

Fishing down the food chain: Some Implications

Bob Earll

**CMS – Communications and Management for
Sustainability**

Thanks to Callum Roberts and lots of other people

Key messages – objectives – take home messages

1. My perspective – A more sustainable future

2. Fishing down the Food chain To make you aware – check what you know

3. Highlight that we have fishing down the food chain in the Clyde and Irish Sea

To make you aware – check – that you know about the work – Roberts & his team, Heath & Speirs, McIntyre, Fernandes and Turrell

4. Mainly look at the implications of this work on the Management Measures we are using in relation to our seas – in particular in relation to:

- **The Government's vision - Marine Planning - The Marine Strategy Framework Directive**

Regional sea quality assessments - MSC accreditation - Discard policies and practice

5. Begs questions

- **Information** - whose job is it to compile and communicate it
- **'Societal choice'** is important but if societal choice have some meaning and we need to see both process – opportunity - and the information to make more balanced decisions

1. My Perspective - Sustainable Outcomes

To do that we need:

1. The Future ... A strong view of the future - We need to know where we are going - the Direction of Travel - and What is needed

2. Content – Integration – Fish, fisheries, biodiversity, ecosystems and society

3. People – Stakeholders – communities – not just fishers – we need to exert **societal choice**

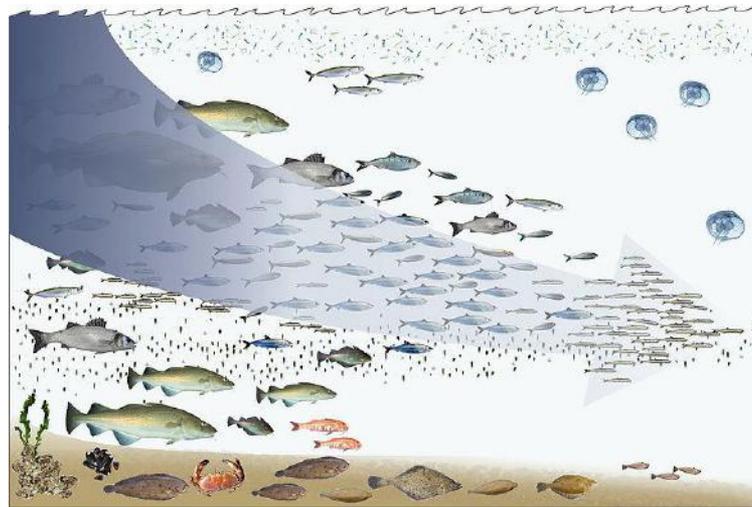
1 + 2 + 3 = **Process** – How our process enable societal choice – adaptive management – testing this on the measures we use – the policies, programmes and projects

**How many of you have heard
of
Fishing down the Food
Chain?**

Fishing down the food chain

1. Daniel Pauly and Colleagues 1998

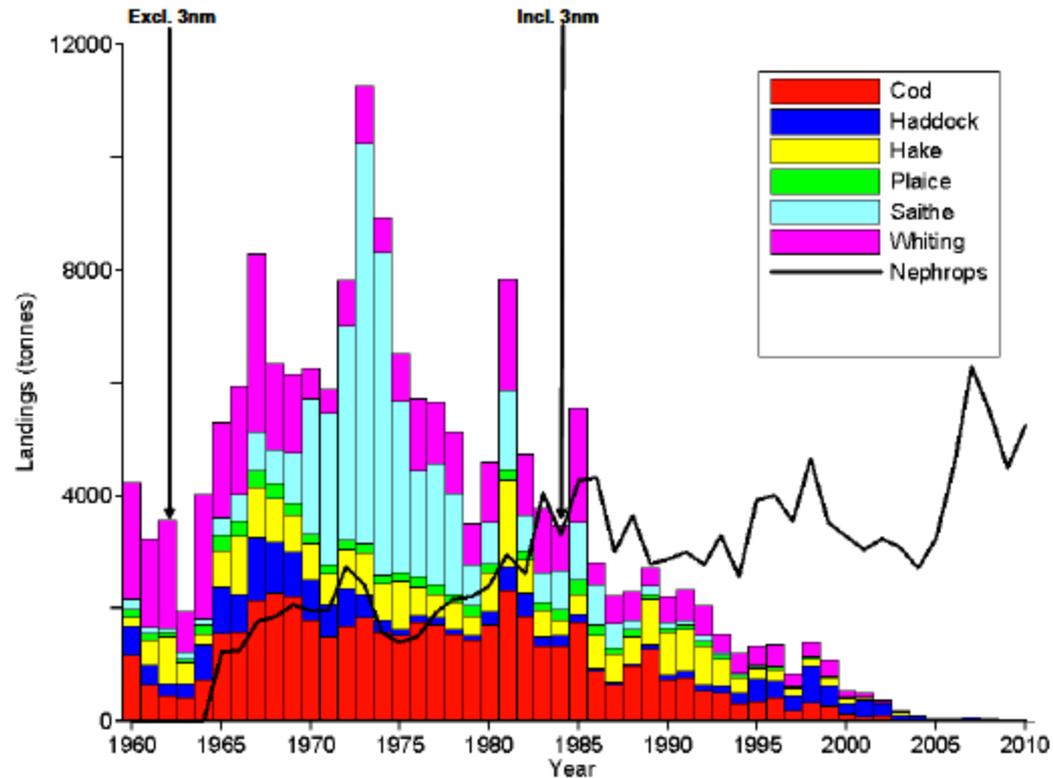
2. Iconic diagram – large to smaller fish



3. AND also the state and Health of the oceans - Alex's talk yesterday

1. Pristine
2. **Exploited**
3. Fully degraded

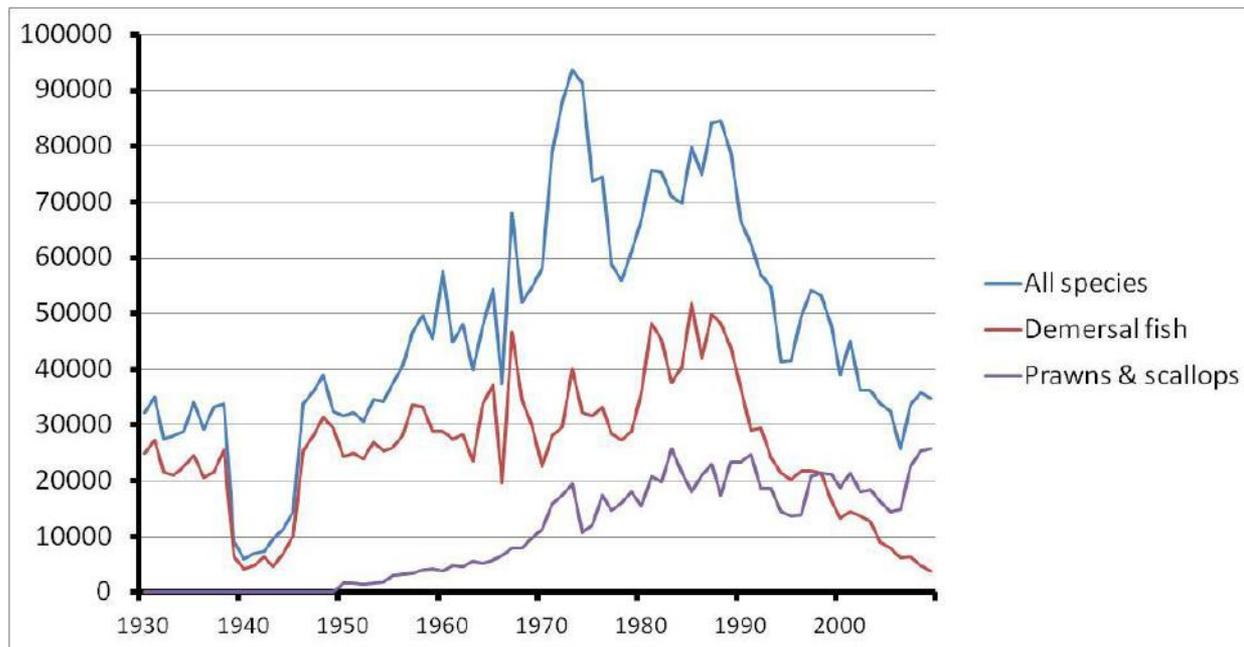
Thurstan & Roberts - > Heath & Speirs 2011 -> McIntyre, Fernandes and Turrell 2012



Two things – commercial edible fish landings going down – Nephrops fisheries going up. BUT landings are not biomass of fish

How many of you know about Callum Robert's teams analysis of the Irish Sea?

Irish Sea fishery landings (tonnes)



Data source ICES Woodcock and Roberts, in prep.

Nephrops

(prawns, scampi, langoustine)



Live in burrows and feed on the surface of muddy sea bed sediments

They can be caught by creel or trawl

Nephrops **trawl** fisheries are 'known' to have a **high bycatch of fish** because the net meshes are small

These graphs point to a significant relationship between the lack of **large** edible commercial fish in areas where there is intensive trawling for *Nephrops*

Scallops

Pecten and Chlamys (queenies)



Damage Scallop dredging is VERY WELL known to have a huge impact on the seabed species that come into contact with the dredge. We have known about the effects of scallop dredging for years and done nothing about it

If you want some **'Evidence'** look at Cook et al 2013 for a definitive study of the Blindingly Obvious study of the effects of scallop dredges and trawls destroying pristine sea bed animal communities

Important Scallop dredging takes place in both Clyde and Irish Sea – but in 2009 made up ½ the landings in Irish Sea – 15,500 tonnes.

Key points from BOTH the Clyde and Irish Sea

Landings are not biomass of fish



BUT the landings of 5 or 6 edible, commercial, demersal fish species have fallen significantly

They are not desserts or dead but they are

'A Changed - Altered Ecosystems' –
for BOTH fish and seabed marine life

Recovery is possible – to a richer , and more diverse ecosystem with benefits for than just the fishing sector

Implications

We have this situation in these two areas because of...

“Societal Choice”

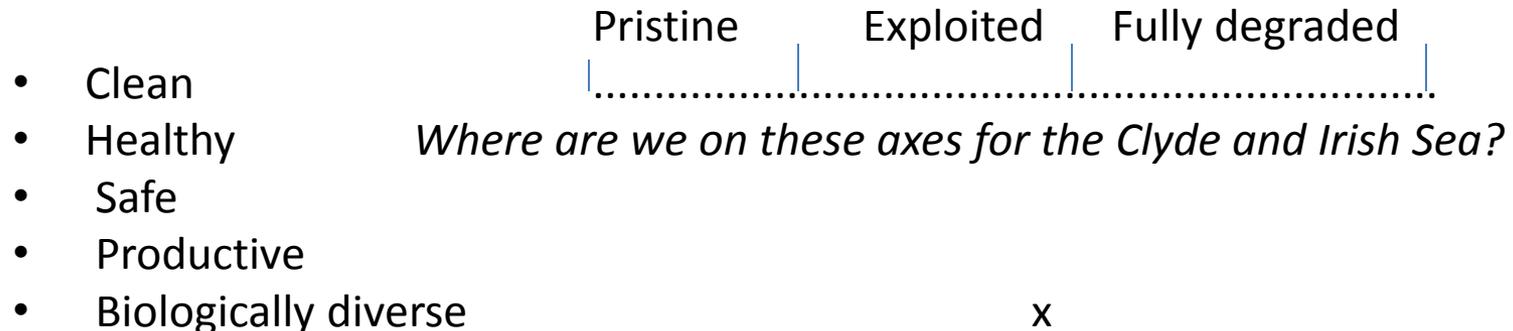
1. The Government's Vision

The Government's **vision** is for: clean, healthy, safe, productive and biologically diverse oceans and seas.

1. It's been widely rehearsed for over a decade ... Consultation – yes – its broadly accepted but are we achieving it?

1. You could apply it to an area of sea – Clyde – Irish Sea – East Coast

3. You could apply criteria e.g. Fishing down the food chain criteria



'Changed ecosystem'

4. We should question the vision much more

2. Marine Planning - I am VERY supportive of planning

Irish Sea fishery landings (tonnes)						
Data source ICES - Woodcock and Roberts in prep.						
Year	1970	1980	1990	2000	2009	2020
Demersal Fish	22611	35184	36645	13387	3897	?
Prawns and scallops	11248	15505	23360	18905	25794	?
ALL species	58138	66757	66581	38945	34796	?

Will you see a table like this in the East Coast Marine Plan No

Will you see a table like this in the East Coast Evidence Report No

But the data exists in yearly MMO fisheries reports Whose job is it to compile it?

This is an important table (diagram) because it covers - fish, fisheries, biodiversity and society

But are there NO tables for numbers of fishermen, economic value of fisheries or fishing effort, or sandeel catch either

A table free zone In fact there are no tables in either the biodiversity or fishing or any other part of the plan *'Too little space' – 'signposting'* [Only two in the Draft plan altogether!]

The future ... Looking back from where we have come from supports statements about where we might want to go to ...

We have been encouraged to think of *'plan lead management'*

But **Is the plan a plan?**

2. Marine Planning & Societal Choice

Irish Sea fishery landings (tonnes)						
Data source ICES - Woodcock and Roberts in prep.						
Year	1970	1980	1990	2000	2009	2020
Demersal Fish	22611	35184	36645	13387	3897	?
Prawns and scallops	11248	15505	23360	18905	25794	?
ALL species	58138	66757	66581	38945	34796	?

1. Planning a potentially good mechanism - Lots of **stakeholder engagement** and statement of participation – in East Coast plan production - Good

2. But what would stakeholder's response be to seeing the table? What choices would you make?

Planning is important for Society

It gives us a view of the future



Lowestoft - *It used to be a fishing port*

In Defra's Fisheries 2027 a long term vision for sustainable fisheries - the first objective is **Economic returns are optimised**

Is 2009 the optimum? NO

Irish Sea fishery landings (tonnes)						
Data source ICES - Woodcock and Roberts in prep.						
Year	1970	1980	1990	2000	2009	2020
Demersal Fish	22611	35184	36645	13387	3897	?
Prawns and scallops	11248	15505	23360	18905	25794	?
ALL species	58138	66757	66581	38945	34796	?

Marine Strategy Framework Directive (MSFD)

Questions

The results from the Clyde and Irish Sea pose fundamental questions to a number of the MSFD descriptors, in terms of:

- How they will measure the status of the descriptors?
 - How they will be monitored singly?
 - How they will be monitored (integrated) in terms of their interactions?** (by say fisheries that affect 2 or more descriptors with their activity)
 - Rather more fundamentally whether they will prompt any corrective measures away from the current business as usual scenario?**
- How will societal choice be enabled?**

3. Marine Strategy Framework Directive – Descriptors

Descriptor MSFD Descriptor 1 '***Biodiversity is maintained*** – *the quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.*' (Defra 2012) There are two words in this statement which focus on the maintaining the status quo maintain and prevailing...

Is the loss of larger marine fish acceptable?

Is the loss of the smaller edible fish acceptable?

Is a heavily impacted seabed (see Descriptor 6) over the plan area acceptable?

MSFD Descriptor 3 ***'The MSFD requires commercially exploited fish and shellfish to be within safe biological limits, exhibiting population age and size distribution that is indicative of a healthy stock.*** This generally means that commercial species will be exploited sustainably (consistent with the highest long term yield, species will have adequate reproductive capacity for replacement (able on average to reproduce once before being caught) and that stocks will have an age and size distribution that avoids impaired recruitment' Defra 2012

How does this fit the current Irish Sea fishery? Rather badly?

MSFD Descriptor 6 ***Sea-floor integrity*** is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems are not adversely affected. Defra 2012

The impacts of the following fishing methods and aggregate industry are well known to significantly alter the biological communities of the seafloor: Beam trawling, Scallop dredging, Nephrops trawling
The new generation of seine nets , Aggregate extraction

How does this fit in with the catch of 15,500 tonnes of scallops from the Irish Sea

or

Cook et al

and

We do have fishing intensity maps for the east coast ..

MSFD Descriptor 4 *'All elements of the **marine food webs**, to the extent that they are known, occur at normal abundance and diversity and level capable of ensuring long term abundance of those species and the retention of their full reproductive capacity.'* Defra 2012

Normal abundance is an interesting phrase.

I think it would be fair to say that for the Irish Sea the larger marine species, cod, larger sharks, rays, are not occurring at their normal abundance

Ditto – the majority of food fish – which are at an all time low

Ditto – larger benthic and epi-benthic filter feeders

Key messages – objectives – take home messages

1. My perspective – A more sustainable future

2. Fishing down the Food chain

3. To make you aware of UK examples - Clyde and Irish Sea

3. Implications for

- **The Government's vision**
- **Marine Planning**
- **The Marine Strategy Framework Directive**

- Regional sea quality assessments
- MSC accreditation –
- Discard policies and practice

Conclusions

1. Information – compiling and communicating - We spend millions of £s on plans and assessments – and yet it takes a University research group to point out a really significant problem
2. ‘Societal choice’ is doesn’t seem to be happening

The current situation has arisen by lots of small, ad hoc decisions over years of developing practice in the fishing sector – with little or no Societal or Governmental input

If ‘Societal choice’ is to have any meaning and we need to see it reflected in both processes (of measures) and the information made available to get wider societal benefits

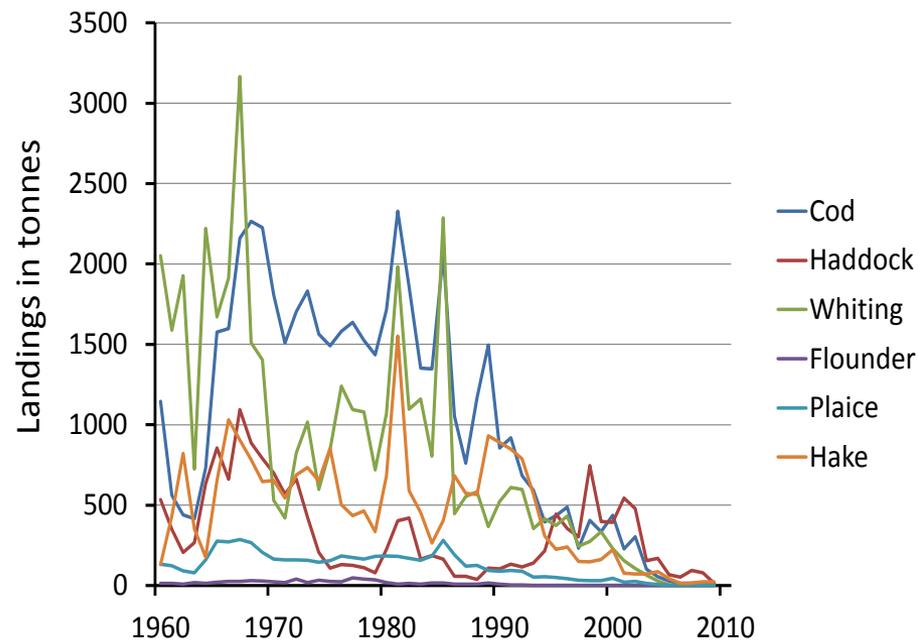
3.To highlight the important implications of the work in the Clyde and the Irish Sea for our management of the marine environment on the measures we use to achieve this; these include:

- The Government's vision for our oceans**
- Marine Planning**
- The Marine Strategy Framework Directive - Fisheries - Biodiversity**
- The regional seas assessment process (e.g. Charting progress)
- MSC accreditation of Nephrops fisheries
- Discard policy and practice

What Callum's group work does is beg questions of all these measures

How many of you have heard of the analysis of Roberts and Thurstan ... & Heath & Speirs and ... McIntyre, Fernandes and Turrell Scottish Government's report?

Firth of Clyde trawled fish landings



So would you choose this if you had the choice?

Irish Sea fishery landings (tonnes)

Data source ICES - Woodcock and Roberts in prep.

Year	1970	1980	1990	2000	2009	2020
Demersal Fish	22611	35184	36645	13387	3897	?
Prawns and scallops	11248	15505	23360	18905	25794	?
ALL species	58138	66757	66581	38945	34796	?