

Summary

Assessing the impacts of gillnetting in Tasmania: Implications for by-catch and biodiversity

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The report, written by a team of researchers at the Institute for Marine and Antarctic Studies regarding the impacts of gillnetting on the by-catch and biodiversity of Tasmania, was written as an aid to guide the debate on gillnetting. The report addressed the challenges posed by both commercial and recreational gillnetting, although the focus of this summary is generally surrounding recreational gillnetting.

The introduction of licensing for recreational gillnets occurred in 1995, with various net sizes available for use. In 2002, the sizes allowed were reduced to one 50m graball net, and the maximum length of the mullet nets were reduced to 25m. More changes were implemented in 2004 when overnight netting was prohibited in all areas, excluding Macquarie Harbour. Despite this change, the licence numbers for recreational gillnetting remained between 9,000 and 10,000. 2009 brought changes to the maximum soak duration, prohibiting soak times exceeding two hours in shark refuge areas (SRAs) and six hours in all other waters, except Macquarie Harbour which still allows the overnight netting. As the gillnets are non-discriminatory, by-catch is inevitable. The researchers defined by-catch as any organism that is caught in fishing gear and subsequently released or discarded. (Lyle et al, 2014) Different fisheries have various rules regarding acceptable catch, although, again, by-catch cannot be controlled with gillnets. The mortality and condition of the by-catch species has become a significant issue and is one of the primary focuses of this report. Declines in the abundance of several gillnet species has concerned community members, and the ecological impacts of gillnetting has subsequently become another main focus of this report. The researchers acknowledge that some of the laboratory experiments may not be an accurate representation of what occurs in the wild.

To conduct this study, the team relied upon various methodologies to gain a full understanding of the commercial and recreational gillnetting sectors. They synthesized research from previous studies to survey the regional and temporal changes in the species abundance. Previous recreational fishing survey data, commercial catch sampling and research fishing with recreational gillnets were used to analyse the composition and levels of by-catch from the main gillnet fisheries. Additionally, they used a survey of recreational gillnet fishers to look at the implications of changes within gillnet management to determine its impacts on recreational netting practices. From the data obtained, they were able to synthesize the information to evaluate the total impacts of gillnetting and identify potential alternatives to resolve some of the effects, although it is not explicitly stated whether or not gillnets should be prohibited within the recreational fishing sector.

The report went through the results for each of the fisheries, species, and tests. Within the recreational gillnet sector, the most recent survey indicated that the Bastard Trumpeter, Blue Warehou, and Wrasse (Bluethroat and Purple) made up 45% of the total catch. Atlantic Salmon, Leatherjackets, Australian Salmon, various Shark species, and Marblefish accounted for 25% of the total catch. Further, more than half of the Leatherjackets, three-quarters of the Wrasse, and 90% of the Sharks and Marblefish were released or discarded. In total, 35% of the catches were classified as by-catch, although the research team believes this may be an underestimate.

The studies on the impact for the threatened, endangered and protected species revealed that the Maugean Skate are susceptible to capture in gill nets within Macquarie Harbour, and they are

vulnerable to a degree of mortality, especially from the overnight sets. Most often caught in shallow waters, the Maugean Skate was typically in good condition, except when trapped overnight. Diving bird species are at risk of becoming entangled in the nets, as well, with the study finding three species of cormorants entangled (Great Cormorant, Black-faced Cormorant, and Little-pied Cormorant) all of which had drowned by the point of net retrieval. Five Little Penguins were also caught with just one surviving its battle with the net.

It is notable to mention that in 2010, the recreational gillnet harvest exceeded the commercial gillnet harvest in some of the fisheries. With a 35% estimated discard rate, the main reasons for discarding species were due to poor eating qualities or failure to meet legal minimum length requirements. The survival rate in relation to the soak duration was analysed, and it became clear that many of the species would benefit from a decrease in the current maximum soak duration. As observed in the research, the individuals' conditions often decreased as the soak time increased. In particular, the commonly caught by-catch species, Bluethroat Wrasse, did not survive capture well. All of the species, except for the Elephantfish, had an increase in lactate and glucose concentrations when caught in the gillnets, indicating the high stress level of fish when caught.

When looking at the overall implications of gillnetting on the various fish populations, it became clear that over the past twenty years, the species have tended to become more aggregated. This suggests a shift has occurred in the fish community structure, which may have been influenced by the declines in abundance of several key gillnet species. This decline mostly occurred during the 1990s and early 2000s, prior to new management initiatives. A reduction in the Banded Morwong abundance was listed as the most noticeable, although Blue Warehouse and Marblefish populations have also shown a decline in abundance since the 1990s. Many of these have since stabilised at a lower level. This study was unable to detect rapid increases in abundance of common species since the management practices have been updated and improved.

In surveys conducted for the recreational fishers, it was identified that the main motives behind their fishing was not related to catching a fish. Relaxation and socialisation were identified as the top priorities, while catching a fish to eat rated as the third objective. Essentially all of the gillnet fishers surveyed also participated in another type of recreational fishing, suggesting these fishermen would be able to replace gillnet fishing with another form, should recreational gillnetting become banned. It is important to note that one of the main reasons people participated in gillnetting, recreationally, was to capture the Atlantic Salmon escapees in areas like Macquarie Harbour. The abundance of these escapees has declined, however, implying the amount of escapes has also declined. This minimizes the desire for gillnetting, especially overnight, in Macquarie Harbour.

To conclude their study, the team acknowledged the recent management changes as being effective to reduce waste and by-catch, as well as improve overall fishing practices. However, the team believes further initiatives could be implemented to help protect the by-catch species and others interacting with the recreational gillnets. It is suggested that the current maximum permitted soak duration is decreased to improve the potential survival of any discarded individuals. This would benefit the Bluethroat Wrasse and Jackass Morwong the most visibly. Other impacts of the gillnets include: an increase in the vulnerability to predation as the fish are unable to avoid the predators and have limited mobility, stress related impacts to the health condition of the fish, and an increase in the fish vulnerability to infectious agents. These are all most impactful upon the by-catch species, as they are only to be discarded upon retrieval from the net.

To ensure the long-term sustainability of endangered and protected species like the Maugean Skate, overnight netting should be banned at Macquarie Harbour, or at the very least, gillnets should be prohibited from use in shallow waters. This will also benefit the Whitespotted Dogfish, a common bycatch species unwanted by fishermen. It is also proposed that attended netting could be enforced to help eliminate unintended captures, like seabirds, although this strategy has not been favoured

by fishermen. The seals have not appeared to be significantly impacted by the gillnetting. If anything, the seals benefit from easy access to fish.

The team reveals with little doubt that gillnetting in Tasmania has caused impacts on species, especially the Banded Morwong, Bastard Trumpeter, and Blue Warehou, as mentioned previously. It is important to keep management approaches in place and actively monitor these fish populations to ensure further abundance depletion does not occur. Specifically, the study suggests an implementation of no-netting areas surrounding juvenile Bastard Trumpeter habitats is an approach that can be taken to assist the longevity of this species. Additional management strategies can be installed to help protect the untargeted species, and perhaps more restrictions need to be placed on when and where the recreational gillnetting can take place. The report calls for further research to see more commonalities and trends within the fisheries of Tasmania, although the gillnetting has had a clear impact on abundance and by-catch species.