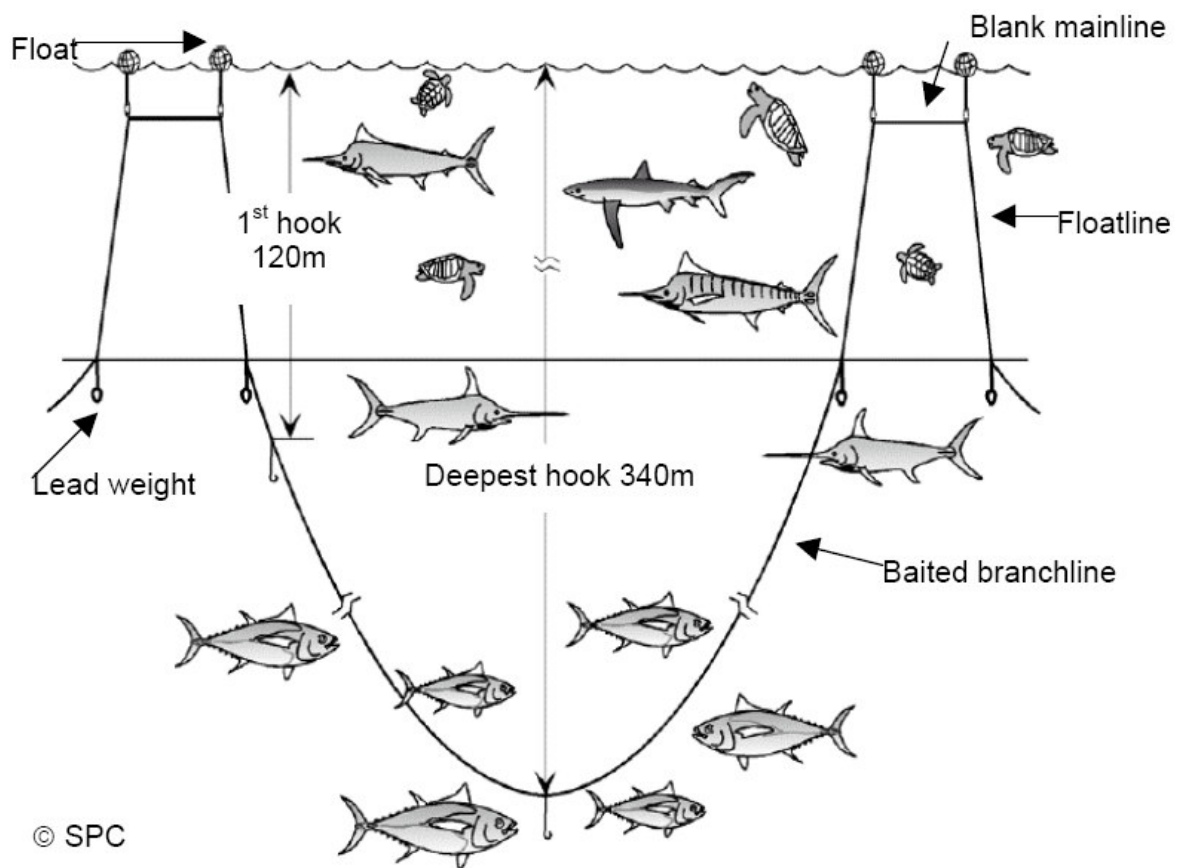


New Deep Setting Longline Technique for Bycatch Mitigation

This project aims to increase effective targeting of deep-swimming market species in Australia's tuna fisheries while reducing the likelihood of taking unwanted shallow water species (bycatch). A study conducted in Hawaii on turtle dive-depth distribution showed loggerhead turtles spend most of their time in waters less than 100m. The incidental catch of turtles occurs in pelagic longline fishing when turtles encounter baited hooks or when they become entangled in mainlines or floatlines.



Longline gear is normally set so the gear 'sags' in a curve from float to float, fishing a variety of depths ranging from 50 to ~300m. This project tested a new method for setting monofilament longlines that sets all baited hooks at a prescribed range of depths, below 100m.

This prevents baited hooks in the top 50 to 100m where they are more likely to be encountered by turtles and other unwanted bycatch species such as seabirds. This method also aims to increase the catch rate of target species such as bigeye tuna and broadbill swordfish during the day. Generally, longline gear fishing deeper in the water column is more effective at targeting bigeye tuna, probably due to the preference of the species for depths of 350-500m and 10 - 15°C during the day.

In order to set the entire line at depth without using very long floatlines, normal floatlines were used in pairs separated by a blank section of mainline with no baited branchlines for a distance of 50m. The section of mainline that holds the baited branchlines was suspended directly under these floats and was weighted down at each end by a 3kg lead weight attached by a snap to the mainline.

The experimental gear was set in conjunction with normal gear. The experimental gear was successfully set at the target depth so that all hooks fished below 100m where bycatch encounters normally occur. As expected, **no** turtles were caught as encounters in Australia's Eastern Tuna and Billfish Fishery are rare.

However what was discovered was that all hooks in a longline can be set in the zone outside that in which turtles normally occur. By observation, fish caught on the deeper weighted gear were generally bigger than fish caught on the shallower gear. In any case, the project gear out-fished the normal gear by approximately 17%, although more work needs to be done to prove the efficacy of this new technique and to show that it can significantly increase the nominal catch per unit effort (CPUE) of deep water target species, especially bigeye tuna.

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Australian Government

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