

## No-take zones: A useful management tool?

No-take zones are areas where all fishing is prohibited. Many small no-take zones (km<sup>2</sup> to 10s km<sup>2</sup>) have been established throughout the world, mostly to encourage the conservation of attractive habitats such as coral reefs. As well as strict no-take zones, other forms of marine protected areas, loosely termed marine reserves, are widely used. In these marine reserves, fishing may be limited to local people, recreational anglers or banned on a seasonal basis.

No-take zones have been proposed as a management tool for European fisheries. The 1997 Intermediate Ministerial Meeting on the Integration of Fisheries and Environmental Issues in Bergen, highlighted cases where no take zones should be considered as a management option. Conservation interests, such as Greenpeace, the Marine Conservation Society (MCS) and the World Wide Fund for Nature (WWF) have also argued the case for no-take zones.

But what is the evidence for the potential benefits, or otherwise, of management systems based on no-take zones? Can they be expected to improve the yields of target species, simplify management and ensure sustainability and are they a real alternative to a system based on TACs and quotas? With growing interest in the use of no-take zones, scientific studies are starting to provide a good indication of what can and cannot be achieved.

No-take zones can provide fisheries benefits if they reduce fishing mortality. For some stocks they will do this, but their success depends on the life history of the stock and how fishing is controlled inside and

outside the no-take zone. Many of the species fished in northern European waters are highly migratory and huge areas would have to be closed to fishing to achieve useful reductions in fishing mortality. For example, one study suggested that closure of 25% of the North Sea would have little effect on potential yields from the cod fishery because cod are highly migratory and fishermen displaced from the closed area would simply catch the cod elsewhere (Figure 1).

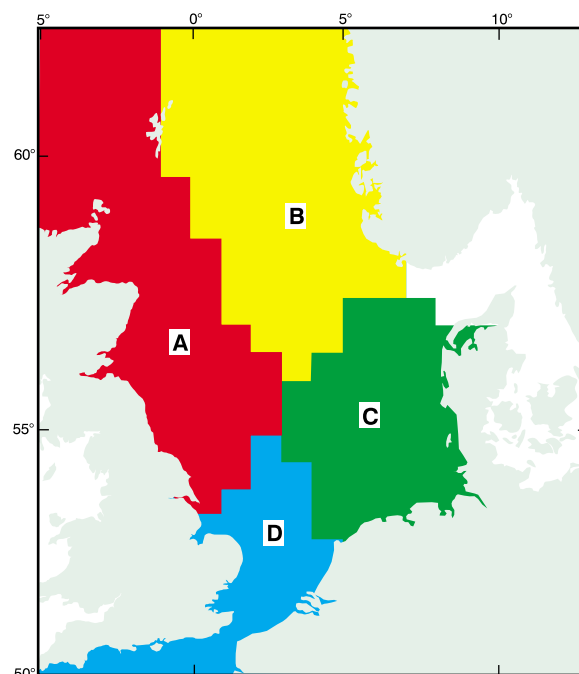


Figure 1. A study by the North Sea task force suggests that the permanent closure of areas A, B, C or D would not lead to a long-term increase in the Spawning Stock Biomass of North Sea cod. This is because cod are migratory and wide-ranging, and fishing effort displaced from the closed area would catch them elsewhere.

In cases where knowledge of the movements and dynamics of fished species suggests that no-take zones would provide fishery benefits they have already been used. For example, the plaice box is intended to reduce mortality on the juveniles of this species, since they remain concentrated in relatively small areas before joining the more migratory adult stocks (Figure 2).

Differences in the potential fishery benefits of no-take zones for species with different biology, suggests that the utility of no-take zones as a management tool should be considered on a case by case basis and the benefits which they may provide should be assessed against the benefits of other management options.

The use of no-take zones for fishery management in European waters is unlikely to simplify management and resolve conflicts between fishing fleets because a method for allocating catches between fleets will still be needed. No-take zones do, however, have other potentially important roles in marine environmental management. They are one of the most effective ways of protecting vulnerable habitats from the effects of fishing disturbance and providing protection for species of conservation concern (Figure 3).

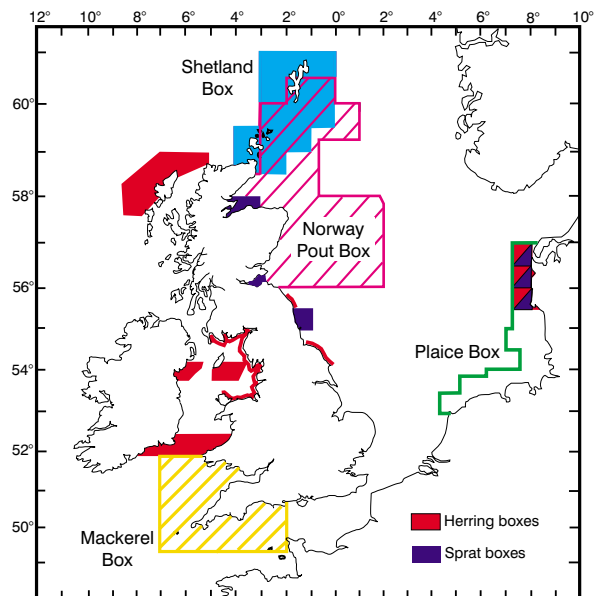


Figure 2. Examples of existing closed areas used for fishery management. The plaice box was designed to protect juvenile plaice from fishing before they start to migrate more widely and join the adult fishery.



Figure 3. Closed areas are useful for protecting vulnerable habitats and species of conservation concern. These may include maerl beds, deep water corals and other habitat forming species that are easily damaged by trawling.