a Marine Protected Area
for the local community of Gairloch?

Peter Cunningham*

Gairloch Community Hall

7th May 2012

[*Biologist, Wester Ross Fisheries Trust; Secretary, Wester Ross Environment Network; returned VSO (Mekong fisheries) volunteer; Gairloch parish resident . . . . (enjoys catching & eating fish!)]

Summary

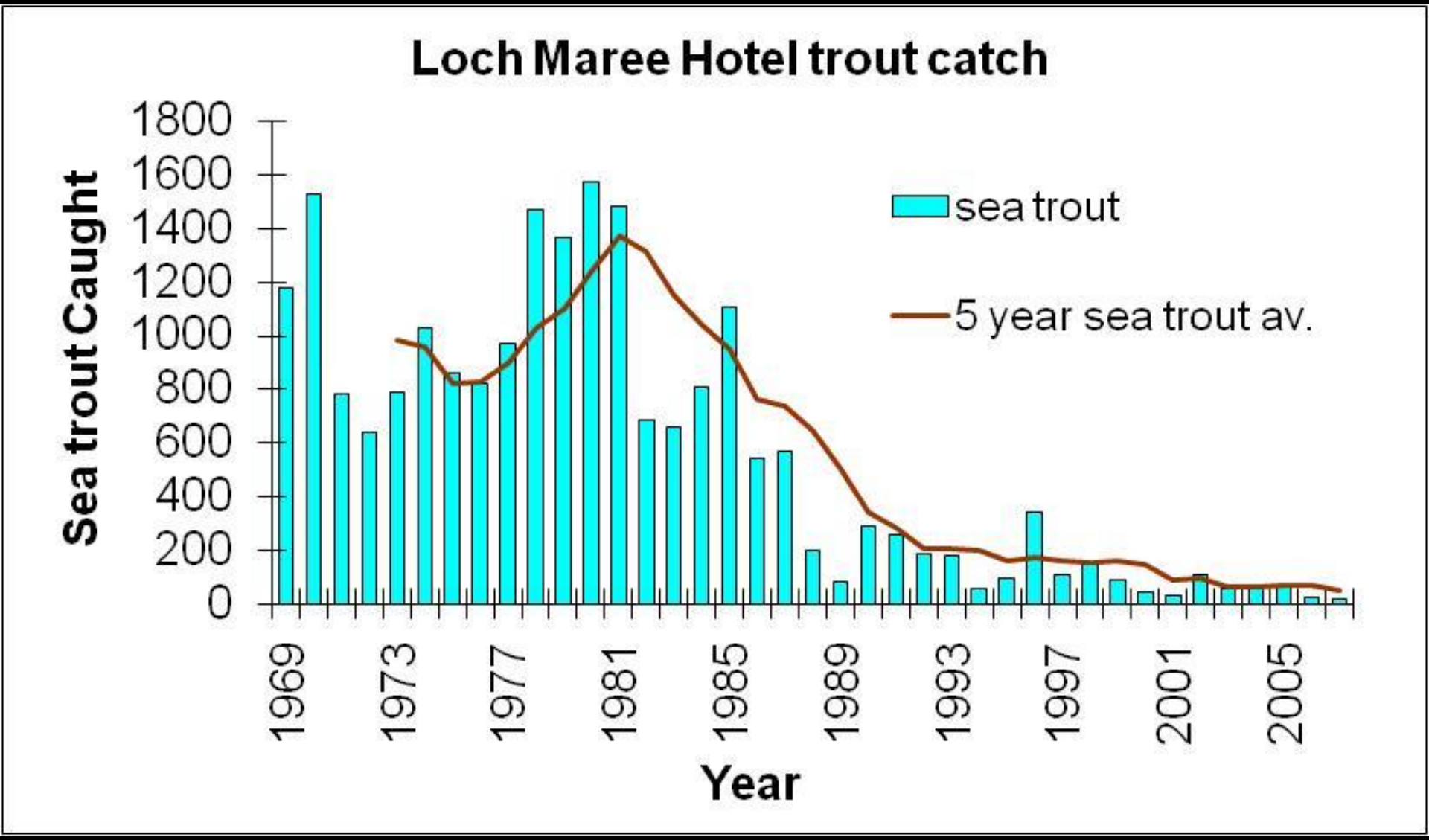
- Fishes and fisheries problems
- ‘Priority habitats and species’ around Loch Gairloch
- Do they need protection?
- What are the options open to us?
- Possible benefits and risks of a local MPA (debate)

The Loch Maree Sea trout Fishery

15+ boats with ghillies through summer and early autumn

Former British record rod caught sea trout

The Loch Maree sea trout fishery collapsed at the end of the 1980s




Loch Maree sea trout head for
Loch Ewe . . .

Sweep netting for sea trout, Boor Bay, Loch Ewe

Supported by the Scottish Government

Problems for sea trout in the marine environment included parasitic sea lice infection . . .

Sea trout and the seas around Wester Ross

Other factors are also of importance

White-tailed (sea) eagle

Trawling: Rising fuel prices provide additional incentives for the further development of alternative, more selective, fishing methods.

Gannet

Sea birds: The 'catastrophic and unprecedented breeding failure' around the West of Scotland in 2005 has been attributed to a shortage of sandeels (RSPB).

Seals: Populations of both harbour and grey seals are near recorded highs. There are few natural predators in local waters (rare Orca sightings). Formerly culled by salmon netsmen.

Phytoplankton: Production depends upon sunlight and dissolved nutrient concentrations, and reaches a peak in early summer.

Zooplankton: Changes in the relative abundance of important *Calanus* species may be related to global climatic change.

Minke whale and porpoise: Target sandeels in the early summer, then sprat and herring from mid-summer onwards. Whales were less common in 2005 than in 2004.

Otter: Widespread and abundant around the coastline. Feeds on small fishes and crabs. Diet is unlikely to include healthy sea trout in the sea.

Herring and sprat: Herring stocks around the west of Scotland were lower in 2005 than in 2004, with particularly few fish in the Minch (ICES).

Small gadoids: Pollack, Saithe, Whiting, etc.

Jellyfish: Dense aggregations of moon jellyfish formed in local sea lochs during summer 2005. Jellyfish may outcompete juvenile fin-fish for zooplankton.

Sandeels: of vital importance for sea birds, marine mammals and many fish species. ICES advise that the current status of West Coast sandeels is 'unknown'.

Pollack: Large pollack may be significant predators of small sea trout. Gadoids (including Pollack) are important food for seals.

Cod, Haddock and Whiting: Taken as bicatch by *nephrops* trawlers. Cod and whiting stocks are near historic low levels; haddock at sustainable levels.

Sea trout: Kelts, overwintered finnock and smolts may be particularly vulnerable when water temperatures are still cold in spring, especially if health is compromised (e.g. by sea lice infection).

Common prawn: Other small crustaceans are also of importance as food for sea trout.

Common shrimp: Emerges from sand to feed at night. An important food for many fish species.

***Nephrops*:** Live in burrows in deeper water. Fishermen in Loch Torridon catch only larger *nephrops* by using creels with 'hatches' that allow smaller *nephrops* to escape (MSC 'Sustainable Fishery').

What happened to other fish populations?

For much of the 20th Century, Gairloch supported a busy herring fishery and a then whitefish fleet ...

ringnetter “Mhaighdean Mara“ ashore at Badachro, Gairloch around 1950

http://www.trawlerphotos.co.uk/gallery/showfull.php?photo=14481

UK Record Weights, rod/line from boat

Plaice: 10-03-08 Longa Sound, Scotland. H Gardiner 1974
(photo: http://www.uk-fish.info/pages/plaice.html)

Loch Gairloch was well known for sea angling

Dab: 2-12-04 Gairloch, Highlands. R. Islip 1975
(photo: http://chesilbeach.forumotion.net/t7074-smashed-dab-record)

LETTERS TO THE EDITOR

Dear G&DT

January, 2010

I was interested in Derek Roxborough's letter and Dorothy's response à propos the Gairloch cod fishery. As stated, both must be correct. A few years ago I was told by an old local fisherman that he vividly remembered setting out the long lines - or 'great lines' if they were for cod - in his grandfather's boat, across Gruinard Bay. He said, 'I can still feel, one by one, the bangs and knocks of fish hooking themselves all down the line' as I held the end.

In 1972 I was living in Lee-On-Solent when I read in *Angling Times* about a British record plaice that had been rod and line caught from Longa Sound by a young man in a canoe. Being very keen sea anglers, my family and I towed out boat all the way up from south Hampshire. We camped at Big Sand and fished every day for a fortnight and talked with local fishermen about the winter cod netting amongst their other commercial activities.

We caught fifteen species of fish in the Gairloch area during that holiday, many to specimen size. These included codling and hake, haddock, thornback and conger plus a lemon sole within half an ounce of the British record (in ten feet of water of Strath) and a dab from Longa Sound that actually became the British rod caught record. May still be in the Guinness Book of Records - haven't checked recently.

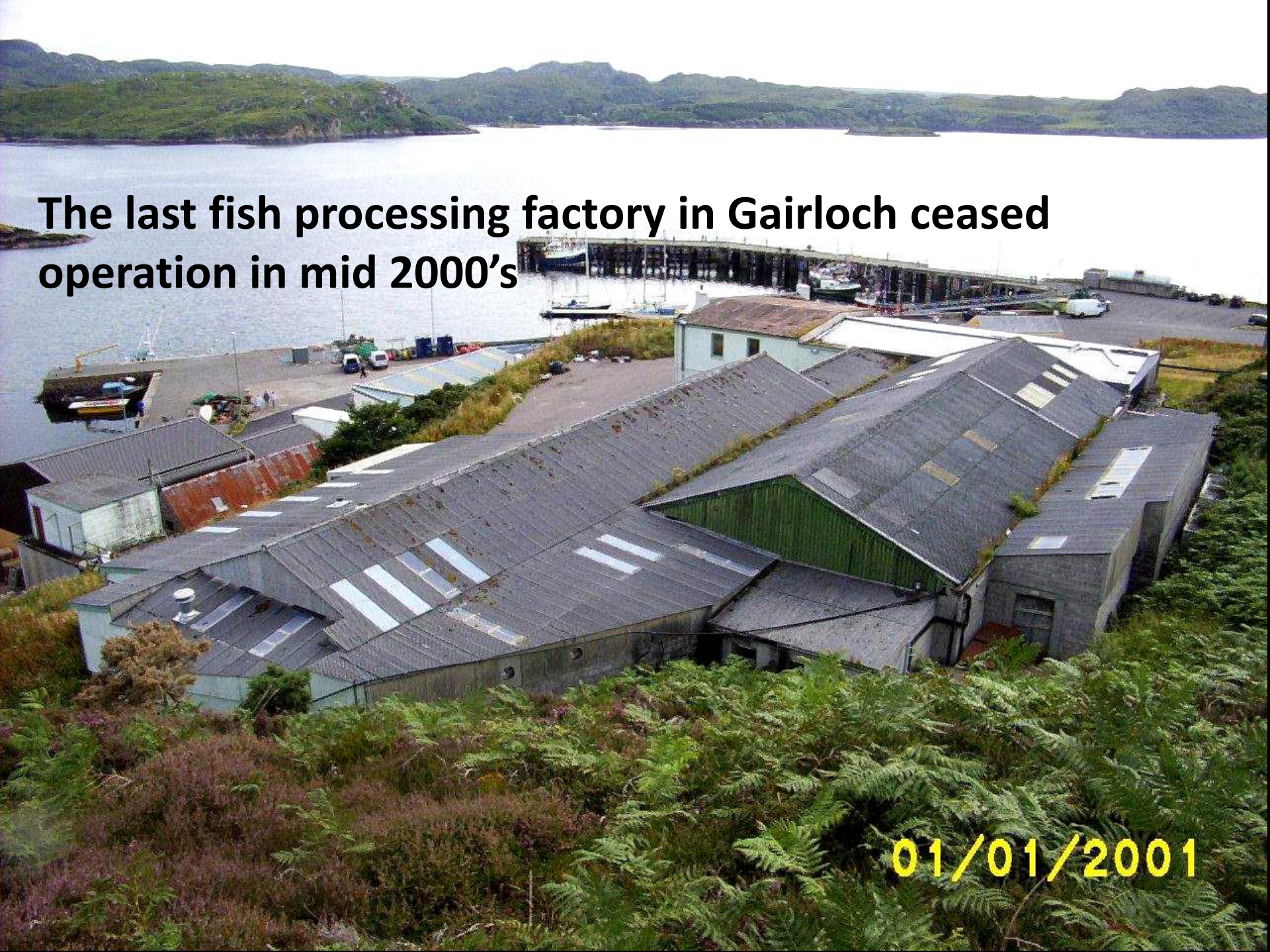
We had fished from shore and boat many coasts around Britain and many since then, but I never encountered anything to compare with this.

But two years later we returned, this time catching very little. The boys in the big boats had been listening! By 1980 the fishing in Gairloch wasn't worth the candle. We heard stories of suction dredgers and illegal night trawling, 'sea bottom like a ploughed and weed-less field', etc, etc. Why are we so keen, so often, to cut off the branch on which we sit?

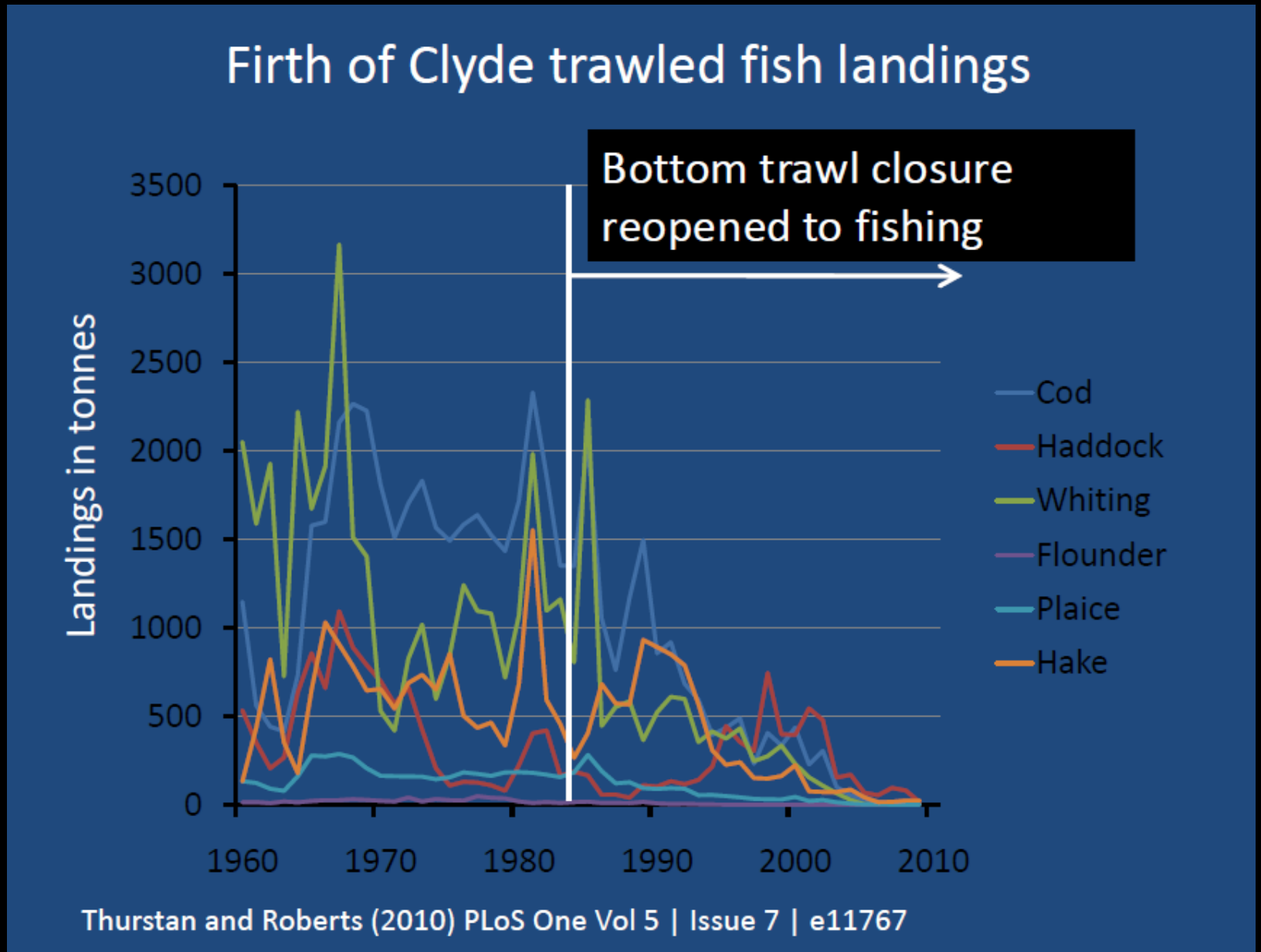
I hope that one day Loch Torridon, the Gairloch and Loch Ewe can become a New Zealand style Marine Park, thus allowing these precious breeding grounds to return to their former glory, for the future benefit of all.

Bryan Islip

‘Seaflower : When I was a child, in the early 70s, we used to go on family holidays to Gairloch in Wester Ross. Every evening, we would go down to the pier to watch the fishing boats unloading. In these days, there were about a dozen or so boats, mostly east coasters I think, which unloaded white fish (i.e. cod, haddock etc. as opposed to herring or prawns) at Gairloch. The pictures were taken in the 80s after the new pier had been built but are similar to the scenes on a summer evening 10-15 years earlier I'm recalling’


The last fish processing factory in Gairloch ceased operation in mid 2000's
01/01/2001

Many other fish populations collapsed around the west of Scotland during the past 25 years, c. Firth of Clyde . . .

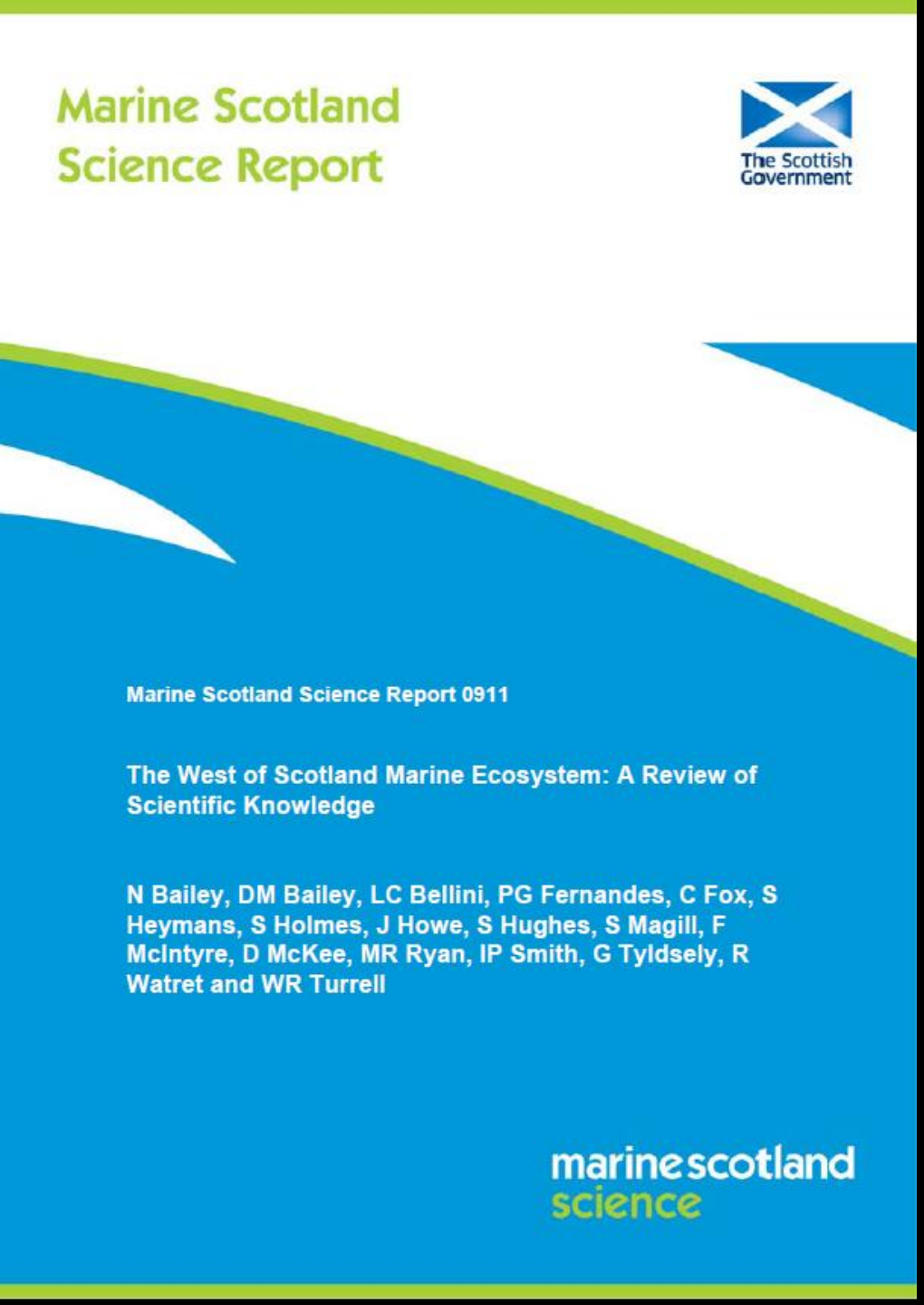


Why?

Across the world, fish populations have been in decline for two main reasons:

1. **Overfishing.** Fishing technology has progressed faster than our ability to manage fishing effort.

2. **Damage to habitats** which support fish production.



'Natural conditions or human impacts in the nearshore environment can have large effects on juvenile fish [Cod and Whiting] abundance. The resulting effects of year classes strength can be traced for up to six years following their settlement year.'

The West of Scotland Marine Ecosystem: A Review of Scientific Knowledge (2011)

In the past 20 years, some of the near shore areas that provided food for local sea trout and supported many other fishes and other animals were damaged in Loch Ewe and outer Loch Gairloch.

Shellfish dredgers reduce the amount of life and structural complexity of the seabed.

Healthy cobble-shell bottom habitat for scallops before *(left)* and after *(right)* one pass of a scallop dredge *(middle).*
Before photo: Peter Auster, National Undersea Research Center. After photo: Peter Auster, NURC. (AOC website)
Scallop dredge photo: SIFT website.

Small fish (e.g. juvenile cod) need sheltered places to feed and grow, and places to hide from predators.

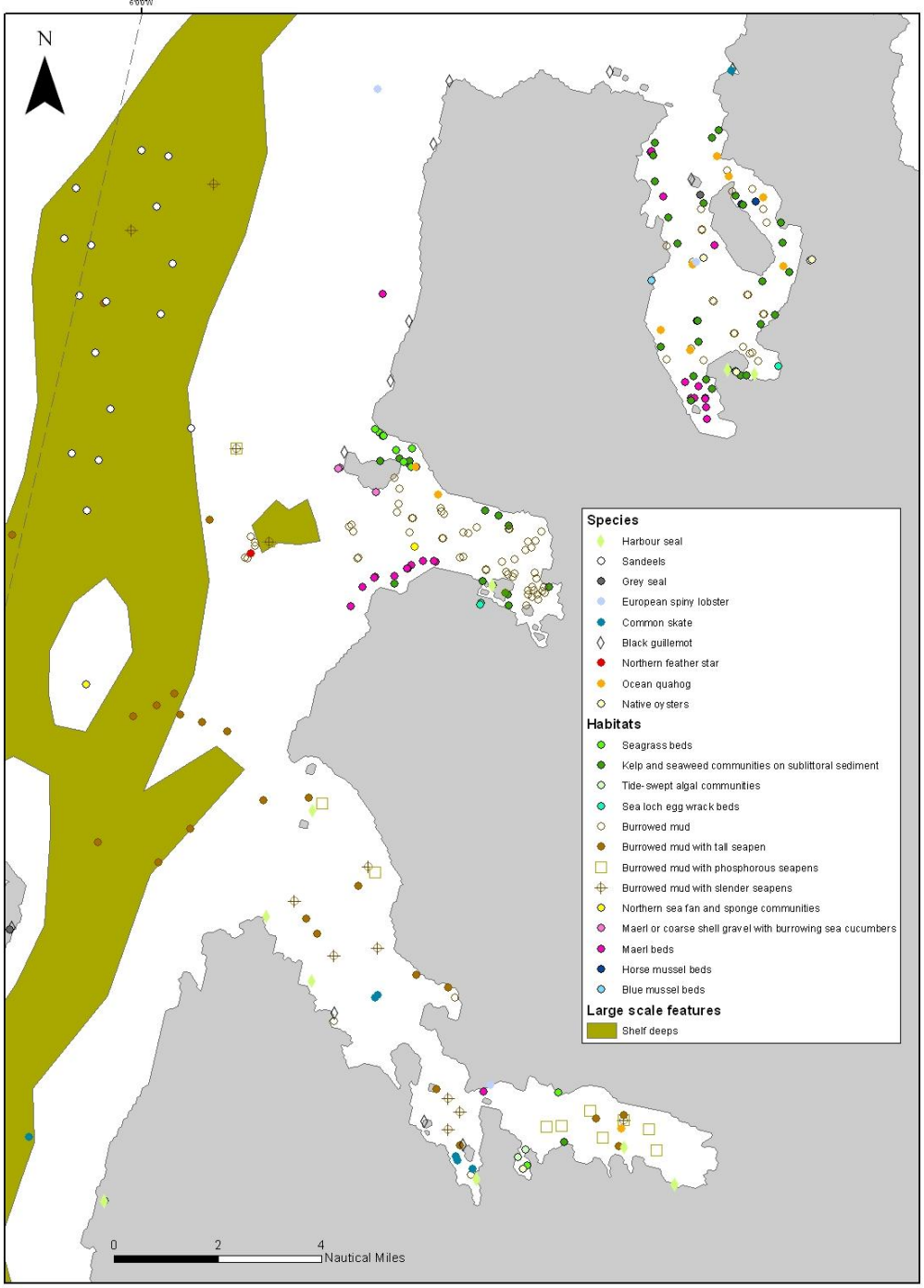
Juvenile cod, Loch Ewe, summer 2008

Would an MPA help protect and restore habitats and fish populations?

This is the area we have been thinking about:

(map from Celtic Fringe magazine)

Map of recorded distribution of MPA search features



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Horse mussel beds
Blue mussel beds
Large scale features
Shelf deeps

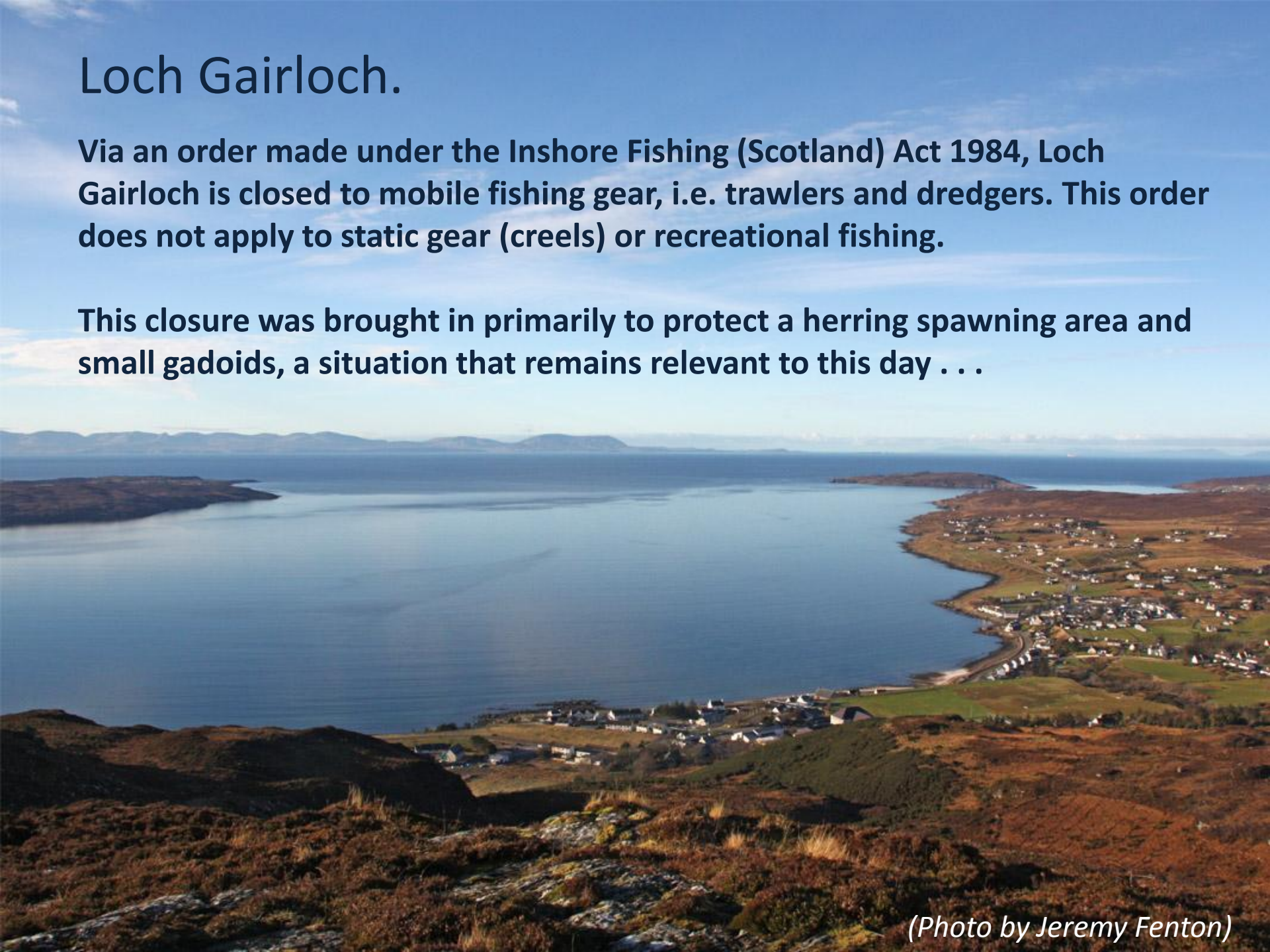
(from SNH records)

Loch Gairloch.

Loch Gairloch.

Via an order made under the Inshore Fishing (Scotland) Act 1984, Loch Gairloch is closed to mobile fishing gear, i.e. trawlers and dredgers. This order does not apply to static gear (creels) or recreational fishing.

This closure was brought in primarily to protect a herring spawning area and small gadoids, a situation that remains relevant to this day . . .

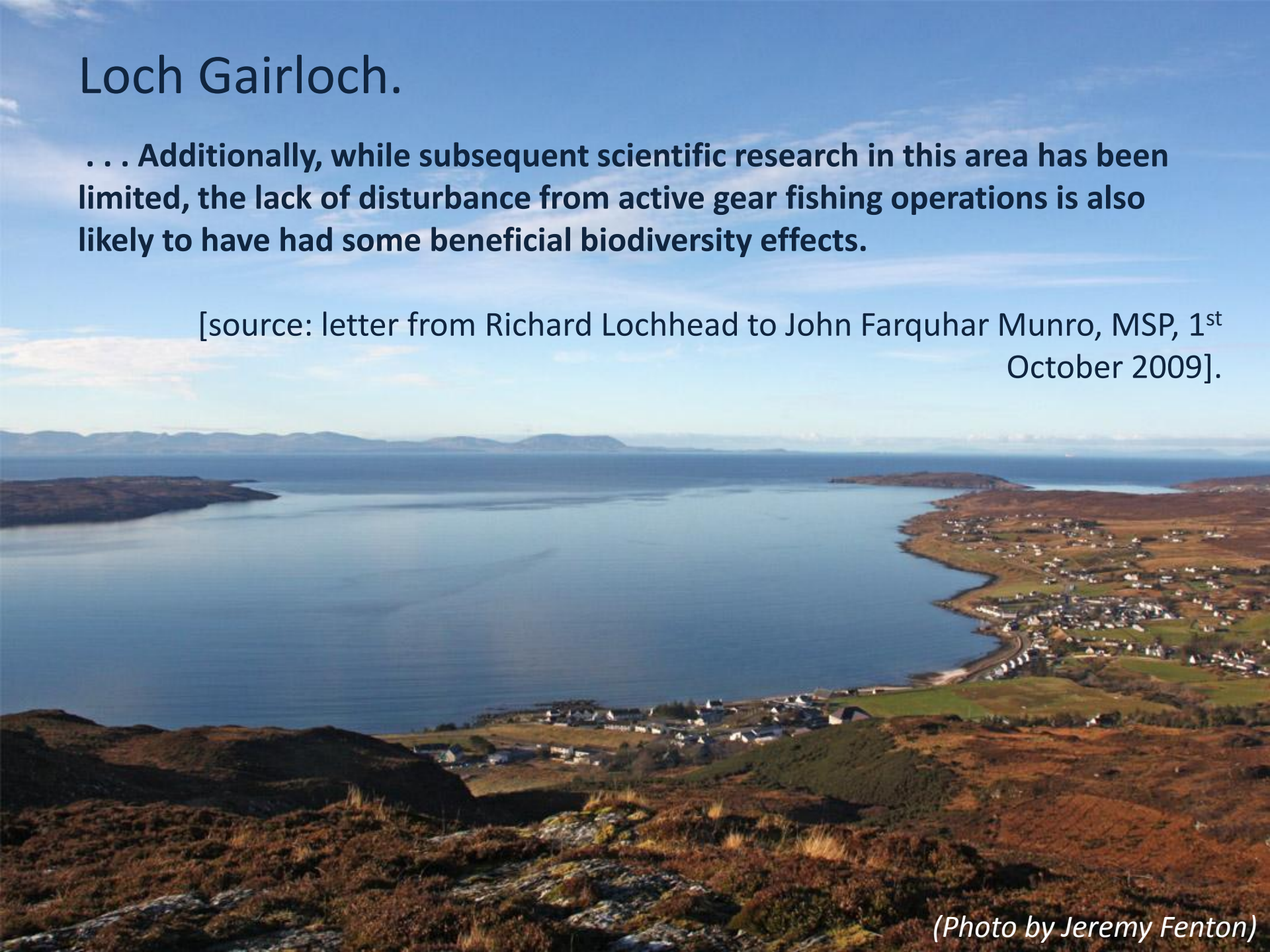


(Photo by Jeremy Fenton)

Loch Gairloch.

. . . Additionally, while subsequent scientific research in this area has been limited, the lack of disturbance from active gear fishing operations is also likely to have had some beneficial biodiversity effects.

[source: letter from Richard Lochhead to John Farquhar Munro, MSP, 1st October 2009].



(Photo by Jeremy Fenton)

Largely because of the ban on mobile gear, Loch Gairloch retains a rich diversity of habitats and species which are '**search features**' for nature conservation MPAs.

Zostrea marina (Seagrass)

- Sound of Longa (Loch Gairloch). NW Scotland's largest seagrass bed?
- Feeding area for record Plaice?
- Sea trout feeding habitat.
- Sea horse habitat.

(*picture from Tayside Biodiversity webpage*)

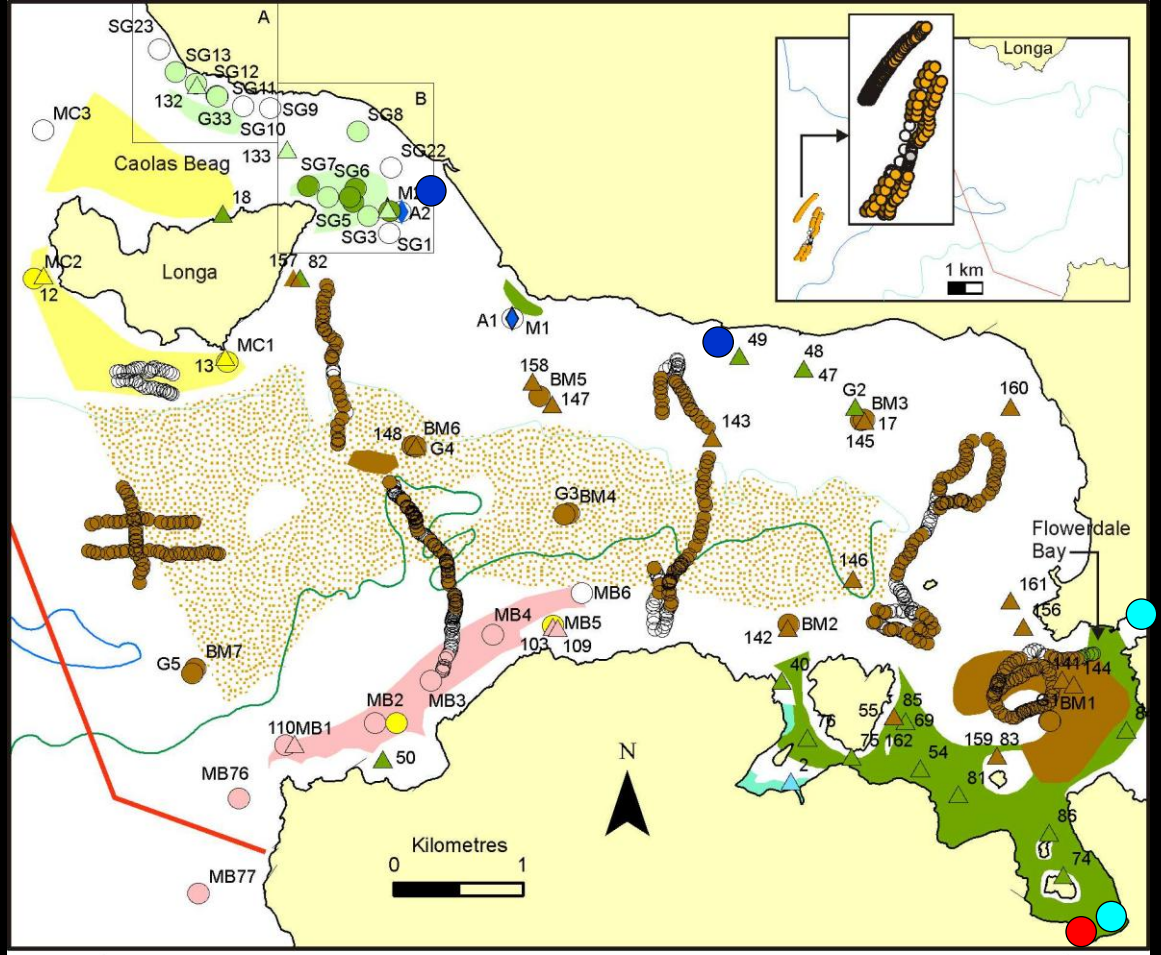
Maerl (red seaweed) bed,

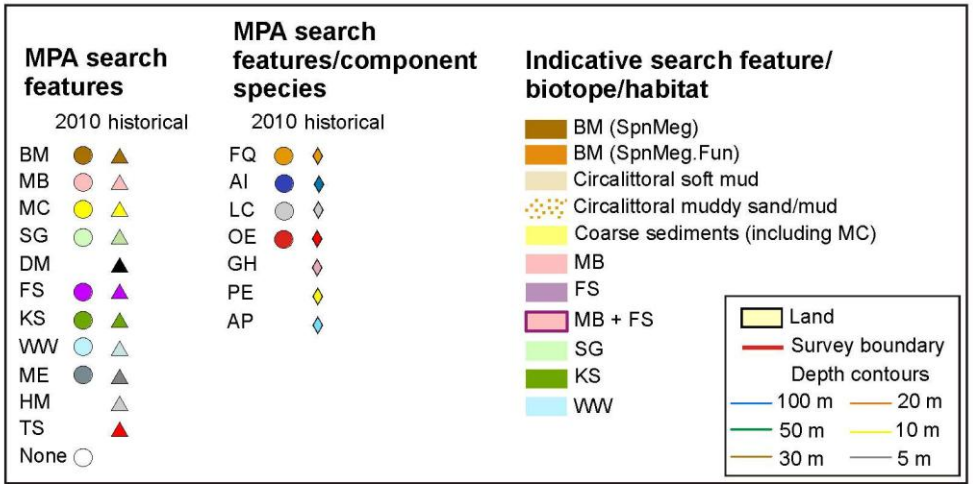
- South side of Loch Gairloch
- Fish and shellfish nursery habitat.
- Can support 185 species above surface; 174 species between *maerl* twigs

(*picture copyright JNCC from MarLIN website*)

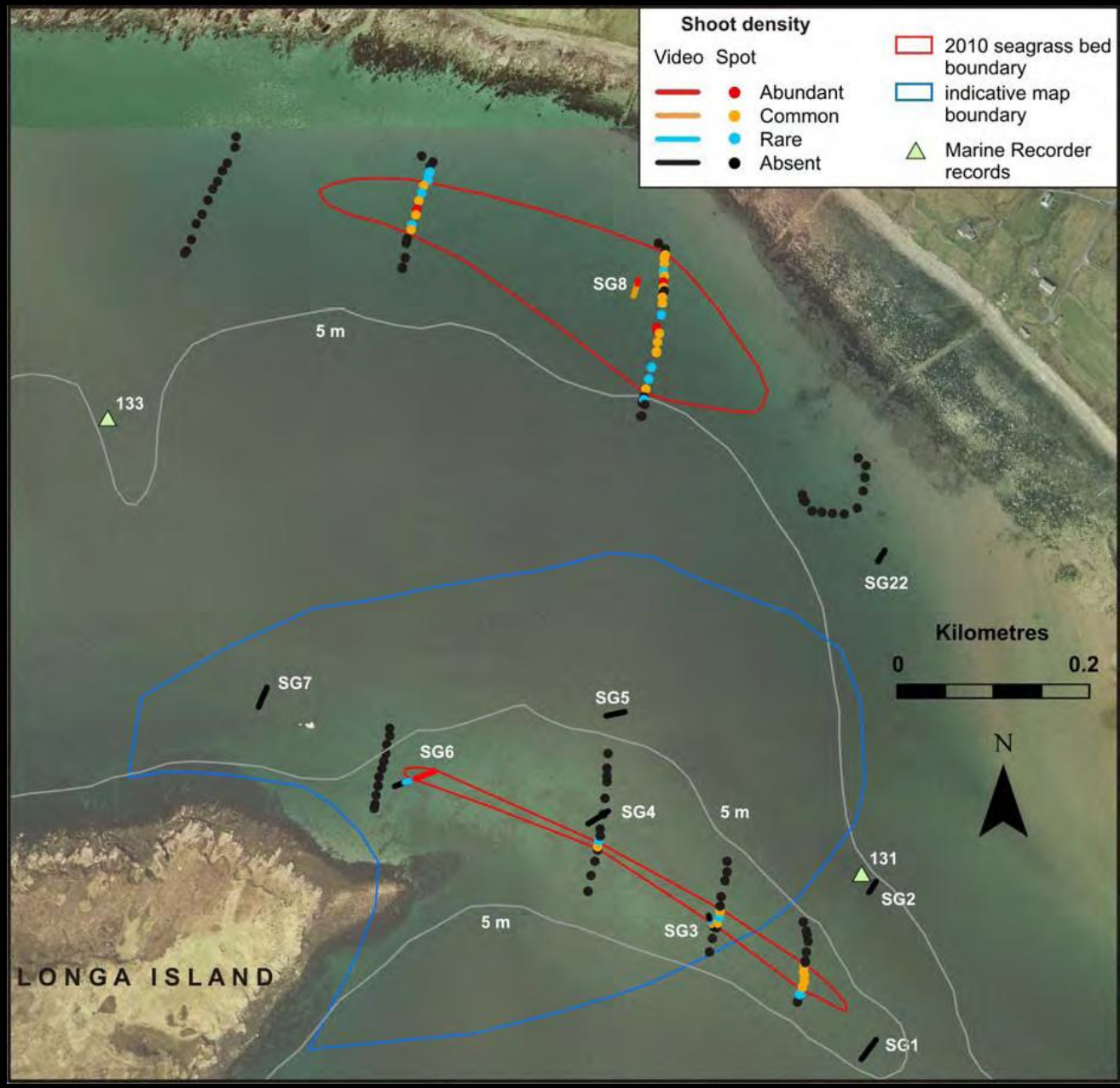
The 2010 SNH survey confirmed the existence of extensive sea grass [SG] beds, maerl beds [MB] and burrowed mud [BM] habitats within Loch Gairloch.

(Mobile fishing gear is excluded from Loch Gairloch as part of 1984 Inshore Fisheries act.)





Seagrass beds in Sound of Longa



From SNH Ullapool Approaches Report, 2011. Based upon Ordnance Survey material with the permission of the Controller of HMSO © Crown copyright (2011) Licence no. 100017908

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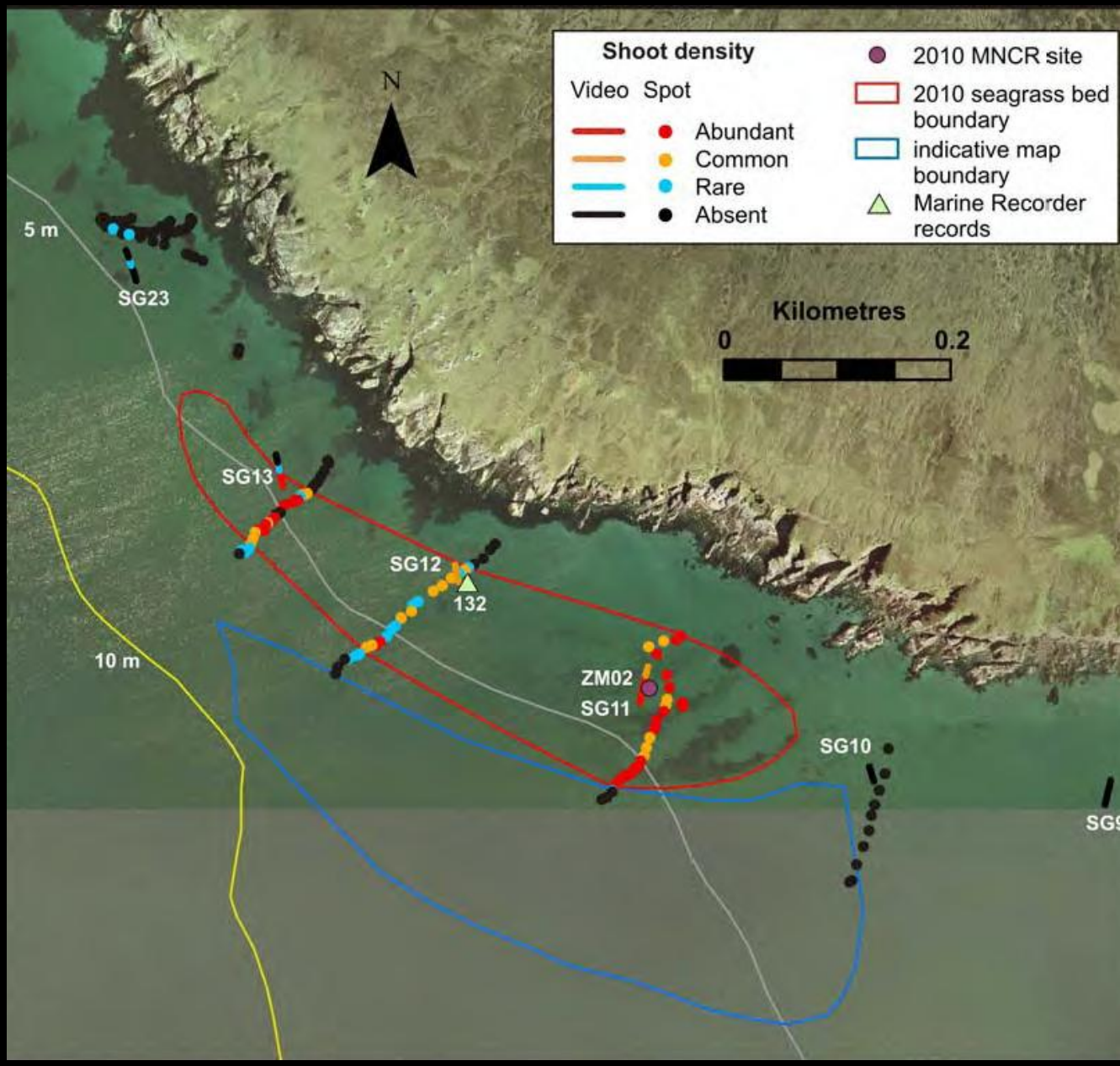
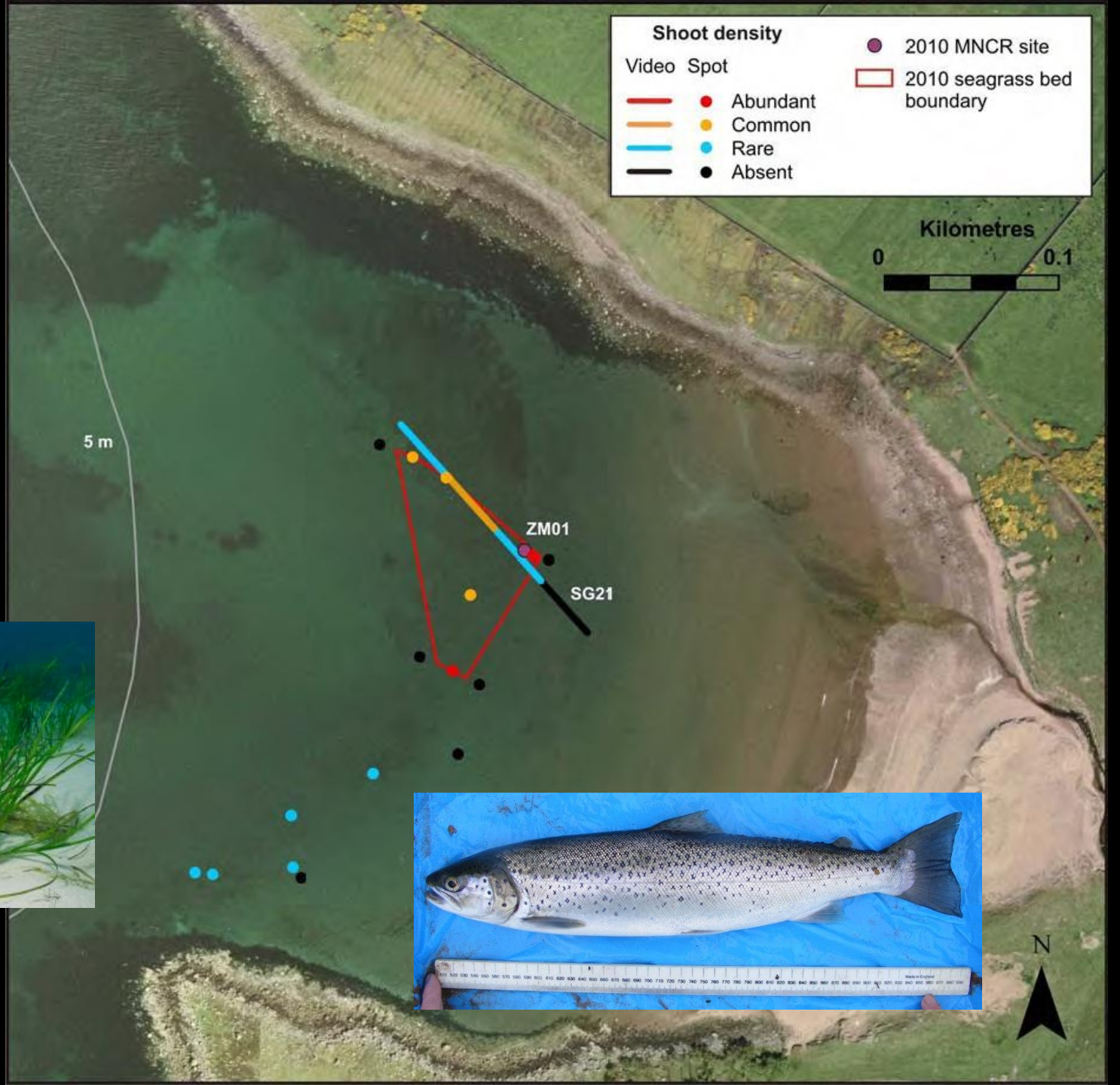


The sea trout caught on 15th June 2011 were in the eel grass bed here.



Seagrass

- Habitat for juvenile fish, associated with record Plaice?
- Habitat for bivalves, sea horses, sea trout . . .

Main threats

- Damage from mobile fishing gear to beds at ?Red Point and illegal fishing in Sound of Longa.
- Disease (historic)

Protection / restoration

- Is existing protection in Sound of Longa adequate?
- Prevent mobile fishing gear from dredging beds.
- Can be propagated and actively restored.

The Sound of Longa . . .

Ocean Quahog

Maerl

Seagrass

British rod caught record Plaice

The Loch Shieldaig . . .

Sea loch egg Wrack
('Crofters wig')
(photo Jeremy Fenton)

Oyster
Ostrea edulis
(photo Keith Hiscock)

Oysters

- A few animals left in sheltered bays.
- Are remaining populations viable?

Main threats

- Over collection.
- Disease in past.

Protection / restoration

- Raise awareness of conservation status.
- Survey remaining beds.
- Propagation possible (aquaculture?).

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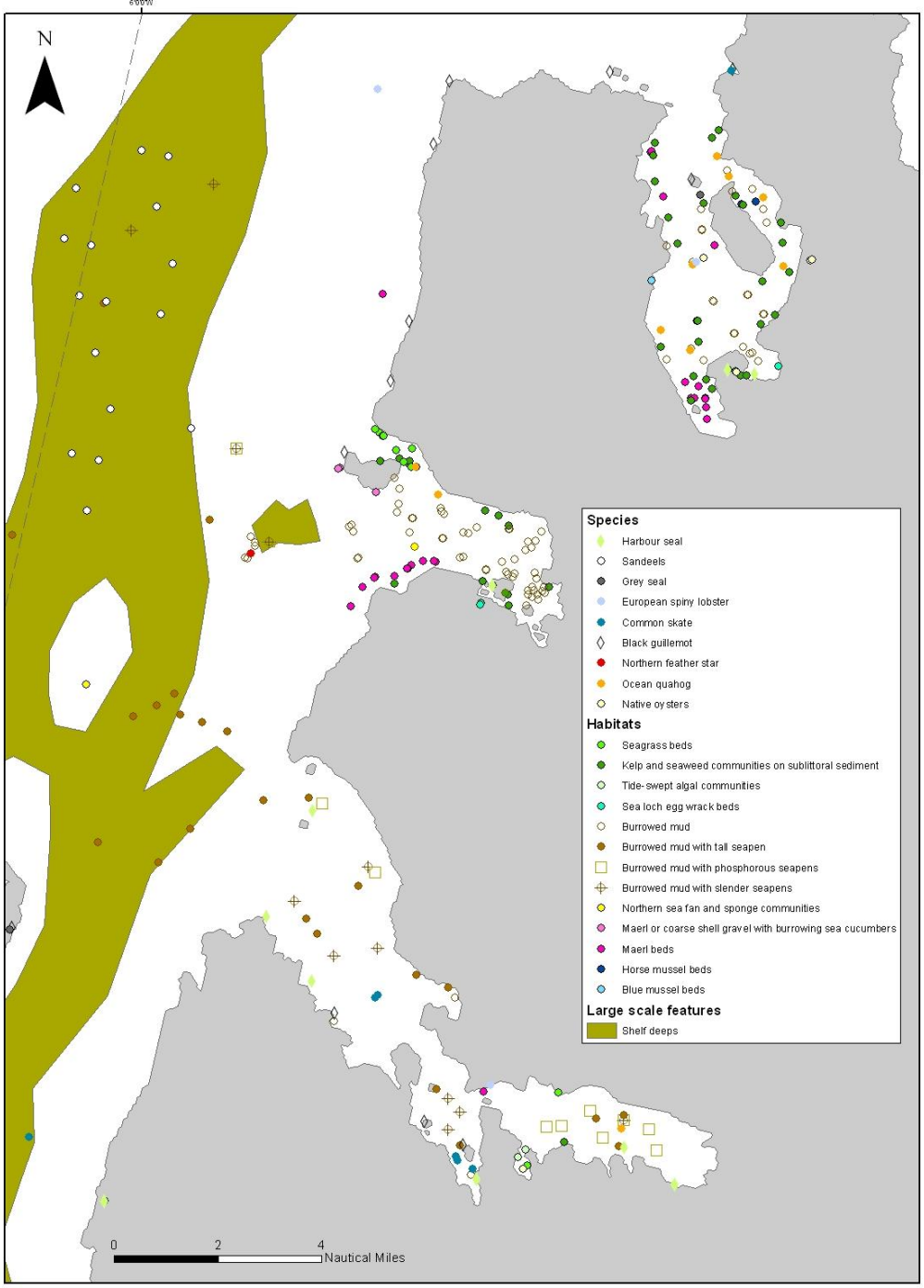

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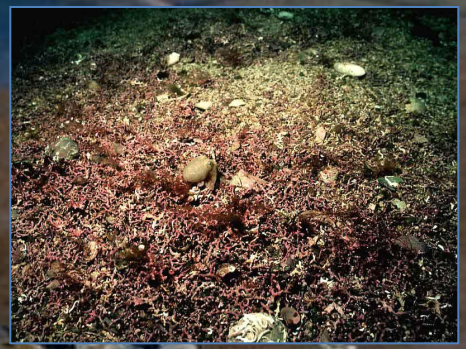
(from SNH records)

Inner Loch Torridon

Pennatula phosphorea

Funiculina quadrangularis



Maerl beds

Burrowed mud

Photos by Sue Scott

Burrowed mud

- Burrows formed by *Nephrops* prawns.
- Supports sea pens and other animals.

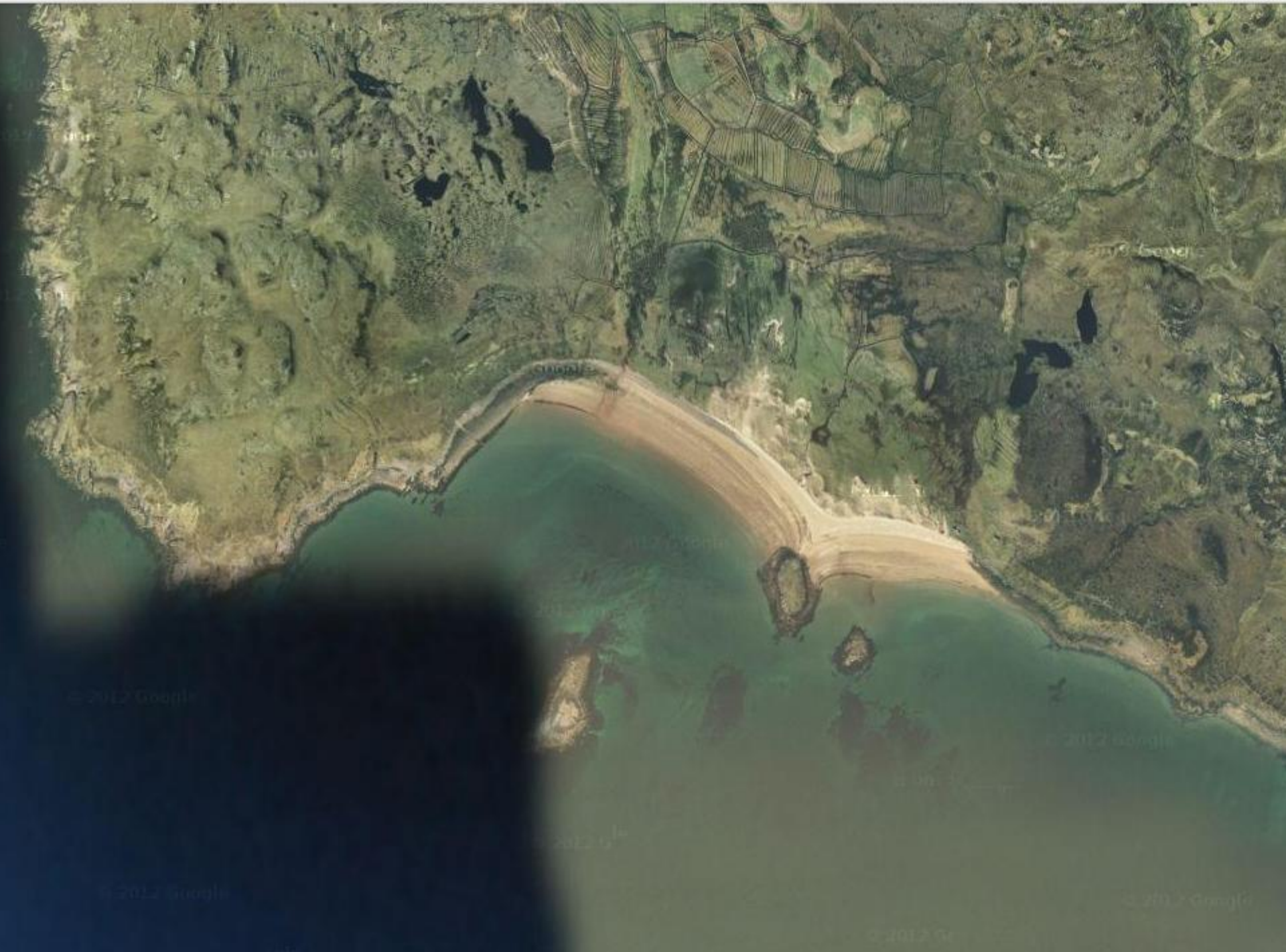
Main threats

- At less risk than maerl or seagrass habitats.
- Risk to associated sea pens and other animals.

Protection / restoration

- Already protected from mobile gear within Loch Torridon and Loch Gairloch, but not elswhere.

Outer Loch Torridon: Red Point beach. . .



Red Point Beach. . .

Skate.
Eggs reported by scallop diver from seabed nearby in 2012.

Seagrass.
Small bed nearby, much more washed up on strandline.

Maerl (not recorded by SNH)

Photo taken on 14 March 2010

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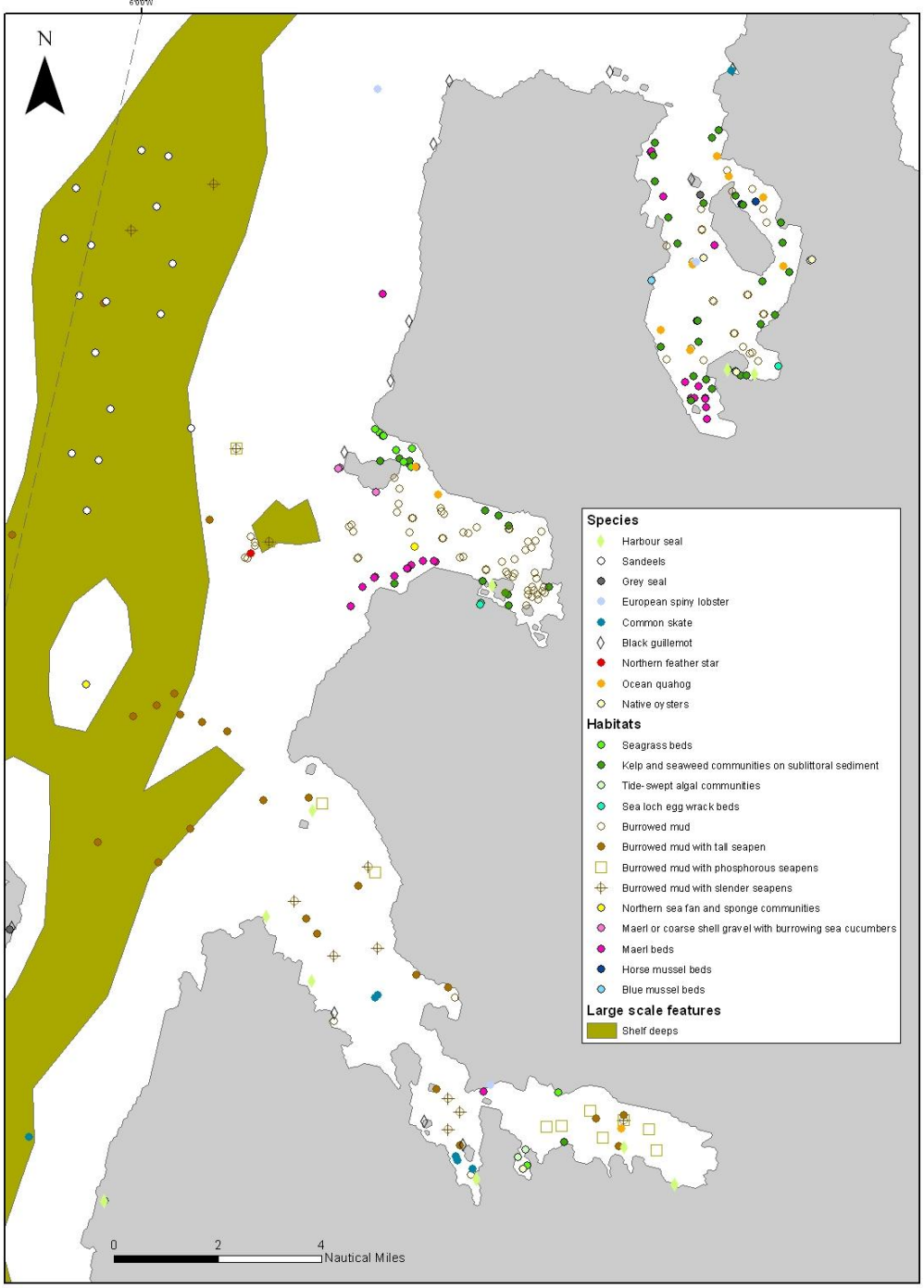

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(from SNH records)

Maerl beds

- Red algae. Very slow growing.
- Forms coral like structure.
- Supports many animals, including juvenile fish and shellfish.
- Herring spawning substrate.

Main threats

- Damage from mobile fishing gear to beds in outer Loch Torridon outer Loch Gairloch and Loch Ewe.
- Pollution (nutrient enrichment)

Protection / restoration

- Already protected within Loch Gairloch.
- Restrict mobile fishing gear from most important beds (e.g. herring spawning areas)

‘Common’ Skate

192lb-plus skate caught from the shore off the west coast of Scotland
By Sea Angler Fish Catches 29 September 2010 10:12

One of the biggest fish ever caught from British shores has been banked following an epic two-hour battle**.** **www.gofishing.co.uk**

Critically Endangered is the highest risk category assigned by the IUCN Red List for wild species.

Critically Endangered means that a species' numbers have decreased, or will decrease, by 80% within 10 years or three generations (whichever is the longer).

It is therefore considered to be facing an extremely high risk of extinction in the wild.

Large skate were seen (and caught & released) around Wester Ross in 2011 & 2012 . . .

Where do they spawn in the area?

Loch Torridon in 2012

? Gruinard Bay

What are their spawning habitat requirements?

Scallop divers know

Should MPAs be designated to protect spawning grounds?

[Who decides?]

Skate spawning grounds

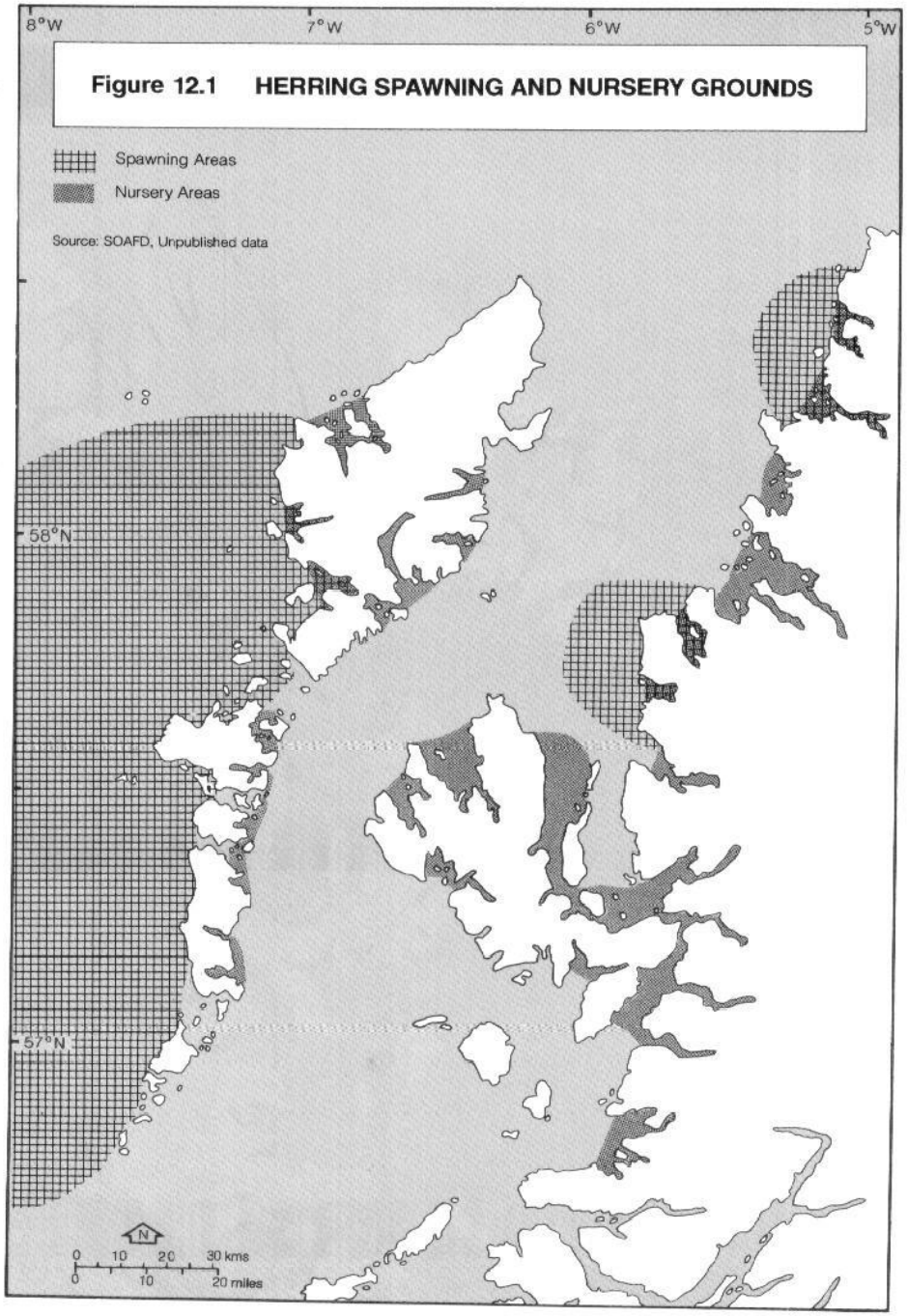
- Egg cases reported in Loch Torridon in 2012 by scallop diver.
- May also lay eggs on sea bed in Loch Ewe area and Gruinard Bay.

Main threats

- Damage to spawning areas by mobile fishing gear.
- Mortality of juvenile and adult skate in other fisheries.

Protection / restoration

- Protect spawning areas from mobile gear.
- Anglers mark and recapture schemes.
- Monitor bicatch in prawn fishery.



12.17

Herring spawning and nursery grounds (Scottish Government data)

from Minch Review, Bryan 1994 (more up to date maps not found)

Herring in spawning condition, from Loch Ewe, January 2010

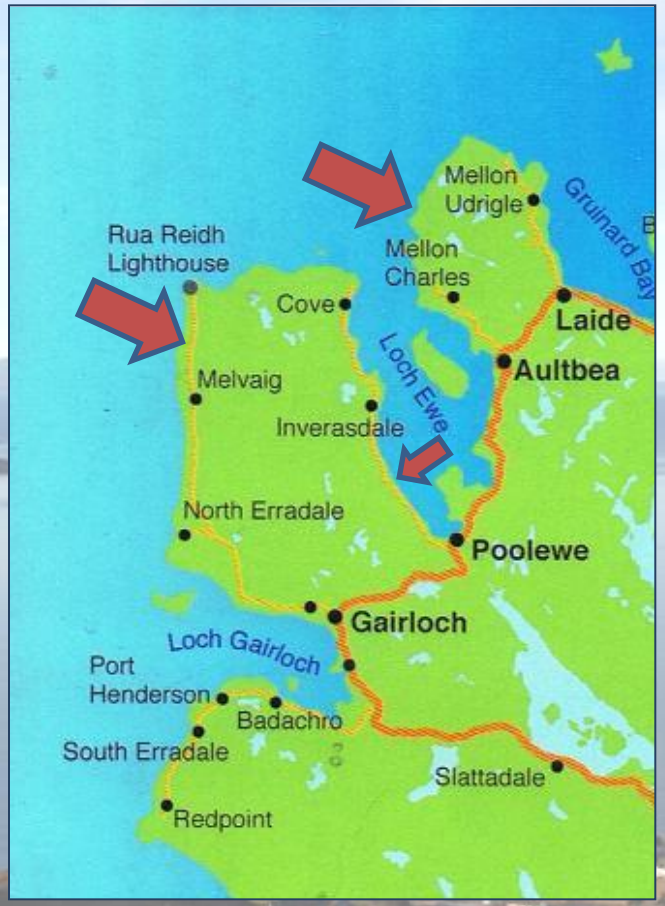
Thanks to Roddy MacIver

Herring need suitable habitats where they can lay their eggs.

Herring eggs are sticky and attach to maerl, gravel or other stable substrates.

Local fishermen say herring spawn(ed) on ‘coral’ (?maerl beds) near Rhu Reidh, Greenstone Point and in Loch Ewe.

Places where fishermen say Minch herring spawn(ed) on ‘coral’ [maerl]



(map from Celtic Fringe magazine.)

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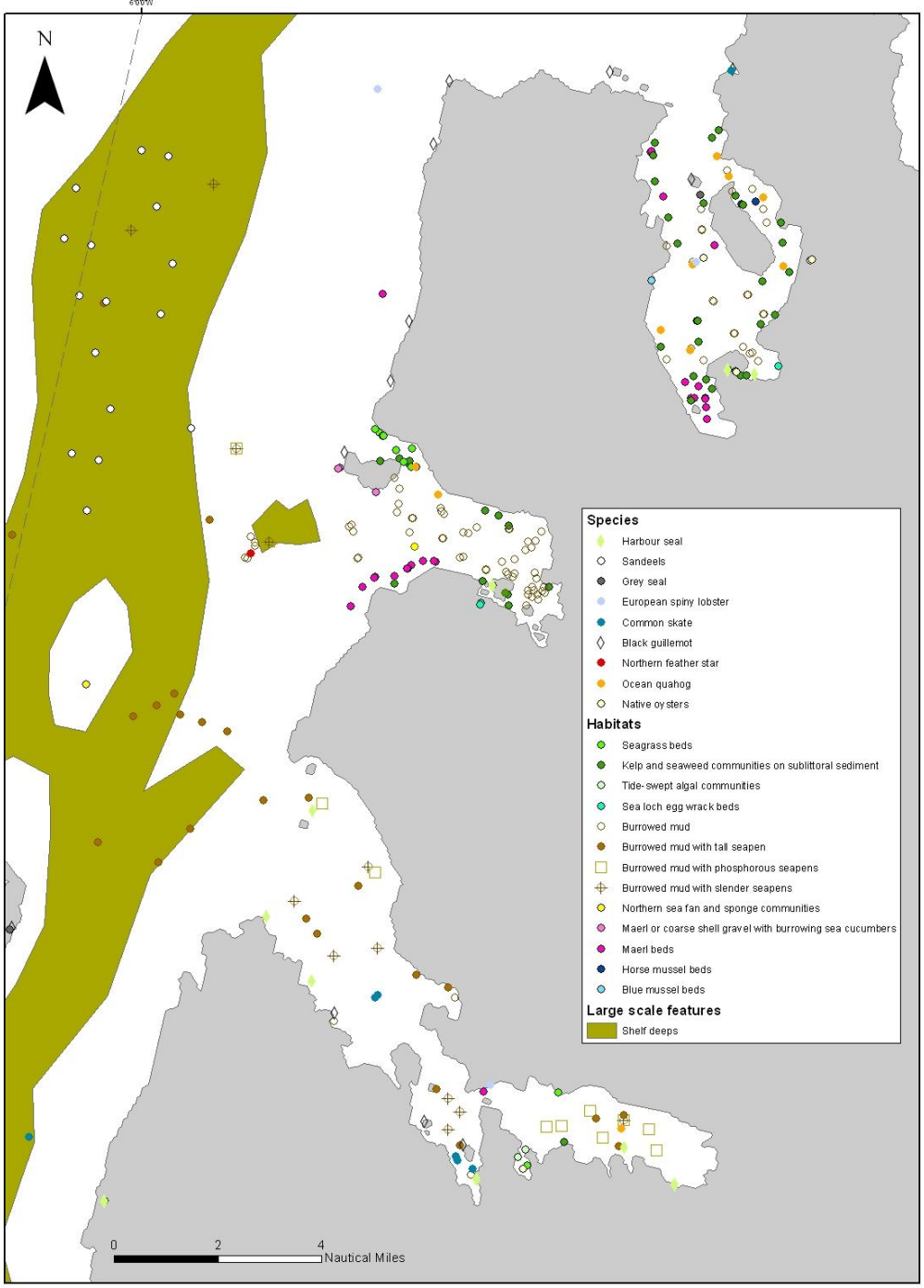

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This is where local fishermen say ‘Minch’ herring spawn(ed) in March on ‘coral’ . . . (unsurveyed)
Imagery ©2012 DigitalGlobe, GeoEye, Getmapping plc, Map
Internet | Protected Mode: On

Local herring

- Said by fishermen to spawn on gravel or maerl ('coral') in Loch Ewe, and near Melvaig and Greenstone Point. (Spring spawning population).
- Spawning areas are known to local fishermen, but not by Government.

Main threats

- Overfishing of pre-spawning adult herring.
- Damage to spawning areas by mobile fishing gear?

Protection / restoration

- Protect pre-spawning herring.
- Protect spawning areas from mobile fishing gear.

Rhu Reidh: basking sharks and cetaceans feeding on zooplankton / small fish (including herring?)

Minke whale

- Most abundant whale species in Wester Ross
- Usually solitary, but aggregations of 5 to 15
- Seasonal & migratory, site fidelity
- Some resident

- **Sandeels,** mackerel & **pre-spawning herring**

(Evans *et al*., 2003; Pierce *et al.*, 2004)

Common dolphin

- Shelf / off-shelf waters off the west coast [Gairloch!]
- Seasonal presence
- 10’s - 100’s

- Whiting and sandeels . . . .

(Santos et al. 1994)

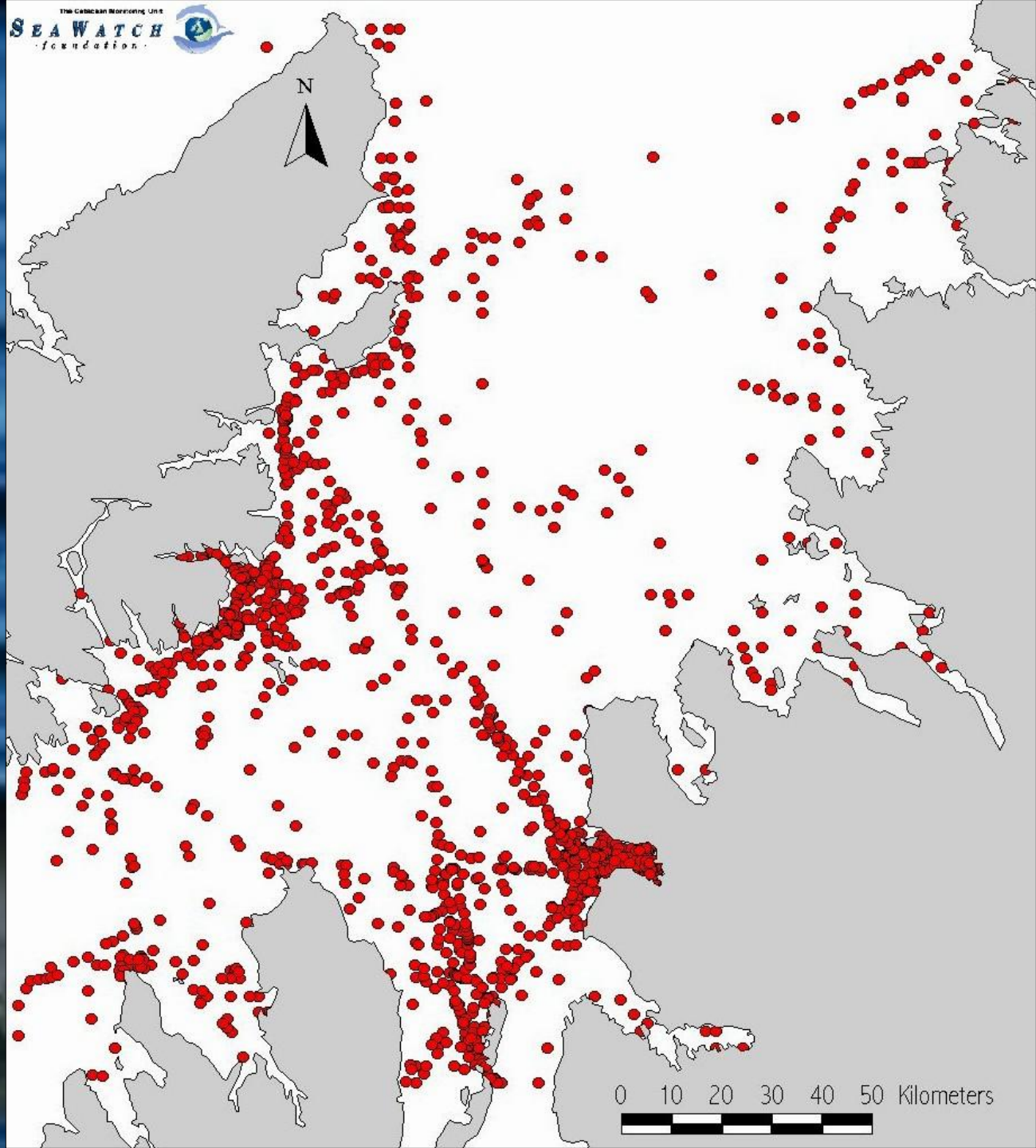
Harbour porpoise

- Most common species, yet declined
- Highest densities in Europe
- Year-round presence & calving
- HSD Annex II

- Whiting, herring, and sandeels

(Weir et al. 2001; SCANS-II 2006; Santos & Pierce, 2003)

Harbour porpoise



Sightings data via Evans, May 2012

WDCS field project in the Minch

- Long term
- Land based / PAM

- Species occurrence
- Habitat use
- Change in movements

	Oct 2008		May 2009	
Minke Whale		18		12
Harbour Porpoise		5		26
Common dolphin		0		1
Bottlenose dolphin	0		3	
Large unid. Whale	1		0	
Basking shark		3		0

Whales & dolphins of Wester Ross

- High diversity of species - 11 regularly seen
- Neolithic bones found around Western Isles
- Maritime skills for hunting cetaceans
- Historical whaling in 19th & 20th century – mainly fin, sei, blue whales

Mulville, 2002; Thompson, 1928; Brown, 1976

Camus Mor and beyond to Loch Ewe

White-tailed Eagle feeding area.

A local fishermen says that large ‘mermaids purses’ have been washed up.

The coastline and shallow water here has not been surveyed for MPA search features by SNH.

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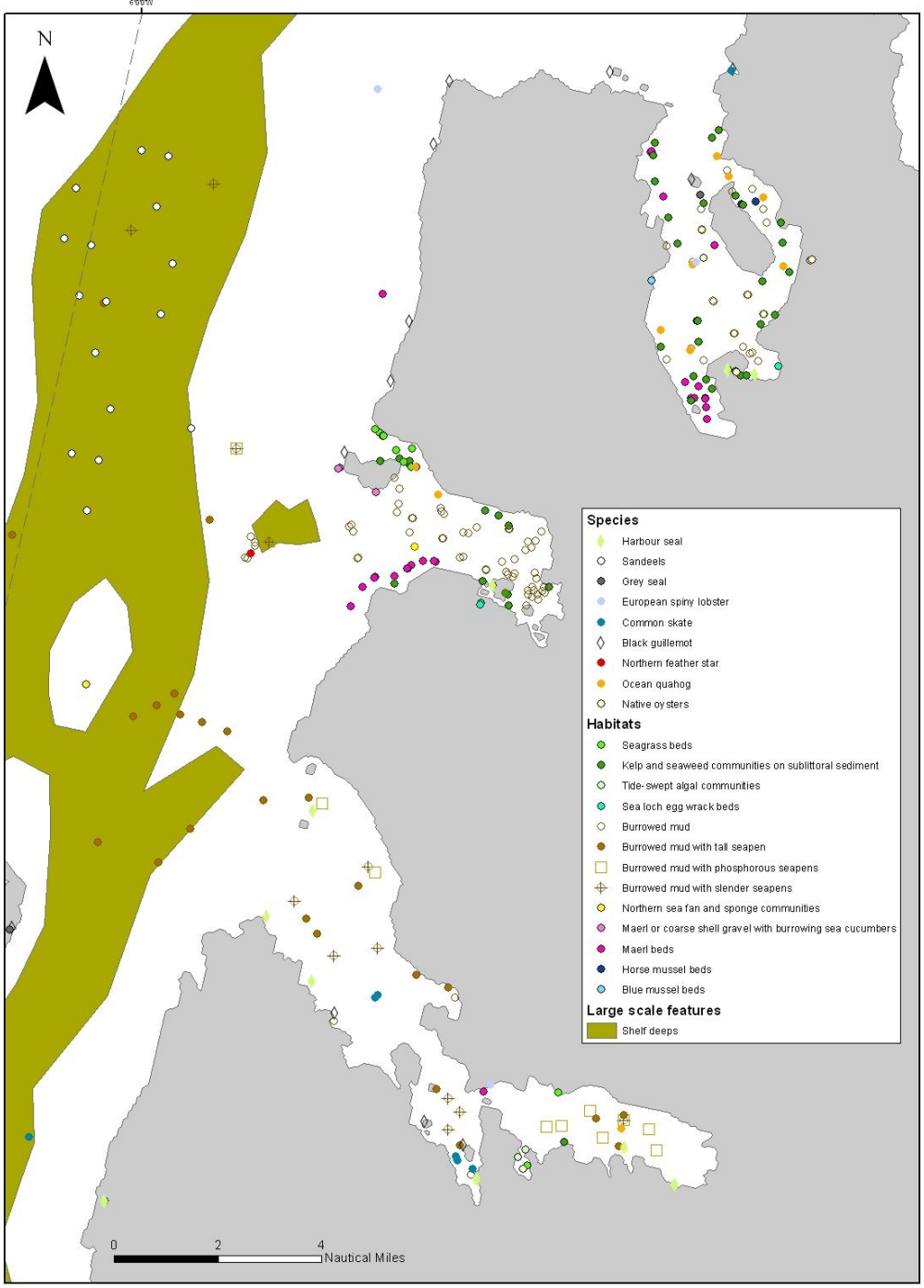

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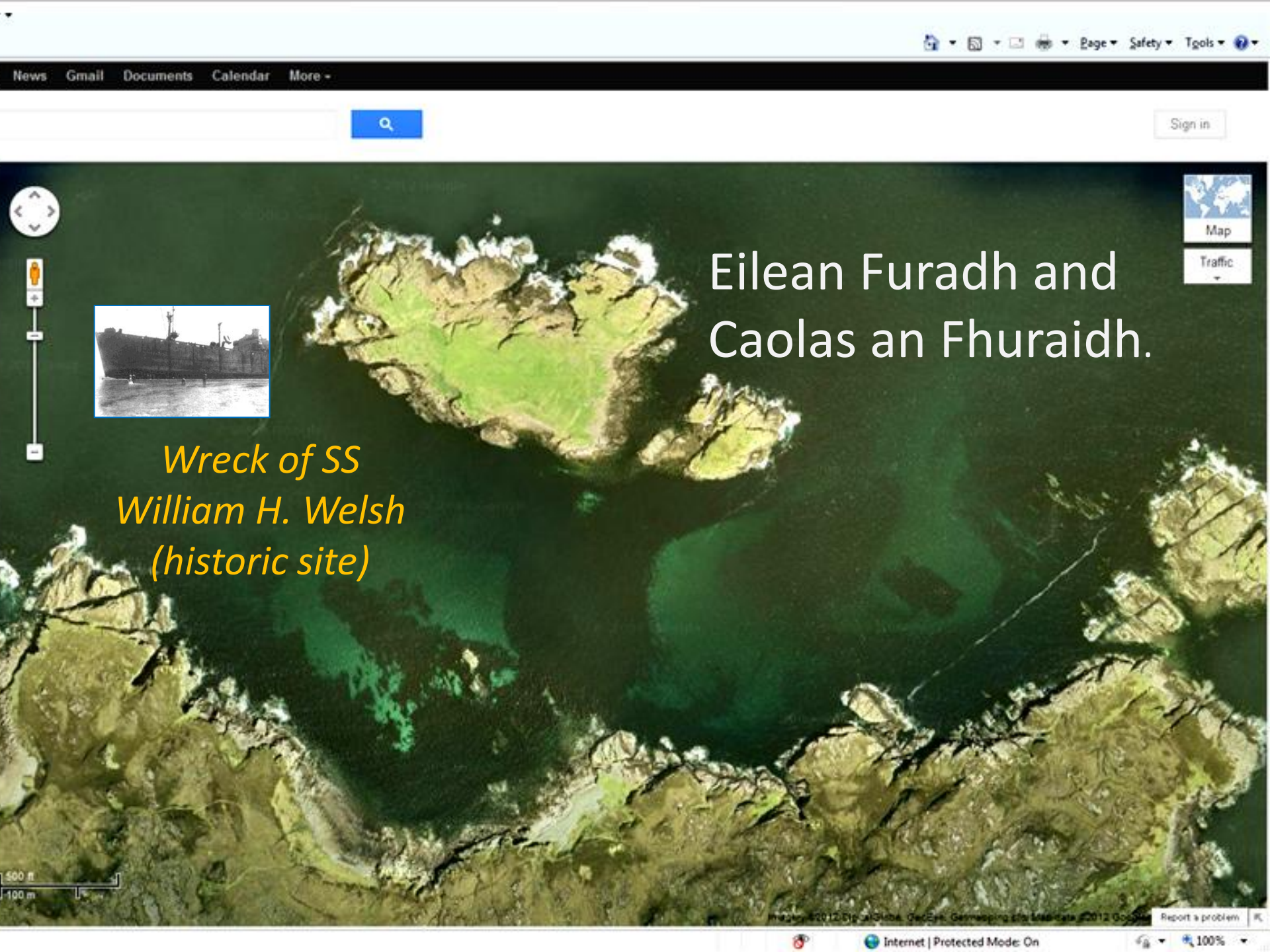
Common skate
Black guillemot
Northern feather star
Ocean quahog
Native oysters
Habitats
Seagrass beds
Kelp and seaweed communities on sublittoral sediment
Tide-swept algal communities
Sea loch egg wrack beds
Burrowed mud
Burrowed mud with tall seapen
Burrowed mud with phosphorous seapens
Burrowed mud with slender seapens
Northern sea fan and sponge communities
Maerl or coarse shell gravel with burrowing sea cucumbers
Maerl beds
Horse mussel beds
Blue mussel beds
Large scale features
Shelf deeps

(from SNH records)

Eilean Furadh and Caolas an Fhuraidh.

Biodiverse seabed (unsurveyed).

?Spiny lobster


Page
Safety
Tools
News
Gmail
Documents
Calendar
More
Sign in
Map
Traffic
Eilean Furadh and
Caolas an Fhuraidh.
Wreck of SS
William H. Welsh
(historic site)
500 ft
100 m
Report a problem
Internet | Protected Mode: On
100%

Eilean Furadh

(former) sea bird breeding site?

Lobster

•Slow growing. Found in rocky ground, kelp beds, and more open areas away from shores at different times of year.

Main threats

•Damage to juveniles, adults and their habitats by mobile fishing gear.

•Over harvesting in the past.

Protection / restoration

•Already protected by minimum landing size and marking schemes.

•Management of juvenile lobster habitat (e.g. maerl beds) may help stocks.

Spiny lobster (Crawfish)

- Slow growing. Found in rocky ground, kelp beds . . .
- Do they breed locally?

Main threats

- Over harvesting?
- Damage to habitats by mobile fishing gear?

Protection / restoration

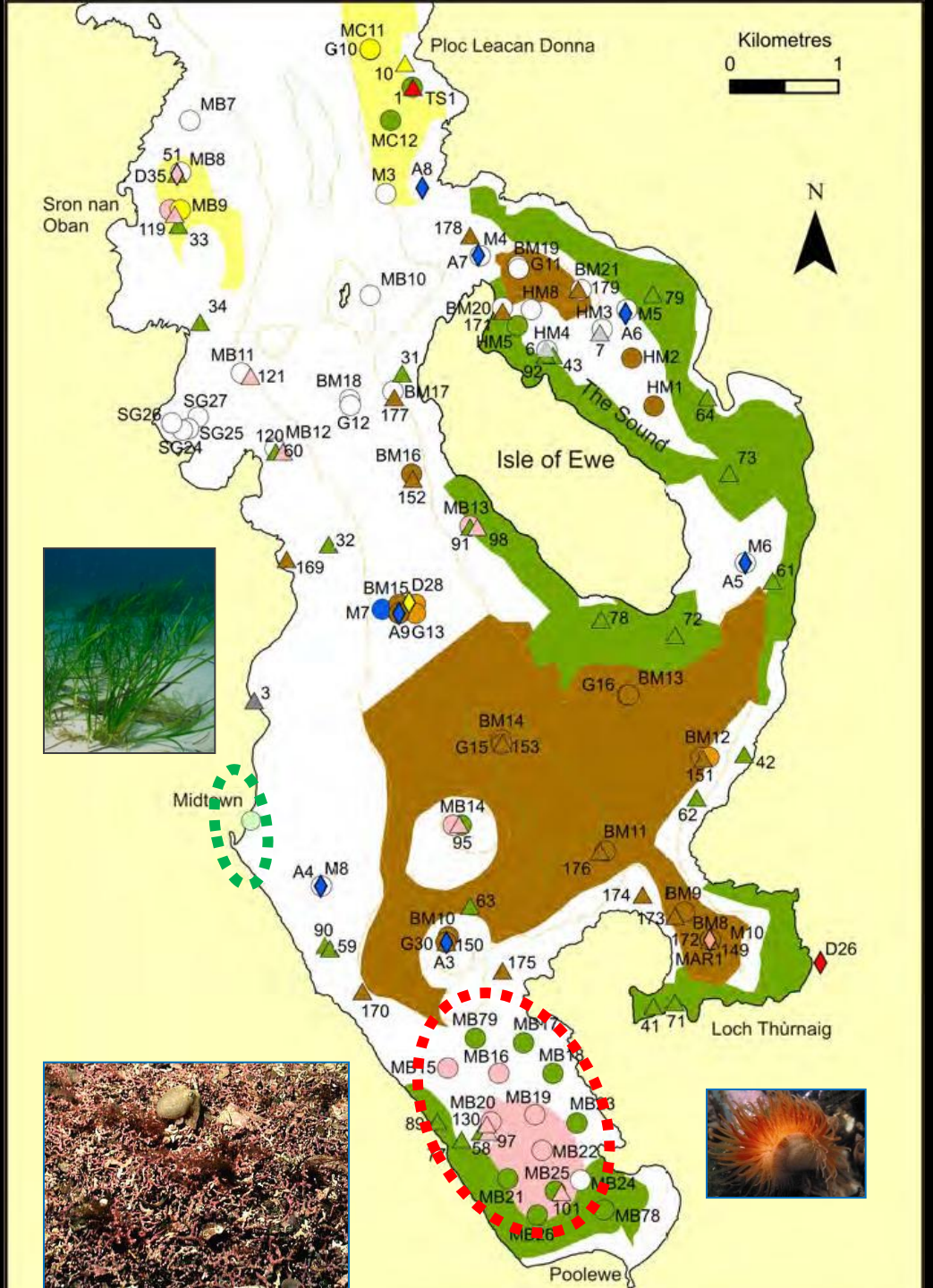
- A MPA search feature., under-recorded by SNH.
- Local status and requirements uncertain.

Loch Ewe

The 2010 survey confirmed existence of extensive but degraded maerl beds [MB] and burrowed mud [BM] habitats.

Subsequently, small sea grass beds have been found, and there are anecdote reports of herring spawning areas and some Skate within / near the loch.

Mobile gear has not been excluded from Loch Ewe.



Loch Ewe

The sea bed here was dredged for scallops up until about ?6 years ago. Is it still vulnerable?

A scallop divers reported major changes to habitat and biota.

Sea trout feeding habitat

Fan mussels ‘common in past’ [scallop diver]: are any still present?

Sea trout

•Feeds in kelp beds, seagrass beds, and other places where there is cover from predators and supply of small fish and crustaceans.

Main threats

•Sea lice epizootics associated with salmon farms.

•Growth at sea limited by food availability.

•Predation where other fish are scarce.

Protection / restoration

•Lice problems understood by salmon farming industry and lice management measures in place.

•Protect and restore habitats where sea trout can feed in the sea.

Isle Ewe


Common Tern (photo by Barry Blake)

Could a local ‘nature conservation’ **Marine Protected Area help** to protect and restore valuable habitats and associated **wild fish** and **shellfish populations** and other **wildlife** and **jobs . . .** ?

Loch Gairloch boats (various sources).

Options:

1. No need for a Marine Protected Area: the existing situation is OK /other forms of management are more appropriate?

2. A local Marine Protected Area could help to protect and restore valuable marine habitats, fish and shellfish populations and benefit people living in the local area and Scotland?

Options for 3rd party bid:

2a. A MPA within the existing Loch Gairloch no-mobile gear zone (primarily to give stronger protection to what remains within the loch).

2b. A larger MPA to include other areas: boundaries to be subject to further appraisal by stakeholders (to protect and restore larger areas for fisheries production and wildlife).

Our National System of Marine Protected Areas

Working together for...

Thank You

Photos by Jeremy Fenton, Barry Blake, Sue Scott, Peter Cunningham, & other sources. For information and support, thank you to many other people . . .