



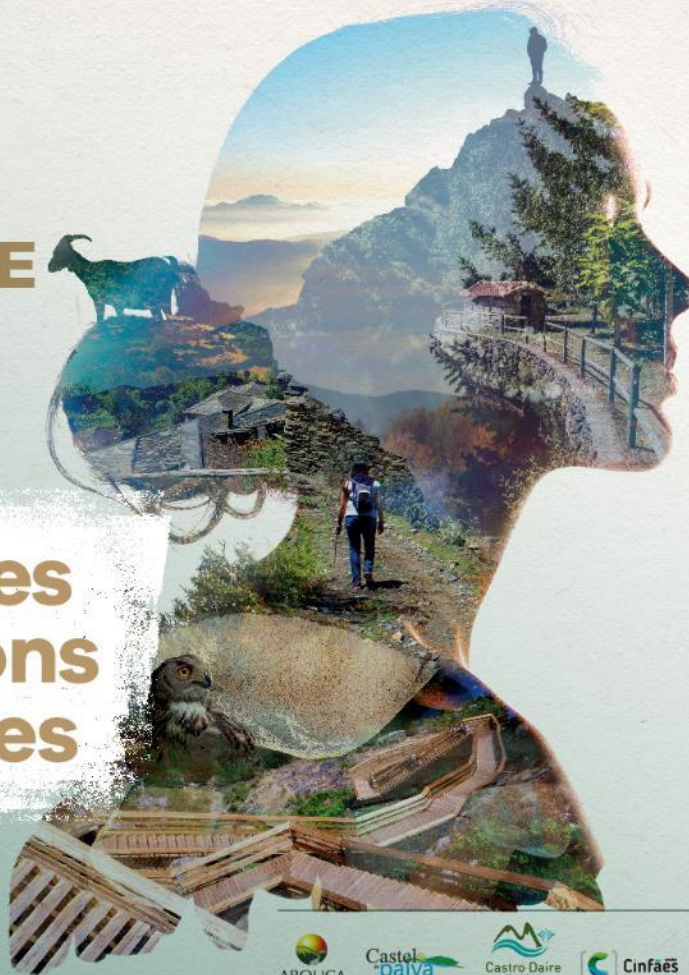
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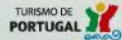
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New Visions  
New Values**

*for People  
and Nature  
in Europe*



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# From ecological meltdown to community-led marine protection; the Community of Arran case study

**Howard Wood**

Chair and Co-Founder of COAST  
The Community of Arran Seabed Trust

**New Voices  
New Visions  
New Values**

*for People  
and Nature  
in Europe*

1. The demise of the Clyde
2. Island community action
3. The hurdles
4. The success
5. Current situation



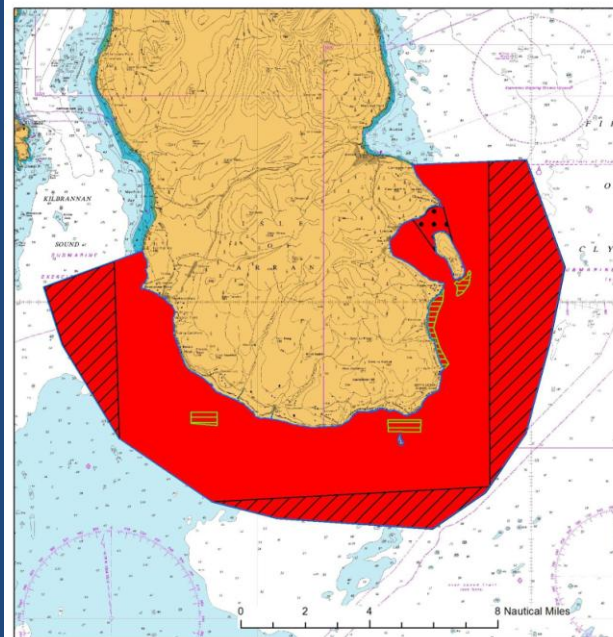
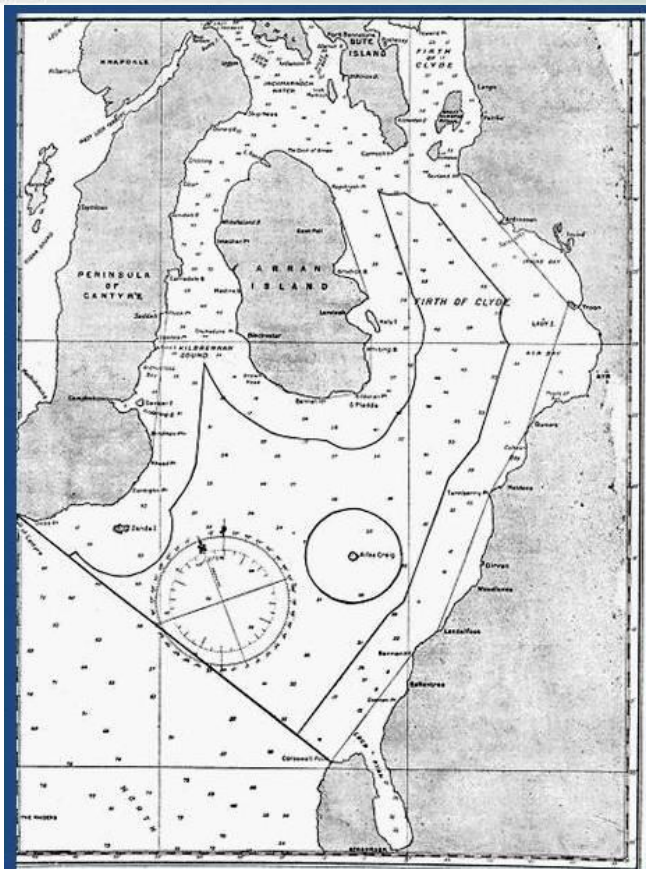
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NACIONAL, INTERPRETAÇÃO DAS ÁREAS DE  
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Isle of Arran



South Arran MPA

- MPA boundary
- Lamlash Bay No Take Zone
- no static gear
- derogated area
- management area

Within the red area no suction dredge, mechanical dredge, beam trawl, or demersal trawl (including seine net) is permitted.  
By way of derogation demersal trawl will be permitted in the black hatched areas by vessels smaller than 120 gross tonnes.

No static gear (creels, bottom set nets, or long lines) permitted in the green hatched areas.  
No fishing of any kind in the Lamlash Bay No Take Zone





## **Community of Arran Seabed Trust COAST**

Established 1995

Until 2011 run by volunteers

Now has 3 full time staff and dozens  
of volunteers

### **The main issue**

Scotland's seas were managed by  
Government & Commercial fishermen.  
Coastal communities were excluded from  
management

Howard Wood, Don MacNeish

In 2009 this paper was published

It led to many more studies  
as to the real state of the Clyde.

What divers and sea anglers had been  
saying for over 20 years was true

## Ecological Meltdown in the Firth of Clyde, Scotland: Two Centuries of Change in a Coastal Marine Ecosystem

Ruth H. Thurstan, Callum M. Roberts\*

Environment Department, University of York, York, United Kingdom

### Abstract

**Background:** The Firth of Clyde is a large inlet of the sea that extends over 100 km into Scotland's west coast.

**Methods:** We compiled detailed fisheries landings data for this area and combined them with historical accounts to build a picture of change due to fishing activity over the last 200 years.

**Findings:** In the early 19<sup>th</sup> century, prior to the onset of industrial fishing, the Firth of Clyde supported diverse and productive fisheries for species such as herring (*Clupea harengus*, Clupeidae), cod (*Gadus morhua*, Gadidae), haddock (*Melanogrammus aeglefinus*, Gadidae), turbot (*Psetta maxima*, Scophthalmidae) and flounder (*Platichthys flesus*, Pleuronectidae). The 19<sup>th</sup> century saw increased demand for fish, which encouraged more indiscriminate methods of fishing such as bottom trawling. During the 1880s, fish landings began to decline, and upon the recommendation of local fishers and scientists, the Firth of Clyde was closed to large trawling vessels in 1889. This closure remained in place until 1962 when bottom trawling for Norway lobster (*Nephrops norvegicus*, Nephropidae) was approved in areas more than three nautical miles from the coast. During the 1960s and 1970s, landings of bottomfish increased as trawling intensified. The trawl closure within three nautical miles of the coast was repealed in 1984 under pressure from the industry. Thereafter, bottomfish landings went into terminal decline, with all species collapsing to zero or near zero landings by the early 21<sup>st</sup> century. Herring fisheries collapsed in the 1970s as more efficient mid-water trawls and fish finders were introduced, while a fishery for mid-water saithe (*Pollachius virens*, Gadidae) underwent a boom and bust shortly after discovery in the late 1960s. The only commercial fisheries that remain today are for *Nephrops* and scallops (*Pecten maximus*, Pectinidae).

**Significance:** The Firth of Clyde is a marine ecosystem nearing the endpoint of overfishing, a time when no species remain that are capable of sustaining commercial catches. The evidence suggests that trawl closures helped maintain productive fisheries through the mid-20<sup>th</sup> century, and their reopening precipitated collapse of bottomfish stocks. We argue that continued intensive bottom trawling for *Nephrops* with fine mesh nets will prevent the recovery of other species. This once diverse and highly productive environment will only be restored if trawl closures or other protected areas are re-introduced. The Firth of Clyde represents at a small scale a process that is occurring ocean-wide today, and its experience serves as a warning to others.

**Citation:** Thurstan RH, Roberts CM (2010) Ecological Meltdown in the Firth of Clyde, Scotland: Two Centuries of Change in a Coastal Marine Ecosystem. PLoS ONE 5(7): e11767. doi:10.1371/journal.pone.0011767

**Editor:** Richard Kazimierz Frank Unsworth, Northern Fisheries Centre, Australia

**Received:** March 15, 2010; **Accepted:** June 27, 2010; **Published:** July 29, 2010

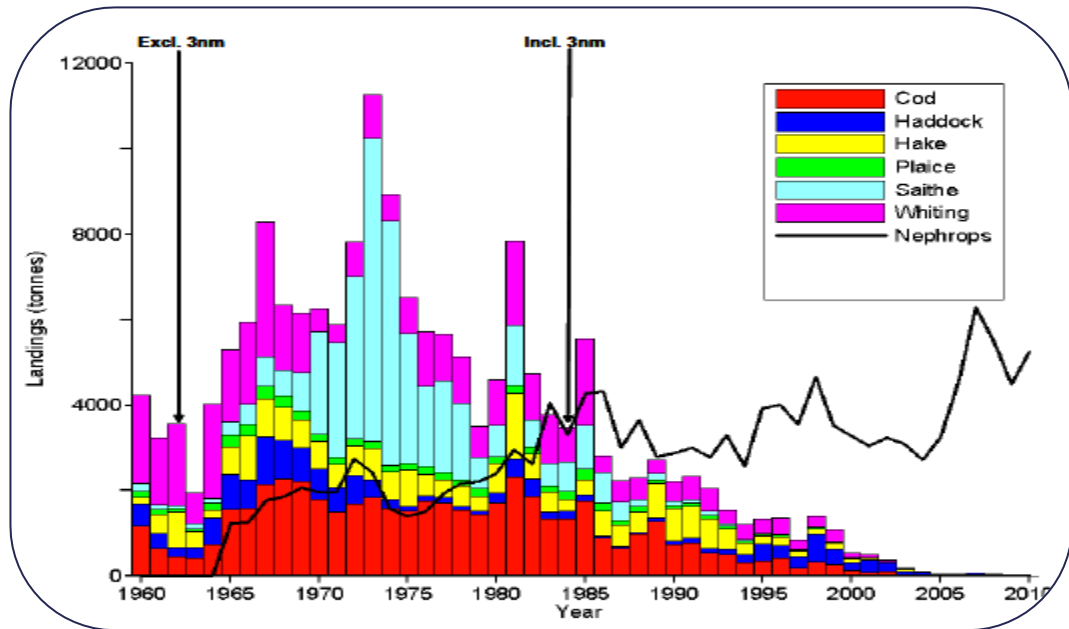
**Copyright:** © 2010 Thurstan, Roberts. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Funding:** This study was partly funded by a Mia Tegner Memorial Grant in Historical Ecology from the Marine Conservation Biology Institute ([www.mcbl.org](http://www.mcbl.org)). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

**Competing Interests:** The authors have declared that no competing interests exist.

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# THE CLYDE IS NOW A FISHERY OF LAST RESORT



The landings of the principle demersal fish, and of Nephrops , from the Clyde since 1960

- Reduction in diversity and abundance of catch

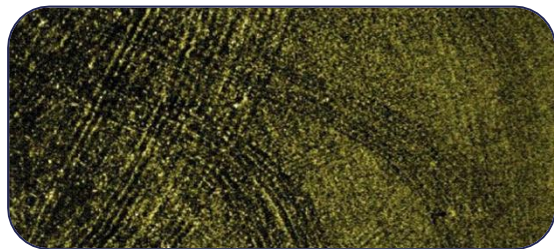
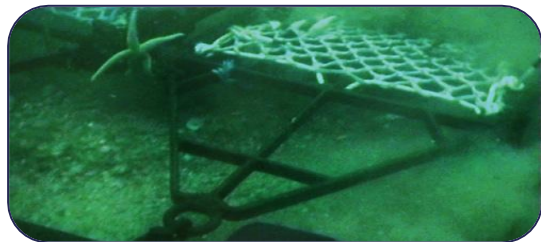
Commercial catches of **fin fish ceased in 2003**

***Nephrops* and scallop**, at the bottom of the food chain account for over **99% of commercial catch** in the Clyde today

The **removal of the 3 nautical mile exclusion zone to trawling** coincides with the **decline in landings**



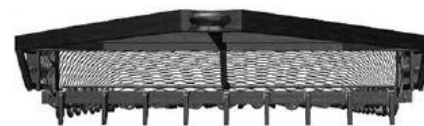




# THE EMERGENCE OF BOTTOM TOWED MOBILE GEAR

## Key facts on bottom trawling and dredging

- They are **dragged across the seabed** by a boat.
- They are very **indiscriminate**; not only do they catch target species but damage non-target species and sea floor habitats.
- *Dredgers have teeth on springs which penetrate into the seabed to take scallops out of the sediment and are **considered the most destructive fishing method worldwide**.*



Boulcott & Howell, 2011

Trawling began

Newhaven  
spring tined  
Dredging began

1889

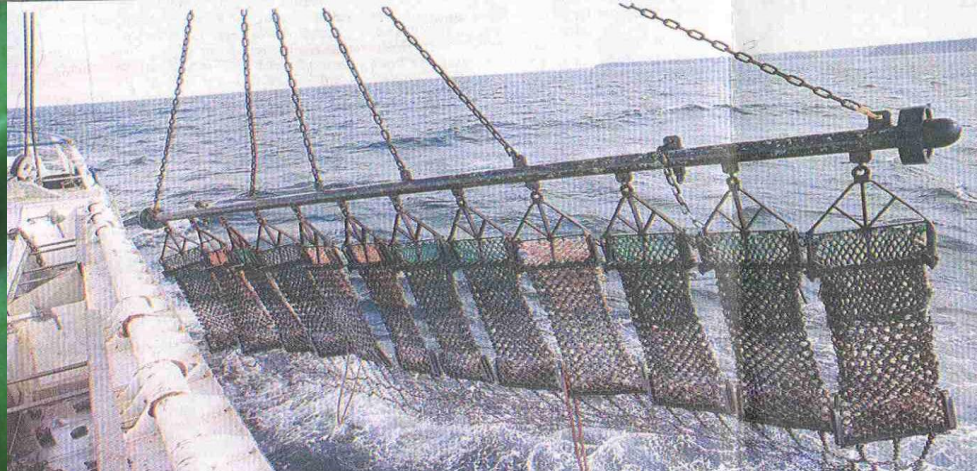
Designated a complete ban  
on the trawling in the Clyde.

1962

Otter trawling became allowed within the Clyde up to the 3 nautical mile limit. This regulation was altered in 1968, allowing year round otter trawling in the Clyde.

1984

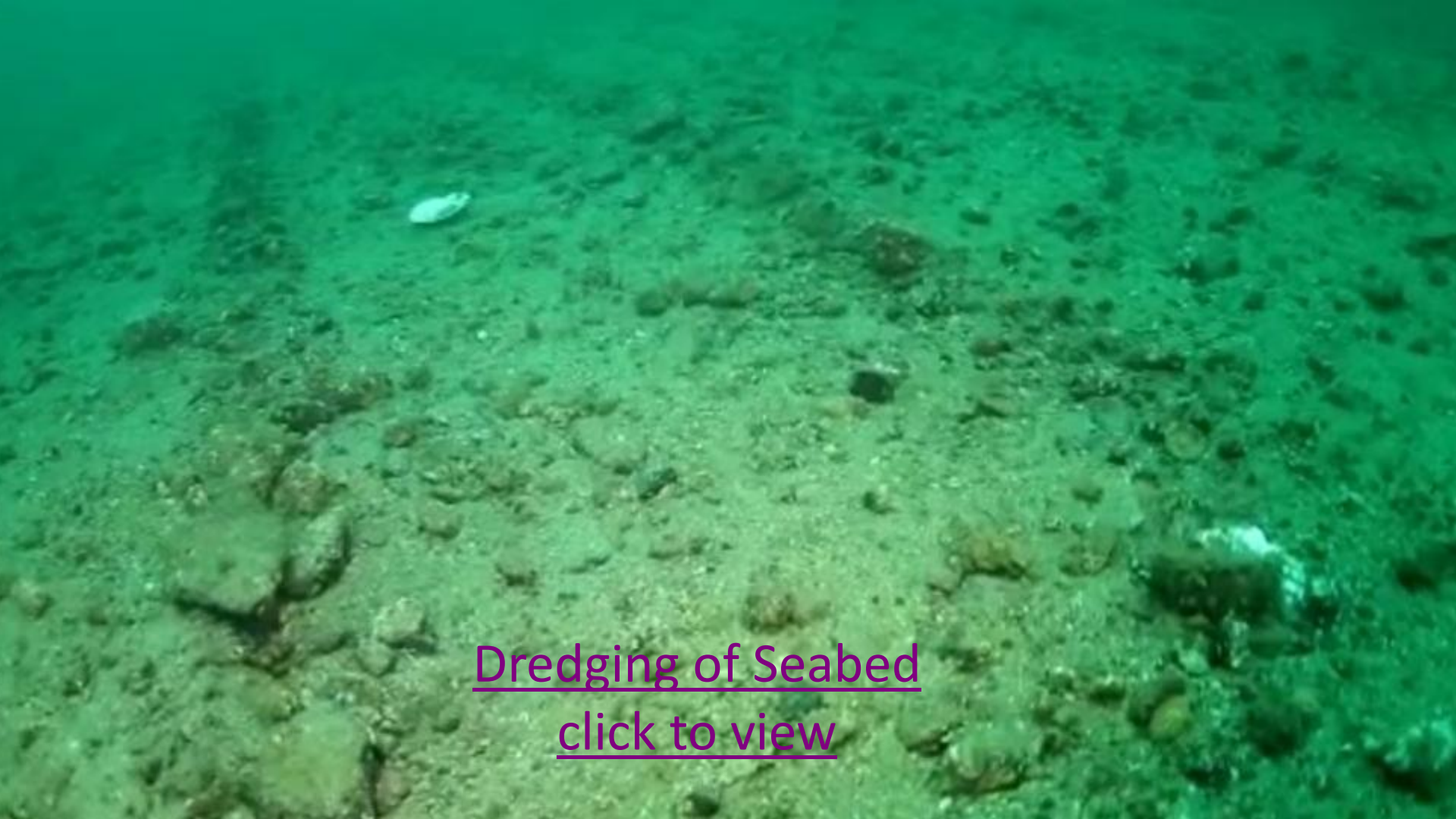
All restrictions inshore for trawling  
have been removed.



**The many issues surrounding the controversial activity of scallop dredging**





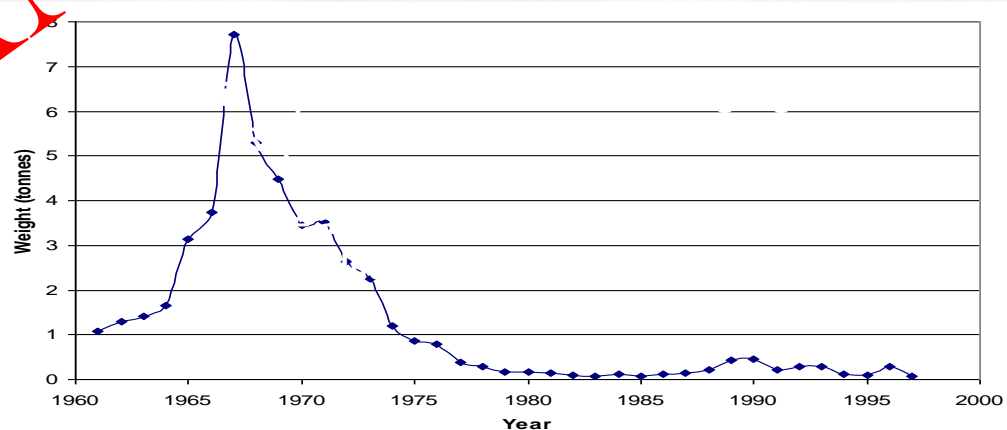
An underwater photograph showing a seabed covered in fine sediment and small rocks. The water is a murky green color. In the lower center, there is a text overlay in purple. 

Dredging of Seabed  
click to view

2009 Government report: Sea Angling was worth over £9 million to Clyde economy



## CLYDE SEA ANGLING FESTIVALS







**COAST HAD TO CHALLENGE  
THE STATUS QUO**





# COMMUNITY ENGAGEMENT AND EDUCATION





In 2004 after a decade of procrastination, COAST appeal directly to the new Scottish Parliament





# Lamlash Bay Community Marine Conservation Area

Scottish Natural Heritage  
and Scottish Wildlife  
This project is part funded by Scottish Natural Heritage  
and Esmée Fairbairn Foundation

Panel 1 of 4

**North Lamlash Bay's Scotland's first No Take Zone**, an area of sea and seabed from which no sea fish can be removed by any method.

In the future No Take Zones will play an essential role in the protection and recovery of marine habitats, helping to protect and regenerate the foundations of the sea.

Since its inception in September 2008 Scottish Natural Heritage and Marine Scotland Science will scientifically monitor the area. The results of these surveys will be posted on [www.arrancoast.co.uk](http://www.arrancoast.co.uk)

The seal seen most often in the bay is the common seal, although the larger grey seal is also present in the Clyde. Seals hunt fish by sight but can also use their sensitive whiskers to find something to eat. The common seal pups are born in the early summer and are able to swim and dive from birth, often taking to the water very quickly. They may live for up to 30 years, the exception of killer whales, the predators.

Moon jellyfish have bodies which pulsate and propel them slowly. Although affected by currents they are not and are capable of running no eyes but using cells to light they may use compass. Moon jellyfish tiny plankton which are trapped when they bite tentacles lined with stinging cells.

Anemones may look like they are in fact animals the same group as jellyfish. What these animals are the stinging cells tentacles. Anemones most colourful animals on the seabed and they come in many shapes and colours. The anemone is just 1cm plumed anemone (L. 30cm tall).

Kelp forms on stable low-tide level. It forms a home living space for a range of species including sponges, fish, urchins. A tangled, root-like holdfast help the rocks. Overtaken by seaweed living with holdfast.

Underwater forests and M

**COAST**  
Community of Pioneers Network Trust

**Lamlash Bay Marine Conservation Area**

This is the area of the No Take Zone

Underwater forests and M

## Lamlash Bay No Take Zone

Welcome to Scotland's first No Take Zone, an area of sea and seabed from which no sea fish can be removed by any method. This underwater world is amazing, and our Scottish waters are home to over 8,000 spectacular species, please help us keep it this way.

**Enjoy your visit to Lamlash Bay, but please respect the No Take Zone by not disturbing or endangering marine plants and animals. This area provides a safe haven and nursery for a wealth of undersea life. In order to protect future generations, there must be:**

- NO recreational fishing from shore or boat.
- NO commercial fishing from shore or boat.
- NO taking of shellfish.

**Walking and picnicking on the shore, swimming, floating, diving and photography are all encouraged as educational and scientific activities, though it is expected that people will not disturb or endanger any marine plants and animals.**

A hidden world with thousands of magical plants and cr





# COLLABORATIVE RESEARCH AND MONITORING



# INSIDE THE NO TAKE ZONE...

## Scallops (2015)

**Larger** and more  
plentiful

**More individuals**  
and a wider variety  
of species

## Seafloor (2015)

Animals and  
plants that attach  
to seafloor **twice**  
**as abundant**

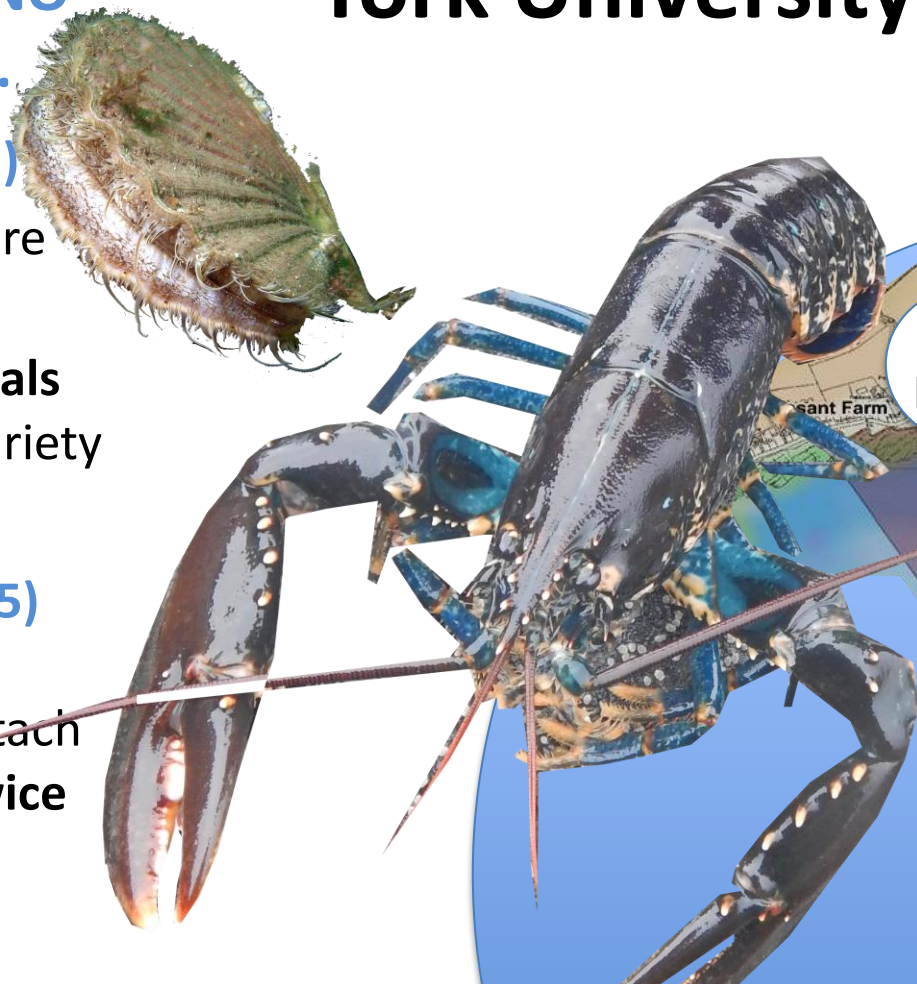
# York University NTZ research

## Lobsters (2017)

**12%  
larger**

**+ 39%  
reproductive  
output**

**X2  
lobsters  
/creel**





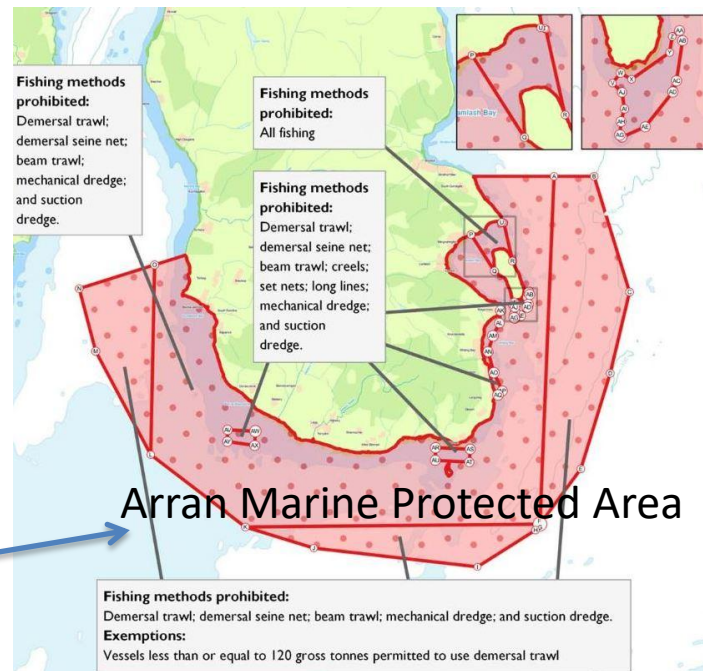
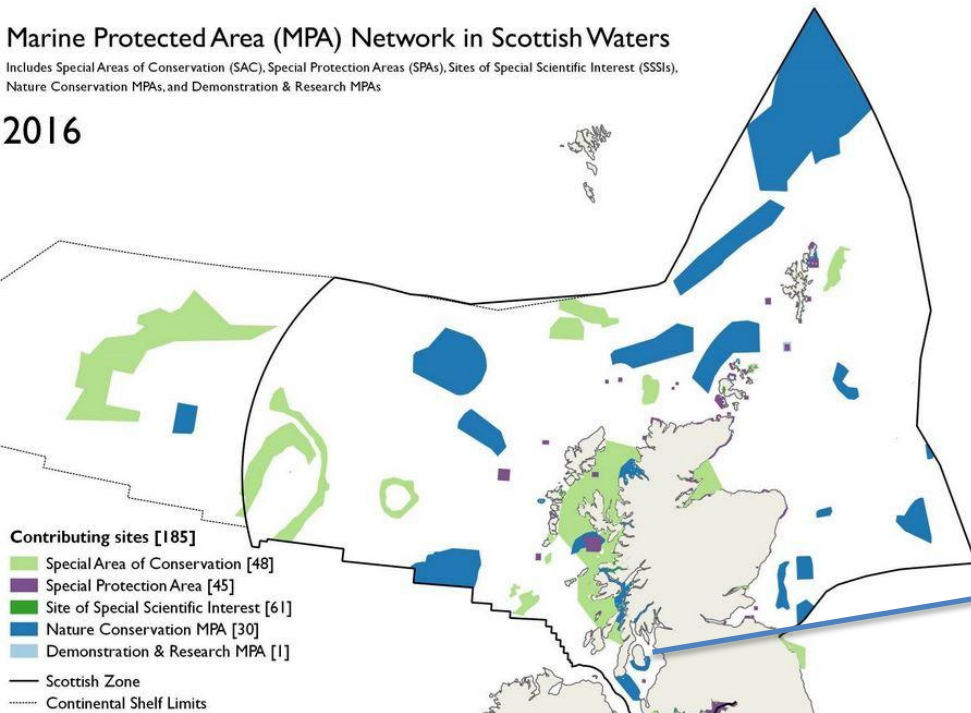
# Scottish MPA network = 20% of our seas

Real protection from damaging activity is patchy

## Marine Protected Area (MPA) Network in Scottish Waters

Includes Special Areas of Conservation (SAC), Special Protection Areas (SPAs), Sites of Special Scientific Interest (SSSIs), Nature Conservation MPAs, and Demonstration & Research MPAs

2016





27<sup>th</sup> January 2016  
Dredge & Trawl Fishermen  
clash with COAST outside  
Scottish Parliament.





# COAST's experience

- Must be a **real desire and rationale** to campaign for change
- Strength is in **community roots** - broad based and inclusive
- **Single objective/ clear agenda**
- **Tenacity and resilience** over the long-term
- Requires **political awareness** and campaigning zeal
- **Government will only implement progressive change with strong support from local communities**

## 2017 Current governance in the Clyde Scotland



Scottish Inshore fisheries management  
Groups still comprise only Commercial  
Fishermans representatives  
(Lack balance)



COAST have now been allowed  
membership of the newly  
Established CMPP





Lamlash Bay NTZ  
2017 Underwater  
Footage [click here](#)





# Bottom-up approach

## Creation of the Lamlash Bay NoTakeZone

- COAST is a grassroots community initiative.
- Observed deterioration of the marine environment inspired its creation.
- Campaign for NTZ long and hard fight (1995 – 2008), resisted by mobile fishing sector and government.
- Strong community support on Arran and around Scotland won the day.
- First NTZ (2.67sq km) in Scotland declared in 2008.
- Meant we were well prepared for the campaign for effective MPAs between 2012 to 2016

COASTs success is now being emulated by 6 other Scottish Coastal communities

coastline 11,550 miles

A large white naval ship, likely a minesweeper, is shown from a side profile, sailing on a deep blue sea. The ship features a prominent yellow and black diagonal stripe on its bow and a small flag on its mast. The background consists of a hazy coastline and a sky filled with soft, white clouds.

coastline 6261 miles







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Thank you!

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