

Horse mussels need more protection in Scotland

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Horse mussel, *Atrina zelandica*. Credit: [Zureks](#) /Wikimedia Commons, [CC BY-SA 3.0](#)

Horse mussels in Scotland could be at risk due to gaps between marine protected areas, a new study shows.

Horse [mussels](#) can grow up to 20 cm in length and live for several decades. Their beds are [biodiversity hotspots](#), providing foundations for soft corals and barnacles, shelter for many small marine creatures and habitat for commercially important shellfish.

They have been known to be in decline since the 1990s and marine protected areas (MPAs) were introduced to protect their numbers, as they have for other rare and declining habitats.

A new study conducted by [marine scientists](#) at Heriot-Watt University found that failure to consider connections between MPAs could be putting horse mussels at risk.

Dr. Jo Porter, based at Heriot-Watt's Orkney campus, and Dr. Clara Mackenzie from Fisheries and Oceans Canada, worked with scientists and nature managers to sample horse [mussel](#) beds around Scotland and analyze their DNA.

Analyzing genetic markers of the mussels' DNA showed how genetically connected and diverse the populations were: low genetic connectivity and diversity could make them less resilient to environmental changes.

The team dived to depths of over 40m to collect the samples.

Dr. Porter said: "Scotland has 12 marine protected areas where horse mussels are protected.

"We wanted to find out whether these areas are actually doing their job of protecting the horse mussels, and how they operate as a network. This is especially important because, like many protected marine species, the larvae spend time traveling in the plankton before they settle.

"What we discovered is that the spaces and connections between MPAs are essential for the mussel beds. Some of the horse mussel beds wouldn't be able to survive without the network, they are dependent on the unprotected spaces in between."

The [team](#) found that the Noss Head horse mussel bed, which covers 385

hectares and is one of the largest horse mussel beds in the UK, could be at risk if other horse mussel beds are not protected properly.

This is because the genetics suggest the bed is reliant on larvae coming from as far away as Shetland.

Porter says the findings make the case for more research into how MPAs function.

"Marine protected areas are an excellent tool for protecting [marine species](#), but we know hardly anything about how they are connected, despite many governments committing to so-called networks.

"Horse mussels are just the tip of the iceberg—there are many other species that are hugely important for conservation and biodiversity that are protected by marine protected areas.

"But, as with horse mussels, they could be far more vulnerable than we think, despite occurring in protected [areas](#)."

Dr. Mackenzie said: "Our findings suggest that Scotland's horse mussel beds are an interconnected system of populations. It is imperative that conservation decisions account for the complexity of such relationships, rather than simply protecting representative sites."

The study was published in *Frontiers in Marine Science*.

Provided by Heriot-Watt University

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