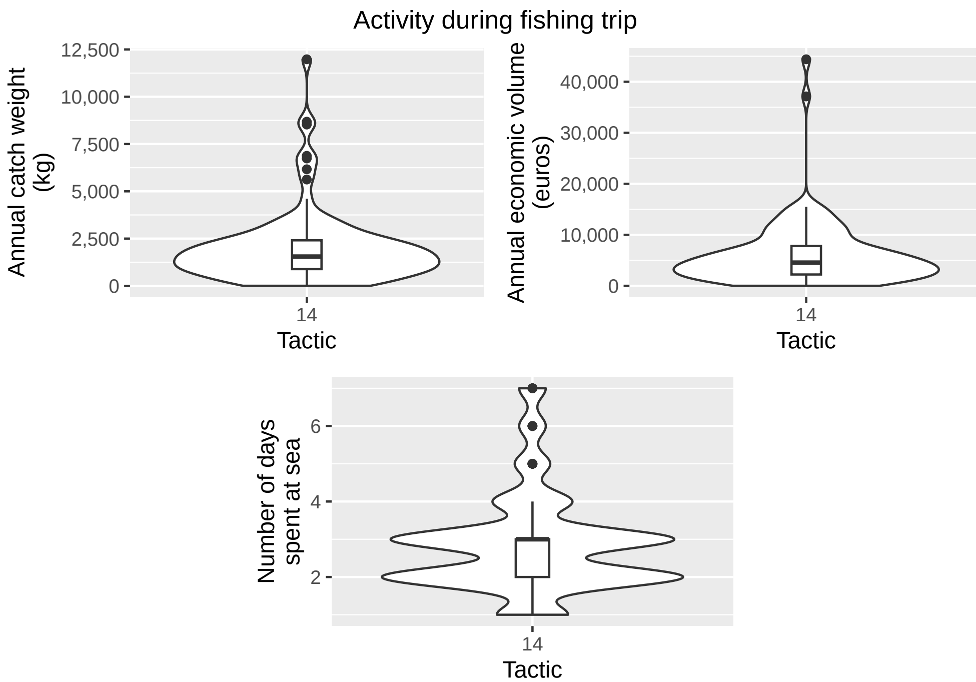
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2011)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

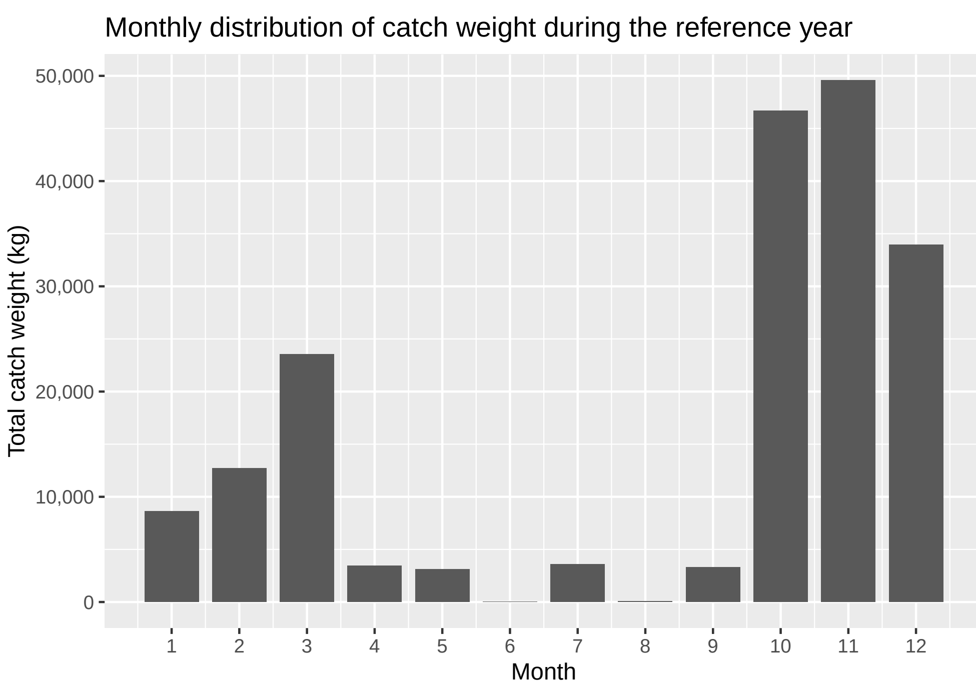


Description of the volume and pattern of fishing activities during the reference year (2011)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



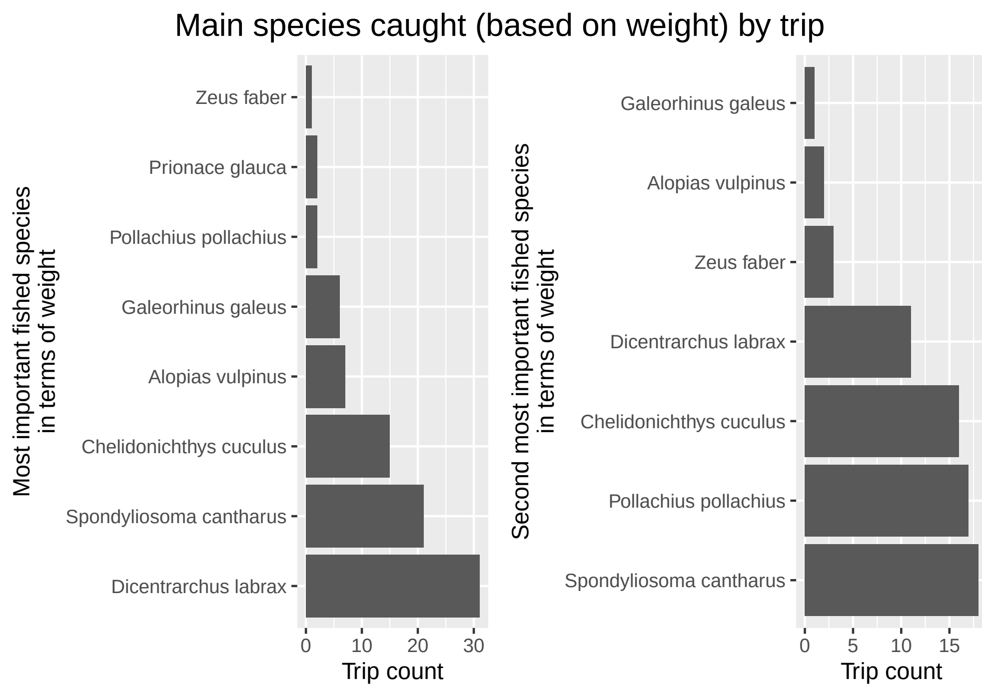
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

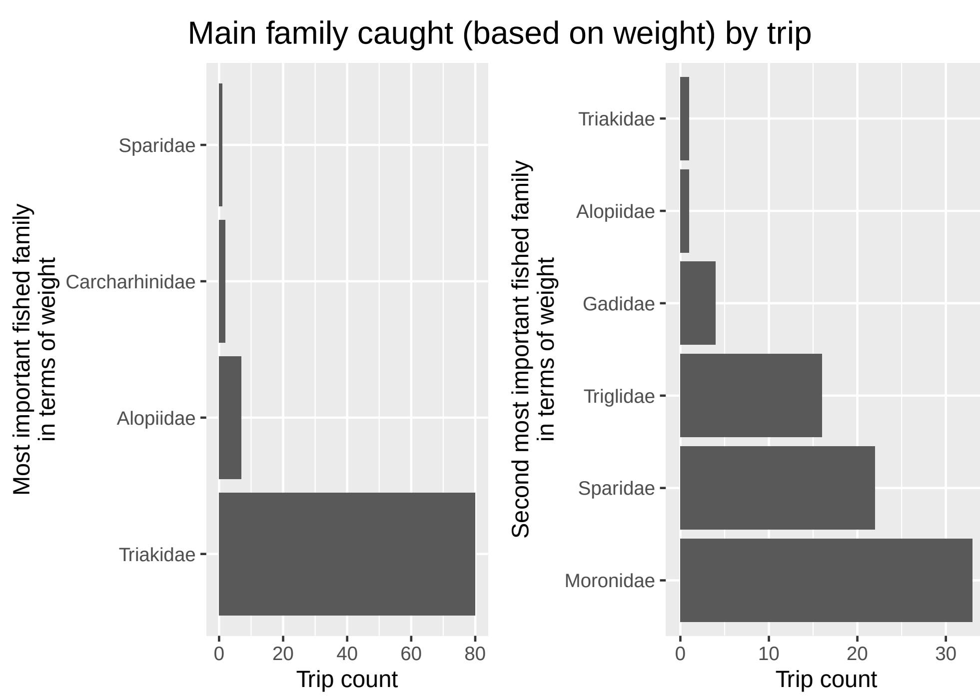


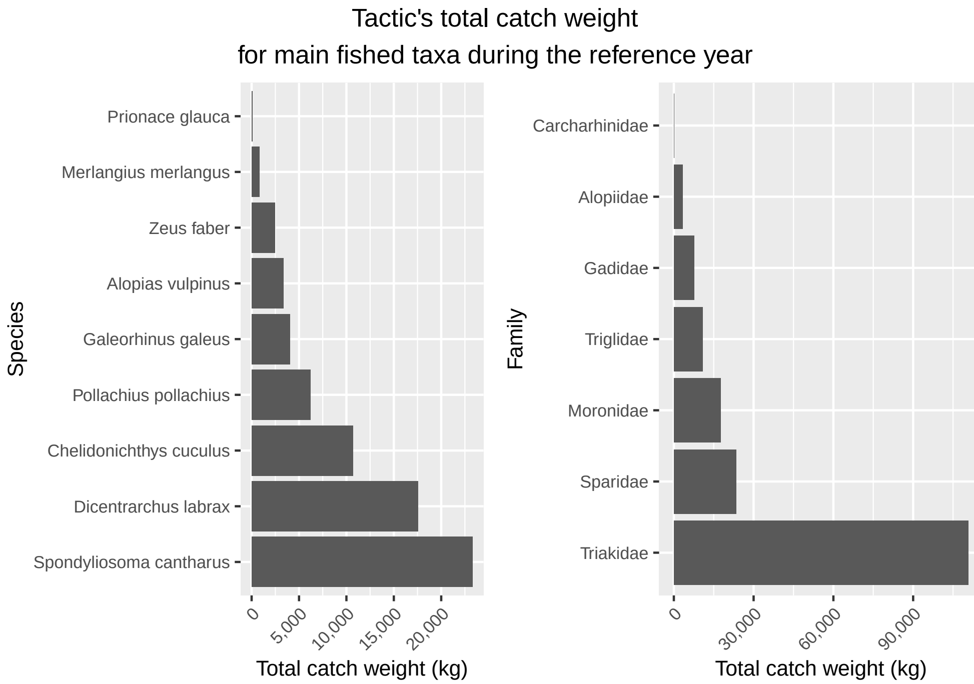
Main fished taxa and used gears during the reference year (2011)

We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

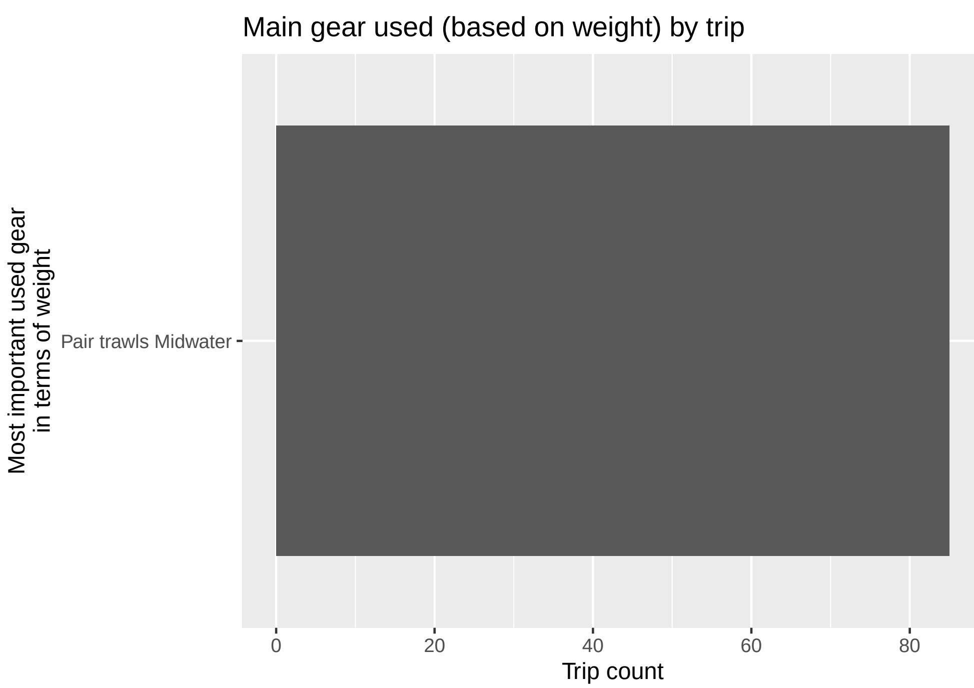
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

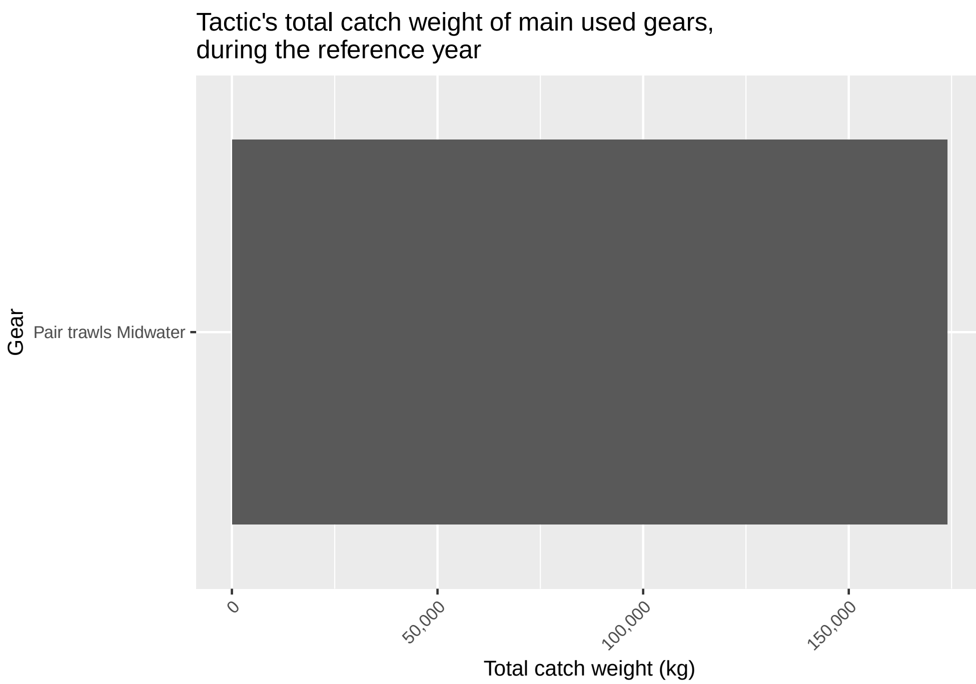






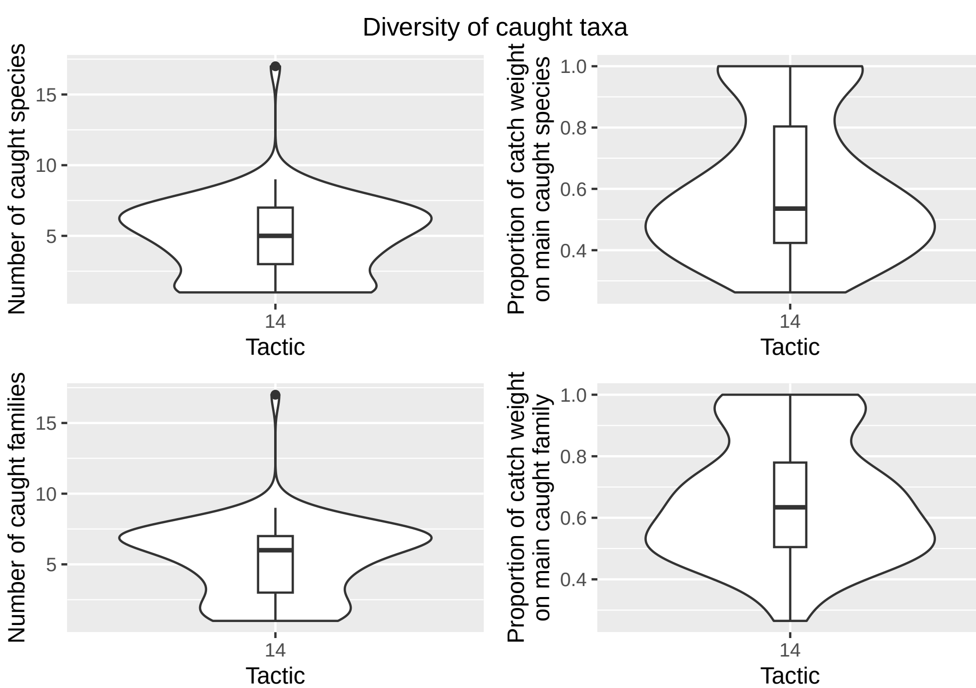
Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).



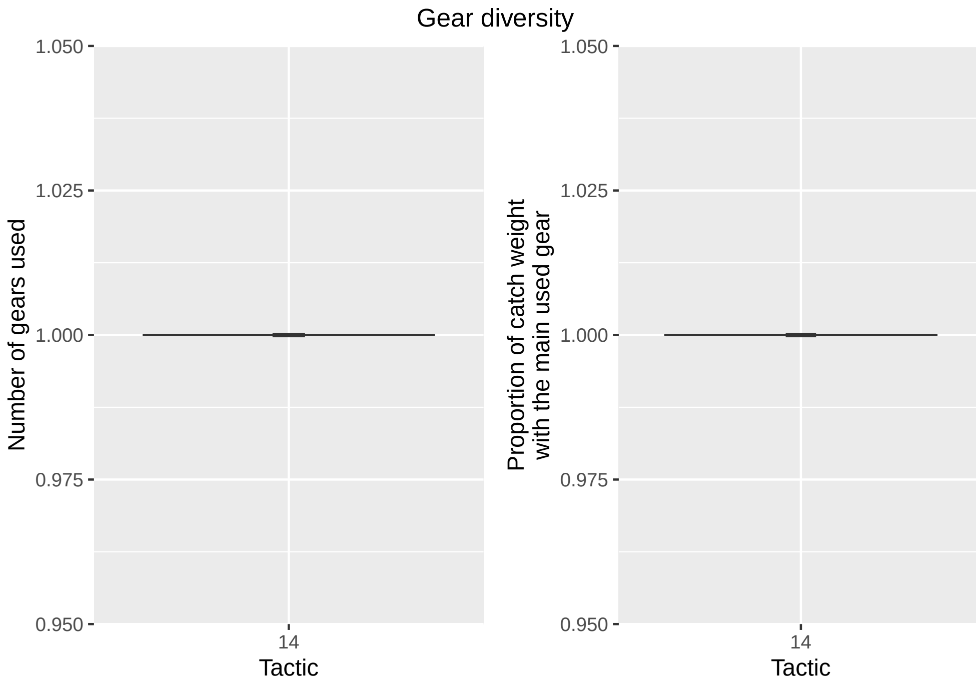


Diversity of fished taxa and used gears during the reference year (2011)

We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

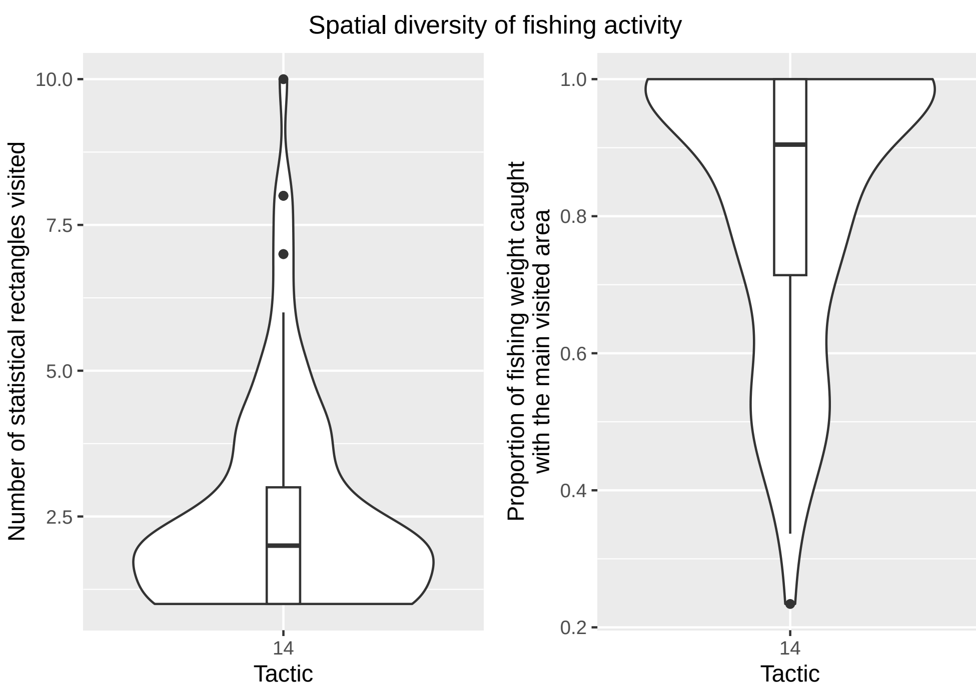


We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

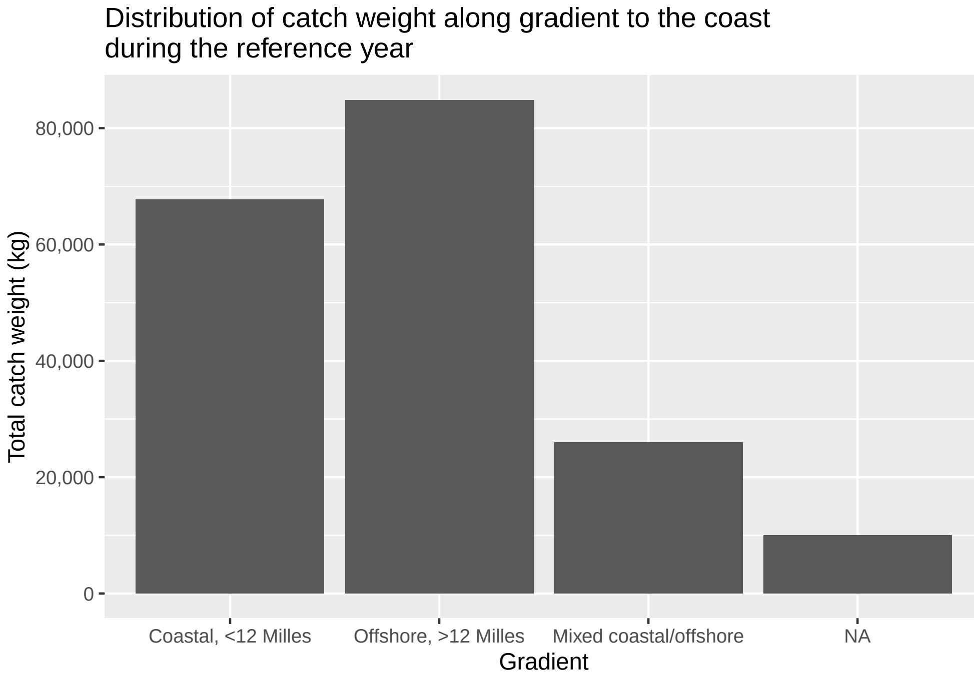


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

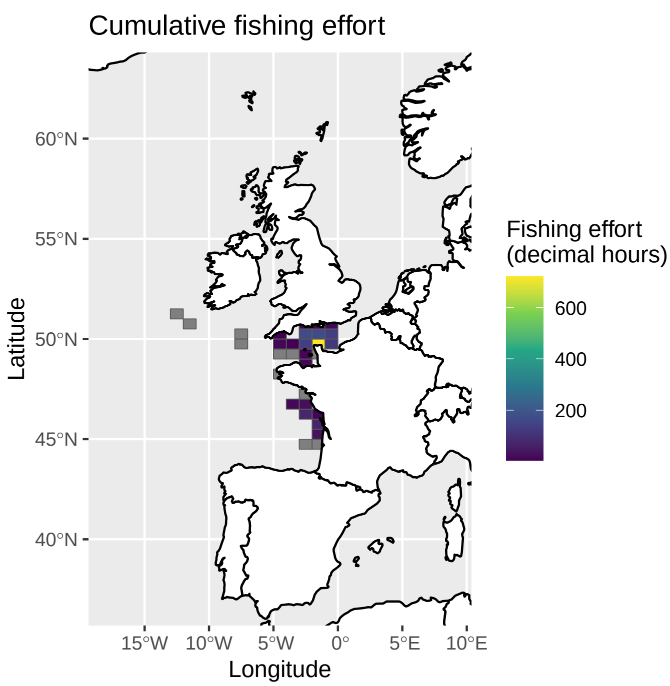


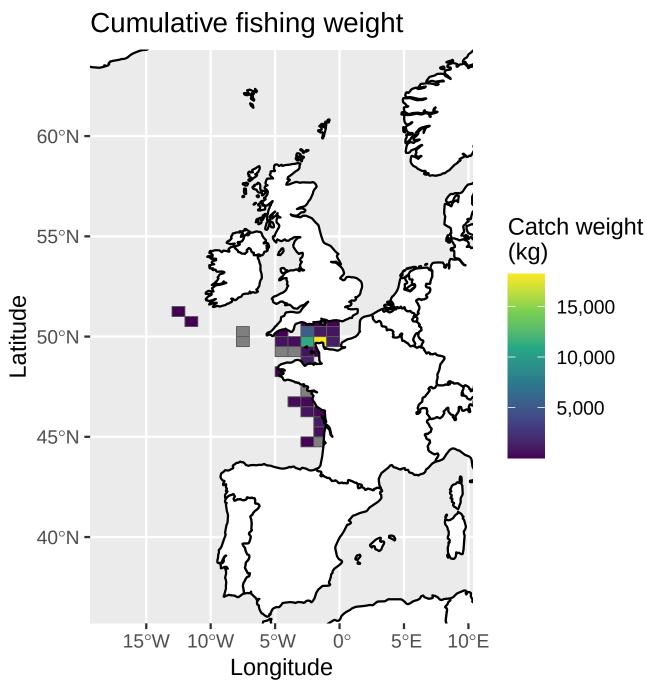
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2011)

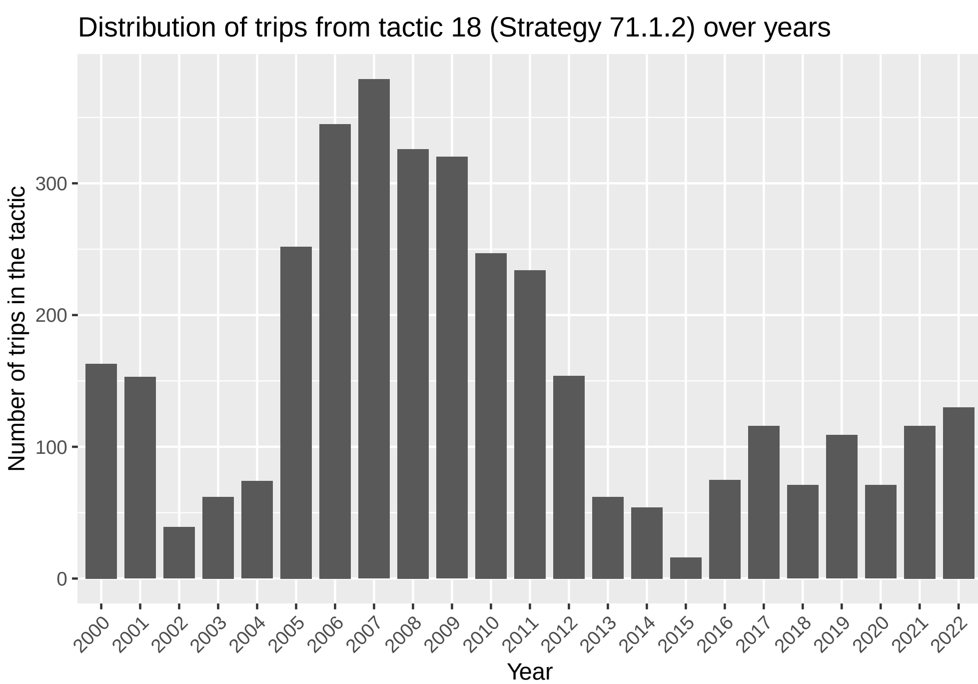
Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.





Tactic 18 (Strategy 71.1.2)

This tactic includes N=3568 fishing trips. There are N=95 vessels using this tactic (whatever the year of activity). The distribution of these fishing trips over the years is provided below.



The reference year used to illustrate this tactic (with the maximum number of vessels) is 2007.

Description table

This table describes the major categories and quantitative variables associated with the tactic of interest. The importance of the association is indicated on the left.

Table 40: Tactic 18 (Strategy 71.1.2)

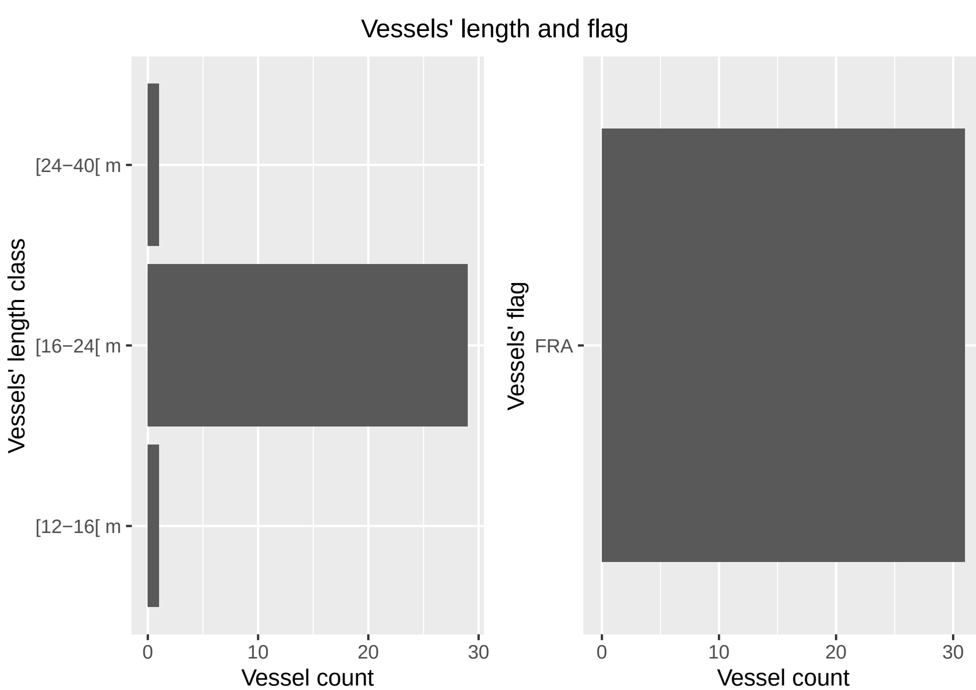
Importance	Variable	Value
Predominant (>65%)	ICES division	27.8.a
	Order	Perciformes
Major (>50%)	ISSCAAP	33
	Spp.	Dicentrarchus spp
		Gadidae
	Family	Moronidae
	Order	Gadiformes
	ISSCAAP	32
		Pair trawls Bottom
	Gear	Pair trawls Midwater
Strong component (>35%)	Trimester	4
	Sp.	Trisopterus luscus
	Spp.	Merluccius spp
	Family	Merlucciidae
	ICES division	27.8.b
	Statistic rectangle	21E7
Component (>20%)	Month	11
		Merlangius merlangus
	Sp.	Scophthalmus rhombus
		Alopias spp
		Scomber spp
	Spp.	Trachurus spp
	Sp.	Spondyliosoma cantharus
		Alopiidae
		Carangidae
		Loliginidae
		Scombridae
		Scophthalmidae
	Family	Sparidae
		Lamniformes
		Myopsida
	Order	Pleuronectiformes
		31
		37
		38
	ISSCAAP	57
	Gear	Otter trawls Bottom
		19E8
		20E8
		21E8
	Statistic rectangle	22E7
		01
		03
		04
		05
		06
		10
	Month	12
		2
Minor component (>5%)	Trimester	3
	div_val_spp	TRUE
	div_val_family	TRUE
	div_val_order	TRUE
High values (>SD)	div_val_isscaap	TRUE
	Sp.	Merlangius merlangus
		Dicentrarchus spp

Table 40: Tactic 18 (Strategy 71.1.2) *(continued)*

Importance	Variable	Value
	Spp.	Merluccius spp
		Gadidae
		Loliginidae
		Merlucciidae
		Moronidae
	Family	Sparidae
		Gadiformes
		Myopsida
	Order	Sepiida
		32
		33
		34
Categories with high values (>SD)	ISSCAAP	57

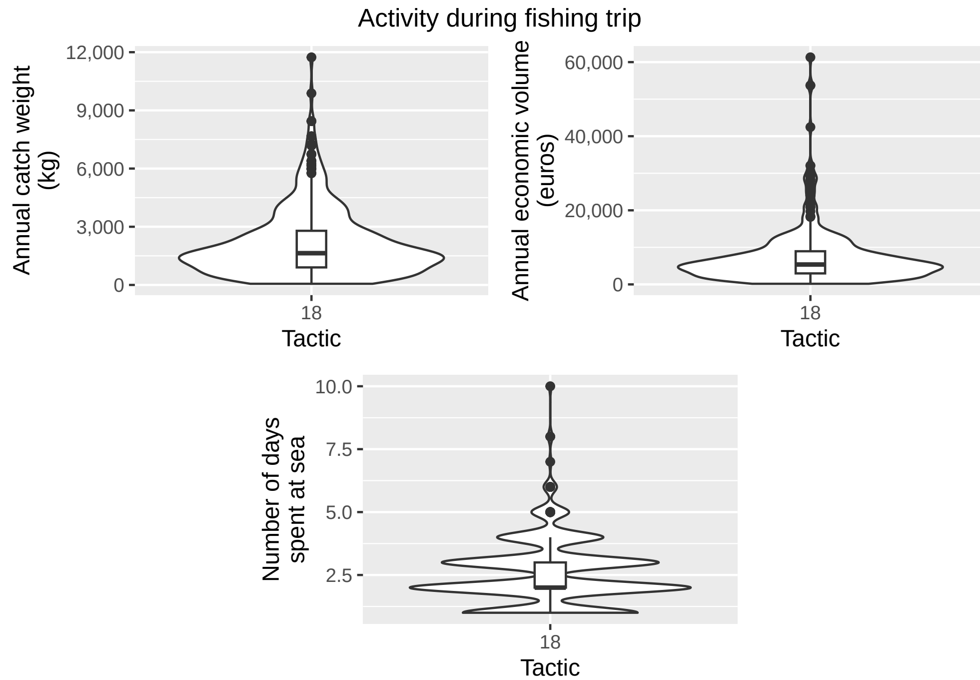
Distribution of length and flag of vessels using the tactic, at least once during the reference year (2007)

Vessel length and flag distributions are provided using the frequency of each flag and main length class.

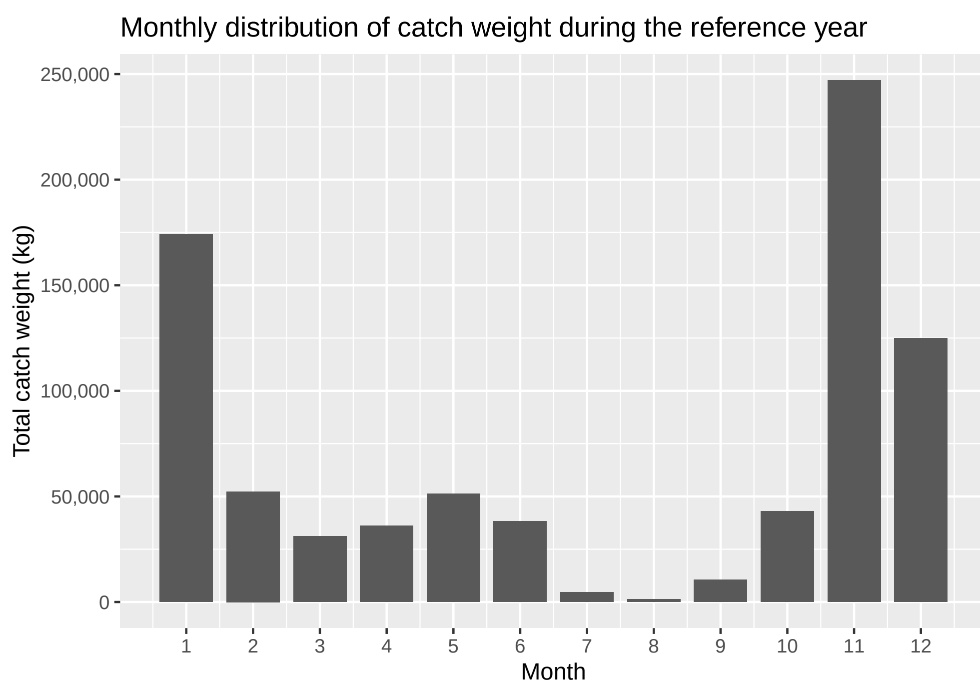


Description of the volume and pattern of fishing activities during the reference year (2007)

We first present the main measures of fishing activity at trip level, i.e. catch weight, economic value and number of days spent at sea, per trip and per vessel.



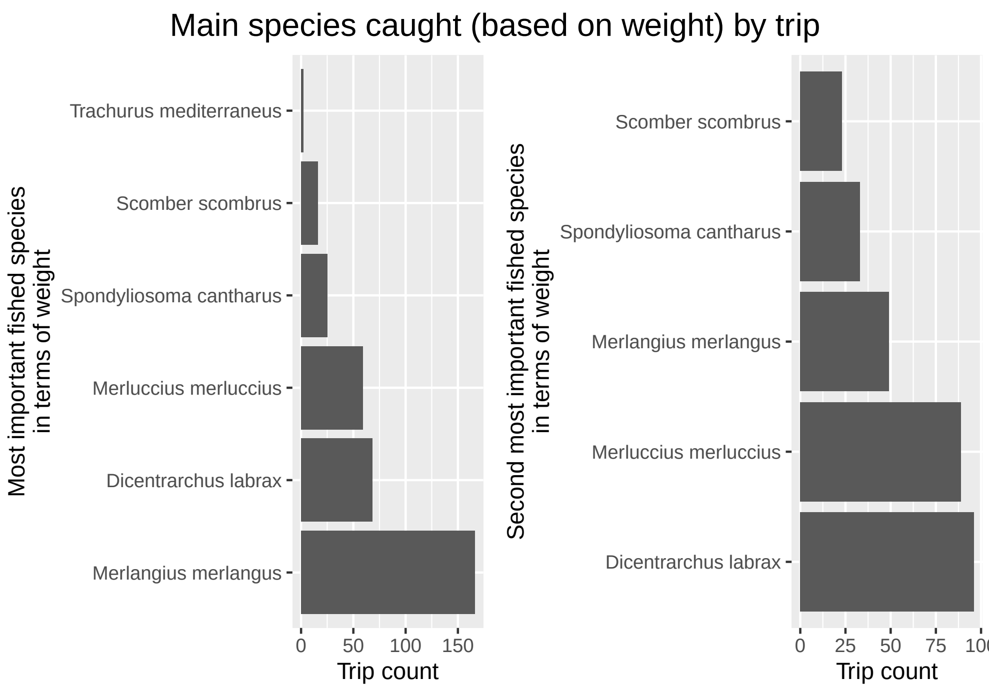
We then show the temporal distribution of activity during the reference year for the tactic of interest, by providing the annual catch weight per month.

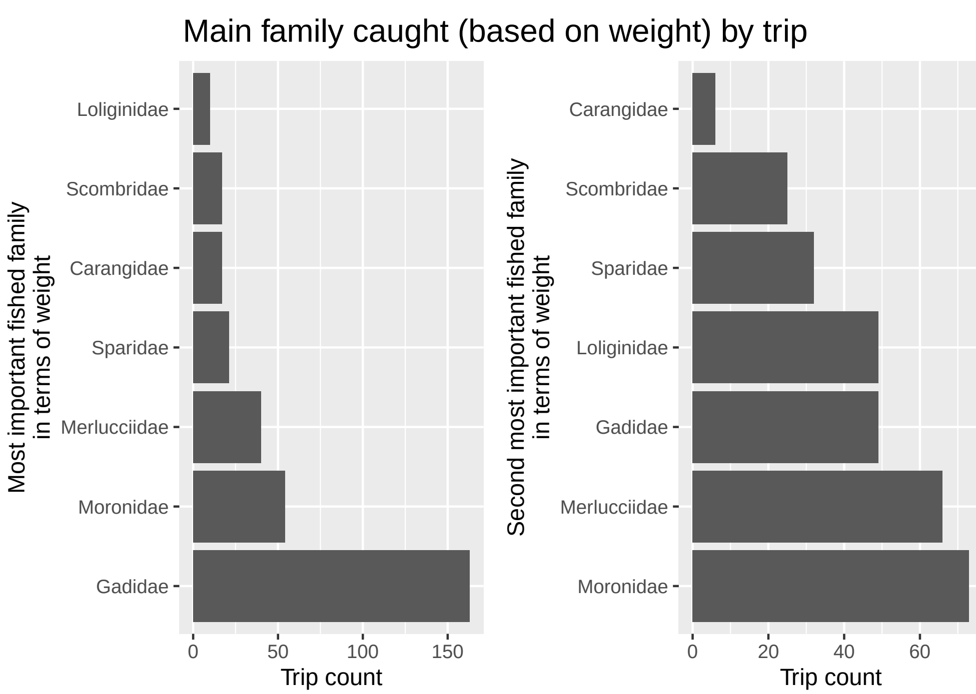


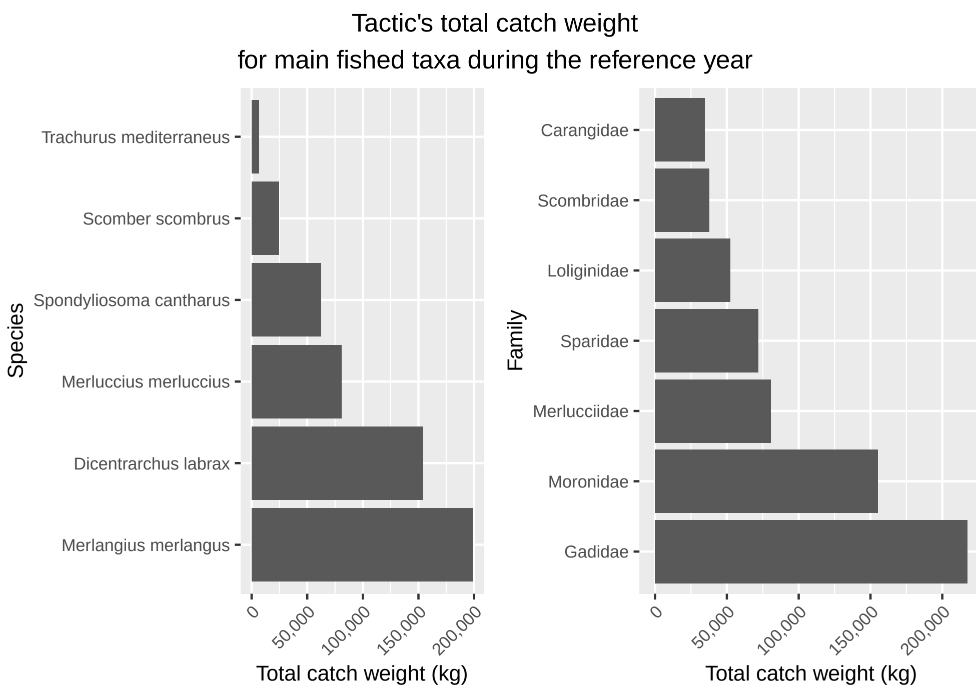
Main fished taxa and used gears during the reference year (2007)

We first display which taxa (species and family levels) are the most important in terms of catch weight and how much of the most important taxa were caught, using the annual catch weight (only for the tactic of

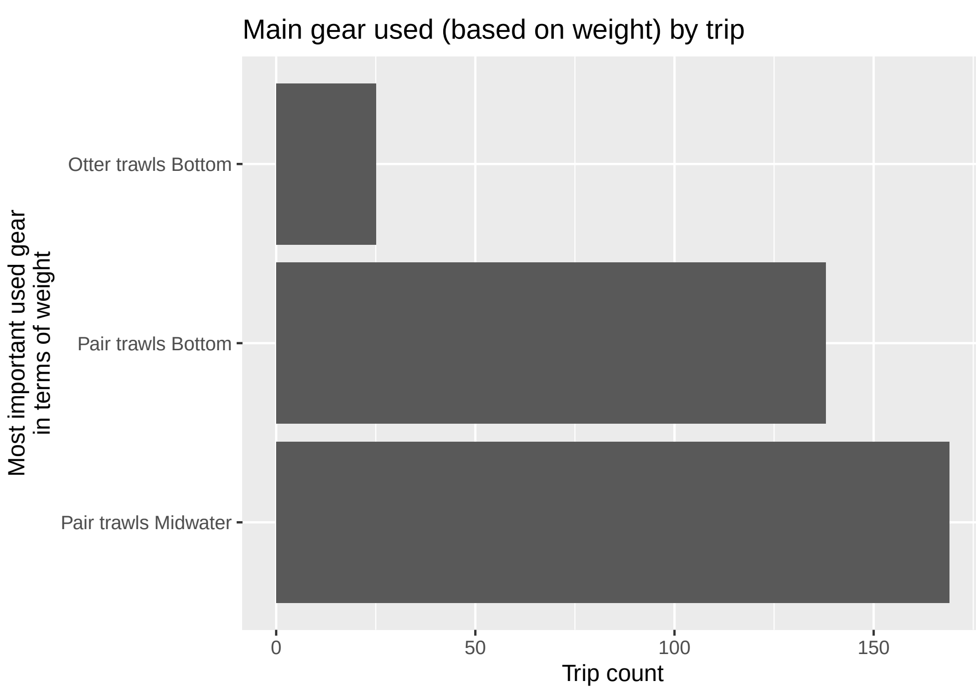
interest). We include all taxa that were identified as the most important (or second most important) fished taxa (in terms of weight) for more than 5% of vessels (for readability).

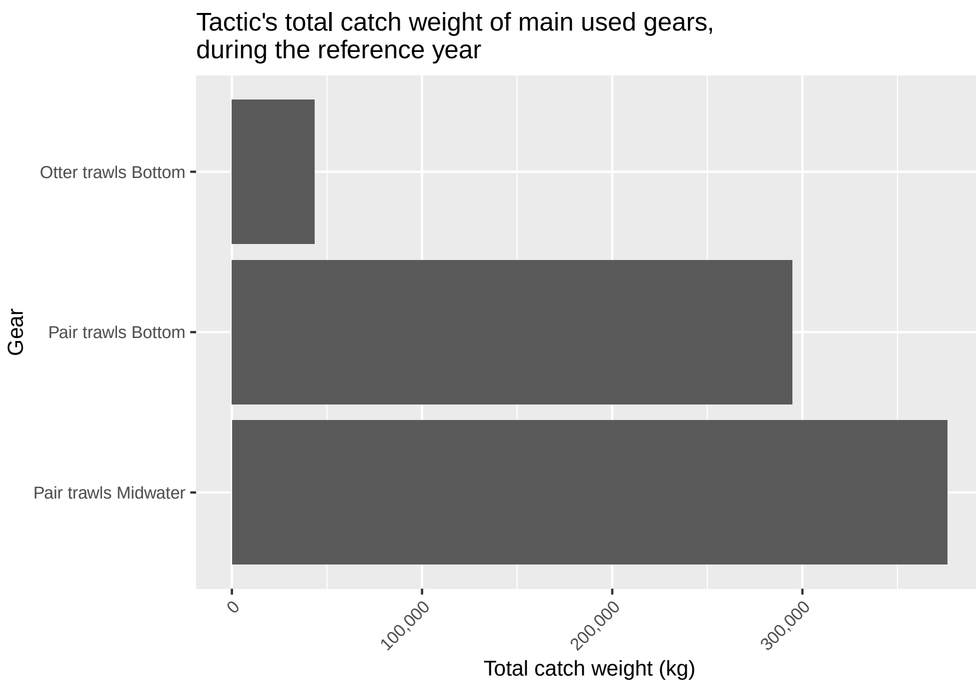






Finally, we illustrate what are the main used gears in terms of catch weight during trips, as well as the total catch weight for each mainly used gear. We include all gears that were determined to be the most important used gear (in terms of weight) for more than 5% of vessels (for readability).

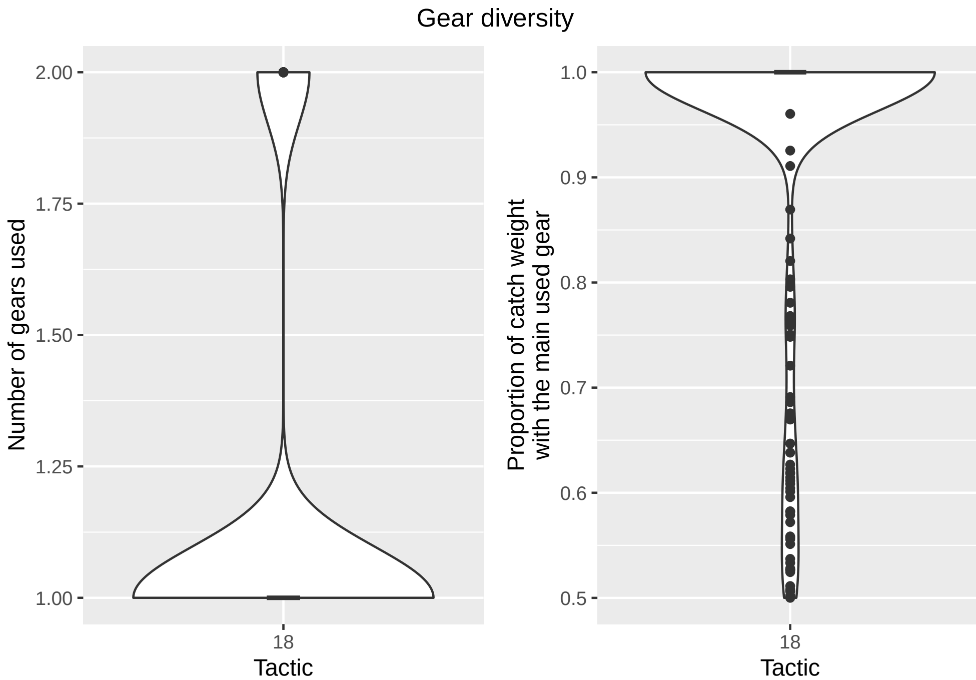




Diversity of fished taxa and used gears during the reference year (2007)

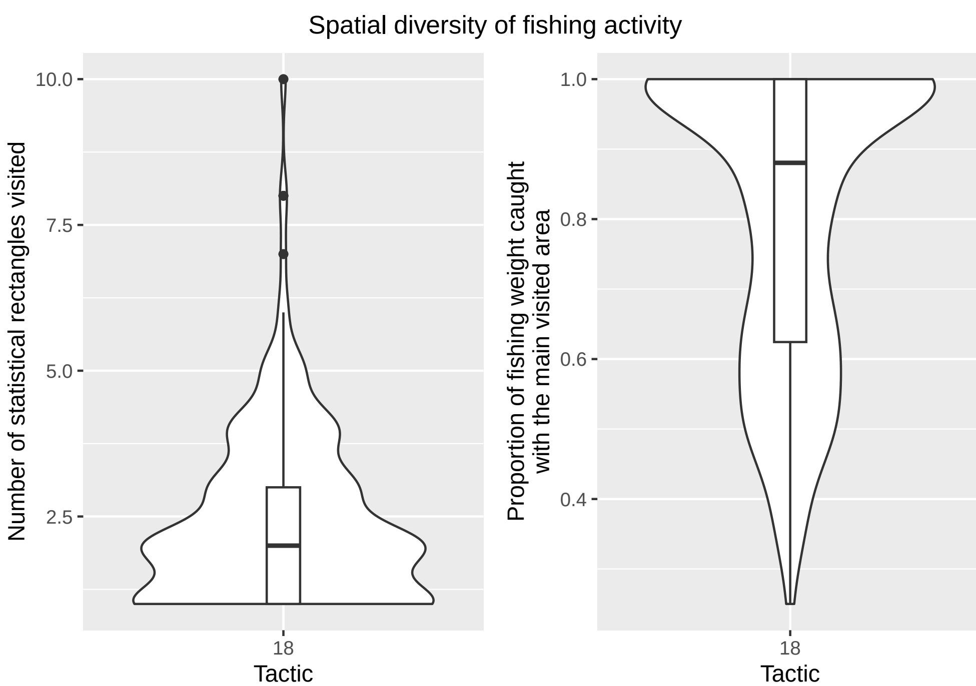
We first display the diversity of fished taxa (number of fished species and families during a trip) and the proportion of main caught taxa (in terms of weight) over the trip.

We then show the diversity of gear used (number of gears used during the trip) and the proportion of weight caught with the main gear used (in weight) in the trip.

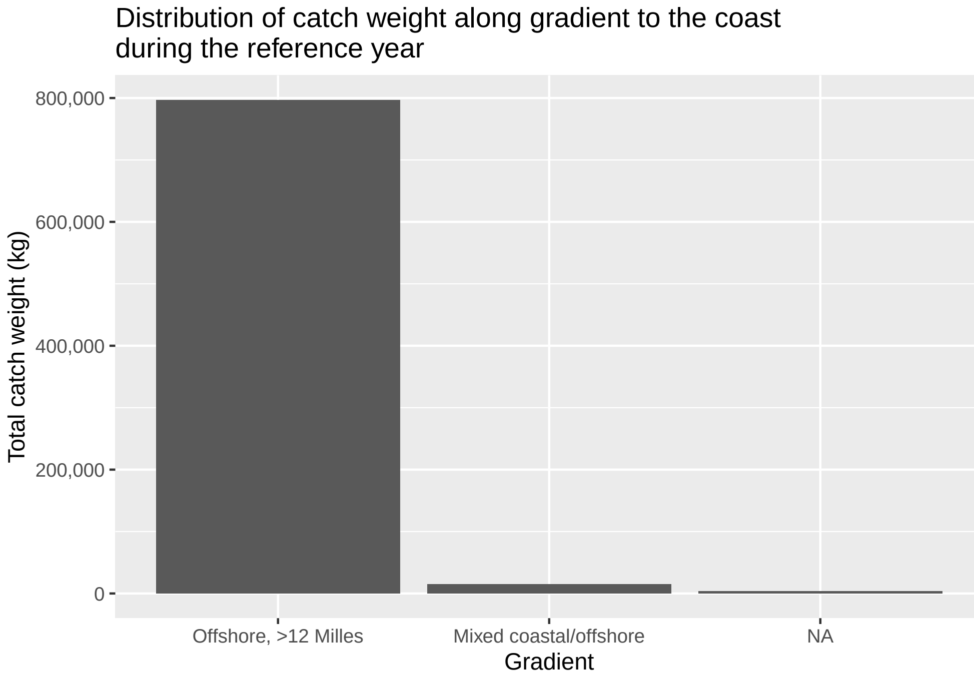


Graphs describing diversity of visited areas

We display the diversity of visited area (ICES statistical rectangles), using number of visited areas over the trip, and the proportion of catch weight performed in the main visited area (in weight) during the trip.

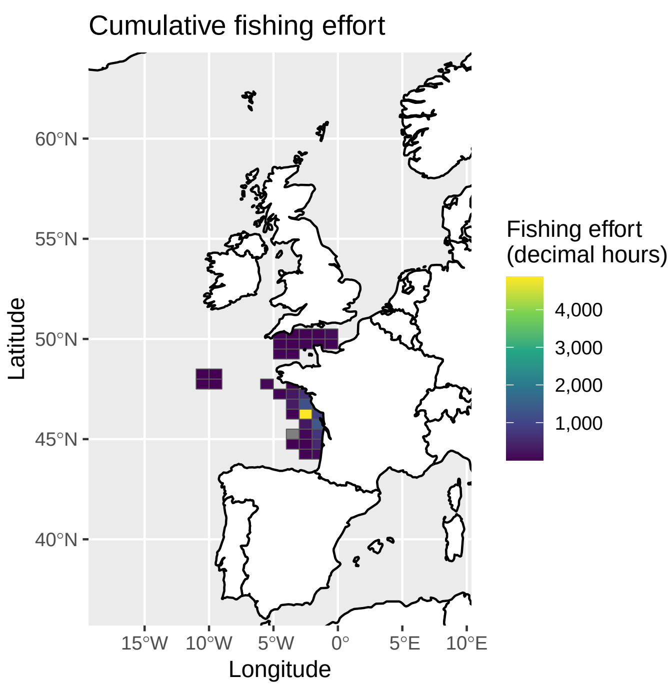


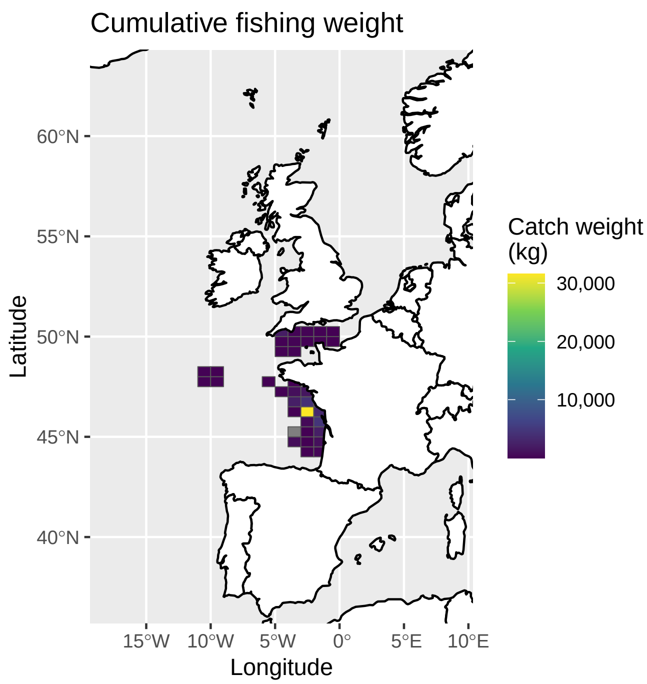
We then display how activity is spatially distributed across gradients (i.e. distance from the coast) during the reference year by providing the annual catch weight for each of the main gradients (coastal, offshore or mixed), only for the tactic of interest.



Maps of fishing activity distribution during the reference year (2007)

Here we show the distribution of fishing effort and weight over the ICES statistical rectangles, for the tactic of interest and during the reference year. Grey squares indicate visited areas for which no data on fishing weight/effort are available.





Correspondence with previous classifications

We show here the correspondence between our classification (strategies) and other previously established classifications: DEFIPEL (trawlers only), SIH (gillnetters only) and ISIS (generalist). Correspondence is shown only if a category (from another classification) represents more than 20% of all available data in a given strategy. Available data in a given strategy may be scarce (e.g. classification on trawlers in a strategy mainly associated with gillnetters), so for classifications not representative of the majority of the corresponding strategy, it should be kept in mind that the correspondence refers to a minority of vessels (number of vessels in the strategy and available number of vessels in the corresponding classification are indicated on the left of the table). It is important to note that each subset of a classification has its own correspondence to the strategy-based classification, so each subset doesn't necessarily have its equivalent in the different levels being compared.

Table 41: Correspondence with IFREMER classification

Strategy	Nb vessels Strategy	Nb vessels IFREMER	IFREMER fleet	IFREMER fleet prop	IFREMER sub fleet	IFREMER sub fleet prop	IFREMER subsub fleet	IFREMER subsub fleet prop
58	1413	1139	Fileyeurs	0.5689201	Fileyeurs exclusifs	0.5680421	Fileyeurs exclusifs	0.5592625
			Métiers de l'hameçon	0.2484636	Fileyeurs exclusifs	0.5680421	Fileyeurs exclusifs	0.5592625
58.2	639	470	Fileyeurs	0.2936170	Fileyeurs exclusifs	0.2914894	Fileyeurs exclusifs	0.2851064
			Métiers de l'hameçon	0.3510638	Fileyeurs exclusifs	0.2914894	Fileyeurs exclusifs	0.2851064
58.2.2	323	164	Fileyeurs	0.7317073	Fileyeurs exclusifs	0.7317073	Fileyeurs exclusifs	0.7134146
58.3	89	88	Fileyeurs	0.7840909	Fileyeurs exclusifs	0.7840909	Fileyeurs exclusifs	0.7386364
58.3.3	60	60	Fileyeurs	0.9000000	Fileyeurs exclusifs	0.9000000	Fileyeurs exclusifs	0.8500000
65	2760	2657	Fileyeurs	0.7117049	Fileyeurs exclusifs	0.7083177	Fileyeurs exclusifs	0.6943922
65.1	1927	1836	Fileyeurs	0.6296296	Fileyeurs exclusifs	0.6247277	Fileyeurs exclusifs	0.6122004
65.1.2	1208	1202	Fileyeurs	0.7670549	Fileyeurs exclusifs	0.7670549	Fileyeurs exclusifs	0.7479201

Table 41: Correspondence with IFREMER classification *(continued)*

Strategy	Nb vessels Strategy	Nb vessels IFREMER	IFREMER fleet	IFREMER fleet prop	IFREMER sub fleet	IFREMER sub fleet prop	IFREMER subsub fleet	IFREMER subsub fleet prop
65.2	833	821	Fileyeurs	0.8952497	Fileyeurs exclusifs	0.8952497	Fileyeurs exclusifs	0.8781973
65.2.1	571	559	Fileyeurs	0.9624329	Fileyeurs exclusifs	0.9624329	Fileyeurs exclusifs	0.9534884
65.2.2	250	250	Fileyeurs	0.7880000	Fileyeurs exclusifs	0.7880000	Fileyeurs exclusifs	0.7520000
71	972	971	Chalutiers exclusifs	0.8352214	Chalutiers mixtes exclusifs	0.6549949	Chalutiers mixtes exclusifs	0.6210093
71.1	471	471	Chalutiers exclusifs	0.9150743	Chalutiers mixtes exclusifs	0.5690021	Chalutiers mixtes exclusifs	0.5477707
			Chalutiers exclusifs	0.9150743	Chalutiers pélagiques exclusifs	0.3439490	Chalutiers pélagiques exclusifs	0.3418259
71.1.1	2	2	Chalutiers exclusifs	0.5000000	Chalutiers pélagiques exclusifs	0.5000000	Chalutiers pélagiques exclusifs	0.5000000
			Divers métiers côtiers	0.5000000	Divers métiers côtiers	0.5000000	Divers métiers côtiers polyvalents Arts dormants	0.5000000
71.1.2	469	469	Chalutiers exclusifs	0.9168443	Chalutiers mixtes exclusifs	0.5714286	Chalutiers mixtes exclusifs	0.5501066
			Chalutiers exclusifs	0.9168443	Chalutiers pélagiques exclusifs	0.3432836	Chalutiers pélagiques exclusifs	0.3411514
71.2	501	500	Chalutiers exclusifs	0.7600000	Chalutiers mixtes exclusifs	0.7360000	Chalutiers mixtes exclusifs	0.6900000
71.2.2	156	156	Chalutiers exclusifs	0.6602564	Chalutiers mixtes exclusifs	0.6410256	Chalutiers mixtes exclusifs	0.6410256
			Senneurs de fond	0.3333333	Senneurs de fond non exclusifs	0.3333333	Senneurs de fond non exclusifs	0.3333333

Table 42: Correspondence with DCR classification

Strategy	Nb vessels Strategy	Nb vessels DCR	DCR fleet	DCR fleet prop	DCR sub fleet	DCR sub fleet prop	DCR subsub fleet	DCR subsub fleet prop
58	1413	1139	Fileyeurs	0.6075505	Fileyeurs exclusifs	0.5601405	Fileyeurs exclusifs	0.5601405
			Palangriers	0.2993854	Fileyeurs exclusifs	0.5601405	Fileyeurs exclusifs	0.5601405
58.2	639	470	Fileyeurs	0.3382979	Fileyeurs exclusifs	0.2851064	Fileyeurs exclusifs	0.2851064
			Palangriers	0.4574468	Palangriers dominants	0.3085106	Palangriers dominants (dormants exclusifs)	0.2404255
58.2.2	323	164	Fileyeurs	0.7926829	Fileyeurs exclusifs	0.7134146	Fileyeurs exclusifs	0.7134146
58.3	89	88	Fileyeurs	0.9204545	Fileyeurs exclusifs	0.7386364	Fileyeurs exclusifs	0.7386364
58.3.3	60	60	Fileyeurs	0.9833333	Fileyeurs exclusifs	0.8500000	Fileyeurs exclusifs	0.8500000
65	2760	2657	Fileyeurs	0.8637561	Fileyeurs exclusifs	0.6943922	Fileyeurs exclusifs	0.6943922
65.1	1927	1836	Fileyeurs	0.8169935	Fileyeurs exclusifs	0.6122004	Fileyeurs exclusifs	0.6122004
65.1.2	1208	1202	Fileyeurs	0.9193012	Fileyeurs exclusifs	0.7479201	Fileyeurs exclusifs	0.7479201
65.2	833	821	Fileyeurs	0.9683313	Fileyeurs exclusifs	0.8781973	Fileyeurs exclusifs	0.8781973
65.2.1	571	559	Fileyeurs	0.9892665	Fileyeurs exclusifs	0.9534884	Fileyeurs exclusifs	0.9534884
65.2.2	250	250	Fileyeurs	0.9680000	Fileyeurs exclusifs	0.7520000	Fileyeurs exclusifs	0.7520000

Table 42: Correspondence with DCR classification *(continued)*

Strategy	Nb vessels Strategy	Nb vessels DCR	DCR fleet	DCR fleet prop	DCR sub fleet	DCR sub fleet prop	DCR subsub fleet	DCR subsub fleet prop
71	972	971	Chalutiers de fond	0.3192585	Chalutiers de fond dominants	0.3110196	Chalutiers mixtes fond dominants	0.2893924
			Chalutiers pélagiques	0.4953656	Chalutiers pélagiques dominants	0.3254377	Chalutiers mixtes pélagiques dominants	0.3017508
71.1	471	471	Chalutiers pélagiques	0.8598726	Chalutiers pélagiques dominants	0.5180467	Chalutiers mixtes pélagiques dominants	0.4840764
			Chalutiers pélagiques	0.8598726	Chalutiers pélagiques exclusifs	0.3418259	Chalutiers pélagiques exclusifs	0.3418259
71.1.1	2	2	Chalutiers pélagiques	0.5000000	Chalutiers pélagiques exclusifs	0.5000000	Chalutiers pélagiques exclusifs	0.5000000
			Divers petits métiers côtiers	0.5000000	Divers petits métiers côtiers	0.5000000	Divers petits métiers côtiers (dormants exclusifs)	0.5000000
71.1.2	469	469	Chalutiers pélagiques	0.8614072	Chalutiers pélagiques dominants	0.5202559	Chalutiers mixtes pélagiques dominants	0.4861407
			Chalutiers pélagiques	0.8614072	Chalutiers pélagiques exclusifs	0.3411514	Chalutiers pélagiques exclusifs	0.3411514
71.2	501	500	Chalutiers de fond	0.5800000	Chalutiers de fond dominants	0.5640000	Chalutiers mixtes fond dominants	0.5240000
71.2.2	156	156	Chalutiers de fond	0.3205128	Chalutiers de fond dominants	0.3141026	Chalutiers mixtes fond dominants	0.3076923
			Chalutiers pélagiques	0.3141026	Chalutiers pélagiques dominants	0.3012821	Chalutiers mixtes pélagiques dominants	0.2692308
			Mobiles polyvalents	0.2756410	Mobiles polyvalents	0.2756410	Mobiles polyvalents (mobiles exclusifs)	0.2115385

Table 43: Correspondence with DEFIPEL classification

Strategy	Nb vessels Strategy	Nb vessels DEFIPEL	DEFIPEL fleet	DEFIPEL fleet prop	DEFIPEL strat	DEFIPEL strat prop
58	1413	21	3 Non classes	0.4285714	Inferieur au seuil	0.4761905
			3 Non classes	0.4285714	Inférieur au seuil	0.4285714
58.2	639	17	3 Chalutiers pelagiques anchois bar vers germon merlu	0.2352941	Inferieur au seuil	0.3529412
			3 Non classes	0.5294118	Inférieur au seuil	0.5294118
			3 Chalutiers pelagiques anchois bar vers germon merlu	1.0000000	1 Chalut pelagique ALB HKE	0.5000000

Table 43: Correspondence with DEFIPEL classification *(continued)*

Strategy	Nb vessels Strategy	Nb vessels DEFIPEL	DEFIPEL fleet	DEFIPEL fleet prop	DEFIPEL strat	DEFIPEL strat prop
58.2.2	323	4	3 Chalutiers pelagiques anchois bar vers germon merlu	1.0000000	Inferieur au seuil	0.5000000
			16 Non classes	0.5000000	Inferieur au seuil	1.0000000
58.3	89	2	5 Chalutiers mixtes germon demer-saux/merlu	0.5000000	Inferieur au seuil	1.0000000
58.3.3	60	1	5 Chalutiers mixtes germon demer-saux/merlu	1.0000000	Inferieur au seuil	1.0000000
65	2760	15	3 Non classes	0.9333333	Inférieur au seuil	0.9333333
65.1	1927	13	3 Non classes	1.0000000	Inférieur au seuil	1.0000000
65.1.2	1208	13	3 Non classes	1.0000000	Inférieur au seuil	1.0000000
			1 Bretons	0.5000000	2 Senne pelagique PIL autres	0.5000000
65.2	833	2	3 Non classes	0.5000000	Inférieur au seuil	0.5000000
65.2.1	571	0	NA	NA	NA	NA
			1 Bretons	0.5000000	2 Senne pelagique PIL autres	0.5000000
65.2.2	250	2	3 Non classes	0.5000000	Inférieur au seuil	0.5000000
			16 Non classes	0.2986111	4 Chalut pelagique ANE BSS	0.3009259
			3 Chalutiers pelagiques anchois bar vers germon merlu	0.2430556	Inferieur au seuil	0.3009259
71	972	432	5 Chalutiers mixtes germon demer-saux/merlu	0.2546296	4 Chalut pelagique ANE BSS	0.3009259
			16 Non classes	0.2767296	4 Chalut pelagique ANE BSS	0.4088050
71.1	471	318	3 Chalutiers pelagiques anchois bar vers germon merlu	0.3081761	Inferieur au seuil	0.2106918
71.1.1	2	1	9 Chalutiers pelagiques Vendee anchois bar vers petits pelagiques merlu	1.0000000	4 Chalut pelagique ANE BSS	1.0000000
			16 Non classes	0.2776025	4 Chalut pelagique ANE BSS	0.4069401
71.1.2	469	317	3 Chalutiers pelagiques anchois bar vers germon merlu	0.3091483	Inferieur au seuil	0.2113565
			16 Non classes	0.3596491	3 Chalut mixtes ALB demersaux	0.2543860
71.2	501	114	5 Chalutiers mixtes germon demer-saux/merlu	0.5350877	Inferieur au seuil	0.5526316

Table 43: Correspondence with DEFIPEL classification *(continued)*

Strategy	Nb vessels Strategy	Nb vessels DEFIPEL	DEFIPEL fleet	DEFIPEL fleet prop	DEFIPEL strat	DEFIPEL strat prop
			5 Chalutiers mixtes germon demer-saux/merlu	0.7936508	1 Chalut pelagique ALB HKE	0.2857143
			5 Chalutiers mixtes germon demer-saux/merlu	0.7936508	3 Chalut mixtes ALB demersaux	0.3015873
71.2.2	156	63	5 Chalutiers mixtes germon demer-saux/merlu	0.7936508	Inferieur au seuil	0.3809524

Table 44: Correspondence with SIH classification

Strategy	Nb vessels Strategy	Nb vessels SIH	SIH fleet	SIH fleet prop	SIH subfleet	SIH subfleet prop
58	1413	492	Fileyeur du Large	0.8800813	Fileyeur du Large (à merlus dominants)	0.7947154
			Fileyeur Côtier	0.3814433	Fileyeur du Large (à merlus dominants)	0.4948454
58.2	639	97	Fileyeur du Large	0.5257732	Fileyeur du Large (à merlus dominants)	0.4948454
58.2.2	323	58	Fileyeur du Large	0.8793103	Fileyeur du Large (à merlus dominants)	0.8275862
			Fileyeur du Large	0.8169014	Fileyeur du Large (à merlus dominants)	0.4788732
58.3	89	71	Fileyeur du Large	0.8169014	Fileyeur du Large (à soles dominants)	0.3380282
			Fileyeur du Large	0.9137931	Fileyeur du Large (à merlus dominants)	0.5172414
58.3.3	60	58	Fileyeur du Large	0.9137931	Fileyeur du Large (à soles dominants)	0.3965517
			Fileyeur Côtier	0.4145803	Fileyeur Côtier (à soles dominants)	0.3475700
65	2760	1358	Fileyeur Mixte	0.3681885	Fileyeur Mixte (à soles dominants)	0.3681885
			Fileyeur Côtier	0.5800227	Fileyeur Côtier (à soles dominants)	0.4846765
65.1	1927	881	Fileyeur Mixte	0.3564132	Fileyeur Mixte (à soles dominants)	0.3564132
			Fileyeur Côtier	0.5254237	Fileyeur Côtier (à soles dominants)	0.4378531
65.1.2	1208	708	Fileyeur Mixte	0.4293785	Fileyeur Mixte (à soles dominants)	0.4293785
			Fileyeur du Large	0.4968553	Fileyeur du Large (à soles dominants)	0.4486373
65.2	833	477	Fileyeur Mixte	0.3899371	Fileyeur Mixte (à soles dominants)	0.3899371
			Fileyeur du Large	0.3523810	Fileyeur du Large (à soles dominants)	0.3365079

Table 44: Correspondence with SIH classification *(continued)*

Strategy	Nb vessels Strategy	Nb vessels SIH	SIH fleet	SIH fleet prop	SIH subfleet	SIH subfleet prop
65.2.1	571	315	Fileyeur Mixte	0.5015873	Fileyeur Mixte (à soles dominants)	0.5015873
65.2.2	250	162	Fileyeur du Large	0.7777778	Fileyeur du Large (à soles dominants)	0.6666667
71	972	20	Fileyeur du Large	0.5000000	Fileyeur du Large (à soles dominants)	0.4000000
			Fileyeur Mixte	0.4000000	Fileyeur Mixte (à soles dominants)	0.4000000
71.1	471	5	Fileyeur Côtier	0.4000000	Fileyeur Côtier (à maigres dominants)	0.4000000
			Fileyeur du Large	0.6000000	Fileyeur du Large (à soles dominants)	0.4000000
71.1.1	2	0	NA	NA	NA	NA
71.1.2	469	5	Fileyeur Côtier	0.4000000	Fileyeur Côtier (à maigres dominants)	0.4000000
			Fileyeur du Large	0.6000000	Fileyeur du Large (à soles dominants)	0.4000000
71.2	501	15	Fileyeur du Large	0.4666667	Fileyeur du Large (à soles dominants)	0.4000000
			Fileyeur Mixte	0.5333333	Fileyeur Mixte (à soles dominants)	0.5333333
71.2.2	156	0	NA	NA	NA	NA

Table 45: Correspondence with ISIS classification

Strategy	Nb vessels Strategy	Nb vessels ISIS	ISIS fleet	ISIS fleet prop	ISIS strat	ISIS strat prop
58	1413	438	bob south 18 24	0.2260274	bob south 18 24 @ gillnet longline	0.2237443
			bob south 24 40	0.4109589	bob south 24 40 @ gillnet	0.3561644
58.2	639	142	Flottilles agrégées 0 10	0.2605634	Flottilles agrégées 0 10	0.2605634
			Flottilles agrégées 10 12	0.2112676	Flottilles agrégées 10 12	0.2112676
58.2.2	323	33	bob north 15 18	0.2727273	bob north 15 18 @ gillnet longline	0.2727273
			bob south 18 24	0.4242424	bob south 18 24 @ gillnet longline	0.3939394
58.3	89	46	bob south 18 24	0.7391304	bob south 18 24 @ gillnet longline	0.7391304
58.3.3	60	41	bob south 18 24	0.8048780	bob south 18 24 @ gillnet longline	0.8048780
65	2760	842	Fileyeurs exclusifs 10 12	0.2945368	Fileyeurs exclusifs 10 12	0.2945368
65.1	1927	561	Fileyeurs exclusifs 10 12	0.4081996	Fileyeurs exclusifs 10 12	0.4081996
65.1.2	1208	422	Fileyeurs exclusifs 10 12	0.5260664	Fileyeurs exclusifs 10 12	0.5260664
65.2	833	281	bob south 15 18	0.3167260	bob south 15 18 @ gillnet longline	0.3167260
			bob south 18 24	0.2206406	bob south 18 24 @ gillnet longline	0.2206406

Table 45: Correspondence with ISIS classification *(continued)*

Strategy	Nb vessels Strategy	Nb vessels ISIS	ISIS fleet	ISIS fleet prop	ISIS strat	ISIS strat prop
			bob south 15 18	0.3926702	bob south 15 18 @ gillnet longline	0.3926702
65.2.1	571	191	bob south 18 24	0.2460733	bob south 18 24 @ gillnet longline	0.2460733
65.2.2	250	88	bob north 18 24	0.3522727	bob north 18 24 @ gillnet longline	0.3522727
71	972	295	bob north 18 24	0.5254237	bob north 18 24 @ mixed	0.4508475
			bob north 15 18	0.2201258	bob north 15 18 @ mixed	0.2201258
71.1	471	159	bob north 18 24	0.6289308	bob north 18 24 @ mixed	0.6163522
71.1.1	2	0	NA	NA	NA	NA
			bob north 15 18	0.2201258	bob north 15 18 @ mixed	0.2201258
71.1.2	469	159	bob north 18 24	0.6289308	bob north 18 24 @ mixed	0.6163522
			bob north 18 24	0.4044118	bob north 18 24 @ mixed	0.2573529
71.2	501	136	bob south 18 24	0.2794118	bob north 18 24 @ mixed	0.2573529
71.2.2	156	70	bob north 18 24	0.5000000	bob north 18 24 @ mixed	0.3857143

Appendix I: Definition tables for ISSCAAP codes and stock codes

Correspondence tables for ISSCAAP and stock codes are provided here. ISSCAAP codes are described by the major taxa associated with them, a detailed description of all the taxa included in each code can be found here: https://www.fishbase.se/report/isscaap/isscaapsearchmenu.php. Detailed descriptions of stock codes are provided for all codes that occur at least once in the SACROIS dataset.

Table 46: Description of ISSCAAP codes

ISSCAAP division code	ISSCAAP division	ISSCAAP code	ISSCAAP group
		11	Carps, barbels and other cyprinids
		12	Tilapias and other cichlids
1	Freshwater fishes	13	Miscellaneous freshwater fishes
		21	Sturgeons, paddlefishes
		22	River eels
		23	Salmons, trouts, smelts
		24	Shads
2	Diadromous fishes	25	Miscellaneous diadromous fishes
		31	Flounders, halibuts, soles
		32	Cods, hakes, haddocks
		33	Miscellaneous coastal fishes
		34	Miscellaneous demersal fishes
		35	Herrings, sardines, anchovies
		36	Tunas, bonitos, billfishes
		37	Miscellaneous pelagic fishes
		38	Sharks, rays, chimaeras
3	Marine fishes	39	Marine fishes not identified
		41	Freshwater crustaceans
		42	Crabs, sea-spiders
		43	Lobsters, spiny-rock lobsters
		44	King crabs, squat-lobsters
		45	Shrimps, prawns
		46	Krill, planktonic crustaceans
4	Crustaceans	47	Miscellaneous marine crustaceans
		51	Freshwater molluscs
		52	Abalones, winkles, conchs

Table 46: Description of ISSCAAP codes *(continued)*

ISSCAAP division code	ISSCAAP division	ISSCAAP code	ISSCAAP group
		53	Oysters
		54	Mussels
		55	Scallops, pectens
		56	Clams, cockles, arkshells
		57	Squids, cuttlefishes, octopuses
5	Molluscs	58	Miscellaneous marine molluscs
		61	Blue-whales, fin-whales
		62	Sperm-whales, pilot-whales
		63	Eared seals, hair seals, walruses
6	Whales, seals and other aquatic mammals	64	Miscellaneous aquatic mammals
		71	Frogs and other amphibians
		72	Turtles
		73	Crocodiles and alligators
		74	Sea-squirts and other tunicates
		75	Horseshoe crabs and other arachnoids
		76	Sea-urchins and other echinoderms
7	Miscellaneous aquatic animals	77	Miscellaneous aquatic invertebrates
		81	Pearls, mother-of-pearl, shells
		82	Corals
8	Miscellaneous aquatic animal products	83	Sponges
		91	Brown seaweeds
		92	Red seaweeds
		93	Green seaweeds
9	Aquatic plants	94	Miscellaneous aquatic plants

Table 47: Description of stock codes

Stock code	Stock label
AGN.27	Angel shark (Squatina squatina) in the Northeast Atlantic
ALB.51	Albacore (Thunnus alalunga) in the Indian Ocean, Western
ALB.34	Albacore (Thunnus alalunga) in the Atlantic, Eastern Central
ALB.27	Albacore (Thunnus alalunga) in the Northeast Atlantic
ALB.47	Albacore (Thunnus alalunga) in the Atlantic, Southeast
ALB.37	Albacore (Thunnus alalunga) in Mediterranean and Black Sea
ALF.27	Alfonsinos nei (Beryx spp) in the Northeast Atlantic
ALV.37	Thresher (Alopias vulpinus) in the Mediterranean and Black Sea
ALV.27	Thresher (Alopias vulpinus) in the Northeast Atlantic
ANE.27.7e.25E5	Anchovy (Engraulis encrasicolus) in statistic rectangle VIIe.25E5
ANE.27.8	Anchovy (Engraulis encrasicolus) in Subarea VIII (Bay of Biscay)
ANE.37.7	Anchovy (Engraulis encrasicolus) in Division 37.GSA7 (Gulf of Lions)
ANE.27.9a	Anchovy (Engraulis encrasicolus) in Division IXa
ANE.27.7h.25E4	Anchovy (Engraulis encrasicolus) in statistic rectangle VIIh.25E4
ARU.27.6b7-1012	Greater silver smelt (Argentina silus) in Subareas VII-X XII and Division VIb (other areas)
ARU.27.5b6a	Greater silver smelt (Argentina silus) in Divisions Vb and VIa (Faroes grounds West of Scotland)
ARU.27.123a4	Greater argentine (Argentina silus) in Subareas 1, 2, 4 and Division 3.a
BET.34	Bigeye tuna (Thunnus obesus) in the Atlantic, Eastern Central
BET.27	Bigeye tuna (Thunnus obesus) in the Northeast Atlantic
BET.47	Bigeye tuna (Thunnus obesus) in the Atlantic, Southeast
BFT.27	Atlantic bluefin tuna (Thunnus thynnus) in the Northeast Atlantic
BFT.37	Atlantic bluefin tuna (Thunnus thynnus) in Mediterranean and Black Sea
BFT.51	Atlantic bluefin tuna (Thunnus thynnus) in the Indian Ocean, Western
BLI.27.5b67	Blue ling (Molva dypterygia) Subdivision Vb in Subareas VI and VII

Table 47: Description of stock codes *(continued)*

Stock code	Stock label
BLI.27.123a4a8912	Blue ling (Molva dypterygia) in Divisions IIIa IVa and Subareas I II VIII IX XII
BLL.27.3a47de	Brill (Scophthalmus rhombus) in Subarea IV and Divisions IIIa and VIId e
BLL.37	Brill (Scophthalmus rhombus) in the Mediterranean and black Sea
BLL.27.8ab	Brill (Scophthalmus rhombus) in Divisions VIIIa and VIIIb
BOC.27	Boarfish (Capros aper) in the Northeast Atlantic
BOY.37	Purple dye murex (Bolinus brandaris) in the Mediterranean and black Sea
BRB.27.8ab	Black seabream (Spondyliosoma cantharus) in Divisions VIII a b
BRB.27.7de	Black seabream (Spondyliosoma cantharus) in Divisions VIId e
BRF.27	Blackbelly rosefish (Helicolenus dactylopterus) in the Northeast Atlantic
BSF.27	Black scabbardfish (Aphanopus carbo) in the Northeast Atlantic
BSH.37	Blue shark (Prionace glauca) in Mediterranean and Black Sea
BSH.27	Blue shark (Prionace glauca) in the Northeast Atlantic
BSK.27	Basking shark (Cetorhinus maximus) in the Northeast Atlantic
BSS.27.8c9a	European seabass (Dicentrarchus labrax) in Divisions VIIIc and IXa (Atlantic Iberian waters)
BSS.27.8ab	European seabass (Dicentrarchus labrax) in Divisions VIIIa b (Bay of Biscay)
BSS.27.6a7bj	European seabass (Dicentrarchus labrax) in Divisions VIa VIIb and VIIj (West of Scotland and Ireland)
BSS.27.4bc7a7d-h	European seabass (Dicentrarchus labrax) in Divisions IVbc VIIa and VIId-h (Irish Sea English Channel and southern North Sea)
BSS.37	European seabass(Dicentrarchus labrax) in the Mediterranean and black Sea
BUM.27	Blue marlin (Makaira nigricans) in the Northeast Atlantic
CET.27.8ab	Wedge sole (Dicologlossa cuneata) in Divisions VIIIa and VIIIb
TPS.27.8a	Carpet shells (Ruditapes spp) in Division VIIIa
TPS.27.8b	Carpet shells (Ruditapes spp) in Division VIIIb
CMO-HYD.27	Ratfishes (Hydrolagus spp and Chimaera monstrosa) in the Northeast Atlantic
COD.27.3an47d	Cod (Gadus morhua) in Subarea IV (North Sea) Division VIId (Eastern Channel) and IIIa West (Skagerrak)
COD.27.22-24	Cod (Gadus morhua) in Subdivisions 22-24 (Western Baltic Sea)
COD.27.5b2	Cod (Gadus morhua) in Subdivision Vb2 (Faroe Bank)
COD.27.5b1	Cod (Gadus morhua) in Subdivision Vb1 (Faroe Plateau)
COD.27.7e-k	Cod (Gadus morhua) in Divisions VIIe-k (Celtic Sea)
COD.27.7bc	Cod (Gadus morhua) in Divisions VIIbc (West of Ireland)
COD.27.1-2	Cod (Gadus morhua) in Subareas I and II (Northeast Arctic cod)
COD.27.6a	Cod (Gadus morhua) in Division VIa (West of Scotland)
COD.27.6b	Cod (Gadus morhua) in Division VIb (Rockall)
COD.27.7a	Cod (Gadus morhua) in Division VIIa (Irish Sea)
COE.27	European conger (Conger conger) in the Northeast Atlantic
CPR.27.8ab	Common prawn (Palaemon serratus) in Divisions VIIIa and VIIIb
CPR.27.7de	Common prawn (Palaemon serratus) in Divisions VIId and VIIe
CRE.27.78abd	Edible crab (Cancer pagurus) in Subarea VII and Divisions VIII a b d
CSH.27.47d	Common shrimp (Crangon crangon) in Subarea IV (North Sea), Division VIId (Eastern English Channel)
CSH.27.8ab	Common shrimp (Crangon crangon) in Divisions VIIIa and VIIIb
CTC.27.8ab	Common cuttlefish (Sepia officinalis) in Divisions VIIIa and VIIIb
CTC.27.7de	Common cuttlefish (Sepia officinalis) in Divisions VIId and VIIe
CTC.37	Common cuttlefish (Sepia officinalis) in the Mediterranean and black Sea
CYO-GUQ.27	Portuguese dogfish (Centroscymnus coelolepis) and leafscale gulper shark (Centrophorus squamosus) in the Northeast Atlantic
DAB.27.3a4	Dab (Limanda limanda) in Subarea IV and Division IIIa
DEC.37	Common dentex (Dentex dentex) in the Mediterranean and black Sea
DGS.27	Spurdog (Squalus acanthias) in the Northeast Atlantic

Table 47: Description of stock codes *(continued)*

Stock code	Stock label
ELE.27	European eel (Anguilla anguilla) in the Northeast Atlantic
ELE.37	European eel (Anguilla anguilla) in the Mediterranean and black Sea
EPI.27	Black cardinal fish (Epigonus telescopus) in the Northeast Atlantic
FLE.27.3a4	Flounder (Platichthys flesus) in Division IIIa and Subarea IV
GAG.27	Tope (Galeorhinus galeus) in the Northeast Atlantic
GFB.27	Greater forkbeard (Phycis blennoides) in the Northeast Atlantic
GHL.27.561214	Greenland halibut (Reinhardtius hippoglossoides) in Subareas V VI XII and XIV
GHL.27.1-2	Greenland halibut (Reinhardtius hippoglossoides) in Subareas I and II
GUG.27.67a-c7e-k	Grey gurnard (Eutrigla gurnardus) in Subarea VI and Divisions VIIa-c and e-k (Celtic Sea and West of Scotland)
GUG.27.3a47d	Grey gurnard (Eutrigla gurnardus) in Subarea IV (North Sea) and Divisions VIId (Eastern Channel) and IIIa (Skagerrak - Kattegat)
GUG.27.89a	Grey gurnard (Eutrigla gurnardus) in Subarea VIII and Division IXa
GUR.27.3-8	Red gurnard (Chelidonichthys cuculus) in subareas 3¿8 (Northeast Atlantic)
GUR.37	Red gurnard (Chelidonichthys cuculus) in the Mediterranean and black Sea
HAD.27.7b-k	Haddock (Melanogrammus aeglefinus) in Divisions VIIb-k
HAD.27.3an46a	Haddock (Melanogrammus aeglefinus) in Subarea IV and Divisions IIIan and VIa (North Sea Skagerrak and West of Scotland)
HAD.27.1-2	Haddock (Melanogrammus aeglefinus) in Subareas I and II (Northeast Arctic)
HAD.27.5b	Haddock (Melanogrammus aeglefinus) in Division Vb
HAD.27.6b	Haddock (Melanogrammus aeglefinus) in Division VIb (Rockall)
HAD.27.7a	Haddock (Melanogrammus aeglefinus) in Division VIIa (Irish Sea)
HER.27.125b14a	Herring (Clupea harengus) in Subareas I II and Divisions Vb XIVa
HER.27.7as7g-k	Herring (Clupea harengus) in Division VIIa South of 52° 30¿ N and VIIg h j k (Celtic Sea and South of Ireland)
HER.27.3a47d	Herring (Clupea harengus) in Subarea IV and Divisions IIIa and VIId (North Sea autumn spawners)
HER.27.6a7bc	Herring (Clupea harengus) in Divisions VIa (South) and VIIb c
HKE.37.7	Hake (Merluccius merluccius) in Division 37.GSA7 (Gulf of Lion)
HKE.27.3a4678abd	Hake (Merluccius merluccius) in Division IIIa Subareas IV VI and VII and Divisions VIIIa b d (Northern stock)
HKE.27.8c9a	Hake (Merluccius merluccius) in Divisions VIIIc and IXa (Southern stock)
HOM.27.2a4a5b6a7a-c7e-k8	Horse mackerel (Trachurus trachurus) in Divisions IIa IVa Vb VIa VIIa-c e-k VIII (Western stock)
HOM.27.3a4bc7d	Horse mackerel (Trachurus trachurus) in Divisions IIIa IVb c and VIId (North Sea stock)
HOM.37	Horse mackerel (Trachurus trachurus) in the Mediterranean and black Sea
ILL.37	Shortfin squids (Illex spp) in the Mediterranean and black Sea
JOD.27.7e-k	John dory (Zeus faber) in Divisions VIIe-k
JOD.27.8ab	John dory (Zeus faber) in Divisions VIIIa and VIIIb
KEF.27	Deep-sea red crab (Chaceon affinis) in the Northeast Atlantic
LBE.27.7e8a	European lobster (Homarus gammarus) in Divisions VIIe and VIIIa
LBE.37	European lobster (Homarus gammarus) in the Mediterranean and black Sea
LEM.27.3a47d	Lemon sole (Microstomus kitt) in Subarea IV and Divisions IIIa and VIId
LEM.27.7e-k	Lemon sole (Microstomus kitt) in Divisions VIIe-k
LEZ.27.7b-k8abd	Megrim (Lepidorhombus spp) in Divisions VIIb-k and VIIIa b d
LEZ.27.8c9a	Megrim (Lepidorhombus spp) in Divisions VIIIc and IXa
LEZ.27.4a6a	Megrim (Lepidorhombus spp) in Subarea IV and Division VIa
LEZ.27.6b	Megrim (Lepidorhombus spp) in Division VIb (Rockall)
LIN.27.3a4a6-91214	Ling (Molva molva) in Divisions IIIa and IVa and in Subareas VI VII VIII IX XII and XIV (other areas)
LIN.27.1-2	Ling (Molva molva) in Subdivisions I and II
LIN.27.5b	Ling (Molva molva) in Division Vb

Table 47: Description of stock codes *(continued)*

Stock code	Stock label
MAC.27	Atlantic mackerel (Scomber scombrus) in the Northeast Atlantic
MAC.37	Atlantic mackerel (Scomber scombrus) in the Mediterranean and black Sea
MGR.27.8ab	Meagre (Argyrosomus regius) in Divisions VIIIa and VIIIb (Bay of Biscay)
MNZ.27.7b-k8abd	Anglerfish (Lophius piscatorius and L. budegassa) in Divisions VIIb-k and VIIIa b d
MNZ.27.8c9a	Anglerfish (Lophius piscatorius and L. budegassa) in Divisions VIIIc and IXa
MNZ.37	Anglerfish (Lophius piscatorius and L. budegassa) in the Mediterranean and black Sea
MNZ.27.1-2	Anglerfish (Lophius piscatorius and L. budegassa) in Subareas I and II (Northeast Arctic)
MNZ.27.3a46	Anglerfish (Lophius piscatorius and L. budegassa) in Division IIIa and Subareas IV and VI
RIB-MOR.27	Moras nei (Moridae) and Common mora (Mora moro) in the Northeast Atlantic
MUR.27.67a-c7e-k89a	Striped red mullet (Mullus surmuletus) in Subarea VI VIII and Divisions VIIa-c e-k and IXa (Western area)
MUR.27.3a47d	Striped red mullet (Mullus surmuletus) in Subarea IV and Divisions VIId and IIIa
MUR.37	Striped red mullet (Mullus surmuletus) in the Mediterranean and black Sea
MUT.27.67a-c7e-k89a	Red mullet (Mullus barbatus) in Subarea VI VIII and Divisions VIIa-c e-k and IXa (Western area)
MUT.37.7	Red mullet (Mullus barbatus) in Division 37.GSA7 (Gulf of Lions)
MYV.27.7de	Mytilus mussels (Mytilus spp) in Divisions VIId and VIIe
NEP.27.8ab.FU23-24	Nephrops (Nephrops norvegicus) in Divisions VIIIa VIIIb (FU 23 - 24)
NEP.27.8de	Nephrops (Nephrops norvegicus) in Divisions VIIId VIIIe
NEP.27.6a.OutFU	Norway lobster (Nephrops norvegicus) in Division VIa outside the functional units
NEP.27.4.OutFU	Norway lobster (Nephrops norvegicus) in Subarea IV outside the functional units (North Sea)
NEP.27.4b.FU6	Nephrops (Nephrops norvegicus) in Division IVb (Farn Deeps FU 6)
NEP.27.7bcjk.FU16	Nephrops (Nephrops norvegicus) in Divisions VIIb c j k (Porcupine Bank FU 16)
NEP.27.7agj.FU19	Nephrops (Nephrops norvegicus) in Divisions VIIa g j (South East and West of IRL FU 19)
NEP.27.7.OutFU	Norway lobster (Nephrops norvegicus) in Subarea VII outside the functional units
NEP.27.7b.FU17	Nephrops (Nephrops norvegicus) in Division VIIb (Aran Grounds FU 17)
NEP.27.7a.FU15	Nephrops (Nephrops norvegicus) in Division VIIa (Irish Sea West FU 15)
NEP.27.7gh.FU20-21	Nephrops (Nephrops norvegicus) in Divisions VIIg VIIh (Labadie Baltimore and Galley - FU 20 and Jones and Cockburn - FU 21)
NEP.27.7gf.FU22	Nephrops (Nephrops norvegicus) in Divisions VIIg VIIf (the Smalls - FU 22)
NEP.27.8c.FU31	Nephrops (Nephrops norvegicus) in Division VIIIc (the Cantabrian Sea - FU 31)
NOP.27.3a4	Norway Pout (Trisopterus esmarkii) in Subarea IV (North Sea) and division IIIa (Skagerrak - Kattegat)
NOP.27.6a	Norway pout (Trisopterus esmarkii) in Division VIa
OCC.37	Common octopus (Octopus vulgaris) in the Mediterranean and black Sea
ORY.27	Orange Roughy (Hoplostethus atlanticus) in the Northeast Atlantic
PAC.37	Common pandora (Pagellus erythrinus) in the Mediterranean and black Sea
PIL.27.7	Sardine (Sardina pilchardus) in Division VII excepted 25E4 and 25E5
PIL.27.7h.25E4	Sardine (Sardina pilchardus) in statistic rectangle VIIh.25E4
PIL.27.7e.25E5	Sardine (Sardina pilchardus) in statistic rectangle VIIe.25E5
PIL.37.7	Sardine (Sardina pilchardus) in Division 37.GSA7 (Gulf of Lions)
PIL.27.4	Sardine (Sardina pilchardus) in Division IV
PIL.27.8abd	Sardine (Sardina pilchardus) in Divisions VIIIa b d
PIL.27.8c9a	Sardine (Sardina pilchardus) in Divisions VIIIc and IXa

Table 47: Description of stock codes *(continued)*

Stock code	Stock label
PLE.27.7hjk	Plaice (Pleuronectes platessa) in Divisions VIIh-k (Southwest of Ireland)
PLE.27.7d	Plaice (Pleuronectes platessa) in Division VIId (Eastern Channel)
PLE.27.89a	Plaice (Pleuronectes platessa) in Subarea VIII and Division IXa
PLE.27.3a204	Plaice (Pleuronectes platessa) in Subarea IV (North Sea) and Subdivision IIIa 20
PLE.27.7a	Plaice (Pleuronectes platessa) in Division VIIa (Irish Sea)
PLE.27.7bc	Plaice (Pleuronectes platessa) in Divisions VIIb c (West of Ireland)
PLE.27.7fg	Plaice (Pleuronectes platessa) in Divisions VIIf g (Celtic Sea)
PLE.27.7e	Plaice (Pleuronectes platessa) in Division VIIe (Western Channel)
POK.27.1-2	Saithe (Pollachius virens) in Subareas I and II (Northeast Arctic)
POK.27.5b	Saithe (Pollachius virens) in Division Vb (Faroe Saithe)
POK.27.7	Saithe(=Pollock) (Pollachius virens) in Subarea VII
POK.27.3a46	Saithe (Pollachius virens) in Subarea IV (North Sea) Division IIIa West (Skagerrak) and Subarea VI (West of Scotland and Rockall)
POL.27.67	Pollack (Pollachius pollachius) in Subareas VI and VII (Celtic Sea and West of Scotland)
POL.27.89a	Pollack (Pollachius pollachius) in Subarea VIII and Division IXa
POL.27.3a4	Pollack (Pollachius pollachius) in Subarea IV and Division IIIa
POR.27	Porbeagle (Lamna nasus) in the Northeast Atlantic
POR.21	Porbeagle (Lamna nasus) in the Northwest Atlantic
QSC.27	Queen scallop (Aequipecten opercularis) in the Northeast Atlantic
RAJ.27.3a47d	Rays and skates (Rajidae) in Subarea 4 and in divisions 3.a and 7.d (North Sea Skagerrak Kattegat and eastern English Channel)
RAJ.27.67a-c7e-h	Rays and skates (Rajidae) in Subarea 6 and divisions 7.a-c and 7.e-h (Rockall and West of Scotland southern Celtic Seas western English Channel)
RAJ.27.89a	Rays and skates (Rajidae) in Subarea 8 and Division 9.a (Bay of Biscay and Atlantic Iberian waters)
RAJ.27.10-12	Rays and skates (Rajidae) in subareas 10 and 12 (Azores grounds and north of Azores)
REB.27.512	Beaked Redfish (Sebastes mentella) in Subareas V and XII
RHG.27	Roughhead grenadier (Macrourus berglax) in the Northeast Atlantic
RJA.27	White skate (Rostroraja alba) in the Northeast Atlantic
RJB.27.67a-c7e-k	Common skate (Raja batis) in Subareas VI and VII (excluding VIId)
RJB.27.89a	Common skate (Raja batis) in Subarea VIII and Division IXa (Bay of Biscay and Atlantic Iberian waters)
RJB.27.3a4	Blue skate (Raja batis) in Subarea IV and Division IIIa
RJC.27.7afg	Thornback ray (Raja clavata) in Divisions VIIa f g (Irish and Celtic Sea)
RJC.27.7e	Thornback ray (Raja clavata) in Division VIIe (Western English Channel)
RJC.27.3a47d	Thornback ray (Raja clavata) in Subarea IV and Divisions IIIa and VIId (North Sea Skagerrak Kattegat and English Channel)
RJC.27.6	Thornback ray (Raja clavata) in Subarea VI (West of Scotland)
RJC.27.8	Thornback ray (Raja clavata) in Subarea VIII (Bay of Biscay and Cantabrian Sea)
RJE.27.7de	Small-eyed ray (Raja microocellata) in Divisions VIId and VIIe
RJE.27.7fg	Small-eyed ray (Raja microocellata) in Divisions VIIf g (Bristol Channel)
RJE.27.89a	Small-eyed ray (Raja microocellata) in Subarea VIII and Division IXa
RJF.27.89a	Shagreen ray (Leucoraja fullonica) in Subarea VIII and Division IXa (Bay of Biscay and Atlantic Iberian waters)
RJF.27.67	Shagreen ray (Leucoraja fullonica) in Subareas VII and VII
RJF.27.3a4	Shagreen ray (Leucoraja fullonica) in Subarea IV and Division IIIa (North Sea Skagerrak Kattegat)
RJH.27.7afg	Blonde ray (Raja brachyura) in Divisions VIIa f g (Irish and Celtic Sea)
RJH.27.4c7d	Blonde ray (Raja brachyura) in Divisions IVc and VIId (Southern North Sea and eastern English Channel)

Table 47: Description of stock codes *(continued)*

Stock code	Stock label
RJH.27.7e	Blonde ray (Raja brachyura) in Division VIIe
RJH.27.4a6	Blonde ray (Raja brachyura) in Subarea VI (West of Scotland) and Division IVa (Fladen Ground)
RJI.27.67	Sandy ray (Leucoraja circularis) in Subarea VI and Divisions VIIabcefghj
RJI.27.89a	Sandy ray (Leucoraja circularis) in Subarea VIII and Division IXa (Bay of Biscay and Atlantic Iberian waters)
RJI.27.3a4	Sandy ray (Leucoraja circularis) in Subarea IV and Division IIIa
RJM.27.7a7e-h	Spotted ray (Raja montagui) in Divisions VIIa and VIIe-h
RJM.27.3a47d	Spotted ray (Raja montagui) in Subarea IV and Divisions IIIa and VIId (North Sea Skagerrak Kattegat and Eastern English Channel)
RJM.27.67bj	Spotted ray (Raja montagui) in Subarea VI (West of Scotland) and Divisions VIIbj
RJM.27.8	Spotted ray (Raja montagui) in Subarea VIII (Bay of Biscay and Cantabrian Sea)
RJN.27.8c	Cuckoo ray (Leucoraja naevus) in Division VIIIc (Cantabrian Sea)
RJN.27.3a4	Cuckoo ray (Leucoraja naevus) in Subarea IV and Division IIIa (North Sea Skagerrak Kattegat)
RJN.27.678abd	Cuckoo ray (Leucoraja naevus) in Subareas VI, VII (Celtic Sea and West of Scotland) and Divisions VIIIa b d (Bay of Biscay)
RJN.27.9a	Cuckoo ray (Leucoraja naevus) in Division IXa (west of Galicia Portugal and Gulf of Cadiz)
RJR.27.67a-c7e-j	Starry ray (Amblyraja radiata) in Subareas VI and VII excepted Division VIId
RJR.27.23a4	Starry ray (Amblyraja radiata) in Subareas II,IV and Division IIIa
RJR.27.89a	Starry ray (Amblyraja radiata) in Subarea VIII and Division IXa (Bay of Biscay and Atlantic Iberian waters)
RJU.27.7bj	Undulate ray (Raja undulata) in Divisions VIIb and VIIj (Southwest of Ireland)
RJU.27.7de	Undulate ray (Raja undulata) in Divisions VIId e (English Channel)
RJU.27.8ab	Undulate ray (Raja undulata) in Divisions VIIIa b (Bay of Biscay)
RNG.27.1245a28914ab2	Roundnose grenadier (Coryphaenoides rupenstris) in all other areas (I II IV Va2 VIII IX XIVa and XIVb2)
RNG.27.3a	Roundnose grenadier (Coryphaenoides rupestris) in Division IIIa
RNG.27.5b6712b	Roundnose grenadier (Coryphaenoides rupenstris) in Subareas VI and VII and Divisons Vb and XIIb
RNG.27.5a110b12a1c14b1	Roundnose grenadier (Coryphaenoides rupenstris) in Mid-Atlantic Ridge (Xb XIIc Va1 XIIa1 XIVb1)
SAL.27.124-12	Salmon (Salmo salar) in Subareas I,II,IV-XII
SAN.27.SA 2	Sandeel (Ammodytes spp) in the South Eastern North Sea (SA 2)
SAN.27.SA 1	Sandeel (Ammodytes spp) in the Dogger Bank area (SA 1)
SBG.27.8ab	Gilthead seabream (Sparus aurata) in Divisions VIIIa and VIIIb (Bay of Biscay)
SBG.37	Gilthead seabream (Sparus aurata) in the Mediterranean and black Sea
SBR.27.678	Red (=blackspot) seabream (Pagellus bogaraveo) in Subareas VI VII and VIII
SBR.27.9	Red (=blackspot) seabream (Pagellus bogaraveo) in Subarea IX
SBR.27.10	Red (=blackspot) seabream (Pagellus bogaraveo) in Subarea X (Azores region)
SBR.34	Red (=blackspot) seabream (Pagellus bogaraveo) in the Atlantic, Eastern Central
SBR.37	Red (=blackspot) seabream (Pagellus bogaraveo) in the Mediterranean and black Sea
SCE.27.8b	Great Atlantic scallop (Pecten maximus) in Division VIIIb
SCE.27.7d	Great Atlantic scallop (Pecten maximus) in Division VIId
SCE.27.8a	Great Atlantic scallop (Pecten maximus) in Division VIIIa
SCE.27.7e	Great Atlantic scallop (Pecten maximus) in Division VIIe
SCK.27	Kitefin shark (Dalatias licha) in the Northeast Atlantic
SCR.27.8ab	Spinous spider crab (Maja squinado) in Divisions VIIIa b (Bay of Biscay)
SCR.27.7e	Spinous spider crab (Maja squinado) in Division VIIe
SDV.27	Smooth-hounds nei (Mustelus spp) in the Northeast Atlantic

Table 47: Description of stock codes *(continued)*

Stock code	Stock label
SFS.27	Silver scabbardfish (Lepidopus caudatus) in the North-east Atlantic
SHO.27.89a	Black-mouth dogfish (Galeus melastomus) in Subarea VIII and Division IXa (Bay of Biscay and Atlantic Iberian waters)
SHO.27.67	Black-mouth dogfish (Galeus melastomus) in Subareas VI and VII (Celtic Sea and West of Scotland)
SKJ.47	Skipjack tuna (Katsuwonus pelamis) in the Atlantic, Southeast
SKJ.34	Skipjack tuna (Katsuwonus pelamis) in the Atlantic, Eastern Central
SMA.27	Shortfin mako (Isurus oxyrinchus) in the Northeast Atlantic
SMA.51	Shortfin mako (Isurus oxyrinchus) in the Indian Ocean, Western
SOL.27.4	Common Sole (Solea solea) in Subarea IV (North Sea)
SOL.27.7a	Common Sole (Solea solea) in Division VIIa (Irish Sea)
SOL.27.7bc	Common Sole (Solea solea) in Divisions VIIb c (West of Ireland)
SOL.27.7d	Common Sole (Solea solea) in Division VIId (Eastern Channel)
SOL.27.7e	Common Sole (Solea solea) in Division VIIe (Western Channel)
SOL.27.7fg	Common Sole (Solea solea) in Divisions VIIf g (Celtic Sea)
SOL.27.7hjk	Common Sole (Solea solea) in Divisions VIIh-k (Southwest of Ireland)
SOL.27.8ab	Common Sole (Solea solea) in Divisions VIIIa b (Bay of Biscay)
SOL.27.8c9a	Common Sole (Solea solea) in Divisions VIIIc and IXa
SOL.37	Common Sole (Solea solea) in the Mediterranean and black Sea
SPF.27	Longbill spearfish (Tetrapturus pfluegeri) in the Northeast Atlantic
SPR.27.67a-c7f-k	European sprat (Sprattus sprattus) in Subarea VI and Divisions VIIa-c and f-k (Celtic Sea and West of Scotland)
SPR.27.7de	European sprat (Sprattus sprattus) in Divisions VIId e
SPR.27.3a4	
SQZ.27.8ab	Inshore squids nei (Loliginidae) in Divisions VIIIa and VIIIb (Bay of Biscay)
SQZ.37	Inshore squids nei (Loliginidae) in the Mediterranean and black Sea
SQZ.27.7de	Inshore squids nei (Loliginidae) in Divisions VIId and VIIe
SWO.27	Swordfish (Xiphias gladius) in the Northeast Atlantic
SWO.34	Swordfish (Xiphias gladius) in the Atlantic, Eastern Central
SWO.37	Swordfish (Xiphias gladius) in Mediterranean and Black Sea
SYC.27.3a47d	Lesser-spotted dogfish (Scyliorhinus canicula) in Subarea IV and Divisions IIIa and VIId (North Sea Skagerrak Kattegat and Eastern English Channel)
SYC.27.67a-c7e-j	Lesser-spotted dogfish (Scyliorhinus canicula) in Subarea VI and Divisions VIIa-c e-j (Celtic Seas and west of Scotland)
SYC.27.8abd	Lesser-spotted dogfish (Scyliorhinus canicula) in Divisions VIIIa b d (Bay of Biscay)
SYC.27.8c9a	Lesser-spotted dogfish (Scyliorhinus canicula) in Divisions VIIIc and IXa (Atlantic Iberian waters)
SYT.27.67	Greater-spotted dogfish (Scyliorhinus stellaris) in Subareas VI and VII (Celtic Sea and West of Scotland)
TUR.27.7e-k	Turbot (Psetta maxima) in Divisions VIIe-k
TUR.27.8ab	Turbot (Psetta maxima) in Divisions VIIIa b (Bay of Biscay)
TUR.27.7d	Turbot (Psetta maxima) in Divisions VIId (Eastern English Channel)
TUR.27.4	Turbot (Psetta maxima) in Subarea IV
TWL.37	Tellins (Tellina spp) in the Mediterranean and black Sea
USK.27.1-2	Tusk (Brosme brosme) in Subareas I and II (Arctic)
USK.27.12ac	Tusk (Brosme brosme) in Divisions of Subarea XII excluding XIIb (Mid Atlantic Ridge)
USK.27.3a45b6a78912b	Tusk (Brosme brosme) in Divisions IIIa Vb VIa and XIIb and Subareas IV VII VIII and IX (other areas)
USK.27.6b	Tusk (Brosme brosme) in Division VIb (Rockall)
VEV.27.7e	Warty venus (Venus verrucosa) in Division VIIe
WHB.27.1-91214	Blue whiting (Micromesistius poutassou) in subareas I-IX, XII and XIV
WHE.27.7d	Whelk (Buccinum undatum) in Division VIId
WHE.27.7e	Whelk (Buccinum undatum) in Division VIIe
WHG.27.89a	Whiting (Merlangius merlangus) in Subarea VIII and Division IXa
WHG.27.47d	Whiting (Merlangius merlangus) in Subarea IV (North Sea) and Division VIId (Eastern Channel)
WHG.27.7bc7e-k	Whiting (Merlangius merlangus) in Divisions VIIbc,e-k

Table 47: Description of stock codes *(continued)*

Stock code	Stock label
WHG.27.6a	Whiting (Merlangius merlangus) in Division VIa (West of Scotland)
WHG.27.6b	Whiting (Merlangius merlangus) in Division VIb (Rockall)
WHG.27.7a	Whiting (Merlangius merlangus) in Division VIIa (Irish Sea)
WHM.27	Atlantic white marlin (Tetrapturus albidus) in the Northeast Atlantic
WIT.27.3a47d	Witch flounder (Glyptocephalus cynoglossus) in Subarea IV Divisions IIIa and VIId
WRF.27	Wreckfish (Polyprion americanus) in the North-east Atlantic
YFT.34	Yellowfin tuna (Thunnus albacares) in the Atlantic, Eastern Central
YFT.47	Yellowfin tuna (Thunnus albacares) in the Atlantic, Southeast
YFT.51	Yellowfin tuna (Thunnus albacares) in the Indian Ocean, Western
YFT.27	Yellowfin tuna (Thunnus albacares) in the Northeast Atlantic

Appendix II: All strategy descriptions

This appendix can be found at the following link: Appendix II (html file). This file contains a description of all the strategies defined by our methodology, following the same structures and methods as the descriptions provided here.

Appendix III: Recent-years comparison only (bycatch in strategies)

We provided here bycatches distribution in strategies only for the 2019-2022 period.

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##
## ## First level
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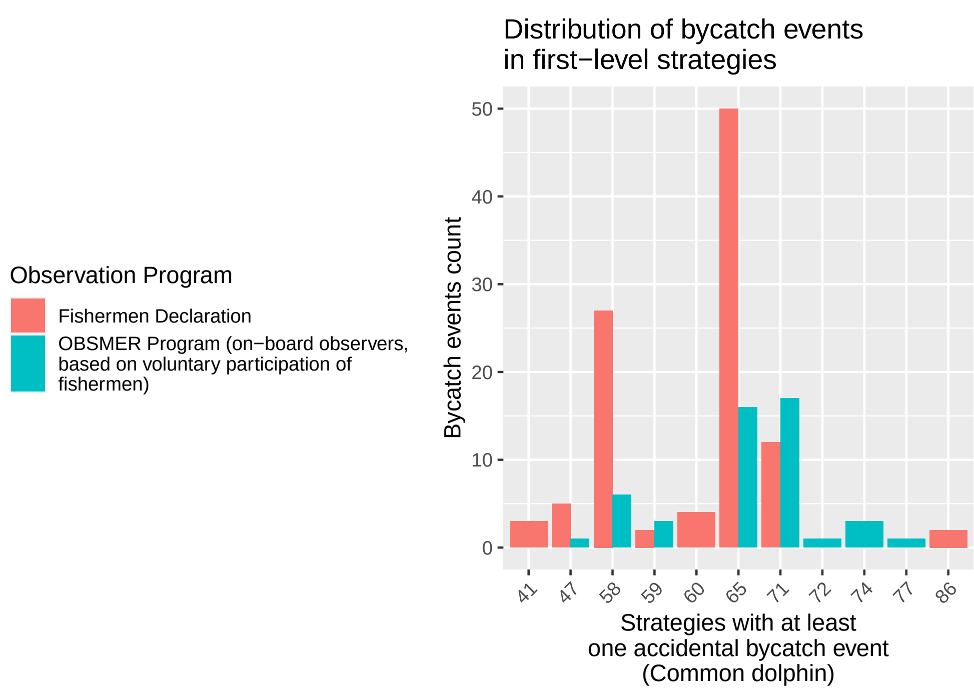
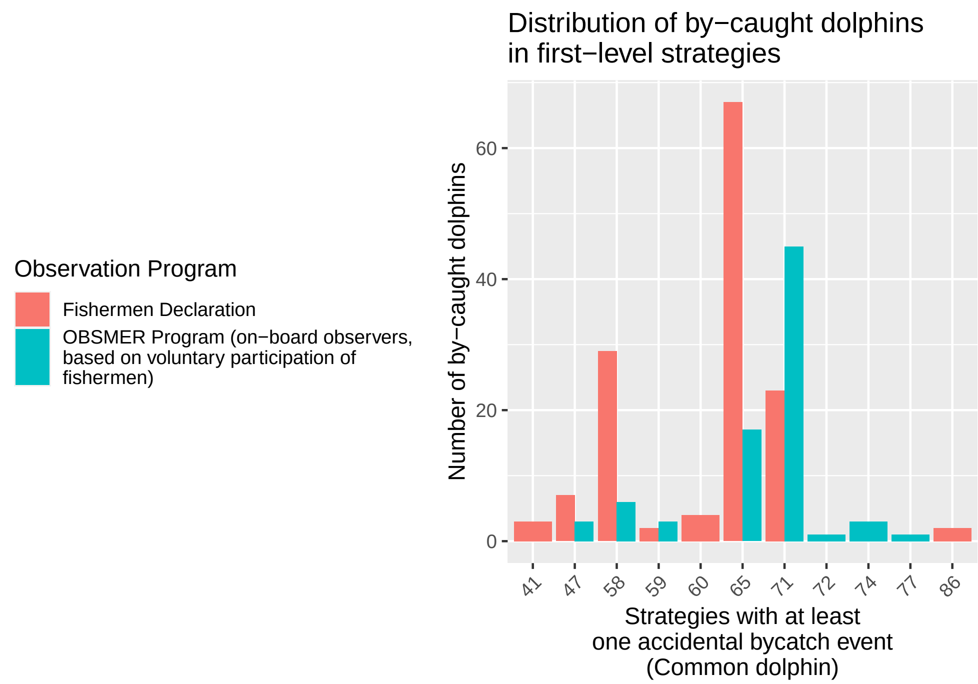
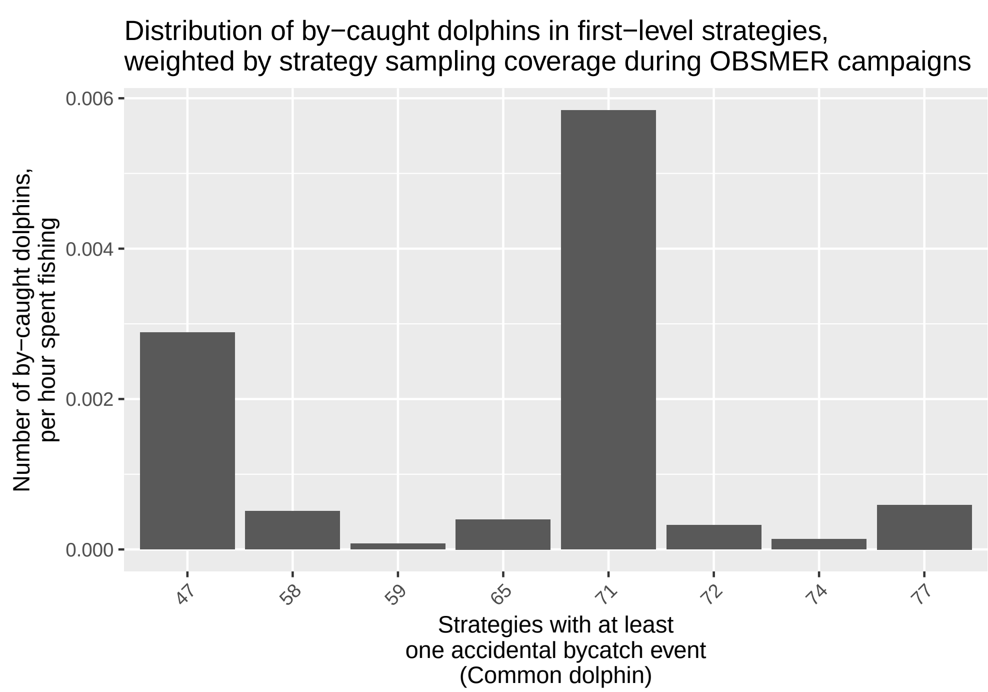
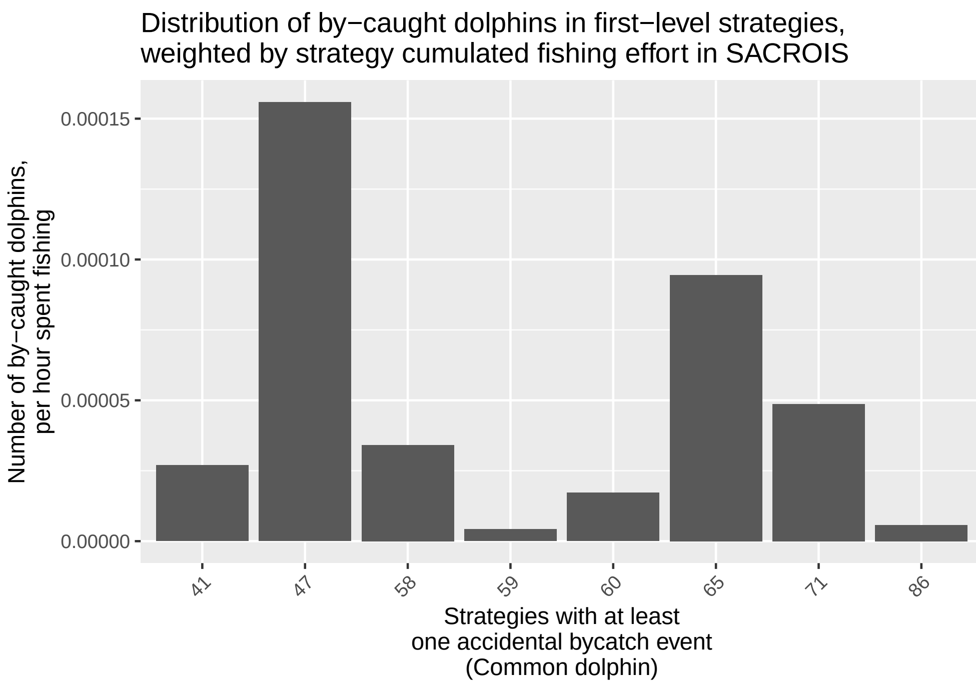



Distribution of by−caught dolphins
in first−level strategies
Observation Program
Fishermen Declaration
OBSMER Program (on−board observers, based on voluntary participation of fishermen)
Number of by−caught dolphins
0
20
40
60
41
47
58
59
60
65
71
72
74
77
86
Strategies with at least
one accidental bycatch event
(Common dolphin)


Distribution of by−caught dolphins in first−level strategies,
weighted by strategy sampling coverage during OBSMER campaigns
Number of by−caught dolphins,
per hour spent fishing
0.000
0.002
0.004
0.006
47
58
59
65
71
72
74
77
Strategies with at least
one accidental bycatch event
(Common dolphin)

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##
## ## Second level
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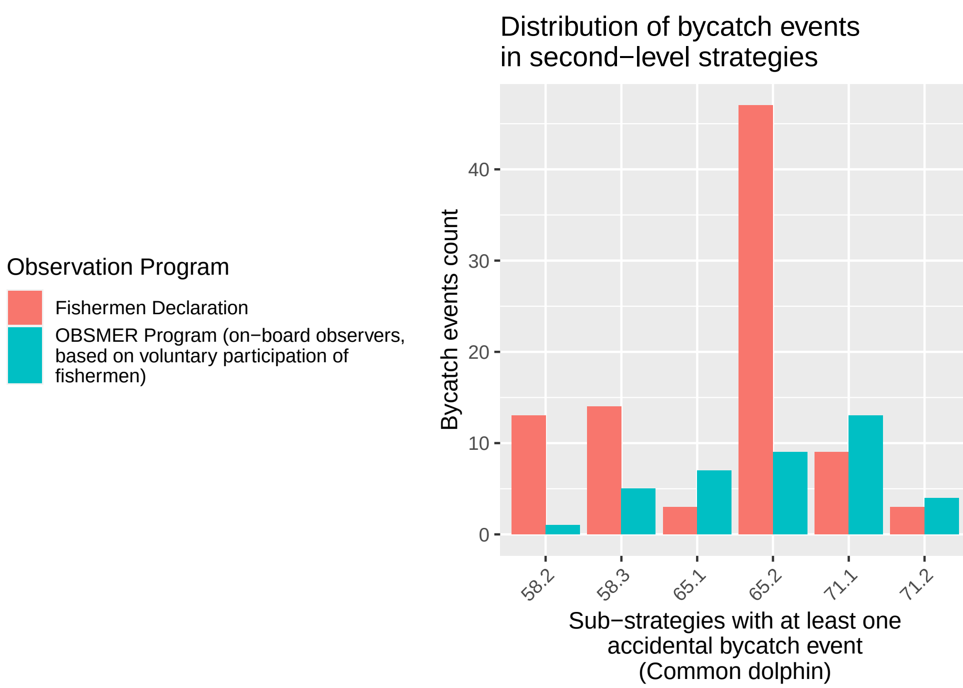
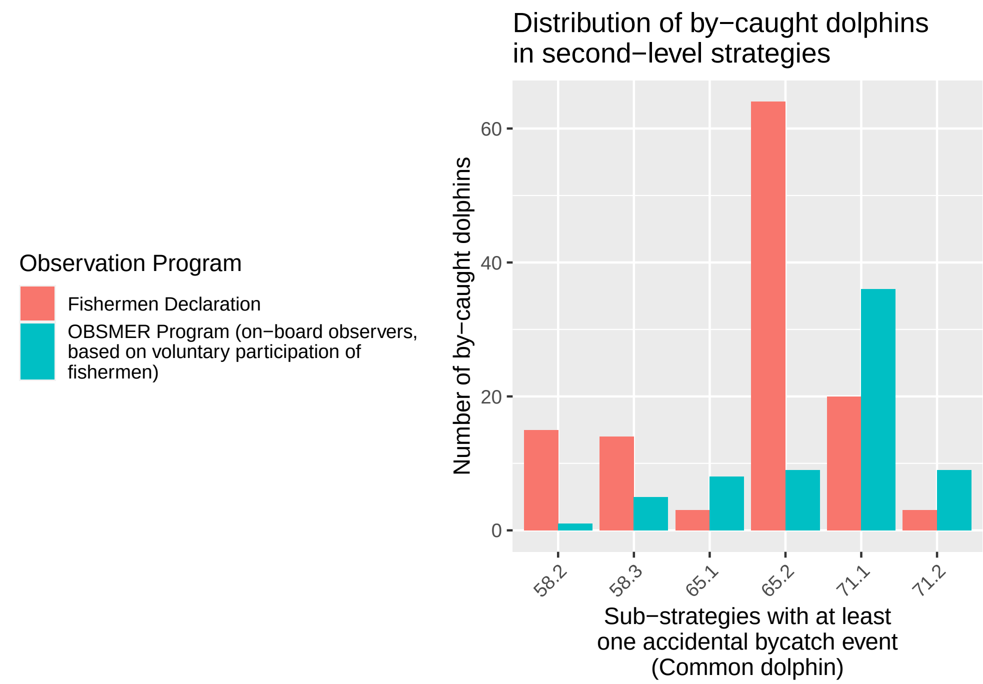
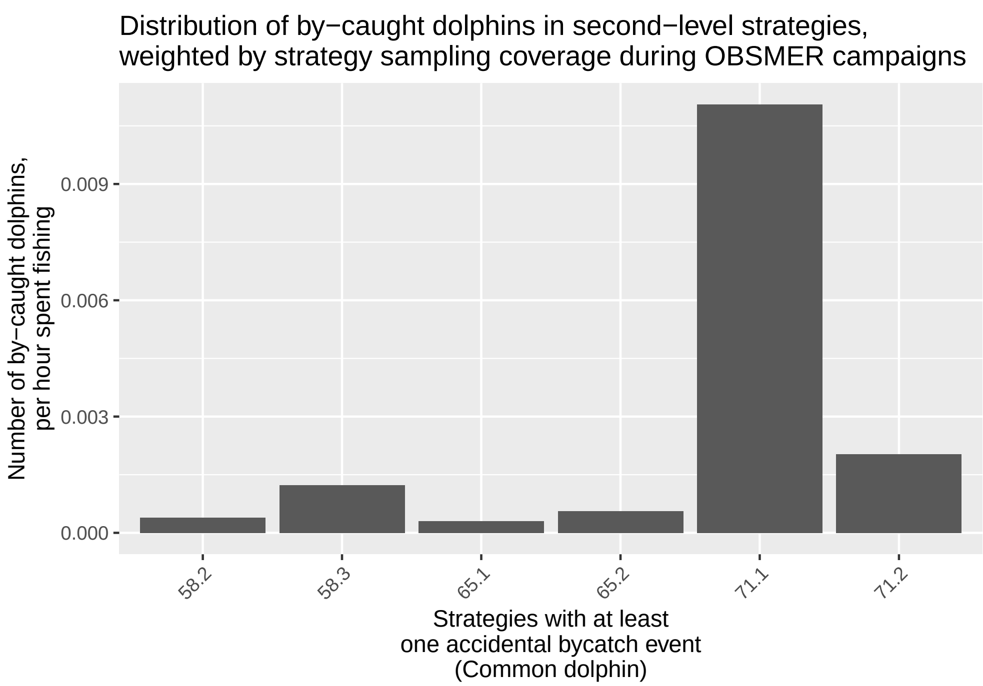
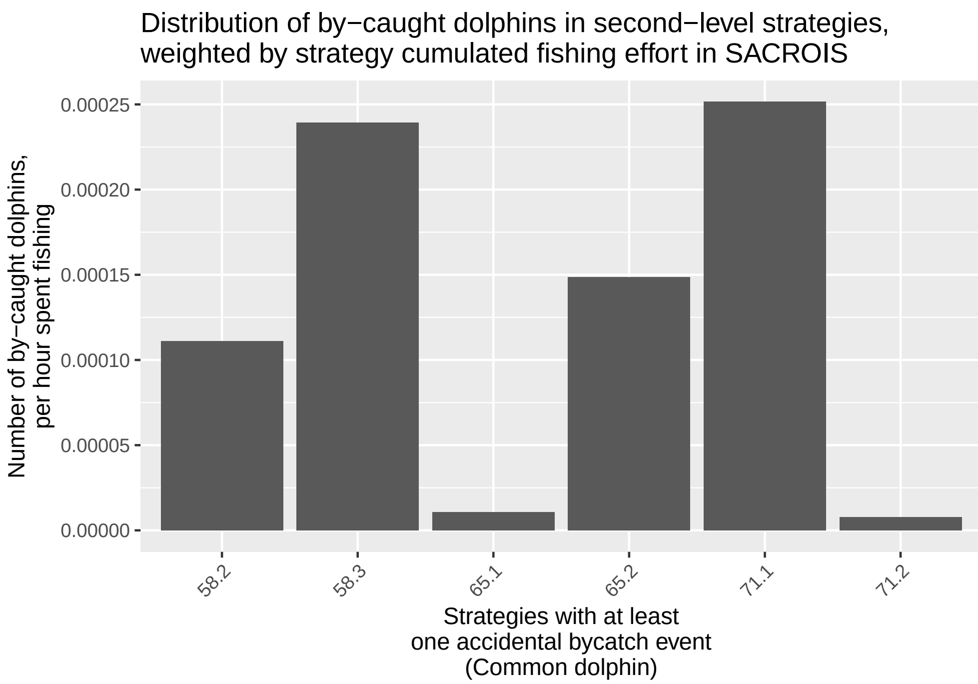


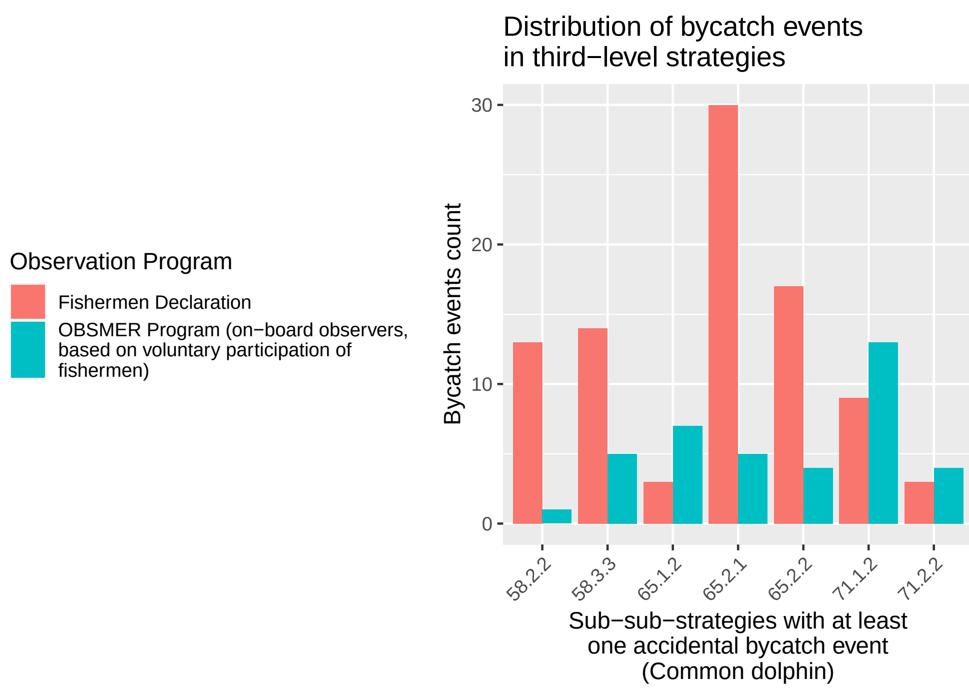

Distribution of by−caught dolphins
in second−level strategies
Observation Program
Fishermen Declaration
OBSMER Program (on−board observers,
based on voluntary participation of
fishermen)
Number of by−caught dolphins
0
20
40
60
58.2
58.3
65.1
65.2
71.1
71.2
Sub−strategies with at least
one accidental bycatch event
(Common dolphin)


Distribution of by−caught dolphins in second−level strategies,
weighted by strategy sampling coverage during OBSMER campaigns
Number of by−caught dolphins,
per hour spent fishing
0.000
0.003
0.006
0.009
58.2
58.3
65.1
65.2
71.1
71.2
Strategies with at least
one accidental bycatch event
(Common dolphin)

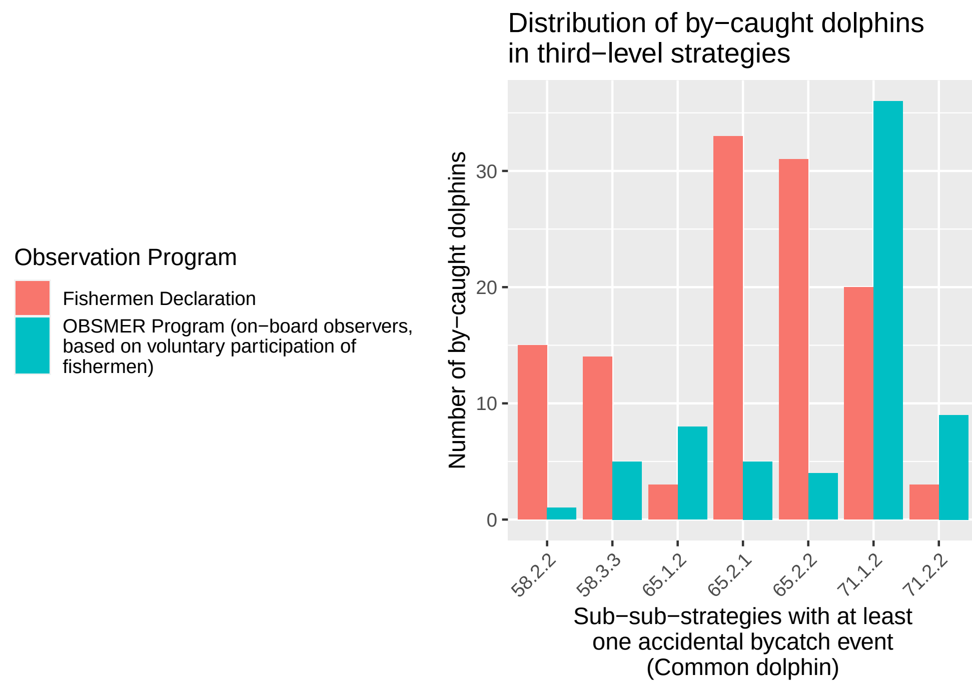


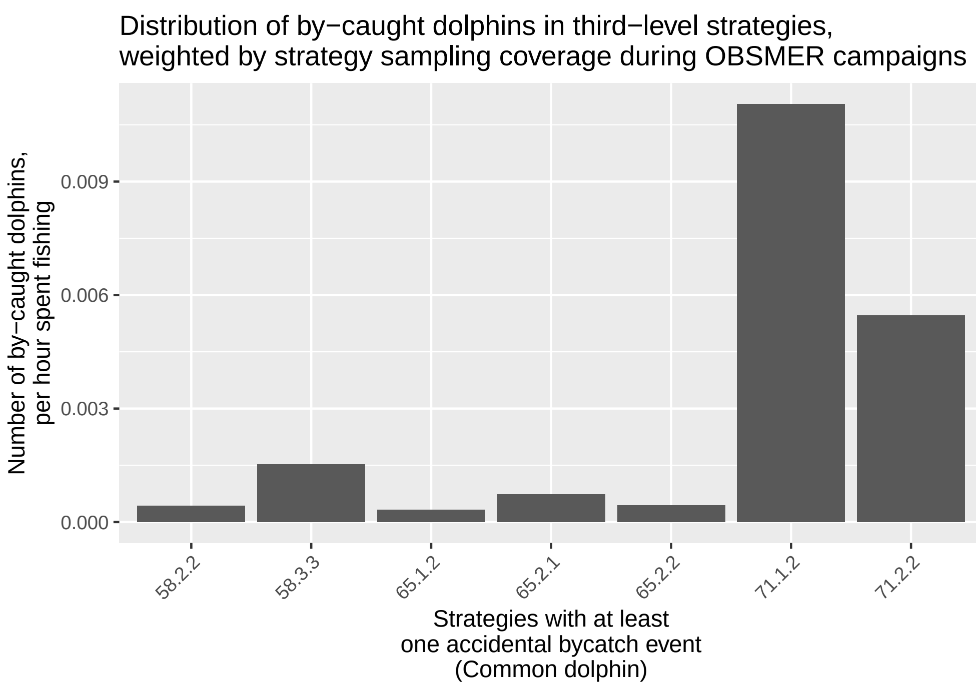
Distribution of by−caught dolphins in second−level strategies,
weighted by strategy cumulated fishing effort in SACROIS
Number of by−caught dolphins,
per hour spent fishing
0.00025
0.00020
0.00015
0.00010
0.00005
0.00000
58.2
58.3
65.1
65.2
71.1
71.2
Strategies with at least
one accidental bycatch event
(Common dolphin)

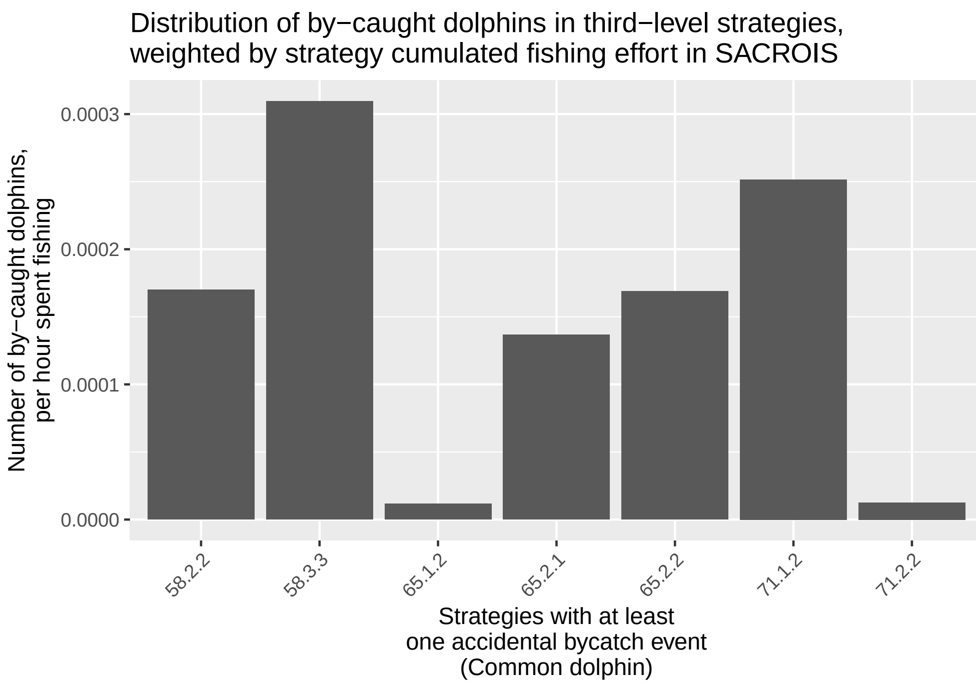

```
##
## ## Third level
```



Distribution of bycatch events
in third−level strategies
Observation Program
Fishermen Declaration
OBSMER Program (on−board observers,
based on voluntary participation of
fishermen)
Bycatch events count
30
20
10
0
58.2.2
58.3.3
65.1.2
65.2.1
65.2.2
71.1.2
71.2.2
Sub−sub−strategies with at least
one accidental bycatch event
(Common dolphin)


Distribution of by−caught dolphins
in third−level strategies
Observation Program
Fishermen Declaration
OBSMER Program (on−board observers, based on voluntary participation of fishermen)
Number of by−caught dolphins
0
10
20
30
58.2.2
58.3.3
65.1.2
65.2.1
65.2.2
71.1.2
71.2.2
Sub−sub−strategies with at least
one accidental bycatch event
(Common dolphin)


Distribution of by−caught dolphins in third−level strategies,
weighted by strategy sampling coverage during OBSMER campaigns
Number of by−caught dolphins,
per hour spent fishing
0.000
0.003
0.006
0.009
58.2.2
58.3.3
65.1.2
65.2.1
65.2.2
71.1.2
71.2.2
Strategies with at least
one accidental bycatch event
(Common dolphin)



Appendix IV: Sets of quantitative descriptors for synthetic descriptions

Table 48: Used set of quantitative descriptors for synthetic description of clusters

Classification	Sets	Variables
		value__weight
		value__eco
		value__weight.prod
	Fishing volumes	value__eco.prod
		sd__weight
		sd__eco
		sd__weight.prod
	Variation in fishing volumes	sd__eco.prod
		value__effort
		value__nb__seq
		nb__marees__year
		value__time__efficiency
	Fishing effort	value__sea__time
		sd__effort
		sd__time__efficiency
	Variation in fishing effort	sd__sea__time
	Fishing trip duration	sea__marees
	Variation in fishing trip duration	sd__sea__marees
		sea__year
		div__days
		div__months
	Diversity in temporal activity	div__trimester
		prop__month
	Proportion in main period of activity	prop__trimester
		div__spe
		div__spp
		div__family
		div__order
	Taxonomic diversity in catches	div__isscaap
		prop__spe
		prop__spp

Table 48: Used set of quantitative descriptors for synthetic description of clusters *(continued)*

Classification	Sets	Variables
		prop__family
		prop__order
	Proportion of catches in main fished taxa	prop__isscaap
		second__spe
		second__spp
		second__family
		second__order
		second__isscaap
		third__spe
		third__spp
		third__family
		third__order
	Importance of secondary taxa catches	third__isscaap
		nb__engine
		div__engine
		nb__engines__dim
		div__engines__dim
		nb__mesh__size
	Diversity of fishing gear used	div__mesh__size
		prop__engine
		prop__engines__dim
	Activity proportion with main fishing gear used	prop__mesh__size
	Importance of secondary gear used	second__engine
		nb__zee
		div__zee
		nb__gradient
		div__gradient
		nb__ICES__divis
		div__ICES__divis
		nb__stat__rect
		div__stat__rect
		nb__stat__subrect
	Diversity in spatial activity	div__stat__subrect
		prop__zee
		prop__gradient
		prop__ICES__divis
		prop__stat__rect
	Activity proportion in main spatial area	prop__stat__subrect
	Age of fishing vessel	CARN__AGE
	Average number of crew on board	CARN__EFFECTIF
Strategy	Size/power of fishing vessel	NAVP
		value__weight
		value__eco
		value__weight.prod
	Fishing volumes	value__eco.prod
		sd__weight
		sd__eco
		sd__weight.prod
	Variation in fishing volumes	sd__eco.prod
		value__effort
	Fishing effort	div__nb__effort
	Variation in fishing effort	sd__effort
	Diversity in temporal activity	div__nb__day
		prop__month
	Proportion in main period of activity	prop__trimester
		div__val__spe
		div__val__spp
		div__val__family
		div__val__order
	Taxonomic diversity in catches	div__val__isscaap
		main__prop__spe
		main__prop__spp
		main__prop__family
		main__prop__order
	Proportion of catches in main fished taxa	main__prop__isscaap
		second__spe
		second__spp
		second__family

Table 48: Used set of quantitative descriptors for synthetic description of clusters *(continued)*

Classification	Sets	Variables
		second_order
		second_isscaap
		third_spe
		third_spp
		third_family
		third_order
	Importance of secondary taxa catches	third_isscaap
		div_val_gear_type
		div_val_dimension
	Diversity of fishing gear used	div_val_mesh_size
		prop_gear_type
		prop_dimension
	Activity proportion with main fishing gear used	prop_mesh_size
		div_val_zee
		div_val_gradient
		div_val_ICES_divis
		div_val_stat_rect
	Diversity in spatial activity	div_val_stat_subrect
		prop_zee
		prop_gradient
		prop_ICES_divis
		prop_stat_rect
Tactic	Activity proportion in main spatial area	prop_stat_subrect

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