

A brief tour of artificial reefs

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NOTE: photographs have been removed from this talk for copyright reasons.

Talk structure

- What is an artificial reef?
- Artificial reefs – some context and examples
- A few consequences of rig removal and non-removal
- Summary

Artificial reefs

- ‘submerged structure placed on the sea bed **deliberately**, to mimic **some characteristics** of a natural reef’ (OSPARCOM).
- Widely adopted in Japan, Korea, US, Australia during the 1950s – to date
- Considerable volume of waste ‘materials of convenience’ has been dumped on the pretext of reef creation
- Led to a poor reputation and effective ban in Europe...

Materials of convenience

- Includes tyres and various other 'junk'

Artificial reefs can be contentious

<http://www.bbc.co.uk/news/uk-23567976>

Experimental artificial reefs



Loch Linnhe Artificial Reef research
facility, SAMS

Wrecks to reefs programme

- Numerous suggestions, over the years, to convert decommissioned warships into sport-diving reefs.
 - Scylla
- Sound of Mull Artificial Reef proposal

De-facto artificial reef

- Where mimicking a reef is not the primary objective
 - Includes coastal defence (purpose built structures or rock dumping)
 - Causeways (e.g. linking islands in Orkney)
 - Artificial islands /land reclamation projects
 - Offshore renewable infrastructure

Man has, and continues, to introduce an enormous number and variety of 'artificial reefs' into the marine environment.

Natural v. artificial reefs

- Artificial reefs are not natural reefs
- Host different communities and function in different ways compared with their natural counterparts
- Does this matter?
- Depends on your objectives
- Rigs/platforms are *de-facto* artificial reefs

What is destroyed by removal

- Destruction of mature, reef-based communities
 - Includes cold-water corals (*Lophelia pertusa*)
- *Areas of sediment that have been excluded from fishing-effort-based physical disturbance for decades*
- *Shell-mounds?*

What will occur if left *in situ*

- Greater local heterogeneity both at the water column and physical structure level
- Greater local productivity
 - no evidence that regional productivity will increase
- Increased local biodiversity, no regional increase
- On-going trawl exclusion – increased biodiversity
- BUT – for how long?

Decommissioning the decommissioned?

- IF the structure is being left *because* of the reef-effect then it should be removed when it stops being a reef
- Will it be more expensive to remove something largely decayed and structurally unsound?
- How long will the steel / concrete last (50 - 100 - 300 yrs?)
- Is this a legacy it is fair to leave to subsequent generations?

Rigs-to-reefs in the North Sea?

- Consider three important shareholders
 - Fishing industry
 - Oil /gas industry
 - Society

Rigs-to-reefs in the North Sea?

Stakeholder	Objective
Fishing industry and shareholders	Maximise revenue (£)
Oil producers and shareholders / pension funds	

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'Environment' and its shareholders (us)	Maximise long-term revenue to society - ecosystem service provision	

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Thanks for listening

Natural reef,
Loch Creran