

Case study – Loch Linnhe

Location: West coast of Scotland off the island of Lismore. The site is in an area with little fishing activity. It is sheltered from the weather, has a varied current regime, and a depth of 12 – 30 metres.



Source: Map and photograph: Tom Wilding

Authorisation: the reef was licensed under the Food and Environment Protection Act, and was the first to be issued under the OSPAR Guidelines, and a devolved Scottish Executive.

Date of construction: 2001 – 2006.

Purpose of reef: to facilitate research between artificial reefs and the environment, including potentially beneficial effects on fisheries and local biodiversity. The long-term aim is to boost fish stocks by creating commercially viable man-made habitats.

Size, design and materials: The main reef complex comprises 30 reef modules, each of which consists of around 4 000 concrete blocks. Each reef is roughly conical, stands 3 – 4.5 metres above the seabed, and is 10 – 15 metres in diameter. Some of the blocks are solid, while others have voids to create “nesting spaces”. The total weight is just over 6 000 tonnes. The concrete contained a blend of cement and coal-ash (8%), and quarry dust. The blocks were tested prior to construction and were shown to be physically robust and chemically inert.

Monitoring programmes: There is ongoing monitoring as part of the research, to see what species are attracted to the reef.

Did the reef fulfil its purpose? There is an active, multidisciplinary research programme associated with the reef including both fundamental and applied research. This covers: environmental impacts; impacts on the local current regime; water flows around the reef and associated sediment movements; an evaluation of the habitat complexity offered by the reef to crustaceans and fish of commercial importance (especially cod and lobsters); opportunities for seafood production; and comparison of productivity between natural and artificial reefs.

Environmental impacts: The most significant impact detected to date is a reduction in the oxygen levels in the sediments at the edges of the reef as a result of the accumulation of detritus, itself a consequence of reduced current flow. Associated with this is a change in the biological community, with a decrease in species sensitive to low oxygen, and a corresponding increase in those which are more tolerant of such conditions. These effects are more pronounced during summer and autumn, but are at all times limited to within 1 metre of the edge of the reef.

Further reading/information: <http://www.sams.ac.uk/research/departments/ecology/ecology-projects/reef-ecology/researchproject.2007-03-09.9122641718>

→ *Go to full QSR assessment report on construction or placement of artificial reefs (publication number 438/2009)*