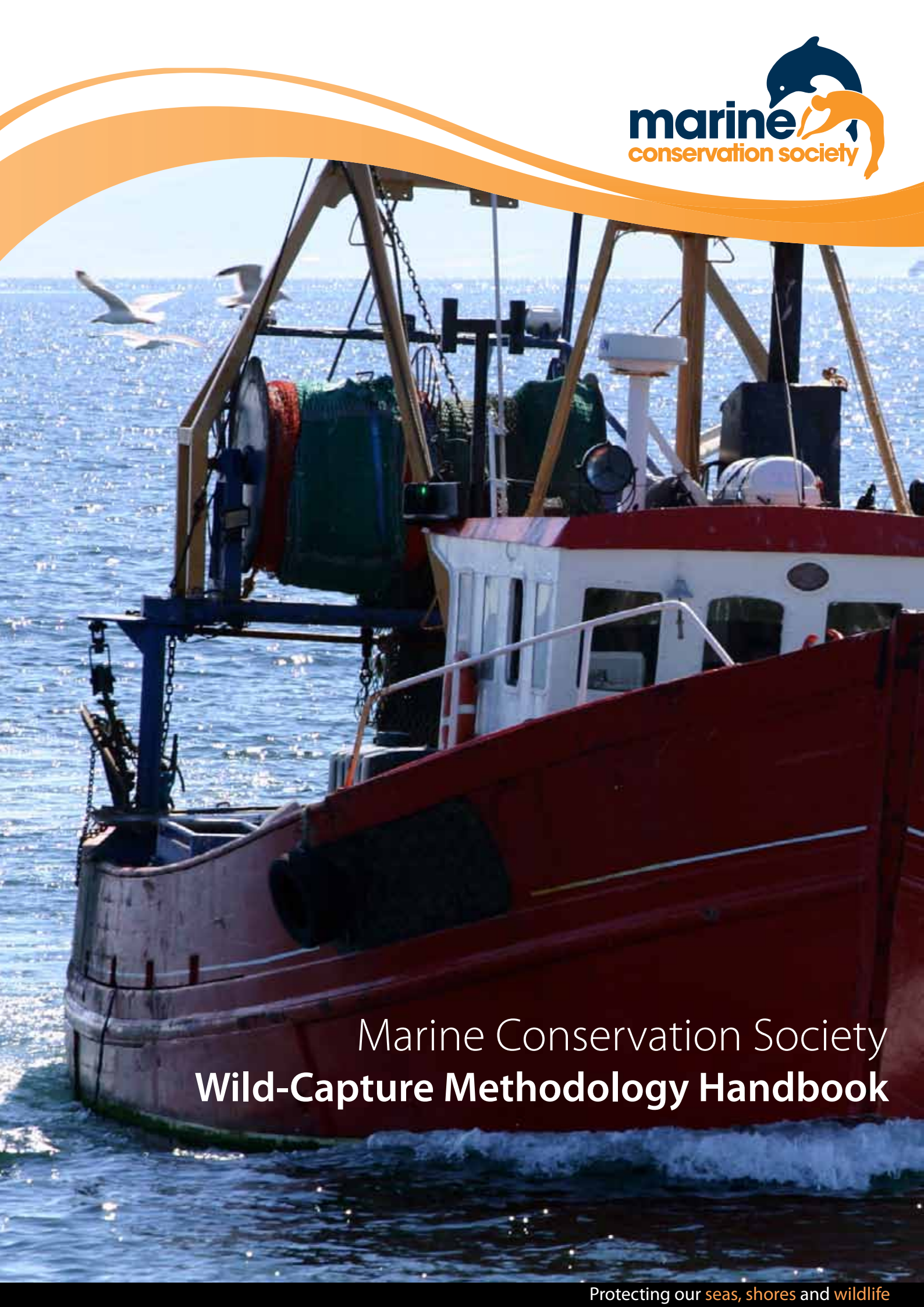
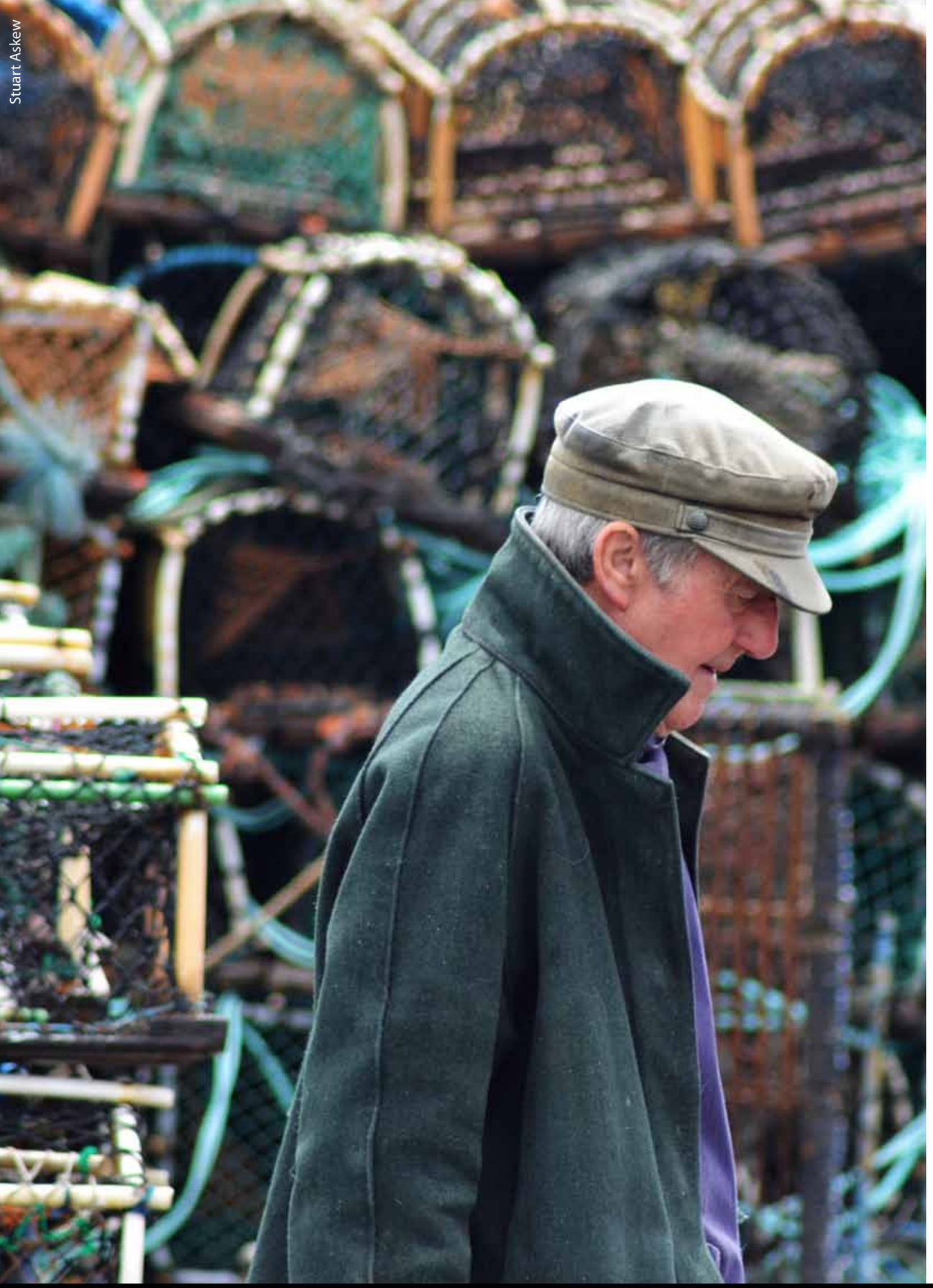
marine conservation society



Marine Conservation Society
Wild-Capture Methodology Handbook

Protecting our seas, shores and wildlife

Contents


Stuart Askew

Foreword

The Marine Conservation Society (MCS) is the UK charity dedicated to protecting our seas, shores and marine wildlife. Our coastal waters are under threat – too much is being taken out, too much thrown in and not enough protected. MCS works to turn the tide on the neglect of our oceans.

MCS believes consumers have a key role to play in safeguarding the future of our fisheries and marine wildlife by making environmentally sustainable choices when buying fish and shellfish – avoiding those that are under pressure in favour of those from healthy well-managed stocks, caught using the most selective methods, or farmed to high environmental and sustainability standards. MCS communicates these messages to the consumer via the FishOnline and Good Fish Guide websites and the Pocket Good Fish Guide.

The FishOnline and Good Fish Guide websites are market-based tools, designed to raise awareness of issues of sustainability associated with fishing, to create demand for more responsibly managed fisheries. The aim of rating seafood is to identify and promote the most sustainable choices available to consumers, and the species or fisheries consumers should be avoiding in order to aid their recovery. This will also reduce the wider environmental impacts of certain fishing practices.

This booklet aims to help consumers, retailers and the fishing industry understand how our ratings are derived and to provide transparency for this process. If you have any questions or specific queries about our methodology or our ratings or you would like to comment on or contribute to information in FishOnline, please contact MCS directly at the address below and we will be happy to help you.

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> “Our fisheries were once thought to be inexhaustible. But during the last 150 years the original sail boat has been superseded by increasingly high tech fishing practices which allow us to fish more efficiently, in deeper and previously inaccessible waters, for longer periods of time and increasingly farther afield.”
>
> **Silent Seas**
> Marine Conservation Society (MCS) 2008

Executive summary

Since the inception of the Marine Conservation Society's (MCS) Fisheries Programme in 1998, we have campaigned for the responsible use of marine fish resources.

Following the publication of the Good Fish Guide in 2002 and launch of FishOnline website in 2004, the main aim of our Consumer Awareness programme has been to raise awareness amongst consumers of the issues surrounding the sustainability of eating fish.

With an increasing global human population, combined with an increase in consumption of fish, the urgency for sustainable management of wild fish stocks is becoming more crucial and MCS believes consumers have a key role to play in achieving this.

Overfishing is widely acknowledged as the greatest single threat to marine wildlife and habitats. Many fish stocks are reported to be in a state of serious decline.

- The Food and Agriculture Organisation (FAO 2012) report that the proportion of non-fully exploited stocks has decreased gradually since 1974, from around 40% in the mid 1970s to 13% in 2010. Whereas, the proportion of overexploited, depleted or recovering stocks increased from 10% in 1974 to 30% in 2010. 57% of stocks worldwide are fully exploited i.e. at or close to their maximum sustainable production
- OSPAR (QSR 2010) reports that exploitation of many fish stocks continues to be beyond sustainable levels, while the status of a large number of stocks still cannot be fully assessed due to lack of data
- Around 75% of European stocks are overfished or outside safe biological limits
- Many once common species such as skate, European eel, spurdog and bluefin tuna are now assessed by IUCN (World Conservation Union) as Critically Endangered

Fishermen are also moving into deeper waters in search of new fishing opportunities. In some cases this has resulted in the destruction of unique habitat and overfishing of species we know nothing or very little about.

For example, in the North-East Atlantic unique cold-water corall formations known as the Darwin Mounds showed significant damage from trawling activity.

In addition to pressures from overfishing fish stocks are also affected by climate change and pollution from other human activities associated with exploitation of both marine and land-based resources.

Fish and fishery products are among the most-traded food commodities worldwide. The supply chain of fish products is complex, and for this reason it is not easy for consumers to make straightforward, informed decisions about the species of fish they are consuming.

Within the EU almost one half of fish consumed is sourced from non-EU waters. In the UK at least one in three fish consumed is imported from outside the EU with reliance on imports from countries such as Iceland, Norway and China[1].

Our ratings are obtained by reviewing available scientific and other information against 5 sustainability criteria namely: stock status; vulnerability of the species; management; ecological impacts of the capture method; and accreditation or certification.

The most sustainable choices available to consumers - known as Fish to Eat, (green) are those Rated 1 and 2. These come from well-managed, sustainably fished stocks; or are species that reproduce rapidly and are therefore more resilient to fishing pressure. Green indicates species that are, in MCS's opinion, the best choice for consumers.

Fish to Avoid (red) are from poorly managed, unsustainably fished stocks; or are species highly vulnerable to fishing pressure. These are Rated 5. Red indicates that, in MCS's opinion, you should avoid these fish until the condition of the stock or it's management, for example, improves.

In achieving its aim to promote the most sustainable seafood available MCS invites an exchange of information with industry to help identify the most responsible fishing practices. Such practices may then be used to distinguish one fishery for the same species within a given area from another and any positive attributes for the fishery recognised by a higher rating.

MCS also provides advice on farmed fish and shellfish, which is assessed using a different methodology and set of criteria specific to farmed species. However the ratings system and communication tools are common for all seafood regardless of its method of production, i.e. wild-caught or farmed. For more information on farmed species please refer to our website Fishonline.org.

Fact Box

www.fishonline.org receives 650 visits/day on average approximating to 20,000 visits/month and www.goodfishguide.org.uk 350 visits/day or 10,000 visits/month. Since the launch of the first Pocket Good Fish Guide in 2004 MCS has printed and distributed more than 700,000 copies.

MCS FishOnline Ratings also underpin the sustainability advice on fish offered by organisations such as Fish2Fork, the Sustainable Restaurant Association and Sustainable Fish City.

Commitment to responsible sourcing of fish has been achieved through various initiatives such as the commitment to sustainable fish procurement adopted by the House of Commons, and the London Olympics Committee. Various UK supermarkets have also responded to MCS advice and improved their sourcing policies by delisting Fish to Avoid and increasing the listings of Fish to Eat.

[1] Fish Dependence -2012 Update. The increasing reliance of the EU on fish from elsewhere. New Economics Foundation (2012). London.

Chapter One
What are 'fish ratings'?

Fish ratings are the nominal 'score' we allocate to various fisheries relative to their *sustainability*. These ratings reflect how well a fishery is managed in order that it can maintain a healthy stock and deliver food security into the future. We use five different colours – from dark green to red - to represent each rating score. These overall scores (from 1-5 respectively) are generated through an assessment of a range of sustainability criteria - stock status; vulnerability of the species to fishery impacts; management; ecological impacts of the capture method; and accreditation or certification - for each fishery or combination of species, area of capture, stock detail and method of capture. The sustainability criteria are explained more fully in Chapter 2. The final rating is a combined total of a number of different calculations, each attributable to one of the 5 sustainability criteria. The lower the score, the better the rating and the more confidence you can have in eating sustainable seafood.

1.1 What do we want to achieve by rating fish?

Fish protein has played a central role in the diets of humans for millennia – from as far back as our distant ancestors who foraged for food along the seashore. Fish protein will continue to form a major constituent of our diets into the future, with demand for seafood set to continue to rise in line with an increasing world human population. To this end fish protein represents an essential component of global 'food security' (a reliable and sustainable supply of food that meets the need of current and future generations), as such the issue of its continued supply through effective and sustainable management must be taken seriously.

MCS recognises the vital importance of fisheries – from their role in gleaning hard-won resources to their contributions to the social and economic prosperity of maritime nations and where significant numbers of people are employed in the fish processing sector. By demanding fisheries management address the critical issues of sustainability, we aim to ensure these fisheries – together with wider marine ecosystems – are in the best condition they can be in, in order to support thriving fish stocks and healthy marine ecosystems for future generations. We are looking to work with fishermen in order to encourage them to adopt sustainable fishing practices, which will in turn safeguard their own livelihoods.

By rating fish we intend to achieve a number of objectives, all of which will contribute to increasing the sustainability of seafood and its availability. These will:

- Steer consumers towards sources of sustainable seafood
- Create consumer demand for sustainable seafood
- Generate dialogue, debate and understanding about the nature of sustainable seafood
- Raise awareness of the value of the marine environment
- Highlight issues in those fisheries that are in need of support and change
- Create partnerships and projects that move more fisheries towards sustainable fish capture

Definition

Fisheries sustainability:
MCS believes we must only exploit fisheries resources in ways that allow future generations to enjoy the same levels of benefit. This must include consideration of the wider ecosystem, and we use this approach in all our fish ratings.

1.2 How can fish ratings help you?

Seafood can come from a bewildering variety of sources and for this reason it is not easy for consumers to make straightforward and informed choices about the fish they are buying. Our fish ratings have been developed to help all those involved in the seafood supply chain make choices that support sustainable and well-managed fisheries. If you like eating seafood then our ratings can help you make informed choices about the fish you eat, whilst helping achieve food security for future generations. Our ratings provide clear and unambiguous information that reflects the sustainability of each individual fishery. They are designed to promote the purchase and consumption of sustainably caught fish, as well as to generate dialogue about sustainability issues within fisheries themselves.

Our fish ratings can be obtained through the following resources:

- FishOnline - www.fishonline.org
- The Good Fish Guide
  www.goodfishguide.co.uk/ratings
- The Pocket Good Fish Guide
  www.goodfishguide.co.uk/pocket-goodfishguide
- The Good Fish Guide Smartphone Application
  www.goodfishguide.co.uk/iphoneApp

1.3 How can fish ratings help the fishing industry?

Fishing is a business and a way of life that makes a major contribution to both our economy and to our society as a whole. MCS wants to ensure that we have a robust fishing industry supplying fish protein for generations to come. When fisheries are well managed, they are more profitable– which makes long-term business sense for all concerned. A healthy and sustainable fishing industry means we have healthy and sustainable seas and viable fishing communities.

To ensure the future of our fish and fisheries we want to work with fishermen in finding solutions to problems inherent in the various ways fish are captured. Some methods are less problematic than others – doing little or no damage to the overall ecosystem – and we would like to see these methods adopted on a wider scale wherever possible.

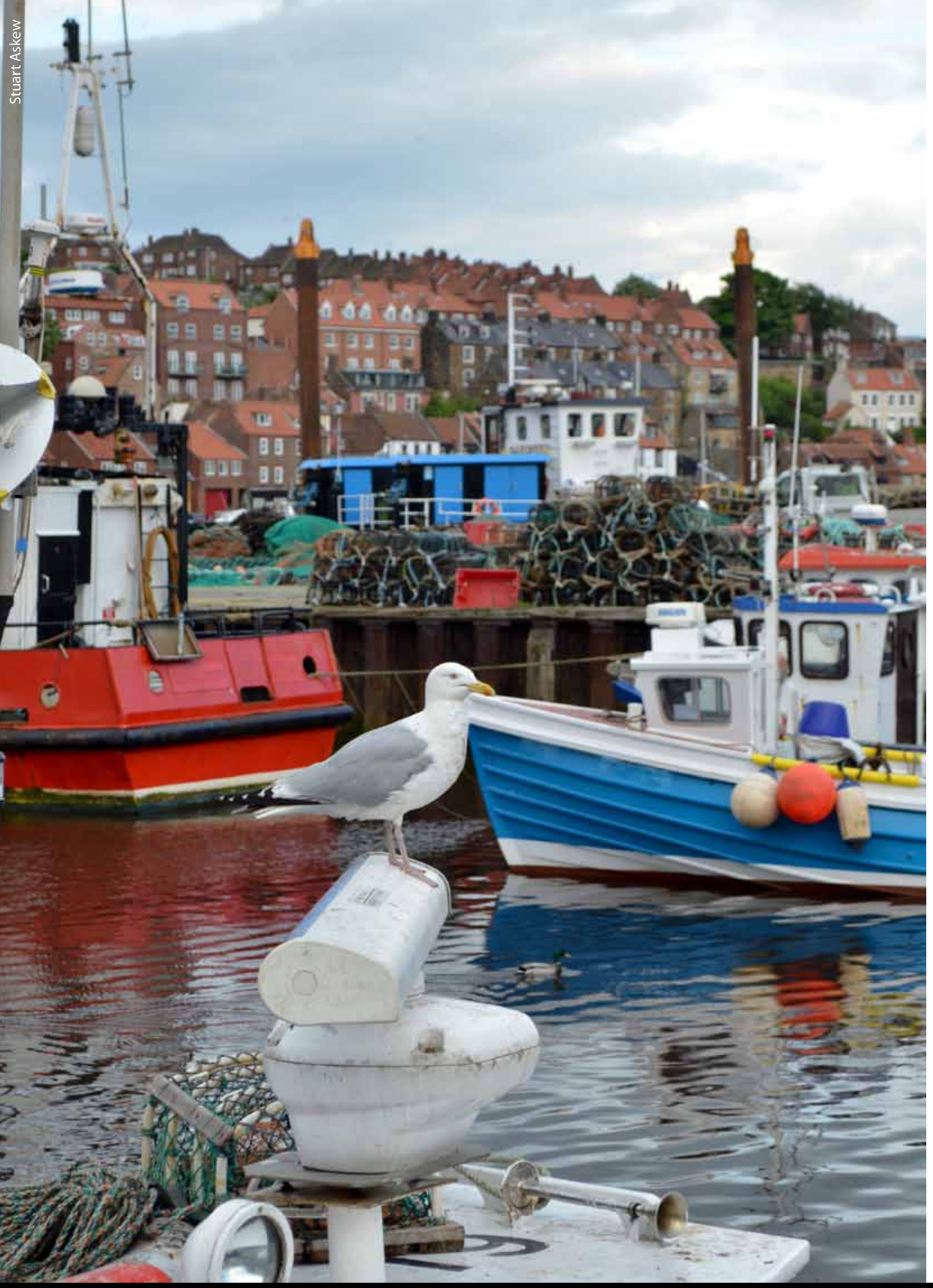
Fact Box

Taking too many fish reduces stocks, disrupts food-webs and ultimately affects livelihoods, and some methods such as dredging and trawling can also have devastating impacts on habitats and non-target species
(Seas Fit for Life, MCS Strategy 2006-2009).

By engaging with fishermen to encourage them to adopt more sustainable practices, and by informing and influencing consumer awareness and purchasing choices, MCS aims to achieve a sustainable fishing industry which is good for everyone: it makes sense for the fishermen (they can plan and manage their businesses with more certainty); it is good for society (food security and other attendant benefits are delivered); and it is good for the environment (without a healthy environment none of this is possible).

MCS will continue to use fish ratings to identify those fisheries that need the most help to improve their practices and we hope to be able to develop solutions to the problems they might face in partnership with the fishermen themselves. Through the development, delivery and communication of appropriately-scaled Fishery Improvement Projects (see glossary), we can generate a greater understanding and appreciation for the changes that can be made. MCS wants all fish protein available to the UK consumer to be sustainable. As a measure of the efficacy and value of the MCS Fish Lists we want to see an increase in the number of 'green' rated fish and a reduction in the 'red' listed species. We are working towards a day when we won't need a red-list of 'fish to avoid'. MCS wants sustainable seafood to be the only choice for consumers.

MCS also uses the fish ratings to highlight best practice for managing and conserving our fisheries and invites submissions from industry and others for consideration and potential inclusion in the information we present online.


Stuart Askew

Chapter two

How do the MCS ratings work?

Our ratings are informed and underpinned by scientific data and information from respected and peer-reviewed sources. All our ratings are reviewed at least annually; new information about fisheries comes to light all the time and as a result we update our FishOnline database twice a year (following release of key fisheries data from essential sources such as that from the International Council for the Exploration of the Seas [ICES]).

We will also re-evaluate our ratings if there is a significant change to a fishery that is likely to affect its sustainability. Each colour rating relates to a score that has been calculated using a methodology which we have illustrated below.

Colour Ratings	
Light Green / Dark Green	Green Ratings (light & dark green) Indicate species that are, in MCS's opinion, the best choice in sustainable seafood and come from well-managed, sustainably fished stocks; this list also includes species that reproduce rapidly and are therefore more resilient to fishing pressure.
Yellow / Orange	Amber Ratings (yellow & orange) Indicate species which MCS would like to encourage people to eat only occasionally until the fishery improves. These fisheries may be at risk of becoming unsustainable because of environmental, management or stock issues. They may also be recovering from previous over-exploitation, be species with lower resilience to fishing (take longer to reproduce) and be more affected by modern fishing methods.
Red	Red Ratings (red) MCS would like consumers to avoid eating or buying fish from red-rated fisheries until the fishery improves. MCS would also like to encourage these fisheries to work towards increasing their sustainability, e.g. by the adoption of more selective fishing methods or by the adoption of more sustainable practices. Red indicates fish that we have calculated as being from unsustainable, overfished, highly vulnerable or poorly managed systems. There may also be unacceptable levels of unwanted by-catch and other damaging environmental practices.

2.1 How ratings work

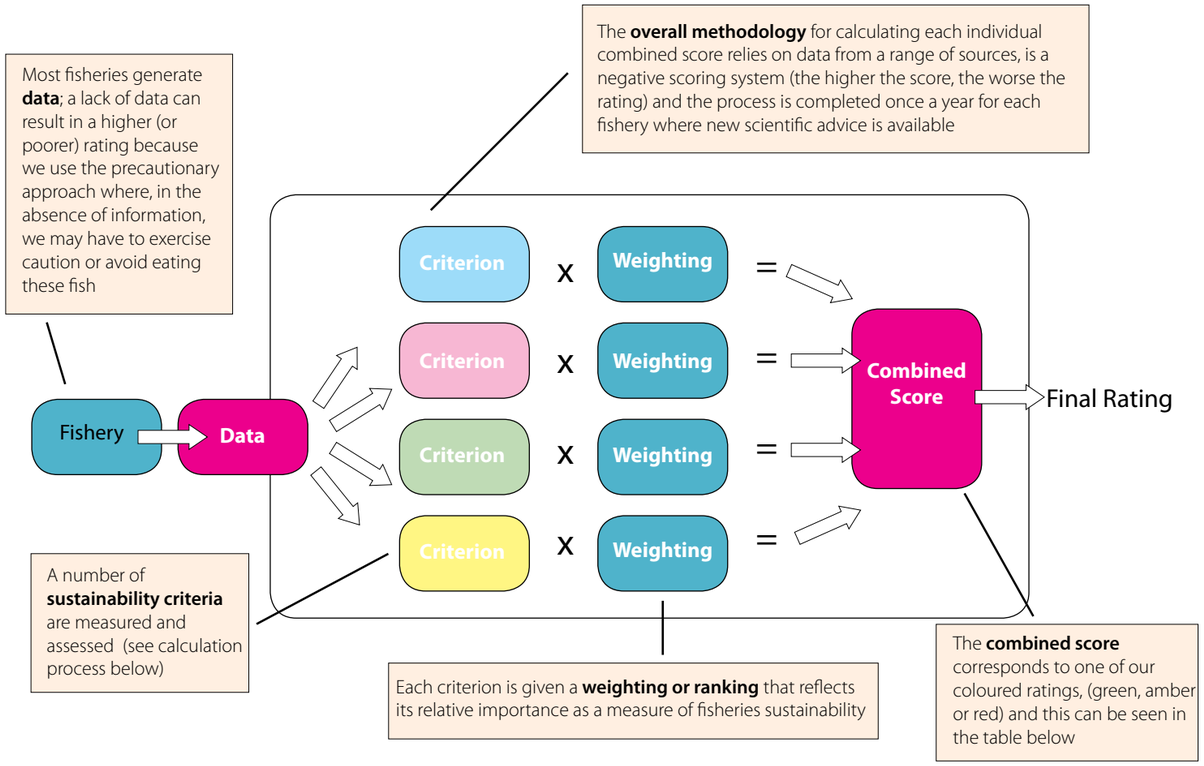
There are a number of criteria that contribute to whether a fishery is sustainable or not. There are also a number of factors that work together, making decisions on complex fish-stock and their management difficult. In order that we can produce our fish lists we consider five separate criteria, these are:

- **Exploitation or stock status** – state of the stock (the total weight of mature or breeding adults) against recommended safe levels and level of exploitation
- **Vulnerability of the species** – its inherent vulnerability to fishing
- **Management** – an assessment of the measures, checks and enforcement in place to ensure the stock is well maintained and the impacts of the fishery mitigated appropriately
- **Capture method and ecological effects** – an assessment of the impacts of the capture methods on the target species, non-target species and wider ecosystem
- **Certification or accreditation** – consideration of whether the fishery is already certified as being sustainable by other bodies (such as the Marine Stewardship Council)

We use information (fishery data) for each of these criteria to generate our ratings. The overall rating will illustrate the **combined** score from each of the five criteria, as set out below. The data we use is from trusted sources and the weightings reflect our views on priorities for assessing sustainability.

An overview of the ratings process for each fishery or combination of species and specific area and method of capture we rate, is presented in the figure below (Figure 1).

Figure 1: Overview of ratings process



The relationship between the combined criteria score and the overall rating is presented in the table below (Table 1).

Table 1. Relationship between combined score and overall rating

Combined criteria score	Overall rating	
Less than 2	Dark Green (Best)	**Eat these fish**
From 2 to 5	Light Green (Good)	
From 5 to 8	Yellow (OK)	**Eat these fish occasionally**
From 8 to 10	Orange (Requires improvement)	
More than 10	Red (Unsustainable)	**Eat other fish**

In addition, each criterion is 'weighted' (Table 2) in a ranking system which places more emphasis (and therefore numerical value) on the criteria that are in our opinion most significant for sustainability. The interpretation or application of data relating to stock status, vulnerability and management have higher weightings. We consider that stock status is the strongest current measure of sustainability and therefore this criterion has the heaviest weighting. Certification, whilst being important, has been given the lowest weighting as this allows us to review all fisheries on the basis of stock status, target species, management and the methods of capture even if they have yet to be fully accredited by independent organisations.

Table 2. Weighting of sustainability criteria

Sustainability criteria	Weighting multiplier
Stock status	x value by 5
Vulnerability	X value by 4
Management measures	X value by 3
Ecological impacts of capture method	X value by 2
Current certification	X value by 1

2.2 The decision-making process

Once all the scientific advice and any other information has been collated and reviewed against MCS sustainability criteria the fishery is rated. A database of ratings is maintained and any changes to the ratings are compiled and forwarded to an Industry Review Group (IRG) (See Appendix VI for list of members) for comment. This group of independent experts assists MCS by providing accurate, up-to-date and relevant scientific information and advice, to inform MCS's assessments. IRG members contribute as individuals and not as representatives of any organisation with which they may be associated. Their comments are not binding on MCS. Ratings are then reviewed against these comments and any other information received.

The review process also provides an opportunity for industry and other key interests to submit information on specific fisheries management, so that good practice and any conservation initiatives developed or being developed by industry can be promoted and reflected within the ratings.

2.3 When do rating updates take place?

Rating updates take place twice a year, in summer/autumn and winter – which is in response to the publication of scientific advice for the main commercial species in the North East Atlantic by the International Council for the Exploration of the Sea (ICES). For an outline of the Update Timescale please see Table 3, for a detailed table of the update process please see Appendix I

Table 3. Update Timescale

Action	Timescale
ICES Summer Advice	June - September Approximately 3.5 months
ICES Autumn Advice	October to Mid January Approximately 3.5 months

2.4 How can ratings change?

Ratings will change in response to the availability of new scientific and other information for stock status, or a change to management or the way in which a species is caught, for example. Changes to MCS ratings are communicated to interested parties listed in Appendix VII

Sue Ranger/MCS

Calum Duncan/MCS

Chapter three:
Our methodology in depth

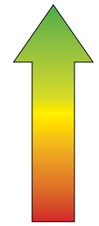
The complexity of the methodology lies in the allocation of values to each sub-division or category within each sustainability criterion. We allocate values from 0 – 1 for each sub-division (category), the higher the score the less sustainable the fishery. These scores are multiplied by the weighting given to each criterion. Each category is accompanied by detailed descriptors that help MCS to determine which category a particular fishery belongs in with regard to each sustainability criterion.

3.1 Criteria categories and associated values

3.1.1 Exploitation or Stock Status

Where ICES or equivalent scientific advice is for zero catch or the fishery is to be closed, the fishery is rated a 5 by default

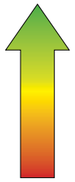
(Table 4. Category Descriptors and weighting for Exploitation or Stock Status)

Category description	Score	Weighting multiplier	Criterion score	Sustainability levels
Fully (see Glossary) or under-fished	0	X5	0	
Abundant and under-utilised or commonly discarded species	0.25	X5	1.25	
Concern for stock and/or fishing mortality levels	0.5	X5	2.5	
Serious concerns for stock and/or fishing mortality levels	0.75	X5	3.75	
Over fished or data deficient	1	X5	5	

3.1.2 Vulnerability (Species Characteristics and Biology)

Where a species is listed as Critically Endangered by IUCN the fishery is rated a 5 by default

(Table 5. Category Descriptors and weighting for Vulnerability)

Vulnerability category (based on ICES, IUCN and OSPAR data)	Score (based on FISHBASE or equivalent values)	Weighting multiplier	Criterion score	Sustainability levels
Green (low to moderate)	0.1- 0.39	X4	0.4 -1.56	
Yellow (moderate to high)	0.40- 0.69	X4	1.6 -2.76	
Amber (High to Very High)	0.7- 0.99	X4	2.8 -3.96	
Red (IUCN Critically Endangered or Endangered or ETP Listed species	1	X4	4	

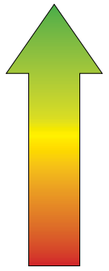
Where no Fishbase*, Sealifebase** or Cephbase*** vulnerability value as appropriate is available, we use the following criteria based on simple life-biology parameters or measures. Species are considered vulnerable if two or more of the following apply and are therefore allocated a precautionary score of 1 (equivalent to red-endangered species):

a) Age at first maturity is 6 or more years
b) Longevity is 25 years or greater
c) Growth rate, k is < 0.15

*Fishbase www.fishbase.org - global species database of fish (specifically finfish) species.
**SeaLife Base www.sealifebase.org - is a global online database of information about marine life. It aims to provide key information for all marine species apart from finfish.
***Cephbase Database of cephalopod (octopus, squid, cuttlefish and nautilus) information.

3.1.3 Management

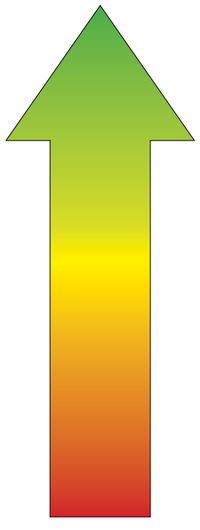
(Table 6. Category descriptors and weighting for management issues)

Category description	Score	Weighting multiplier	Criterion score	Sustainability levels
Adequate or well-managed	0	x3	0	
Management requires some improvement	0.25	x3	0.75	
Partly effective management	0.5	x3	1.5	
Poorly managed and requires considerable improvement or specific management measures implemented	0.75	x3	2.25	
No management measures in place	1	x3	3	

3.1.4 Capture method and ecological effects specific to the fishery

Where there is a significant and documented by-catch issue or the method is unacceptably damaging or illegal the fishery is rated a 5 by default

(Table 7. Category descriptors and weighting for capture method and ecological effects)

Category description (A-E)	Score	Weighting multiplier	Criterion score	Sustainability levels
Very low impact (A) e.g. hand-gathered, pole and line, trap, hook and line, pot	0	x2	0	
Low impact (B) e.g bottom set net, Danish seine	0.25	x2	0.5	
Moderate impact (C) e.g. bottom trawl, longline	0.5	x2	1.0	
High impact (D) e.g. beam trawl, tickler chains, chain mats, scallop dredging	0.75	x2	1.5	
Very high impact (E) e.g. explosives, cyanide, deep-sea bottom trawling, high-seas drift nets, high discard rate, gear towed over reefs	1	x2	2	

3.1.5 Certification or accreditation

(Table 8. Category descriptors and weighting for certification)

Certification status	Score	Weighting multiplier	Criterion score	Sustainability levels
Certified (e.g MSC)	0	x1	0	
Passed Pre-assessment	0.5	x1	0.5	
FIP* = is in a recognised Fisheries Improvement Plan	0.75	x1	0.75	
Non certified	1	x1	1	

*For a Fisheries Improvement Plan to be recognized by MCS, the following must be in place:

- An independent observer/facilitator (e.g. NGO)
- Relevant stakeholder participation
- Identification and addressing of key relevant environmental issues in fishery
- Adherence to SMART objectives
- Public accountability

3.2 Criteria category definition details

Each category within each criterion is further supported by detailed descriptors (see table 9) that allow for very precise allocation of values for each fishery. This is an essential component in order that the methodology – and therefore each rating – is robust and based on the best available evidence.

Table 9. Category descriptor detail for exploitation or stock status

Category description	Score	Associated descriptors
Fully or under-fished	0	• Inside safe biological limits and fished BELOW OR AT MSY (see glossary) – when a stock is of sufficient size to reproduce and support a commercial fishery, but not fished at MSY. Fishing could be increased to achieve MSY. Or when a stock is of sufficient size to reproduce and support a commercial fishery, and is also fished AT MSY • Fishing mortality and biomass levels are below and above precautionary targets respectively • Not at risk* • Stock not subject to overfishing and stock not in overfished state**
Abundant and under utilised or commonly discarded species	0.25	• Under-utilised species that have known abundance but are commonly discarded at present
Concern for stock and/or fishing mortality levels	0.5	• Includes cases where one reference level is above or below but near precautionary targets respectively (these reference points now largely superceded by MSY as a reference point) • Includes fisheries that do not have defined reference points i.e. there is insufficient information to evaluate stock status • Also includes stocks that are not formally assessed but that do NOT show any indications of overfishing • Inside Biological Limits but fished ABOVE MSY – when a stock is of sufficient size to reproduce and support a commercial fishery, but corrective action is required to reduce fishing to levels that are consistent with MSY • Under-utilised species for which abundance is unknown or uncertain • Probably not at risk* • Stock not subject to overfishing but stock in overfished state**
Serious concerns for stock and/or fishing mortality levels	0.75	• Stock below the biomass action point B MSY trigger – there is concern that the stock needs to be rebuilt and fishing mortality reduced to allow the stock to be rebuilt • Probably at risk* • Stock subject to overfishing but stock not in overfished state**
Overfished or where no data is available	1	• Fishing mortality and biomass levels above and below precautionary targets respectively (these reference points now largely superceded by MSY as a reference point) • Completely data deficient fisheries, i.e. fisheries for which NO data exists as distinct from fisheries where there is insufficient data or information to determine reference points or to evaluate stock status • Fisheries that do not have defined reference points i.e. there is insufficient information to evaluate stock status, but are showing indications of overfishing (eg. catches and catch rates are unstable or decreasing and size structure of the target species is skewed towards small sizes / ages by fishing) • Stock outside safe biological limits – the stock is in a condition where there is concern that reproduction may be impaired. Action should be taken appropriate to each stock to further reduce fishing mortality and encourage stock rebuilding • Stock status category at risk* • Stock subject to overfishing and stock in overfished state**

* These descriptors refer specifically to the potential status of wild salmon stocks assessed by the Environment Agency (EA)

** These descriptors refer specifically to the potential status of tuna stocks assessed by the Regional Fisheries Management Organisations (RMFO), such as Indian Ocean Tuna Commission (IOTC), for example.

Table 10. *Category description detail for management*

Category description	Score	Associated descriptors
Adequate or well-managed	0	• Pressure (caught as target or by-catch) and non pressure stocks: all appropriate management measures are in place, enforced and appear to be effective • Management Plan agreed and in place and evaluated by ICES as precautionary • No formal management plan but practice consistent with MSY approach • Includes certified or third party or independently assessed fisheries
Management requires some improvement	0.25	• Pressure (caught as target or by-catch) and non pressure stocks: some appropriate management measures are in place, enforced and appear to be effective • Management Plan in place but not evaluated by ICES as precautionary
Partly effective management	0.5	• Pressure (caught as target or by-catch) and non pressure stocks: some but not all appropriate management measures are in place, enforced but appear to be having little effect or are insufficient or inadequate • Management Plan under development
Poorly managed and requires considerable improvement or specific management measures implemented	0.75	• Pressure (caught as target or by-catch) and non pressure stocks: few appropriate management measures are in place, enforced but appear to have no effect
No management measures in place	1	• Pressure stock (caught as target or by-catch) with no species specific or appropriate management measures in place • Non-pressure stock with no management measures at all

There are additional questions and issues to consider with regard to fishery management, these can be found in Appendix IV

3.3 Capture method and ecological effects

Further explanation for the impact of the gear and corresponding score used with the weighting multiplier to obtain the criterion score (See Table 7) is discussed below.

3.3.1 Impact scoring

A score is allocated for the impact of each fishing method or type of fishing gear on: habitat; target species; non-target species; and how well management of the fishery addresses issues relating specifically to that gear type. Each of the 4 considerations are assigned a value (0-1). Again, the higher the score the greater the impacts of the fishing gear under consideration. See Examples below in Table 11.

Also see Gear league table appendix I for summary of impacts and values for 24 gear types in general use.

Table 11. *Impact scoring for example capture methods*

Fishing method	Examples of species targeted by method	Impact on habitat (0-1)	Impact on target species - juveniles, discards (0-1)	Impact on non-target species- bycatch	Technical manage-ment measures (0-1)	Mitigation or conservation measures required to improve selectivity and sustainability	Category description (A-E)
1) Beam trawl	Sole	0.75	1	1	0.5	Mesh size increase	3.25 = E
2) Pot	Crab	0	0	0	0.5	Pot limitation etc	0.5 = A
3) Tangle net	Monkfish	0	0.25	0.5	0.5	Soak time, length of net	1.25 = B

3.3.2 Value ranges

The category description score obtained will fall into one of the 5 Value Ranges (A-E) corresponding to a score value. This is then multiplied by the weighting multiplier to obtain the criterion score. (See Table 12. below). The criterion score is then combined with the scores obtained for each of the other 4 criterion to arrive at the rating score.

Table 12. *Value ranges for category descriptor for capture method and ecological effects*

Category description	Value range	score	Weighting multiplier	Criterion score
A	0 - 0.5	0	x 2	0
B	0.75 - 1.25	0.25	x 2	0.5
C	1.5 - 2.25	0.5	x 2	1.0
D	2.5 - 3	0.75	x 2	1.5
E	3.25 - 4	1	x 2	2

3.4 Example ratings explained

Below are examples showing data or information compiled for FishOnline database/website and how we arrived at ratings for 3 key species in the UK as an illustration of the direct relationship between the criteria and data we consider, and the ratings that appear on the website. The information is based on ICES advice published in 2011:

Example one

Plaice, *Pleuronectes platessa* , Western Channel, North East Atlantic, Beam trawl, Rated 5

Biological Summary:
Plaice is a bottom-dwelling flatfish. It spawns in the early months of the year (January to March) and sometimes makes long spawning migrations. North Sea plaice reach between 35 and 45cm in their 6th year. It is a long-lived species, becoming sexually mature at 3-7 years (females) 2-6 (males) and living 30 years or more. Maximum reported age 50 years.

Capture Area (FAO): North East Atlantic (FAO 27)
Stock or Fishery Area: Western Channel **Stock of Fishery Detail:** VIIe

Stock Information:
Fishing mortality for this stock is currently well above F MSY and higher than the maximum level recommended by ICES, and has been since the late 1980's. Advice in recent years has been to substantially reduce catches. Spawning Stock Biomass is undefined in terms of precautionary reference points but is above MSY B trigger (based on the lowest SSB from which the stock has recovered). ICES advises on the basis of the transition to the MSY approach that fishing mortality be reduced and landings in 2012 be no more than 1440 t. This will increase the biomass in 2013 relative to 2012 by +7%.

Capture Method: Beam trawl

Capture Information:
Plaice in this area are taken as a bycatch in the beam trawl fishery (57%) mainly targeting sole and anglerfish, and as part of a mixed demersal fishery by otter trawls (31%). Gillnets (3%) are also used. Beam trawling, especially using chain-mat gear, is damaging to the seabed and known to have a significant impact on the benthic communities, although less so on soft substrates. Smaller meshes are used (80 mm) by both beam and otter trawlers in mixed flatfish fisheries, resulting in the discarding of large numbers of undersized plaice below the legal minimum landing size. However, a distinction should be made between the type of beam trawlers operating in the southern North Sea, and those operating off the south coast of England (ICES Area VII), for example. The main distinction is in the size of the vessel and the length of beam used. Beam trawlers operating in the North Sea are typically 30-45m in length and have an aggregated beam length of 24m - (12m beams on each side of the vessel) - with engines of 800-2,500hp. By comparison, a significant number of vessels operating in Area VII are under 24m, have 300hp engines and are restricted by their size and power to an aggregated beam length of 9m. Also the majority of beam trawlers in Area VII use wheels on their fishing gear instead of skid shoes. This reduces fuel consumption and the impact of the gear on the seabed. Look for vessels which are involved in the "Seafish Responsible Fishing Scheme" for assurance of scientific co-operation, best environmental practices and experimentation with Benthic Release Panels to reduce impact to bottom dwelling species. Benthic drop-out panels release about 75% of benthic invertebrates from the catches. The minimum landing size for plaice in EU waters is 27cm. The approximate size at which 50% of females mature or first spawn is around 30-34cm. Discards are relatively low for this area, compared to other plaice fisheries.

Gear:

Fishing method	Examples of species targeted by method	Impact on habitat (0-1)	Impact on target species - juveniles, discards (0-1)	Impact on non-target species- bycatch	Manage-ment (0-1)	Mitigation or conservation measures required to improve selectivity and sustainability	Category description (A-E)
1) Beam trawl	Plaice	0.5 (sand)	1	1	0.5	Larger mesh sizes	0.75 (2.5 - 3.0)

General:

Exploitation/ stock status	Wt	Vulnerab-ility	Wt	Management	Wt	Capture method & eco-effects	Wt	Certification or accreditation	Wt	Total score 2011/12	FOL rating 2011/12
1	5	0.69	4	0.5	3	0.75	2	1	1	11.26	5

Example two

Atlantic cod, *Gadus morhua*, Celtic Sea, All applicable methods (demersal otter trawl, beam trawl and gillnet), Rated 3

Biological Summary:
Cod belongs to a family of fish known as gadoids, which also includes species such as haddock, pollack, pouting, and ling. It is a cold-temperate (boreal), demersal (bottom-dwelling) species.They spawn in winter and spring from February to April in the North Sea; cod mature at 4-5 years at a length of about 50cms and can live up to 60 years.

Capture Area (FAO): North East Atlantic (FAO 27)
Stock or Fishery Area: Celtic Sea **Stock of Fishery Detail:** VIIe-k

Stock Information:
Spawning Stock Biomass is above Bpa and assessed as having full reproductive capacity. Stock is harvested sustainably. However more than 80% of the landings are made up of age groups 1-3 and the stock is heavily dependent on incoming recruitment. Atlantic cod is listed by OSPAR as a threatened and declining species in the Greater North Sea and the Celtic Sea. In order to protect cod stocks in this area, Cornish fishermen's leaders, and their Irish and French counterparts, went to the European Commission with proposals for a 3,600 sq. mile 'closed season' off Trevose Head in the Bristol Channel. The closure was first introduced in February 2005. As far as MCS is aware, this is the largest industry proposed conservation closure area in Europe. However, the direct impact of the closure on the status of cod has not as yet been quantified. A plan for this stock is under development by the North Western Waters Regional Advisory Council (NWWRAC). ICES advises that fishing mortality should result in landings of 10,000 t in 2012.

Capture Method: Demersal Otter trawl

Capture Information:
Cod is caught in a number of ways including demersal otter trawl, beam trawl and gillnet. There is potential damage to the seabed by trawling. Trawling is also associated with discarding of unwanted fish, i.e. undersized and/or non-quota and/or over-quota species. Discards estimated at more than 500 t in 2010.

Specific Information (FOL. summary):
Stock is harvested sustainably. However landings mostly comprise young fish and the stock is heavily dependent on incoming recruitment.

Scoring

Gear:

Fishing method	Example of species targeted by method	Impact on habitat	Impact on target species - juveniles, discards	Impact on non target species - bycatch	Manage-ment	Mitigation or conservation measures required to improve selectivity and sustain-ability	Score overall A-E (0-4)
Demersal otter trawl	Cod	0.5	0.5	0.5	0.5	MLS that reflect ma-turity; mixed TAC quotas; etc	0.5 (1.5-2.25)

General:

Exploita-tion/ stock status	Wt	Vulnerabil-ity	Wt	Manage-ment	Wt	Capture method & eco-effects	Wt	Certification or accredita-tion	Wt	Total score	FOL rating 2011/12
0	5	1 (OSPAR Listed)	4	0.5 (landings comprise 80% immature fish)	3	0.5	2	1	1	7.5	3

Example three

Red Gurnard, *Aspitrigla cuculus* North East Atlantic, All Areas, Demersal Otter trawl, Rated 2

Biological Summary:
Gurnards belong to a group of fish known as the Triglidae (sea robins) family. Classified as a generalist, they are characterised by fast growth and early sexual maturity at a relatively large size. Red gurnard is one of the smallest European gurnards. The red gurnard is a benthic species widely distributed in the northeast Atlantic from South Norway and north of the British Isles to Mauritania on grounds between 20 and 250 m. This benthic species is abundant in the Channel and on the shelf west of Brittany. It spawns in summer and can attain a length of 40cm and a weight of about 900g, with a maximum reported age of 21 years. Gurnards are able to grunt or growl by the use of muscles associated with the swim bladder, and this is believed to aid in keeping schools together.

Capture Area (FAO): North East Atlantic (FAO 27)
Stock or Fishery Area: All areas **Stock of Fishery Detail:** I-IX

Stock Information:
Of the six species known in northern European waters, red gurnard is most commonly exploited as a food fish. Although widely distributed throughout the Atlantic it is only locally abundant. Currently there is no TAC for this species in the ICES area and it is not clear whether there should be one or several management units. There is insufficient information to evaluate the status of the red gurnard. Therefore, based on precautionary considerations, ICES advises that catches should not be allowed to increase in 2012. There is no detailed stock assessment for the species as there is a lack of data and sampling. However, landings and available abundance indices have shown an indication of stability in recent years.

Capture Method: Demersal Otter trawl

Capture Information:
Red gurnards are mainly caught by demersal trawlers in mixed fisheries, mostly in Divisions VIId–k and VIIIa,b and also in Division IVc. There are no technical measures specifically dedicated to red gurnard or other gurnard species. There is a potential for damage to the seabed by trawling. Trawling is also associated with discarding of unwanted fish, i.e. undersized and/or non-quota and/or over-quota species. Red gurnard matures at 25cm and efforts should be made to select fish at, or above, that size.

Specific Information (FOL. summary):
Taken as bycatch in trawl fisheries, red gurnard is a fast growing fish which matures early at a large size. Populations are currently stable. However, more research is needed to inform management, gain a true reflection of stock status and the impact of fishing, as there is currently no management for the species. Avoid eating immature fish (less than 25cm) and fresh (not previously frozen) fish caught during the spawning season (summer). Gurnards are non-quota species so they are often discarded due to low market demand. Increased consumption and demand for the species will alleviate the need to waste fish through the practice of discarding, but efforts must be made to understand the biology of the stocks and manage them appropriately if the species is to become commercially targeted.

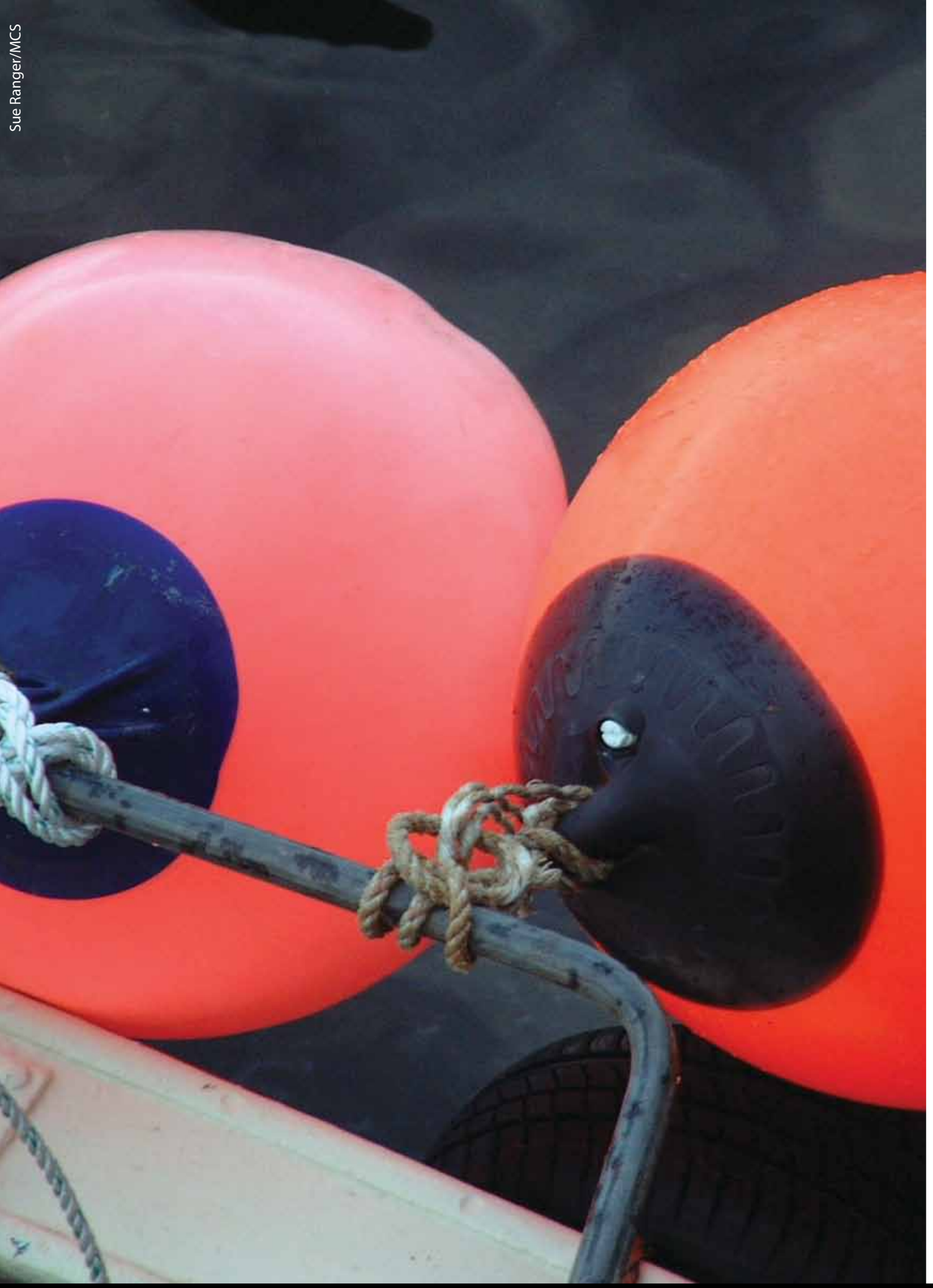
Scoring

Gear:

Fishing method	Example of species targeted by method	Impact on habitat	Impact on target species - juveniles, discards	Impact on non target species - bycatch	Manage-ment	Mitigation or conservation measures required to improve selectivity and sustain-ability	Score overall A-E (0-4)
Demersal Otter trawl	Gurnard	0.5	0.5	0.5	0.5	MLS, bycatch species	0.5 (1.5-2.25)

General:

Exploita-tion/ stock status	Wt	Vulnerabil-ity	Wt	Manage-ment	Wt	Capture method & eco-effects	Wt	Certification or accredita-tion	Wt	Total score	FOL rating 2011/12
0	5	0.31	4	0.5	3	0.5	2	1	1	4.74	2



Sue Ranger/MCS

Appendix 1
Fishing Methods League Table

This table has been developed to provide an *overview* of 24 fishing methods in general use and to help identify the most sustainable fishing methods available, in terms of their impact on marine habitat and species, and the effectiveness of their management.

Impact on habitat – considers the impact of the fishing gear on the seabed and/or other habitat such as coral, seamounts etc.

Impact on target species – considers the impact of the fishing gear on the target species itself - how selective a method is it? How many juvenile or undersized fish are discarded or thrown away etc? Factors such as the mesh size in use will have an impact on the number of undersized fish discarded or thrown away.

Impact on non-target species – considers the impact of the fishing gear on non-target species – often referred to as by-catch - these may be other fish species or non-fish species such as marine birds, turtles or mammals. The extent of the impact on non-target species depends on a number of factors, such as the target fish species and the area in which the fishing activity is taking place. For example, pelagic or mid-water trawling is associated with unacceptable levels of dolphin by-catch in seabass fisheries, whereas when fishing using the same method for herring no such problem encounters.

Management – here the management framework, specifically regulation and/or effort controls, and its effectiveness is considered for fisheries in EU and UK waters only.

A number of **Mitigation or Conservation Measures** are also listed for each method which, if implemented in all cases, would improve the selectivity of the method further reducing its impact on marine habitat and/or species.

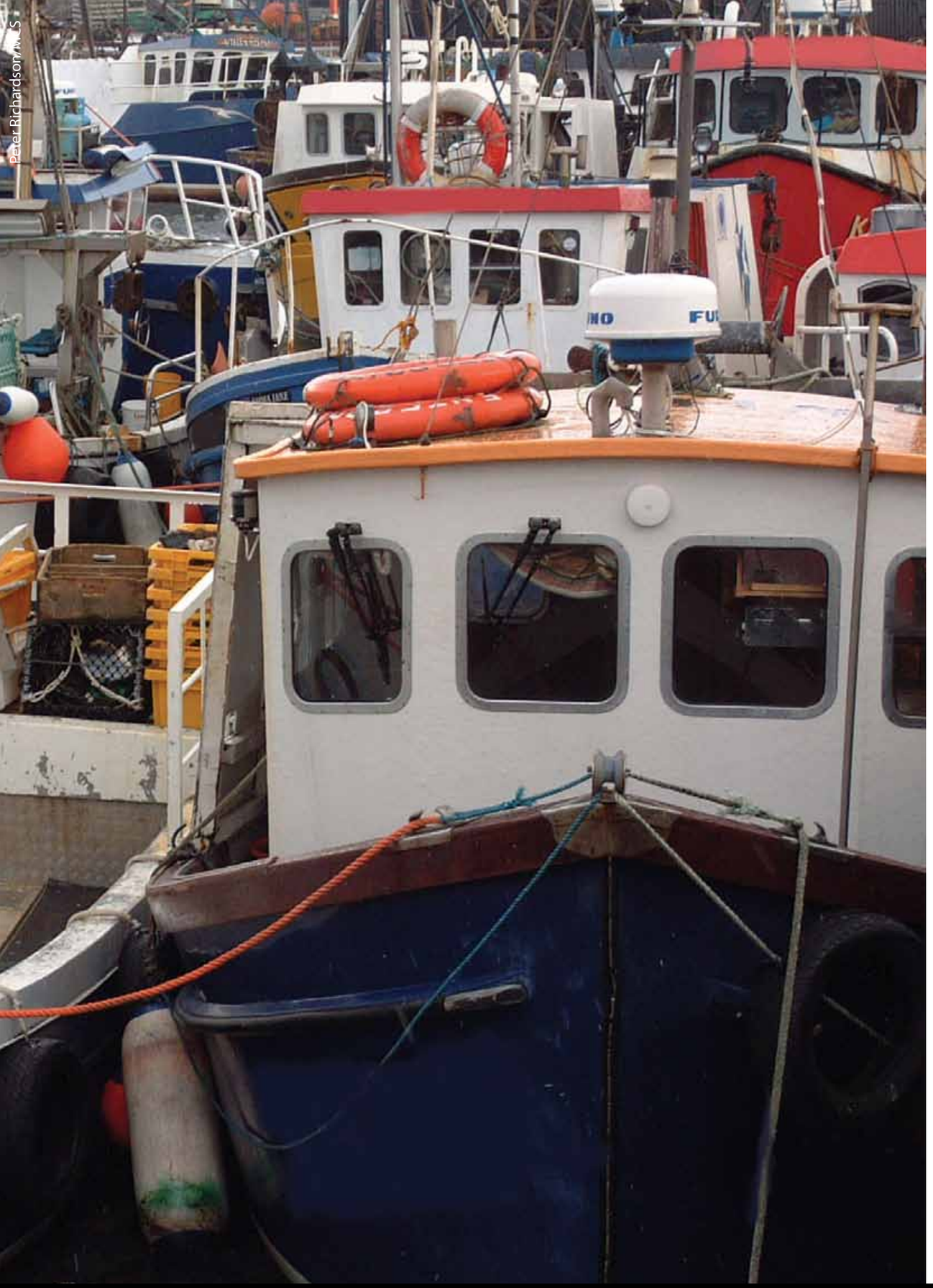
A full description of the key fishing methods is provided on: **www.fishonline.org**

Graphic	Impact	Fishonline criteria score
	Very low impact/ Well managed	0
	Low impact/Management requires some improvement	0.25
	Some impact/Management requires improvement	0.5
	Moderate impact/Poorly managed	0.75
	High impact/Unacceptable	1

Fishing method	Examples of species targeted by method	Impact on habitat (0-1)	Impact on target species - juveniles, discards	Impact on non-target species - bycatch	Management (0-1)	Mitigation or conservation measures available (but not necessarily applied)	Rating overall (0-4) or A-E
Dive caught	Scallops					Licensed diving only; closed areas	
Hand gathered or raked	Molluscs e.g. cockles					Controls on unlicensed harvesting	
Handline	Mackerel, cod					Licensing	
Jig	Squid				Not Applicable		
Pot or Creel	Crab, lobster, Dublin Bay prawn					Restrictions on the number and type of pot e.g. parlour pot; escape gaps; closed areas and seasons	
Rod and line (commerical)	Trout					Licensing; closed seasons; gear restrictions; and minimum landing sizes	
Spear/harpoon	Tuna, grouper				Not Applicable		
Trap	Octopus, cuttlefish, prawns					Restrictions on the number of traps; escape gaps	
Troll	Tuna, swordfish				Not Applicable		
Bottom trawl (beam) (vessel <24m, 220Kw)	Flat fish e.g. plaice, sole, turbot, brill, lemon sole. Also monkfish or angler and cuttlefish					Square Mesh Panel (SMP) to reduce bycatch of benthos; mesh size; square mesh; closed areas; replacement of skids with wheels	
Bottom longline	Cod, haddock, rays, ling and huss					Restrictions on number of hooks, length of line, soak time	
Bottom trawl (otter) (shelf seas)	Demersal e.g. cod, haddock, monkfish					SMP; square mesh; mesh size; separator panels and grids etc.; closed areas	

Fishing method	Examples of species targeted by method	Impact on habitat (0-1)	Impact on target species - juveniles, discards	Impact on non-target species - bycatch	Management (0-1)	Mitigation or conservation measures available (but not necessarily applied)	Rating overall (0-4) or A-E
Fixed or Gill	Hake, turbot, brill, sole					Attachment of acoustic deterrent devices; closed areas; effort controls	
Drift net (Coastal)	Salmon, herring					Licensing; mesh size restrictions; effort controls	
Pelagic longline	Toothfish, tuna, swordfish					Various measures inc. circular-shaped hooks & bait type to reduce turtle by-catch; various measures to reduce seabird by-catch e.g. weighted lines	
Purse-seine	Mackerel, tuna, herring, sardine					Dolphin friendly methods where applicable	
Demersal Seine netting	Demersal fish e.g. cod, sole, lemon sole, red mullet, squid, dab					Effort controls; licensing; mesh size restrictions; selective panels	
Pelagic or mid-water trawl	Herring, mackerel, hoki, horse mackerel, pilchard					Sorting grids; EU ban on mid-water pair trawling	
Pelagic or mid-water trawl with known high bycatch	Seabass					Sorting grids; EU ban on mid-water pair trawling	
Bottom trawl (beam) (vessel >24m, >220Kw)	Flat fish e.g. plaice, sole					Electric ticklers (experimental); Square Mesh Panel (SMP) to reduce benthos bycatch; mesh size; square mesh; closed areas; replacement of skids with wheels	
Dredge	Scallops, oysters					Closed areas; gear restrictions; effort controls	
Hydraulic or suction dredge	Molluscs e.g. cockles, clams					Closed areas; gear restrictions; effort controls	
Tangle net	Spider crab, turbot, sole, angler or monkfish					Effort controls; restrictions on number and length of nets; mesh size	

Fishing method	Examples of species targeted by method	Impact on habitat (0-1)	Impact on target species - juveniles, discards	Impact on non-target species - bycatch	Management (0-1)	Mitigation or conservation measures available (but not necessarily applied)	Rating overall (0-4) or A-E
Bottom trawl (otter) (deepwater coral reefs & seamounts)	Demersal e.g. orange roughy					Moratorium on high seas bottom trawling	
Chemical	Reef species e.g. grouper				Not Applicable	Illegal	
Explosive	Reef fish e.g. snapper				Not Applicable	Illegal	
Drift net (High Seas)	Tuna, shark				Not Applicable	Illegal	



Appendix II
Glossary

Term	Description
Artisanal	Term used to describe small-scale, traditional fisheries
Benthic	Living on or near the seabed
Biodiversity	Term used to express the variability amongst living organisms
Biomass	The total weight of living organisms or total weight of a resource or stock
Blim	Limit reference point fro spawning stock biomass (SSB)
Bpa	Precautionary reference point for spawning stock biomass (SSB)
Bycatch	Non-target organisms caught in fishing gear
Bmsy	Spawning Stock Biomass (SSB) that results from fishing at Fmsy for a long time. BMSY is the bio mass that enables a fish stock to deliver the maximum sustainable yield. In theory, BMSY is the population size at the point of maximum growth rate. The surplus biomass that is produced by the population at BMSY is the maximum sustainable yield that can be harvested without reducing the population.
Btrigger	Value of SSB that triggers a specific management action
Data deficient	Fisheries for which data is insufficient to evaluate reference points
Discards	Are those components of a fish stock thrown back after capture e.g. because they are below the Minimum Landing Size (MLS) or because quota have been exhausted for that species. Most of the discarded fish will not survive
ETP	Endangered, threatened or protected
FIP	Fisheries Improvement Plan or Project. A FIP operates via a collaborative alliance of buyers, suppliers, and producers. These stakeholders work together to improve a fishery by pressing for better policies and management while voluntarily changing purchasing and fishing practices to reduce problems such as illegal fishing, by-catch, and habitat impacts.
Fishing effort	The amount of fishing gear of a specific type used over a given unit of time e.g. hours trawled per day; the overall amount of fishing expressed in units of time e.g. number of hauls per boat per day
Fishing Mortality	Instantaneous Rate of Fishing Mortality (F).
Fishery	The sum of all fishing activities on a given resource e.g. shrimp fishery or activity of catching fish from one or more stocks e.g. North Sea cod fishery or it may also refer to a single type or style of fishing e.g. trawl fishery
Fmsy	is the maximum rate of fishing mortality (the proportion of a fish stock caught and removed by fishing) resulting eventually, usually a very long time frame, in a population size of Bmsy. Fmsy is a constant and can be applied to any stock that is not impaired in its reproductive capacity

Fully fished	Fishery where catches are close to or at MSY
Non-pressure stock	Stock not subject to a Total Allowable Catch (TAC)
Overcapacity	When the catching capacity or ability of the fishing fleet is greater than that which can be sustained by the available amount of fish or stock level
Overfished or Overfishing	Fishing with a sufficiently high intensity to reduce catch rates that a fish population should be capable of sustaining
Pressure Stock	A stock that is subject to a Total Allowable Catch (TAC)
Reference Points or Safe Biological Limits	Limits for fishing mortality rates and spawning stock biomass, beyond which the fishery is unsustainable. Other criteria which indicate when a stock is outside safe biological limits include age structure and distribution of the stock and exploitation rates. A fishery which maintains stock size within a precautionary range (a range within which the probability of reaching any limits is small) would be expected to be sustainable.
RFMO	Regional Fisheries Management Organisation
Sustainable	Can be sustained. In the light of the ICES interpretation of precautionary approach: fisheries management that keeps stock(s) above B pa (precautionary reference point for SSB) and fishing mortality below F pa (precautionary reference point for fishing mortality)
Stock	Term given to a group of individuals in a species occupying a well-defined spatial range independent of other stocks of the same species. A stock will form the basis of a distinct fishery defined in terms of season and area.
SSB	Spawning Stock Biomass. Total weight of all sexually mature fish in the stock.
Stock status	State or condition of the stock
Total Allowable Catch (TAC)	Maximum tonnage, set each year, that may be taken of a fish species within an area
Underfished	A stock fished at a level blow MSY
Underutilised	Species with a quota allocation that is not fully taken up as a consequence of either market demand or having landing restrictions in placed in a mixed fishery or species for which a substantial part of their catch is not landed (i.e. it is discarded). Species for which resources are available but not yet exploited, i.e. species that potentially offer new fisheries.

Reference:
www.ices.dk/committe%5Cacom%5Ccomwork%5Creport%5C2012%5Cacronyms_and_terminology.pdf - 2012-03-01
Good Fish Guide 2nd Edition. B Clarke (2003). Marine Conservation Society, Ross-on-Wye. UK.

Appendix III
Detailed update schedule

Action	Timescale
ICES Summer Advice June-Mid September	June - Mid September Approx. 3.5 months
1) New ICES (or other) advice	Received June/July
2) Advice processed by (Post Acom Industry Briefing Meeting 1st week July)	3rd Week July
3) Internal discussion of any ratings changes	Last week July
4) Ratings agreed internally	Last week July
5) Ratings to IRG	1st August
6) IRG input reviewed	1st week September
7) Rating changes (if any) made and agreed internally	2nd week September
8) Confirmation of final ratings to IRG	End of 2nd week September
9) Changes sent to interested parties	As soon as possible after confirmation sent to IRG
10) Database uploaded to FishOnline	3rd week September
11) MCS IApp updated	Twice a year
ICES Autumn Advice	October - Mid January Approx 3.5 months
1) New ICES (or other) advice received	August to November
2) Advice processed	Ongoing from August
3) Internal discussion of any rating changes	Ongoing as they arise
4) Ratings agreed internally	Ongoing as they arise
5) Ratings to IRG	1st week December
6) IRG input reviewed	2 weeks
7) Rating changes (if any) made and agreed internally	1st week January
8) Confirmation of final ratings to IRG	End of 2nd week of January
9) Changes sent to interested parties	As soon as possible after confirmation sent to IRG
10) Database/final changes uploaded to FishOnline	2nd week January (wc 9th January 2012)
11) Fish lists/layout compiled/finalised for Pocket Good Fish Guide (PGFG)	3rd and 4th week
12) Pocket Good Fish Guide to printers	30th January
13) Delivery of new PGFG	1st week February
14) Launch PGFG	February 14th

Appendix IV
Additional questions we consider when deciding each rating

Is there a management plan or are management measures in place?

- Stock assessment/estimations conducted on a regular basis
- Catch control (TACs) which is accompanied by Effort control (days at sea restrictions, seasonal/area closures)
- Technical conservation measures:
- Minimum Mesh Size
- Minimum Landing Size
- Maximum landing size where appropriate
- Selectivity of gear (Square Mesh Panels /sorting grids / coverless trawls etc)
- Spawning/nursery ground closures
- Measures to protect spawning individuals- i.e. illegal to land berried lobsters
- Measures to reduce incidental catch & impact on ecosystem (i.e. bird scarers, o hooks for turtles, etc)
- Monitoring of the stock- scientific / science-industry partnership surveys
- Measures to avoid IUU fishing (logbooks)

NB: If the species is vulnerable to fishing pressure (i.e. elasmobranchs/ deep sea sp.) or has large recruitment variation (i.e. haddock) or the fishery has significant impacts on non-target species, it is vital that management measures are in place.

Are the management measures being enforced?

- Log books
- Observers to monitor and verify the catch
- Register of buyers & sellers
- Chain of custody
- Fisheries inspectors
- Port control
- Fines for IUU fishing (i.e. check MFA/Defra website)
- Infringement procedures for states that go over their quota (i.e. check EC website)
- If voluntary measures, are there incentives for participants or Black Listing for those who do not?
- If a long term management/recovery plan is in place- is it being adhered to?

Is the management effective?

- Are the regulations in place actually being adhered to?
- Are the technical conservation measures appropriate – i.e. does MLS reflect size at maturity? If maximum landing size are there survivorship studies to prove that the species will survive discarding? If closures were enforced, did they work to protect the species?
- Does the TAC reflect precautionary approach, i.e. does it reflect the ICES advice?
- If a long term management/recovery plan is in place- is there evidence that it is working i.e. SSB has increased?

Appendix V
Fisheries management, scientific and certification bodies

Association of Inshore Fisheries and Conservation Authority **www.association-ifca.org.uk**
Centre for Environment, Fisheries and Aquaculture Science (CEFAS) **www.cefas.defra.gov.uk**
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) **www.cites.org**
Environment Agency (EA) **www.environment-agency.gov.uk**
Fishbase **www.fishbase.org**
Fishsource (Fishery Improvement Project) **www.fishsource.com**
Food and Agriculture Organisation (FAO) **www.fao.org**
International Council for the Exploration of the Sea (ICES) **www.ices.dk**
Indian Ocean Tuna Commission (IOTC) **www.iotc.org**
Marine Stewardship Council (MSC) **www.msc.org**
Marine Management Organisation (MMO) **www.marinemanagement.org.uk**
Marine Scotland Science **www.scotland.gov.uk**
OSPAR (List of Threatened and/or Declining Species and Habitat) **www.ospar.org**
Seafish Industry Authority (Seafish) **www.seafish.org**
Sealifebase **www.sealifebase.org**
International Union for Conservation of Nature (IUCN) **www.iucn.org**

Appendix VI
Members of industry review group

Philip MacMullen	Seafish
William Lart	Seafish
Jon Harman	Seafish
Jess Sparks	Seafood Scotland
Peter Stagg	Le Lien Ltd
Charles Redfern	Organico
Nigel Edwards	Seachill
Mike Berthet	M & J Seafood
Mike Mitchell	Young's Seafood
Estelle Brennan	Lyons Seafood
Lucy Blow	New England Seafood
Stephen Munnings	Flatfish Ltd
Claire Pescod	Marine Stewardship Council

Appendix VII
Interested parties

Interested parties to whom rating changes are communicated:

Compass Group
Dorset WT
Fish2Fork
Good Catch
Selfridges
Sustain
Sustainable Restaurant Association (SRA)

www.mcsuk.org
Registered Charity No (England and Wales): 1004005
Registered Charity No (Scotland): SC037480

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176-2012