



**ADVICE IN PREPARATION FOR NAFO ANNUAL MEETING
Montreal (Canada), 18-22 September 2017**

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13 September 2017**

1. BACKGROUND / AIM OF THIS ADVICE

The meeting of the Scientific Advisory Council of NAFO, held in Halifax (Canada) from the 1st to the 15th of June of 2017, assessed the state of main commercial stocks in NAFO and as a result a table with recommendations for fishing opportunities for 2018 was established (see Table 1 below). The LDAC would like to make a number of clarifications for the awareness of DG MARE of the European Commission and the Fisheries Administrations of the Member States of the EU, based on the outcomes of the Scientific Council and relevant NAFO Working Groups, with a view to prepare the forthcoming discussions within the 39th Annual Meeting of NAFO, to be held in Montreal (Canada) from the 18th to the 22nd of September of 2017. The TACs and quotas for 2018 will be established at that meeting, together with other management and conservation measures relevant to the commercial fisheries for the LDAC members (both EU fleet and other interest groups including NGOs) in the NAFO regulatory area.

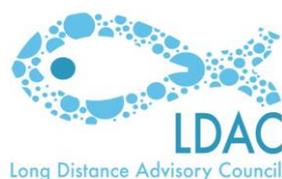


Table 1.
Scientific Council recommendations for fishing opportunities for 2018 on the stocks under the management of NAFO.

Stock	Estimated Catches 2016	TAC 2016	TAC 2017	Recommended TAC for 2018
Greenland Halibut 2+3JKLMNO	14 900	14 799	14 799	15000-17500
Cod 3M	14 023	13 931	13 931	8 182
Redfish 3M	7 400	7 000	7 000	7000–12000
Redfish 3LN*	8 500	10 400	14 200	14 200
Redfish 3O*	9 000	20 000	20 000	¿?
White Hake 3NO	400	1 000	1 000	400?
Cod 3NO*	666	ndf	ndf	ndf
American Plaice 3LNO*	1 741	ndf	ndf	ndf
American Plaice 3M	200	ndf	ndf	ndf
Witch Flounder 2J3KL*	100	ndf	ndf	ndf
Witch Flounder 3NO	1 062	2 172	2 225	1 116
Capelin 3NO*	5	ndf	ndf	ndf
Rays 3LNO*	3 470	7 000	7 000	4 700
Plaice 3LNO*	9 300	17 000	17 000	¿?
Shrimp 3M*	0	ndf	ndf	¿?
Shrimp 3LN*	0			ndf
Squid 3+4*	18	34 000	34 000	34 000

Tbd = to be decided / ndf = no directed fishery (Moratorium on Fishing)

** Stocks assessed in previous years.*



a. STOCKS FOR DECISION IN 2018

2. Greenland halibut (GHL) SA 2 + Div. 3KLMNO

The LDAC would like to praise the efforts and work developed by both the successive Scientific Council meetings held in April in Vigo and from 1-15 June 2017 in Halifax; and the Joint Fisheries Commission (FC) -Scientific Council (SC) Working Group on Risk-Based Management Strategies (RBMS – 8-9 February, 22-27 April and 11-13 July 2017) in developing a benchmarking process for Greenland halibut in the regulatory area 2 + 3KLMNO. The Scientific Council has met several times in 2017 and made substantial progress in setting the different assessment models and management scenarios or hypothesis for the drafting of a new Harvest Control Rule (HCR) to be decided at the Annual Meeting in September that will govern the conditions of the fishery.

It was agreed in Vigo during the April SC that, in case the MSE was not available in time for the Annual Meeting in September, an assessment and short term forecast should be done in order to be able to provide a recommendation for a TAC for 2018. It was decided that the stock assessment models more suitable for this evaluation were SCAA and SSM, and that further work would be carried out. The SC was not able to provide an advice in June due to factual errors detected after the June meeting.

The LDAC encourages the Contracting Parties to continuing work from the Fisheries Commission adopting the necessary measures to ensure that the human and financial resources or equivalent alternatives available to the SC of NAFO may enable the latter to develop a benchmarking process and a recommendation for the 2017 Annual Meeting.

In relation to the above-referred benchmarking process, the LDAC would like to make the following comments:

- The NAFO COM-SC-RBMS WP 17-11 compiles the results of the tests made with the Candidate Management Procedures (CMPs) on the SCAA-based Operating Models (OMs 1-7) which were agreed in June and that provide different scenarios, some of them highly unlikely. It also includes a proposals based on “Management Procedure” with its corresponding selection of values for each of the control parameters. This document will be examined at the next SC-FC Joint Working Panel which will meet on 15-16 September 2017, just before the Annual Meeting. The outcome of this meeting could determine a proposal for TAC for 2018 as well as a HCR for the future to be presented to the Fisheries Commission.



- The LDAC would like to support this document as a route map for finding a suitable and stable management scenario for the forthcoming years. However, the LDAC wants the final proposal to be both balanced and justified in terms of choices of variables, as this document is open to very different solutions for which slight variations might end up in very different results. Despite providing good arguments, this report of technical nature is highly complex and needs to be carefully studied.
- The analysis of bias is crucial, as it seems very difficult looking at the tables that a single candidate model success in all tests. For example, it should not be given excessive importance to bias shown in table 3 in respect of extreme scenarios OM2 showing great variations on recruitment (i.e. the proportion $B5-9\ 2037 < 0,8 * B5-9\ MSY$ gives 0,26 against a limit of 0,25) and OM7 with an assumption of continued overfishing above 30% of annual TAC (i.e. the proportion $B5-9\ 2022 < B5-9\ MSY$ gives 0,44 against a limit established in 0,25). This is also recommended in the document to avoid taking conclusions from biases stemming from highly unlikely scenarios in the long term. **OM1 however seems to be a more reasonable scenario, providing quite robust results.**
- Of all tested variations, the CMPA, with a TAC 2018 of 17,500t, tuned for a Biomass referred to $B_{msy} = 1$ (for OM7), gives quite reasonable results, as it can be checked in the basis option OM1. This could be proposed as basic alternative. **The LDAC would like that SC test at its Extraordinary meeting in 15-16 September 2017 values within the range of 17,500 and 20,000 t as starting point for the future HCR, as indicated at the COM-SC-RBMS-WP17-11.**
- Regarding calculation rule for annual quota (formerly known as HCR), there are two modalities observed: one slope-based (old model) and one new target-based which would take into account variables such as the biomass evolution, the economic stability for fishing industry activity, or the maximization of catches in a period with a 20 year horizon (up to 2037). The conclusions seem to highlight the prevalence of the new modality over the former one and the adoption of the latter is recommended on this process.
- A new control tuning parameter has been inserted including a modulation on the assessment of the abundance indexes shown in the campaigns relative to the geographical coverage of the fishing area. This will influence in the calculation of J_i , which will be the basis to calculate the TAC for the next year. They are proposed values equivalent to 1,00% for the Canada Fall campaign 2J3K, 1,10% for the EU Campaign 0-1.400m, and finally 0,20% for Canada spring 3LNO, which has been traditionally the most conflictive one. For the calculation it is proposed to use for each campaign the average of the 3 last recent years.



The LDAC hopes that these changes will be positive and reduce “noise” on the assessment in relation to severe discrepancies found in the Canadian spring survey that had doubts in relation to 2014 data in comparison to that of the years 2011-2013. There were concerns about the accuracy of that survey in terms of bathymetry and the lack of age groups for the population sampled.

Regarding the limitations of inter annual variations of the TAC between 10-20%:

- **If the proposed level of TAC is maintained at 17,500t, the 10% limit seems the most adequate to give stability to the norm.**
 - **However, a figure of up to 15% for annual variations of TAC would be possible if the percentage of annual variation is linked to the starting point of the HCR. So that, if it starts higher, increase the % of admissible annual variation. One issue that it must be avoided is to set a higher percentage downwards (for reduction) than upwards (for increase).**
- **The LDAC would be supportive of low values for parameter X (response strength to HCR), as it considers that high values closer to 1 give poorer performances and this parameter is closely linked to the limits for annual variation of TACs, as indicated above. The LDAC agrees with the recommendation of the Joint Group of choosing the value of 0,15.**

LDAC Recommendation:

In view of the considerations above mentioned, the LDAC would request the Commission to acknowledge the weaknesses of candidate management plans (CMPs) and the associated 7 operational models analysed, choosing carefully the one which provides a balanced stability for fishing activity. The LDAC advocates for a TAC fixed within the range of 15000-17500t as indicated in OM1 as starting point for 2018.



3. Cod 3M

The TAC proposed by the SC for 2018 for this stock is 8,182t, a number resulting from the change in model, and is a considerable reduction of 41% from the existing TAC of 13,931t. The SC recommendation comes with the warning that all outcomes analysed are on or beyond the PA approach. The main risk factor identified is the low recruitment and the future effect it may have on the SSB in the next years.

2017 was meant to be the year when the 3M Cod would see its stock benchmarked and an appropriate HCR established so as to give the TAC progression a more cohesive evolution through the years, avoiding the jagged knife movements of the past years since the stock was reopened. Due to the increased workload of the SC as a result of the ongoing benchmarking of the GHL, only a new assessment model was adopted. This model kept the past priors, and inconsistencies in the results and model led to the need of further benchmarking, a process now postponed until the 2018 annual meeting.

Also persisting is the uncertainty over the reasons behind an increased mortality as well as the possible effects of selectivity on the stock. However, no exercises have been carried out by the SC to clarify these, nor has it recommended or proposed possible solutions or exercises to determine how these possible threats can be modulated. These are important knowledge gaps that need to be addressed, along with the trophic interactions that occur in the area. Some actors in the fishery are convinced that the continuous movements in the SSBs of redfish are related to the cod population and its feeding patterns.

A proper impact assessment of the increasing activities related to the exploitation of the bottom of the ocean in the regulatory area, such as mining and drilling, has to be carried out, as well as the impact of other factors such as the shifting currents and temperature changes in the area. The persistent suspicion of the fleet of a covert effort to move the fleet out of the way to allow for more mineral and oil exploitation activities taking place can seem somewhat paranoid, but they certainly seem to match the documented expansion of drilling licenses in the Flemish cap for the next years.

The EC should also look more into the vested interests and conflicts that the two countries profiting the most from the oil drilling in the area, namely Canada (with the sovereignty over the continental shelf in the area) and Norway (shareholder of Statoil, the main company most involved in this exploitation) have. Through their actions they have impeded in the past the revision and alignment of the reference points of the stock with those of the cod stock in the Barents Sea. The reference points for F are a clear example of this.



The industry represented in the LDAC would also like to remind the EC of its obligation to protect not only the environmental aspects of a fishery, but also the socioeconomics. This is not to say that the stock should be put in danger, but rather that more gradual TAC movements should be looked at, as it is done in the exploitation rules, where a cap is usually set to either increase or decrease the TAC. A 40% move certainly would be well outside of any future such cap, with tremendous short term consequences for the fleet and likely resulting in a less controlled F as more cod would have to be discarded as the quota would end earlier in the year. Current catch rates point to this situation.

It is also important to note that this year the selectivity trials performed for the cod fishery in the NAFO RA 3M on commercial fishing vessels from UK using sorting grids have continued and fine-tuned with encouraging results. This is the same fishing gear and grid used in the fishing grounds of Norway and Svalbard. This effort, however, is somewhat thwarted by the SC as it seems to find these as anecdotal evidence. Movements to relate the TAC to a mandatory use of grids would be much more welcome and probably be much more realistic and effective than drastic immediate cuts in TAC. The EU concerned cod fleet demands that these efforts be monitored and evaluated by the SC and incorporated to the model.

LDAC Recommendations:

The LDAC recognizes the SC effort proposed in its recommendation to push for strategies that allow a rebuilding of the SSB and that counters the possible consequences of a low recruitment and the possible decrease in SSB as the models seem to indicate. Taking into account the economic and social pillars of sustainability, the LDAC encourages the European Commission and NAFO CPs to adopt a gradual approach. Furthermore, the LDAC requires all efforts to set a new HCR that provides stability to the system and avoids high fluctuations in TACs between years as much as possible to minimise harm to the economic planning and profitability of the fleets.

Following the SC, the NGO group of the LDAC supports a TAC of 8,182t for 2018.

In addition, prior to the benchmark next year, a study of the uncertainties surrounding the stock has to be conducted and all possible mitigation strategies, not only a continuous reduction of the TAC, have to be studied and evaluated. In the meantime, we propose a lower decrease of the TAC, as it would happen should an exploitation rule be in place, and to combine it with an increased or even mandatory use of grids. Also the process must be guaranteed independence from the vested interests of some of the CPs, and ensure it is purely scientific approach with only the best interest of the stock and the participants in the fishery in mind.



The LDAC is in favour that the commercial trials for improving gear selectivity in cod trawlers using sorting grid continues, albeit safeguarded by a scientific program validated by the NAFO Fisheries Commission in order to be applicable to the new exploitation rules to be adopted next year. The LDAC wish to make the Commission, and through them the SC, aware that members are willing to assist in the provision of additional data where possible.

4. Redfish 3M

Catches of redfish are a mix of three species, where assessment relies on data from only two species (*S mentella* and *S fasciatus*) known as Beaked Redfish. The next full assessment of the Beaked Redfish in Div. 3M stock was scheduled for June 2017. Scientific Council approved an XSA-based evaluation and estimated a fluctuating natural mortality (M) taking into account the biological features of the species. It shows high biomass indexes in recent years as a result of good recruitments on period 2002-2006. However, there has been a decrease in abundance and the R for the period 2015-2016 is within the lowest of the historical series. F is still considered to be in low levels.

In all short-term projections with four scenarios of F (F=0, Fstatusquo, F0.1 and Fmax), the SSB remains at high levels in comparison with historical series. Therefore, the SC considers that in the short term (2 years), the stock is able to support catches in line with the current level of F corresponding to a TAC of 12,000 tonnes. However, if the management objective is to achieve the Yield at F0.1 and maximise catches in the long term, the SC recommends to remain closer to 7,000t.

LDAC Recommendations:

The current status quo for Redfish 3M should be maintained: the solution, agreed a few years ago, was to distribute more quota but at the same time leave a reduced TAC, so that, once reached, the fishery closes.

On the other hand, the situation in 2016 reflected more or less a balance between declared catches of 6,804t (7,400t according to SC) and the TAC (7,000t).

In light of the SC recommendation providing a range of TAC between 7,000 and 12,000 tonnes depending on the scenarios chosen, taking into account the specific management regime for this fishery, and the expected economic and social impact of a reduction in the TAC for Cod in the same area, the LDAC would advise to set a value within the medium of the range.



5. American Plaice 3M

The LDAC is supportive of maintaining the moratorium on this stock in line with the NAFO SC recommendation that *“there should be no directed fishery on this stock in 2018, 2019 and 2020, and by-catch should be kept at the lowest possible level”*.

6. Witch Flounder 3NO

A Bayesian (surplus) production model has been chosen by the SC to evaluate this stock using the Canadian spring and autumn campaigns as reference. The results of this evaluation show an increase on biomass from 1999 to 2010 and a decrease from 2012 until now, being currently around 52% of Bmsy. Recruitments (individuals < 21 cm) are estimated to be low since 2013, with the 2016 year class amongst the lowest on the historical series.

Catches in 2016 were below the TAC. However, forecasts assume that in 2017 the full TAC will be fished in the different F scenarios projected. Biomass population is expected to increase in all scenarios and there is a more than 50% probability that B will be higher in 2020 than in 2016 for all scenarios. However, B will be still below Bmsy.

The SC recommends that the level of exploitation in 2018 and 2019 will not be higher than the current 2016 harvest rate, so catches should not exceed from 1,116 tons in 2018 and 1,175 tons in 2019.

The Witch Flounder 3NO stock reopened to activity in 2015, since it was previously in NDF for many years. The reduction of TAC proposed by the SC shows that the position that then maintained the European Commission regarding the reopening was justified.

The proposed reduction of 50% of the current TAC might generate a discarding problem due to by-catches for those vessels not having quota (i.e. the majority of the EU vessels operating in NAFO). Studies and analysis for more effective measures for catch avoidance should be encouraged.

The LDAC considers that returning to pre-2015 status (NDF) with a by-catch allowance would help to rebuild the stock and avoid a directed fishery on spawning aggregations (which might partly explain the recent low levels of recruitment) as well as mitigate the problem of discards. This would also be coherent with the EC landing obligation rules applicable within EU waters.



7. White hake 3NO

The management unit for this species is 3NO although it is also distributed in Subdivision 3Ps. This stock has a qualitative trend-based assessment drawn from surveys and catch indexes. The biomass for this stock remains at low levels and there have been no good recruitments since 2000. The fishing mortality remains low.

Given the absence of increase in recruitments, the SC recommended last year that catches did not exceed the present level (i.e. 400t) and this means a reduction of the TAC from 1,000 t in 2016 and 2017 to 400t for 2018.

However, the LDAC believes that, since this is a species whose presence is highly seasonal, depending mainly on its recruitments, it is of interest to set a TAC that may cater for accidental catches in other fisheries.

LDAC Recommendations:

Given the overall sustainable level of catches and complexities of allocation keys for TAC between CPs, suggested to maintain the current status quo for TAC at 1,000 t and also allow mechanisms to increase in the event that a significant increase in catch per unit effort (CPUE) occurs.

8. Pelagic Sebastes Mentella in the NAFO Convention Area

This fishery takes place in the between East Greenland and Iceland, both in the NEAFC and NAFO Regulatory Areas. The two regional organisations have agreed that NEAFC adopts overall total allowable catches (TACs) for redfish, setting aside a part of them to be taken in the NAFO Regulatory Area.

LDAC Recommendation:

The LDAC would like to note its concern on the fact that Russia has objected in NEAFC to abide by NEAFC management rules in relation to the pelagic redfish fishery. The Western stock falls within NAFO RA and Russian vessels are catching around 20,000 t of pelagic redfish while the EU is bound by the TAC established by NEAFC (7,000t).



b. STOCKS MONITORED

9. Cod 3NO

Due to the heavy workload of the Scientific Council this year, the 2017 assessment was not done. The date for its realisation will be discussed at next SC meeting in September.

According to the last analytical evaluation approved in 2015 showed that SSB was well below Blim. This population is keeping moderate (rather low) levels of recruitment and a fishing mortality well below F_{lim} . Recent indexes from Canadian and EU campaigns from 2015 and 2016 have decreased in respect of those from 2014, so data outputs have not changed.

It is therefore considered appropriate by the LDAC to maintain the population under a moratorium, as proposed by the Scientific Council.

The limit for by-catch established for this stock under Article 6.3 (b) of NCEM "*for cod in Division 3NO: 1,000 kg or 4%, whichever is the greater*" has been exceptionally low in recent years, responding to express recommendations by the SC to achieve a faster recovery of the stock. This figure should be adjusted upward as such recovery is recorded, in order to reduce the increasing need to discard. The analysis of CATs shows that the current limit is being exceeded with some frequency in the redfish, ray and yellowtail flounder fisheries.



10. Cod 2J3KL^{1 2}

The EC should look to the evolution of the catches in this area closely. Not only has Canada not refrained from fishing in these areas of the RA, but the catches there have continued to increase year after year.

Canada has been fishing more than 4,000 tons/year since 2013. Last year it reported 9,645 tons. In 2017, it has reported 4,113 tons captured to date in 2J3KL. Also, one of the theories about the reasons of dwindling population of Cod in 3M is the displacement of the fish towards 3KL, a displacement caused by environmental change but probably also due to the increased seismic vessel activity and increased mineral exploitation of the bottom and oil drilling.

This could mean that the action of some CP would not only reduce the fishing possibilities of the other CP (effectively exchanging oil for food), but also push the fish to areas where Canada would profit from the displaced population of fish barring the access to actors as the EU and other CP.

The existing agreement between Canada and the EU on the sharing of TAC in that area elapsed in 2005, but the EC should explore the possibilities to fish on those areas based on past track records and considering that this could be a good compensation for the possible reduction of fish in the Flemish Cap due to the new human activities in the area.

Also, Canada should not be allowed to continue to deny the existence of a TAC in the 2J3KL areas, it is evident that the activity there is well established and with declared catches that are well above the TAC established for the 3M area and close to doubling it if the proposed TAC for 3M is accepted).

LDAC Recommendations:

It is imperative that the EC, together with other CP, begin the process of obtaining fishing possibilities in the 2J3KL areas in line with past track records and the existing fishing activity in the area. The EC must strongly consider the possibility of seeking compensation in this area, among others, for the decreasing fishing possibilities in the Flemish Cap due to the seismic, mining and oil drilling activity.

¹ [Fisheries and Oceans Canada link 2016](#)

² [Fisheries and Oceans Canada link 2017](#)



11. Thorny Skate 3LNO

The SC recommendation for 2017-2018 says:

"The stock has shown little improvement at recent catch levels (approx. 4700 t, 2011 - 2015), therefore Scientific Council advises no increase in catches".

When referring to the Stock status in the summary, it says:

"The stock is currently above Blim. The probability that the current biomass is above Blim is 0.99. Stock biomass has been increasing very slowly from low levels since the mid-1990s. Recruitment declined below average in 2014-2015. Fishing mortality is currently low." (Advice based only survey index and catches)

Also, the SC report adds the following:

"Since 1997, biomass indices have been increasing very slowly from low levels, while abundance indices remain relatively stable at very low levels".

There are no warning signs that justify changes in the exploitation patterns, and the recommendation of not increasing catches can be easily met without need of adjusting the TAC provided that there are no changes in the current fishing effort.

FC is tasked to set the TAC in 3LNO while Canada sets autonomously a TAC of 1,050t for RA 3Ps, which has remained stable since 1997 (even when the current catches are only 247t).

Some CPs, which do not have a commercial interest in the fishery and do not consume its quota within the RA, have used SC recommendations in previous years to ask for reductions on the TACs to align it with the catches in a process that only affects those CPs that do catch their quotas and see reduced their TAC as a result. This has led to a reduction of the TAC, without any scientific evidence, from 13,500t to the current 7,000t despite the fact that the present biomass is higher than the referenced one for setting the initial TAC.

The key figures for this stock are shown here:

TAC 2015-2016, 3LNO 7,000t (CAN 1,167 (catches 1t 0%), UE 4,408 (63%), RUS 1,167 (catches 74t ó 6%); Others 258t).

The total EU catches in 2015 were approx. 3,750t, (80% of its TAC), 3,399t ESP (TAC 3,403t) 100%, 310t POR (TAC 660t) approx. 50%, y 47t EST (TAC 345t) approx. 15%.



A decrease of the TAC 3LNO to 4,700t (average catches for the period 2011-2015), would leave the EU with 2,961t so it should have to reduce automatically its fishing effort, which is not in accordance with what the SC asks, as this would bring the volume of catches down. On the contrary, in Canadian waters (3PS) this criteria is not applied when adapting the quota to the catches, and it would remain unchanged.

In terms of the fishing exploitation rate, it seems to be a downward trend in the volume of annual landings. The situation of the ray fishery is quite specific, with the by-catches having a great incidence on its performance. The progressive improvement of the yellowtail flounder, plaice and cod stocks has caused steady increases of by-catches of these three species. This can be identified as the main limiting factor of the directed ray fishery: once the by catch species improve their state, it creates a limitation de facto on the targeted fishing activity due to the ceilings in form of fixed percentages, which obliges to effort displacement in accordance with the NAFO CEM rules.

For the case of Yellowtail Flounder, there is an exception allowing a 15% by-catch limit so its effect in the process is mitigated, but in the case of cod the by-catch limit is only 3% and for plaice, 5%. Its impact here for the ray targeted fishery is higher.

12. Redfish 3LN

The scientific assessment indicates that the stock is above B_{lim} and fishing mortality below F_{lim} with recently increased recruitments, which endorse that the current HCR may set a TAC of 14,200 tonnes for the biennium 2017-2018.

The current management system for this stock was adopted in 2014, by the NAFO/FC Doc 14/29 "**Risk-Based Management Strategy for 3LN Redfish**", which defined an HCR to increase the TAC gradually, with the target to reach 18,100t in the period 2019-20, being this target compatible with an MSY level of 21,000t, with the SC as responsible body to validate these increases.

The SC made the following statement:

SC conducted the 2016 full assessment of Redfish in Division 3LN and evaluated the impact of the implementation of the adopted MS on the state of the stock. At the beginning of 2016, the stock was at or above B_{msy} and fishing mortality was well below F_{msy} during 2015. The probability of biomass being below B_{lim} or fishing mortality being above F_{msy} is < 1%.



The above statement means in practice to approve the increase of the TAC in accordance with the HCR adopted.

The TAC allocation approved for this stock is 10,400t for 2015, based on the allocation given in 1997, as follows: Canada 4,430t (42.60%); Cuba 1,019t (9.80%); EU 1,896t (18.23%); and Russia 2,992t (28.77%); and others 63t (0.6%). Within the EU, Estonia, Latvia and Lithuania have 514t each which means 14.82% of the total TAC; and Germany has 354t, 3.4% of the total TAC.

Regarding Swaps of Redfish in 3LN in 2015, Cuba transferred to Portugal 819t of 3LN Redfish; and the EU transferred to Canada 125 t, within the framework of a more general agreement. Most part of the catches are being made by Canada within its EEZ; and Russia and EU-Portugal within the RA 3L. The estimation for 2016 according to Stantlant21 A, sums up to 10,244t, allocated between Canada 4,415t; Russia 2,972t; Faroe 64t; France St. Pierre 324t (in chartering with Estonia); Portugal 2,100t; Estonia 202t and Spain 177t.

It is worthy to note that Canada catches also in the Grand Banks 5,500t of Red Fish, under autonomous quotas in sub-areas 3Ps, 4T, 4VN, 4VS, 4W and 4X.

LDAC Recommendation:

The proposal by the Scientific Council fir Redfish 3LN is considered adequate, and it is understood that an improved stock assessment should have a positive impact on the management decisions of redfish stocks.

13. [Redfish 3O](#)

The scientific assessment indicates that there is a high degree of uncertainty and data are limited, but there are indications that fishing mortality is low compared to that of the period 2000-2006, and while recruitments may be lower than desired due to the fishing of immature specimens as stated by the SC, it is no less evident that in the final decision of the FC the good status of the neighbouring stock in 3LN also ought to be weighed in.

There is a lack of agreement for setting reference points for this stock, and the assessment is based only on the indexes of the scientific campaigns and the catch trends. It is also indicated in the SC report that recent recruitments have fallen and that the stock could have decreased in relation to the record values reached for both indicators on 2012.



It is noted here that there are biomass indexes from scientific campaigns carried out by Spain which show that, out of the last 7 years, the stock has increased in 6 years, confirming a stable increasing trend and also that Canada did not carry out its autumn campaign in 2014, which makes more difficult to measure these data series.

The SC decided not to propose a TAC for the period 2017-2019 due to the scarce information available to base its advice: ***“There is insufficient information on which to base predictions of annual yield potential for this resource. Stock dynamics and recruitment patterns are also poorly understood. Catches have averaged about 13 000 t since the 1960s and over the long term, catches at this level appear to have been sustainable. Council is unable to advise on an appropriate TAC for 2017, 2018 and 2019.”***

This last sentence is identical to that used by the SC in 2010, to do not establish a TAC for 2011-2013, and very similar to that of 2014 (*“Scientific Council is unable to advice on a more specific TAC level”*). In both cases, the FC kept the TAC at 20,000t.

LDAC Recommendation:

Since the SC has not proposed a TAC for 2018, the LDAC members concerned with this fishery (mainly Portuguese and Spanish fleet) agree that the EU advocates before the Fisheries Commission to keep a TAC “status quo” of 20,000t for Redfish 3O for the aforementioned three-year 2017-2019 period, acknowledging the distinction between the TAC and the total levels of catches similarly to the case of Thorny Skate.

Another important factor is the close relationship existing between the stocks from 3LN and 3O, whose split seems artificial, as it is acknowledged by the SC on each assessment for this species, although for the time being recommends to keep the situation as it is:

Most studies the Council has reviewed in the past have suggested a closer connection between Divs. 3LN and Div. 3O, for both species of redfish. A recent study (Valentin et al. 2015) showed that some juvenile *S. fasciatus* sampled in the Gulf of St. Lawrence had the genetic signature of adult redfish from Divs. 3LNO and southern 3Ps. These findings suggest that stock structure is not well understood for not only Div. 3O but also neighbouring redfish stocks. However, differences observed in population dynamics between Divs. 3LN and Div. 3O suggested that it would be prudent to keep Div. 3O as a separate management unit.



The TAC in 3O, has remained at 20,000t since 2005, and is allocated between Canada (6,000t), the EU (7,000t), Japan (150t), given by swap to Canada, Russia (6,500t), Ukraine (150t, swapped to Poland), Korea (100t, swapped to the EU), and Others (100t).

Regarding the catches, according to Statlant21A, in 2015 they raised up to 8,364t (42% of the TAC), distributed as follows: Canada 31t (0.5% of its quota), which proves that it is not interested in this fishery, Russia 1,085t (18% of its quota, which decrease displacing vessels to 3L), and EU 6,745t (96% of its quota and 80% of its total catches). Within the EU, Spain caught 1,713t, Portugal 4,232t, and Estonia 800t.

As it can be checked in these three areas, the EU represents more than 80% of the catches in 3M and 3O, while in 3LN only counts for 18.23% of the TAC and almost one quarter of the catches due to the swaps. Therefore, the EU is the CP which is the most interested in having a uniform and balanced management along the three areas where the stocks are closely interrelated.

LDAC Recommendations:

It does not seem logical under the above referred circumstances the diverging management decisions between the stock of Redfish 3LN, for which it is proposed by the SC this year an increase of 36.5% now and a further 27.5% in two years and that they propose with the scientific report for the same stock in 3O, to reduce the TAC with the argument to align it with the catches, when the correct approach would be to keep the level of catches (“status quo”) looking at the TAC distribution and the catches of last year.

The LDAC also requests to the European Commission to ask for information from the Canadian administration on the results of their scientific observer spring campaigns for redfish in area 3O, including the volume of catches for each of the species of redfish to better understand the global state of the stock distributed both within the Canadian EEZ and in NAFO waters.



14. Plaice 3LNO

The 2016 assessment shows an improving trend in the spawning biomass, although the probability for it to exceed B_{lim} does not seem feasible until 2019, so the SC proposes to maintain the catch moratorium for 2017 and 2018.

LDAC Recommendation:

It is considered appropriate to maintain the Plaice 3LNO stock under a moratorium in force since 2009 during such period, as is proposed by the Scientific Council. It would be also positive to know discard data of this species as a by-catch from yellowtail flounder fishery.

15. Plaice 3M

The assessment for this stock was made both based on the information of the scientific surveys and the commercial catch data. The stock has increased its biomass in recent years due to improvement in recruitments (incoming year classes). Despite the low level of catches since 1996, the stock is still on low SSB levels. For this reason, the SC has advised to maintain the current moratorium on catches for this stock until 2020.

LDAC Recommendation:

The LDAC agrees with this proposal from the SC in maintaining the current moratorium on catches for Plaice 3M until 2020.

16. Witch flounder 2J3KL

The quantitative assessment shows that the biomass is increasing since 2004, which in 2015 is close to B_{lim} , with low fishing mortality and improved recruitments in recent years (2013-2015), whereby the SC proposes to maintain that there be no directed fishing in the 2017-2019 triennium.

LDAC Recommendation:

It is considered appropriate to maintain the stock under a moratorium during 2017-2019 period, as proposed by the Scientific Council. Bycatches of witch flounder in other fisheries should be kept at the lowest possible level to allow for rebuilding of the stock.



17. Squid 3 + 4

LDAC Recommendation:

Based on the last assessment of the Scientific Council in 2016, the LDAC considers appropriate the TAC of 34,000t per annum (“roll over” equal to the current level) established for the 2017-2019 period.

18. Shrimp

For the last two decades the 3M shrimp is the most important single stock in terms of EU NAFO fishing and employment.

A moratorium has been used for many stocks in the past, but never on the North Atlantic shrimp stocks in the high-seas except for the NAFO ones. Shrimp fishing differ from other fisheries in the high-seas because there is literally no by-catch due mandatory sorting grids.

LDAC Recommendation:

The LDAC thinks that moratorium should not be considered as a reservation measure for shrimp in the high seas. If a stock is depressed the catch effort will immediately follow as NAFO records shows. It is important to allow for minor scale fishing effort for 3M shrimp to obtain CPUE data and to follow the stock development.

3LN shrimp

The LDAC emphasizes the importance of being against a reopening of the shrimp moratorium in 3LN unless same is applied for zone 3M.



3M shrimp

The stock situation is not as well-known as it could be because there is a lack of feedback from fishing vessels. The area has been fully closed for shrimp fishing for 7 years without much recorded improvement for the stock except for the female biomass that went slightly up in for 2014 and 2015 but is still below B_{lim} . If there are no or weak signs of recovery it is clear the regression of the stock could not be connected to a lower or modest fishing effort, but more likely would be connected to an increase of the cod biomass in the region starting 2009-2010 and signs of decrease of 3M cod starting 2013-2014.

The only information available for the last seven years has been the annual survey mainly focusing on the ground-fish in 3M. The annual survey is not comprehensive enough in terms of information on the shrimp stocks in NAFO.

LDAC Recommendations for 3M and 3LN shrimp:

Experimental fishery in 3M should be allowed in 2018. It is proposed to allow for an effort of 50-100 fishing days, subject to participation of a NAFO scientific observer programme to collect more data.

The reopening of commercial shrimp fishing in NAFO should apply to both 3LN and 3M simultaneously. The EU should under no circumstances agree on reopening of the 3LN shrimp until the moratorium in 3M is lifted, unless scientific advice for the stocks clearly state otherwise.

19. Splendid Alfonsinos in Subareas 6

In the absence of a stock assessment, the TAC recommendation for this stock is based on recent catch history (2009-2014). The SC recommends that exploitation should not exceed recent average levels of approximately 200 t or 16 days-on-ground on Kukenthal Peak, and no Alfonsino fishery on all other seamounts in the NRA.

LDAC Recommendation:

The LDAC supports this recommendation and notes in relation to the effort limit to 16 fishing days or 200 tons for alfonsinos fishery, it should be taken into account the activity carried out in the last years by the EU fleet (one Spanish vessel) insofar as the access to the resource is not undermined, also looking at potential access (fishing rights) from fleets that exploited this resource in the past.



c. OTHER CONSERVATION ISSUES

20. Risk assessment on the impact of survey hauls in closed areas for fishing.

This issue has been analysed by the Scientific Council of NAFO in response to the consultation by the FC both in 2016 and 2017.

In 2016, the SC performed a study regarding the negative impact it may have on the indices of Greenland halibut and grenadier, as they show the greatest differences. The SC stated then: *"if closed areas are withdrawn from the surveys, it may be difficult in some strata to find closed areas that may be trawled in order to perform the hauls."*

The LDAC requested in last year's advice to support provision of all data on tows where sponges have been found, and whether these data are utilized in the stock assessment analysis.

A study was presented by the SC in June 2017 on the impact of not fishing in closed areas with scientific campaigns. Three VMEs indicators were analysed in the hauls of the surveys: sponges, big gorgonians and penatulaceans. The VME indicators with higher risk of impact as a result of fishing and taking samples in scientific campaigns on areas closed to fishing were sponges and big gorgonians. This analysis shows that 87% of trawl surveys made in the closed areas exceeded the threshold catch of 75kg of sponges and in some cases, up to 10,000kg have been recorded.

There were also estimates of how the removal of scientific hauls had any impacts in determining biomass indexes and size distribution. The results of the Canadian campaigns showed that the impact of eliminating these hauls is minimum for the purpose of these campaigns.

In view of the above, the SC recommended avoiding or minimising hauls in scientific campaigns within VMEs. This idea of eliminating samplings from scientific surveys in areas closed to fishing is currently justified from two different perspectives: the ethical and the practical, as gear damage in sampling can prevent from having a reliable sampling result.

The LDAC follows this line or argument and requests that NAFO must make every effort to prohibit or strongly restrict trawling in these closed areas, and ensure that all data is assessed including surveys by other contracting parties as per the recommendation from the WGEAFM, which states in part that "scientific trawl surveys in existing closed areas be avoided if possible". Further studies on alternative methods for gathering equivalent data must be conducted.



21. Impact of bottom fisheries in NAFO areas in relation to VMEs

A specific work on this is planned to start in 2021. A preliminary evaluation took place to assess the juxtaposition of 8 fisheries in areas where there are VMEs. The first findings show that the Greenland halibut fishery is the one overlapping the most with polygons containing VMEs. The longline cod and the shrimp fisheries do not affect VMEs. The other fisheries analysed showed an intermediate level of overlap with VMEs. The SC recommended to enrich this first analysis with more detailed data such as VMS and haul-by-haul data.

At the 2016 NAFO Annual Meeting and during the joint FC-SC Working Group, additional seamount closures in the New England Seamount Chain and on Corner Rise were discussed. Currently, there seems to be no proposals to follow this work with no agreement reached on those specific areas.

The LDAC is of the opinion that it is imperative that the NAFO Contracting Parties continue with this discussions aimed to protect the identified remaining seamounts. The NGO group of the LDAC recommends that NAFO closes all seamounts above 2000m to all bottom fishing, in keeping with the UNGA Sustainable Fisheries Resolutions and the identification of seamounts as VME elements.

The LDAC would advocate for developing a clear methodology and a well-designed project to continue refining this preliminary assessment on scale of impacts of different fisheries/métiers before adopting management decisions on this basis. It is necessary, as the SC has acknowledged, to work on making it a priority the effective implementation of the FAO guidelines on Impact Assessment for VMEs, in particular regarding resilience, recovery rates and functions of VMEs.

It is also necessary to improve data quality and increase resources in collecting more quantitative data insofar as possible. Any new study on indicators other than sponges and corals must be done well in advance to 2021 if they are to be included in the new impact evaluation.

22. Progress in review of NAFO Precautionary Approach (PA)

The LDAC notes that no much work progress has happened since the document that was issued in 2016 to review the current PA framework for NAFO. This was the result of deliberations from the Joint SC-FC Working Group on Risk Based Management Strategies (WG-RBMS) held in 2015. SC acknowledges that some progress has been made by WG-ESA in evaluation of PA in the context of the ecosystem approach.



The LDAC would like to see further developments on this review process and a good pool of technical experts that are able to define the general principles and indicators to implement the PA at ecosystem level. This must be done in consultation (directly or through the CPs) with relevant stakeholders to achieve a common understanding and buy-in of this process.

23. Working plan on the potential impact of activities other than fishing

Beyond the individual considerations of proposals for the closure of fishing areas, NAFO should face the debate on the protection of Vulnerable Marine Ecosystems (VMEs) and the seabed, not only regarding fishing activities, but also pursuant to all human interactions and activities, of any kind and industry, in this organisation's regulatory and supervisory area. It makes no sense to continue closing fishing areas and then allow for oil or gas drilling or, in a not too distant future, seabed mining.

While it is clear that NAFO is an organisation that mediates only in the supervision and regulation of fishing activities in the field of their Regulatory Area, it is also clear that the activities of other industries have an increasingly strong impact on the status of fish stocks and the marine environment that supports them. The effects of these industries must necessarily be incorporated into the analyses and recommendations of the SC as factors that may have an impact on the mortality or the spatial distribution of the stocks. Moreover, the impact on VMEs and on the seabed, in general, should also be assessed.

It is also necessary that the RFOs in general, and NAFO in particular, begin to consider how to undo the Gordian knot that is the existence of numerous 'single-industry' bodies that regulate human activities in a given area. It makes no sense that an organisation may authorise underwater mining in an area closed to fishing or that the impact of such activities do not include the impact of the sediment plumes they leave floating in the sea.

On land, whenever an area is closed or regulated for conservation purposes, such decision affects all economic activities taking place there and the impact assessments must take into account the different interactions with ecosystems in order to approve any new activity. Such consistency should be the same on land and at sea, and therefore the thresholds to be respected by human activity should be equal in every area.

This discussion was featured in the recent Review Conference of the UN Agreement, held in May in New York. It is relevant in the field of marine biodiversity conservation and it is expected to mark the development of the discussions on the protection of the seabed in the context of ABNJ and BBJN.



LDAC Recommendations on impact of activities other than fishing:

The LDAC believes that NAFO should aim at actively leading such discussions, given its knowledge and experience on seabed impacts and conservation of marine habitats and ecosystems.

It should be debated whether or not present or future decisions towards closing or regulating a specific area should be made dependent on the implementation of similar measures regarding other human uses of the same area, by the competent organisms.

24. Structure and operation of the Scientific Committee

There is a recurring consideration at the meetings and conversations with the scientists who are collaborating and contributing to the work of the Scientific Committee, and that is the complexity of its structure and the workload it bears. It must be remembered that much of the work is carried out at the summer session each year in Halifax, where members meet during three weeks. To extend it to four weeks or longer seems to be a cosmetic measure.

The work of the Scientific Committee is the most important of all the committees that make up the decision-making framework of NAFO. Without its scientific validation, all other work and decisions made by policy makers and managers of the fishery would be no more than arbitrary and with no value for stock conservation.

Therefore, a thorough evaluation is necessary of the working methods of the SC as well as of its internal methodology and its composition in order that it may successfully tackle its workload and also perform it within the time frames necessary for the proper protection of the ecosystem for which NAFO is responsible, but also of the fleets operating in the Regulatory Area, as they are also the responsibility of NAFO.

This is not meant to criticise the SC or its scientists, quite the contrary. More and more matters are being referred to the SC for analysis before a decision is made, and thus there is an increasing burden of "minor issues" that prevent larger projects from progressing.

In a fishing scenario in which we always endeavour for the best science available to prevail, this cannot be construed as just the science available, but as the best science that may be achieved, and to such a purpose more means and organisational facilities should be made available for the activities of the SC.

It is also necessary for the SC to open up to new scientific approaches, and above all, to greater collaboration with the fishing industry and fleets operating in NAFO.



The LDAC further recommends reaching out to other RFMOs to learn about and potentially incorporate other scientific methods being used, especially regarding impact assessments, ecosystem road maps, MSE and HCRs.

25. Impact assessments

The LDAC would like to reinforce its idea to assess the overlap of fisheries with VMEs, in order to improve the knowledge on fishery specific impacts as proportion of the area. This has already been discussed at the 2016 WG on Ecosystem Approach Framework to Fisheries (WFEAFFM). It is further considered useful to work on studies regarding functional SAI (seriously adverse impact assessments) criteria, to include in the assessments parameters such as resilience and links with fisheries.

With regard to SAI, certain areas still remain open, the LDAC asked on its last year's advice for setting closures for sea pens in areas 13/14.

The LDAC would like to have some information on the effectiveness of the sea pens closure in areas 13/14 in terms of protection of these features and also information on studies on resilience, as well as any proposal for further developments or future impact assessments.

26. Deep Sea fisheries

The LDAC welcomes the adoption of a NAFO Bycatch Action Plan. However, it is unfortunate that only the top five commercial species are currently being analysed.

The LDAC urges NAFO to require bycatch recording and submission of data on all species that are caught incidentally or as part of multi-species tows.

27. Ecosystem Approach / Roadmap

NAFO's ongoing work on an ecosystem road map and efforts to identify total productive capacity of the ecosystem represent the leading edge of RFMO efforts to move towards an ecosystem approach to management. However, there is no indication that this research and advice is being incorporated into stock assessments in the short term.



Given the decline of the primary zooplankton species and the nutrient standing stock by 40% since 2011, it is advised that NAFO takes into consideration the ecosystem considerations when discussing management measures on NAFO stocks, including fishing possibilities.

In addition, NAFO has yet to fully incorporate climate change vulnerability indices into its decision making process and stock status projections.

The LDAC recommends that as of 2018 climate change be integrated into decision making procedures and be part of a comprehensive ecosystem based approach to fisheries management.

28. Performance Review

NAFO has made notorious progress in improving transparency over the last years. Nevertheless, the NAFO's Performance Review process still lacks from meaningful engagement with observers and stakeholders, as they are not invited to participate at meetings nor are informed of their outcomes. This is behind other RFMOs such as NEAFC and ICCAT where observers are generally invited to contribute submissions on the RFMO performance and can attend key meetings.

The LDAC therefore recommends that NAFO implements procedures similar to other RFMOs and improves transparency and stakeholders' engagement during its current performance review process.

-END-