ICES WGCSE REPORT 2018

ICES ADVISORY COMMITTEE

ICES CM 2018/ACOM:13

Report of the Working Group on Celtic Seas Ecoregion (WGCSE)

9–18 May 2018

Copenhagen, Denmark

ICES International Council for the Exploration of the Sea
CIEM Conseil International pour l'Exploration de la Mer

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Executive Summary

The ICES Working Group for the Celtic Seas Ecoregion (WGCSE) met from 9th–18th May 2018 at ICES Headquarters in Copenhagen. The participants were from five countries; Belgium, France, Ireland, the Russian Federation and the UK. Of the 29 participants, 16 attended all of the meeting, eight attended part-time, and five contributed by correspondence. The WG was supported throughout by professionals from ICES secretariat who assisted the WG with their advice drafting tasks. The meeting was chaired by Tim Earl and Helen Dobby (UK).

In total the WG is responsible for the provision of updated fisheries data, assessments and draft advice for 39 demersal fish and *Nephrops* stocks across ICES subareas 6 and 7 (with the distribution of megrim extending into Division 4.a, sea bass into 4.b,c and anglerfish into Subarea 4 and Division 3.a). This includes twelve *Nephrops* stocks, five sole and plaice stocks, four cod and whiting stocks, three haddock stocks, two each of megrim and sea bass, one anglerfish and one putative pollack stock. As in previous years, advice for *Nephrops*, anglerfish and Rockall megrim is not issued until autumn to make use of the most up to date survey information. For a number of other stocks (bss.27.6a7bj, cod.27.6a, cod.27.6b, ple.27.7bc, sol.27.7bc, whg.27.7a), no new advice was provided this year. Advice on the remaining stocks was scheduled for release on the 29th June. The advice for sea bass in 4.b.c, 7.a and 7.d–h includes a reopening of the advice previously given for 2018.

Since the last Working Group meeting, two stocks have gone through a benchmark procedure; bss.27.4.b.c7.a.d–h and anf.27.3a46, the results of which were presented to the group.

Update assessments were generally carried out according to the stock annexes (any deviations were detailed in the stock sections). Overall the stock status across the ecoregion is very similar to that presented last year. Of the 39 stocks assessed, 20 were fished below $F_{MSY,}$ ten stocks were fished above F_{MSY} and nine stocks had unknown status relative to $F_{MSY;}$ 18 were above MSY $B_{trigger}$, and ten were below MSY $B_{trigger}$, with 11 unknown relative to $B_{trigger}$ (see table below).

Table 1. Number of stocks relative to reference points by WG year.

	2011	2012	2013	2014	2016	2017	2018
F Below F_{MSY}	17	11	14	16	19	20	20
F Above F_{MSY}	9	14	13	11	10	10	10
Unknown	10	11	12	12	10	9	9
	2011	2012	2013	2014	2016	2017	2018
SSB Above $B_{trigger}$	13	13	11	13	15	18	18
SSB Below $B_{trigger}$	5	4	5	7	11	10	10
Unknown	18	19	23	19	13	11	11

West of Scotland cod remains severely depleted, but the *Nephrops* stocks within functional units 11and 12 and megrim in divisions 6.a and 4.a are exploited below F_{MSY} and have biomass or abundance above MSY $B_{trigger}$. The assessment of Northern Shelf anglerfish stock also shows an general increasing trend in stock size (although the 2018 abundance is slightly down on the 2017 value) and decrease in harvest rate, although reference points have not been defined for this stock. The Rockall haddock stock is at its highest level since the mid-1990s and was fished below F_{MSY} in 2017.

In the Irish Sea, sole is fished below F_{lim} and the SSB has increased sufficiently (although still below MSY $B_{trigger}$) to allow non-zero advice to be provided. Whiting in 7.a remains at a very low level relative to the past and remains severely depleted (no new advice was issued for this stock in 2018). Other demersal stocks in the area are assessed to be in a rather better state. Haddock and plaice are fished below F_{MSY} with SSB well above MSY $B_{trigger}$, while cod is fished well below F_{MSY} and has increasing SSB (although below MSY $B_{trigger}$). The two *Nephrops* stocks FU15 and FU14 are above $B_{trigger}$ and below F_{MSY}.

Further south, in the Celtic Sea and West of Ireland areas, the biomass of haddock and whiting stocks have declined in recent years but remain above MSY $B_{trigger}$. They are both fished above F_{MSY}. Although the fishing mortality on cod has declined (now just above F_{MSY}), recent recruitment has been weak and the stock remains below B_{lim} in 2017. Among the *Nephrops* stocks in this area, the stock in functional unit 17 is above MSY $B_{trigger}$, two stocks are below MSY $B_{trigger}$: functional units 19 and 22, and the remaining have no biomass reference points. Functional unit 16 is estimated to be exploited above F_{MSY}, while the remaining functional units are below F_{MSY}.

Celtic Sea sole is assessed as being fished above F_{MSY} although the SSB is above MSY $B_{trigger}$ in 2017. Proxy reference points have been estimated for ple.27.7.fg, ple.27.7.h–k and sol.27.7.h–k. Both sol.27.7.h–k and ple.27.7.fg are above MSY $B_{trigger}$ and below F_{MSY}, whereas ple.27.7.h–k is well below B_{lim} and fishing pressure remains above F_{lim}.

Fishing mortality on sea bass in 4.b.c, 7.a and 7.d–h is estimated to have declined below F_{MSY} while SSB remains below B_{lim}.

1 Introduction

1.1 Terms of reference

1.1.1 Generic ToRs

2017/2/ACOM05 The following ToRs apply to: AFWG, HAWG, NWWG, NIPAG, WGWIDE, WGBAST, WGBFAS, WGNSSK, WGCSE, WGDEEP, WGBIE, WGEEL, WGEF, WGHANSA and WGNAS.

The working group should focus on

a) Consider and comment on Ecosystem and Fisheries overviews where available;

b) For the aim of providing input for the Fisheries Overviews, consider and comment for the fisheries relevant to the working group on:

i) descriptions of ecosystem impacts of fisheries;

ii) descriptions of developments and recent changes to the fisheries;

iii) mixed fisheries considerations; and

iv) emerging issues of relevance for the management of the fisheries.

c) Conduct an assessment on the stock(s) to be addressed in 2018 using the method (analytical, forecast or trends indicators) as described in the stock annex and produce a brief report of the work carried out regarding the stock, summarising where the item is relevant:

i) Input data and examination of data quality;

ii) Where misreporting of catches is significant, provide qualitative and where possible quantitative information and describe the methods used to obtain the information;

iii) For relevant stocks (i.e. all stocks with catches in the NEAFC area) estimate the percentage of the total catch that has been taken in the NEAFC Regulatory Area in 2017;

iv) The developments in spawning–stock biomass, total-stock biomass, fishing mortality, catches (wanted and unwanted landings and discards) using the method described in the stock annex;

v) The state of the stocks against relevant reference points;

vi) Catch options for next year(s) for the stocks for which ICES has been requested to provide advice on fishing opportunities;

vii) Historical and analytical performance of the assessment and catch options and brief description of quality issues with these;

viii) For the purpose of conducting further analyses relative to the issue of catch forecasts from biased assessment for category 1 and 2 age-structured assessment, report the mean Mohn's rho (assessment retrospective analysis) values for R, SSB and F. The WG report should include a plot of this retrospective analysis. The values should be calculated in accordance with the "Guidance for completing ToR viii) of the Generic ToRs for Regional and Species Working Groups - Retrospective bias in assessment" and reported using the ICES application for this purpose.

d) Produce a first draft of the advice on the fish stocks and fisheries under considerations according to ACOM guidelines;

e) Review progress on benchmark processes of relevance to the expert group;

f) Prepare the data calls for the next year update assessment and for the planned data evaluation workshops;

g) Identify research needs of relevance for the expert group.

Information of the stocks to be considered by each Expert Group is available here.

1.1.2 Specific ToRs

WGCSE–Working Group for the Celtic Seas Ecoregion

2017/2/ACOM13 The **Working Group for the Celtic Seas Ecoregion** (WGCSE), chaired by Timothy Earl, UK and Helen Dobby, Scotland, UK will meet at ICES Headquarters, Copenhagen, Denmark, 9–18 May 2018 and by correspondence September / October 2018 to:

a) Address generic ToRs for Regional and Species Working Groups;

b) Report on reopened advice if appropriate;

c) Estimate MSY proxy reference points for the category 3 and 4 stocks in need of new advice in 2018:

i) Update the MSY proxy reference points for those category 3 and 4 stocks with existing proxy reference points using most recent data. For those stocks without reference points listed below, collate necessary data and information in order to estimate MSY proxy reference points prior to the Expert Group meeting. The official ICES data call included a call for length and life-history parameters for each stock in the table below;

ii) Propose appropriate MSY proxies for each of the stocks listed below by using methods provided in the ICES Technical Guidelines (ICES, 2017) along with available data and expert judgement.

d) Address the special request from the European Commission on a revised advice on fishing opportunities for 2018 for bss-47 by:

i) updating the catch advice for 2018 based on the results of an assessment using the most recent benchmark results; and

ii) consider the implications of the updated catch advice as “intermediate year” assumption when calculating catch options for 2019.

Stock Code	Stock name description	EG	Data Category
lez.27.6b	Megrim (*Lepidorhombus* spp.) in Division 6.b (Rockall)	WGCSE	3
ple.27.7e	Plaice (*Pleuronectes platessa*) in Division 7.e (western English Channel)	WGCSE	3.2
ple.27.7fg	Plaice (*Pleuronectes platessa*) in divisions 7.f and 7.g (Bristol Channel, Celtic Sea)	WGCSE	3.2
ple.27.7h–k	Plaice (*Pleuronectes platessa*) in divisions 7h–k (Celtic Sea South, southwest of Ireland)	WGCSE	3.2
sol.27.7h–k	Sole (*Solea solea*) in divisions 7.h–k (Celtic Sea South, southwest of Ireland)	WGCSE	3.2

The assessments will be carried out on the basis of the stock annex. The assessments must be available for audit on the first day of the meeting.

Material and data relevant for the meeting must be available to the group on the dates specified in the 2018 ICES data call.

WGCSE will report by 25 May 2018 for the attention of ACOM, and by 7 October 2018 for *Nephrops* stocks, anglerfish and megrim in Rockall. Concerning ToR b) the group will report on the ACOM guidelines on reopening procedure of the advice before 12 October and will report on reopened advice before 28 October.

1.2 Participation

The number of participants able to attend the Working Group for the full duration of the meeting continues has increased slightly compared to last year, but continues overall to decline (Figures 1.2.1 and 1.2.2). As last year, seven institutes were represented by full-time participants at the meeting.

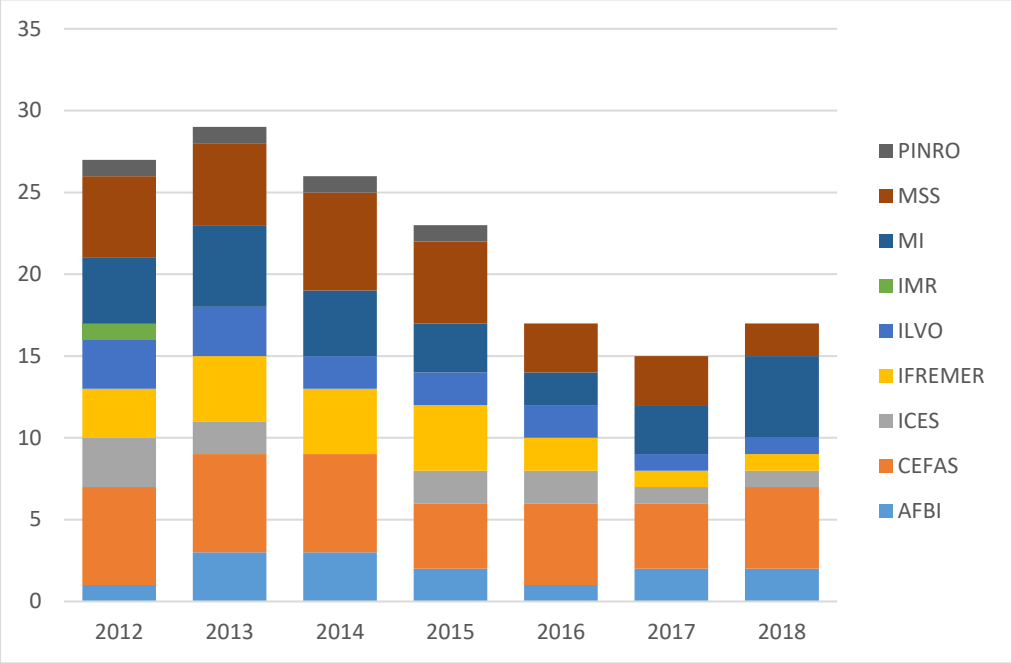

Figure 1.2.1. Numbers of WGCSE full-time participants by institute over time.

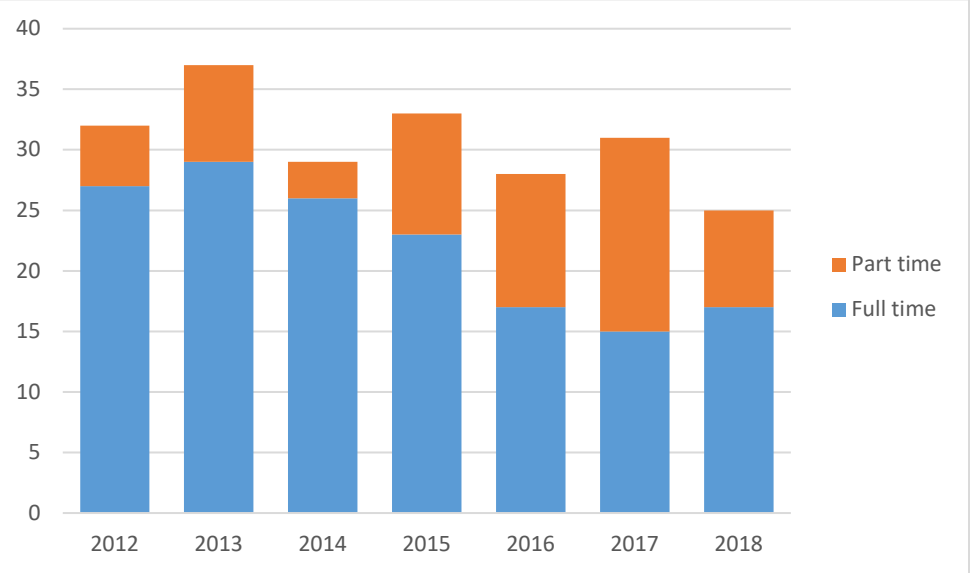

Figure 1.2.2. Numbers of WGCSE participants over time, and whether they were full-time or part-time (part-time includes working by correspondence).

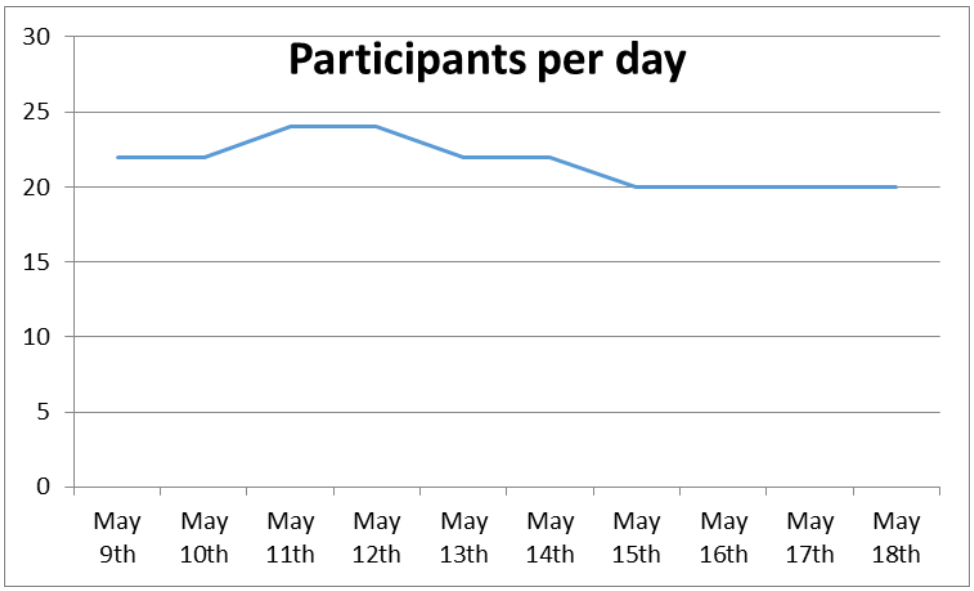

Figure 1.2.3. Number of participants in WGCSE 2018 by day.

1.3 Methods

The type of final assessments presented at the WG are summarised as follows:

- Category 1 age-based assessments and forecasts were conducted for bss.27.4bc7ad–h, cod.27.6.a, cod 27.7.a, cod.27.7.e–k, had.27.6.b, had.27.7.a, had.27.7.b–k, ple.27.7.a, sol.27.7.a, sol.27.7.e, sol.27.7.fg, whi.27.6.a, whi.27.7.a, whg.27.7.b–ce–k;
- Category 1 Bayesian surplus production model for lez.27.4.a6.a;
- Category 1: UWTV survey based assessments and advice were used for nep.fu.11, nep.fu.12, nep.fu.13, nep.fu.14, nep.fu.15, nep.fu.16, nep.fu.17, nep.fu.19, nep.fu.2021 and nep.fu.22. Fisheries data were updated at the May meeting and survey data were updated in the autumn;
- Category 3: Catch-at-age based assessments with caveats i.e. used for trends only and without forecasts for ple.27.7.e, ple.27.7.h–k and sol.27.7.h–k;
- Category 3: SPICT used to provide biomass trend for ple.27.7fg;
- Category 3: Analysis of the trends in survey data are used as the basis for advice for anf.27.3a46 and lez.27.6b;
- Category 4: Depletion corrected average catch was used for pol.27.67;
- Category 5 & 6: No assessments were carried out in 2018 for bss.27.6bc7ad–h, cod.6b, nep.27.6aoutFU and nep.27.7outFU, ple.27.7bc, sol.27.7bc, whi.27.6b; only landings statistics were updated.

For the stocks for which a full analytical assessment was possible, the WG typically used either Extended Survivor's Analysis (XSA), Time-Series Analysis (TSA), or Age-Structured Assessment Program (ASAP). These approaches and procedures for using them are discussed in further detail in the relevant stock annexes.

1.4 Data issues

WGCSE were made aware of an issue with the sampling level in Q1 and Q2 of 2017 from France (WD12) due to a lack of on-shore sampling during this period. The samples were in-filled based on samples taken in the previous years, where there was limited inter-year differences in the previous years. The stocks affected are listed below, with the number of simulated samples (Table 2). Because of the lack of market sampling for length, efforts were made to try and fill the deficiency in the number of samples through the use of simulation techniques. Both simulated data and actual data were uploaded to InterCatch combined, making it impossible to distinguish true samples from simulated ones. Due to the timing in notifying the working group, it was not possible to assess the impact of such simulated data on the assessment. However, given the relatively low number of simulated samples, it seems unlikely that this process has had a major impact on the stock assessment results.

Table 2. Simulated samples provided as part of the French submission to Intercatch.

Species	Area	Number of simulated samples
Sea bass	4.b–c, 7.a, and 7.d–h	6
Cod	7e–k	2
Plaice	7h–k	1
Sole	7e	1
Sole	7h–k	2
Whiting	7b–ce–k	2

1.5 Transparent Assessment Framework (TAF)

TAF is a new framework, currently in development, to organize all ICES stock assessments. Using a standard sequence of R scripts, it makes the data, analysis, and results available online, and documents how the data were pre-processed. Among the key benefits of this structured and open approach are improved quality assurance and peer review of ICES stock assessments. Furthermore, a fully scripted TAF assessment is easy to update and rerun later, with a new year of data. As of spring 2018, the first assessments are being scripted in standard TAF scripts. See http://taf.ices.dk for more information.

During the WGCSE 2018 meeting, the following progress was made getting stocks into TAF:

i) Sole (*Solea solea*) in Division 7.e (western English Channel) (sol.27.7e) has been fully scripted in TAF: data.R, input.R, model.R, output.R. This includes forecasts, retrospective analyses and the scripts to produce the tables and figures for the report. Future work will document the pre-processing of the data, e.g. the generation of VPA files.

ii) Norway lobster *(Nephrops norvegicus*) in Division 6.a, Functional Unit 11 (West of Scotland, North Minch) (nep.fu.11) has been fully scripted in TAF: data.R, input.R, model.R, output.R. Work will continue throughout 2018 to document the pre-processing of data.

The 2018 sol.27.7e and nep.fu.11 assessment will become publicly available on https://github.com/ices-taf after ACOM has released the advice.

1.6 Internal auditing and external reviews

As in previous years, the Working Group carried out its own internal audit process using the standard ICES template. Given the workload of many of the scientists at WGCSE (sometimes with one scientist responsible for two or more stocks), many of the reports were not finalized until after the WG meeting. Audits were therefore typically carried out by correspondence after the WG.

All stocks for which advice was provided in June 2018 were audited by the WG and audit reports were produced for most of these. Issues discovered during the audit process were corrected in the WG report. In some instances, despite undergoing an audit, mistakes were found in the advice sheet during the ADG, suggesting the audits to be of variable quality.

1.7 Generic ToR e: WGCSE recommendations for stocks to be benchmarked

WGCSE recommend that cod, haddock and whiting in the Celtic Sea should be benchmarked together in 2019, and that sole in the Celtic Sea and, haddock in Rockall should also be benchmarked in 2019. The focus of the benchmarks would be on streamlining data compilation procedures for fishery-dependent and survey data. This will give improved transparency and diagnostics surrounding commercial tuning fleets and surveys. The benchmarks should also relook at the assessment methods and diagnostics, given the potential for changes in selectivity in the commercial fishery. The benchmark should also investigate mixed fisheries and multispecies interactions and in particular, should consider environmental drivers that may be impacting on growth and recruitment of the three Celtic Sea gadoid species.

The Working Group also agreed that there is a need to benchmark both West of Scotland whiting and West of Scotland cod in the near future. However, given the issues associated with stock structure (for cod in particular), it may be appropriate to conduct West of Scotland and North Sea cod benchmarks concurrently.

Further details are given in the stock sections.

1.8 Specific ToRs

1.8.1 c(ii): Estimation of MSY proxy reference points

The Terms of reference contained a list of five stocks for which proxy reference points should be considered. The Working Group addressed this Tor as follows.

- For three stocks (plaice in 7.e and in 7.h–k, sole in 7.h–k) age-based assessments are performed, although only used as relative indicators of stock status. For these stocks, reference points were estimated using the package EqSim, and the method of WKMSYREF4 at WGCSE 2017. The extra data available at this year's Working Group did not warrant recalculation of the reference points.
- For plaice in 7.fg, a SpiCT assessment using survey and lpue data, combined with a hind-cast of discards was used to estimate the stock status relative to reference points.
- For megrim in Rockall, a SpiCT assessment using survey data was used to estimate the stock status relative to reference points.

- For anglerfish in subareas 4 and 6, which was benchmarked in 2018, none of the DL approaches for estimating proxy reference points were entirely satisfactory.

1.8.2 Specific ToR c(viii): Calculation of Mohn's Rho

Mohn's Rho was calculated and the results uploaded to the "Retro-bias-2018" SharePoint for the following stocks: bss.27.4bc7ad–h, cod.27.6a, cod.27.7a, cod.27.7e–k, had.27.7a, ple.27.7a, sol.27.7a, sol.27.7e and sol.27.7fg. The assessments of *Nephrops* stocks do not revise the perception of previous years, and so there is no retrospective assessment.

1.9 TACMAN request

ICES received a request from DGMARE to consider the role of TACs for a number of stocks and the risk to the stocks of removing the TACs. The TACMAN request covered nine stocks assessed within WGCSE (shown below), and was addressed by providing advice in September 2018. As part of the work to address this request, Working Documents were submitted and presented for each stock. Standard extractions of effort, landings and financial value for the requested stocks and a mixed-fishery summary of the species/gear interactions were also provided to provide a standard data source for addressing the questions.

Species	Area	Comments
Cod	6b	
Plaice	7a	
Plaice	7bc	
Plaice	7fg	
Plaice	7hjk	
Pollack	6	Combined advice with area 7
Whiting	6	Current advice for 6a and 6b separately
Whiting	7a	