Department of
Primary Industries and
Regional Development

GOVERNMENT OF
WESTERN AUSTRALIA

Fisheries science update – April 2022

Temperate Shark Fisheries

Two fisheries make up Western Australia's Temperate Shark Fisheries: the West Coast Demersal Gillnet and Demersal Longline Fishery; and the Southern Demersal Gillnet and Demersal Longline Fishery. They are some of the longest standing sustainable target shark fisheries in Australia.

These fisheries contribute to the WA economy by supplying sustainable locally sourced seafood; employing up to 150 people per year; and have an estimated overall annual market value up to $20 million.

774 tonnes of sharks were landed in 2019-20, which is approximately 2.27 million meals. The majority of which goes straight to the WA community, and is commonly found in local fish and chip shops.

Most fishers use demersal gillnets to target sharks, with scalefish taken in smaller amounts. Demersal longlines are also allowed but currently not widely used.

A comprehensive study on the sustainable use of demersal gillnet and demersal longline in WA's Temperate Shark Fisheries was recently completed by the Department of Primary Industries and Regional Development (DPIRD) scientists.

WA's Temperate Shark Fisheries

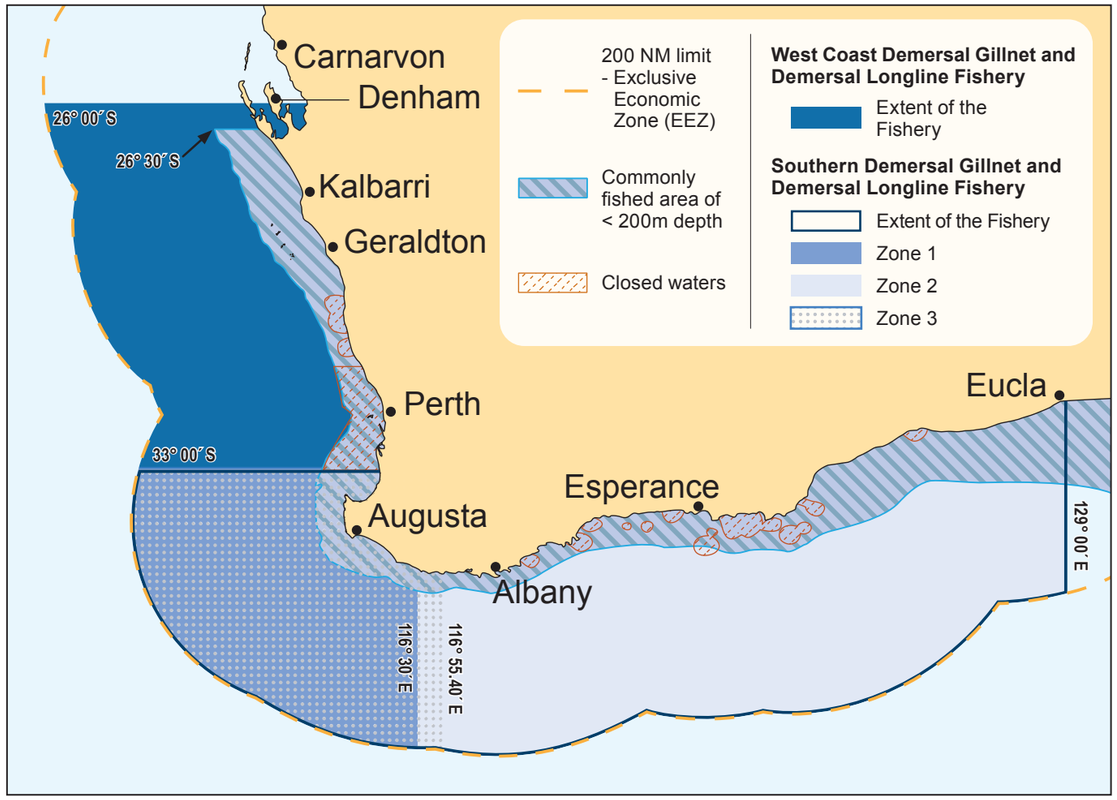


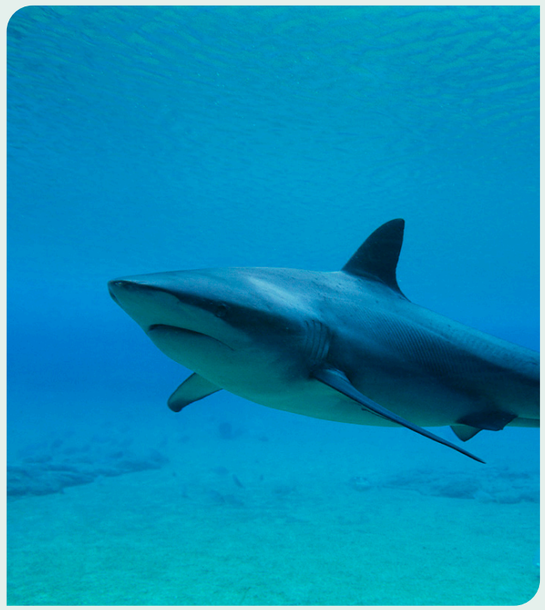
Figure 1. Map showing Temperate Shark Fisheries

The project

'Sustainable use of demersal gillnet and demersal longline' was an Our Marine Parks Grants project, funded by the Australian Government and run by the Western Australian Fishing Industry Council (WAFIC), DPIRD and the Southern Seafood Producers WA Association.

The project had two objectives:

- to compare the use of demersal gillnets and demersal longlines in the Temperate Shark Fisheries, looking at a range of topics, including changes in fishing efficiency and catch composition, to impacts on habitats and protected species; and
- to understand the social and economic contributions of these fisheries to the WA community.



The two fishing methods

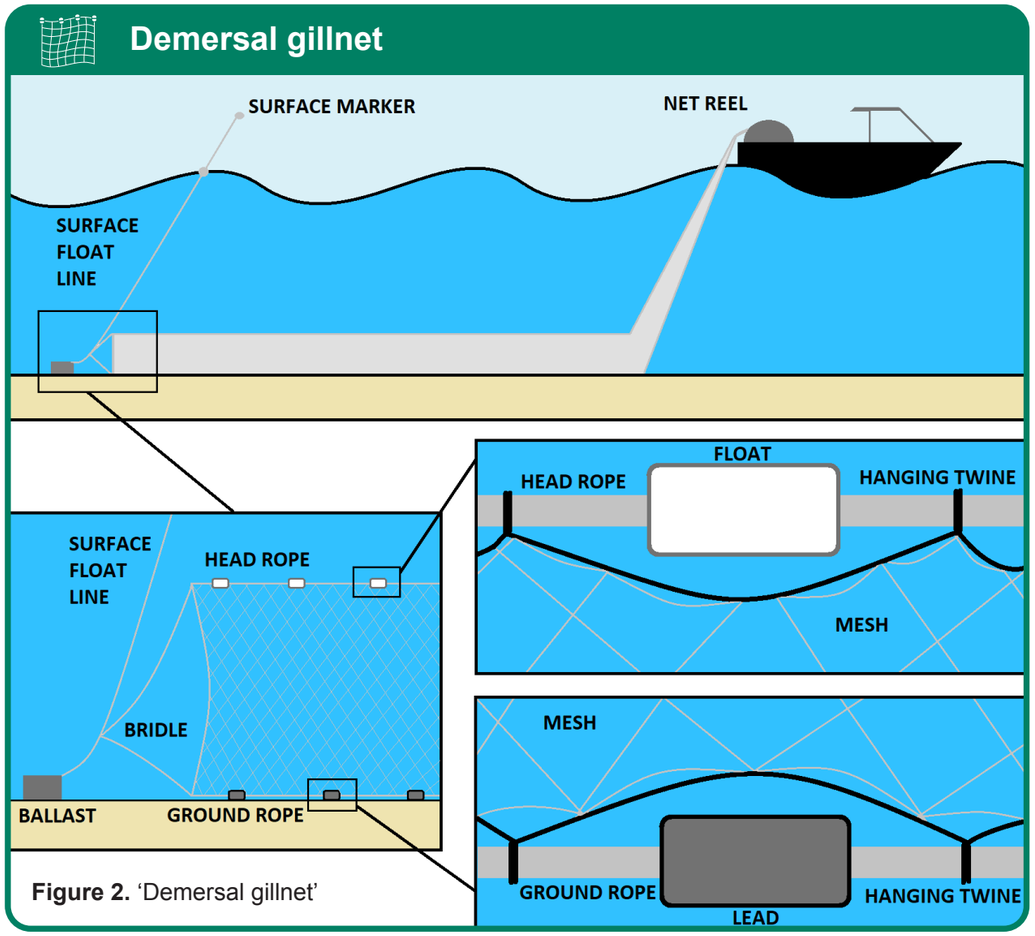


Figure 2. 'Demersal gillnet'

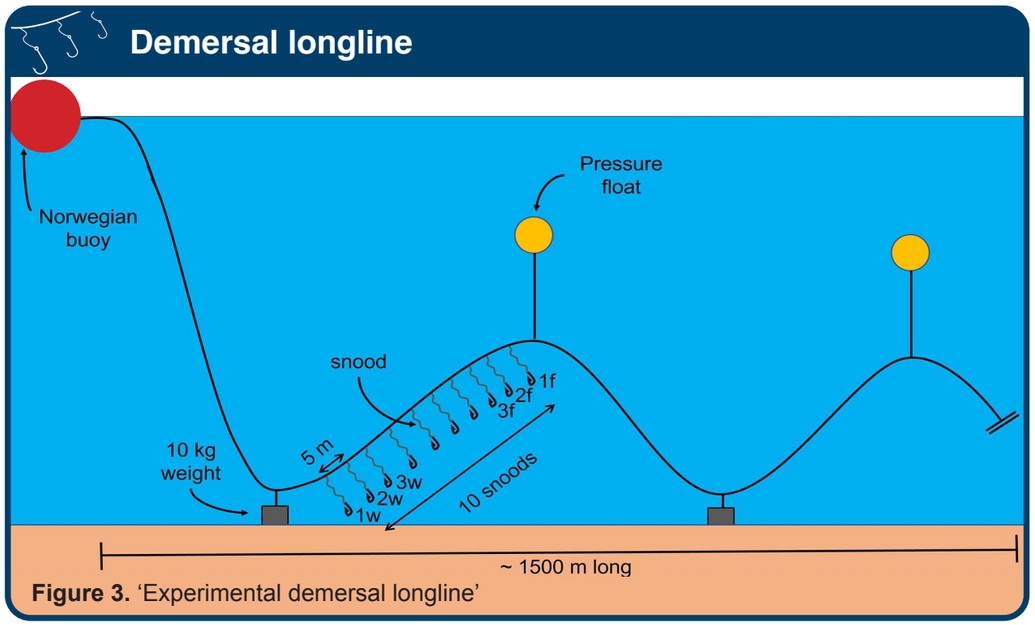


Figure 3. 'Experimental demersal longline'

The field survey

Three commercial boats were chartered to fish with demersal gillnets and demersal longlines at the same time between July 2020 and September 2021.

To make sure the survey captured day-to-day commercial fishing, fishers supplied their own demersal gillnet gear and chose when and where the gear was set.

Fishers typically use a mesh size of 114mm, which is selective at catching sharks and fish within a certain size range.

Demersal longlines were supplied by DPIRD and included hooks of different sizes and shape attached to the main line with stainless steel wire rope or monofilament snoods (a length of line attached to the hook, used to extend the distance between the hook and the mainline).

Each hook on the demersal longline was manually baited with traditionally used species including squid, octopus, mullet, whiting, herring or pilchards.

Cameras were set on the boat, subsurface, and underwater along the gear. Underwater data has not previously been available for these fishing methods.

Fishery/Zone	Chartered fishing days	Demersal gillnet deployments	Demersal longline deployments
West Coast Demersal Gillnet and Demersal Longline Fishery	13	12	10
Southern Demersal Gillnet and Demersal Longline Fishery (Zone 1)	20	22	23
Southern Demersal Gillnet and Demersal Longline Fishery (Zone 2)	22	45	30

Catches – what did we find out?

- Demersal gillnets catch a greater number of species and more caught individuals are likely to be kept by fishers, compared to demersal longlines.
- For both types of gear, the number of species that drop out before reaching the deck is low, particularly for commercially targeted shark and scalefish species.
- Most of the main commercial species (dusky, gummy, whiskery and sandbar sharks, pink snapper and Western Australian dhufish) are captured by both gears but in different proportions.
- Demersal longlines have higher catch rates of pink snapper, West Australian dhufish and gummy shark but negligible to very low catch rates of blue groper and queen snapper.
- Catch compositions of species caught and in what numbers during a fishing trip, were very similar between electronic monitoring such as deck cameras, and onboard observers.
- For longlines, no significant differences in catch rates are found between snood types (wire or monofilament).

What species are returned to the water?

- Port Jackson sharks are the shark or ray species most commonly returned to the water, from both gears. While buffalo bream and dusky morwong are the most returned scalefish from demersal gillnets.
- Most individuals returned to the water are released in good condition. With satellite tagging of Port Jackson sharks showing a very high post-release survival rate.

Figure 4. Deployment of satellite tags on a Port Jackson shark.

Fishing gear, protected species and habitats

- During the project, a range of protected species were seen, including protected sharks (grey nurse, oversized dusky, and white sharks) and rays (black and smooth stingrays), seabirds (brown skua, cormorants, little black cormorant, pacific gulls, shearwaters, pied cormorant, and yellow-nosed albatross), green turtles, cetaceans (humpback whale) and Australian sea lions.
- The number of protected species observed is minor compared to the number of non-protected species.
- From underwater cameras, most protected species are observed ‘swimming past’ (Australian sea lion, humpback whale, smooth stingray and white shark).
- The second most commonly observed behaviour is ‘bouncing off’ demersal gillnets (black and smooth stingrays) and ‘attracted’ to, but not physically interacting with, demersal longlines (pied cormorant and smooth stingray).
- Demersal gillnets are mostly set on coarse sand and sometimes macroalgae. Underwater cameras showed very limited damage on the different habitats where gear was set.

The socio-economic survey

Temperate Shark Fisheries stakeholders were interviewed to better understand their contribution to the WA community. Two questionaries were developed, one for fishers and one for fish processors.

Fishers were asked who they sell their catch to, what price they sell it for, how many people they employ, what their operational costs are and where they spend it. Processors were asked similar questions adapted to fish processing.

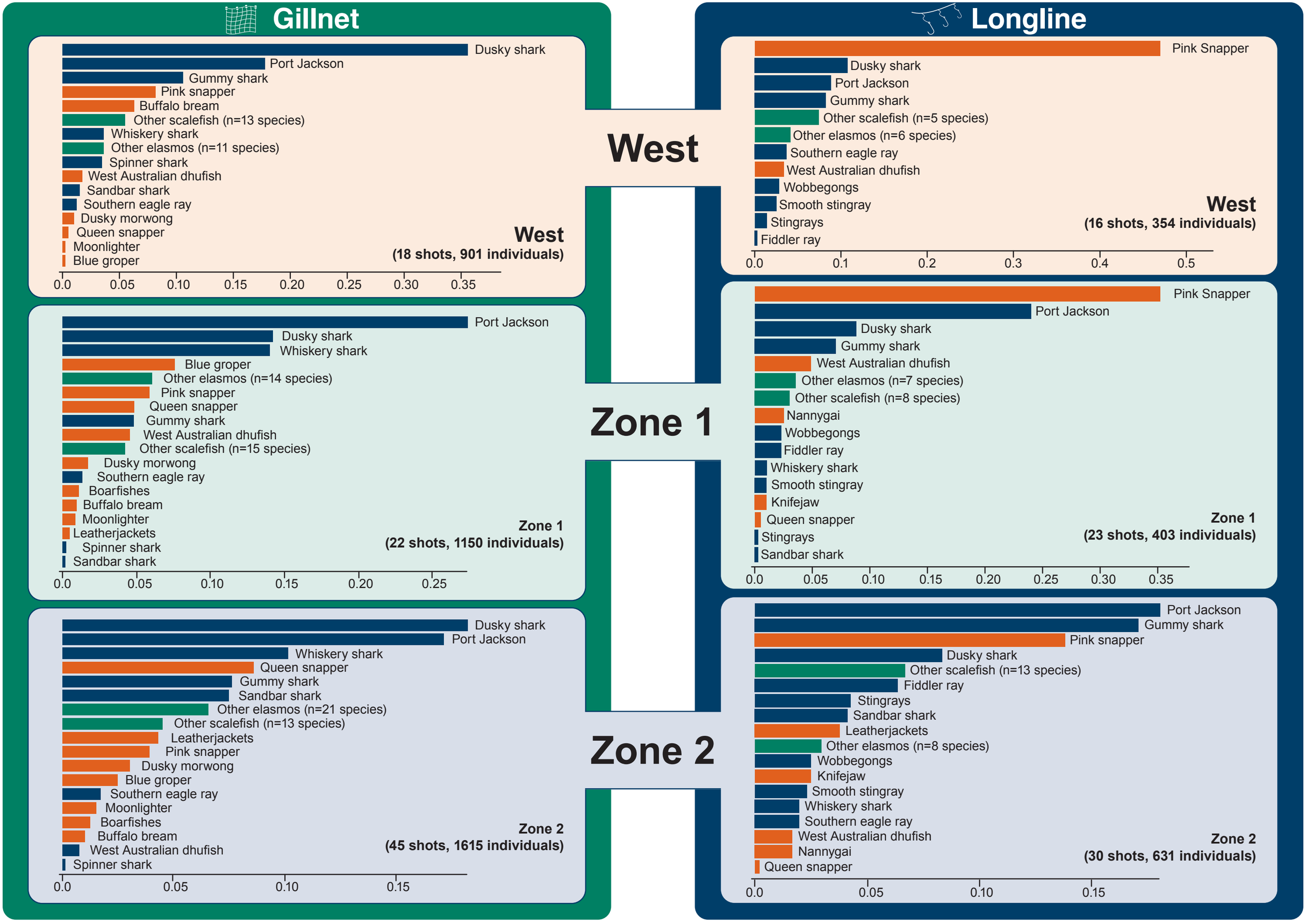


Figure 5. Cumulative observed catch composition (number of individuals) by fishing method and zone.

Social and economic contributions

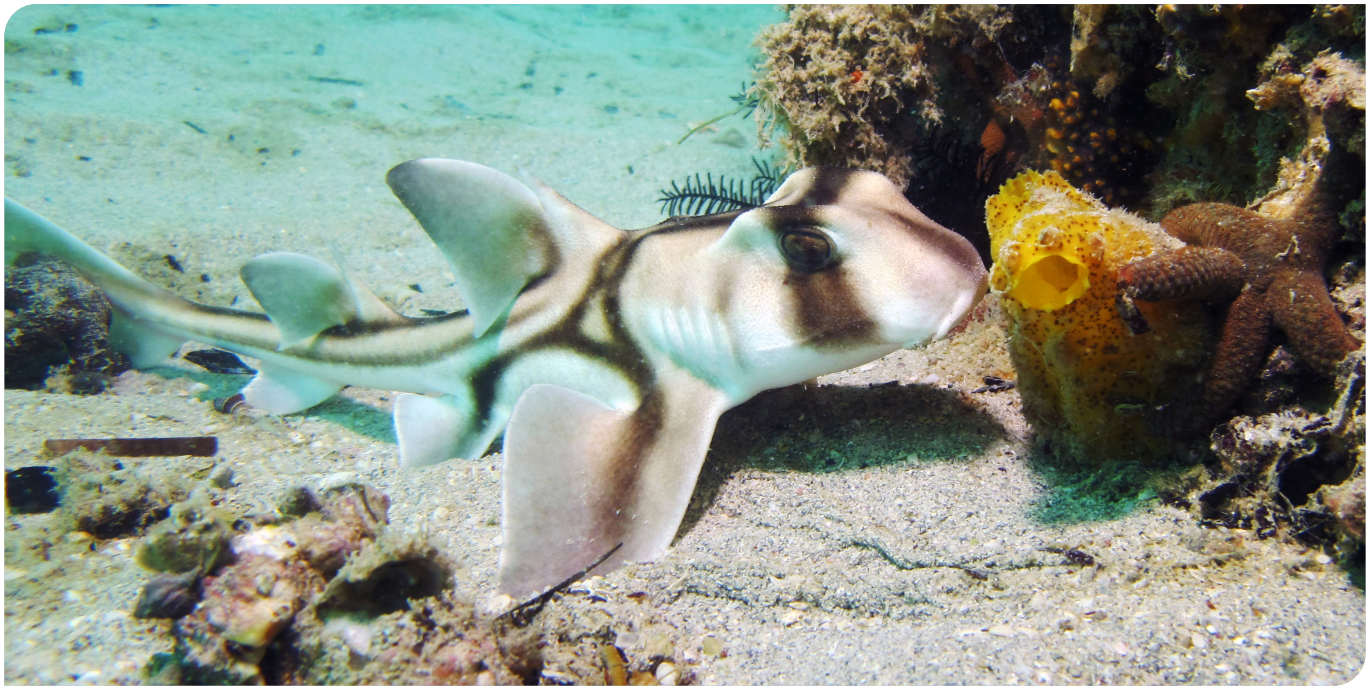
Fishers sell most of their catch to processors, who, in turn, sell most of their seafood to local retailers and direct to the public, with only a small proportion sold interstate. We also found out:

- Fishers sell predominately flesh and fins, while processors also sell cartilage.
- The majority of revenue generated in these fisheries originates from the sale of shark and scalefish flesh, not shark fins.
- These fisheries employ up to 150 people per year in the West Coast and South Coast Bioregions of Western Australia.
- Fishers and processors spend most of their operational costs within their local government areas.
- The estimated overall annual market value through the supply chain is up to 20 million, considerably larger than the Gross Value of Production.

Where can I find out more?

DPIRD reports on the Temperate Shark Fisheries in the annual State of the Fisheries.

Visit **fish.wa.gov.au** and search State of the Fisheries.



Port Jackson shark

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