

MACALISTER ELLIOTT AND PARTNERS LTD

Draft Public Certification Report

Euronor saithe (*Pollachius virens*) fishery

28 OCTOBER 2009



MacAlister Elliott and Partners Ltd
56 High Street, Lymington
Hampshire SO41 9AH
United Kingdom
Tel: 01590 679016
Fax: 01590 671573
E-mail: mep@macalister-elliott.com
Website: www.macalister-elliott.com

Report summary

This report details the process and results of a Marine Stewardship Council assessment of the fishery for saithe (*Pollachius virens*) by the fishing company Euronor, based in Boulogne-sur-Mer, France. Euronor is the most important saithe fishing company in France, and one of the most important in Europe. The directed saithe fishery by Euronor operates on the North Sea stock (mainly ICES Subarea IV); there is also a small proportion of the catch which comes from the northeast Arctic stock (ICES Subareas I and II) as a by-catch of a cod fishery. Both these fisheries are covered by this assessment. Both fisheries use a demersal otter trawl.

The Euronor fishery is regulated under the EU Common Fisheries Policy and by a joint EU-Norway management agreement. Both saithe stocks are subject to TACs and quotas, as are most of the retained and by-catch species. The TACs are set by agreement between the EU and Norway following advice from ICES, who carry out an annual stock assessment based on fisheries dependent and independent data sets. The level of by-catch in the fishery is low (~6% by weight) but with a wide variety of species, most of which are retained most of the time. The team considered the catches of the majority of species to be negligible: they determined the main retained species to be cod *Gadus morhua* (from the northeast Arctic and North Sea stocks), redfish (*Sebastes marinus* and *mentella*) and Greenland halibut (*Rheinhardtius hippoglossoides*). Norway pout (*Trisopterus esmarkii*) was the only main by-catch (discarded) species.

Under MSC Principle 1, the team assessed the status, management and information for each target stock. The status of each stock appears to be good, with the spawning stock biomass above and fishing mortality below precautionary reference points in each case. The management framework is precautionary, and harvest control rules are robust and are implemented in full. The stock assessment was also considered to be robust: there are some uncertainties, particularly for the northeast Arctic stock, but these are counterbalanced by the fact that the stock biomass is considerably greater than the precautionary reference point at present. The overall score for Principle 1 was 90.6, and no PI scored lower than 80.

Under MSC Principle 2, the team assessed the impact of the fishery on retained and by-catch species, ETP species, habitats and ecosystems. The impact on retained and by-catch species was within acceptable limits. Euronor vessels do not interact with any ETP species, and the team considered that habitat and ecosystem impacts were within acceptable limits. The overall score for Principle 2 was 82.7, and no PI scored lower than 80.

Under MSC Principle 3, the team assessed the management, legal and decision-making framework, objectives, participation, compliance and enforcement, research and evaluation. The management framework is the EU Common Fisheries Policy and international agreements between the EU and Norway, all of which have sustainability as a core objective. Euronor participates in management via the North Sea RAC as well as

via more informal mechanisms. The enforcement regime (involving Norwegian, Scottish and French authorities) is strong and compliance by Euronor with the regulatory regime is exemplary. There is sufficient research to support management and the management system is evaluated regularly. The overall score for Principle 3 was 88.1 and no PI scored <80.

Résumé du rapport

Ce rapport détaille le processus et les résultats d'une évaluation MSC (Marine Stewardship Council) de la pêche de lieu noir (*Pollachius virens*) de l'armement Euronor, basé à Boulogne-sur-Mer, France. Les captures de lieu noir d'Euronor sont les plus importantes en France, ce qui place cette société parmi les plus importantes d'Europe pour les prises de cette espèce. La pêche a lieu essentiellement dans la mer du Nord (principalement Subarea CIEM IV); on constate aussi une petite proportion des captures provenant du stock de l'Arctique nord-est (Subarea CIEM I et II) en tant que prises accessoires d'une pêche de cabillaud. Ces deux pêcheries sont incluses dans la présente évaluation. L'engin de pêche, dans les deux cas, est le chalut de fond.

La pêche d'Euronor est régie dans le cadre de la politique commune de la pêche de l'UE (CFP), ainsi que dans le cadre d'un accord de gestion entre l'UE et la Norvège. Les deux stocks de lieu noir sont l'objet de TAC et de quotas, de même que pour la plupart des stocks des espèces considérées comme prises accessoires. Les TAC sont déterminés en fonction de l'accord entre l'UE et la Norvège, en suivant les avis du CIEM, qui se charge d'évaluer chaque année les stocks en question, en utilisant des données CPUE des pêcheries ainsi que des données des suivis scientifiques indépendants. Le taux de prises accessoires dans cette pêche est peu élevé (~6% en poids) mais comporte une grande diversité d'espèces, dont la plupart est le plus souvent retenue. L'équipe d'évaluation considère que, pour la majorité des espèces accessoires, les prises sont négligeables: comme principales espèces retenues, elle a identifié le cabillaud *Gadus morhua* (des stocks de l'Arctique nord-est et de la mer du Nord), le sébaste (*Sebastes marinus* et *mentella*) et le flétan noir (*Rheinhardtius hippoglossoides*). La seule espèce accessoire principale non-retenue était l'argentine (*Trisopterus esmarkii*).

Dans le cadre du Principe 1 du MSC, l'équipe a évalué l'état de chaque stock cible, ainsi que la gestion et les données disponibles. Les deux stocks de lieu noir considérés semblent chacun être en bon état, avec une biomasse reproductrice au-dessus des points de références de précaution et la mortalité de pêche en dessous des points de références de précaution. Le cadre de gestion suit également l'approche de précaution, et les règles pour le contrôle des prises sont robustes et sont pleinement mises en vigueur. L'analyse du stock est également considérée comme robuste: quelques incertitudes subsistent, surtout par rapport au stock arctique, mais celles-ci sont compensées par le fait que la biomasse reproductrice se trouve, à l'heure qu'il est, sensiblement plus élevée que le niveau de référence de précaution. Le score global pour le Principe 1 était de 90,6, et aucun PI n'a reçu une note inférieure à 80.

Dans le cadre du Principe 2 du MSC, l'équipe a évalué l'impact de la pêche sur les espèces accessoires retenues et non-retenues, les espèces protégées et menacées, les habitats et les écosystèmes. Les impacts sur les espèces accessoires ne dépassaient pas les limites acceptables. Les vaisseaux d'Euronor n'ont pas d'interactions avec les espèces menacées ou protégées, et l'équipe a considéré que les impacts sur l'habitat et l'écosystème se conforment aux limites acceptables. Le score global pour le Principe 2 était de 82.7, et aucun PI n'a reçu une note inférieure à 80.

Dans le cadre de Principe 3 de MSC, l'équipe a évalué le cadre légal de gestion ainsi que les modalités de la prise des décisions, les objectifs, la participation, conformité aux règlements et surveillance, recherche et évaluation. Le cadre de gestion est fourni par la CFP ainsi que les accords internationaux entre l'UE et la Norvège, qui retiennent tous la durabilité comme objectif de fond. Euronor participe dans la gestion par le moyen du RAC mer du Nord ainsi qu'informellement. Le régime de contrôle (de la part des autorités norvégiennes, écossaises et françaises) est strict, et Euronor se conforme avec le régime réglementaire de façon exemplaire. La recherche répond aux besoins de la gestion et le système de gestion est l'objet d'évaluations régulières. Le score global pour le Principe 3 était de 88,1 et aucun PI n'a reçu une note inférieure à 80.

Table of contents

1. Introduction.....	7
1.1 General background.....	7
1.2 Client.....	7
1.3 Unit of certification.....	7
1.4 Assessment team and peer reviewers.....	8
1.5 Report structure.....	9
2. Background to the fishery.....	9
2.1 Target species.....	9
2.2 Vessels, gear and fishing operations.....	9
2.2.1 Vessels.....	9
2.2.3 Fishing grounds.....	10
2.3 Saithe catch.....	11
2.4 Retained species, by-catch and interactions with ETP species.....	12
2.5 Ecosystem context.....	13
2.6 Interactions with other fisheries.....	14
3. Management System.....	15
3.1 Legislative context.....	15
3.2 Organisations involved in management.....	15
3.3 Harvest control rules and tools.....	16
3.4 Management plan and objectives.....	17
3.5 Regulation and enforcement.....	17
4. Stock assessment.....	18
4.1 Definition of stocks and management units.....	18
4.2 Monitoring and stock assessment system.....	18
4.3 Current status of stocks and recruitment.....	20
5. Fishery evaluation process.....	21
5.1 MSC standard and methodology.....	21
5.2 Assessment process.....	24
5.3 Assessment of Euronor saithe fishery.....	25
5.4 Stakeholder consultations.....	25
6. Scoring.....	26
6.1 Scoring methodology.....	26
6.2 Issues in interpreting the FAM.....	27
6.3 Weighting.....	29
7. Assessment results.....	30
7.1 Overall results.....	31
7.2 Principle 1.....	31
7.3 Principle 2.....	31
7.4 Principle 3.....	32
8. Draft Certification Recommendation.....	32
8.1 Recommendation.....	33
8.2 Conditions.....	33
9. Chain of custody.....	33

10. Peer reviewer reports	33
10.1 Report of Peer Reviewer 1	33
10.2 Report of peer reviewer 2	37
11. References and information sources	42
Annex 1 – Assessment tree	45
1.1 Outcome	45
1.1.1 Stock status	45
1.1.2 Reference points.....	48
1.1.3 Stock rebuilding	49
1.2 Harvest strategy (management).....	49
1.2.1 Harvest strategy	49
1.2.2 Harvest control rules and tools	51
1.2.3 Information / monitoring.....	52
1.2.4 Assessment of stock status.....	54
2.1 Retained species.....	56
2.1.1 Outcome status.....	56
2.1.2 Management strategy	60
2.1.3 Information / monitoring.....	62
2.2 By-catch	64
2.2.1 Outcome status.....	64
2.2.2 Management strategy	66
2.2.3 Information / monitoring.....	66
2.3 ETP species	68
2.3.1 Outcome status.....	68
2.3.2 Management strategy	70
2.3.3 Information / monitoring.....	72
2.4 Habitat.....	73
2.4.1 Outcome status.....	73
2.4.2 Management strategy	78
2.4.3 Information / monitoring.....	79
2.5 Ecosystem	80
2.5.1 Outcome status.....	80
2.5.2 Management strategy	81
2.5.3 Information / monitoring.....	82
3.1 Governance and policy.....	83
3.1.1 Legal and/or customary framework	83
3.1.2 Consultation, roles and responsibilities.....	86
3.1.3 Long term objectives	87
3.1.4 Incentives for sustainable fishing.....	88
3.2 Fishery-specific management system.....	89
3.2.1 Fishery-specific objectives	89
3.2.2 Decision-making processes	90
3.2.3 Compliance and enforcement.....	91
3.2.4 Research plan	93
3.2.5 Monitoring and management performance evaluation.....	94

1. Introduction

1.1 General background

The Marine Stewardship Council (MSC) is a non-profit organisation which aims to use market mechanisms to support the long-term sustainability of marine fisheries. MSC has developed a standard for well managed and sustainable fisheries, and an associated methodology for assessing individual fisheries against the standard – this collectively is now called the Fisheries Assessment Methodology (FAM) (1). The standard and methodology is periodically updated. This assessment version 1 of June 2008 - the most recent at the time the assessment was started. Assessments are carried out by private companies (Certification Bodies – CBs) who are accredited to carrying out MSC assessments by the accreditation organisation Accreditation Services International (ASI).

This report is the draft public certification report for the Euronor fishery for saithe (*Pollachius virens*) in the North Sea and North Norway (ICES Subareas I, II and IV). The report has been prepared by an assessment team from the CB MacAlister Elliott and Partners Ltd. (MEP). The report will be available for comment on the MSC website, and MEP welcomes comments on the report at any time (contact details on the MSC website or at www.macalister-elliott.com).

1.2 Client

The client for this assessment is the fishing company 'Le Comptoir des Pêches d'Europe du Nord' or Euronor, based in Boulogne-sur-Mer, France (see www.euronor.eu). Euronor specialises in fishing for saithe (lieu noir, *Pollachius virens*), and at present has five boats fishing for saithe in the northern North Sea and off the west coast of Norway (ICES Subarea IV). This includes three freezer trawlers and two fresh fish trawlers. Two other Euronor fresh fish trawlers, which currently fish for deep water species off northwest Scotland, will undergo a refit over the next two to three years and may join the saithe fishery, at least occasionally. Aside from saithe, the freezer trawlers fish to a minor extent (one trip per year) off northern Norway (ICES Subareas I and II) for cod from the Arctic stock (*Gadus morhua*), with some by-catch of saithe (retained and sold).

1.3 Unit of certification

The unit of certification defines exactly what is being assessed and certified. It is set out at the beginning of the assessment process (in the Notification Report to MSC).

The unit of certification has been defined as follows: Vessels belonging to the fishing company Euronor, who fish for saithe in the North Sea and north Norway.

In this case, the unit of certification has been defined in terms of the fishing company rather than in terms of individual fishing vessels. This is designed to give Euronor flexibility in terms of replacing or adding vessels to the saithe fishery (as is planned in

regard to the André Leduc and the Cap Saint Georges) such that the landings by these vessels would then be certified, as long as the vessels operated in the same way as the others, and within the conditions of the FAM and the certification report. Note that these two vessels currently fish in ICES Subarea VI. They do not land any saithe, but if they were to land saithe from this area, it would not be certified under the unit of certification as defined here.

1.4 Assessment team and peer reviewers

The assessment team was made up of three experts, each of whom have competences in fisheries assessment, marine ecology and fisheries management – i.e. in each of the three Principles of the MSC standard. All three experts therefore had equal input on the scoring of each PI in each of the three Principles. For the purpose of drafting the rationales and reporting, each member of the team took responsibility for one of the Principles, and their drafts were then reviewed and revised by the other two team members.

The assessment team was composed of the following individuals:

Prof. Jean-Claude Brêthes: Jean-Claude is professor of fisheries science at the Institut des Sciences de la Mer, Université de Québec à Rimouski and an expert in fisheries analysis and stock assessment. He has been involved in two previous MSC assessments – the Gulf of St. Lawrence northern shrimp fishery (2) and the Mauritania mullet (trial assessment) (3). Jean-Claude was responsible for Principle 1.

Dr. Jo Gascoigne: Jo is the Director for Fisheries Certification at MEP and a former research lecturer in marine biology at Bangor University. She has been involved in one previous assessment (Mauritania mullet trial assessment) (3) and one ongoing assessment (northern Menai Strait mussel). Jo was responsible for Principle 2, as well as the Project Manager for the assessment.

Ulf Löwenberg: Ulf is an independent fisheries consultant with many years of experience in fisheries assessment and management in Europe and West Africa. He has been involved in three MSC assessments (German saithe fishery (4), German Baltic herring fishery (5) and Swedish herring and sprat fishery in Skagerrak and North Sea (6)). Ulf was responsible for Principle 3.

The report was peer reviewed by the following individuals:

Dr Colin Bannister: Colin was a senior fisheries scientist at CEFAS (UK national fisheries and marine science laboratory) until his retirement, and has wide experience of MSC assessments and of peer reviewing MSC assessment reports.

Dr Jan Hiddink: Jan is a marine ecologist and lecturer in marine science at the University of Wales Bangor. He is a specialist in fisheries ecology and an expert on the effects of fishing and climate change on marine ecosystems, particularly the North Sea.

Full CVs for all five experts are available on the MSC website.

1.5 Report structure

The report is structured as follows:

Section 1: Introductory material;
Section 2: Background on the species, fishery, catches of target and by-catch species, interactions with ETP species and with other fisheries;
Section 3: The management system;
Section 4: Stock assessment and stock monitoring;
Section 5: The MSC assessment process;
Section 6: The scoring process;
Section 7: Results of the assessment;
Section 8: Certification recommendation and conditions;
Section 9: Chain of custody
Section 10: Peer reviewer reports and responses;
Section 11: References
Annex 1: Assessment tree with references

2. Background to the fishery

2.1 Target species

Saithe (lieu noir, *Pollachius virens*) is a large fish in the cod family (Gadidae). It is distributed across the North Atlantic in the Barents Sea, around Greenland and Iceland, in the North Sea and as far south as the Bay of Biscay and North Carolina (although rare on the edges of this range) (7,8). It is gregarious, and is known to migrate ontogenetically and for spawning. Adult saithe are piscivorous, feeding on smaller fish (8,9).

In the eastern Atlantic, juvenile saithe are distributed in coastal waters – in the fjords on the coast of Norway, for example. They mature age around 3 years, and at the same time migrate offshore where they live as adults roughly between 200 and 400 m depth (9).

2.2 Vessels, gear and fishing operations

2.2.1 Vessels

As discussed above, Euronor has seven vessels, of which five fish for saithe at present. Three of the saithe fishing vessels are freezer trawlers (the Cap Nord, the Klondyke and the Nordic II) and two are fresh fish trawlers (the Bressay Bank and the Halten Bank). Euronor has two other fresh fish vessels which do not currently fish for saithe but which are planned to join the saithe fishery in the next few years following a refit (see ‘Unit of Certification’ above). Another fresh fish trawler, the Cap Saint Jean, who was fishing for saithe, ceased its activity in June 2009. The vessel characteristics are shown in Table 1.

Table 1. Characteristics of Euronor vessels.

	Vessel	Type	Length metres	Gross tonnage
1	Cap Nord	freezer	54.55	1492
2	Klondyke	freezer	54.55	1491
3	Nordic II	freezer	54.25	861
4	Bressay Bank	fresh	44.00	826
5	Cap Saint Jean*	fresh	49.95	822
6	Halten Bank	fresh	54.25	842
7	André Leduc*	fresh	44.15	837
8	Cap Saint Georges*	fresh	44.10	885

*Not currently fishing for saithe

2.2.2 Gear and fishing operations

The gear used to fish for saithe is a standard demersal otter trawl. The trawl mesh size must be at least 110mm¹.

As regards the size and weight of the gear used by Euronor, the otter boards (trawl doors) weigh between 1500 and 2300 kg according to the vessel. For a trawl with 1500 kg doors, the other dimensions are as follows:

- vertical opening ~5.2 m
- horizontal opening ~ 1 m
- trawl held open vertically by 90 four-litre floats (diameter 200 mm)
- Towing speed 4 - 4.2 knots
- Warp line: diameter 24 mm; weight 2.64kg/m
- Upper bridle: length 60 m, diameter 18 mm, weight 1.33 kg/m
- Lower bridle: length 60 m, diameter 24 mm, weight 1.33 kg/m
- Sweeplines: length 60 m, diameter 24 mm, weight 2.072 kg/m
- Rubber bobbins ('rockhoppers'): diameter 550 mm, weight 105 kg

Mean trawling depth is 200-250 m ; towing duration is 4 to 6 hours.

When the bycatch of cod comes within 95% of the quota, Euronor vessels switch from a standard demersal trawl to a "chalut à cordes" (similar to an eliminator trawl (see below). This is a semi-pelagic trawl with ropes in the forepart instead of meshes and using Suberkrub otter boards.

2.2.3 Fishing grounds

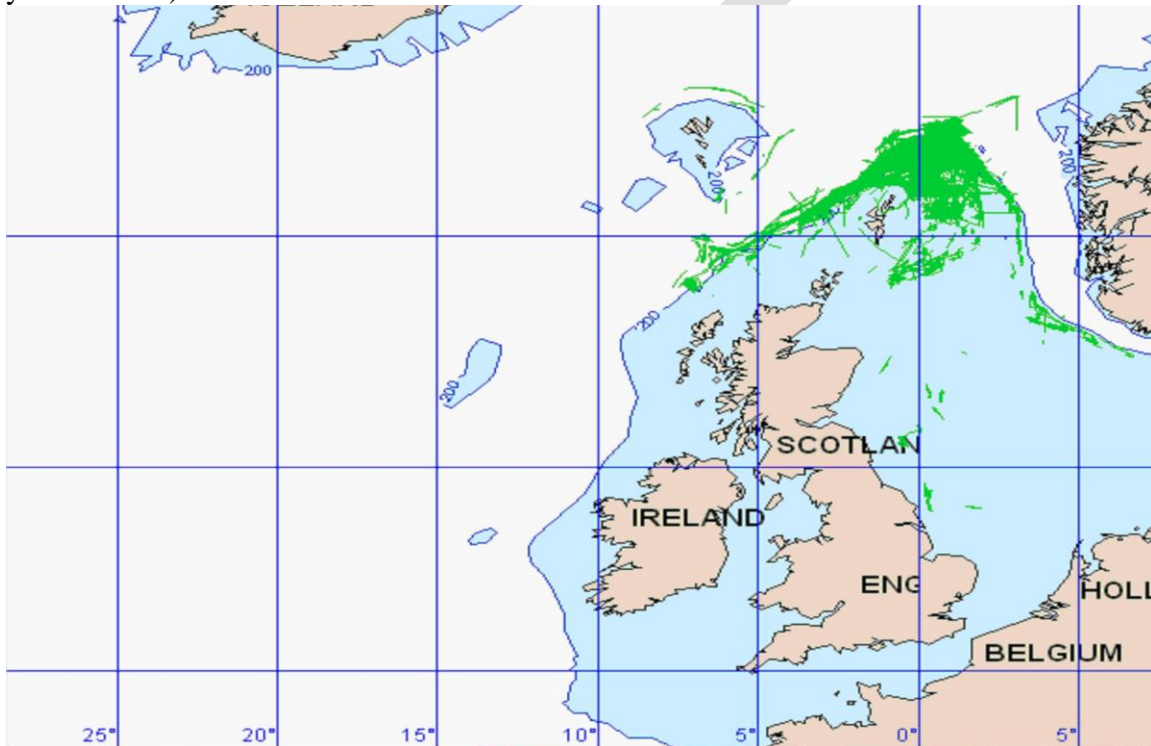
Euronor fisheries for saithe in two distinct fishing grounds: the North Sea and the Arctic (North Norway). The North Sea fishing grounds are situated in ICES Subarea IV (with a small overlap with Division IIb) – this includes both EU (Scottish) and Norwegian

¹ The minimum mesh size in the North Sea is normally 120mm but the targeted saithe fishery has a derogation to use 110mm mesh trawls because it is considered to have low rates of cod by-catch.

waters. The Arctic fishing grounds are exploited only periodically by the freezer trawlers, who have a small quota for cod in this area, with a by-catch of saithe. This is ICES Subareas I and II. The two fishing grounds are separate stocks of saithe – see below (10,11).

The main fishing areas for Euronor vessels in the North Sea are shown in the map below – a compilation of several years of VMS and logbook data gathered by Euronor. Note that current fishing areas may not include all this area.

Figure 1. Main Euronor saithe fishing areas in the North Sea (compilation of several years of data). Data source: Euronor.



The catch is essentially landed at two ports: Boulogne-sur-Mer (France) or Hanstholm (Denmark). The Bressay Bank occasionally lands catch at Lochinver (Scotland).

2.3 Saithe catch

Euronor saithe catches for 2007 and 2008 from the two stocks are shown in Table 2.

Table 2. Catches for each Euronor vessel from each stock area (tonnes) in 2007 (2008 catches were available to the team but not divided by vessel – see below).

	North Sea	Arctic
Cap Nord	1 663	694
Klondyke	2 285	609
Nordic II	2 912	142

Bressay Bank	2 700	0
Cap Saint Jean	3 079	0
Halten Bank	2 683	0
Total*	15 322	1 445

* a small amount of pulp and eggs recorded in logsheets is not included in this total

2.4 Retained species, by-catch and interactions with ETP species

The MSC standard distinguishes between retained species and by-catch, with retained species those that are kept and marketed along with the target species, and by-catch those that are discarded (1). This distinction is important because retained species feature in the logbooks and discarded species do not. In this fishery, nearly all the non-saithe catch is retained and marketed. This fishery has a relatively low proportion of retained / by-catch species in the catch – around 6 % of the catch by volume according to Euronor's figures. However, because of the relatively high tonnage of landings, this can still mean that the catch of the main retained and by-catch species is significant.

Most of the retained species are caught while targeting saithe, but two are sometimes also targeted: i) cod (main target species of Arctic fishery) and ii) redfish (occasional target species).

A list of retained species and their landings by Euronor vessels are shown in Table 3, along with their percentage live weight contribution to the total catch from 2007. Catch data from 2008 was provided to the team and used in the assessment, but is in a form which is more difficult prepare for presentation here. The figures are very similar.

Table 3. Retained species volume by Euronor vessels, 2007. Percentages are calculated on the basis of live weight equivalent. Species are listed in order of size of landings. Cod landings from the Arctic fishery are not included (these are discussed separately below).

Species (French)	Species (English and Scientific)	landings 2007 (kg)	live weight equivalent (kg)	% of total catch (live weight)
cabillaud du stock arctique*	cod <i>Gadus morhua</i> from Arctic stock*	384951	1081712	5.68
églefin	haddock <i>Melanogrammus aeglefinus</i>	191164	318358	1.77
merlu	hake <i>Merluccius merluccius</i>	164312	243019	1.35
sébaste	ocean perche / redfish <i>Sebastes</i> spp.	226088	235539	1.31
lingue franche	ling <i>Molva molva</i>	70312	96923	0.54
merlan	whiting <i>Merlangius merlangus</i>	34145	42646	0.24
cabillaud du stock mer du Nord	cod <i>Gadus morhua</i> from North Sea stock	34965	41731	0.23
flétan noir	Greenland halibut <i>Reinhardtius hippoglossoides</i>	30296	34662	0.19

brosme	tusk or cusk <i>Brosme brosme</i>	21065	32306	0.18
loup	wolfish <i>Anarichas lupus</i>	7442	22326	0.12
cardine	megrim <i>Lepidorhombus</i> spp.	16660	17326	0.096
lotte	monkfish <i>Lophius</i> spp.	2530	9992	0.056
lieu jaune	pollock <i>Pollachius pollachius</i>	3570	5987	0.033
lingue bleue	blue ling <i>Molva dypterygia</i>	4326	5104	0.028
raie	rays Rajidae	1394	1687	0.0094
limande rouge	dab <i>Limanda limanda</i>	1152	1279	0.0071
grenadier	grenadier Macrouridae	816	906	0.0050
loche blanche	forkbeard <i>Phycis phycis</i>	786	880	0.0049
divers	unidentified	665	745	0.0041
flétan de l'atlantique	Atlantic halibut <i>Hippoglossus hippoglossus</i>	227	252	0.0014
roussette	dogfish <i>Scyliorhinus canicula</i>	159	212	0.0012
taupe	porbeagle <i>Lamna nasus</i>	125	167	0.0009
limande sole	lemon sole <i>Microstomus kitt</i>	92	102	0.0006
chien	dogfish <i>Squalus acanthius</i>	47	63	0.0004
rat	roughhead grenadier <i>Macrourus berglax</i> (see also grenadier)	20	22	0.0001

* Main target species of Arctic fishery

By-catch species (those that are discarded) were identified from observer reports (12,13 see below) as the following: Norway pout *Trisopterus esmarkii*, herring *Clupea harengus harengus*, mackerel *Scomber scombrus*, argentine *Argentina* spp. and blue whiting *Micromesistius poutassou*. Of these, the catches of all except Norway pout appear to be negligible. Catches of Norway pout reached ~5 % of total catches on the occasional tow, although in most tows none are caught. Note that observer coverage of this fishery has been relatively sparse up till now, due mainly to the perception that there are no serious environmental issues. In 2009, however, a observer campaign was started, with 5 trips so far, three more planned in 2009 and 12 so far in 2010. At the time of scoring, two observer reports were available, both very recent.

ETP ('endangered, threatened and protected') species are defined by MSC as those which are protected under national law or international treaty (1). On the fishing grounds used by Euronor, these consist of some species of cetaceans, seals and seabirds (14,15). The team could find no evidence any interactions with any of these species.

2.5 Ecosystem context

The North Sea is a semi-enclosed water body, situated on the continental shelf of Northwest Europe. It is relatively shallow (generally <200m) is strongly affected by both saline inflows from the north, and from freshwater inputs from the major rivers of the continent. It is highly productive ecosystem, with primary productivity generally highest

in the south, coastal regions, around the Dogger Bank and at tidal fronts. The North Sea is the focus of a range of human activities, including fishing, dredging, oil and gas exploitation, shipping and as recipient for discharges.

A wide range of information exists on the North Sea ecosystem, including oceanography, plankton, nutrients, benthos, fish distribution and abundance, and the interactions between these components. As regards the interactions of fish species such as saithe within the North Sea ecosystem, feeding habits have been examined using stomach contents data. These studies have been used as the basis for the Multispecies VPA programme developed for the North Sea by the ICES Multispecies Assessment Working Group, which estimates the predation mortalities for nine commercially important fish stocks by key fish species, seabirds and seals. ICES takes these ecosystem-level impacts into account in fisheries assessment and advice (10,11).

2.6 Interactions with other fisheries

In the North Sea, a dozen or so countries report saithe landings (10). Norwegian, German and French fleets take the majority of the catch (10, Table 1); the former two are already MSC certified (4,16). Those fleets prosecute a directed trawl fishery in deep water along the Northern Shelf edge and the Norwegian Trench. The UK fishery is also important (10).

Table 1 – Reported landings of saithe in the North Sea in 2008 (source: ICES² 10)

Country	2008 Reported landings North Sea (tones)
Denmark	8 069
France	15 302
Germany	14 141
Norway	62 055
UK	11 701
Other countries	3 249
Total	114 517

Norway's saithe fishery is by far the most important in the Northeast Arctic (Table 2), and involves a variety of gears (trawls, purse seines, Danish seines, gillnets and handlines). There may be occasional discards in these fisheries (16). Russia also reports some saithe landings and other countries may also land limited amounts (11, Table 2).

Table 2 – Reported landings of saithe in the Northeast Arctic in 2008 (source: ICES³ 11)

Country	2008 Reported landings Northeast Arctic (tonnes)
Faroe Islands	1543
France	302

² ICES Advice 2009, Book 6, Section 6.4.12.

³ ICES Advice 2009, Book 3, Section 3.4.4.

Germany	2766
Norway	166 263
Portugal	335
Russia	11 577
UK	418
Other countries	372
Total	183 443

There are many other fisheries in the northern North Sea and the Arctic, but most do not interact particularly with this fishery. Incidental saithe catches occur in other demersal fisheries and discards may exist in fisheries which do not have a saithe quota (10). Overall, however, scientists consider that those discards are not significant compared to total landings (10).

In the North Sea, the most significant interaction of the saithe fishery is with cod (an important retained species under strict quota control), and the intensity of that interaction is considered as medium⁴ (17). In the Arctic, interaction is considered high with cod (target species) and medium with redfish⁵ (18,19). These fisheries are all considered in detail by the assessment. Interactions with other fisheries are considered as low or non-existent.

3. Management System

3.1 Legislative context

The Euronor saithe fishery takes place in both EU and Norwegian waters, and is managed under an international agreement between the EU and Norway, which has been in force since 1980 (20, Council Regulation 2214/1980). The EU and the Norwegian Government meet annually to review management measures for the fishery and to determine the TAC. Within the EU, the fisheries in managed under the framework of the Common Fisheries Policy (CFP). EU Regulation 2731/2002 (21) sets out the framework and objectives for the CFP, and enables the Commission regulate individual fisheries. The principal regulations relevant to the saithe fishery are i) the annual TAC and national quotas (22); ii) technical measures such maximum trawl mesh sizes and minimum landing sizes (22); and iii) those associated with the North Sea Cod Recovery Plan (23).

3.2 Organisations involved in management

Several organisations are involved in the management of this fishery :

- ICES is responsible for assessing the stock and giving scientific advice on management and the level of the TAC (see below)

⁴ ICES Advice 2008, Book 6, section 6.3.2.

⁵ ICES Advice 2008, Book 3, section 3.3.2.

- The North Sea RAC (Regional Advisory Council) is the stakeholder group for North Sea fisheries, which provides an opinion to the European Commission on management measures (see below)
- The European Council of Ministers makes the final decision on the management of the fishery (TAC, regulations), based on a proposal from the European Commission, that follows prior negotiations between the Commission and Norway (shared stock)
- The Ministère de l'Alimentation, de l'Agriculture et de la Pêche is responsible for dividing up the French quota to Producer Organisations (note however that it retains ownership of the quota on behalf of the French nation)
- Euronor belongs to the Producer Organisation FROM Nord, from which it obtains quota

3.3 Harvest control rules and tools

The main management measure for the saithe stocks is control of harvest via an annual TAC, which is divided into quotas for each fishing company. The TAC and quotas are set as follows:

1. For each stock, ICES provides scientific advice on the status of the stock. The ICES Advisory Committee proposes a total allowable catch (TAC) selected from a range of TAC options, including those that are consistent with the precautionary approach and the EU-Norway management plan. This is done on an annual basis.
2. The final TAC is decided by the European Council of Ministers following annual negotiation between the Commission and Norway, and taking into account any implementation of the EU rule restricting the change in TAC between years to 15%. They are not obliged to follow ICES' advice; however, since 2001 the TAC for saithe has been set at or slightly below the level proposed by ICES (10,11).
3. This TAC is divided between the EU and Norway by negotiation.
4. The EU TAC is then divided between Member States. In 2009, France received a TAC of 31 035 tonnes from the EU allocation (22).
5. The French quota is divided up by the French Government (Ministère de l'Alimentation, de l'Agriculture et de la Pêche). In 2009, of the 31035 tonne quota, 5 492 tonnes were exchanged, and the rest (25 543 tonnes) was allocated to two Producer Organisations. The organisation FROM Nord, of which Euronor is a member, received a quota of 23 658 tonnes, all of which went to Euronor.

There are also other management regulations on EU saithe fisheries, which are set by regulation by the EU under the framework of the CFP and the EU-Norway management plan (22). There is a minimum size limit of 37cm for saithe in EU waters and 40cm in Norwegian waters. The trawl mesh size must be at least 110mm (a derogation from the standard 120mm for this fishery because of low cod by-catch). There are also management measures in the fishery associated with the Cod Recovery Plan – these include quotas, effort limitations and real-time closures in areas where high cod catches are reported. These last are a UK initiative applying to the UK (Scottish) part of EU waters (in the case of this fishery, nearly all the EU waters are Scottish waters), and for

the moment only UK vessels are obliged to respect them, although in practice they are usually respected by all vessels: they are always respected by Euronor vessels. In any case, from 2010 they will be mandatory for all EU vessels.

3.4 Management plan and objectives

The North Sea saithe stock has management objectives defined by a management agreement between the EU and Norway. The specific objectives defined in this plan are the following : i) spawning stock biomass (SSB) to be maintained above 106 000 tonnes ; ii) exploitation at $F = 0.3$ when the stock is above B_{pa} (10). The management plan and these objectives was evaluated by ICES in 2008 and was considered to be consistent with the precautionary approach in the short term. A review of the management plan shall take place no later than 31 December 2012 (24).

For the north Norway stock, management objectives are set by the Norwegian Ministry of Fisheries and Coastal Affairs (11 - Annex). Their stated objectives for the management of this stock are to maintain i) high long-term yield, ii) year-to-year stability and iii) full utilization of all available information on the stock dynamics in the development of management strategies (25). Specifically, the plan aims to maintain target F at F_{pa} (the precautionary reference point for fishing mortality) and minimize between-year changes in the TAC to 15%, unless SSB falls below B_{pa} (precautionary reference point for SSB) in which case the management targets should be adjusted to rebuild the biomass above B_{pa} . ICES evaluated this management strategy in spring 2007 and concluded that it is consistent with the precautionary approach, as long as estimates of uncertainty are appropriate (11).

3.5 Regulation and enforcement

Management and control over the fishery is maintained by a variety of different methods:

Logbooks: The main means of keep track of catches is via vessel logbooks, which all vessels >10m in EU and Norwegian waters are required to complete. The logbooks record all catches of all retained species on a daily basis. There are, however, two sources of imprecision in the logbook data; firstly, weight of catches on board are estimated rather than measured; and secondly the weight of each species is only measured on board after the fish have been gutted, a multiplication factor being applied to correct for live weight. The first source of imprecision is corrected later using sales records, as long as the catch is sold in the EU (as it is in this case) – official EU catch statistics include this correction but the raw logbook data does not. (The Euronor catch data presented above and to the expert team also included this correction.) In the second case, the multiplication factor may often be somewhat conservative, meaning that live weight of landings may be slightly overestimated.

VMS: All the vessels in this fishery are tracked by a satellite vessel monitoring system which provides their position every two hours to the relevant authorities (i.e. to the Norwegian authorities in Norwegian waters and to the relevant national authority plus

Brussels in EU waters). These satellite tracks can be cross-referenced to the logbook data to ensure that logbooks have been completed correctly. It is possible to assess by the track (speed, changes in direction) whether or not a vessel is fishing at any given point.

Marine controls: In EU waters (Scottish in this case), the frequency of marine controls has been increasing steadily but is still at a relatively low level. In Norwegian waters, controls at sea are reported to be frequent and thorough.

VHF controls: Vessels fishing in British waters are frequently contacted via radio and are requested to transmit information on catches and fishing grounds.

Observers: Euronor has been participating in a French government observer programme in 2009 (observers had been present on two trips by the Bressay Bank at the time of scoring) – see 12,13. Before 2009, however, observer coverage of the saithe fishery was low, reflecting a perception that it is not a priority fishery for scientific study because there are no particular concerns about the stock or the impacts of the fishery.

Quayside controls: Vessels landing fish in the EU (as these vessels do) must submit to controls on the catch during landing. A vessel must land at a designated port and must provide 4 hours warning to authorities in the relevant port (in this case either Boulogne or Hanstholm in Denmark) so that they can mobilise to check the catch.

4. Stock assessment

4.1 Definition of stocks and management units

Northeast Atlantic saithe populations consist of several components. For assessment and management purpose, four units (therefore considered *de facto* to be separated stocks) are considered:

- Iceland and West Greenland (ICES Division Va) (26);
- Faroe (ICES Division Vb) (27);
- Northeast Arctic (ICES Subareas I – II) (11);
- North Sea (ICES Division IIIa - Subareas IV and VI) (10,28).

The separation between the two latter is set at the latitude 62°N, even if exchanges occur between the two units.

The majority of the catches by the Euronor fishery take place on the North Sea stock. A small amount takes place on the north Norway (Northeastern Arctic) stock.

4.2 Monitoring and stock assessment system

The monitoring of stock status is based on fisheries-dependent data (Catch Per Unit Effort, CPUE) and fisheries-independent data (scientific surveys). Time series of CPUE are derived from logbook data, which are crosschecked by dockside monitoring and by sales records. For the North Sea stock, two scientific surveys are carried out (29):

1. the Norwegian acoustic survey collects data on fish with an age range of 3-6, and has been operating annually since 1995 (“NORACU”)
2. the North Sea International Bottom Trawl Survey (IBTS) collects data on fish ages 3-5, and has operated each autumn since 1991 (“IBTSq3”).

For the Northeast Arctic stock, an acoustic survey carried on by Norwegian scientists is used to validate CPUE data. This survey started in 1994 and covers fish up to age 7 (30).

Basic biological data (length, weight, otoliths for age reading) are collected from sampling of landings. Other data (i.e., age at maturity, fecundity, etc.) are gathered on a less regular basis, either during trawl surveys or with specific sampling programs.

ICES assesses the stocks using an age-based model called XSA, which is calibrated using both fisheries-dependent data (i.e. the CPUE time series) and fisheries-independent data (survey indices as above). A stock assessment is made every year by the Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak (WGNSSK) and the Arctic Fisheries Working Group (AFWG) from ICES. Assessments are peer reviewed by the ICES Review Group and the Scientific, Technical and Economic Committee for Fisheries (STECF). (29,30). The main limitations on the modelling process relate to the use of commercial CPUE time series, which may not track stock abundance reliably. Nonetheless, retrospective analysis suggests that the assessment for the North Sea stock is robust; there are more concerns about medium and long term forecasts for the Arctic stock.

For each stock, both target and limit reference points are defined as set out in Table 3 below.

Table 3 - ICES reference points and their definitions (10,11).

Reference point	Definition	Type
B_{lim}	The stock biomass (B) should be maintained above this level according to the management plan and to the precautionary approach.	limit
F_{lim}	The rate of fishing mortality that is estimated to lead to the stock biomass falling below B_{lim} in the long term	limit
B_{pa}	A precautionary reference point, from which the spawning stock biomass has only a small risk of dropping below B_{lim}	limit
F_{pa}	The rate of fishing mortality which maintains an equilibrium stock biomass greater than B_{pa} , with a probability of <10% that it will fall below B_{pa}	limit
F_{mgt}	The rate of fishing mortality defined in the management plan as the maximum permissible when the stock biomass is above B_{pa} . Assuming the stock is above B_{pa} , the current	target

	estimated stock biomass is multiplied by this rate of fishing mortality to calculate the proposed TAC ⁶ .	
--	--	--

An appropriate value for these reference points is re-evaluated each year by ICES, as is the status of the stock in relation to them. At present they are as follows :

Table 4 - Limit and target reference points for each stock (10,11).

	North Sea stock	North Norway stock
B _{lim}	106 000 tonnes	136 000 tonnes
F _{lim}	0.6	0.58
B _{pa}	200 000 tonnes	220 000 tonnes
F _{pa}	0.4	0.35
F _{mgt}	0.3	0.35*
most recent estimated SSB	263 377 tonnes	689 583 tonnes
most recent estimated F	0.29 (average 2006-8)	0.20 (2008)

4.3 Current status of stocks and recruitment

ICES defines the North Sea stock at present as sustainably harvested. It considers that the stock is at full reproductive capacity, and that fishing mortality is appropriate in relation to the productivity of the stock and the agreed target mortality. The stock biomass is estimated to have been above the precautionary reference point since 1998, and the fishing mortality to have been below the precautionary target reference point since 1997. The most recent estimate of spawning stock biomass (SSB) was in 2009 and the most recent estimate of fishing mortality was in 2008 (10).

ICES also defines the Arctic stock as sustainably harvested. It considers the stock to be at full reproductive capacity, with fishing mortality appropriate in relation to maximum yield as well as to the target mortality for the stock. Fishing mortality is stable and has been below the precautionary target reference point since 1996. The SSB has been well above the precautionary reference point since 1994 (11).

These analyses, plus the fact that juvenile saithe are not exploited due to their habitat preferences (in coastal waters such as fjords – 9), suggest that recruitment is not likely to be affected by fishing, with fluctuations in recruitment likely to be due to environmental factors (an issue with nearly all fisheries). However, the non-exploitation of juveniles, while obviously a benefit for stock conservation, means that there is no fisheries dependent data for the 1-3 year ages classes, making direct scientific assessment of recruitment difficult. The stock assessment model, however, estimates the size of each age cohort; however this is done only retrospectively once the cohort has entered the fishery (i.e. round about 4 years) (10). For the North Sea stock, the most recent cohort for

⁶ In fact it's a little more complicated than that, but that's the general principle.

which the biomass has been estimated is thus the 2004 cohort, which is considered to be among the strongest in the last 20 years; although since 1987, recruitment has been on average low (in common with other gadoid stocks) (10). It is reported (see Peer Review Reports below) that recruitment in 2008 was low. For the Arctic stock, recruitment in 2002 was estimated to be the highest in the time-series, while 2003 was the lowest (11).

5. Fishery evaluation process

5.1 MSC standard and methodology

This assessment follows the Fisheries Assessment Methodology and Guidance (FAM), version 1, from June 2008 (the most recent version at the time of evaluation). The FAM sets out the MSC Standard against which the fishery is assessed, as well as setting out the assessment methodology and providing definitions of key terms (1).

The MSC Standard is composed of three Principles, as follows:

- **Principle 1:** A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery;
- **Principle 2:** Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.
- **Principle 3:** The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

Each Principle is divided into a series of Performance Indicators (PIs). Each PI can be either related to ‘outcome’ (i.e. the current situation in regard to the element described in the PI), ‘management’ (i.e. the management objectives, strategy or rules for that element) or ‘information’ (i.e. the available knowledge about that element). The structure of the FAM and the PIs for each Principle are shown in Table 5.

Table 5 - The PIs for each Principle within the FAM (1).

Prin- ciple	Compo- nent	PI number	PI
1	Out- come	1.1.1 Stock status	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing
		1.1.2 Reference points	Limit and target reference points are appropriate for the stock
		1.1.3 Stock rebuilding*	Where the stock is depleted, there is evidence of stock rebuilding

	Management	1.2.1 Harvest strategy	There is a robust and precautionary harvest strategy in place
		1.2.2 Harvest control rules / tools	There are well defined and effective harvest control rules in place
		1.2.3 Information / monitoring	Relevant information is collected to support the harvest strategy
		1.2.4 Assessment of stock status	There is an adequate assessment of the stock status
2	Retained species	2.1.1 Outcome	The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species
		2.1.2 Management	There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species
		2.1.3 Information	Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species
	By-catch	2.2.1 Outcome	The fishery does not pose a risk of serious or irreversible harm to the by-catch species or species groups and does not hinder recovery of depleted by-catch species or species groups
		2.2.2 Management	There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations
		2.2.3 Information	Information on the nature and amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch
	ETP species	2.3.1 Outcome	The fishery meets national and international requirements for protection of ETP species. The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species
		2.3.2 Management	The fishery has in place precautionary management strategies designed to: - meet national and international requirements; - ensure the fishery does not pose a risk of serious or irreversible harm to ETP species; - ensure the fishery does not hinder recovery of ETP species; and - minimise mortality of ETP species
		2.3.3 Information	Relevant information is collected to support the management of fishery impacts on ETP species, including: - information for the development of the management strategy; - information to assess the effectiveness of the management strategy; and - information to determine the outcome status of ETP species
	Habitats	2.4.1 Outcome	The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function
		2.4.2 Management	There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types
		2.4.3 Information	Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types
	Eco-	2.5.1 Outcome	The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function

3	systems	2.5.2 Management	There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function
		2.5.3 Information	There is adequate knowledge of the impacts of the fishery on the ecosystem
	Governance and policy	3.1.1 Legal / customary framework	The management system exists within an appropriate and effective legal and/or customary framework which ensures that it: - Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; - Observes the legal rights created explicitly or by custom of people dependent on fishing for food or livelihood; and - Incorporates an appropriate dispute resolution framework
		3.1.2 Consultation, roles and responsibilities	The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties.
		3.1.3 Long term objectives	The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach
		3.1.4 Incentives for sustainable fishing	The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing
	Fishery-specific management system	3.2.1 Fishery-specific objectives	The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2
		3.2.2 Decision-making processes	The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives
		3.2.3 Compliance and enforcement	Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with
		3.2.4 Research plan	The fishery has a research plan that addresses the information needs of management
		3.2.5 Management performance evaluation	There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system

* Only scored when evidence that stock is depleted – not scored in this case.

For each PI, there are three Scoring Guideposts (SGs). The lowest SG corresponds to a minimum requirement for certification, under the condition that the situation can be improved; the middle SG corresponds to a minimum requirement for certification without conditions, while the highest SG corresponds to an optimal or 'perfect' scenario. These three SGs are assigned scores of 60, 80 and 100. The consequences for each score are set out in Table 6 below.

Table 6 - Categories of score for a PI, and the consequences of a given score for the overall outcome of certification (1).

Score	Consequence
-------	-------------

< 60	If even one PI scores < 60, certification cannot be awarded
60 – 80	Certification is possible but with conditions: performance under any PI scoring between 60 and 80 must be improved to at least the 80 level within a time period specified by the assessment team
80 – 100	If all PIs score 80 or above, certification will be achieved without any conditions

Note that this assessment methodology (the FAM) differs from the methodology used in assessments prior to mid-2008, because PIs and SGs were previously defined by the CB. They are now set out in the FAM, and cannot be altered except under exceptional circumstances (they have not been altered in this case).

The full set of PIs and SGs are set out in the assessment tree for this fishery, with the scores given for each PI and a detailed rationale for each score according to the SGs. The assessment tree is provided in Annex 1 of this report. The scores are also summarised in Section 7.

5.2 Assessment process

The steps to follow in the assessment process are set out by MSC in the Fisheries Certification Methodology (most recent version Version 6, September 2006). In summary, these steps are as follows:

1. Pre-assessment
2. Full assessment step 1: Preparation. This phase forms the start of the formal assessment process, and includes i) the formal notification of the assessment to MSC, stakeholders and public; ii) the selection and approval (including the possibility of stakeholder input) of team of experts and iii) selection of the appropriate assessment methodology (usually the FAM)⁷.
3. Full assessment step 2: Data gathering and evaluation. In this phase the fishery is assessed using data from a variety of sources including: i) published and unpublished scientific data, reports and other similar sources; ii) a site visit by the expert team; and iii) stakeholder consultations via face-to-face interview, phone or email. On the basis of the information gathered, the fishery is scored against the standard (using the FAM). A preliminary assessment report is produced, which is reviewed by the client and by two external peer reviewers. The resulting Draft Certification Report and Draft Certification Determination is then made available for stakeholder comment.
4. Full assessment step 3: Final report and objections procedure. In this phase, the CB produces a Final Report which must present and respond in full to all comments by reviewers and stakeholders. The Final Report is made available on the MSC website, and stakeholders are given the opportunity to object formally to the determination made by the CB. If such objections are received, the CB must respond in detail to the objector and to MSC. A final determination decision is then made.

⁷ It is possible to use an alternative assessment methodology known as the Risk-Based Framework (RBF) for some elements of the standard. The RBF was not used for this assessment.

5. Ongoing review of certification. A certified fishery is audited every year and re-assessed every five years.

The publication of this Draft Public Certification Report on the MSC website marks the end of step 3 of the assessment process for this fishery.

5.3 Assessment of Euronor saithe fishery

Pre-assessment: MEP prepared out a pre-assessment study of the Euronor saithe fishery in January 2009. The outcome of the pre-assessment led Euronor to decide to apply for MSC certification. The intention to proceed with full assessment was announced by MEP on the MSC website on 23 February 2009.

Full assessment: The proposed assessment team was nominated by MEP on the MSC website on 26 February 2009 and confirmed on 9 April 2009. No comment or objections were received about the composition of the team. The team concluded that it would be appropriate to use the FAM for this assessment (see above), and this was announced by MEP on 29 April 2009. The site visit and scoring meeting took place on 9-12 June 2009, in Boulogne-sur-Mer. The peer reviewers were nominated by MEP on August 7 and approved on August 17. The draft public certification report was returned after review by the client on date 28 September and by the peer reviewers on 12 and 15 October.

5.4 Stakeholder consultations

As well as making announcements and documents available via the MSC website, as required by the MSC assessment process, MEP twice made direct contact with key stakeholders, to ensure that they were aware that the assessment was taking place and that they had the opportunity to comment or objective to any part of the process. This process of contact was conducted primarily by email, backed up by telephone when there was difficulty in making contact by email. The first set of contact letters was sent out on 23 February 2009 and announced the imminent start of the assessment. The second set was sent out on 5 May 2009 and announced the details of the site visit.

The following stakeholder organisations were contacted in this way:

- ICES Working Group on the Assessment of Demersal Stocks in the North Sea and Skagerrak
- IFREMER (French marine science and fisheries assessment organisation)
- Norwegian Ministry of Fisheries and Coastal Affairs
- Scottish Government: Fisheries Group, Environment and Rural Affairs Department
- Scottish Fisheries Protection Agency
- Comité National des Pêches Maritimes et des Elevages Marins (CNPMEM) (French national organisation representing marine fisheries and aquaculture)
- Direction des Affaires Maritimes, Ministère de l'Ecologie, de l'Energie, du Développement durable et de la Mer

- North Sea Regional Advisory Council (RAC) Secretariat (North Sea fisheries stakeholder organisation)
- FROM Nord (Producer Organisation)
- Union des Armateurs de Pêche Français (UAPF) (French Union of Fishing Vessel Owners)
- WWF France

During the site visit, a series of stakeholders were met and interviewed by the team, as shown in Table 7.

Table 7 - Stakeholders interviewed by the team during the site visit.

Name	Affiliation	Position
Bruno Leduc	Euronor	Deputy Director
Jean-Paul Delpech	IFREMER	Head of Fisheries Resources Laboratory
Franck Coppin	IFREMER	Researcher – Fisheries Resources Laboratory
Gildas Dubois	Boulogne-sur-mer auction	Deputy Director
Caroline Gamblin	Comité National des Pêches et des élevages marins CNPMEM	Chargée de mission
Delphine Roncin	Comité Régional des Pêches et des élevages marins CRPMEM	General Secretary
Eamon Mangan	Direction Régionale des Affaires Maritimes	Administrateur des Affaires Maritimes charged with fisheries control and enforcement
Laurent Nicolle	FROM Nord (Producer Organisation)	Deputy Director
Nigel Atkins	Marr Management, UK	Managing Director

One stakeholder comment was received by telephone, from the Scottish Fisheries Protection Agency.

6. Scoring

6.1 Scoring methodology

Each PI is scored with reference to the three scoring guideposts (SGs) (see above). Initially, each member of the assessment team scored each of the PIs independently, using the dossier of information provided by the client. During the site visit and scoring meeting, each PI was discussed in the light of additional information received from

stakeholders during the site visit. The score and rationale put forward by each team member was considered and a joint score arrived at.

An employee of MSC and two employees of ASI were present to observe the scoring (Maylynn Engler - MSC, Phil Crocombe - ASI, Sönke Fischer - ASI). Scores between 60 and 80 or between 80 and 100 were arrived at by a semi-quantitative method. For example, if the fishery achieves all the elements set out in SG 80, but only some of the elements in SG 100, the fishery would have been scored as shown in Table 8.

Table 8 - Example of how the team decided on a score between 80 and 100 (the same principle would apply to a score between 60 and 80, as well as to SG with different numbers of elements).

Number of elements in SG 100 achieved by the fishery, out of four	Score	Number of elements in SG 100 achieved by the fishery, out of five	Score
0	80	0	80
1	85	1	80
2	90	2	85
3	95	3	90
4	100	4	95
		5	100

6.2 Issues in interpreting the FAM

Despite advice from MSC, the team had to make some decisions about interpreting elements of the FAM in this case (all from Principle 2). These elements are set out below, along with the team's decision on how they should be interpreted for this fishery. MEP particularly welcomes comments on the decisions that the team made in these cases.

Retained vs. by-catch species: The FAM makes a distinction between 'retained species' (species which are not targeted but if caught are retained and sold), and 'by-catch' species (species which are discarded if caught). In practice, in this fishery, the same species may sometimes be retained and at other times discarded. This may happen if, for example, there is a minimum size limit (e.g. cod, haddock). A very small catch from one tow (one or a few individuals) may be discarded, while a larger catch from one tow may be retained, for practical reasons. The team decided for simplicity to define all species which are ever retained as 'retained species' (i.e. these species are considered under PIs 2.1.1, 2.1.2 and 2.1.3) and to define only those few species which are never retained as 'by-catch' (i.e. to be considered under PIs 2.2.1, 2.2.2 and 2.2.3). It is theoretically possible that this would make a difference to the overall score (i.e. if all the low scoring elements were assessed under the same set of PIs vs. under several sets of PIs), although it is unlikely it has made any difference in this case.

'Main' retained or by-catch species: For the PIs on retained and by-catch species, SGs 60 and 80 make reference to 'main' retained or by-catch species. The FAM defines 'main'

as follows: *‘a species that comprises less than 5% of the catch by weight may normally be considered to be a minor species, i.e., not ‘main’, in the catch, unless it is of high value to the fisher or of particular vulnerability, or if the total volume of the fishery is large, in which case even 5% may be a considerable catch.’*

In this case, while there was no species that regularly comprised >5% of the overall catch, this is a relatively high volume fishery. The team therefore felt that some retained species below the 5 % threshold should nonetheless be considered ‘main species’.

The team use the following decision criteria to decide which species should be considered main retained species:

1. The species was a secondary target species;
OR
2. Euronor landings in 2007 and 2008 comprised a significant proportion of the EU quota (note that the team did not define ‘significant proportion’ in a precise quantitative way, although ~10 % was the approximate cut-off point.);
OR
3. Euronor landings are non-trivial AND the stock is considered by ICES to be overfished, or to have a biomass below the limit reference point or fishing mortality above the limit reference point, or there is some other cause for concern about the status of the stock (note that the team did not define ‘non-trivial’ in a precise quantitative way, but it was considered relative to known or estimated total landings or to ICES advice).

Retained species outcome PI (2.1.1) vs. management PI (2.1.2): For both these PIs, SG 80 requires that there is a ‘partial strategy’ in place either to maintain the main retained species within biologically-based limits or to ensure that the fishery does not hinder recovery. The team was concerned in scoring against this guidepost not to score the same issue twice in PI 2.1.1 and PI 2.1.2. The team decided that while PI 2.1.1 (an outcome PI) refers the status and hence management of the stock of retained species, PI 2.1.2 (a management PI) refers to the management of the impacts of the fishery on these species or stocks. They were thus given different scores in relation to the ‘partial strategy’ – i.e. what comprises a ‘partial strategy’ at the level of the fishery may not be sufficient at the level of the stock. (The same issue applies to PIs 2.2.1 and 2.2.2 on by-catch, although it was less problematic in this case.)

Definition of ETP species in the FAM: ETP (‘endangered, threatened and protected’) species are defined by MSC in the FAM as follows: *‘Endangered, threatened or protected species are those that are recognised by national legislation and/or binding international agreements (e.g. CITES) to which the jurisdictions controlling the fishery under assessment are party.’* (1)

The MEP team would like to note here that they were not happy with this definition, since it seems to encompass only the ‘protected’ element of ‘endangered, threatened and protected’. If this is the intent of MSC, the team was of the opinion that ‘ETP species’ should be changed to ‘protected species’ in future versions of the standard. However, the team would also like to note that it would have liked more scope to consider species such

as some rays and sharks that are IUCN listed but not formally protected by national or international legislation (at least as would apply to this fishery). In practice, the team discussed at length the possibility of impacts on these species from this fishery, and concluded that there is no evidence that this fishery poses a threat to these species; this, however, is not reflected in the assessment tree or scoring anywhere. For future assessments MEP is concerned that there is a real risk that important issues and impacts could be excluded by this definition. MEP would like to propose that the definition be widened such that factors such as listing by IUCN or under national Biodiversity Actions Plans or similar non-legislative instruments could be included where appropriate.

6.3 Weighting

The FAM sets out how the score of each PI should be weighted. The weighting ensures that overall scores for each Principle are equally important in the overall score. Within each Principle, each component is weighted equally. Within each component, each PI is weighted equally. The aggregate score for each Principle, and the overall score, is thus a weighted average of the scores for each PI. The overall weighting is shown in Figure 1.

Figure 1. Weighting of Principles, components and PIs in the FAM (1). The alternative weightings for Principle 1, Component 1 depend on whether PI 1.1.3 is scored or not – in this case it was not so the first alternative was used.

Principle	Weight Level 1	Component	Weight Level 2	PI No.	Performance Indicator	Weight Level 3	Weight in Principle			
One	1	Outcome	0.5	1.1.1	Stock Status	0.5	0.25	0.333	0.1667	
				1.1.2	Reference Points	0.5	0.25	0.333	0.1667	
				1.1.3	Stock Rebuilding	--	--	0.333	0.1667	
		Management	0.5	1.2.1	Harvest Strategy	0.25	0.125			
				1.2.2	Harvest Control Rules & Tools	0.25	0.125			
				1.2.3	Information & Monitoring	0.25	0.125			
				1.2.4	Assessment of Stock Status	0.25	0.125			
				Two	1	Retained species	0.2	2.1.1	Outcome	0.333
2.1.2	Management	0.333	0.0667							
2.1.3	Information	0.333	0.0667							
Bycatch	0.2	2.2.1	Outcome			0.333	0.0667			
		2.2.2	Management			0.333	0.0667			
		2.2.3	Information			0.333	0.0667			
ETP species	0.2	2.3.1	Outcome			0.333	0.0667			
		2.3.2	Management			0.333	0.0667			
		2.3.3	Information			0.333	0.0667			
Habitats	0.2	2.4.1	Outcome			0.333	0.0667			
		2.4.2	Management			0.333	0.0667			
		2.4.3	Information			0.333	0.0667			
Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667					
		2.5.2	Management	0.333	0.0667					
		2.5.3	Information	0.333	0.0667					
Three	1	Governance and Policy	0.5	3.1.1	Legal/Customary Framework	0.25	0.125			
				3.1.2	Consultation, Roles & Responsibilities	0.25	0.125			
				3.1.3	Long Term Objectives	0.25	0.125			
				3.1.4	Incentives for sustainable fishing	0.25	0.125			
		Fishery Specific Management System	0.5	3.2.1	Fishery Specific Objectives	0.2	0.1			
				3.2.2	Decision Making processes	0.2	0.1			
				3.2.3	Compliance & Enforcement	0.2	0.1			
				3.2.4	Research Plan	0.2	0.1			
				3.2.5	Management	0.2	0.1			
					Performance Evaluation					

7. Assessment results

This section summarises the results of the assessment of the Euronor saithe fishery. The full assessment tree with scores and rationales for each PI is in Annex 1 of this report.

7.1 Overall results

The scores for each Principle (calculated as described above) are shown in Table 9.

Table 9 - Scores for each Principle for the Euronor saithe fishery assessment.

Principle	Aggregate score
Principle 1	90.6
Principle 2	82.7
Principle 3	88.1
Overall	87.3

7.2 Principle 1

The scores for each PI, and the aggregate score for each component for Principle 1 are shown in Table 10.

Table 10 - Scores for each PI, and aggregate scores for each component for Principle 1 for the Euronor saithe fishery.

Component	PI	Score
<i>Outcome</i>		92.5
	Stock status	95
	Reference points	90
	Stock rebuilding	N/A
<i>Harvest strategy (management)</i>		88.8
	Harvest strategy	90
	Harvest control rules and tools	90
	Information/monitoring	85
	Assessment of stock status	90

7.3 Principle 2

The scores for each PI, and the aggregate score for each component for Principle 2 are shown in Table 11.

Table 11 - Scores for each PI, and aggregate scores for each component for Principle 2 for the Euronor saithe fishery.

Component	PI	Score
<i>Retained species</i>		80
	Outcome	80
	Management	80
	Information	80
<i>By-catch</i>		81.7

	Outcome	80
	Management	85
	Information	80
<i>ETP species</i>		80
	Outcome	80
	Management	80
	Information	80
<i>Habitat</i>		85
	Outcome	80
	Management	90
	Information	85
<i>Ecosystem</i>		86.7
	Outcome	85
	Management	80
	Information	95

7.4 Principle 3

The scores for each PI, and the aggregate score for each component for Principle 3 are shown in Table 12.

Table 12 - Scores for each PI, and aggregate scores for each component for Principle 3 for the Euronor saithe fishery.

Component	PI	Score
<i>Governance and policy</i>		86.3
	Legal and/or customary framework	90
	Consultation, roles and responsibilities	95
	Long term objectives	80
	Incentives for sustainable fishing	80
<i>Fishery-specific management system</i>		90.0
	Fishery-specific objectives	90
	Decision-making process	90
	Compliance and enforcement	100
	Research plan	80
	Monitoring and management performance evaluation	90

8. Draft Certification Recommendation

8.1 Recommendation

The fishery is recommended for certification under the MSC programme, having met the following criteria:

- Each Principle has an aggregate score higher than 80;
- No individual PI has a score below 60

8.2 Conditions

No individual PI scored below 80. There are therefore no conditions imposed on this certification.

9. Chain of custody

This report is required to define the point at which (assuming the fishery is certified) the chain of custody will start. The chain of custody may start either at the point of capture or at the point of offloading and first sale, depending on the fishery.

In this case, all saithe caught by Euronor will be certified MSC – i.e. there is no risk of certified saithe and non-certified saithe coming into contact on board fishing vessels. Saithe is separated from other retained species on capture, and packaged and labelled separately on board. There is some processing on board (e.g. gutting and some filleting) but there is no block freezing of mixed species, surimi manufacture or any other kind of processing which is considered likely to result in a risk of saithe being mixed with other species.

The MEP team considered it unlikely that other species would be landed as saithe by Euronor vessels, for two reasons: i) saithe is not the most valuable species landed by Euronor; and ii) all the enforcement authorities interviewed by MEP for this assessment have emphasised that Euronor has an excellent record of abiding by all the regulations, and it seems unlikely that Euronor would risk this record for a financial gain which would be likely to be relatively trivial (since ~95% of their landings are saithe).

The MEP therefore concluded that the chain of custody should start at point of first sale rather than at point of capture.

10. Peer reviewer reports

10.1 Report of Peer Reviewer 1

The report of Peer Reviewer 1, Dr. Jan Geert Hiddink of Bangor University, UK, is presented below in full, with responses from the MEP team in boxes.

Review of Public Certification Report Euronor saithe (*Pollachius virens*) fishery

JG Hiddink, Bangor University

In general, this report is well presented and well argued. Most relevant information is present, and it is particularly commendable that the scoring in Annex 1 is very clearly justified. I do however have several concerns that largely relate to P2.

In order to assess the impact of this fishery on the wider ecosystem, it is important to have a good idea of the fishing gear used, the areas fished, and the intensities of fishing. I think the report should include a description of the trawl gear used, including the length of the groundrope, length of the bridles, weight and size of the otter doors, trawling speed and trawl duration. In addition to this, a map is needed that indicates where trawling occurs and at what intensities, and over what bottom types and depths.

We agree. The information on the trawl and the map of fishing zones has been inserted in section 2.2. Note that the team saw an example of the gear during the site visit – this informs the scoring under PIs 2.4.1, 2.4.2 and 2.4.3 in particular.

All this information is needed for the assessment of point 2.4 and 2.5. The assessment report argues that, although the otter trawls that this fishery uses damage seafloor habitats, this additional damage that this fishery causes on top of the damage done by past and other fisheries is small. I have two problems with this argument.

Firstly, such reasoning would allow the certification of all individual vessels in a fishery where all vessels together cumulatively seriously harm the habitat, but it would not allow certification of the fishery as a whole. I.e. in such a fishery, individual vessels are unlikely to do additional serious harm to the habitat, while the whole fishery does. This does not seem right to me and surely must be against the spirit of the MSC.

The argument presented by the reviewer is incorrect as much as an assessment of an individual vessel still needs to consider the habitat impacts of the fishery as a whole – as per the definition of ‘fishery’ given in regard to Principle 2 in the FAM. However, it is true to say that the convention of MSC assessment to date is to allow certification in cases where the habitat has previously been damaged by trawling – in the case of the North Sea many, many years of trawling – such that current trawling operations by a given fishery do not do much further damage over what has already been done. Philosophically MEP agrees that this is problematic. However, including past damage by trawling in the fishing zone in this assessment as damage by this fishery poses two problems for us:

- It would not be fair to Euronor, who operates in exactly the same way with exactly the same gear as fisheries who have already been certified, to penalise them for the past history of fishing in the area by many vessels from several countries when others have not been;

- The data does not exist to say what habitats in the northern North Sea would have looked like 100 years ago before the start of high intensity commercial trawling in the area. Such an assessment would therefore have to be based largely on speculation.

Overall, while the team could see the force of the reviewer's argument, they felt that this was a matter for MSC rather than for a single assessment, and that this assessment need in all fairness to proceed according to the 'convention' established in previous assessments.

Secondly, the information necessary to evaluate the statement that the additional damage done by the saithe fishery is not serious, is not provided. In order to evaluate in the impact of this saithe trawl fishery on habitats, it is necessary to know the distribution of the saithe trawl fishing effort, the distribution of other trawl fishing operations, the distribution of benthic habitats, the cumulative damage of the trawl fisheries in these habitats due to trawling, and the fraction of this that is attributable to the saithe fishery. Only if the saithe fishery makes up a small fraction of the overall trawling effort in all regions or only trawls in areas that are not sensitive to trawling operations, the impact on the habitat can be considered to be 'not serious'. Any exploitation of previously untrawled areas by otter trawls is likely to result in reductions in the abundance of benthic invertebrates of up to 64%, depending on the substrate (Kaiser et al. 2006). For comparison, cumulatively commercial trawl fisheries, including otter and beam trawls, in the southern North Sea reduce biomass of benthic invertebrates by 56% and production by 21% (Hiddink et al. 2006). In the absence of information on the current and past distribution of the trawling effort of the saithe and other fisheries, habitat types, and sensitivities of these habitats, it seems impossible to assess to what extent serious harm is done by this saithe fishery and it can be assumed that the effect of this fishery is of the same magnitude. If any trawling occurs in previously untrawled areas, which is suggested by the fact that the gear is sometime snagged on the seabed, serious harm is likely to be done to habitats in such pristine areas.

The information that is currently provided in the assessment is of a very general nature and only backed up by very generic sources ('The fishery does not, however, operate in areas of sensitive habitat or areas with high benthic biomass or diversity') and does not provide any of the detail required to assess if serious harm is done to habitats.

We agree. The rationale for the scoring guideposts on habitat impacts (PIs 2.4.1, 2.4.2 and 2.4.3) has been extensively revised as a result of this comment. The following information has been added:

- Map of distribution of fishing effort by Euronor (see also section 2.2 above);
- General discussion of geographic distribution and intensity of trawling effort in the Euronor fishing zones by other fleets (rationale 2.4.1);
- Discussion of the distribution of benthic habitats types and the habitat information available in the Euronor fishing area (rationale 2.4.1, 2.4.3);
- Map of the distribution of threatened or declining habitat types considered likely to be of relevance (rationale 2.4.1);

- Consideration of the likelihood of Euronor vessels causing significant damage to these habitats based on overlap of geographic distribution and depth (rationale 2.4.1).

The score for PI 2.4.1 was reduced from 90 to 80.

The score for PI 2.4.2 was reduced from 100 to 90.

The score for PI 2.3.2 did not change.

Finally we note that snags on the seabed by Euronor vessels are usually as a result of manmade objects related to the oil industry.

Section 2.3. regarding ETP species, does not seem to consider species that are listed under OSPAR or that are protected under Schedule 5 of the UK Wildlife and Countryside Act 1981. The ocean quahog *Arctica islandica* is listed as threatened in the OSPAR treaty, is likely to occur in the areas exploited by this fishery, and populations of this species have been shown to be severely affected by chronic beam trawling (Witbaard and Klein 1994) and are therefore likely to be vulnerable to otter trawls too. The Wildlife and Countryside Act protects a large range of marine species, a few of which may occur in the exploited area. I do not know to what extent OSPAR provide protection and if the Wildlife and Countryside Act provides protection in offshore waters, but it would be helpful if this could be discussed in the report.

Regarding OSPAR: We agree – this is a binding international agreement in the same way as CITES and should be included. The species on this list considered to be relevant in this case have been added to the list considered in PIs 2.3.1, 2.3.2 and 2.3.3. These species are: ocean quahog *Arctica islandica*, basking shark *Cetorhinus maximus* and common skate *Dipturus (Raja) batis*. Justification as to why these species were selected from the full list of OSPAR protected species is also provided in the rationale for PI 2.3.1.

As a result of this further analysis the score for PI 2.3.1 was reduced from 100 to 80 and the score for PI 2.3.3 was reduced from 90 to 80.

Regarding the Wildlife and Countryside Act (UK) : According to the UK Joint Nature Conservation Commission, ‘The Act makes it an offence (subject to exceptions) to intentionally kill, injure, or take, possess, or trade in any wild animal listed in Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. The Act also prohibits certain methods of killing, injuring, or taking wild animals.’ (31).

In our opinion, the word ‘intentionally’ implies activities directed at these species, and therefore would not cover accidental interactions of a fishery with ETP species. Nonetheless, we considered the list of species listed under Schedule 5. The only species that might overlap with this fishery in terms of geographical distribution and depth range (for benthic species) is the basking shark - already noted above.

Finally, I would like to see more detail on *what* subsidies are provided to this fishery (3.1.4 Incentives for sustainable fishing). It is difficult to assess the impact of these subsidies without such detail. Boulogne trawlers have been in the news several times in the last decade because of blockages of the harbour in protest over high fuel prices, and subsidies were promised by the French government to address the concerns of the fishers. Such direct or indirect subsidies are thought to encourage overharvesting of resources (Ludwig et al. 1993), and it is therefore important to see why the subsidies to the saithe fishery would not encourage overexploitation.

We agree. The rationale for PI 3.1.4 has been expanded to consider these subsidies in more detail. However, we note that i) the vessels involved in blockades were artisanal vessels from the area, not Euronor vessels; ii) in the team's opinion the use of 'red diesel' by fishing vessels is a tax differential rather than a subsidy, since the fuel is not sold below cost price, and is used in many industries other than fishing; and iii) the further subsidies proposed by the French government in this particular case never came into effect due to the collapse in fuel prices in mid-2009.

The score for PI 3.1.4 did not change.

LITERATURE CITED

- Hiddink, J.G., Jennings, S., Kaiser, M.J., Queirós, A.M., Duplisea, D.E., and Piet, G.J. 2006. Cumulative impacts of seabed trawl disturbance on benthic biomass, production and species richness in different habitats. *Can. J. Fish. Aquat. Sci.*, **63**: 721-736.
- Kaiser, M.J., Clarke, K.R., Hinz, H., Austen, M.C.V., Somerfield, P.J., and Karakassis, I. 2006. Global analysis and prediction of the response of benthic biota to fishing. *Mar. Ecol. Prog. Ser.*, **311**: 1-14.
- Ludwig, D., Hilborn, R., and Walters, C. 1993. Uncertainty, Resource Exploitation, and Conservation: Lessons from History. *Science*, **260**: 17&36.
- Witbaard, R., and Klein, R. 1994. Long-term trends on the effects of southern North Sea beamtrawl fishery on the bivalve mollusc *Arctica islandica* L.(Mollusca, Bivalvia). *ICES journal of marine science*. London, **51**: 99-105.

10.2 Report of peer reviewer 2

The report of Peer Reviewer 2, Dr. Colin Bannister of CEFAS, UK (retired) is presented below in full, with responses from the MEP team in boxes.

2137 Euronor Saithe Peer Review of Public Certification Report by Dr Colin Bannister

Overall assessment

I have checked the Report taking into account what is known of the biology and life history of saithe, the nature of the fishery being certified, and the results of current ICES assessments of the status of the North Sea and North East Arctic stocks.

I approve the decisions made by the assessment team regarding the definition of retained and by-catch species (page 10), and the approach shown in Table 8 (page 24) for scoring between 80 and 100. I commend the report for the clarity with which it justifies most of the scores.

I set out below some comments, suggestions, and questions, most of which relate to accuracies on the fisheries aspects. However, I do raise some questions about whether the responses to PI 's 3.1.3, 3.1.4, and 3.2.4 are sufficiently explicit about Principle 2 issues, a difficulty which has come up in other assessments where the information and objectives on the Prin 2 side are weaker than for the fisheries aspects. The team will no doubt wish to reflect on whether their response to those questions requires changes to the text or the scores.

See responses to specific comments below.

Notwithstanding these comments I do not disagree with an overall conclusion that the fishery be recommended for certification, with the conditions that have been identified.

R C A Bannister 15/10/2009

Comments and questions (Any suggested new text is in blue)

Section 2.5 Retained species etc

The identification and quantities of retained species are clear enough, based on the data described for 2007, and examined but not shown for 2008, but it would help to have confirmation that these are typical of a longer run of data (based on, say, the aggregated weight and percentage retained, without breakdown, if available).

We agree in principle. The problem is that before 2007 several of the Euronor vessel that now target only saithe were also involved in the deep-water trawl fishery – resulting in a completely different set of retained and by-catch species. This means that to construct a long time series of landings for the saithe fishery alone would require an enormous amount of work to disaggregate the landings data by vessel and fishing trip, so that the deep-water fishery could be separated out of the data – noting also that the raw data is not in a format very friendly to manipulation. That being said, if other comments are received requesting this information, MEP will consider trying to present it.

On page 11 it would be helpful to quote the level of observer coverage in this fishery.

We agree. Added.

Section 3.2 Organisations involved in management

Suggest that in the bulleted list, the RAC bullet should precede the Council bullet.

Re the Council bullet, it would be more accurate to say:

'The European Council of Ministers makes the **final** decision on the management of the fishery **based on a proposal from the European Commission that follows prior negotiations between the Commission and Norway** (shared stock)'

We agree. Changed as suggested.

Section 3.3 Harvest control rules and tools

Under 1, suggest '.....advice based on the status of the stock. **The ICES Advisory Committee proposes a total allowable catch (TAC) selected from a range of TAC options including those that are consistent with the precautionary approach and the EU-Norway management plan**'.

Under 2, strictly speaking, **'The final TAC is decided by the European Council of Ministers following annual negotiation between the E Commission and Norway, and taking into account any implementation of the EU rule restricting the change in TAC between years to 15%'**

We agree that this is more precise but are not totally convinced that is more clear. However, we changed the text as suggested.

Section 3.4 paragraph at top of p15

The reference to the 15% TAC constraint. This is certainly an EU rule: is it also in the Norwegian management plan ?

It is in the joint EU-Norway management plan.

Section 3.5 Regulation and enforcement

Under Marine Controls, is there a quotable statistic corresponding to 'relatively low level'?

Not really because it is quite variable – there may be a specific campaign where there is a lot of control, followed by long periods (months) with no controls at sea in EU waters. A statistic such as 'X times per year' would give a misleading impression of constancy.

Section 4.2 Monitoring and stock assessment

Is it possible to add a brief quote regarding the quality of the biological sampling, and the confidence in the assessment based on the diagnostics from the XSA ?

This is described in some detail in the rationales for Principle 1. However, we also added a sentence to Section 4.2 as proposed.

Table 3 on page 17.

I think that F_y is titled F_{mgt} in the ICES stock assessment table. Why not use this in case of confusion with F_{msy} and then simply delete the comment on F_y at the top of p18 ?

Good idea. Done.

Section 4.3 Current status.....

Not quite sure what is meant by the phrase ' fishery mortality is appropriate in relation to maximum yield '.....do you mean that the current fishing mortality is close to F_{msy} ?

We mean that fishing mortality ('fishery' was a typo - sorry) is below the point at which the productivity of the stock would be impaired, and below F_{pa} and F_{lim} . F_{msy} is not explicitly defined for this stock. We edited this sentence a bit so hopefully it is more clear now.

For completeness in this section it would be helpful to reference the diagrams in Section 11 of the 2009 assessment, showing the stock-recruitment plot, and the trend in recruitment which is clearly reduced after 1987, in common with other gadoid type fish.

Since you mention the good 2004 year class, it would be a balancing comment to note that the 2008 year class looks like being very poor, which could reduce stock status in several years time.

Both added.

Page 26 re EPT species

It is realistic to score separately the performance against the Protected species that are listed: if the point about also scoring the E T components were to be taken up in the future, they would have to be scored separately against a different standard.

Noted – we are not sure that we agree, as discussed above. However this is a matter for consideration by MSC.

P35, para below the text table

The 2010 landings of 118 000 t actually include the application of the 15% TAC constraint, so that $F = 0.34$, which is close to, but above, the F_{mgt} of 0.3 .

This is noted already in the rationale for PI 1.2.1.

P37, second paragraph of the rationale

My understanding is that F_{lim} is F_{loss} i.e the F equivalent to the lowest observed spawning stock, since B_{lim} is B_{loss} .

This is correct, however some kind of yield per recruit analysis is required to get from B_{lim} to F_{lim} so what we say is also correct. We have clarified this explanation.

P40, first paragraph of the rationale

I consider the list of bullets at the top of page 39 to represent genuine harvest control rules (i.e. pre-agreed decisions about what F should be in relation to the PA reference points) but that the other measures (technical measures) although part of the management strategy, are NOT control rules: there is no pre-agreed commitment to change them in the event of a change of status, although they may eventually be changed. So the subsequent paragraph on the TAC describes a rule ('TAC based on F that is linearly reduced from Fpa') but the others simply describe 'measures in place'.

We regarded the TAC as the main rule, but considered the others to be 'tools' which support the TACs in helping to control harvest rates for each stock. We have clarified the wording. In any case, the scoring was based on the harvest control rule (i.e. the mechanics for setting the TACs).

P43 Fisheries independent stock data

Are there any caveats on these surveys that restrict their value to the assessment e.g. longevity of the surveys, location with respect to recruits etc, statistical properties ?

There is indeed an issue with surveying recruits, since year classes 0-3 are not in the same locations as adults and have proved very difficult to survey. We have noted this limitation.

P44, last paragraphs.

For the N Sea there is also uncertainty about the longer term trend in R, given that R has been at a lower level since 1987 (whereas in the N E Arctic the R regime is in general higher now than in previous decades).

Noted and added.

P56, last paragraph of PI 2.2.2

The gear type and fishing technique (and possibly also the fishing locations?) represent measures that limit the by-catch, but it could be suggested that they are not a strategy unless there is a commitment in the management plan that specifically identifies them as the 'strategy for reducing by-catch'.

My comment would also apply to the rationale for **PI 2.3.2**, re the words 'the fishery has in place precautionary management strategies designed to'. Its again a question of whether 'measures in place' are a 'precautionary strategy'.

We do not agree. We note that while Principle 1 applies to the whole stock (i.e. the management plan is relevant), Principle 2 applies to the fishery in question. We consider that the measures Euronor has put in place (notably the deployment of the special trawl when at 95 % of cod quota) constitutes a 'precautionary strategy' in the context of the fishery.

P70, PI 3.1.3

The main evidence is in relation to a management plan that appears to be pretty exclusively a fisheries plan. Given that the indicator is about objectives for the MSC Principles (plural), and that PI 3.2.1 is about the fishery-specific objectives, it could be argued that 3.1.3 should also embrace long term objectives for Principle 2 issues. Is there evidence for that in the management plan ?

As regards the relevance to P2 of the management plan – see our comment above. Nonetheless, we have noted the ecosystem (i.e. Principle 2) elements which come in to the ICES assessments rather than the management plan – i.e. they are implicit rather than explicit. The score was not changed.

P72, PI 3.1.4

The same comment could apply here, since Prin 2 is specifically mentioned in the guidelines. Are there incentives for Prin 2 concerns ?

Some discussion of the management system and P2 issues has been added. The score was not changed.

P73 last paragraph of PI 3.2.1

Is it not the case that the outcome of the fishery objectives is measured specifically by the ICES stock assessment ?

We think there is a distinction made here by MSC between long-term objectives for the stock and fishery specific objectives for the fishery in question (see also above). The ICES stock assessment would come into the former (i.e. PI 3.1.3) and we discuss it in that context rather than here.

P77/78 regarding PI 3.2.4

Again Prin 2 is specifically mentioned in the scoring guidelines. Some evidence about research plans for Prin 2 issues should presumably be cited to justify the 80 score.

We do mention P2 issues, but have expanded the discussion somewhat. The score did not change.

END

11. References and information sources

Note: The assessment tree (Annex 1) is referenced separately.

1. MSC 2008. Fisheries Assessment Methodology and Guidance, version 1, 12 June 2008.

2. Tavel 2008. The Gulf of St. Lawrence northern shrimp trawl fishery. Public Certification Report. 17 September 2008. See <http://www.msc.org/track-a-fishery/certified/north-west-atlantic/Gulf-of-st-lawrence-northern-shrimp>
3. MEP 2008. MSC GASS/DD Project Case Study: Yellow mullet fishery, Pac National de Banc d'Arguin, Mauritania. Revised certification report. See <http://www.msc.org/about-us/credibility/all-fisheries/fisheries-in-trial-assessments/banc-d-arguin-mullet>.
4. Moody Marine 2008. German North Sea saithe trawl fishery. Public Certification Report. 8 October 2008. See <http://www.msc.org/track-a-fishery/certified/north-east-atlantic/Germany-North-Sea-saithe-trawl>
5. Moody Marine. Assessment of Western Baltic spring-spawning herring. See <http://www.msc.org/track-a-fishery/certified/north-east-atlantic/Germany-North-Sea-saithe-trawl>
6. Moody Marine. Assessment of the Swedish sprat and herring fishery. <http://www.msc.org/track-a-fishery/in-assessment/north-east-atlantic/sppo-north-sea-and-baltic-herring-and-sprats>
7. Miller P.J. and Loates M.J. 1997. Fish of Britain and Europe. Harper Collins, London.
8. FishBase entry for saithe <http://www.fishbase.org/Summary/SpeciesSummary.php?id=1343> and saithe ecology <http://www.fishbase.org/Ecology/FishEcologySummary.php?StockCode=1361&GenusName=Pollachius&SpeciesName=virens>
9. Du Buit, M.H. 1991. Food and feeding of saithe (*Pollachius virens* L.) off Scotland. Fisheries Research 12, 307-323.
10. ICES 2009. Advice Book 6, 6.4.12: Saithe in Subarea IV (North Sea), Division IIIa (Skagerrak) and Sub-area VI (West of Scotland and Rockall).
11. ICES 2009. Advice Book 3, 3.4.4: Saithe in Subareas I and II (Northeast Arctic).
12. Ifremer 2009. Observations à bord des navires de pêche: restitution individuelle. Bressay Bank, départ 11/4/09. Reference restODD3
13. Ifremer 2009. Observations à bord des navires de pêche: restitution individuelle. Bressay Bank, départ 25/4/09. Reference restODD4
14. Ministère de l'Ecologie, de l'Energie, du Développement et de la Mer. Espèces protégées en France. www.developpement-durable.gouv.fr
15. UNEP-WCMC. Searchable database of CITES-listed species. <http://www.cites.org/eng/resources/species.html>
16. Moody Marine 2008. Certification Report for Norwegian saithe fishery. See <http://www.msc.org/track-a-fishery/certified/north-east-atlantic/norway-north-sea-saithe>
17. ICES 2009. Advice Book 6, 6.4.2: Cod in Subarea IV (North Sea), Division VIIId (Eastern Channel) and IIIa (West Skagerrak).
18. ICES 2009. Advice Book 3, 3.4.5: Beaked redfish (*Sebastes mentella*) in Subareas I and II.
19. ICES 2009. Advice Book 3, 3.4.6: Golden redfish (*Sebastes marinus*) in Subareas I and II.
20. EC 1980. Council Regulation 2214/1980.
21. EC 2002. Council Regulation 2731/2002.

22. EC 2009. Council Regulation No 43/2009 of 16 January 2009 fixing for 2009 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required. Official Journal of the European Union L 22, 1-205.
23. EC 2008. Council Regulation No 1342/2008 of 18 December 2008 establishing a long-term plan for cod stocks and the fisheries exploiting those stocks and repealing Regulation (EC) No 423/2004
24. EC-Norway 2008. Agreed record of conclusions of fisheries consultations between Norway and the European Community for 2009. Oslo, 10 December 2008.
25. See for example http://www.fisheries.no/info/ancient_traditions_harvesting+_sea.htm
26. ICES 2009. Advice Book 2, 2.4.4: Saithe in Division Va (Icelandic saithe).
27. ICES 2009. Advice Book 4, 4.4.4: Faroe saithe in Division Vb.
28. ICES 2009. Advice Book 5, 5.4.27: Saithe in Subarea VI (West of Scotland and Rockall).
29. ICES 2009. Saithe in Subarea IV, VI and Division IIIa. Report of the working group on the assessment of demersal stocks in the North Sea and Skagerrak. ICES WGNSSK Report 2009, section 11.
30. ICES 2009. Saithe in Subareas I and II (Northeast Arctic). Report of the Arctic fisheries working group (AFWG). ICES AFWG Report, section 5.
31. Joint Nature Conservation Commission website <http://www.jncc.gov.uk/page-3415>

Annex 1 – Assessment tree

Principle 1

A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.

1.1 Outcome

1.1.1 Stock status

The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing

SG 60: It is likely that the stock is above the point where recruitment would be impaired.

SG 80: It is highly likely that the stock is above the point where recruitment would be impaired. The stock is at or fluctuating around its target reference point

SG 100: There is a high degree of certainty that the stock is above the point where recruitment would be impaired. There is a high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.

Score: 95

Rationale

1. Definition of stocks

The Euronor saithe fishery operates on two different stocks of saithe. The majority of the catch comes from a directed saithe fishery on the North Sea stock (ICES Division IIIa, Subareas IV and VI – Skagerrak, North Sea and NW Scotland) (1). A small proportion of the catch comes from the saithe by-catch (retained) of the Arctic cod fishery, for which Euronor has a small quota (2). The status, management and monitoring of both these stocks therefore needs to be assessed.

2. North Sea stock

The status of the stock is assessed every year by ICES (see 1.2.4 below) (1). Reference points consider both the spawning stock biomass (*SSB*) and the fishing mortality (*F*). For *SSB* two reference points are defined:

- B_{lim} , (limit reference point) below which the reproductive capacity of the stock is reduced and where the risk of collapse is high (recruitment overfishing);
- B_{pa} , (precautionary reference point) – the stock should remain above this reference point so that the risk of reaching B_{lim} is low, taking uncertainties into consideration.

In the same manner, ICES has set two reference points for F :

- F_{lim} is the limit fishing mortality above which the exploitation becomes unsustainable;
- F_{pa} is the precautionary level of mortality that should not be exceeded so that the risk of reaching F_{lim} is low, taking uncertainties into account.

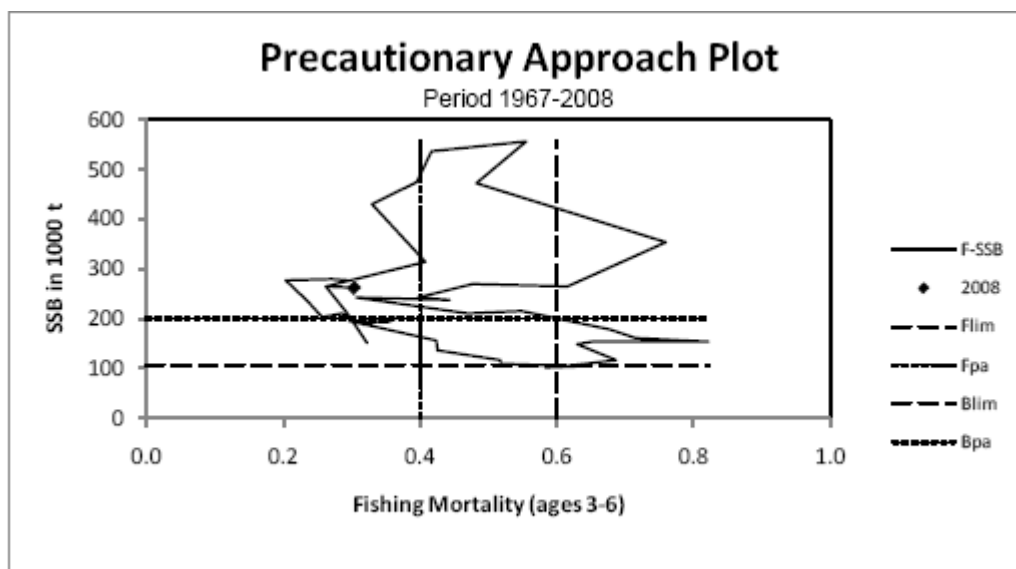
Therefore, if $SSB > B_{pa}$, the stock is at its full reproductive capacity, and if $F < F_{pa}$, exploitation is considered sustainable.

For the North Sea saithe stock (ICES Division IIIa, Subareas IV and VI – Skagerrak, North Sea and NW Scotland), reference points have been set at the following values (1):

Type	Value	
Precautionary approach	B_{lim}	106 000 t
	B_{pa}	200 000 t
	F_{lim}	0.6
	F_{pa}	0.4

For this stock, the projected biomass for 2011, with 2010 landings of 118 000 t (in agreement with the management plan), is 212 000 t. The calculated SSB has been above 200 000 t since 1999 and F has been below F_{pa} since 1997. In 2009, the SSB is estimated to be $1.3 * B_{pa}$ (i.e. 30% higher than the precautionary reference point). The average fishing mortality for the period 2006-2008 is estimated at 0.29, i.e. below F_{pa} and close to the management plan target rate expected to lead to high long-term yields ($F = 0.3$). The stock is therefore considered to be above precautionary reference points with a high degree of certainty. Since 2003, stocks have been in this “safe” zone of the precautionary approach plot ($SSB * F$) (1).

Since 2003, stocks have been in the “safe” zone of the precautionary approach plot ($SSB * F$) – see Figure below from ICES advice 2009 (1).



There are a few concerns, however. ICES considers that productivity of the North Sea saithe stock has declined, due to recent reductions in recruitment levels and growth rates. ICES advice on this stock in 2008 (3) states: *The influence on the maturity ogive from the observed decrease in the weight at age is unknown, but it is reasonable to believe that the spawning capacity of the stock will be affected.* The ICES review group also raised this issue of possible changes in the maturity ogive for this stock. While ICES are aware of the issue and are able to incorporate new data into future stock assessments, the team considered that for this reason a full score of 100 was not justified, although the requirements of SG 100 are broadly met.

3. Arctic stock

For the North-East Arctic saithe stock (ICES Subareas I and II) reference points have been set as follows (2):

Type	Value	
Precautionary approach	B_{lim}	136 000 t
	B_{pa}	220 000 t
	F_{lim}	0.58
	F_{pa}	0.35

For the Arctic stock, the projected biomass for 2010, with 2009 catches of 225 000 t, is 569 000 t, which would lead to $F = 0.29$. The calculated SSB has been above 275 000 t since 1994 and F has been below F_{pa} since 1995 (2).

According to those data, it is almost certain that the stock is above the point where recruitment would be impaired over the short term (<5 years). There is also a high degree of certainty that the stock has been above its target reference point, and that fishing mortality has been below target reference points, over recent years. For this stock, too,

however, there are uncertainties about the maturity ogive that could have an effect on the stock status, so the full 100 was not given (2).

1.1.2 Reference points

Limit and target reference points are appropriate for the stock.
--

SG 60: Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.

SG 80: Reference points are appropriate for the stock and can be estimated. The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity. The target reference point is such that the stock is maintained at a level consistent with BMSY or some measure or surrogate with similar intent or outcome. For low trophic level species, the target reference point takes into account the ecological role of the stock.

SG 100: Reference points are appropriate for the stock and can be estimated. The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of relevant precautionary issues. The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.

Score: 90

Rationale

For both stocks (North Sea and Eastern Arctic), reference points are derived from biological assessment by the ICES Working Groups (4,5).

For the North Sea stock, reference points were established in 1998. B_{lim} was defined from a recruitment-stock relationship and B_{pa} was derived from the value of B_{lim} . Fishing mortality (F_{lim}) was defined from a yield-per-recruit analysis based on B_{lim} (4). Simulations were carried on to assess the effect of those scenarios (4). This approach is classical fisheries science, is recognized worldwide and appears to be generally successful (6). The approach has some shortcomings, however: i) simulations assume that current productivity levels are constant; ii) discards and highgrading are not taken into account in the simulations (4). In this case, however, these shortcomings are considered as minor compared to the official landings and should not therefore affect the output of the analytical models. Biologists are concerned that the productivity of the stock has declined, and uncertainties about recruitment and weight at age remain issues (1,2). Fecundity with size has been adequately established but does not appear to be under

regular review to detect trends and shifts. The assessment uses a single maturity ogive and natural mortality of 0.2 (4). Experiences from other fisheries show that those parameters may change over time, due to exploitation or natural factors. Those parameters are key elements and may add uncertainty to the simulations.

Even if not formally revised, the references points are tested each year along with the new assessment. Scientists consider that they are still valid in the medium term (<5 years) (4).

For the Arctic stock, reference points have recently been re-estimated by the 2005 ICES Working Group. They appear to be consistent with the precautionary approach (5).

Overall, the team considered that the reference points are appropriate for both stocks and that they should provide a safe means to protect the stocks' reproductive capacity. However, the team considered that the concerns raised about the productivity of the North Sea stock are not taken into account in the definition of the reference point with a high degree of certainty, as required for a score of 100.

1.1.3 Stock rebuilding

Where the stock is depleted, there is evidence of stock rebuilding
--

NOT REQUIRED TO BE SCORED

1.2 Harvest strategy (management)

1.2.1 Harvest strategy

There is a robust and precautionary harvest strategy in place

SG 60: The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points. The harvest strategy is likely to work based on prior experience or plausible argument. Monitoring is in place that is expected to determine whether the harvest strategy is working.

SG 80: The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points. The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.

SG 100: The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points. The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels. The harvest strategy is periodically reviewed and improved as necessary.

Score: 90

Rationale

For the North Sea stock (Division IIIa, Subareas IV and VI), the EU and Norway agreed in 2004 to implement a long-term management plan for the saithe stock, consistent with the precautionary approach (1):

- Spawning stock biomass should be $> 106\,000\text{ t}$ (B_{lim});
- If $SSB > 200\,000\text{ t}$ (B_{pa}), fishing mortality should not exceed 0.3;
- If $SSB > B_{\text{lim}}$ and $< B_{\text{pa}}$, fishing mortality should be < 0.3 ;
- If $SSB < B_{\text{lim}}$, fishing mortality should not exceed 0.1.

The management plan also includes a TAC constraint : *if the application of the preceding rules leads to a TAC which deviates by more than 15% from the TAC the preceding year the Parties shall fix a TAC that is no more than 15% greater or 15% less than the TAC of the preceding year* (1).

This management plan was partially revised by ICES in 2008 (4).

Since 1987 in Division IIIa and Subarea IV (23 years of assessment), the decision on the level of the TAC has followed scientific advice (i.e. same level as advised or below) on 16 occasions; while on seven occasions, the agreed TAC has been higher than recommended. The divergence was generally less than 10% apart from a notable exception in 1994 (35 %). Since 2003, management decisions appear to have been more in line with science – this may be due to the 2004 Management Plan) (1).

Since 2003, stocks have been in the “safe” zone of the precautionary approach plot ($SSB * F$) (1 - see also PI 1.1.1).

For the Arctic stock (Subareas I-II), there is no formally agreed management plan. However, since 1998, the agreed TAC has been consistent with scientific advice (equal or lower) except in 1994 and 1995. However, landings generally exceeded TACs until 2000 (generally $< 10\%$ greater) but since then have been constantly below. Since 1995, stocks are in the “safe” zone of the precautionary approach plot ($SSB * F$). However, discards remain an important issue for this stock (2).

There are, however, some questions about these management strategies: i) Over the short term, EU regulation authorizes Member State to ask for a quota increase if 75% is reached by October. This may lead to a quota overrun, although it should be deducted from next year's quota. ii) There is some possible concern about the 15% TAC constraint since it reduces the possibility of taking drastic measures should they be necessary; however if the management plan specifies that this constraint can be modified if necessary. For instance, for the North Sea stock at the 2009 SSB level, F should be no more than 0.3 to be in accordance with the management plan. This would give a 24% reduction in the TAC for 2010 (1). With this TAC constraint, this corresponds to landings

of 118 000 t in 2010 and a F above the precautionary reference point of 0.3 – this decision has not yet been taken.

Overall, the team concluded that the harvest strategy for each stock is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points. Also, evidence exists to show that they are achieving their objectives including being clearly able to maintain stocks at target levels (see rationale for 1.1.1). SG 80 is thus met. The harvest strategies are periodically reviewed but has not been fully evaluated. This, plus the minor concerns discussed above preclude a score of 100.

1.2.2 Harvest control rules and tools

There are well defined and effective harvest control rules in place

SG 60: Generally understood harvest control rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached. There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.

SG 80: Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. The selection of the harvest control rules takes into account the main uncertainties. Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.

SG 100: Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached. The design of the harvest control rules take into account a wide range of uncertainties. Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.

Score: 90

Rationale

For both areas, harvest control rules are based on a TAC, but also include various technical measures including minimum mesh size, minimum landing size, bycatch regulations, area closures, and other area and seasonal restrictions (1,2,7). The main harvest control tool, however, is the TAC.

TAC: For both areas, a TAC is calculated such that fishing mortality does not exceed F_{pa} or SSB drop below B_{pa} (1 - see above). For the North Sea stock, TACs are suggested by ICES and set by the European Council of Fisheries Ministers. Harvest control rules are defined in the management plan (see above). Agreed TACs are then divided by member state, each implementing its own sharing system. For the Arctic stock, the TAC is

calculated as a simulated average for the 3 coming years, based on F_{pa} . If the biomass is below B_{pa} , the TAC should be based on a fishing mortality that is linearly reduced from F_{pa} (2). The ICES Working Group recommends that there be no limitation in TAC reduction (i.e. the 15% rule) if the biomass is below B_{pa} (see PI 1.1.2 above).

Other tools available that contribute to controlling rates of harvest are:

Minimum landing size: For the North Sea stock, the minimum landing size is 35 cm. In Norwegian waters the minimum landing size is 45 cm for trawl and conventional gears, and to 42 cm (north of Lofoten) and 40 cm (between 62°N and Lofoten) for purse-seine, with an exception for the first 3000 t purse-seine catch between 62°N and 65°30'N, where the minimum landing size remains at 35 cm (7).

Minimum mesh size: In the North Sea there is a minimum mesh size in the cod-end of 100 mm (soon to be increased to 110 mm). In Norwegian waters north of 62 degrees N, the minimum mesh size is 135 mm (7).

Closed areas: Areas in Scottish waters in the North Sea may be closed at very short notice (hours) if high catches of juvenile cod are reported. At present, only UK fleets are obliged to comply, but next year it will be required for all fleets. Euronor already complies with these closures.

Other measures: In the Norwegian fishery, quotas may be transferred between fleet. Sorting grids are used in the trawl fishery. Discarding is illegal but does occur when trawlers targeting cod catch saithe as by-catch without having any quota for saithe (this does not apply in the case of Euronor). Highgrading is prohibited.

Overall, it appears obvious that well defined harvest control rules are in place that are consistent with the harvest strategy. Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules (scientific advice vs TAC; TAC vs landings, see above).

A concern remains with the 15% TAC constraint (see 1.2.1). Also, it is important to note that even if uncertainties are built in the definition of the precautionary reference points (F_{pa} , B_{pa}), it is not possible to say that the design of the harvest control rules take into account a wide range of uncertainties such as environment or stock productivity. Those uncertainties are raised in the assessment but are not formally incorporated in the design of control harvest rules. Thus SG 100 was not fully met.

1.2.3 Information / monitoring

Relevant information is collected to support the harvest strategy

SG 60: Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy. Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule

SG 80: Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy. Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule. There is good information on all other fishery removals from the stock.

SG 100: A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly relevant to the current harvest strategy, is available. All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.

Score: 85

Rationale

1. Information on fisheries removals

Boats are clearly identified and recorded through the licensing system. On board, catches are recorded in compulsory logbooks. They are cross-checked with sale-slips on landings. The producer organization (FROM-Nord) has the mandate to verify landings and has a permanent inspector on the quayside at Boulogne. Sale slips and logbooks are gathered and verified by France AgriMer (a French national office), which centralizes all landings data. A difference of around 5-8% between logbooks and sale slips is tolerated; in case of divergence, the highest value is kept on record. Occasional controls on landing and logbook data are also made by the French Gendarmerie Maritime, the Maritimes Affairs, the service of fraud repression (Direction Générale de la Concurrence, de la Consommation et de la Répression des Fraudes, DGCCRF) and EU inspectors. When fish is landed in another country (Denmark or Scotland for Euronor), landings are made in a designated port (as imposed by EU regulation) and recorded there (Hanstholm or Lochinver). Fish landed in Denmark is sold there, while fish landed in Scotland is placed in sealed trucks until arrival in France, where they enter the French system. Data from Denmark and Scotland are sent to the French administration (and cooperation is considered to be very good).

The German and Norwegian fleets, which along with the French fleet represent the majority of North Sea saithe catches, are also well monitored. Discards are not considered to be a problem in any of these fleets (8,9). Discards may be more important in the Scottish fleets (4) but are nonetheless considered minor compared to total catches.

2. Biological data

The general aspects of saithe biology are well known and documented (e.g. 1,2,3,8,9,10,11,12). IFREMER is the French research institute in charge of gathering

biological data. On the quayside, technicians collect basic data (length, weight) and otoliths for age determination, which is a specialism in the Boulogne laboratory. Weight-at-age is thus regularly recorded and can be formally incorporated into ICES assessments (1,2). As fish is gutted at sea, no other biological data are recorded.

3. Fisheries-independent stock data

Aside from CPUE, stock abundance data and biological data are also gathered by annual scientific surveys (see rationale for 1.2.4 for details).

4. Uncertainties in data

Maturity and fecundity-at-age are not regularly monitored. This is important because the maturity ogive may have changed (see 1.1.1 for more details). North Sea stock productivity is declining and remains an issue. Large uncertainties also exist in the prediction of the recruitment, because surveys have had difficulty in evaluating year classes 0-3 (3).

There is monitoring of environmental parameters; however this is independent from the stock assessments, and the effect of the environment on stock productivity is not formally considered in the assessment (1). Most of the criteria for SG 100 are thus not fully met.

1.2.4 Assessment of stock status

There is an adequate assessment of the stock status

SG 60: The assessment estimates stock status relative to reference points. The major sources of uncertainty are identified.

SG 80: The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points. The assessment takes uncertainty into account. The stock assessment is subject to peer review.

SG 100: The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery. The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way. The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored. The assessment has been internally and externally peer reviewed.

Score: 90

Rationale

ICES working groups use two series of indices in the assessment: commercial fisheries catches per unit effort (CPUE) and scientific surveys (1,2).

For the North Sea stock, the 2009 assessment incorporates CPUEs from the French bottom trawl fishery (age range: 3-9, year range 1990-2008 – « FRATRIB ») and the German bottom trawl fishery (age range: 3-9, year range 1995-2008 – « GEROTB »). The Norwegian trawl fishery CPUEs were discarded in 2007 and again in 2009 (4,5). Scientific surveys include the Norwegian acoustic survey (age range 3-6, year range 1995-2008 – « NORACU ») and the bottom trawl survey IBTS (IBTS quarter 3, age range: 3-5, year range 1991-2008 – « IBTSq3 ») (4,5).

Landings at age data by fleet are routinely supplied by Denmark, Germany, France, Norway, UK (England), and UK (Scotland) for Subarea IV and by the UK (Scotland) for Subarea VI. This provides a reliable time series, incorporated in the analytical assessment (4).

For the eastern Arctic stock, the assessment uses the CPUE data from the Norwegian trawl fisheries (started 1994, age range 4-8) and the Norwegian acoustic survey (started 1994, age range 3-7) (5).

Both stocks are assessed with a Sequential Population Analysis model (« XSA ») (1,2). Results are discussed in the ICES Working Groups on the assessment on demersal stocks, North-Sea and Skagerrak (WGNSSK) and Arctic Fisheries Working Group (AFWG). Alternative tools and approaches are tested and discussed. Results are further peer reviewed by a Review Group, the Scientific, Technical and Economic Committee for Fisheries (STECF) composed of external scientists (4,5).

The assessments provide a comprehensive vision of the stocks' trends : spawning stock biomass, recruitment-stock relationships, fishing mortality. Data are related to the accepted reference points, in an analytical way. Despite the concerns raised, the analyses appear robust.

Assessments are limited by the use of commercial CPUEs, which may fail to track population trends. Catch rates may remain high even if the population is declining as fishers are able to detect fish concentrations.

For the North-Sea stocks, retrospective patterns in the analytical assessment remain low, which gives faith in the results. Uncertainties are related to the poor reliability of the recruitment data (age 3) (1). According to scientists, the quality of 2009 assessment is strongly affected by the uncertainty about the size of the strong 2004 year class (4). There is also reported to be questions around the assessment of longer-term trends in recruitment (see Peer Review Reports above). Discards are not considered as a major problem in that area (1). In 2007, external reviewers raised the concern that measurement or implementation errors were insufficiently included within the analyses (4).

For the Eastern Arctic, retrospective pattern is high (5). In 2008, Scientists stated : « Difficulties in estimating initial stock size are the major problem in the forecast. This is due to widely divergent indices of abundance used in the tuning of the XSA, in addition to lack of reliable recruitment estimates. Prediction of catches beyond the TAC year will,

to a large extent, be dependent on assumptions of average recruitment » (5). Discards are also considered to be important in that fishery and is not incorporated in the assessment (5).

No probabilistic approaches, such as risk analyses, are used in both assessment. Biological characteristics are considered in the analysis but not formally incorporated in the assessment.

The team considered that all the criteria in SG 80 were met. For SG 100, some of the additional criteria were met – the assessment is regularly tested and the North Sea assessment has been shown to be robust (the Arctic assessment less so). The assessments are regularly reviewed internally and externally. Overall, the team considered that 90 was an appropriate score.

Principle 2

Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

2.1 Retained species

2.1.1 Outcome status

The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species.

SG 60: Main retained species are likely to be within biologically based limits or if outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species. If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.

SG 80: Main retained species are highly likely to be within biologically based limits, or if outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.

SG 100: There is a high degree of certainty that retained species are within biologically based limits. Target reference points are defined and retained species are at or fluctuating around their target reference points.

Score : 80

Rationale

1. 'Retained' species vs. by-catch species

The FAM makes a distinction between 'retained species' (species which are not targeted but if caught are retained and sold), and 'by-catch' species (species which are discarded if caught). In practice, in this fishery, the same species may sometimes be retained and at other times discarded. This may happen if, for example, there is a minimum size limit (e.g. cod, haddock). A very small catch from one tow (one or a few individuals) may be discarded, while a larger catch from one tow may be retained, for practical reasons.

The team decided for simplicity to define all species which are ever retained as 'retained species' (i.e. these species are considered under PIs 2.1.1, 2.1.2 and 2.1.3) and to define only those few species which are never retained as 'by-catch' (i.e. to be considered under PIs 2.2.1, 2.2.2 and 2.2.3).

2. Definition of 'main retained species'

Scoring guideposts 60 and 80 make reference to 'main retained species'. The FAM defines 'main retained species' as follows:

'a species that comprises less than 5% of the catch by weight may normally be considered to be a minor species, i.e., not 'main', in the catch, unless it is of high value to the fisher or of particular vulnerability, or if the total volume of the fishery is large, in which case even 5% may be a considerable catch.'

In this case, there is no species that regularly (or indeed usually) comprises >5% of the overall catch – total retained species are roughly at or just over this level (6.2% of the catch by live weight in 2007). Arctic cod, however, makes up a significant proportion of the catch from the fishing trips to North Norway (because this is in fact the target species when vessels are fishing in this area).

However, this is a high volume fishery (total saithe landings in 2008: 19267 tonnes, quota for 2009: 23810 tonnes). It was therefore felt that some species below the 5 % threshold should nonetheless be considered 'main retained species'.

The team use the following decision criteria to decide which species should be considered main retained species:

1. The species was a secondary target species;
OR
2. Euronor landings in 2007 and 2008 comprised a significant proportion of the EU quota (note that the team did not define 'significant proportion' in a precise quantitative way, although ~10 % was the approximate cut-off point.);
OR

3. Euronor landings are non-trivial AND the stock is considered by ICES to be overfished, or to have a biomass below the limit reference point or fishing mortality above the limit reference point, or there is some other cause for concern about the status of the stock (note that the team did not define ‘non-trivial’ in a precise quantitative way, but it was considered relative to known or estimated total landings or to ICES advice).

This definition gave us a list of retained species as shown in the table below:

Species	Euronor landings 2008 (tonnes)	EU quota 2008 and/or 2009 (tonnes)	Most recent ICES advice	Refs
Cod (cabillaud <i>Gadus morhua</i>) Arctic stock	938	2008: 17057 2009: 19324	Full reproductive capacity; harvested sustainably; above reference points (secondary target species)	7, 13 ICES 2009a EC 2009
Cod North Sea stock	282	2008: 18386 2009: 23902	Reduced reproductive capacity; overfished.	7, 14 ICES 2009b, EC 2009
Redfish (sébaste <i>Sebastes marinus</i> and <i>mentella</i>)	159	I, II and NEAFC area: 2008: 14500 and 2009: 10500	‘Two stocks presently at very low levels.’	7, 15, 16 ICES 2009c,d EC 2009
Greenland halibut (flétan noir <i>Rheinhardtius hippoglossoides</i>)	48	2008 and 2009: I and II (Norway) : 50; I and II (international) : 0 IIa, IV and VI: 2008 : 497 ; 2009 : 720	‘Stock at relatively low level’ ‘Catches should be below 13 000 t as advised since 2003’	7, 16 ICES 2009e, EC 2009

3. Scoring against SG 100

SG 100 does not refer to ‘main’ retained species, the inference being that all retained species should be considered when scoring against this scoring guidepost. There are more than 20 by-catch species in total, nearly all of which are retained at least sometimes (see above). Several groups of species – rabbitfish and rays, for example – are not or have not

until recently been distinguished to species. There is also an element of ‘unidentified’ in the logbooks, albeit small.

SG 100 states: ‘There is a high degree of certainty that retained species are within biologically based limits. Target reference points are defined and retained species are at or fluctuating around their target reference points.’

Working on the assumption that this refers to all retained species, it is clear that neither of these conditions can be met, since not all the individual animals retained are even identified to species. Even for those that are, many (most) do not have stock assessments or defined reference points (for example, conger, grenadier, forkbeard).

The team therefore concluded that no element of this scoring guidepost was met, and therefore that the overall score could not be higher than 80.

4. Scoring the main retained species against SG 60 and 80

For scoring against SGs 60 and 80 (which both refer to ‘main retained species’), each of these stocks / species above were scored separately. The overall score was a qualitative aggregation score for each species (as set out in the FAM). The condition applies to the stocks receiving a score of <80.

Arctic cod **Score: 80**

Arctic cod was considered to meet SG 80, because it was considered highly likely to be within biologically-based limits. ICES considers that the biomass is above B_{pa} and the fishing mortality is at F_{pa} - i.e. the stock is within precautionary reference points (13).

North Sea cod **Score: 80**

North Sea cod was considered to meet SG 80, because while the stock is outside biologically based limits, there is a management strategy in place (the Cod Recovery Plan) which appears to be effective (increases in SSB in recent years according to ICES advice 2008; ICES considers ‘high probability’ of recovery by 2015) (14). The fishery is playing its role in the recovery plan by keeping within its quotas.

Redfish **Score: 80**

Redfish was considered to meet SG 80 because while the stocks appears to be outside biologically-based limits, there is a partial strategy in place to support recovery and rebuilding (area closures and quotas), and it is not considered likely given the relatively low catches that this fishery will hinder recovery and rebuilding (15,16).

Greenland halibut **Score: 80**

Greenland halibut was considered to meet SG 80 because while the stock appears to be outside biologically-based limits, there are measures in place to support recovery and rebuilding (TAC), and it is not considered likely that this fishery will hinder recovery and rebuilding. The team considered that these measures comprised a ‘partial strategy’

because the TAC is set at a level at which the SSB has previously increased, and research is underway which should lead to a stock assessment in the near future (17).

The overall score was therefore 80.

2.1.2 Management strategy

There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.

SG 100: There are measures in place that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding. The measures are considered likely to work, based on plausible argument (eg, general experience, theory or comparison with similar fisheries/species).

SG 80: There is a partial strategy in place that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding. There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved. There is some evidence that the partial strategy is being implemented successfully

SG 60: There is a strategy in place for managing retained species. The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports high confidence that the strategy will work. There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its overall objective.

Score : 80

Rationale

1. Main retained species

For definition of 'main retained species' see rationale for PI 2.1.1. Main retained species have been defined by the team as cod (Arctic stock), cod (North Sea stock), redfish, Greenland halibut and tusk.

2. Scoring against SG 100

It is assumed that SG 100 refers to all retained species (see rationale under PI 2.1.1 above).

SG 100 requires that for each retained species there is a tested management strategy based on information about the fishery and/or the species concerned. In several cases, retained species have not until recently been identified to species (e.g. for rays) and in other cases there is little scientific information on the stock (e.g. tusk, forkbeard). The

team therefore concluded that none of the requirements of SG 100 could be met, and therefore the maximum score for this PI should be 80.

DRAFT

3. Scoring against SG 80

SG 80 requires that there is a 'partial strategy' in place either to maintain the main retained species within biologically-based limits or to ensure that the fishery does not hinder recovery. The team was concerned in scoring against this guidepost not to repeat issues which have already been scored in PI 2.1.1 above, under which SG 80 also required a 'partial strategy' for the management of retained species. The team decided that while PI 2.1.1 (an outcome PI) refers the status and hence management of the stock of retained species, this PI (a management PI) refers to the management of the impacts of the fishery on these species or stocks.

The management of the fishery with regard to these main retained species (or stocks) is by quota. For each species / stock, Euronor is allocated a quota. The quota has not in recent years been exceeded. The team concluded that this did constitute a partial strategy for the management of the impacts of the fishery on these species. The team considered that these quotas were sufficiently small relative to the geographic distribution of the stock or to other fisheries on the stock (see rationale for PI 2.1.1 above for volume of Euronor landings) that there was a reasonable objective basis for thinking that the fishery would not hinder recovery of these stocks. There is evidence that the strategy is being implemented successfully (quotas are not being exceeded by Euronor).

Overall, the team concluded that the requirements of SG 80 were met.

2.1.3 Information / monitoring

Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species
--

SG 60: Qualitative information is available on the amount of main retained species taken by the fishery. Information is adequate to qualitatively assess outcome status with respect to biologically based limits. Information is adequate to support measures to manage main retained species

SG 80: Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery. Information is sufficient to estimate outcome status with respect to biologically based limits. Information is adequate to support a partial strategy to manage main retained species. Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).

SG 100: Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations. Information is sufficient to quantitatively estimate outcome status with a high degree of certainty. Information is adequate to support a comprehensive strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective. Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species

Score : 80

Rationale

For the definition of ‘main retained species’ see rationale for PI 2.1.1 above.

1. Source of information

Quantitative information on catches of most retained species by Euronor is available from logbooks. The logbook data is verified by quayside inspections, at sea inspections, observers and VMS, and was considered by the team likely to be accurate and verifiable. The exceptions are where individuals were not identified to species (see rationales for PIs 2.1.1 and 2.1.2 above) – this does not apply to any ‘main retained species’.

2. Scoring against SG 100

As for PIs 2.1.1 and 2.1.2, the team considered that since SG 100 refers to all retained species, none of the requires of SG 100 can be met. The maximum score for this PI is therefore 80.

3. Scoring against SGs 60 and 80

SGs 60 and 80 refer to main retained species only. SG 60 requires sufficient information for a qualitative assessment of the stock in relation to biologically-based limits. SG 80 requires sufficient information for a quantitative assessment of stock status against biologically-based limits, to support a partial management strategy and to detect increases in risk. Again, in order not to score the same issue twice, the team needed to consider here the information that was available rather than the stock status or the management strategy per se – e.g. is there enough information to support a partial management strategy in theory, even if in practice there is no such strategy.

The team considered that for the main retained species, there is good quantitative information available on catch by the fishery. This information comes from logbooks, backed up by quayside inspections and auction and sales data (see rationale for 3.2.3 for more information). However, information on the stock was more variable. The situation and score for each main retained species is shown in the table below:

Species / stock	Information available	Could status be judged against biologically-based limits?	Could info support partial management strategy?	Could increased risk be detected?	Score	Refs
Arctic cod	Stock assessment, reference points	Yes – stock assessment and reference points	Yes – management strategy in place	Yes – stock assessment revised annually	80	13
North Sea cod	Stock assessment, reference points	Yes – stock assessment and reference points	Yes – management strategy in place (Cod Recovery Plan)	Yes – stock assessment revised annually	80	14
Redfish	Landings, CPUE, survey indices giving abundance by age for <i>S. marinus</i> and <i>S. mentella</i>	Yes – historical levels of CPUE or survey indices could act as biologically-based limits	Yes – quotas could be extended outside Norwegian waters (see rationale for 2.1.1)	Yes – CPUE and survey data monitored	80	15,16
Greenland halibut	Landings, CPUE, survey data. ICES working on stock assessment.	Yes – ICES suggests that SSB will increase if catches kept below 13000 tonnes – this can be considered a ‘biologically-based limit’	Yes – TAC comprises partial strategy – see 2.1.1	Yes – CPUE and survey data monitored, stock assessment being finalised	80	17

The overall score was therefore 80.

2.2 By-catch

2.2.1 Outcome status

The fishery does not pose a risk of serious or irreversible harm to the by-catch species or species groups and does not hinder recovery of depleted by-catch species or species groups.

SG 60: Main by-catch species are likely to be within biologically based limits, or if outside such limits there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding. If the status is poorly known there

are measures or practices in place that are expected result in the fishery not causing the by-catch species to be biologically based limits or hindering recovery

SG 80: Main by-catch species are highly likely to be within biologically based limits or if outside such limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding

SG 100: There is a high degree of certainty that by-catch species are within biologically based limits

Score: 80

Rationale

1. Definition of 'by-catch species' and 'main by-catch species'

As described in the rationale for PI 2.1.1, species which are sometimes retained and sometimes discarded have been defined here as 'retained species'. The only species discussed here are therefore those which are always discarded. Data on these species are not included in logbooks, but species are listed in three observer reports provided to the team (19,20).

These species are the following: Norway pout (*Trisopterus esmarkii*), herring (*Clupea harengus*), mackerel (*Scomber scombrus*), argentine (*Argentina sphyraena*) and blue whiting (*Micromesistius poutassou*). Of these, the catches of all except Norway pout appear to be negligible. Catches of Norway pout reach ~5 % of total catches on the occasional tow, according to one of the observer reports. The team therefore defined Norway pout as the only 'main' by-catch species.

Three species of ray must under EU regulations be discarded. These are *Dipturus batis* (common stake), *Raja undulata* (undulate ray) and *Rostroraja alba* (bottlenosed skate). Two of these species are IUCN Redlisted, one (*D. batis*) as critically endangered. The team discussed whether these should be included as 'main by-catch species' on this basis. The conclusion was reached that they should not be including, for two reasons: i) low to negligible catch rates of total rays reported by Euronor vessels and by observers: likely to be not more than 10s to low 100s of individuals per year; ii) difficulty of identifying rays to species mean that there is no evidence that Euronor vessels have ever caught any individuals of these three species.

2. Scoring

SG 100 requires a high degree of certainty that all by-catch species are within biologically-based limits. The most recent ICES advice for Norway pout (21) suggests that the stock has full reproductive capacity, but reference points for F cannot be established, and the short-lived nature of the species makes stock assessment difficult. The team did not therefore consider that the ICES assessment met the criterion of 'high degree of certainty' even for the main by-catch species. However, the team did consider

based on ICES advice that it was ‘highly likely’ that the Norway pout stock was within biologically based limits, as required by SG 80.

2.2.2 Management strategy

There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations.

SG 60: There are measures in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery. The measures are considered likely to work, based on plausible argument (e.g general experience, theory or comparison with similar fisheries/species).

SG 80: There is a partial strategy in place, if necessary, for managing bycatch that is expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery. There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or the species involved. There is some evidence that the partial strategy is being implemented successfully.

SG 100: There is a strategy in place for managing and minimising bycatch. The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports high confidence that the strategy will work. There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.

Rationale

For definition of ‘main by-catch species’ see 2.2.1. The team considered that only ‘main by-catch species’ is Norway pout.

The team considered in general terms that there was a strategy for managing by-catch - the gear type (100mm or 135mm mesh size) and the fishing technique (7) means that by-catch levels are minimal. However, the strategy is general, rather than based on the particular fishery and species involved here, and it does not have particular objectives, nor has it been specifically tested. Therefore, only one element of SG 100 is met. This gives a maximum score of 85. The team considered that SG 80 was met because all necessary actions to minimise by-catch were in place, that the outcome was successful and that based on by-catch levels this fishery was highly unlikely to have any impact on populations of by-catch species.

2.2.3 Information / monitoring

Information on the nature and amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch
--

SG 60: Qualitative information is available on the amount of main bycatch species affected by the fishery. Information is adequate to broadly understand outcome status with respect to biologically based limits. Information is adequate to support measures to manage bycatch

SG 80: Qualitative information and some quantitative information are available on the amount of main bycatch species affected by the fishery. Information is sufficient to estimate outcome status with respect to biologically based limits. Information is adequate to support a partial strategy to manage main bycatch species. Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).

SG 100: Accurate and verifiable information is available on the amount of all bycatch and the consequences for the status of affected populations. Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty. Information is adequate to support a comprehensive strategy to manage bycatch, and evaluate with a high degree of certainty whether a strategy is achieving its objective. Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.

Rationale

1. Scoring against SG 100

SG 100 requires that accurate and verifiable information is available on all by-catch in this fishery and on its consequences for population status. This is not the case: catch which is discarded (i.e. 'by-catch' according to the MSC definition) is not required to be noted in logbooks, so the only information comes from observer reports. Observers are only present on a small minority of Euronor fishing trips. In addition, the population status of all by-catch species is not known accurately – e.g. for small pelagic species where stock assessment is difficult or for rays where catch data is lacking because of difficulties in identification by fishermen. SG 100 is therefore not met in its main elements, and the team considered that the highest possible score was 80.

2. Scoring against SG 80

SG refers to 'main by-catch species' rather than all by-catch species. For definition of 'main by-catch species' see 2.2.1. The team considered that only 'main by-catch species' in this case is Norway pout.

Some qualitative and some quantitative information is available on Norway pout by-catch from observer reports (19,20), and this information was considered sufficient by the team to be confident that this fishery is not having a significant impact on Norway pout populations. In addition, there are annual stock assessments of Norway pout by ICES (21), which is able to estimate the status of the stock as regards reproductive capacity, and to set precautionary catch limits. The team therefore considered that SG 80 was met.

2.3 ETP species

2.3.1 Outcome status

The fishery meets national and international requirements for protection of ETP species. The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species.

SG 60: Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species. Known direct effects are unlikely to create unacceptable impacts to ETP species

SG 80: The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species. Direct effects are highly unlikely to create unacceptable impacts to ETP species. Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts

SG 100: There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species. There is a high degree of confidence that there are no significant detrimental effects (direct and indirect) of the fishery on ETP species

Rationale

1. Definitions

ETP species are defined by MSC as follows: 'Endangered, threatened or protected species are those that are recognised by national legislation and/or binding international agreements (e.g. CITES) to which the jurisdictions controlling the fishery under assessment are party.'* The team would like to note here that they were not happy with this definition, since it seems to encompass only the 'protected' element of 'endangered, threatened and protected'. The team would have liked to have included some discussion of the fishery's interaction with all threatened or endangered skates and rays (22,23). However, with the exception of the common skate, the species in question are not legally protected under any relevant national or international jurisdiction and are therefore not covered by the definition of ETP species laid down by MSC.

* FAM page 32, Section 7.1.1.

2. Protected species under the above definition

The table below shows the species that might be relevant, according to the above definition. These are species which are present in the area in which Euronor is fishing, and which are protected in some way. The sources of protection considered were i) EU legislation; ii) national legislation (Norway, UK, France); iii) binding international agreements (OSPAR, CITES)

Species were selected by the team to be relevant if there was any possibility of overlap with the Euronor fishing operations by i) geographic distribution only (for terrestrial or pelagic species) or by i) geographic distribution and depth (for marine benthic species).

Species	Source of protection
Ocean quahog <i>Arctica islandica</i>	OSPAR (53)
Cold water coral <i>Lophelia pertusa</i>	OSPAR (54 - note: considered a habitat type), EU and Norwegian legislation (7)
Basking shark <i>Cetorhinus maximus</i>	OSPAR, UK legislation (55)
Common skate <i>Raja (Dipturus) batis</i>	OSPAR
Whales (any species)	CITES (24)
Common or harbour seal <i>Phoca vitulina</i>	French legislation (25)
Grey seal <i>Halichoerus grypus</i>	French legislation
Bottlenose dolphin <i>Tursiops truncatus</i>	French legislation, CITES
Harbour porpoise <i>Phocoena phocoena</i>	French legislation, CITES, OSPAR
Roseate tern <i>Sterna dougallii</i>	French legislation
Razor bill <i>Alca torda</i>	French legislation
Common guillemot <i>Uria aalge</i>	French legislation
Puffin <i>Fratercula arctica</i>	French legislation

3. Cetaceans, seals, seabirds and basking shark

Euronor captains report that cetaceans and seabirds are seen while fishing, but that there are never any negative interactions (death, injury or disturbance). Seal are not reported to be seen. A basking shark has never been caught or landed on board. Observer reports likewise report no interactions with the above species, but these cover only a small minority of fishing trips (19,20). According to Defra (26), cetaceans are not considered to be at risk from bottom trawling, and it is not clear by what mechanism negative interactions could occur. This scoring element scored 100.

4. Common skate

Up until recently, skates and rays have not been separated into species in the logbook, so it is not possible from current landings data to assess whether Euronor has ever caught a common skate. Landings of rays by Euronor in 2007 (see Table 3 of the main report) were 1.69 tonnes, but an unknown proportion of these were associated with some residual activity of Euronor vessels in a deep-water fishery, rather than the saithe fishery. In 2009 between the start of the assessment in mid February and the site visit in early June, 8 rays were brought on board Euronor vessels as by-catch. These rays were photographed before being discarded but could not be reliably identified by the team from the photographs. Observer reports (19,20) also suggest a low catch rate of rays from this fishery, not exceeding 10s to 100s of individuals per year (of all species grouped).

The common skate is a demersal species that lives mainly between 0 and 200 m depth, although it is occasionally found down to 600 m (56). Its core depth range therefore does not overlap with this fishery, which takes place mainly between 200 m and 250 m.

Overall, the team concluded that there was no good evidence that the fishery interacted with common skates, and even if there is some occasional by-catch, direct interactions are likely to be at a level which is highly unlikely to have unacceptable impacts on the population. No indirect effects of the Euronor fishery on common skate were considered likely since the species does not appear to interact with saithe, which dominates the catch. However, the team did not consider that there was a 'high degree of certainty' regarding Euronor's interactions with the common skate, so none of the requirements of SG 100 were met. This scoring element therefore scores 80.

5. *Ocean quahog (Arctica islandica)*

Peer reviewer 1 notes that there is evidence that this species has been reduced in the southern North Sea due to beam trawling. However, the team also notes that populations of *Arctica* in the northern North Sea are considered high (57) – particularly in the Fladen Ground which is a very important area for *Nephrops* trawling. The team therefore felt that there was no evidence that otter trawling posed a significant threat to this species. This scoring element scores 100.

6. *Lophelia pertusa*

Lophelia pertusa is considered by OSPAR as a threatened habitat rather than a protected species. However, it is protected in some areas of Norwegian and Scottish waters by a ban on trawling (7). This protection is effective in keeping Euronor vessels out of these areas. The team followed the lead of OSPAR in considering the wider distribution of *Lophelia* under habitats below. This scoring element scores 100.

7. *Scoring*

The team took the overall score to be the lowest of the scoring elements – i.e. 80.

2.3.2 Management strategy

The fishery has in place precautionary management strategies designed to: - meet national and international requirements; - ensure the fishery does not pose a risk of serious or irreversible harm to ETP species; - ensure the fishery does not hinder recovery of ETP species; and - minimise mortality of ETP species.

SG 60: There are measures in place that minimise mortality and injury, and are expected to achieve the ETP Outcome PI 80 level of performance or above. The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).

SG 80: There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, that is designed to achieve the ETP Outcome

PI 80 level of performance or above. There is an objective basis for confidence that the strategy will work, based on some information directly about the fishery and/or the species involved. There is evidence that the strategy is being implemented successfully.

SG 100: There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, that is designed to achieve above the ETP Outcome PI 80 level of performance. The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work. There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. There is evidence that the strategy is achieving its objective.

Score: 80

Rationale

A list of relevant ETP species is given in the rationale for 2.3.1 above.

From PI 2.3.1 above, the key relevant species is the common skate. As of 2009, a strategy for the management of interactions of this species with fishery has been put in place at EU level (7). The elements of the strategy are as follows:

- All rays and skate brought on board are required to be identified in logbooks to species level.
- Three species, including the common skate, are required to be discarded alive as far as possible. Crews should take measures to maximise survival; i.e. rapid discarding in a careful fashion.

Euronor has issued instructions to all vessel captains regarding these requirements.

A risk with this management strategy is the (mis)identification of skates and rays in the by-catch. To help with this, Ifremer has created laminated identification sheets for the main species of rays caught by French fisheries, including the common skate. These have also been issued to all Euronor vessels. In addition, the post-capture survival of common skate in this fishery is not known. A study on trawl fisheries in the Bristol Channel (58) suggested a mean survival rate of just over 50 % for rays (mixed species) caught in trawl tows of commercial duration, but it is not clear how applicable this is to the Euronor fishery (different species, different fishery, different location).

Overall, however, the team considered that given the evidence laid out above to suggest that direct impacts by this fishery on common skate were very low, there was a good objective basis for considering that this management strategy would be successful in minimising mortality of common skate by this fishery. The team accepted that in the first instance, there were likely to be some issues around difficulties in identification of ray and skate species, but felt that given the information provided that the strategy would be implemented successfully in the long run. Thus SG 80 was met. SG 100 requires a

‘comprehensive strategy’, with a ‘quantitative analysis’ of its performance – this is not the case.

2.3.3 Information / monitoring

Relevant information is collected to support the management of fishery impacts on ETP species, including: - information for the development of the management strategy; - information to assess the effectiveness of the management strategy; and - information to determine the outcome status of ETP species.

SG 60: Information is adequate to broadly understand the impact of the fishery on ETP species. Information is adequate to support measures to manage the impacts on ETP species. Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.

SG 80: Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a full strategy to manage impacts. Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.

SG 100: Information is sufficient to quantitatively estimate outcome status with a high degree of certainty. Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives. Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.

Score: 80

Rationale

A list of relevant ETP species is given in the rationale for 2.3.1 above.

For all species except the common skate, the team was confident that, given the nature of the fishery and the species involved, the level of fishing mortality and the nature of the threat posed by this fishery could be confidently and quantitatively predicted. The team further considered that outcome status with regard to this fishery could be estimated with a high degree of certainty and that impacts could be minimised with a high degree of certainty.

For common skate, the situation is somewhat different, since this species may be occasionally caught as a by-catch (see rationale for 2.3.1 above). Prior to 2009, rays had been lumped together in logbook data as one group, regardless of species. In 2009 an EU requirement entered into force to separate rays and skates by species in the logbooks. Ifremer has provided guidance sheets on the identification of rays, which are used on board all Euronor’s vessels; however identification to species is difficult in many cases and it is probably to be expected that it will take some time for reliable data on by-catch of skates and rays to become available. The existing information on by-catch of rays in

this fishery suggests that it is low (see rationale for PI 2.3.1). However it is not known that common skate is never caught. Also, while it is required under EU regulation that it is discarded alive, the post-capture mortality is also not known, but is considered likely to be significant (see rationale for PI 2.3.2).

Overall, for common skate, the team considered that information was sufficient to assess that this fishery is not likely to be a barrier to the recovery of this species. The team did not consider that information at present was sufficient to allow a quantitative estimates of fishery related impact on this species; however they considered that the regulations in force since 2009 would provide sufficient information to meet SG 80 in the long term.

2.4 Habitat

2.4.1 Outcome status

The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.

SG 60: The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.

SG 80: The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.

SG 100: There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.

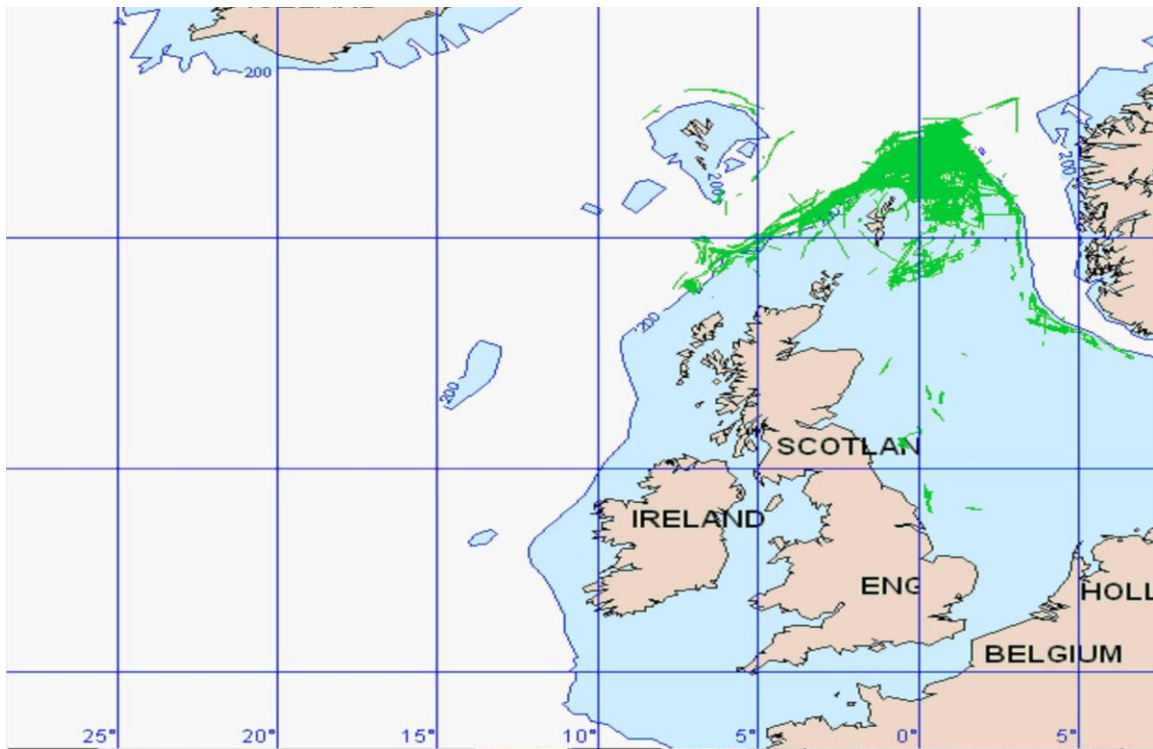
Score: 80

Rationale

1. Fishing area

The Euronor fishing zones for saithe in the North Sea are shown below. Note that this is a compilation of several years of data, and not all of these areas may be currently fished. However, we consider all these areas in the analysis of habitat types below.

Map 1. Euronor saithe fishing areas (from Euronor).



2. Gear - action on bottom

The gear used by the fishery is a demersal ‘rockhopper’ otter trawl, with relatively large and heavy otter boards (1500 – 2000 kg each). The gear operates on or near the bottom, and may thus *a priori* be predicted to cause some damage to benthic habitats. The rockhopper type gear reduces damage relative to a simple tickler chain, but the contact of the trawl doors with the bottom causes a clear trail which can be seen, for example, using side-scan sonar (27). Demersal otter trawling is known to cause damage to benthic habitats (e.g. 28), and ICES estimate that otter trawling in the northern North Sea removes or kills approximately 25% of the standing crop biomass annually (29).

3. Distribution of sensitive habitats in relation to fishing

Information on sensitive habitats in the Northeast Atlantic is available from OSPAR (54). Maps are available showing areas where a variety of threatened or declining habitats have been found to occur. These maps were examined by the team for possible overlap with the map above. Possible sensitive habitats that were examined were i) deep-sea sponges; ii) *Lophelia pertusa* reefs; iii) *Modiolus* reefs and iv) seapens and burrowing megafauna. We consider these habitats in turn.

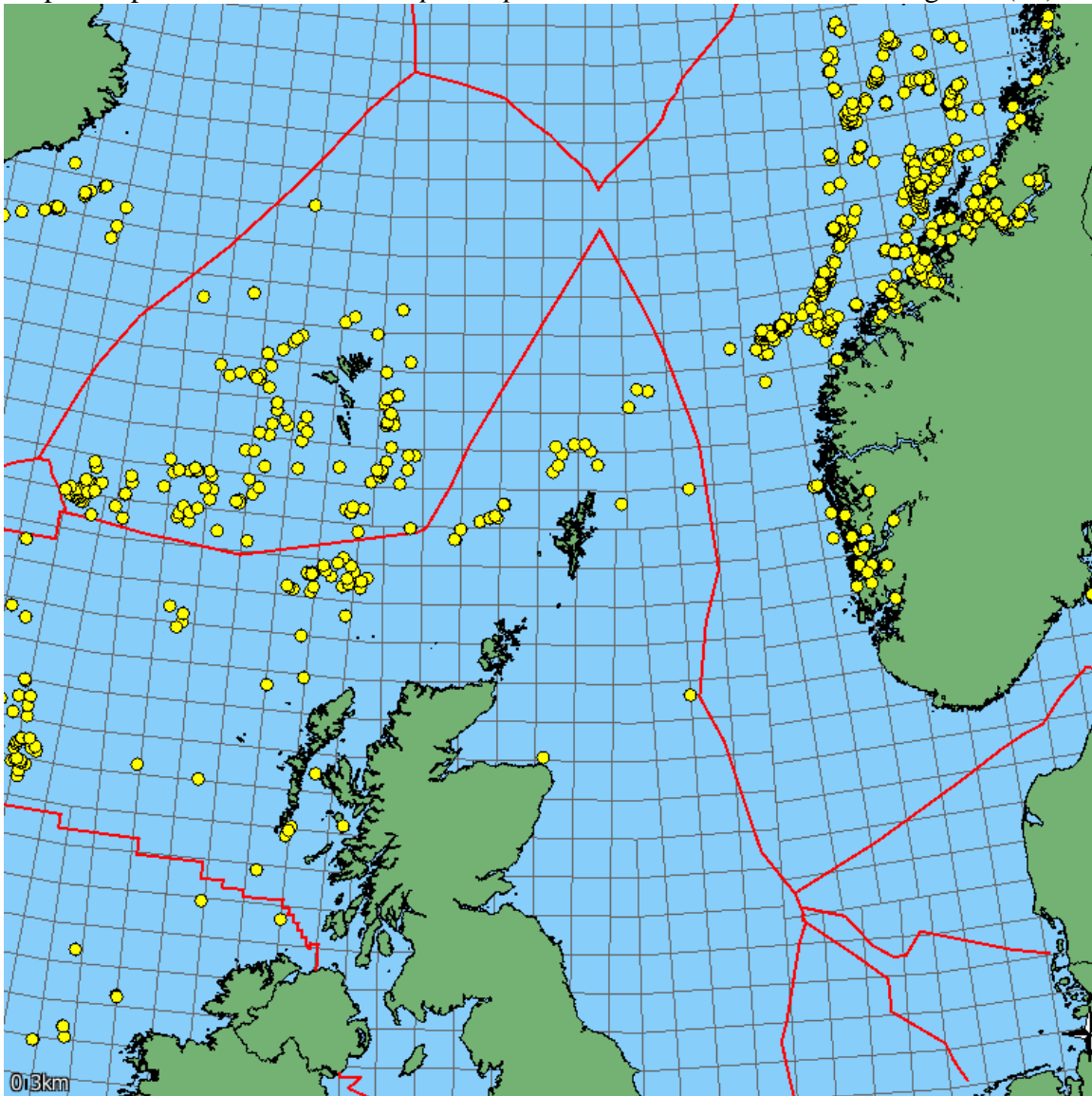
3.1 Deep sea sponges

The distribution of this habitat type did not overlap with the Euronor fishing area (54).

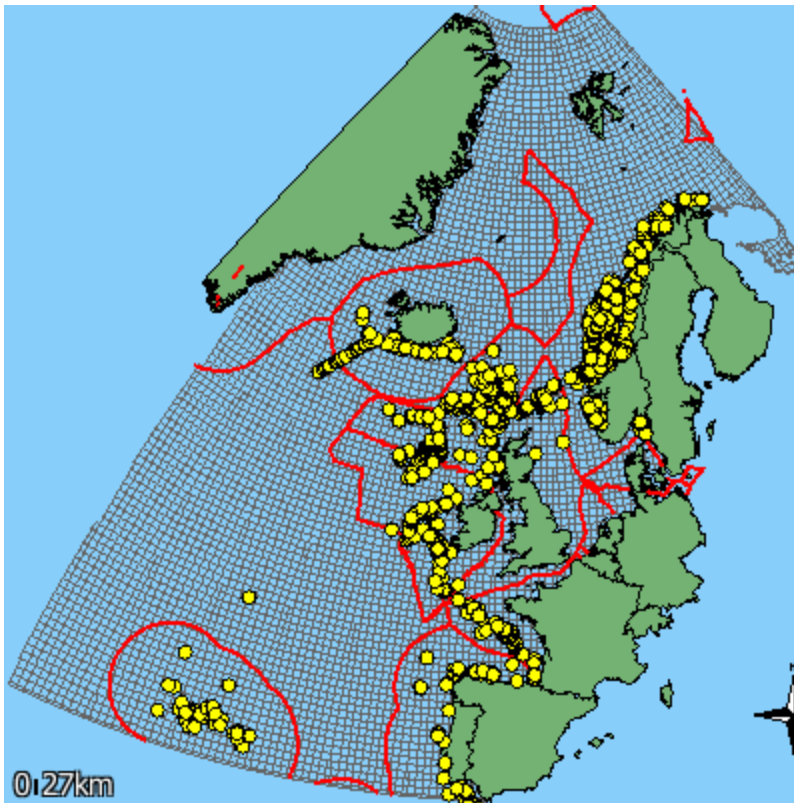
3.2 *Lophelia* reefs

The maps below show the distribution of *Lophelia pertusa* in the Northeast Atlantic, according to OSPAR (54). Comparison of Map 2 with the map of Euronor saithe fishing area shows that there is some overlap of the fishing area with a few reported occurrences of *Lophelia*, to the north and west of the Shetland islands. Map 3 (zoomed out) shows that this is a small proportion of the *Lophelia* reefs in the northeast Atlantic – nonetheless, this is a threatened and ecologically important habitat.

Map 2. Reported occurrence of *Lophelia pertusa* in the main Euronor fishing area (54).



Map 3. Reported occurrence of *Lophelia pertusa* in the wider northeast Atlantic (54).



The depth distribution of *Lophelia pertusa* is from 200 m to 1000 m (they can occur more shallowly, but rarely). The depth distribution of Euronor fishing is 200 – 250 m. Therefore there is some overlap, but only with a relatively small proportion of the depth range.

The team also noted i) that Euronor fishing captains stated that they had never seen cold water corals in the trawl and ii) that the most important areas of *Lophelia* in the Euronor fishing zone have been closed to trawling (7).

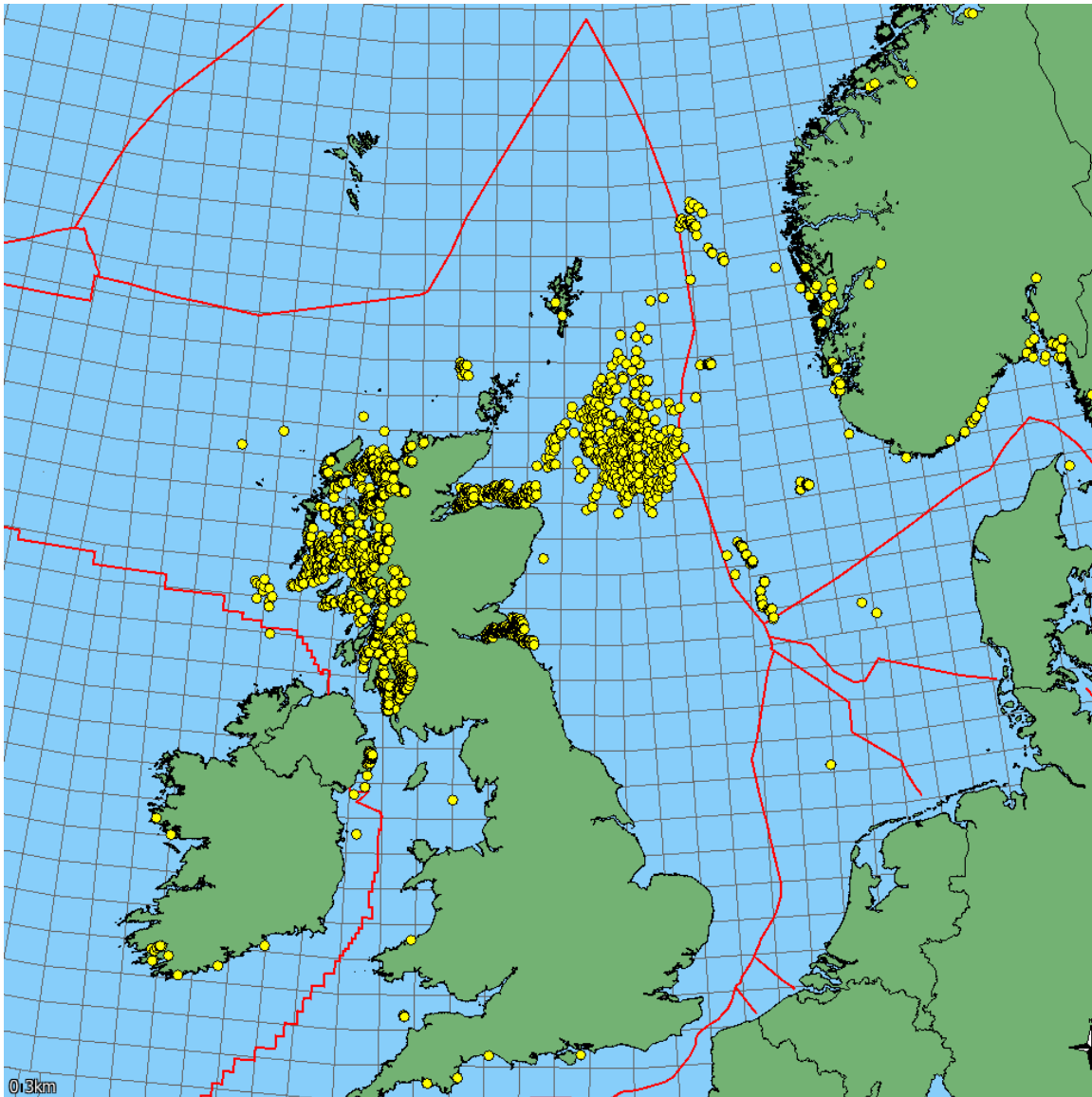
3.3 *Modiolus* reefs

The horse mussel *Modiolus modiolus* can sometimes form biogenic reefs, and these have been recorded around the Shetland islands, but much closer inshore than the Euronor fishing area (54). While *Modiolus* may occur as deep as 280 m (59), it is usually found much more shallow than this – even occasionally in the intertidal.

3.4 *Seapens and burrowing megafauna*

The distribution of this habitat type is shown in Map 4 below.

Map 4. Reported occurrence of habitat type ‘seapens and burrowing megafauna’ in the main Euronor fishing area (54).



In the North Sea, this habitat type is concentrated in the Fladen Ground – a soft-bottomed area with a fauna dominated by burrowing hagfish, *Nephrops* and bivalves (J. Gascoigne, pers. obs.). This is an important area from *Nephrops* trawling but is shallower than the saithe fishing areas (~100 m). Generally, it is clear that this habitat type does not overlap with the Euronor fishing zone.

The main habitat of concern here, therefore is *Lophelia pertusa* reefs.

4. Operation of the fishery

Captains report that the fishery operates over mud, gravel or rocky bottoms, and both captains and observer reports (19,20) state that benthic fauna such as sponges, starfish and corals are not brought up in the trawl. According to fishing captains, the gear is sometimes snagged on bottom features and lost, but has nearly always been retrieved (for

financial reasons). The features concerned tend to be artificial (connected to the petroleum industry) rather than natural. The fishery does not operate in the main areas identified as cold water coral reefs, since they have been closed to trawling (7).

5. Other trawling operations in the area

Aside from Euronor vessels, around 8 other EU vessels fish regularly in the same area (5 German, one British and two Polish). Up to 50 Norwegian vessels also fish in the same area on a less regular basis. Fishing areas of these vessels overlap significantly because of the rather specific depth requirement for saithe fishing (around or just below the 200 m contour). Overall, therefore, this particular area has to be considered to be heavily trawled, and the likelihood that Euronor vessels are fishing in untrawled areas is therefore low.

More generally, very high rates of benthic trawling has been a dominant feature of the North Sea ecosystem for several decades. Scientific work shows that the majority of damage to sensitive benthic ecosystems is done the first time a trawl passes over, and that cumulative damage from frequent trawling in the same spot may be only slightly more significant than damage from a single trawl pass (28). It is thus likely that North Sea benthic ecosystems were greatly changed by trawling long before Euronor started its operations, and it is thus unlikely that Euronor trawling will greatly alter the habitat structure and function relative to what was present before.

6. Scoring

SG 80 requires that it is highly unlikely that the fishery would reduce habitat structure and function to a point where there would be serious or irreversible harm. Clearly the main issue here is with *Lophelia* reefs. The team considered that on the basis of i) the large number of vessels operating in this area over many years; ii) the relatively small depth overlap between *Lophelia* habitat and Euronor operations and iii) the high level of protection offered to the main areas of *Lophelia* reefs in both EU and Norwegian waters, that this guidepost was met.

SG 100 requires evidence about the impacts of Euronor vessels on habitats. There are several lines of direct evidence for Euronor vessels specifically (set out above) but the team considered that these were all anecdotal, and mainly came from Euronor itself rather than from objective observers, so were not strongly convincing. The team therefore decided that SG 100 was not met on any counts.

2.4.2 Management strategy

There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.
--

SG 60: There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance. The measures are considered likely to work, based on

plausible argument (e.g general experience, theory or comparison with similar fisheries/habitats).

SG 80: There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above. There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or habitats involved. There is some evidence that the partial strategy is being implemented successfully.

SG 100: There is a strategy in place for managing the impact of the fishery on habitat types. The strategy is mainly based on information directly about the fishery and/or habitats involved, and testing supports high confidence that the strategy will work. There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.

Score: 90

Rationale

The team noted that there are several measures in place to avoid trawling by Euronor in sensitive habitat areas. Areas with cold water corals have been closed to all bottom trawling (7), and the tracking of Euronor fishing vessels by VMS (position given every two hours) make it highly unlikely that these rules are being breached. Euronor is in the process of signing up to 'contrat bleu' (agreements proposed under a French government programme (le 'Plan Barnier') to promote responsible fishing - 31), under which it agrees not to trawl close to shore (which it does not do in any case). The team considered that these measures together comprised a strategy for managing the habitat impacts on this fishery, which is being implemented successfully. However, the team considered that the lack of direct, objective evidence about habitat impacts by Euronor vessels (such as observer reports) was not sufficient to conclude with high confidence that the strategy was achieving its objective. Only three of the five elements of SG 100 are therefore met, leading to a score of 90.

2.4.3 Information / monitoring

Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types.

SG 60: There is a basic understanding of the types and distribution of main habitats in the area of the fishery. Information is adequate to broadly understand the main impacts of gear use on the main habitats, including spatial extent of interaction.

SG 80: The nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery. Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent, timing and location of use of the fishing gear. Sufficient data continue to be collected to detect any

increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).

SG 100: The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types. Changes in habitat distributions over time are measured. The physical impacts of the gear on the habitat types have been quantified fully.

Score: 85

Rationale

The distribution of benthic habitats in the North Sea is relatively well-known compared to most marine areas – see for example the EU project ‘Mapping European Seabed Habitats’ (30), as well as the maps of threatened or declining habitats available from OSPAR (54). Habitats in the main Euronor fishing area in northern North Sea have therefore been mapped at an appropriate scale. The impacts of otter trawls on benthic habitats are well known (e.g. 27,28). The timing, location and spatial extent of the use of fishing gear is well known from VMS and logbook data (see Map 1 in the rationale for PI 2.4.1 above). Increases in risk to habitat are considered by the team to be unlikely, but could be inferred from changes in fishing operations. ICES collects information on habitat impacts of fisheries on an ongoing basis (32). The team therefore concluded that SG 80 is met, along with the first element of SG 100. However, the team did not consider that changes in habitat distribution over time were measured in sufficient detail in relation to Euronor fishing activities, nor that the impacts of the gear were fully quantified in relation to this particular fishery. Only one of three elements in SG 100 were therefore met, leading to a score of 85.

2.5 Ecosystem

2.5.1 Outcome status

The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function.

SG 60: The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.

SG 80: The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.

SG 100: There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.

Score: 85

Rationale

The North Sea ecosystem is relatively well-known compared to most other marine systems (e.g. CEFAS has constructed an ecosystem model – 33), and ICES takes ecosystem impacts into account in fisheries assessment and advice, in as far as this is possible (1,2).

The role of saithe in the North Sea ecosystem is also relatively well understood. Adult saithe are predators of other smaller fish – i.e. have a high trophic level (11,12). They are not major prey for any other predators, although they may be a minor component of the diet of sperm whales in some areas (they probably live too deep to be important prey for seals and small cetaceans). The fishery is quite monospecific, and the saithe stocks in question are in good condition (1,2), although saithe has declined in the North Sea over the last 120 years, according to CEFAS (33).

Overall, the team considered that the fishery was highly unlikely to disrupt key elements of ecosystem structure and function; i.e. that SG 80 was met. There is some evidence, as set out above, but the conclusion in the main comes from inference – i.e. SG 100 is not met in full.

2.5.2 Management strategy

There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function.

SG 60: There are measures in place, if necessary, that take into account potential impacts of the fishery on key elements of the ecosystem. The measures are considered likely to work, based on plausible argument (eg, general experience, theory or comparison with similar fisheries/ ecosystems).

SG 80: There is a partial strategy in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance. The partial strategy is considered likely to work, based on plausible argument (eg, general experience, theory or comparison with similar fisheries/ ecosystems). There is some evidence that the measures comprising the partial strategy are being implemented successfully.

SG 100: There is a strategy that consists of a plan, containing measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem. This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm. The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved. There is evidence that the measures are being implemented successfully.

Score: 80

Rationale

There are a series of measures in place which consider the impacts of fisheries on ecosystem structure and function, which the team considered comprised a 'partial strategy'. This includes i) a consideration of ecosystem elements in ICES assessments and advice, as required by the Common Fisheries Policy (e.g. 1); and ii) other legislation such as the OSPAR Convention and the Habitats Directive (34,35). The team considered that this strategy was likely to work in avoiding significant ecosystem impacts of Euronor fisheries, and that there was evidence that the strategy is being implemented (e.g. closed areas in sensitive habitats (7), ICES advice is being followed).

SG 100 requires a strategy for the fishery based on well-understood functional relationships. The team considered that this did not exist, therefore SG 100 is not met.

2.5.3 Information / monitoring

There is adequate knowledge of the impacts of the fishery on the ecosystem. Information is adequate to identify the key elements of the ecosystem (e.g. trophic structure and function, community composition, productivity pattern and biodiversity).

SG 60: Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.

SG 80: Information is adequate to broadly understand the functions of the key elements of the ecosystem. Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but may not have been investigated in detail. The main functions of the Components (i.e. target, by-catch, retained and ETP species and habitats) in the ecosystem are known. Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred. Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).

SG 100: Information is adequate to broadly understand the key elements of the ecosystem. Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated. The impacts of the fishery on target, by-catch, retained, ETP and habitats are identified and the main functions of these Components in the ecosystem are understood. Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred. Information is sufficient to support the development of strategies to manage ecosystem impacts.

Score: 95

Rationale

The team considered that information, as outlined above (see rationale for 2.5.1 and 2.5.2) is sufficient to understand key elements of ecosystem structure and function, and that the impacts of the fishery on these key elements can be inferred. The role of main retained and by-catch species in the ecosystem, and the impacts of the fishery on these, as well as on ETP species and habitats, is also broadly understood (see for example ICES advice for main retained and by-catch species – 1,2,13,14,15,16,17,18,21). The team considered that this information was sufficient to infer the ecosystem-level impacts of the fishery, and to support a strategy to manage these impacts. Most of the elements of SG 100 are thus met, except that the interactions of the fishery with key ecosystem elements have not been specifically investigated. The team therefore gave a score of 95.

Principle 3

The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable

3.1 Governance and policy

3.1.1 Legal and/or customary framework

The management system exists within an appropriate and effective legal and/or customary framework which ensures that it: - Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; - Observes the legal rights created explicitly or by custom of people dependent on fishing for food or livelihood; and - Incorporates an appropriate dispute resolution framework.

SG 60: The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2. The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system. Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery. The management system generally recognises and respects the legal rights created explicitly or by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.

SG 80: The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2. The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery. The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges. The management system observes the legal rights created explicitly or by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.

SG 100: The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2. The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective. The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges. The management system is formally committed to the legal rights created explicitly or by custom on people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.

Score: 90

Rationale

The fishery is managed through the Common Fisheries Policy of the EU in accordance with the basic fisheries regulation (2371/2002) (36). The objective of the CFP is to “*to provide for sustainable exploitation of living aquatic resources and of aquaculture in the context of sustainable development, taking account of the environmental, economic and social aspects in a balanced manner.*” (36). This objective is clearly aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.

The EC CFP is consistent with the FAO Code of Conduct (37) and all other international conventions dealing with fishing. The fishery is fundamentally managed under an international agreement between the EU and Norway (38,39). European Union Member States and Norway ratified the 1982 UN Convention of the Law of the Sea in the latter part of the 1990s; the European Union ratified the Convention in 1998. Since this date the European Union has played an active part in the development of three new instruments that supplement and add further detail to the provisions established by the Convention on the Law of the Sea, namely:

- the Agreement to promote compliance with international conservation and management measures by fishing vessels on the high seas, adopted by the FAO in 1993 (40),
- the Code of Conduct for Responsible Fisheries, adopted by the FAO Conference in November 1995, following on from the Cancun Declaration of 1992 (37),

- the Agreement for the implementation of the provisions of the United Nations Convention on the Law of the Sea relating to the conservation and management of fish stocks found both inside and outside exclusive economic zones (straddling stocks) and highly migratory fish stocks, known as the "New York Agreement", adopted in 1995 (41).

The annual fishing opportunities for saithe are determined by the international agreement, between the EC and Norway (39). The EC CFP is consistent with this agreement.

This management system is supported by a transparent mechanism for the resolution of legal disputes that is tried and tested. The rules relating to the fishery are clearly set out and communicated to the participants in the fishery (7). Non-compliance with rules is dealt with through established enforcement mechanisms, such as financial penalties and confiscation of illegal fishing gear and catch. Legal proceedings are carried out through the justice system, which provided the opportunity for defence against allegations and appeal against rulings through domestic courts and ultimately the European Court of Justice.

The Common Fisheries Policy sets out a formal commitment to the legal and customary rights of people dependent on fishing: *“In view of the precarious economic state of the fishing industry and the dependence of certain coastal communities on fishing, it is necessary to ensure relative stability of fishing activities by the allocation of fishing opportunities among the Member States, based upon a predictable share of the stocks for each Member State.”* (36)

Scientific research and assessment is carried out by ICES. Advice is provided through the Advisory Committee on Fisheries Management (ACFM) which draws on the ongoing work of international scientists from relevant research laboratories and institutions on the stock biology and marine science on the status of target and non-target stocks to the European Commission. ICES advice, via Commission proposals, informs the annual EU Council of Ministers regulation establishing management measures, in particular TACs and quotas (see e.g. 1,2,13,14,15,16,17,18).

At the national level, the “Direction des Pêches Maritimes et de l’Aquaculture (DPMA)” of the “Ministère de l’Alimentation de l’Agriculture et de la Pêche” is the government authority responsible for the implementation of the CFP and a range of management and regulatory duties, including management of fleet activity, management of national quota, monitoring and control of all fisheries occurring within national jurisdiction, collection, collation and transmitting of key fishery data.

There is clear and evident division of responsibility between EU, ICES (ACFM) and national institutions and authorities. On-going evolution of these structures can be seen as a result of the regular monitoring and revision of responsibilities and interactions, leading to improved clarity, but also to improved integration.

The European Union is also a member of a range of Regional Fisheries Organisations (RFOs), created to guarantee the conservation and sustainable exploitation of fish resources in the open seas, play a key role in combating illegal, unreported and unregulated fishing (IUU) and destructive fishing practices, which damage fragile habitats, in particular seamounts and cold water corals (see 7).

The management system is considered to be entirely consistent with the multi-national nature, scale and intensity of the fishery.

The management system for the fishery is well established, transparent, tried and tested, and meets therefore all of the SG80 requirements and the first two of the SG100. But the management system does not act proactively and is not formally committed to the legal rights on people depending in fishing this indicator gets a score of 90.

3.1.2 Consultation, roles and responsibilities

The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties.

SG 60: Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood. The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.

SG 80: Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction. The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained. The consultation process provides opportunity for all interested and affected parties to be involved

SG 100: Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction. The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used. The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.

Score: 95

Rationale

The management system for this fishery involves scientists, stakeholders and fisheries managers in a consultative process that explicitly defines and explains the respective roles of all parties in all areas of responsibility.

Scientific advice from ICES forms the core of the management system. At a European level, key institutions are the Advisory Committee on Fisheries and Aquaculture (ACFM) - which comprises a contact group at the European level for all stakeholders at national

and regional levels – and the Regional Advisory Councils (RACs) – which comprise a contact group dealing with particular fisheries at the regional level (36).

The outcome of meetings of the Council of Ministers clearly demonstrates that all of this information is taken into account, and explains how the information is used (42,43). The annual consultation process for TACs and the decadal consultation on the review of the CFP provide opportunities for stakeholders to engage directly in the management process, and this involvement is facilitated at the EC and national level (36).

At a national level, administrations operate formal consultation procedures. The French quota belong to the Government and is distributed among the POs based on customary rights. They have the right to distribute their quota among their member vessels. While quotas can be changed between members of a PO, this is not the case if quotas are to be changed between POs (within France or between member states). Such transfers have to be channelled through the Direction des Pêches Maritimes et de l'Aquaculture (DPMA) of the “Ministère de l’Alimentation de l’Agriculture et de la Pêche”

The management system meets all of the SG80 and most of the SG 100 requirements. The management system does, however, not explain how information from the consultation process is used or not used (2nd guidepost) and can therefore not score more than 95.

3.1.3 Long term objectives

The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach

SG 60: Long-term objectives to guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are implicit within management policy.

SG 80: Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within management policy.

SG 100: Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy

Score: 80

Rationale

The management system contains overarching environmental management objectives arising from international agreements (such as the UN Convention on the Law of the Sea, and Convention on Biological Diversity), and EC legislation (the CFP (36) and EC environmental Directives (e.g. the Habitats Directive – 35)). These objectives are measured by a range of performance indicators.

Long-term objectives for the saithe the North Sea and the Northeast Arctic saithe are set out in a management plans. The one for the North Sea was agreed by the EU and Norway in 2004 (1,39). This management plan is an integral part of the EU-Norway agreement

(38). The management plan for the Northeast Arctic has been implemented in 2007 (2). Both plans set long-term objectives for the target species and also imposes constraints on management measures (such as a limit on the amount that the TAC may be increased annually). ICES takes ecosystem-level questions into account in its stock assessments for these stocks, to the extent that this is possible (1,2).

At an operational level short-term objectives are represented by annual TACs. Achievement against these annual targets is monitored at national level on a monthly basis. The ICES ACFM presents advice on stock management based on its current understanding of the state of stocks. It also advises on what TACs should be set for the coming year for those stocks that it has been requested to advise on – taking into consideration its knowledge of the stocks and any decision-control rules that have been adopted for these stocks (1,2).

The team holds the view that long-term objectives and the precautionary approach are explicit within the management policy but they are not required by it. The indicator therefore meets only the SG80 requirements.

3.1.4 Incentives for sustainable fishing

The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing
--

SG 60: The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.

SG 80: The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that negative incentives do not arise

SG 100: The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure that they do not contribute to unsustainable fishing practices.

Score: 80

Rationale

Economic and social incentives are provided by the management regime through the allocation of resources (quota) at a level compatible with sustainable fishery management (1,2). These measures are supported by a legal regime that provides an additional incentive to comply with management requirements, through the penalties that can be imposed for non-compliance with the CFP. Administrative, technical and quota-related offences can all result in legal action, prosecution and fines. These measures all contribute to sustainable fishing and ecosystem management, and are regularly reviewed as part of the ongoing process of fisheries management established by the CFP.

The EC and Member States provide funding to the fishing industry. Until recently this was provided via the Financial Instrument for Fisheries Guidance (FIFG), which was

superseded by the European Fisheries Fund (EEF) in 2007 (44). Concerns have been raised by some NGOs that FIFG represented a subsidy to the industry (45,46). However the actual aims of FIFG were to “achieve a balance between fisheries resources and their exploitation” (44). The purpose of the EEF is to both support the industry as it adapts its fleet to make it more competitive and promote measures to protect and enhance the environment. One of the main objectives of the EEF is “promoting environmentally-friendly fishing and production methods”. It is therefore clear that the objectives of both FIFG and EEF are consistent with MSC Principles.

As regards Principle 2 specifically, the management system provides significant incentives, both positive and negative, for reducing impacts to the wider ecosystem. For example, this fishery has a derogation as to trawl mesh size in EU waters (from 120 mm to 110 mm) because of the low cod by-catch. Maintaining this derogation, plus tight quotas, has provided an incentive for the fisheries to work hard on reducing cod by-catch. The management system also provides for areas of important habitat (such as carbonate mounds) to be close to trawling (7).

Some commentators (60) have considered that the system of ‘red diesel’ (low tax diesel) available to fishing, farming and some other industries in the EU constitutes a subsidy that would encourage unsustainable fishing. This point is arguable (many NGOs agree – 61) but MSC convention to date has been that red diesel does not constitute a subsidy to fisheries – this argument is reasonable as long as the cost of fuel is not supported by the government such that it is sold to fishermen at below cost price. In France in 2009, high fuel prices led to promises by the French government for temporary support to the industry to reduce fuel costs – arguably this would have constituted a subsidy and was in fact contrary to EU law; however the collapse in the oil price later in the year meant that these proposed subsidies were never put into operation.

Although the management system “provides incentives that are consistent with achieving the outcomes expressed by MSC Principals 1 and 2, and seeks to ensure that negative incentives do not arise” it does not “explicitly consider incentives in a regular review of management policy or procedures”. This indicator therefore cannot be scored more than 80.

3.2 Fishery-specific management system

3.2.1 Fishery-specific objectives

The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC’s Principles 1 and 2.
--

SG 60: Objectives, which are broadly consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are implicit within the fishery’s management system.

SG 80: Short and long term objectives, which are consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are explicit within the fishery’s management system.

SG 100: Well defined and measurable short and long term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system

Score: 90

Rationale

The overall objectives for managing this fishery are set out in the EC Common Fisheries Policy and the bilateral agreement between the EC and Norway for managing the fisheries in the North Sea (36,39). Fishery-specific management measures for the North Sea and Northeast Arctic saithe stocks are established under the CFP. These measures define the annual TAC for the fishery (1,2,3,47).

Harvest controls rules are in place in form of management plans, which entered into force in 2004 (North Sea) and 2007 (Northeast Arctic) respectively and which are consistent with a precautionary approach and designed to ensure a rational exploitation pattern and provide for stable and high yields. The North Sea management plan is updated during the annual EU-Norwegian consultations and will be reviewed before end of 2012 (4,5).

The TACs for 2009 are entirely consistent with the ICES advice and are thus appropriate for the current stock (1,2).

Short and long term objectives are explicit within the fisheries management system but they are not in either case "measurable" and "demonstrably consistent". The SG80 requirements are fully met but only a part of the SG100 requirements. Therefore a score of 90 has been fixed.

3.2.2 Decision-making processes

The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives
--

SG 60: There are informal decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions

SG 80: There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. Decision-making processes use the precautionary approach and are based on best available information. Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity

SG 100: There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives. Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions. Decision-making processes use the precautionary approach and are based on best available information. Formal reporting to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity

Score: 90

Rationale

Both the EC's CFP and the EC-Norway Agreement represent established decision making processes that could result in measures and strategies that deliver fishery specific objectives – such as setting annual TACs that are compatible with precautionary reference points (36,39). This process is based upon the best available information, provided by ICES and stakeholder groups.

Performance of the fishery relative to these objectives is measured on a monthly basis through landings data, which provides near real-time recording of catch levels and quota uptake. ICES reports on performance of the fishery relative to SSB and F annually, as well as reporting on unrecorded mortality.

The decision making process provides a mechanism for responding to all relevant issues, through opportunities for stakeholder engagement, and through a broad suite of management objectives that are set out in the CFP. Tried and tested procedures exist to reduce harvest in response to annual scientific advice and ongoing monitoring results.

These measures can be quickly implemented. As well as adjusting quota, the EC and national administrations can restrict fishing activity in particular areas to address management issues if necessary.

The outcome of meetings of the Council of Ministers clearly demonstrates that all of this information is taken into account, and explains the basis for management actions. This information is formally reported and readily accessible on the EC website (42,43).

The decision-making process is well established and uses the precautionary approach. It does, however, not respond to all issues identified nor is it guaranteed that all interested stakeholders get a formal report on how the management system responded. Thus the score cannot pass 90.

3.2.3 Compliance and enforcement

Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with.
--

SG 60: Monitoring, control and surveillance mechanisms exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective. Sanctions to deal with non-compliance exist and there is some evidence that they are applied. Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery

SG 80: A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules. Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence. Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery. There is no evidence of systematic non-compliance

SG 100: A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules. Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence. There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery. There is no evidence of systematic non-compliance

Score: 100

Rationale

It is the responsibility of the EU Member States to make sure that the rules agreed under the CFP are enforced. Fisheries controls play a central role in encouraging compliance, deterring fraud and ensuring sustainable fishing. To make sure that all national enforcement authorities apply the same standards of quality and fairness in their enforcement, there is also an EU Inspectorate. To strengthen controls, it was decided in the 2002 reform of CFP to set up an EU fisheries control agency. The Community Fisheries Control Agency (CFCA) became operational in 2007. It will strengthen the uniformity and effectiveness of enforcement by pooling EU and national means of inspection and control, and will coordinate enforcement activities (48). In 2008, the Commission proposed a reform of the EU fisheries control system, to foster a culture of compliance with fisheries rules and create a level playing field for Europe's fishermen.

There are systems in place for imposing corrective actions. Non-compliance is dealt with by the relevant national authorities through their criminal justice systems, and using agreed and tested procedures. Compliance with management measures is reported on the EC website (49).

Enforcement includes use of satellite VMS and VHF-communication, patrol vessels and aerial surveillance, checked against data and log book and landings records. While patrols on sea are very rigid in Norwegian waters there are less controls in British waters. Landings are weighed and inspected by fisheries inspectors at the point of landing in

Boulogne or in Denmark where Euronor vessels land a considerable part of the catches. The assessment team interviewed the local administrator responsible for fisheries inspection during the site visit who confirmed that the fleet under assessment complies with the legislation in force and that there is no evidence of systematic non-compliance.

There is a comprehensive MCS system that has demonstrated its ability to enforce management measures, sanctions exist and have demonstrated their dissuasive effect, and fishers comply with the system. Enforcement and compliance are without a doubt meeting all requirements for SG100.

3.2.4 Research plan

The fishery has a research plan that addresses the information needs of management
--

SG 60: Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2. Research results are available to interested parties.

SG 80: A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2. Research results are disseminated to all interested parties in a timely fashion

SG 100: A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2. Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.

Score: 80

Rationale

The principal marine research institute in France is IFREMER, with 4 centres and 13 stations along the Atlantic and Mediterranean coast (and another centre with 4 stations overseas) (50). The "Laboratoire des Ressources Halieutiques" in Boulogne concentrates on research on whiting, saithe and plaice. The institute participates in the ITBS program and takes samples at the landing site in Boulogne. It has one of the most modern laboratories for otolith reading in Europe and has a lively exchange with European colleagues in order to harmonize age reading in different species. The Institute also participates in different ICES Working groups. Investigations designed to improve the selectivity of fishing gears is another research field of IFREMER. Euronor cooperates closely with the centre in Boulogne in several projects. One of the projects, RECOPECA, deals with the saithe fishery and one of the clients vessels is equipped with sondes to measure temperature and salinity directly in the net.

The research that is carried out provides comprehensive information to guide the management of the fishery, and priorities for future research are identified.

Research is principally coordinated by ICES through ACOM, and its various working and study groups. The ICES working groups routinely gather and analyse information on stock status, and also investigate specific issues such as recruitment and larval survival. The ICES working groups also develop and review assessment methodologies used in the fishery. Other commercial fish species, including those identified as main retained and by-catch species, are treated in the same way. Other issues such as climate change, associated changes to plankton, habitats and ecosystem effects of fisheries are also investigated by ICES study groups and workshops (51).

ICES reports identify the current status of fish stocks and also identify areas requiring further investigation (e.g. 4,5). The annual publication of these reports provides a strategic framework for coordinating fisheries research plans.

All of the results of ICES research are disseminated to interested parties in a timely fashion through reports and publications, all of which are readily available from the ICES website (51).

A research plan provides the management system with reliably and timely information and the results are published on the ICES website. Thus all of the SG80 requirements are met. But since there is no comprehensive research plan covering all principals and neither the plan nor the results are disseminated to all interested parties or widely publicly available none of the SG100 requirements is met. This indicator therefore scores 80.

3.2.5 Monitoring and management performance evaluation

There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system.

SG 60: The fishery has in place mechanisms to evaluate some parts of the management system and is subject to occasional internal review.

SG 80: The fishery has in place mechanisms to evaluate key parts of the management system and is subject to regular internal and occasional external review.

SG 100: The fishery has in place mechanisms to evaluate all parts of the management system and is subject to regular internal and external review.

Score: 90

Rationale

The management regime for this fishery incorporates measures that allow for review of both the agreement between the EU and Norway, as well as for the EC Common Fisheries Policy. This occurs at every level of the system with policy documents formulated at a European Commission level as a result of initiatives at national, sub-national and European levels. These policies and resulting operational plans and practices are then subject to wide consultation before ratification, and prescribed monitoring and evaluation processes after ratification. These systems also include formal consultation and review processes involving all EC Member State fisheries administrations, and

committees such as ACOM (the body through which ICES provides formal advice), STECF (the committee by which the European Commission seeks expert opinion on fisheries), the ACFM (dealing with industry concerns at a European / “horizontal” level), and the Regional Advisory Councils (RACs) dealing with regionally specific technical issues (of which the body specifically incorporating saithe industry interests is the North Sea RAC) (36,52).

There is also on-going and extensive review of stock assessment and data gathering methodologies at ICES level and at the level of the contributing laboratories and research institutions. Within ICES, a methods working group keeps methods for fish stock assessment under regular review. In addition, other study and working groups exist to review herring surveys, the precautionary approach, discards, biological sampling, reference points, and recruitment variability (51).

Formal external review of the management system is rather more limited. ICES can, and does, involve external scientists in extensive review of its methodologies if considered necessary. However there is no clear external review of all management systems; although external audits do take place at CFP level. The inclusion of review clauses in other CFP legislation is commonplace. The RACs also provide an opportunity for review.

The next major opportunity for external participation in the review of the management system will occur in the lead-up to the review of the CFP in 2012. When the CFP was last reviewed in 2002, the review was preceded by formal consultations and regional ‘roadshows’ that provided many opportunities for external involvement in the review of the management system.

On balance, management plans are modified on an annual basis, and the various review processes do ensure that systems adapt to changing circumstances, and are subject to critical inspection. There are various checks and balances of the management system in place, but it has to be said that this is not always a regular, rapid or formalised process. It should also be noted that there are recommendations emanating from ICES Working Group reports that are not always implemented.

Each member state must also report annually on control matters. EC fishery inspectors monitor national enforcement activity. EC data collection requirements, carried out by member states, are reviewed each year. Within nation states, internal audits also occur, reviewing the nature and efficacy of control measures.

The fishery has in place mechanisms to evaluate key parts but not all parts of the system, but there is a regular internal and external review. This results in a score of 90.

References for the assessment tree

Note: the main body of the report is referenced separately.

1. ICES 2009. Advice Book 6, 6.4.12: Saithe in Subarea IV (North Sea), Division IIIa (Skagerrak) and Sub-area VI (West of Scotland and Rockall).
2. ICES 2009. Advice Book 3, 3.4.4: Saithe in Subareas I and II (Northeast Arctic).

3. ICES 2008. Advice Book 6, 6.4.12: Saithe in Subarea IV (North Sea), Division IIIa (Skagerrak) and Subarea VI (West of Scotland and Rockall).
4. ICES 2009. Saithe in Subarea IV, VI and Division IIIa. Report of the working group on the assessment of demersal stocks in the North Sea and Skagerrak. ICES WGNSSK Report 2009, section 11.
5. ICES 2009. Saithe in Subareas I and II (Northeast Arctic). Report of the Arctic fisheries working group (AFWG). ICES AFWG Report, section 5.
6. Worm B. et al. 2009. Rebuilding global fisheries. *Science* 325, 578-585.
7. EC 2009. Council Regulation No 43/2009 of 16 January 2009 fixing for 2009 the fishing opportunities and associated conditions for certain fish stocks and groups of fish stocks, applicable in Community waters and, for Community vessels, in waters where catch limitations are required. *Official Journal of the European Union* L 22, 1-205.
8. MSC certified German saithe fishery - see <http://www.msc.org/track-a-fishery/certified/north-east-atlantic/Germany-North-Sea-saithe-trawl>
9. MSC certified Norway saithe fishery - see <http://www.msc.org/track-a-fishery/certified/north-east-atlantic/norway-north-sea-saithe>
10. Miller P.J. and Loates M.J. 1997. *Fish of Britain and Europe*. Harper Collins, London.
11. FishBase entry for saithe
<http://www.fishbase.org/Summary/SpeciesSummary.php?id=1343> and saithe ecology
<http://www.fishbase.org/Ecology/FishEcologySummary.php?StockCode=1361&GenusName=Pollachius&SpeciesName=virens>
12. Du Buit, M.H. 1991. Food and feeding of saithe (*Pollachius virens* L.) off Scotland. *Fisheries Research* 12, 307-323.
13. ICES 2009a. Advice Book 3, Section 3.4.1 - Stock summary: Cod in Subareas I and II (Northeast Arctic cod).
14. ICES 2009b. Advice Book 6, Section 6.4.2 – Stock summary: Cod in Subarea IV (North Sea), Division VIIId (Eastern Channel), and IIIa West (Skagerrak) .
15. ICES 2009c. Advice Book 3, Section 3.4.6 – Stock summary: Golden Redfish (*Sebastes marinus*) in Subareas I and II.
16. ICES 2009d. Advice Book 3, Section 3.4.5 – Stock summary: Beaked Redfish (*Sebastes mentella*) in Subareas I and II.
17. ICES 2009e. Advice Book 3, Section 3.4.7 – Stock summary: Greenland halibut in Subareas I and II.
18. ICES 2009f. Advice Book 5, Section 5.4 28 – Stock summary: Megrim (*Lepidorhombus spp*) in Subarea IV (North Sea) and VI (West of Scotland and Rockall).
19. Ifremer 2009a. Observations à bord des navires de peche: restitution individuelle. Bressay Bank, départ 11/4/09. Reference restODD3
20. Ifremer 2009b. Observations à bord des navires de peche: restitution individuelle. Bressay Bank, départ 25/4/09. Reference restODD4

21. ICES 2009. Advice Book 6, Section 6.4.20 – Stock summary: Norway pout in Subarea IV and Division IIIa.
22. IUCN listing for *Dipturus batis*: see <http://www.iucnredlist.org/details/39397/0>
23. IUCN listing for *Raja clavata*: see <http://www.iucnredlist.org/details/39399/0>
24. UNEP-WCMC. Searchable database of CITES-listed species.
<http://www.cites.org/eng/resources/species.html>
25. Ministère de l'Ecologie, de l'Energie, du Développement et de la Mer. Espèces protégées en France. www.developpement-durable.gouv.fr
26. Defra report on cetacean by-catch in UK waters <http://www.defra.gov.uk/wildlife-countryside/pdf/biodiversity/indicator/200812m6.pdf>
27. Humborstad, O.-B., Nøttestad, L., Løkkeborg, S., and Rapp, H. T. 2004. RoxAnn bottom classification system, sidescan sonar and video-sledge: spatial resolution and their use in assessing trawling impacts. *ICES Journal of Marine Science* 61, 53-63.
28. Hiddink, J. G., Jennings, S., Kaiser, M. J., Queiros, A. M., Duplisea, D. E., and Piet, G. J. 2006. Cumulative impacts of seabed trawl disturbance on benthic biomass, production and species richness in different habitats. *Canadian Journal of Fisheries and Aquatic Sciences*, 63: 721-736.
29. Greenstreet, S. P. R., Robinson, L. A., Piet, G. J., Craeymeersch, J., Callaway, R., Reiss, H., Ehrich, S., *et al.* 2007. The ecological disturbance caused by fishing in the North Sea. FRS Collaborative Report, 04/07. 169 pp.
30. MESH: Mapping European Seabed Habitats see <http://www.searchmesh.net/>
31. Plan Barnier (2008) – see http://agriculture.gouv.fr/sections/thematiques/peche-aquaculture/peche-aquaculture/downloadFile/FichierAttache_1_f0/peche_durable_plan_0116.pdf?nocache=1211187354.34
32. ICES 2009. Advice Book 9, Section 9.3.2.1. NEAFC request to continue to provide all available new information on distribution of vulnerable habitats in the NEAFC Convention Area and fisheries activities in and in the vicinity of such habitats – ICES response.
33. CEFAS study on the history of North Sea fish stocks – see <http://www.cefass.co.uk/news-and-events/news-releases/news-releases-2004/what-happened-to-north-sea-fish.aspx>
34. OSPAR – see <http://www.ospar.org/>
35. EC 1992. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, Official Journal L 206, 22.7.1992, p. 7)
36. EC 2002. Council Regulation No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy. Official Journal of the European Union L 358, 59-80.
37. FAO Code of Conduct for Responsible Fisheries – see <http://www.fao.org/DOCREP/005/v9878e/v9878e00.htm>

38. EC 1980. Council Regulation No 2214/80 of 27 June 1980 on the Conclusion of the Agreement on Fisheries between the European Economic Community and the Kingdom of Norway. Official Journal of the European Union L 226, 47-50.
39. EC 2008. Agreed Record of Conclusions of Fisheries Consultations between the European Community and Norway for 2009. 43pp. (10.12.08)
40. FAO 1993. Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas.
41. UNCLOS 1982. United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.
42. EC 2009b. Council Meetings. Viewed at http://ec.europa.eu/fisheries/meetings_events/council_meetings_en.htm
43. EC 2009c. Council Meetings. Viewed at <http://www.consilium.europa.eu/App/newsroom/loadbook.aspx?BID=100&LANG=1&cmsid=355>
44. EC 2006. Council Regulation No 1198/2006 of 27 July 2006 on the European Fisheries Fund. Official Journal of the European Union L 223, pp. 1-44
45. Brown J. 2006. Evolution of the EU Fisheries Subsidy Regime: Drivers and Approaches. Paper presented to OECD Workshop on Subsidy Reform and Sustainable Development, Helsinki, Finland 20-21 June 2006. IEEP, London.
46. Sporrang, N. and Bevins, K. 2002. Subsidies to the European Union Fisheries Sector. IEEP, London. 18 pp.
47. ICES 2008a. ICES Advice 2008. Saithe in subareas I and II (Northeast Arctic). Book 3, pp. 72-83
48. CFCA (2009). View at <http://cfca.europa.eu>
49. EC 2009d. Infringement control. Viewed at http://ec.europa.eu/fisheries/cfp/control_enforcement/infringements_control_en.htm
50. IFREMER website www.ifremer.fr/anglais/
51. ICES website www.ices.dk
52. EC 2009e. Common Fisheries Policy. Viewed at http://ec.europa.eu/fisheries/cfp_en.htm
53. Richardson E.A., Kaiser M.J., Hiddink J.G., Galanidi M. and Donald E.J. Developing scenarios for a network of marine protected areas. DEFRA Research and Development Contract CRO 0348 - Final report. University of Wales Bangor.
54. OSPAR: Distribution maps for threatened or declining habitats. <http://data.nbn.org.uk/hosted/ospar/ospar.html>
55. List of taxa listed on Schedule 5 of the UK Wildlife and Countryside Act available here: <http://www.naturenet.net/law/sched5.html>

56. UK Biodiversity Action Plan – listing for common skate
<http://www.ukbap.org.uk/UKPlans.aspx?ID=543>
57. Witbaard R and Bergman M.J.N. 2003. The distribution and population structure of the bivalve *Arctica islandica* L. in the North Sea: what possible factors are involved? *Journal of Sea Research* 50, 11-25.
58. Enever R., Catchpole T.L., Ellis J.R. and Grant A. 2009. The survival of skates (Rajidae) caught by demersal trawlers fishing in UK waters. Seafish, UK.
59. Marine Life Information Network (MarLIN) : Species information for *Modiolus modiolus* : <http://www.marlin.ac.uk/speciesinformation.php?speciesID=3817>
60. Ludwig, D., Hilborn, R., and Walters, C. 1993. Uncertainty, Resource Exploitation, and Conservation: Lessons from History. *Science*, 260: 17&36.
61. Album G. 2008. Fuel subsidies and CO₂ emissions in the fishing fleet. Memo – Friends of the Earth, Norway.