



IMarEST Emerging Marine Trends

Issue 3 - Mesopelagic fisheries

Fishing in the deep

There has been a growing interest in the fishing industry into the potential exploitation of the mesopelagic zone. This is the area between 200m and 1000m deep, otherwise known as the 'twilight zone' of the ocean – a mysterious realm that is home to weird and wonderful sea creatures such as [angler fish](#), [lantern fish](#) and the [vampire squid](#). The economic viability of harvesting here is unknown, however, with around ten billion tonnes of fish inhabiting this ocean zone, it could be a potentially a lucrative environment to explore for new fisheries now that technology has advanced sufficiently to allow us to do so.

This presents reprieve for shallower fisheries, allowing fish stocks such as tuna and mackerel to recover from historic overexploitation. However, moving to this deep environment is not without risks. Twilight zone species tend to grow slowly and have low reproduction rates, which would result in long recovery times for populations to replenish themselves after fishing. The depletion of fish stocks could therefore simply be transferred from one location to another but could incite ecosystem issues in a largely unknown environment.

Moreover, fish in these deep waters are vital for moving carbon. They feed in the shallows and return back to the twilight zone, carrying the ingested carbon with them. By removing these species there is a risk that we would reduce the carbon available for deep-dwelling animals and available food sources for other species, such as krill for whales. This could also have further ramifications for the ocean's regulating effect on climate change. The oceans act as a crucial 'carbon sink', storing carbon for millennia, following carbon dioxide (CO₂) from the atmosphere dissolving into the ocean. However, removing species that carry carbon away from surface waters could lead to a reduction in absorbed CO₂. No one knows how [human interference will influence this biological 'carbon pump'](#) and could cause detrimental effects to calcifying creatures that use it to build their shells and skeletons, such as corals.

As we do not have a good understanding of the ecosystems within this 'twilight zone', nor regulation and control in the high seas (beyond national jurisdiction), it is vital that we develop our knowledge before attempting to harvest here. With several countries such as Norway and



Pakistan already issuing experimental fishing licenses, it is an imminent issue that must be addressed now, before we risk damaging this fascinating and largely untouched environment.

The IMarEST is running a livestream lecture on Ocean Governance issues in the high seas, which will explore this issue further by discussing the long term management of the high seas looking in particular at biodiversity resources in areas beyond national jurisdiction and deep sea mining. You can watch the [FREE live-stream lecture on IMarEST TV](#), by signing up through Eventbrite.

How can you help?

As the topic of fishing in the twilight zone is a new issue, you may think it might be hard to engage with. However, you can still get involved in this issue by becoming a more conscious consumer and helping reduce the need for us to begin exploiting these unknown ecosystems. If you would like to get involved and help with the issues raised in this article, here is a list of useful tips and resources:

- **Look for sustainable seafood** – on your next shop, look for seafood that shows the [blue Marine Stewardship Council \(MSC\) label](#). The MSC fisheries standard reflects the most up-to-date understanding of internationally accepted fisheries science and management, which regularly reviews and develops the standards in consultation with scientists, the fishing industry and conservation groups. This helps to reduce practices that create food security risks and change marine food webs.
- **Use sustainable seafood guides** – there are many pocket guides such as the [Seachoice](#) and [Seafood Watch](#) that can be downloaded as iPhone or Android apps that can help you to make good decisions when you are at the grocery store or eating out in a restaurant. They are specific to your location, so they can be used anywhere with accuracy.
- **Cooking sustainably at home** – there are a variety of [sustainable seafood recipes](#) and books such as the [Smithsonian's Sustainable Seafood Cookbook](#) that you can utilise to continue being a conscious consumer in your own home.
- **Spread the word!** – by staying up to date on issues that are related to mesopelagic fisheries and sustainable fishing and helping to make others aware of the problem, you can help drive wider behavioural changes. Follow the news in dedicated ocean news platforms such as [the IMarEST's newsroom](#) or [Deep Sea News](#) and tell your friends, family and work colleagues about what they can do to be a more conscious consumer.

