**Supporting Information:**

Threatened fish species in the Northeast Atlantic are functionally rare

**Supplementary Appendix 1 –Tables**

**Table S1**. Information on available bottom trawl surveys describing the area, period, months of sampling, number of hauls (number of samples), gear type when known, fish species richness, trawl depth range. See references for details.

| **Survey** | **Complete survey name** | **Area** | **Period** | **Month** | **Number of hauls** | **Gear type** | **Fish species richness** | **Depth range** | **Reference** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **BITS** | Baltic International Trawl Survey | Baltic Sea | 1991-2020 | all months | 16503 | "CAM" "CHP" "DT" "EGY" "ESB" "EXP" "FOT" "GOV" "GRT" "H20" "HAK" "LBT" "LPT" "P20" "PEL" "SON" "TVL" "TVS" | 142 | 3-190 | 5 |
| **BTS** | Beam Trawl Survey | Celtic Sea; Channel; North Sea | 1987-2019 | 2;3;4;7;8;9;10 | 16320 | BT4A; BT4AI; BT4P; BT4S; BT7; BT8 | 204 | 8-249 | 7 |
| **BTS-VIII** | Beam Trawl Survey - Bay of Biscay | Bay of Biscay | 2011-2019 | 11;12 | 568 | BT4A | 109 | 7-250 | 7 |
| **DWS** | Deepwater Survey | Irish Sea | 2006-2009 | 9;12 | 72 | JDT | 146 | 445-2000 | 9 |
| **DYFS** | Inshore Beam Trawl Survey | Southern North Sea | 2002-2019 | 8;9;10;11 | 6568 | BT3; BT6 | 91 | 1-48 | 7 |
| **EVHOE** | French Southern Atlantic Bottom trawl Survey | Bay of Biscay & Celtic Sea | 1997-2019 | 10;11;12 | 3138 | GOV 36/47 | 217 | 13-587 | 2 |
| **FR-CGFS** | French Channel ground Survey | English Channel | 1988-2019 | 9;10;11 | 2766 | GOV 36/47 | 113 | 7-82 | 3 |
| **IE-IAMS** | Irish Anglerfish and megrim survey | Scottish rockall & Irish Sea | 2016-2019 | 1;2;3;4 | 461 | JDT | 127 | 51-1510 | 3 |
| **IE-IGFS** | Irish Groundfish survey | Ireland Shelf Sea | 2003-2019 | 9;10;11;12 | 2753 | GOV 36/47 | 196 | 10-750 | 3 |
| **NIGFS** | Northern Ireland Groundfish Survey | Irish Sea - Ireland | 2009-2019 | 2;3;4;10;11 | 1335 | RockHopper ROT | 94 | 10-191 | 3 |
| **NS-IBTS** | North Sea International Bottom Trawl Survey | North Sea | 1965-2020 | 1;2;3;6;7;8;9. | 7741 | GOV 36/47 | 266 | 10 | 4 |
| **PT-IBTS** | Portuguese International Bottom Trawl Survey | Portugal Shelf Sea | 2002-2017 | 9;10;11 | 1306 | CAR & NCT | 195 | 19-705 | 3 |
| **ROCKALL** | Scottish Rockall Survey (until 2010) | Rockall plateau | 1999-2009 | 8;9 | 372 | GOV 36/47 | 61 | 136-236 | 3 |
| **SCOROC** | Scottish Rockall Survey (from 2011) | Scottish rockall | 2011-2019 | 8;9 | 384 | GOV | 67 | 122-468 | 3 |
| **SCOWCGFS** | Scottish West Coast Groundfish Survey | Scottish west coast | 2011-2020 | 2;3;11;12 | 1157 | GOV | 122 | 40-500 | 3 |
| **SNS** | Sole Net Survey | Southern North Sea | 2002-2019 | 9;10 | 790 | BT6 | 56 | 10-43 | 7 |
| **SP-ARSA** | Spanish Gulf of Cadiz Bottom trawl Survey | Spain | 1996-2019 | 2;3;4;10;11;12 | 1326 | BAKa trawl 44/60 | 33 | 19-770 | 6 |
| **SP-NORTH** | Spanish North Coast Bottom Trawl Survey | North of Spain | 2001-2019 | 8;9;10;11 | 2765 | BAKa trawl 44/60 | 175 | 25-842 | 3 |
| **SP-PORC** | Spanish Porcupine Bottom Trawl Survey | Irish Sea | 2001-2019 | 8;9;10 | 1706 | PORB | 130 | 187-787 | 6 |
| **SWC-IBTS** | Scottish West Coast International Bottom Trawl Survey | Scotland Shelf Sea | 1985-2010 | 1;2;3;4;10;11;12 | 2905 | GOV 36/47 | 143 | 10-500 | 3 |

1. ICES. Database of Trawl Surveys (DATRAS). Available at: https://datras.ices.dk/Data\_products/Download/Download\_Data\_public.aspx
2. ICES. The EVHOE survey (France). ICES Documents. (1997). Available at: [3 (ices.dk)](https://www.ices.dk/data/Documents/DATRAS%20Manuals/EVHOEManual.pdf) ICES. Manual of the IBTS North Eastern Atlantic Surveys. Series of ICES Survey Protocols SISP 15 (2017). doi:10.17895/ices.pub.3519
3. ICES. Manual for the International Bottom Trawl Surveys Revision VIII. Series of ICES Survey Protocols SISP 10 - IBTS IX. (2015).
4. <http://www.ices.dk/sites/pub/Publication%20Reports/ICES%20Survey%20Protocols%20%28SISP%29/> SISP%207%20-

%20Manual%20for%20the%20Baltic%20International%20Trawl%20Surveys%20%28BITS%29.pdf

1. SISP 7 - Manual for the Baltic International Trawl Surveys (BITS) (figshare.com) https://ices-library.figshare.com/articles/report/SISP\_7\_-\_Manual\_for\_the\_Baltic\_International\_Trawl\_Surveys\_BITS\_/19050986
2. https://datras.ices.dk/Home/Descriptions.aspx#SPA
3. SISP 14 - Manual for the Offshore Beam Trawl Surveys (WGBEAM) (figshare.com) https://ices-library.figshare.com/articles/report/SISP\_14\_-\_Manual\_for\_the\_Offshore\_Beam\_Trawl\_Surveys\_WGBEAM\_/19051328

BAK: Baka trawl; BT4A: Four m Beam trawl; BT4AI: Four m Beam trawl; BT4P: Four m Beam Trawl; BT4S: Four m Beam Trawl; BT6: Beam trawl 6 meters; BT7: Seven m Beam trawl; BT8: Eight m Beam trawl; CAM: Unspecified Gear; CAR: Bottom trawl FGAV019; CHP: Cod Hopper; DT: Russian bottom trawl; EGY: Unspecified Gear; ESB: Estonian small bottom trawl; EXP: EXPO trawl - winged midwater trawl; FOT: Fotomidwater trawl, GOV: Grande Ouverture Verticale Trawl; GRT: Granton trawl; H20: Herring ground trawl (HG20/25); HAK: Hake- 4M; JDT: Jackson Trawl; LBT: Latvian Bottom Trawl; LPT: Latvian Pelagic Trawl; PEL: Pelagic midwater trawl; PORB: Porcupine Baka; SON: Sonderborg trawl; TVL: Large TV trawl; TVS: Small TV trawl.

**Table S2. Ecological traits of marine fish species in the Northeastern Atlantic selected for our study, along with selection criteria, data sources, and references.** Adapted from McLean et al. (2019).

| **Trait** | **Definition** | Influence on | **References** | **Type** | **Attributes** | **Sources** |
| --- | --- | --- | --- | --- | --- | --- |
| Habitat | Position in the water column | Distribution, dispersal, mobility | Alheit et al., 2014; MonterroSerra et al., 2014; Rijnsdorp et al., 2009 | Categorical | Bathydemersal  Bathypelagic  Benthopelagic  Demersal  Pelagic  Reef-associated | FishBase table ‘Ecology’ and depth distribution of species on the website of the Ocean Biogeographic Information System |
|
|
|
|
|
| Trophic level | Position in the food web | Position within the food web, impacts on carbon and nutrient fluxes | Hempson et al., 2018; Huxel and McCann, 1998; Schneider et al., 2016 | Numeric | Continuous  Minimum: 2.0  Maximum: 4.57  Maximum: 4.57 | Computed from the ‘Diet’ table (Palomares and Sa-a 2000) |
|
|
| Feeding mode | Type of food consumed | Distribution, population growth rate, impacts on carbon and nutrient fluxes | Albouy et al., 2011; Finke and Denno, 2005 | Categorical | Benthivorous  Generalist  Herbivorous  Piscivorous  Planktivorous | FishBase tables ‘Ecology’ and ‘Diet’; inferred from the genus or family |
|
|
|
|
| Age at sexual maturity | 1- Age at which 50% of the population is mature  2- Lowest reported age at which a mature individual has been found | Growth rate, speed of maturation and reproduction, population turnover | Crozier and Hutchings, 2014; King and McFarlane, 2003; Mims and Olden, 2012;  Pankhurst and Munday, 2011; Thorson et al., 2017 | Numeric (year) | Continuous  Minimum: 0.26  Maximum: 156 | FishBase table ‘Maturity’ (Binohlan, 2000); literature |
| Length at sexual maturity | 1- Length at which 50% of the population is mature  2- Lowest reported length at which a mature individual has been found | Growth rate, metabolism, feeding rate, mobility, position in the food web | Brown et al., 2004; Fisher et al., 2010; Petchey et al., 2008 | Numeric (cm) | Continuous  Minimum: 2.5  Maximum: 725 | FishBase table ‘Maturity’ (Binohlan, 2000); literature |
| Fecundity | Number of eggs or offspring produced per year by female (if spawning only once) or per batch (if spawning multiple times per year) | Population growth rate, dispersal rate, population turnover | Lambert, 2008; Pécuchet et al., 2017; Portner et al., 2001 | Numeric | Continuous  Minimum: 1  Maximum: 3.0e+10 | FishBase table ‘Spawning’(Torres 2000) ; literature; inferred from the genus or family. |
| Offspring size | Egg diameter for fish, length of egg case for skates and rays or body length of a new-born pup for sharks | Offspring survival and dispersal | Adams, 1980; Pianka, 1970; Sirot et al., 2015; Ware, 1975 | Numeric (mm) | Continuous  Minimum: 0.05  Maximum: 1750 | FishBase table ‘Eggs’ (Froese 2000); literature; inferred from the genus or family |
| Von Bertalanffy growth coefficient K | Parameter describing how fast an individual reaches its asymptotic size | Growth rate | Thorson et al., 2017 | Numeric (year-1) | Continuous  Minimum: 0.008  Maximum: 5.9 | FishBase table ‘Growth'; literature |
| Maximum length | Maximum recorded total body length | Egg production and fecundity. Position in the food web | Winemiller, 1995 | Numeric (cm) | Continuous  Minimum: 3.8  Maximum: 1000 | FishBase table ‘Age/Size’ (Binohlan and Pauly 2000) ; literature |
| Length infinity | Theoretical asymptotic length | Egg production and fecundity. Position in the food web | Thorson et al., 2017 | Numeric (cm) | Continuous  Minimum: 4.3  Maximum: 1000 | FishBase table 'Growth'; literature |
| Spawning type | Reproductive guild of fish and the amount of parental care | Offspring survival and dispersal. Represents an energetic trade-off in life-history strategy | Smith and Wootton, 1995; Winnemiller and Rose, 1992 | Categorical | Bearer (external brooders, internal livebearers)  Guarder (clutch tenders, nesters)  Non-Guarder (spawning in open water, on substratum and brood-hider) | FishBase table 'Reproduction' (Torres 2000); inferred from the genus or family |

**Table S3.** Advantage of using an integrative distinctiveness index: calculation and comparison of within-species and between-species variances ratios.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Within-species variances | Between-species variance | Ratios between Within-species variances and Between-species variance |
| Minimal | 0.03961 | 0.04132 | 0.9588 |
| Mean | 0.05859 | 0.04132 | 1.4182 |
| Maximal | 0.19757 | 0.04132 | 4.7820 |

**Table S4**. Effect of coping with missing trait values on distinctiveness index rank deviation: Statistics from Generalized Additive Models (GAM) with species conservation status as response variable and integrated distinctiveness as predictor.

|  |  |  |
| --- | --- | --- |
|  | Percentage deviation of distinctiveness index rank (database with no missing data) | Percentage deviation of distinctiveness index rank (database with missing data predicted with the R package ‘missForest’)Deviance explained |
| Minimum | -7% | -5% |
| Mean | 0.2% | 0 |
| Maximum | 7% | 3% |

**Table S5**. List of northeastern Atlantic marine fish species with ecological indexes. ‘Taxon’ refers to the valid name of species, ‘IntDi’ refers to the integrated distinctiveness index. ‘Decile’ refers to the functional group in which the species was classified (D1 = most common species; D2-D9 = intermediate species; D10 = most distinct species), ‘Sci’ refers to the scarcity index and ‘IntRi’ refers to the integrated taxonomic restrictedness index . ‘IUCN status’ refers to the species IUCN status (LC = low concern, NT = near-threatened, VU = vulnerable, EN = endangered, CR = critically endangered).

| **Taxon** | **IntDi** | **Rank IntDi** | **Decile** | **Sci** | **IntRi** | **PCoA1** | **PCoA2** | **Region identifier** | **IUCN status** | **Result category** | **Extinction risk** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Abramis brama* | 0,1413 | 168 | 4 | 0.99981 | 0.99795 | 0.03434 | 0.0143 | Europe | LC | Least Concern | 0 |
| *Acantholabrus palloni* | 0,16572 | 296 | 7 | 0.99987 | 0.97593 | 0.04913 | 0.07851 | Europe | LC | Least Concern | 0 |
| *Acipenser sturio* | 0,20987 | 392 | 10 | 0.99999 | 0.52241 | -0.00323 | 0.09033 | Europe | CR | Critically Endangered | 1 |
| *Agonus cataphractus* | 0,12036 | 34 | 1 | 0.82491 | 0.54302 | 0.06302 | 0.02138 | Europe | LC | Least Concern | 0 |
| *Alburnus alburnus* | 0,1726 | 329 | 8 | 0.9999 | 0.99809 | 0.06569 | -0.01726 | Europe | LC | Least Concern | 0 |
| *Aldrovandia affinis* | 0,15081 | 229 | 6 | 0.99999 | 0.99459 | 0.0902 | -0.02804 | Europe | NA | Not Applicable | NA |
| *Aldrovandia phalacra* | 0,13827 | 151 | 4 | 1 | 1.00000 | 0.01914 | -0.03984 | Europe | LC | Least Concern | 0 |
| *Alepocephalus agassizii* | 0,13966 | 160 | 4 | 0.99936 | 0.99321 | 0.01239 | 0.01263 | Europe | LC | Least Concern | 0 |
| *Alepocephalus bairdii* | 0,13466 | 123 | 3 | 0.99726 | 0.98388 | -0.04594 | -0.04441 | Europe | DD | Data Deficient | DD |
| *Alepocephalus productus* | 0,10509 | 2 | 1 | 1 | 0.99774 | -0.01058 | -0.01939 | Europe | LC | Least Concern | 0 |
| *Alepocephalus rostratus* | 0,13822 | 150 | 4 | 1 | 0.99650 | 0.00363 | -0.02577 | Europe | LC | Least Concern | 0 |
| *Allocyttus verrucosus* | 0,17926 | 349 | 9 | 1 | 0.99883 | -0.07863 | -0.07452 | Europe | NA | NA | NA |
| *Alopias vulpinus* | 0,35487 | 423 | 10 | 1 | 0.98388 | -0.28144 | 0.04309 | Europe | EN | Endangered | 1 |
| *Alosa agone* | 0,13664 | 139 | 4 | 0.99975 | 0.98029 | -0.02569 | -0.05078 | Europe | LC | Least Concern | 0 |
| *Alosa alosa* | 0,15397 | 246 | 6 | 0.99977 | 0.97191 | 0.0177 | -0.04331 | Europe | LC | Least Concern | 0 |
| *Alosa fallax* | 0,13941 | 158 | 4 | 0.98908 | 0.83665 | -0.03934 | -0.05274 | Europe | LC | Least Concern | 0 |
| *Amblyraja hyperborea* | 0,15151 | 233 | 6 | 1 | 0.99973 | -0.05548 | 0.00285 | Europe | LC | Least Concern | 0 |
| *Amblyraja jenseni* | 0,13971 | 161 | 4 | 1 | 0.99528 | -0.04724 | -0.04066 | Europe | LC | Least Concern | 0 |
| *Amblyraja radiata* | 0,14408 | 186 | 5 | 0.96492 | 0.70983 | -0.06694 | -0.01288 | Europe | LC | Least Concern | 0 |
| *Ammodytes marinus* | 0,17362 | 334 | 8 | 0.51915 | 0.78683 | 0.06728 | -0.01761 | Europe | LC | Least Concern | 0 |
| *Ammodytes tobianus* | 0,1475 | 208 | 5 | 0.97201 | 0.81530 | 0.08582 | 0.00608 | Europe | DD | Data Deficient | DD |
| *Anarhichas lupus* | 0,12859 | 84 | 2 | 0.99847 | 0.80952 | 0.01631 | 0.03612 | Europe | DD | Data Deficient | DD |
| *Anarhichas minor* | 0,16602 | 298 | 7 | 1 | 0.99809 | 0.00823 | 0.1197 | Europe | NT | Near Threatened | 0 |
| *Anarrhichthys ocellatus* | 0,16378 | 284 | 7 | 1 | 0.99973 | 0.03948 | 0.04506 | Europe | NA | NA | NA |
| *Anguilla anguilla* | 0,12896 | 89 | 3 | 0.9978 | 0.92312 | -0.01187 | -0.00899 | Europe | CR | Critically Endangered | 1 |
| *Anoplogaster cornuta* | 0,18502 | 357 | 9 | 1 | 0.99549 | 0.01103 | -0.14467 | Europe | LC | Least Concern | 0 |
| *Anthias anthias* | 0,13721 | 142 | 4 | 0.99915 | 0.97990 | -0.01765 | -0.04213 | Europe | LC | Least Concern | 0 |
| *Antimora rostrata* | 0,14297 | 179 | 5 | 0.99992 | 0.98788 | -0.00016 | 0.00014 | Europe | LC | Least Concern | 0 |
| *Aphanopus carbo* | 0,1851 | 358 | 9 | 0.99566 | 0.97851 | -0.08823 | -0.04706 | Europe | LC | Least Concern | 0 |
| *Aphia minuta* | 0,23434 | 405 | 10 | 0.90468 | 0.62065 | 0.10032 | 0.05919 | Europe | LC | Least Concern | 0 |
| *Apletodon dentatus* | 0,17255 | 326 | 8 | 0.99984 | 0.99304 | 0.10762 | 0.10275 | Europe | LC | Least Concern | 0 |
| *Apristurus aphyodes* | 0,13645 | 137 | 4 | 0.99993 | 0.98832 | -0.06344 | -0.05059 | Europe | LC | Least Concern | 0 |
| *Apristurus laurussonii* | 0,13495 | 125 | 3 | 0.99995 | 0.98874 | -0.05564 | -0.04903 | Europe | LC | Least Concern | 0 |
| *Apristurus melanoasper* | 0,17057 | 316 | 8 | 0.99999 | 0.99285 | -0.10443 | 0.00978 | Europe | LC | Least Concern | 0 |
| *Apristurus microps* | 0,14436 | 187 | 5 | 0.99999 | 0.99403 | -0.08176 | -0.05479 | Europe | LC | Least Concern | 0 |
| *Arctozenus risso* | 0,14655 | 199 | 5 | 0.99998 | 0.99455 | 0.03913 | -0.05884 | Europe | LC | Least Concern | 0 |
| *Argentina silus* | 0,13183 | 105 | 3 | 0.93148 | 0.70373 | -0.00738 | -0.04188 | Europe | LC | Least Concern | 0 |
| *Argentina sphyraena* | 0,12658 | 70 | 2 | 0.56322 | 0.44855 | -0.00895 | -0.0469 | Europe | LC | Least Concern | 0 |
| *Argyropelecus aculeatus* | 0,14054 | 165 | 4 | 1 | 0.99824 | 0.01731 | -0.06223 | Europe | LC | Least Concern | 0 |
| *Argyropelecus hemigymnus* | 0,17369 | 335 | 8 | 0.99998 | 0.98987 | 0.08076 | -0.03244 | Europe | LC | Least Concern | 0 |
| *Argyropelecus olfersii* | 0,14305 | 180 | 5 | 0.99996 | 0.97832 | 0.04001 | -0.05866 | Europe | LC | Least Concern | 0 |
| *Argyrosomus regius* | 0,19752 | 374 | 9 | 0.99909 | 0.98836 | -0.09003 | -0.04596 | Europe | LC | Least Concern | 0 |
| *Arnoglossus imperialis* | 0,12199 | 41 | 1 | 0.97708 | 0.74782 | 0.03502 | 0.01882 | Europe | LC | Least Concern | 0 |
| *Arnoglossus laterna* | 0,11637 | 6 | 1 | 0.7133 | 0.49925 | 0.04579 | 0.02056 | Europe | LC | Least Concern | 0 |
| *Arnoglossus rueppelii* | 0,12611 | 67 | 2 | 0.99992 | 0.98767 | 0.02226 | 0.01955 | Europe | DD | Data Deficient | DD |
| *Arnoglossus thori* | 0,12486 | 60 | 2 | 0.99104 | 0.98277 | 0.07452 | 0.0231 | Europe | LC | Least Concern | 0 |
| *Artediellus atlanticus* | 0,11865 | 26 | 1 | 1 | 0.99941 | 0.05548 | 0.02322 | Europe | LC | Least Concern | 0 |
| *Atherina boyeri* | 0,12734 | 73 | 2 | 0.99996 | 0.99767 | 0.04882 | -0.01821 | Europe | LC | Least Concern | 0 |
| *Atherina presbyter* | 0,15472 | 248 | 6 | 0.83545 | 0.96805 | 0.03001 | -0.02896 | Europe | LC | Least Concern | 0 |
| *Balistes capriscus* | 0,1734 | 333 | 8 | 0.99984 | 0.98449 | 0.00003 | 0.07602 | Europe | DD | Data Deficient | DD |
| *Bathygadus melanobranchus* | 0,1484 | 210 | 5 | 0.99999 | 0.99080 | 0.01381 | -0.02021 | Europe | LC | Least Concern | 0 |
| *Bathypterois dubius* | 0,14104 | 167 | 4 | 0.99994 | 0.98941 | 0.00737 | -0.04395 | Europe | LC | Least Concern | 0 |
| *Bathyraja pallida* | 0,16135 | 275 | 7 | 1 | 0.99782 | -0.06644 | -0.03939 | Europe | LC | Least Concern | 0 |
| *Bathyraja richardsoni* | 0,17399 | 338 | 8 | 1 | 0.99841 | -0.11341 | -0.05165 | Europe | LC | Least Concern | 0 |
| *Bathysaurus ferox* | 0,20884 | 391 | 10 | 0.99999 | 0.87203 | -0.12035 | -0.05987 | Europe | LC | Least Concern | 0 |
| *Bathysolea profundicola* | 0,13526 | 129 | 3 | 0.99981 | 0.98289 | 0.04912 | 0.00193 | Europe | LC | Least Concern | 0 |
| *Belone belone* | 0,16598 | 297 | 7 | 0.99877 | 0.93677 | -0.07403 | -0.02298 | Europe | LC | Least Concern | 0 |
| *Benthocometes robustus* | 0,23152 | 404 | 10 | 0.99999 | 0.99876 | 0.10194 | -0.1031 | Europe | LC | Least Concern | 0 |
| *Benthosema glaciale* | 0,16025 | 273 | 7 | 0.99999 | 0.99727 | 0.06037 | -0.0168 | Europe | LC | Least Concern | 0 |
| *Beryx decadactylus* | 0,13646 | 138 | 4 | 0.99995 | 0.98027 | -0.06342 | -0.05421 | Europe | NT | Near Threatened | 0 |
| *Beryx splendens* | 0,14318 | 182 | 5 | 0.99986 | 0.98384 | -0.06484 | -0.0494 | Europe | NT | Near Threatened | 0 |
| *Blennius ocellaris* | 0,14975 | 218 | 6 | 0.99853 | 0.88839 | 0.06664 | 0.08915 | Europe | LC | Least Concern | 0 |
| *Blicca bjoerkna* | 0,13812 | 149 | 4 | 0.99996 | 0.99801 | 0.07432 | 0.04577 | Europe | LC | Least Concern | 0 |
| *Boops boops* | 0,15445 | 247 | 6 | 0.97456 | 0.94461 | 0.08087 | 0.00915 | Europe | LC | Least Concern | 0 |
| *Borostomias antarcticus* | 0,12777 | 78 | 2 | 0.99999 | 0.99241 | -0.00537 | -0.04775 | Europe | LC | Least Concern | 0 |
| *Brama brama* | 0,16168 | 276 | 7 | 0.99983 | 0.97577 | -0.03513 | -0.1231 | Europe | LC | Least Concern | 0 |
| *Brosme brosme* | 0,12732 | 72 | 2 | 0.99949 | 0.91860 | -0.03267 | -0.01624 | Europe | LC | Least Concern | 0 |
| *Buenia jeffreysii* | 0,15278 | 242 | 6 | 0.99976 | 0.96650 | 0.06009 | 0.08968 | Europe | LC | Least Concern | 0 |
| *Buglossidium luteum* | 0,12596 | 66 | 2 | 0.57149 | 0.64472 | 0.07448 | 0.02334 | Europe | LC | Least Concern | 0 |
| *Callanthias ruber* | 0,18757 | 364 | 9 | 0.99953 | 0.99059 | 0.06261 | -0.13757 | Europe | LC | Least Concern | 0 |
| *Callionymus lyra* | 0,12346 | 50 | 2 | 0.60255 | 0.18908 | 0.07143 | 0.023 | Europe | LC | Least Concern | 0 |
| *Callionymus maculatus* | 0,12468 | 58 | 2 | 0.92475 | 0.35625 | 0.07385 | 0.02307 | Europe | LC | Least Concern | 0 |
| *Callionymus reticulatus* | 0,12637 | 68 | 2 | 0.99494 | 0.82099 | 0.07661 | 0.02368 | Europe | LC | Least Concern | 0 |
| *Capros aper* | 0,14407 | 185 | 5 | 0.00153 | 0.62849 | 0.09149 | -0.05805 | Europe | LC | Least Concern | 0 |
| *Caranx rhonchus* | 0,14154 | 170 | 4 | 1 | 0.99954 | -0.03811 | -0.04759 | Europe | DD | Data Deficient | DD |
| *Cataetyx laticeps* | 0,20042 | 377 | 9 | 0.99995 | 0.98876 | 0.00675 | 0.12549 | Europe | LC | Least Concern | 0 |
| *Centrolabrus exoletus* | 0,17687 | 344 | 9 | 0.99996 | 0.98916 | 0.06917 | 0.0808 | Europe | LC | Least Concern | 0 |
| *Centrolophus niger* | 0,15211 | 237 | 6 | 0.99999 | 0.98979 | 0.0325 | -0.05569 | Europe | LC | Least Concern | 0 |
| *Centrophorus squamosus* | 0,24203 | 407 | 10 | 0.99984 | 0.98585 | -0.20973 | 0.02445 | Europe | EN | Endangered | 1 |
| *Centroscyllium fabricii* | 0,17147 | 322 | 8 | 0.99997 | 0.99331 | -0.09697 | 0.01547 | Europe | LC | Least Concern | 0 |
| *Centroscymnus coelolepis* | 0,21348 | 397 | 10 | 0.99995 | 0.99977 | -0.17138 | 0.01693 | Europe | EN | Endangered | 1 |
| *Centroscymnus crepidater* | 0,21254 | 395 | 10 | 0.99984 | 0.99065 | -0.15653 | 0.05955 | Europe | LC | Least Concern | 0 |
| *Cepola macrophthalma* | 0,15613 | 257 | 6 | 0.99704 | 0.91417 | 0.10831 | -0.02974 | Europe | LC | Least Concern | 0 |
| *Ceratoscopelus maderensis* | 0,16004 | 271 | 7 | 0.99999 | 0.99776 | 0.0739 | -0.03316 | Europe | LC | Least Concern | 0 |
| *Cetorhinus maximus* | 0,5072 | 424 | 10 | 1 | 0.98354 | -0.12093 | 0.1999 | Europe | EN | Endangered | 1 |
| *Chauliodus sloani* | 0,14284 | 178 | 5 | 0.99998 | 0.98881 | -0.02905 | -0.06774 | Europe | LC | Least Concern | 0 |
| *Chaunax pictus* | 0,14156 | 171 | 4 | 1 | 0.99920 | -0.05614 | -0.01617 | Europe | LC | Least Concern | 0 |
| *Chelidonichthys cuculus* | 0,11925 | 29 | 1 | 0.87605 | 0.46314 | 0.002 | -0.022 | Europe | LC | Least Concern | 0 |
| *Chelidonichthys lucerna* | 0,12191 | 40 | 1 | 0.96884 | 0.55574 | -0.01809 | -0.02309 | Europe | LC | Least Concern | 0 |
| *Chelidonichthys obscurus* | 0,11784 | 18 | 1 | 0.99926 | 0.95010 | 0.03606 | 0.01895 | Europe | LC | Least Concern | 0 |
| *Chelon labrosus* | 0,15264 | 240 | 6 | 0.99988 | 0.98774 | 0.08391 | 0.03667 | Europe | LC | Least Concern | 0 |
| *Chiasmodon niger* | 0,19456 | 373 | 9 | 1 | 0.99803 | -0.02627 | -0.09669 | Europe | LC | Least Concern | 0 |
| *Chimaera monstrosa* | 0,13788 | 145 | 4 | 0.98831 | 0.89229 | -0.00114 | 0.01076 | Europe | NT | Near Threatened | 0 |
| *Chimaera opalescens* | 0,14452 | 188 | 5 | 0.99998 | 0.99587 | -0.01353 | 0.01523 | Europe | LC | Least Concern | 0 |
| *Chirolophis ascanii* | 0,16512 | 292 | 7 | 0.99997 | 0.98723 | 0.05393 | 0.0804 | Europe | LC | Least Concern | 0 |
| *Chlorophthalmus agassizi* | 0,12684 | 71 | 2 | 0.99999 | 0.99417 | 0.0174 | -0.00231 | Europe | LC | Least Concern | 0 |
| *Ciliata mustela* | 0,11775 | 16 | 1 | 0.97479 | 0.86298 | 0.02348 | -0.01721 | Europe | LC | Least Concern | 0 |
| *Ciliata septentrionalis* | 0,13183 | 106 | 3 | 0.99973 | 0.95233 | 0.04328 | 0.00515 | Europe | LC | Least Concern | 0 |
| *Citharus linguatula* | 0,12024 | 33 | 1 | 0.99941 | 0.97468 | 0.01812 | 0.01923 | Europe | LC | Least Concern | 0 |
| *Clupea harengus* | 0,14183 | 173 | 5 | 0 | 0.28478 | 0.03441 | -0.01875 | Europe | LC | Least Concern | 0 |
| *Coelorinchus caelorhincus* | 0,1356 | 131 | 4 | 0.95377 | 0.91497 | 0.01922 | 0.01264 | Europe | DD | Data Deficient | DD |
| *Coelorinchus labiatus* | 0,15732 | 264 | 7 | 0.99902 | 0.98556 | -0.08611 | -0.05697 | Europe | LC | Least Concern | 0 |
| *Conger conger* | 0,18574 | 359 | 9 | 0.99307 | 0.65170 | -0.09657 | 0.02688 | Europe | LC | Least Concern | 0 |
| *Conocara murrayi* | 0,1054 | 3 | 1 | 1 | 0.99849 | -0.00026 | -0.01956 | Europe | LC | Least Concern | 0 |
| *Coregonus albula* | 0,15127 | 232 | 6 | 1 | 1.00000 | 0.04703 | -0.01747 | Europe | LC | Least Concern | 0 |
| *Coregonus lavaretus* | 0,13227 | 107 | 3 | 0.99992 | 0.99694 | 0.04711 | -0.01835 | Europe | VU | Vulnerable | 1 |
| *Coryphaenoides guentheri* | 0,14324 | 183 | 5 | 0.82221 | 0.98864 | -0.00756 | -0.04123 | Europe | LC | Least Concern | 0 |
| *Coryphaenoides mediterraneus* | 0,13674 | 140 | 4 | 0.99983 | 0.98872 | 0.01551 | -0.05298 | Europe | LC | Least Concern | 0 |
| *Coryphaenoides rupestris* | 0,14023 | 164 | 4 | 0.98936 | 0.97247 | -0.0186 | -0.05283 | Europe | EN | Endangered | 1 |
| *Cottunculus microps* | 0,13547 | 130 | 4 | 1 | 0.99969 | -0.05427 | -0.05468 | Europe | DD | Data Deficient | 0 |
| *Cottunculus thomsonii* | 0,12555 | 62 | 2 | 0.99999 | 0.99382 | 0.01993 | 0.00042 | Europe | LC | Least Concern | 0 |
| *Cottus gobio* | 0,16678 | 300 | 8 | 0.99998 | 0.99723 | 0.08964 | 0.11541 | Europe | DD | Data Deficient | 0 |
| *Crystallogobius linearis* | 0,17889 | 348 | 9 | 0.99948 | 0.96038 | 0.08793 | 0.07568 | Europe | LC | Least Concern | 0 |
| *Ctenolabrus rupestris* | 0,13626 | 136 | 4 | 0.99897 | 0.88419 | 0.04333 | 0.00605 | Europe | LC | Least Concern | 0 |
| *Cyclopterus lumpus* | 0,17287 | 330 | 8 | 0.99477 | 0.64340 | -0.01388 | 0.04247 | Europe | NT | Near Threatened | 0 |
| *Cyttopsis rosea* | 0,16759 | 305 | 8 | 0.99993 | 0.98444 | -0.01386 | -0.13266 | Europe | DD | Data Deficient | DD |
| *Dalatias licha* | 0,21638 | 399 | 10 | 0.99998 | 0.97436 | -0.16535 | 0.06127 | Europe | EN | Endangered | 1 |
| *Dasyatis pastinaca* | 0,16727 | 303 | 8 | 0.99979 | 0.97952 | -0.04538 | 0.12569 | Europe | VU | Vulnerable | 1 |
| *Dasyatis tortonesei* | 0,17988 | 350 | 9 | 0.99999 | 0.99727 | -0.09366 | 0.07343 | Europe | NA | NA | NA |
| *Deania calcea* | 0,23 | 403 | 10 | 0.99903 | 0.99715 | -0.17782 | 0.06509 | Europe | EN | Endangered | 1 |
| *Deania profundorum* | 0,26113 | 409 | 10 | 0.99999 | 0.99985 | -0.2053 | 0.05974 | Europe | DD | Data Deficient | DD |
| *Deltentosteus quadrimaculatus* | 0,16428 | 287 | 7 | 1 | 0.99910 | 0.09795 | 0.09885 | Europe | LC | Least Concern | 0 |
| *Dentex canariensis* | 0,11798 | 20 | 1 | 1 | 0.99918 | 0.02926 | 0.02446 | Europe | NA | NA | NA |
| *Dentex dentex* | 0,15714 | 262 | 7 | 0.99999 | 0.99860 | -0.083 | -0.05249 | Europe | VU | Vulnerable | 1 |
| *Dentex gibbosus* | 0,1413 | 169 | 4 | 1 | 0.99918 | -0.06442 | -0.04792 | Europe | LC | Least Concern | 0 |
| *Dentex maroccanus* | 0,11796 | 19 | 1 | 1 | 0.99816 | 0.02398 | 0.01962 | Europe | LC | Least Concern | 0 |
| *Dicentrarchus labrax* | 0,11825 | 23 | 1 | 0.98338 | 0.86545 | 0.01104 | -0.01473 | Europe | LC | Least Concern | 0 |
| *Dicentrarchus punctatus* | 0,13894 | 155 | 4 | 0.99998 | 0.99488 | -0.04386 | -0.05005 | Europe | LC | Least Concern | 0 |
| *Dicologlossa cuneata* | 0,11927 | 30 | 1 | 0.99697 | 0.95985 | 0.06244 | 0.02264 | Europe | LC | Least Concern | 0 |
| *Diplodus annularis* | 0,12921 | 91 | 3 | 0.99992 | 0.99629 | 0.02484 | 0.0049 | Europe | LC | Least Concern | 0 |
| *Diplodus bellottii* | 0,12769 | 77 | 2 | 0.99941 | 0.99715 | 0.02709 | 0.00599 | Europe | LC | Least Concern | 0 |
| *Diplodus cervinus* | 0,1512 | 231 | 6 | 1 | 0.99872 | 0.06546 | 0.01328 | Europe | LC | Least Concern | 0 |
| *Diplodus puntazzo* | 0,15109 | 230 | 6 | 1 | 0.99962 | 0.05948 | 0.01789 | Europe | LC | Least Concern | 0 |
| *Diplodus sargus* | 0,12223 | 45 | 2 | 0.99999 | 0.99958 | 0.0646 | 0.02468 | Europe | LC | Least Concern | 0 |
| *Diplodus vulgaris* | 0,1288 | 88 | 3 | 0.98488 | 0.97006 | 0.03411 | 0.00534 | Europe | LC | Least Concern | 0 |
| *Dipturus batis* | 0,16844 | 308 | 8 | 0.99653 | 0.77367 | -0.00405 | 0.06799 | Europe | CR | Critically Endangered | 1 |
| *Dipturus nidarosiensis* | 0,17161 | 323 | 8 | 0.99999 | 0.99134 | -0.03164 | 0.02854 | Europe | NT | Near Threatened | 0 |
| *Dipturus oxyrinchus* | 0,15514 | 251 | 6 | 0.99997 | 0.98771 | -0.0215 | 0.0209 | Europe | NT | Near Threatened | 0 |
| *Diretmus argenteus* | 0,1764 | 343 | 9 | 1 | 0.99587 | 0.0886 | -0.01715 | Europe | LC | Least Concern | 0 |
| *Echiichthys vipera* | 0,13798 | 147 | 4 | 0.76236 | 0.73491 | 0.00326 | 0.02581 | Europe | LC | Least Concern | 0 |
| *Echiodon drummondii* | 0,15001 | 223 | 6 | 0.99982 | 0.97184 | -0.02314 | -0.10779 | Europe | LC | Least Concern | 0 |
| *Enchelyopus cimbrius* | 0,12122 | 38 | 1 | 0.92499 | 0.60470 | 0.05048 | 0.01781 | Europe | LC | Least Concern | 0 |
| *Engraulis encrasicolus* | 0,16092 | 274 | 7 | 0.06138 | 0.50570 | 0.06287 | -0.02104 | Europe | LC | Least Concern | 0 |
| *Entelurus aequoreus* | 0,16435 | 288 | 7 | 0.98287 | 0.64258 | -0.01219 | 0.0598 | Europe | LC | Least Concern | 0 |
| *Ephippion guttifer* | 0,12505 | 61 | 2 | 0.99999 | 0.99795 | 0.03886 | 0.03417 | Europe | DD | Data Deficient | DD |
| *Epigonus denticulatus* | 0,20324 | 383 | 9 | 1 | 0.99920 | 0.01054 | -0.11969 | Europe | LC | Least Concern | 0 |
| *Epigonus telescopus* | 0,18584 | 361 | 9 | 0.99985 | 0.97715 | -0.024 | -0.10612 | Europe | DD | Data Deficient | DD |
| *Esox lucius* | 0,14978 | 219 | 6 | 1 | 0.99887 | -0.05232 | 0.00994 | Europe | LC | Least Concern | 0 |
| *Etmopterus princeps* | 0,19797 | 376 | 9 | 0.99985 | 0.98317 | -0.13799 | 0.05729 | Europe | LC | Least Concern | 0 |
| *Etmopterus pusillus* | 0,18893 | 368 | 9 | 0.99996 | 0.99648 | -0.11245 | 0.05633 | Europe | DD | Data Deficient | DD |
| *Etmopterus spinax* | 0,16914 | 311 | 8 | 0.98888 | 0.92698 | -0.1016 | 0.00616 | Europe | NT | Near Threatened | 0 |
| *Eurypharynx pelecanoides* | 0,18576 | 360 | 9 | 1 | 1.00000 | -0.06315 | -0.13367 | Europe | LC | Least Concern | 0 |
| *Eutrigla gurnardus* | 0,11803 | 21 | 1 | 0.07061 | 0.16633 | -0.00749 | -0.0209 | Europe | LC | Least Concern | 0 |
| *Facciolella oxyrhyncha* | 0,11726 | 12 | 1 | 1 | 0.99904 | 0.04381 | 0.02252 | Europe | NA | NA | NA |
| *Gadella maraldi* | 0,14197 | 174 | 5 | 1 | 0.99822 | -0.00268 | -0.04509 | Europe | LC | Least Concern | 0 |
| *Gadiculus argenteus* | 0,14061 | 166 | 4 | 0.46825 | 0.62210 | 0.02274 | -0.02226 | Europe | LC | Least Concern | 0 |
| *Gadus morhua* | 0,14278 | 177 | 5 | 0.15306 | 0.21803 | -0.06975 | -0.04715 | Europe | LC | Least Concern | 0 |
| *Gaidropsarus argentatus* | 0,13307 | 111 | 3 | 1 | 0.99702 | 0.00598 | -0.04718 | Europe | LC | Least Concern | 0 |
| *Gaidropsarus biscayensis* | 0,13255 | 109 | 3 | 0.99998 | 0.99327 | 0.03256 | 0.00421 | Europe | LC | Least Concern | 0 |
| *Gaidropsarus macrophthalmus* | 0,12991 | 97 | 3 | 0.99976 | 0.95820 | 0.06337 | 0.03225 | Europe | LC | Least Concern | 0 |
| *Gaidropsarus mediterraneus* | 0,12204 | 42 | 1 | 0.99996 | 0.98736 | 0.0317 | -0.01992 | Europe | LC | Least Concern | 0 |
| *Gaidropsarus vulgaris* | 0,12096 | 37 | 1 | 0.99742 | 0.76518 | 0.05402 | 0.02172 | Europe | LC | Least Concern | 0 |
| *Galeorhinus galeus* | 0,22657 | 401 | 10 | 0.99881 | 0.89361 | -0.17037 | 0.07474 | Europe | VU | Vulnerable | 1 |
| *Galeus atlanticus* | 0,13601 | 134 | 4 | 0.99917 | 0.98507 | -0.05345 | -0.05561 | Europe | NT | Near Threatened | 0 |
| *Galeus melastomus* | 0,12982 | 96 | 3 | 0.97964 | 0.83788 | -0.03341 | -0.02071 | Europe | LC | Least Concern | 0 |
| *Galeus murinus* | 0,14919 | 214 | 5 | 0.99997 | 0.99161 | -0.06242 | -0.02734 | Europe | LC | Least Concern | 0 |
| *Glyptocephalus cynoglossus* | 0,12879 | 87 | 3 | 0.97063 | 0.51002 | 0.05476 | 0.03041 | Europe | LC | Least Concern | 0 |
| *Gnathophis mystax* | 0,12327 | 47 | 2 | 1 | 0.99904 | 0.03328 | 0.03012 | Europe | LC | Least Concern | 0 |
| *Gobius auratus* | 0,18146 | 351 | 9 | 1 | 0.99956 | 0.11089 | 0.13612 | Europe | LC | Least Concern | 0 |
| *Gobius cobitis* | 0,16442 | 289 | 7 | 1 | 0.99952 | 0.08894 | 0.1027 | Europe | LC | Least Concern | 0 |
| *Gobius gasteveni* | 0,15592 | 255 | 6 | 0.99979 | 0.96581 | 0.08455 | 0.09337 | Europe | LC | Least Concern | 0 |
| *Gobius niger* | 0,15372 | 245 | 6 | 0.95383 | 0.90721 | 0.08056 | 0.09193 | Europe | LC | Least Concern | 0 |
| *Gobius paganellus* | 0,15507 | 250 | 6 | 0.99955 | 0.97078 | 0.08252 | 0.09285 | Europe | LC | Least Concern | 0 |
| *Gobiusculus flavescens* | 0,17258 | 327 | 8 | 1 | 0.99971 | 0.1057 | 0.10188 | Europe | LC | Least Concern | 0 |
| *Gymnammodytes semisquamatus* | 0,16646 | 299 | 7 | 0.93489 | 0.95864 | 0.09776 | 0.00939 | Europe | LC | Least Concern | 0 |
| *Halargyreus johnsonii* | 0,1448 | 189 | 5 | 0.99951 | 0.98178 | 0.00864 | -0.06176 | Europe | LC | Least Concern | 0 |
| *Halosauropsis macrochir* | 0,1502 | 225 | 6 | 0.99998 | 0.99294 | 0.08013 | -0.03642 | Europe | LC | Least Concern | 0 |
| *Harriotta raleighana* | 0,1385 | 152 | 4 | 0.99987 | 0.98830 | -0.01012 | 0.01102 | Europe | LC | Least Concern | 0 |
| *Helicolenus dactylopterus* | 0,13469 | 124 | 3 | 0.85064 | 0.63883 | -0.02227 | -0.04233 | Europe | LC | Least Concern | 0 |
| *Heptranchias perlo* | 0,24162 | 406 | 10 | 1 | 0.94065 | -0.17818 | 0.06853 | Europe | DD | Data Deficient | DD |
| *Hexanchus griseus* | 0,31604 | 420 | 10 | 0.99995 | 0.97597 | -0.28744 | 0.04104 | Europe | LC | Least Concern | 0 |
| *Hippocampus guttulatus* | 0,16386 | 285 | 7 | 0.99997 | 0.99465 | 0.0096 | 0.04879 | Europe | DD | Data Deficient | DD |
| *Hippocampus hippocampus* | 0,18205 | 352 | 9 | 0.99933 | 0.96296 | 0.03584 | 0.05531 | Europe | DD | Data Deficient | DD |
| *Hippoglossoides platessoides* | 0,12792 | 79 | 2 | 0.16149 | 0.41908 | -0.03855 | -0.01887 | Europe | LC | Least Concern | 0 |
| *Hippoglossus hippoglossus* | 0,18659 | 363 | 9 | 0.99967 | 0.91203 | -0.07547 | 0.03328 | Europe | VU | Vulnerable | 1 |
| *Holtbyrnia anomala* | 0,20623 | 386 | 10 | 0.99997 | 0.99235 | 0.14984 | -0.09304 | Europe | LC | Least Concern | 0 |
| *Hoplostethus atlanticus* | 0,15569 | 254 | 6 | 0.99981 | 0.98763 | -0.06488 | -0.06912 | Europe | VU | Vulnerable | 1 |
| *Howella sherborni* | 0,20828 | 390 | 10 | 0.99999 | 0.99958 | 0.14337 | -0.01763 | Europe | NA | NA | NA |
| *Hydrolagus affinis* | 0,1498 | 220 | 6 | 0.99997 | 0.99013 | -0.08305 | -0.04973 | Europe | LC | Least Concern | 0 |
| *Hydrolagus mirabilis* | 0,14483 | 190 | 5 | 0.99982 | 0.98633 | -0.06825 | -0.0484 | Europe | LC | Least Concern | 0 |
| *Hydrolagus pallidus* | 0,14685 | 203 | 5 | 0.99999 | 0.99478 | -0.0673 | -0.04439 | Europe | LC | Least Concern | 0 |
| *Hygophum benoiti* | 0,16306 | 281 | 7 | 0.99999 | 0.99910 | 0.07678 | -0.03354 | Europe | LC | Least Concern | 0 |
| *Hymenocephalus italicus* | 0,14171 | 172 | 4 | 0.99995 | 0.99692 | -0.00024 | -0.03607 | Europe | LC | Least Concern | 0 |
| *Hyperoplus immaculatus* | 0,14736 | 207 | 5 | 0.96513 | 0.88910 | -0.03208 | 0.00767 | Europe | DD | Data Deficient | DD |
| *Hyperoplus lanceolatus* | 0,12177 | 39 | 1 | 0.70031 | 0.64254 | -0.00797 | -0.02369 | Europe | LC | Least Concern | 0 |
| *Icelus bicornis* | 0,12803 | 81 | 2 | 1 | 0.99945 | 0.07415 | 0.02672 | Europe | NA | NA | NA |
| *Ilyophis blachei* | 0,14908 | 213 | 5 | 1 | 0.99746 | 0.05056 | 0.00612 | Europe | LC | Least Concern | 0 |
| *Labrus bergylta* | 0,17377 | 336 | 8 | 0.99955 | 0.93757 | 0.06321 | 0.08552 | Europe | LC | Least Concern | 0 |
| *Labrus mixtus* | 0,16945 | 313 | 8 | 0.99947 | 0.91470 | 0.00861 | 0.07607 | Europe | LC | Least Concern | 0 |
| *Lamna nasus* | 0,29404 | 417 | 10 | 0.99999 | 0.99937 | -0.23501 | 0.09338 | Europe | CR | Critically Endangered | 1 |
| *Lampanyctus crocodilus* | 0,15877 | 268 | 7 | 0.99989 | 0.98235 | 0.06272 | -0.03164 | Europe | LC | Least Concern | 0 |
| *Lampanyctus intricarius* | 0,1683 | 307 | 8 | 1 | 1.00000 | 0.10429 | -0.08531 | Europe | LC | Least Concern | 0 |
| *Lampetra fluviatilis* | 0,15198 | 236 | 6 | 0.99975 | 0.96226 | -0.04716 | 0.0099 | Europe | LC | Least Concern | 0 |
| *Lepadogaster lepadogaster* | 0,188 | 365 | 9 | 0.99999 | 0.99577 | 0.12161 | 0.11591 | Europe | LC | Least Concern | 0 |
| *Lepidion eques* | 0,14493 | 193 | 5 | 0.99702 | 0.97478 | 0.04145 | 0.00717 | Europe | LC | Least Concern | 0 |
| *Lepidopus caudatus* | 0,14726 | 206 | 5 | 0.99205 | 0.96627 | -0.06079 | -0.04105 | Europe | LC | Least Concern | 0 |
| *Lepidorhombus boscii* | 0,12355 | 52 | 2 | 0.9908 | 0.84447 | 0.0348 | 0.01726 | Europe | LC | Least Concern | 0 |
| *Lepidorhombus whiffiagonis* | 0,14869 | 211 | 5 | 0.9198 | 0.48698 | -0.03599 | -0.01026 | Europe | LC | Least Concern | 0 |
| *Lepidotrigla cavillone* | 0,12219 | 44 | 2 | 0.99864 | 0.98294 | 0.04098 | -0.0182 | Europe | LC | Least Concern | 0 |
| *Lepidotrigla dieuzeidei* | 0,11813 | 22 | 1 | 0.99967 | 0.98518 | 0.01802 | -0.02053 | Europe | LC | Least Concern | 0 |
| *Leptagonus decagonus* | 0,12473 | 59 | 2 | 0.99999 | 0.99958 | 0.0442 | -0.01736 | Europe | LC | Least Concern | 0 |
| *Leptoclinus maculatus* | 0,15269 | 241 | 6 | 0.99993 | 0.99195 | 0.07583 | 0.09322 | Europe | NA | NA | NA |
| *Lesueurigobius friesii* | 0,15686 | 261 | 7 | 0.99199 | 0.88218 | 0.07104 | 0.09166 | Europe | LC | Least Concern | 0 |
| *Lesueurigobius sanzi* | 0,15636 | 258 | 7 | 0.99998 | 0.99631 | 0.07029 | 0.09128 | Europe | LC | Least Concern | 0 |
| *Leuciscus leuciscus* | 0,14931 | 215 | 5 | 1 | 0.99941 | 0.0572 | 0.0128 | Europe | LC | Least Concern | 0 |
| *Leucoraja circularis* | 0,12443 | 57 | 2 | 0.99978 | 0.95803 | 0.02319 | 0.03391 | Europe | EN | Endangered | 1 |
| *Leucoraja fullonica* | 0,13499 | 126 | 3 | 0.99966 | 0.92985 | -0.00217 | 0.00867 | Europe | VU | Vulnerable | 1 |
| *Leucoraja lentiginosa* | 0,12964 | 93 | 3 | 1 | 0.99977 | -0.03096 | -0.01515 | Europe | NA | NA | NA |
| *Leucoraja naevus* | 0,1344 | 120 | 3 | 0.98465 | 0.53954 | -0.02337 | 0.03226 | Europe | LC | Least Concern | 0 |
| *Limanda limanda* | 0,11706 | 10 | 1 | 0.00002 | 0.31147 | 0.05546 | 0.02201 | Europe | LC | Least Concern | 0 |
| *Liparis montagui* | 0,12645 | 69 | 2 | 0.99953 | 0.97180 | 0.07039 | 0.02203 | Europe | LC | Least Concern | 0 |
| *Lipophrys pholis* | 0,16006 | 272 | 7 | 1 | 0.99973 | 0.09027 | 0.09717 | Europe | LC | Least Concern | 0 |
| *Lithognathus mormyrus* | 0,11652 | 7 | 1 | 0.9999 | 0.99667 | 0.05143 | 0.02219 | Europe | LC | Least Concern | 0 |
| *Lophius budegassa* | 0,16938 | 312 | 8 | 0.99174 | 0.70126 | -0.10236 | -0.02949 | Europe | LC | Least Concern | 0 |
| *Lophius piscatorius* | 0,17238 | 324 | 8 | 0.97669 | 0.28522 | -0.10757 | -0.02651 | Europe | LC | Least Concern | 0 |
| *Lota lota* | 0,12342 | 49 | 2 | 1 | 0.99933 | -0.02462 | -0.01647 | Europe | LC | Least Concern | 0 |
| *Lumpenus lampretaeformis* | 0,14547 | 195 | 5 | 0.96541 | 0.85138 | 0.04447 | 0.08864 | Europe | NA | NA | NA |
| *Lycenchelys sarsii* | 0,16546 | 294 | 7 | 0.99969 | 0.98778 | 0.05471 | 0.07172 | Europe | NA | NA | NA |
| *Lycodes gracilis* | 0,14636 | 197 | 5 | 0.99725 | 0.98115 | 0.04895 | 0.08847 | Europe | NA | NA | NA |
| *Lycodes pallidus* | 0,15663 | 259 | 7 | 1 | 0.99669 | 0.08129 | 0.09649 | Europe | NA | NA | NA |
| *Lycodes terraenovae* | 0,15743 | 265 | 7 | 1 | 0.99532 | 0.02965 | 0.06838 | Europe | NA | NA | NA |
| *Lycodes vahlii* | 0,15823 | 266 | 7 | 0.97147 | 0.96252 | -0.00203 | 0.01501 | Europe | NA | NA | NA |
| *Macroparalepis affinis* | 0,19155 | 370 | 9 | 1 | 0.99958 | 0.07242 | -0.06879 | Europe | NA | NA | NA |
| *Macroramphosus scolopax* | 0,1345 | 121 | 3 | 0.99926 | 0.97203 | 0.11004 | -0.00815 | Europe | LC | Least Concern | 0 |
| *Macrourus berglax* | 0,1399 | 162 | 4 | 0.99933 | 0.99015 | -0.00289 | 0.01518 | Europe | LC | Least Concern | 0 |
| *Malacocephalus laevis* | 0,13865 | 154 | 4 | 0.99792 | 0.89948 | -0.05008 | -0.04789 | Europe | LC | Least Concern | 0 |
| *Malacoraja kreffti* | 0,128 | 80 | 2 | 1 | 0.99931 | 0.0313 | 0.04468 | Europe | NA | NA | NA |
| *Malacosteus niger* | 0,13243 | 108 | 3 | 0.99999 | 0.99099 | 0.00595 | -0.06016 | Europe | LC | Least Concern | 0 |
| *Maulisia microlepis* | 0,2062 | 385 | 10 | 1 | 0.99956 | 0.14973 | -0.09306 | Europe | LC | Least Concern | 0 |
| *Maurolicus muelleri* | 0,17469 | 341 | 8 | 0.94872 | 0.66088 | 0.08795 | -0.03628 | Europe | LC | Least Concern | 0 |
| *Melanogrammus aeglefinus* | 0,12226 | 46 | 2 | 0.00002 | 0.25981 | 0.00052 | 0.02194 | Europe | LC | Least Concern | 0 |
| *Melanonus zugmayeri* | 0,20717 | 389 | 10 | 0.99999 | 0.99327 | 0.11325 | -0.06243 | Europe | LC | Least Concern | 0 |
| *Melanostigma atlanticum* | 0,20676 | 387 | 10 | 1 | 0.99528 | 0.03895 | 0.02473 | Europe | LC | Least Concern | 0 |
| *Melanostomias bartonbeani* | 0,16742 | 304 | 8 | 1 | 1.00000 | -0.04288 | -0.04146 | Europe | LC | Least Concern | 0 |
| *Merlangius merlangus* | 0,14597 | 196 | 5 | 0 | 0.18436 | -0.06256 | -0.05126 | Europe | LC | Least Concern | 0 |
| *Merluccius merluccius* | 0,1392 | 156 | 4 | 0.48744 | 0.29799 | -0.05276 | -0.02106 | Europe | LC | Least Concern | 0 |
| *Micrenophrys lilljeborgii* | 0,12578 | 63 | 2 | 0.99998 | 0.99040 | -0.00775 | -0.01657 | Europe | LC | Least Concern | 0 |
| *Microchirus boscanion* | 0,12865 | 85 | 2 | 0.99981 | 0.99109 | 0.0743 | 0.02056 | Europe | LC | Least Concern | 0 |
| *Microchirus ocellatus* | 0,12865 | 86 | 2 | 1 | 0.99809 | 0.07431 | 0.02056 | Europe | DD | Data Deficient | DD |
| *Microchirus variegatus* | 0,1283 | 82 | 2 | 0.9237 | 0.49627 | 0.07553 | 0.01975 | Europe | LC | Least Concern | 0 |
| *Micromesistius poutassou* | 0,13851 | 153 | 4 | 0.00003 | 0.47597 | -0.03419 | -0.06605 | Europe | LC | Least Concern | 0 |
| *Microstomus kitt* | 0,12374 | 54 | 2 | 0.74336 | 0.23847 | 0.06227 | 0.02564 | Europe | LC | Least Concern | 0 |
| *Mola mola* | 0,20424 | 384 | 10 | 0.99974 | 0.99465 | -0.04173 | -0.08792 | Europe | DD | Data Deficient | DD |
| *Molva dypterygia* | 0,15476 | 249 | 6 | 0.99881 | 0.93860 | -0.07572 | -0.01584 | Europe | VU | Vulnerable | 1 |
| *Molva macrophthalma* | 0,14882 | 212 | 5 | 0.99764 | 0.93648 | -0.0672 | -0.01841 | Europe | LC | Least Concern | 0 |
| *Molva molva* | 0,18277 | 354 | 9 | 0.99071 | 0.53365 | -0.07509 | -0.04088 | Europe | LC | Least Concern | 0 |
| *Monochirus hispidus* | 0,1236 | 53 | 2 | 0.99997 | 0.99409 | 0.07192 | 0.02342 | Europe | LC | Least Concern | 0 |
| *Mora moro* | 0,14317 | 181 | 5 | 0.99942 | 0.97834 | -0.00453 | 0.0026 | Europe | LC | Least Concern | 0 |
| *Mugil cephalus* | 0,1741 | 339 | 8 | 1 | 0.99962 | 0.01889 | -0.04472 | Europe | LC | Least Concern | 0 |
| *Mullus surmuletus* | 0,11663 | 8 | 1 | 0.94424 | 0.53390 | 0.05003 | 0.02229 | Europe | DD | Data Deficient | DD |
| *Mustelus asterias* | 0,17103 | 321 | 8 | 0.98865 | 0.71040 | -0.02955 | 0.13003 | Europe | NT | Near Threatened | 0 |
| *Mustelus mustelus* | 0,19405 | 371 | 9 | 0.99884 | 0.89472 | -0.09362 | 0.07825 | Europe | VU | Vulnerable | 1 |
| *Myctophum punctatum* | 0,14679 | 202 | 5 | 0.9999 | 0.99164 | 0.05187 | -0.03319 | Europe | LC | Least Concern | 0 |
| *Myliobatis aquila* | 0,18835 | 366 | 9 | 0.99997 | 0.99579 | -0.0882 | 0.03747 | Europe | VU | Vulnerable | 1 |
| *Myoxocephalus quadricornis* | 0,15898 | 269 | 7 | 0.97518 | 0.98560 | -0.00597 | 0.05693 | Europe | NA | NA | NA |
| *Myoxocephalus scorpioides* | 0,15681 | 260 | 7 | 0.99967 | 0.98459 | 0.07337 | 0.0948 | Europe | NA | NA | NA |
| *Myoxocephalus scorpius* | 0,15324 | 244 | 6 | 0.92743 | 0.70658 | 0.00221 | 0.03676 | Europe | LC | Least Concern | 0 |
| *Myxine glutinosa* | 0,14276 | 176 | 5 | 0.98362 | 0.89046 | -0.0182 | 0.03014 | Europe | LC | Least Concern | 0 |
| *Naucrates ductor* | 0,20122 | 379 | 9 | 1 | 0.99870 | 0.0134 | -0.04652 | Europe | LC | Least Concern | 0 |
| *Nemichthys scolopaceus* | 0,18616 | 362 | 9 | 1 | 0.99325 | 0.05367 | -0.08741 | Europe | LC | Least Concern | 0 |
| *Neocyttus helgae* | 0,1655 | 295 | 7 | 1 | 1.00000 | -0.01733 | -0.05727 | Europe | LC | Least Concern | 0 |
| *Neogobius melanostomus* | 0,15216 | 238 | 6 | 0.99679 | 0.96306 | 0.07601 | 0.09211 | Europe | LC | Least Concern | 0 |
| *Neoraja caerulea* | 0,13942 | 159 | 4 | 0.99999 | 0.99216 | 0.01028 | 0.01381 | Europe | LC | Least Concern | 0 |
| *Nerophis lumbriciformis* | 0,17247 | 325 | 8 | 1 | 0.99876 | -0.03448 | 0.04079 | Europe | LC | Least Concern | 0 |
| *Nerophis ophidion* | 0,17084 | 319 | 8 | 0.99943 | 0.98694 | -0.03488 | 0.04022 | Europe | LC | Least Concern | 0 |
| *Nesiarchus nasutus* | 0,15004 | 224 | 6 | 1 | 0.99881 | -0.07891 | -0.05021 | Europe | LC | Least Concern | 0 |
| *Nettastoma melanurum* | 0,12897 | 90 | 3 | 0.99999 | 0.99417 | 0.0171 | 0.00122 | Europe | LC | Least Concern | 0 |
| *Nezumia aequalis* | 0,13514 | 128 | 3 | 0.99651 | 0.97807 | 0.01202 | -0.03748 | Europe | LC | Least Concern | 0 |
| *Nezumia bairdii* | 0,13176 | 104 | 3 | 1 | 0.99818 | 0.00528 | -0.03745 | Europe | NA | NA | NA |
| *Nezumia sclerorhynchus* | 0,14487 | 191 | 5 | 0.99994 | 0.99436 | 0.0212 | -0.05326 | Europe | LC | Least Concern | 0 |
| *Normichthys operosus* | 0,20685 | 388 | 10 | 0.99999 | 0.99841 | 0.15141 | -0.09293 | Europe | LC | Least Concern | 0 |
| *Notacanthus bonaparte* | 0,13351 | 116 | 3 | 0.9999 | 0.98291 | 0.01834 | -0.0161 | Europe | LC | Least Concern | 0 |
| *Notacanthus chemnitzii* | 0,1726 | 328 | 8 | 0.99992 | 0.98851 | 0.02557 | 0.01297 | Europe | LC | Least Concern | 0 |
| *Notoscopelus kroyeri* | 0,16451 | 290 | 7 | 0.99976 | 0.98407 | 0.07801 | -0.03527 | Europe | NA | NA | NA |
| *Oncorhynchus mykiss* | 0,16241 | 279 | 7 | 1 | 0.99931 | -0.07739 | -0.05573 | Europe | NA | NA | NA |
| *Ophidion barbatum* | 0,13315 | 113 | 3 | 1 | 0.99964 | 0.04545 | 0.04599 | Europe | LC | Least Concern | 0 |
| *Osmerus eperlanus* | 0,14506 | 194 | 5 | 0.87691 | 0.89042 | 0.03203 | -0.02329 | Europe | LC | Least Concern | 0 |
| *Oxynotus paradoxus* | 0,19116 | 369 | 9 | 1 | 0.99826 | -0.1343 | 0.01881 | Europe | DD | Data Deficient | DD |
| *Pachycara crassiceps* | 0,09753 | 1 | 1 | 0.99999 | 0.99382 | -0.00603 | 0.01488 | Europe | DD | Data Deficient | DD |
| *Pagellus acarne* | 0,12931 | 92 | 3 | 0.97492 | 0.94583 | 0.00924 | 0.00217 | Europe | LC | Least Concern | 0 |
| *Pagellus bellottii* | 0,11551 | 4 | 1 | 1 | 0.99964 | 0.04389 | 0.0199 | Europe | LC | Least Concern | 0 |
| *Pagellus bogaraveo* | 0,14003 | 163 | 4 | 0.99878 | 0.97048 | -0.05927 | -0.049 | Europe | NT | Near Threatened | 0 |
| *Pagellus erythrinus* | 0,12842 | 83 | 2 | 0.99836 | 0.97300 | 0.02607 | 0.00756 | Europe | LC | Least Concern | 0 |
| *Pagrus auriga* | 0,13292 | 110 | 3 | 0.99999 | 0.99797 | -0.00772 | 0.00463 | Europe | LC | Least Concern | 0 |
| *Pagrus pagrus* | 0,13387 | 119 | 3 | 0.9999 | 0.97805 | -0.00458 | 0.0013 | Europe | LC | Least Concern | 0 |
| *Parablennius gattorugine* | 0,15195 | 234 | 6 | 0.9999 | 0.97524 | 0.0607 | 0.08886 | Europe | LC | Least Concern | 0 |
| *Pegusa lascaris* | 0,12765 | 76 | 2 | 0.99764 | 0.88644 | 0.07016 | 0.02013 | Europe | LC | Least Concern | 0 |
| *Perca fluviatilis* | 0,14689 | 204 | 5 | 0.99916 | 0.98243 | -0.04352 | 0.00875 | Europe | LC | Least Concern | 0 |
| *Peristedion cataphractum* | 0,12384 | 55 | 2 | 1 | 0.99897 | 0.05943 | 0.03876 | Europe | DD | Data Deficient | DD |
| *Petromyzon marinus* | 0,14994 | 222 | 6 | 0.99991 | 0.98000 | -0.05914 | 0.01176 | Europe | LC | Least Concern | 0 |
| *Pholis gunnellus* | 0,14675 | 201 | 5 | 0.99527 | 0.87218 | 0.05659 | 0.08808 | Europe | LC | Least Concern | 0 |
| *Phrynorhombus norvegicus* | 0,27428 | 414 | 10 | 0.99774 | 0.98233 | 0.06906 | -0.1242 | Europe | LC | Least Concern | 0 |
| *Phycis blennoides* | 0,12757 | 75 | 2 | 0.99104 | 0.74956 | 0.01466 | 0.00429 | Europe | DD | Data Deficient | DD |
| *Phycis phycis* | 0,25355 | 408 | 10 | 0.99998 | 0.99853 | -0.04442 | -0.18546 | Europe | DD | Data Deficient | DD |
| *Physiculus dalwigki* | 0,15237 | 239 | 6 | 1 | 0.99899 | -0.06456 | -0.05728 | Europe | LC | Least Concern | 0 |
| *Platichthys flesus* | 0,1198 | 32 | 1 | 0.38599 | 0.64512 | 0.05834 | 0.02335 | Europe | LC | Least Concern | 0 |
| *Pleuronectes platessa* | 0,12403 | 56 | 2 | 0.0631 | 0.25488 | 0.05184 | 0.0286 | Europe | LC | Least Concern | 0 |
| *Pollachius pollachius* | 0,14952 | 217 | 6 | 0.9959 | 0.80205 | -0.07648 | -0.05064 | Europe | LC | Least Concern | 0 |
| *Pollachius virens* | 0,1394 | 157 | 4 | 0.86882 | 0.59549 | -0.05806 | -0.01865 | Europe | LC | Least Concern | 0 |
| *Polyacanthonotus rissoanus* | 0,15053 | 227 | 6 | 0.99999 | 0.99170 | 0.00503 | -0.07958 | Europe | LC | Least Concern | 0 |
| *Polymetme corythaeola* | 0,31145 | 419 | 10 | 0.99989 | 0.99340 | -0.05683 | -0.07223 | Europe | LC | Least Concern | 0 |
| *Polymetme thaeocoryla* | 0,35356 | 422 | 10 | 0.99994 | 0.99843 | -0.14017 | -0.08598 | Europe | LC | Least Concern | 0 |
| *Polyprion americanus* | 0,14714 | 205 | 5 | 1 | 0.99738 | -0.06634 | -0.01413 | Europe | NT | Near Threatened | 0 |
| *Pomatomus saltatrix* | 0,16348 | 283 | 7 | 0.99999 | 0.99954 | -0.08239 | -0.05827 | Europe | NT | Near Threatened | 0 |
| *Pomatoschistus lozanoi* | 0,1732 | 331 | 8 | 0.9857 | 0.96036 | 0.07043 | 0.04552 | Europe | LC | Least Concern | 0 |
| *Pomatoschistus microps* | 0,15555 | 253 | 6 | 0.99287 | 0.97830 | 0.08131 | 0.09404 | Europe | LC | Least Concern | 0 |
| *Pomatoschistus minutus* | 0,17008 | 314 | 8 | 0.66041 | 0.76304 | 0.10221 | 0.10024 | Europe | LC | Least Concern | 0 |
| *Pomatoschistus norvegicus* | 0,15604 | 256 | 6 | 0.9998 | 0.99052 | 0.08294 | 0.09439 | Europe | LC | Least Concern | 0 |
| *Pomatoschistus pictus* | 0,16212 | 277 | 7 | 0.99989 | 0.99088 | 0.09234 | 0.09848 | Europe | LC | Least Concern | 0 |
| *Pontinus kuhlii* | 0,1337 | 117 | 3 | 1 | 0.99889 | -0.05226 | -0.05385 | Europe | LC | Least Concern | 0 |
| *Prionace glauca* | 0,27157 | 413 | 10 | 1 | 0.99688 | -0.20893 | 0.08678 | Europe | NT | Near Threatened | 0 |
| *Protomyctophum arcticum* | 0,15833 | 267 | 7 | 1 | 1.00000 | 0.07277 | -0.03305 | Europe | LC | Least Concern | 0 |
| *Pterycombus brama* | 0,17395 | 337 | 8 | 1 | 0.99973 | -0.05931 | -0.11425 | Europe | LC | Least Concern | 0 |
| *Pungitius pungitius* | 0,19762 | 375 | 9 | 0.99988 | 0.98847 | 0.04207 | 0.01913 | Europe | LC | Least Concern | 0 |
| *Raja asterias* | 0,1198 | 31 | 1 | 1 | 0.99857 | 0.03032 | 0.02921 | Europe | NT | Near Threatened | 0 |
| *Raja brachyura* | 0,13092 | 101 | 3 | 0.99739 | 0.81350 | -0.03 | -0.0104 | Europe | NT | Near Threatened | 0 |
| *Raja clavata* | 0,13081 | 99 | 3 | 0.96757 | 0.52600 | -0.03528 | -0.01219 | Europe | NT | Near Threatened | 0 |
| *Raja microocellata* | 0,14648 | 198 | 5 | 0.99876 | 0.95488 | -0.04235 | 0.02203 | Europe | NT | Near Threatened | 0 |
| *Raja miraletus* | 0,12059 | 35 | 1 | 0.9999 | 0.98652 | -0.01629 | -0.01657 | Europe | LC | Least Concern | 0 |
| *Raja montagui* | 0,12329 | 48 | 2 | 0.97377 | 0.62444 | -0.02421 | -0.01681 | Europe | LC | Least Concern | 0 |
| *Raja undulata* | 0,1305 | 98 | 3 | 0.99943 | 0.94176 | 0.01655 | 0.04006 | Europe | NT | Near Threatened | 0 |
| *Rajella bathyphila* | 0,13617 | 135 | 4 | 0.99999 | 0.99260 | 0.00794 | 0.00956 | Europe | LC | Least Concern | 0 |
| *Rajella bigelowi* | 0,13594 | 133 | 4 | 1 | 0.99721 | -0.0089 | 0.0076 | Europe | LC | Least Concern | 0 |
| *Rajella fyllae* | 0,13788 | 146 | 4 | 0.99998 | 0.98922 | 0.01735 | 0.01233 | Europe | LC | Least Concern | 0 |
| *Rajella kukujevi* | 0,14326 | 184 | 5 | 1 | 0.99822 | -0.02063 | 0.01485 | Europe | LC | Least Concern | 0 |
| *Rajella lintea* | 0,14949 | 216 | 6 | 1 | 0.99939 | -0.0176 | 0.01802 | Europe | LC | Least Concern | 0 |
| *Raniceps raninus* | 0,11736 | 13 | 1 | 0.99995 | 0.97941 | 0.02757 | 0.02015 | Europe | LC | Least Concern | 0 |
| *Regalecus glesne* | 0,33923 | 421 | 10 | 1 | 0.98241 | 0.0538 | -0.2475 | Europe | LC | Least Concern | 0 |
| *Rhinochimaera atlantica* | 0,16426 | 286 | 7 | 0.99998 | 0.99222 | 0.01096 | -0.0228 | Europe | LC | Least Concern | 0 |
| *Rostroraja alba* | 0,18276 | 353 | 9 | 0.99999 | 0.99792 | -0.09621 | 0.02769 | Europe | CR | Critically Endangered | 1 |
| *Rouleina attrita* | 0,12974 | 94 | 3 | 0.9998 | 0.98937 | -0.00624 | -0.05737 | Europe | LC | Least Concern | 0 |
| *Rutilus rutilus* | 0,1449 | 192 | 5 | 0.99996 | 0.99530 | 0.01939 | -0.03974 | Europe | LC | Least Concern | 0 |
| *Salmo salar* | 0,16293 | 280 | 7 | 0.99995 | 0.98277 | -0.0894 | -0.05244 | Europe | VU | Vulnerable | 1 |
| *Sander lucioperca* | 0,20128 | 380 | 9 | 0.99828 | 0.97453 | -0.09425 | 0.05753 | Europe | LC | Least Concern | 0 |
| *Sarda sarda* | 0,17561 | 342 | 9 | 0.9998 | 0.98790 | -0.07253 | -0.02753 | Europe | LC | Least Concern | 0 |
| *Sardina pilchardus* | 0,15955 | 270 | 7 | 0.50412 | 0.65231 | 0.05907 | -0.02095 | Europe | NT | Near Threatened | 0 |
| *Sarpa salpa* | 0,2131 | 396 | 10 | 0.99996 | 0.99440 | 0.06384 | -0.01297 | Europe | LC | Least Concern | 0 |
| *Schedophilus medusophagus* | 0,17094 | 320 | 8 | 0.99999 | 0.99147 | -0.00043 | -0.084 | Europe | LC | Least Concern | 0 |
| *Scomber colias* | 0,13749 | 143 | 4 | 0.94573 | 0.94061 | -0.02804 | -0.05089 | Europe | LC | Least Concern | 0 |
| *Scomber japonicus* | 0,14664 | 200 | 5 | 0.99602 | 0.98507 | 0.03081 | -0.02232 | Europe | LC | Least Concern | 0 |
| *Scomber scombrus* | 0,13375 | 118 | 3 | 0.00127 | 0.19635 | -0.00747 | -0.04535 | Europe | LC | Least Concern | 0 |
| *Scopelogadus beanii* | 0,14821 | 209 | 5 | 0.99999 | 0.99229 | 0.00164 | -0.04126 | Europe | LC | Least Concern | 0 |
| *Scophthalmus maximus* | 0,21573 | 398 | 10 | 0.98331 | 0.95908 | 0.01246 | -0.00906 | Europe | VU | Vulnerable | 1 |
| *Scophthalmus rhombus* | 0,27746 | 415 | 10 | 0.99093 | 0.79908 | 0.0769 | -0.06787 | Europe | LC | Least Concern | 0 |
| *Scorpaena loppei* | 0,12205 | 43 | 1 | 0.99989 | 0.99358 | 0.06263 | 0.02128 | Europe | LC | Least Concern | 0 |
| *Scorpaena notata* | 0,11748 | 15 | 1 | 0.99996 | 0.99344 | 0.04049 | 0.01948 | Europe | LC | Least Concern | 0 |
| *Scorpaena porcus* | 0,11886 | 28 | 1 | 0.99999 | 0.99669 | 0.01801 | 0.01982 | Europe | LC | Least Concern | 0 |
| *Scorpaena scrofa* | 0,12978 | 95 | 3 | 0.99998 | 0.99447 | -0.00765 | 0.02533 | Europe | LC | Least Concern | 0 |
| *Scyliorhinus canicula* | 0,12354 | 51 | 2 | 0.68772 | 0.29509 | -0.02245 | -0.01489 | Europe | LC | Least Concern | 0 |
| *Scyliorhinus stellaris* | 0,16229 | 278 | 7 | 0.99633 | 0.90977 | -0.07822 | -0.04057 | Europe | NT | Near Threatened | 0 |
| *Scymnodon ringens* | 0,29225 | 416 | 10 | 0.99998 | 0.98855 | -0.19675 | 0.01794 | Europe | LC | Least Concern | 0 |
| *Searsia koefoedi* | 0,19418 | 372 | 9 | 0.99999 | 0.99476 | 0.12309 | -0.09192 | Europe | LC | Least Concern | 0 |
| *Sebastes mentella* | 0,17707 | 345 | 9 | 1 | 0.99950 | -0.08825 | -0.0042 | Europe | EN | Endangered | 1 |
| *Sebastes norvegicus* | 0,18491 | 356 | 9 | 0.99987 | 0.99212 | -0.12127 | 0.0238 | Europe | VU | Vulnerable | 1 |
| *Sebastes viviparus* | 0,17076 | 318 | 8 | 0.66773 | 0.87459 | -0.06896 | 0.05178 | Europe | NA | NA | NA |
| *Serranus cabrilla* | 0,11885 | 27 | 1 | 0.99989 | 0.97321 | 0.03122 | -0.01662 | Europe | LC | Least Concern | 0 |
| *Serranus hepatus* | 0,11721 | 11 | 1 | 0.9938 | 0.98503 | 0.05517 | 0.02129 | Europe | LC | Least Concern | 0 |
| *Serranus scriba* | 0,11685 | 9 | 1 | 1 | 0.99881 | 0.02477 | 0.01956 | Europe | LC | Least Concern | 0 |
| *Serrivomer beanii* | 0,16325 | 282 | 7 | 0.99998 | 0.98761 | -0.02607 | -0.06714 | Europe | LC | Least Concern | 0 |
| *Sigmops bathyphilus* | 0,13801 | 148 | 4 | 1 | 0.99826 | 0.06063 | -0.01059 | Europe | LC | Least Concern | 0 |
| *Solea senegalensis* | 0,12746 | 74 | 2 | 0.99996 | 0.98820 | 0.06158 | 0.02241 | Europe | DD | Data Deficient | DD |
| *Solea solea* | 0,13319 | 114 | 3 | 0.75785 | 0.49543 | 0.06866 | 0.03334 | Europe | LC | Least Concern | 0 |
| *Somniosus microcephalus* | 0,52853 | 425 | 10 | 1 | 0.99597 | -0.45432 | 0.25273 | Europe | NT | Near Threatened | 0 |
| *Somniosus rostratus* | 0,22211 | 400 | 10 | 1 | 0.98262 | -0.17468 | 0.06262 | Europe | DD | Data Deficient | DD |
| *Sparus aurata* | 0,11616 | 5 | 1 | 0.99902 | 0.98107 | 0.01408 | -0.0165 | Europe | LC | Least Concern | 0 |
| *Spectrunculus grandis* | 0,16534 | 293 | 7 | 0.99999 | 0.99363 | -0.02374 | -0.10305 | Europe | LC | Least Concern | 0 |
| *Sphoeroides pachygaster* | 0,15548 | 252 | 6 | 0.99992 | 0.99218 | -0.04691 | -0.02116 | Europe | LC | Least Concern | 0 |
| *Spicara maena* | 0,14992 | 221 | 6 | 0.99874 | 0.99216 | -0.02066 | -0.03017 | Europe | LC | Least Concern | 0 |
| *Spicara smaris* | 0,18884 | 367 | 9 | 0.99998 | 0.99830 | 0.06914 | 0.0573 | Europe | LC | Least Concern | 0 |
| *Spinachia spinachia* | 0,21165 | 394 | 10 | 0.99858 | 0.98765 | 0.03127 | 0.01445 | Europe | LC | Least Concern | 0 |
| *Spondyliosoma cantharus* | 0,13141 | 102 | 3 | 0.93265 | 0.86931 | 0.00963 | -0.0388 | Europe | LC | Least Concern | 0 |
| *Sprattus sprattus* | 0,16722 | 302 | 8 | 0 | 0.34816 | 0.06853 | -0.02119 | Europe | LC | Least Concern | 0 |
| *Squalus acanthias* | 0,20296 | 382 | 9 | 0.95185 | 0.53084 | -0.15584 | 0.02481 | Europe | EN | Endangered | 1 |
| *Squalus blainville* | 0,18395 | 355 | 9 | 0.99999 | 0.99730 | -0.09491 | 0.06319 | Europe | DD | Data Deficient | DD |
| *Symbolophorus veranyi* | 0,15196 | 235 | 6 | 1 | 0.99830 | 0.06529 | -0.03277 | Europe | LC | Least Concern | 0 |
| *Symphodus bailloni* | 0,17059 | 317 | 8 | 0.99977 | 0.97579 | 0.06922 | 0.08004 | Europe | LC | Least Concern | 0 |
| *Symphodus melops* | 0,16849 | 309 | 8 | 0.99987 | 0.97841 | 0.06278 | 0.07958 | Europe | LC | Least Concern | 0 |
| *Symphodus roissali* | 0,17028 | 315 | 8 | 1 | 0.99874 | 0.06315 | 0.07928 | Europe | LC | Least Concern | 0 |
| *Symphurus nigrescens* | 0,11843 | 24 | 1 | 0.99997 | 0.99222 | 0.05766 | 0.02078 | Europe | LC | Least Concern | 0 |
| *Synaphobranchus kaupii* | 0,14229 | 175 | 5 | 0.9994 | 0.97505 | -0.06143 | -0.0563 | Europe | LC | Least Concern | 0 |
| *Synchiropus phaeton* | 0,12087 | 36 | 1 | 0.99977 | 0.98384 | 0.06496 | 0.02189 | Europe | LC | Least Concern | 0 |
| *Syngnathus acus* | 0,15723 | 263 | 7 | 0.98981 | 0.81512 | 0.0488 | 0.10637 | Europe | LC | Least Concern | 0 |
| *Syngnathus rostellatus* | 0,16863 | 310 | 8 | 0.93628 | 0.90983 | 0.01976 | 0.07475 | Europe | LC | Least Concern | 0 |
| *Syngnathus typhle* | 0,17837 | 347 | 9 | 0.99995 | 0.98606 | -0.03122 | 0.07272 | Europe | LC | Least Concern | 0 |
| *Taurulus bubalis* | 0,11776 | 17 | 1 | 0.99643 | 0.90639 | 0.04786 | 0.02097 | Europe | LC | Least Concern | 0 |
| *Tetronarce nobiliana* | 0,26784 | 412 | 10 | 0.99997 | 0.99275 | -0.21805 | 0.08974 | Europe | DD | Data Deficient | DD |
| *Thorogobius ephippiatus* | 0,17711 | 346 | 9 | 1 | 0.99935 | 0.10327 | 0.13341 | Europe | LC | Least Concern | 0 |
| *Thunnus thynnus* | 0,20168 | 381 | 9 | 1 | 0.99983 | -0.11534 | -0.01731 | Europe | NT | Near Threatened | 0 |
| *Torpedo marmorata* | 0,20069 | 378 | 9 | 0.99971 | 0.95403 | -0.09061 | 0.10142 | Europe | LC | Least Concern | 0 |
| *Torpedo torpedo* | 0,17332 | 332 | 8 | 1 | 0.99771 | -0.07754 | 0.08615 | Europe | LC | Least Concern | 0 |
| *Trachinus draco* | 0,12585 | 65 | 2 | 0.88012 | 0.85281 | -0.03146 | -0.02167 | Europe | LC | Least Concern | 0 |
| *Trachipterus arcticus* | 0,22783 | 402 | 10 | 0.99999 | 0.98629 | -0.13584 | -0.03988 | Europe | LC | Least Concern | 0 |
| *Trachurus mediterraneus* | 0,13502 | 127 | 3 | 0.93453 | 0.97405 | -0.01569 | -0.04807 | Europe | LC | Least Concern | 0 |
| *Trachurus picturatus* | 0,13676 | 141 | 4 | 0.61517 | 0.95738 | 0.00627 | -0.04069 | Europe | LC | Least Concern | 0 |
| *Trachurus trachurus* | 0,13327 | 115 | 3 | 0 | 0.11885 | -0.01666 | -0.04596 | Europe | LC | Least Concern | 0 |
| *Trachyrincus murrayi* | 0,13567 | 132 | 4 | 0.99888 | 0.98742 | -0.01068 | -0.03697 | Europe | NA | NA | NA |
| *Trachyrincus scabrus* | 0,13309 | 112 | 3 | 0.99961 | 0.99164 | -0.02925 | -0.04494 | Europe | LC | Least Concern | 0 |
| *Trichiurus lepturus* | 0,17426 | 340 | 8 | 0.99999 | 0.99782 | -0.09261 | -0.01886 | Europe | DD | Data Deficient | DD |
| *Trigla lyra* | 0,1258 | 64 | 2 | 0.99961 | 0.94512 | 0.00695 | -0.00153 | Europe | DD | Data Deficient | DD |
| *Triglops murrayi* | 0,11746 | 14 | 1 | 0.9998 | 0.98094 | 0.05155 | 0.023 | Europe | LC | Least Concern | 0 |
| *Trigonolampa miriceps* | 0,1671 | 301 | 8 | 1 | 0.99952 | -0.0437 | -0.04158 | Europe | LC | Least Concern | 0 |
| *Trisopterus esmarkii* | 0,15072 | 228 | 6 | 0 | 0.40983 | 0.05181 | -0.01808 | Europe | LC | Least Concern | 0 |
| *Trisopterus luscus* | 0,13085 | 100 | 3 | 0.62834 | 0.61797 | -0.00002 | -0.04199 | Europe | LC | Least Concern | 0 |
| *Trisopterus minutus* | 0,13176 | 103 | 3 | 0.04823 | 0.16463 | -0.008 | -0.04467 | Europe | LC | Least Concern | 0 |
| *Umbrina canariensis* | 0,11854 | 25 | 1 | 0.99969 | 0.98979 | 0.05076 | 0.0239 | Europe | LC | Least Concern | 0 |
| *Uranoscopus scaber* | 0,13452 | 122 | 3 | 1 | 0.99870 | -0.03385 | -0.02288 | Europe | LC | Least Concern | 0 |
| *Venefica proboscidea* | 0,16827 | 306 | 8 | 1 | 0.99637 | 0.10114 | -0.04169 | Europe | LC | Least Concern | 0 |
| *Vinciguerria poweriae* | 0,3053 | 418 | 10 | 0.99986 | 0.99616 | 0.16133 | -0.09078 | Europe | LC | Least Concern | 0 |
| *Xenodermichthys copei* | 0,13785 | 144 | 4 | 0.99865 | 0.97918 | 0.02654 | -0.05465 | Europe | LC | Least Concern | 0 |
| *Xiphias gladius* | 0,21131 | 393 | 10 | 0.99999 | 0.99966 | -0.13115 | -0.0196 | Europe | LC | Least Concern | 0 |
| *Zenopsis conchifer* | 0,15303 | 243 | 6 | 0.99998 | 0.99208 | -0.07552 | -0.05311 | Europe | DD | Data Deficient | DD |
| *Zeugopterus punctatus* | 0,26189 | 410 | 10 | 0.99902 | 1.00000 | 0.11651 | -0.06257 | Europe | LC | Least Concern | 0 |
| *Zeugopterus regius* | 0,26313 | 411 | 10 | 0.9997 | 0.99642 | 0.0595 | -0.1531 | Europe | LC | Least Concern | 0 |
| *Zeus faber* | 0,16482 | 291 | 7 | 0.98048 | 0.48302 | -0.07929 | -0.02165 | Europe | DD | Data Deficient | DD |
| *Zoarces viviparus* | 0,15052 | 226 | 6 | 0.95709 | 0.88268 | -0.00802 | 0.10389 | Europe | LC | Least Concern | 0 |

**Table S6:** Statistics associated with the null model, considering that species were distributed following a multivariate normal distribution within the trait space.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Functional group** | **Observed** | **SES** | **p-value** | **Number of repetitions** |
| **D1** | **0.63** | **7.52** | **1** | **999** |
| **D2** | **0.55** | **5.36** | **1** | **999** |
| **D3** | **0.48** | **3.88** | **1** | **999** |
| **D4** | **0.45** | **3.29** | **1** | **999** |
| **D5** | **0.43** | **3.01** | **0.99** | **999** |
| **D6** | **0.41** | **1.61** | **0.94** | **999** |
| **D7** | **0.69** | **5.85** | **1** | **999** |
| **D8** | **0.58** | **4.79** | **1** | **999** |
| **D9** | **0.64** | **5.51** | **1** | **999** |
| **D10** | **0.85** | **10.46** | **1** | **999** |