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Report of the Working Group on Improving use of Survey Data for Assessment and Advice (WGISDAA)

21–23 January 2014

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Executive summary

The Working Group on Improving the use of Survey Data for Assessment and Advice (WGISDAA) met at Le centre Ifremer Atlantique à Nantes, France, 21–23 January 2014, under the Co-Chairmanship of David Reid, Ireland, and Stephen Smith, Canada. In addition there were four participants from the following ICES countries; Denmark, England, France, and Portugal. The timing and location of this meeting was set to coincide with the annual meeting of the Working Group on Integrating Surveys for the Ecosystem Approach (WGISUR) to facilitate joint sessions on providing guidance on the adaptation of existing surveys to provide ecosystem data (see agenda item 1 below).

The meeting had three agenda items for discussion.

1) Evaluate the potential impacts of adding ecosystem data collection activities on surveys currently collecting abundance indices in terms of changes to the precision of the fish stock estimates. Work to be done in separate and joint sessions with WGISUR.
2) Future of WGISDAA
3) Evaluate the new survey Ifremer is planning for ICES area VIIde

One of the anticipated impacts of adding more ecosystem data collection to cruises collecting data for fish abundance indices is a decrease in the number of tows or transects devoted to this latter purpose. In turn, the impact in the reduction of tows for abundance indices is expected to be reflected in a decrease in the precision (or increase in CV) for the abundance estimates. Three case studies were presented for surveys where estimates of CV were available to evaluate the impacts of reducing the number of tows. The impacts were case specific and depended upon spatial distribution and current sampling levels. Impacts on non-target species and other information collected on the survey also need to be considered. Survey design changes to mitigate losses of precision for the current design were also discussed. The potential for using the additional environmental data as covariates to improve precision estimates for the fish estimation in the survey should be explored. In the end, the most important issue may be the impact of reduced precision for the abundance indices on the stock assessment advice. A recently published study was presented that evaluated changes in survey sampling levels on stock assessment model results and showed that while there was a predictable change in precision of the model results, there could also be changes in trend and stock status. Most ICES surveys do not provide CVs nor do ICES assessments currently include survey CVs in their models and therefore it will be difficult to evaluate the impacts of reductions in survey tows on abundance indices and stock assessment model results.

This was the third annual meeting of this working group and it was also the most poorly attended of all of the meetings. Past reports of this working group have commented on the difficulty in soliciting agenda items and associated researchers for meetings and this meeting was no exception. While a number of working groups had identified potential agenda items in their annual recommendations in autumn of 2013, there did not seem to be anyone available from the working groups to present information on the items and explain the request. We believe that the original reason for creating WGISDAA still exists and that it is worthwhile to encourage other WGs to look to our working group to deal with issues concerning survey data and stock assessments. A number of approaches to improve the interaction with other working

groups were discussed such as replacing the annual meeting with periodic workshops focusing on a particular set of issues, or forming a crises team that can be called in an ad hoc basis. No matter how the meetings are scheduled, WGISDAA will consider requests from the survey and assessment working groups but there must be enough lead time and commitment on everyone's part to work on solutions to the questions raised before the meeting and to participate in the review meeting. . Default involvement in Benchmark working groups would be an initial first step. Chairs of these working groups and ICES staff should identify any issues relating to the use of the fishery-independent data sources and refer these to WGISDAA. The scale, quantity, timing and workload of such requests would have to be considered, but priorities could be established and the work of WGISDAA focused on that basis. We would suggest that this could be the primary route for referral, however, we could also suggest a further avenue of approach directly to survey or assessment EG to identify this type of issue BEFORE it reaches the level of the benchmark.

Ifremer's plans for a new survey series in the western English Channel (CAMANOC) were presented for information only to the working group.

1 Opening of the meeting

The Working Group on Improving use of Survey Data for Assessment and Advice (WGISDAA) chaired by David Reid, Ireland and Stephen Smith, Canada, will meet in Nantes, France, 21–23 January 2014. This schedule will allow for one or more joint sessions with the Working Group on Integrating Surveys for the Ecosystem Approach (WGISUR) to work on TOR a) below:

a) Developing multifunction surveys and their impact on fish stock data acquisition.

b) Develop a framework and methodology for the analysis of fishery-independent survey information for stock assessment and advisory purposes.

c) Explore and suggest refinements to current survey designs that will improve the quality of data used to support assessment and advisory processes.

d) Investigate methods of combining and or improving indices across multiple surveys and other ways of consolidating survey-derived data.

e) Develop methods for use of survey derived indices and other survey data products as a basis for scientific advice.

f) Request priority case studies from assessment working groups to support the initial activities of the WG.

2 Adoption of the agenda

The agenda for this meeting was accepted and is given in Annex 2.

3 Work

3.1 Multifunction surveys

3.1.1 WGISDAA

One of the anticipated impacts of adding more ecosystem data collection to cruises collecting data for fish abundance indices is a decrease in the number of tows or transects devoted to this purpose. Changes in the coefficient of variation (CV) of the abundance index have been suggested as one measure of potential impact of the reduced number of stations on the survey indices. However, CVs are not available for all types of fisheries abundance surveys making it difficult to assess the impacts of reductions in tows for many surveys. Decreasing sampling effort may also result in inconsistencies in the time-series, especially in cases where persistent spatial distributions over time are evident in the survey data.

The WG reviewed three cases for which CV was available to understand how CV might reflect changes in the number of survey tows. The first was the Irish Sea and Bristol Channel Beam trawl which was presented during the joint session with WGISUR (see 3.1.2).

The second case dealt with transect designs for acoustic surveys. Survey precision depends on the number of samples and the sampling mesh size relative to the underlying spatial process. For non-random design, geostatistics provide methods to calcu-

late survey precision (Rivoirard *et al.*, 2000). For acoustic surveys made of parallel regularly spaced transects where a continuous acoustic sampling is performed along the transect lines, a simple procedure has been proposed (Petitgas, 1993) where survey precision is computed in 1d using transect sums. In this case, survey precision can be simply formulated as a function of inter-transect distance. In, turn this precision estimate can be used to evaluate the impact of adjusting survey effort (i.e. transect distance) to accommodate the collection of additional ecosystem information.

The third case was the Western Channel (Q1SWECOS formerly the Q1SWBeam) beam trawl survey which uses a stratified random survey design. Reduction in the number of tows for this kind of survey may simply be accomplished by a proportional decrease across all strata. However, the variance of the abundance indices associated with this kind of design is a function of both the appropriateness of the strata boundaries and the number of tows allocated to each stratum. As a result, it may be possible change the allocation of the remaining tows to strata in a way to mitigate any impacts of reducing the number of abundance tows on the variance and hence the CV.

Smith and Gavaris (1993) presented a methodology to evaluate the current stratified design in terms of the realized gains from stratification and the allocation scheme allowing for the determination for the possibility for improvements for the current, increased or decreased sample sizes. This methodology was applied to the stratified mean number of sole for ages 4, 5 and 6 from the "Western Channel" survey as a demonstration only. The results from the three ages were similar and only those for age 6 were presented.

The stratified variance of the mean exceeded the simple random variance of the mean in 2006, 2009, 2010 2011 and 2012 (Table 1). The higher stratified variance resulted from negative allocation components indicating that the allocation scheme resulted in a mismatch between sample size and strata standard deviation. The allocation component can be negative, zero or positive for an arbitrary allocation scheme, proportional to strata area scheme or a proportional to stratum area times the stratum standard deviation (optimal) scheme, respectively.

The strata components tended to be small and the negative value for 2006 indicates that it was close to zero and is due to the approximation used in the formula in Smith and Gavaris (1993).

The lowest stratified variance of the mean would be obtained when the optimal allocation scheme is used. In the case of the age 6 sole index, the optimal scheme recommends allocating a large number of samples to stratum 8, 11, and 13 for most years (Table 2). On the other hand, no samples were allocated to strata 3. While this scheme may provide the smallest variance of the mean, it may not work for the other ages of sole in the survey or for the plaice index. It is also a drastic change from the current allocation which has been designed with more than just the abundance indices in mind. However, this approach does allow one to identify which strata may be contributing most to the negative allocation component and it may be possible to develop a compromise between the optimal and the current scheme that results in a less drastic change while still reducing the detrimental effects of the allocation scheme. As an example only the strata allocation effects were calculated for the 2013 survey and showed that the current allocation of only 5 tows to stratum 13 resulted in the largest negative impact (Table 3). As noted above, the optimal scheme allocated a large number of samples to this stratum. An increase in the number of samples to this stratum is warranted and an ad hoc reallocation of a total of 6 samples from strata 4 and

5 to stratum 13 resulted in a positive gain in allocation with minimal change to the current allocation scheme. Of course this choice will need to be evaluated for the other ages of sole and the plaice index. The basis of the current allocation with a minimum allocation of 5 samples per stratum is designed to ensure that a reasonable number of samples are present in all strata to cover many other ecosystem components, while those strata where the majority of the fishery takes place (under the assumption that this would also contain the majority of the fish and be necessary for the development of an appropriate ALK) received greater sampling effort. The current examination suggests that the latter approach is unwarranted, but that the minimum allocation of 5 samples per stratum can still be maintained whilst decreasing the CV. Further work ought to be carried out to assess the effects on other age groups and on the index provided for plaice, but this would certainly seem a viable option.

The point of this demonstration was to show that there are tools available for the stratified random design that allow for improving the variance of the mean (and CV) without an increase in sample size. These tools are equally applicable in the situation where the sample size has been reduced. That is, changes to the allocation scheme could be made to maintain or even possibly increase the precision of the estimates although the sample size has been reduced.

Another option that was briefly discussed but not explored in detail was using additional environmental or ecological data as covariates to model the distribution/abundance of fish species caught in the survey. If reliable relationships are developed, then the loss of precision caused by the reduction in fish sampling effort can at least in part be mitigated by the greater understanding and hence increase in precision of the index estimates. In essence in terms of the variance component the approach is analogous to an infinite number of strata without the need to sample all strata because the relationship between strata is known. Generally this approach requires large sample sizes, but these can be accumulated over many years so that precision increases with time unlike the pure stratified approach.

Table 1. Evaluation of the stratified random design in terms of difference between variance from the stratified design and a simple random sample design. Allocation and Strata refer to components of the decomposition of the differences between the two variances. Note all estimates have multiplied by 1000. Analysis presented for the survey indices for age 6 sole.

Year	Stratified mean	Stratified variance	Simple random variance	Allocation component	Strata component
2006	158.17	4.95	2.49	-2.28	-0.19
2007	156.56	1.94	2.66	0.19	0.54
2008	101.69	1.10	1.81	0.15	0.56
2009	154.14	3.87	2.58	-1.37	0.08
2010	230.84	4.79	3.42	-1.40	0.03
2011	113.95	1.70	1.65	-0.10	0.04
2012	168.86	2.44	1.56	-0.95	0.07
2013	270.77	3.34	3.38	-0.43	0.48

Table 2. Optimal sample size by year required to provide the minimum variance of the stratified mean in terms of the observed annual stratum standard deviation. Analysis presented for the survey indices for age 6 sole. Note that total sample size varied over time.

	Stratum												
Year	1	2	3	4	5	6	7	8	9	10	11	12	13
2006	5	1	0	3	5	0	7	0	0	12	0	21	21
2007	0	0	0	0	7	11	8	0	0	20	27	0	0
2008	0	6	0	3	0	0	0	0	0	0	50	12	0
2009	0	8	0	4	0	0	9	35	0	4	7	0	12
2010	5	3	0	0	3	9	17	13	0	0	22	0	15
2011	7	6	0	4	6	12	0	0	13	0	27	15	0
2012	7	3	0	5	0	0	0	18	12	9	12	0	20
2013	3	7	0	3	3	8	3	13	0	9	11	9	14

3.1.2 Joint meeting of WGISDAA/WGISUR

A joint activity with WGISDAA on the possibility to modify existing fish surveys without losing information relevant to stock assessments lead to a number of potential methodologies for further investigation of the survey. The topics for this activity were:

a) Evaluate the current level of precision for the survey estimates with respect to the maximum (theoretical) precision possible.

b) Evaluate impact in terms of changes in sample size for trawl stations used for abundance indices when adding additional activities

c) Evaluate if and which design changes need to be made to accommodate the additional activities with the objective of minimizing any loss in precision of the survey estimates used for stock assessment.

As the activities are highly interlinked, the outcome is organized thematically and not by activity.

The combined WGISUR/WGISDAA group.

3.1.2.1 Concepts

Impact on assessment and community data on cutting stations from Irish Sea Beam Trawl survey

By Sven Kupschus and Brian Harley

In 2011 Cefas carried out analysis on the effect of removing stations from the DCF funded Beam Trawl survey in the Irish Sea. The project had two strands, a) "The bootstrap approach" and b) "The Ecological approach".

a) "The Bootstrap approach"

   This approach uses R to bootstrap the abundance indices calculation to give confidence intervals, and then use a Jack-after-boot to assign station leverage values per species at each age and year. To calculate an overall station importance these leverage values are averaged across a user-defined number of the most recent years, to give a value per age for each station. A user-defined weight (multiplier: in this study 1 and 0 dependent on whether the data point is used in the current assessment or not) is then applied to each age and species, and the remaining leverages are summed at each station, thus producing an age-combined leverage value for each species per station. The overall importance value is then simply the maximum (summed over all species) 'age-combined leverage value' per station.

   This process allows a selection of scenarios to be presented by removing varying numbers of fishing stations deemed to have lesser "importance" and the effect of eliminating stations can be examined.

b) "The Ecological approach"

This approach uses 'Hierarchical Clustering' to determine clusters of species communities within the survey area. These will be used to determine the effect of station reduction on the species communities' data collection.

The approach results in a set of scenarios, listing both the expected efficiency savings and the consequences to the abundance indices produced from strand a). The increasing reliance of ICES assessment on survey information means that its imperative that the abundance indices supplied to ICES are not significantly adversely affected by any efficiency gains and this methodology does allow one to test the effects prior to implementation.

Following the primarily criterion of maintaining assessment integrity the different scenarios taken from strand a) were then investigated with respect to a community analysis over time to establish if any of the options would completely exclude any species communities proposed in work strand b). The removal of a community cluster would imply the potential cessation of data collection for certain species and hence a potentially costly loss of data for ecosystem monitoring and a potential loos of assessment information for species not currently formally assessed using survey information.

With respect to the Irish Sea Beam Trawl survey, the analysis concluded the following:

i. For plaice and sole assessments it was possible to reduce the numbers of stations sampled by up to 50% (depending on scenario) and not significantly affect the stock assessment of the two stocks.
   However in doing so the whiting assessment quality deteriorated and there was loss of monitoring for some ecological communities and thus a significant reduction in the ecosystem monitoring value of the survey.
ii. By reducing the number of stations by 20% there was no significant impact on any of the stock assessments or the communities covered.
iii. The above results are based on several assumptions, first that the assessment methodology and the data (ages and years) used persist into the future and second that the distribution of the populations monitored by the survey remains constant.

The effect of collecting more ecosystem information during regular fishery abundance surveys on number of tows.

By Stephen Smith

Meeting the requirement for collecting more ecosystem information during regular fishery abundance surveys could result in the reduction in the number of survey tows being used to derive abundance indices. One measure of this impact could be the associated reduction in precision of the abundance indices as measured by the survey CV. There also could be a further impact on the actual stock assessment advice based on these abundance indices. One way of evaluating this impact is to carry the survey CV through the stock assessment analysis. However, CVs are currently not available for most of the surveys used in ICES for stock assessment and even if

they were available experience elsewhere on incorporating CVs into stock assessment models has been limited and controversial.

Smith and Hubley (2014) investigated using a state-space assessment model to evaluate the common expectation that an increase or decrease in precision of the survey index would carry through to increased or decreased precision in the stock assessment advice. The state-space model allows for characterizing survey indices variability as observation error and model uncertainty as process error. The study indicated that the impact of increasing or decreasing survey precision (or CV) depends upon the concurrence between the annual changes in biomass as observed by the survey and those predicted by the model. Where these changes were aligned, changes in precision in the survey did carry over into changes in precision for model predictions such as current population biomass. However, where there was a lack of concurrence, the model would not only provide less or more precise estimates but also indicate a change in the biomass. Two such examples were presented in Smith and Hubley (2014) where stock status actually changed with respect to the reference points used.

3.1.2.2 Analyses

3.1.2.2.1 Decreasing number of tows

One of the anticipated impacts of adding more ecosystem data collection to cruises collecting data for fish abundance indices is a decrease in the number of tows or transects devoted to fish abundance indices. Changes in the coefficient of variation (CV) of the abundance index have been suggested as one measure of potential impact of the reduced number of stations on the survey indices.

The impact of reducing the number of tows on the CV was evaluated for the Western Channel (Q1SWECOS formerly the Q1SWBeam) beam trawl survey which uses a stratified random survey design. Reduction in the number of tows for this kind of survey may simply be accomplished by a proportional decrease across all strata. However, the variance of the abundance indices associated with this kind of survey design is a function of both the appropriateness of the strata boundaries and the number of tows allocated to each stratum. A preliminary examination of the age 6 sole indices from the survey indicated that the CV could have been reduced with a reallocation of tows to some of the more variable strata.

The point of this demonstration was to show that there are tools available for the stratified random design that allow for improving the variance of the mean (and CV) without an increase in sample size. These tools are equally applicable in the situation where the sample size has been reduced. That is, changes to the allocation scheme could be made to maintain or even possibly increase the precision of the estimates although the sample size has been reduced.

3.2 Future of WGISDAA

This was the third annual meeting of this working group and it was also the most poorly attended of all of the meetings. There were only six people in attendance of which two were the co-chairs. Past reports of this working group have commented on the difficulty in soliciting agenda items and associated participants for meetings and this meeting was no exception. While a number of working groups had identified potential agenda items in their annual recommendations in autumn of 2013,

there did not seem to be anyone available from the working groups to present information on the item and explain the request.

A number of the requests were generic in the sense that they requested advice on estimating variances for abundance indices for a particular stock from a specific survey (e.g. IBTS). While CVs based on a bootstrapping approach are available for IBTS indices in DATRAS, it seems that this may not be widely known (see ICES, 2012) or perhaps the methodology may not have had documented public review that users could access to evaluate using the CVs. In this context it is clear that some form of wider publication than in the WGISDAA report would be a sensible option. This could be via a chapter in a Cooperative Research Report (CRR, see below), or as a free standing publication in an appropriate journal.

Variance estimation for survey data has been reviewed by ICES in the past by two meetings of the Workshop on Survey Design and Data Analysis (WKSAD; ICES, 2004, 2005). The reports issued from these workshops considered both design-based and model-based estimates of variance for a range of situations, but it is likely that they did not cover every situation of interest to the ICES community. Discussions with the WGISDAA and the WGISUR attendees at the Nantes meetings suggested that the valuable material collected in the WKSAD reports was largely unknown to the wider community. WGISDAA felt that this material would still be useful to many potential users and we would recommend revisiting these reports and updating as appropriate, possibly in a future WGISDAA meeting. This should be followed by publication ideally as a CRR, along with material from the more recent WGISDAA work.

We believe that the original reason for creating WGISDAA still exists and that it is worthwhile to encourage other WGs to look to our working group to deal with issues concerning survey data and stock assessments. A number of approaches to improve the interaction with other working groups were discussed such as replacing the annual meeting with periodic workshops focusing on a particular set of issues, or forming a crises team that can be called in an ad hoc basis. No matter how the meetings are scheduled, WGISDAA will consider requests from the survey and assessment working groups but there must be enough lead time and commitment on everyone's part to work on solutions to the questions raised before the meeting and to participate in the review meeting.

An excellent example of where WGISDAA could provide this type of support was seen at the meeting of the Benchmark Workshop on Pelagic Stocks (WKPELA) held in Copenhagen 17–21 February 2014. This workshop was largely focused on the assessment for NEA mackerel. A substantial part of the meeting was taken up in debate and analysis on the use of a series of four fishery-independent data sources; The International Ecosystem Survey in the Nordic Seas (IESSNS); The ICES Triennial Mackerel Egg survey; recruitment index from the western IBTS surveys; and a long time-series of tagging data. Each of the series had particular issues, particularly with regard to coverage, and also demonstrated at least partially conflicting signals. Variance calculation was also an issue with most of these. Finally, the assessment was carried out using the relatively new SAM approach www.stockassessment.org. This is exactly the type of issue that WGISDAA was set up to address. Attendance of the various survey operatives, plus the experts in SAM, would have allowed a coherent response that could have been delivered to WKPELA, which in turn could have focused on the work of benchmarking the assessment. WGISDAA would recommend that any future benchmarks, where such issues occur (conflicting survey signals etc.)

should refer these questions. This could possibly be a role for the ICES professional officer responsible for the benchmark?

Two potential candidates for next year's agenda either as part of a workshop or annual meeting were proposed. The first was an investigation of variance estimation for indices from the Portuguese Groundfish survey and the Baltic International Trawl Survey (BITS). Both trawl surveys have primary sampling units defined in terms of area and depth but sampling within primary units is not strictly random. These surveys could be used as test cases for evaluating variance estimation methods that would be robust to violations of random sampling assumptions. WG members who suggested this topic could initiate discussion with the responsible WG and the WGISDAA Chair will follow up with a formal letter and plan.

The second topic suggested was to evaluate optimal sampling plans for sampling fish from individual tows during monitoring surveys. The WGISDAA Chair will solicit interest from survey WGs on contributing to this topic in the spring of 2014.

After the WGISDAA meeting Kelle Moreau (WGISUR) gave a presentation on WGISDAA and WGISUR on 29 January to the meeting of WGCHAIRS dealing with the results of the joint session held in Nantes, as well as attendance and communications issues. It appears that some of the assessment WG Chairs did not know about the existence of either of WGISDAA or WGISUR, so there is still a lot of work and coordination that needs to be done.

In this context, WGISDAA would suggest that a more proactive approach to the potential work for the EG would be appropriate. Default involvement in Benchmark workshops would be an initial first step. Chairs of these and ICES staff should identify any issues relating to the use of the fishery-independent data sources and refer these to WGISDAA. The scale, quantity, timing and workload of such requests would have to be considered, but priorities could be established and the work of WGISDAA focused on that basis. We would suggest that this could be the primary route for referral, however, we could also suggest a further avenue of approach directly to survey or assessment EG to identify this type of issue BEFORE it reaches the level of the benchmark.

Joint sessions, such as the one conducted with WGISUR in 2014 should be the norm for this EG when possible. The mapping exercise carried out by WGISUR at the 2014 meeting would be a useful pointer to fruitful future joint meetings. The links and common interests of WGISUR and WGISDAA suggest that future joint meetings could be as valuable as the meeting in 2014 was.

3.3 CAMANOC – Proposal of an ecosystem survey in the western English Channel

Ifremer is planning to conduct an ecosystem survey in the western English Channel to obtain data currently lacking from that area. Such a survey would address 2 main objectives. The first one is to provide a complete view of the ecosystem from the abiotic environment up to the top predators and for the pelagic and the benthic environments. The data are expected to provide information for MSFD reporting in those areas. The second objective is to initiate a time-series of an "IBTS-type" survey for the western English Channel, which could be used for many purposes (evolution of species of interest, providing some indices and parameters, etc.) and in conjunction with the neighbouring EVOHE and NS-IBTS surveys.

In order to sample the western English Channel, characterized by rocky bottom, Ifremer are currently developing an adapted GOV-trawl with double footrope. This trawl has been built as a compromise between scientific requirements of similarities with the classic GOV used in IBTS and EVHOE surveys (similar size and mesh size) and the fishers experience of the area (using semi-pelagic rigging); it will be tested in April 2014 in the Western Channel, prior to CAMANOC survey. This gear will sample the demersal assemblage. Combining the observations made during CAMANOC with the beam trawl survey that occurs in the area will provide a complete picture of the ecosystem, from the benthos up through the water column.

In 2014, an intercalibration is planned between CAMANOC and CGFS in order to continue the CGFS survey (covering the eastern English Channel since 1988 on the RV "Gwen Drez") using the RV "Thalassa". From 2015 onwards the plan is to sample the entire Channel (western and eastern) on the RV "Thalassa" in one month during the period end of Q3 – beginning of Q4. Several options are still under debate concerning the best period for sampling the eastern Channel.

This item was considered to be mainly for the information of the working group. The researchers associated with this project were not in attendance and points raised by the working group were intended to be passed on to them for their interest. In particular, the discussion raised questions of clarity about the sampling gear, what data existed in this area and timing with respect to the larval fish sampling.

4 References

ICES. 2004. Report of the Workshop on Survey Design and Data Analysis (WKSAD) 21–25 June 2004 Aberdeen, UK. ICES Fisheries Technology Committee ICES CM 2004/B:07

ICES. 2005. Report of the Workshop on Survey Design and Data Analysis (WKSAD), 9–13 May 2005, Sète, France. ICES CM 2005/B:07. 170 pp.

ICES. 2012. Report of the Working Group on Improving use of Survey Data for Assessment and Advice (WGISDAA). ICES CM 2012/SSGESST:18.

Petitgas, P. 1993. Geostatistics for fish stock assessments: a review and an acoustic application. ICES Journal of Marine Science 50: 285-298.

Rivoirard, J., Simmonds, J., Foote, K., Fernandes, P., and Bez, N. 2000. Geostatistics for estimating fish abundance, Blackwell Science.

Smith, S.J. and S. Gavaris. 1993. Improving the precision of abundance estimates of Eastern Scotian Shelf Atlantic cod from bottom trawl surveys. N. Am. J. Fish. Manage., 13: 35–47.

Smith, S.J. and P.B. Hubley. 2014. Impact of survey design changes on stock assessment advice: sea scallops. ICES J. Mar. Sci., 71: 320–327.

Annex 1: List of participants

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Annex 2: Agenda

1) The demand for increasing the amount of ecosystem data collected has led to recommendations to redesign surveys currently focused on collecting fish stock data to collecting a broader range of data such as environmental, benthic, etc. The potential impacts of these additional activities in terms of changes to the precision of the fish stock estimates will be evaluated in separate and joint sessions with WGISUR.

2) This is the third meeting of WGISDAA and similar to the previous meetings, it has been difficult to attract participants and issues that the WG can contribute to. At this meeting we will discuss the future of the WGISDAA and what approaches can be used to improve participation for the next meeting.

3) Ifremer is planning on initiating a new annual survey series in ICES area VIIde and IBTSWG recommended that the survey proposal be presented to WGISDAA to address the issues of: (1) Producing indices for ICES area VIIde, where indices have historically not been usable, and (2) Considering that VIIde is of relevance to both North Sea and Celtic Sea stocks and respective working groups, a communication from both groups on how data could be integrated into assessments from either or both areas.

WGISDAA draft resolution for multi-annual ToRs (Category 2)

A **Working Group on Improving use of Survey Data for Assessment and Advice (WGISDAA)**, chaired by Sven Kupschus (UK), will meet in Copenhagen, Denmark, 20–22 January 2015, to work on ToRs and generate deliverables as listed in the Table below.

WGISDAA will report on the activities of 2015 by 1 March 2015 to SSGIOMP.

ToR descriptors

ToR	Description	Background	Science Plan topics addressed	Duration	Expected Deliverables
a	Identify with Assessment EG chairs where improvements in survey information could be of benefit to the assessment proceedure, and assign priorities for consideration	The advisory need is to underpin the value of the survey programme in the needs of the assessment and advice cycle. Multiple survey indices are an asset, but inconsistencies and conflict in signal should be handled outside the assessment process, as a science link	4.1	annually	On line catalogue, with prioritisation
b	Identify problems with design or index calculation with Survey planning groups. Assign priorities for consideration, and propose solutions	Survey designs, and development of indices are the core work of the survey communities. These will be the main fishery independent data source for assessment. The role of WGISDAA will be to advise on statisticall robust and appropriate designs and index calculations	4.1	annually	Individual advisory papers with and to the appropriate survey EG.

c	Initiate with ACOM and secretariat a process to identify upcoming issues associated with the use of survey data in benchmarks. This should be initiated as soon as the benchmark process is started	Survey data issues, as in ToR a, are often critical in the benchmarking process. WGISDAA can advise best if involved in this process from the start, can collaborate with the operators and present conclusions at the benchmark	4.1., 5.1., 5.2	As required	Reports and presentations to the appropriate Benchmark workshop.

Summary of the Work Plan

Year 1	Initiate process elicitating advice requests from other elements of the ICES system; assessment, survey and benchmarking groups. Identify priorities within requests, and set up meeting and personnel accordingly
Year 2	Continue and update process elicitating advice requests from other elements of the ICES system; assessment, survey and benchmarking groups. Identify priorities within requests, and set up meeting and personnel accordingly
Year 3	As in year 2, plus appraisal of the success of the process, and make proposals for changes and any continuation

Supporting information

Priority	This group will feed the results of its work directly into the assessment and hence advisory process. As such it should be considered central and of high priority
Resource requirements	The key additional resource requirement is the group needs particpation of the key players in the relevant assessment, survey or benchmark group. This would be in addition to work required for the normal operations of htese groups. Essentially, this would involve key personnel attending the relevant WGISDAA meeting, and where rquired, personnel from WGISDAA attending the relevant requesting EG
Participants	Dependant on information requests, but normally 12–15 persons
Secretariat facilities	Identification in particular of upcoming benchmarks and key questions on use of survey data. As early in the process as possible.
Financial	No financial implications.
Linkages to ACOM and groups under ACOM	ACOM, Benchmark Steering Group, and assessment EG will be the key clients for the work of WGISDAA
Linkages to other committees or groups	WGISDAA will have strong links to to survey working groups under SSGIOMP, and in particular to the work of WGISUR. Given surveys as an important source of wider ecosystem data there will also be important links to groups under SSGIEA
Linkages to other organizations	None specific

Annex 4: Recommendations

Recommendation	Adressed to
1. Assessment EG Chairs should inform WGISDAA of priority stocks where improvments in survey information could be of benefit to the assessment proceedure.	WGCSE, WGNSSK, WGDEEP, NWWG, WGEF, WGWIDE, HAWG
2. Survey planning groups should refer problems with design or index calculation to WGISDAA.	Survey Planing Group Chairs (IBTSWG, SGNEPS, WGBEAM, WGACEGG, WGALES, WGMEGS, WGEGGS2, WGIPS, WGBIFS, WGRS (will have new name), WGNEACS)
3. WGISDAA should have a more formal role linked to reviewing survey issues in advance of planned benchmarks and IBPs.	ACOM