From micronekton to tuna

Tuna fishing accounts for over 70% of GDP in small island countries in the Western and Central Tropical Pacific. However, this activity is threatened by global warming, which could displace or reduce tuna populations.

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Tuna fishing in the West Pacific.

Tuna feed on micronekton, which are organisms of all shapes (molluscs, crustaceans, fish) measuring between 2 and 20 cm, which move through the water column, mainly between the surface and 1,000 m deep. And because tuna is a food source for humans, the challenges to micronekton in the face of the climate and various environmental variations have become objects of study and monitoring, as well as causes for concern.

According to recent studies, micronekton in the tropical zone is likely to lose between 3 and 22% of its biomass by the end of the century. If we continue on the same trajectory, by 2050, three species of tropical Pacific tuna (skipjack, yellowfin and bigeye) could move eastwards, leaving exclusive economic zones (EEZs) and moving into international waters, where they could be caught by large industrialised countries.

This geographical change could have a huge economic impact. Pacific island nations, which until now have intelligently negotiated fishing days in their EEZs among themselves, could lose up to 20% of their tuna resources and therefore, of their income. This would create a "climate injustice" for countries that are in no way responsible for climate change. In such a context, scientific documentation of this phenomenon is necessary, so that the small island countries in question can defend themselves and claim compensation.

Understanding the future behaviour of micronekton is therefore crucial, but difficult, because these organisms are not easy to observe. Current observation systems used during marine campaigns (direct trawl sampling, active acoustics, environmental DNA, video systems) offer very different representations of micronekton species and biomass.

This is why we need to deploy new, broader means of observation. Negotiations are underway to ensure, for example, that all vessels in

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••• Recent studies have highlighted the negative impact of global warming on micronekton, an essential food source for tuna •••

the French scientific fleet automatically take acoustic measurements of micronekton in the water column whenever they move. Studies have also been launched to better understand how contaminants such as methylmercury accumulate at various trophic levels, from phytoplankton to tuna.

Micronekton caught during surveys off New Caledonia and Wallis and Futuna.

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