Do Gut-hooked Whiting Survive?

Research by Shane McGrath,
Paul Butcher and Matt Broadhurst

NSW Department of Primary Industries, Fisheries Conservation Technology Unit.

Image - Noal Kühl

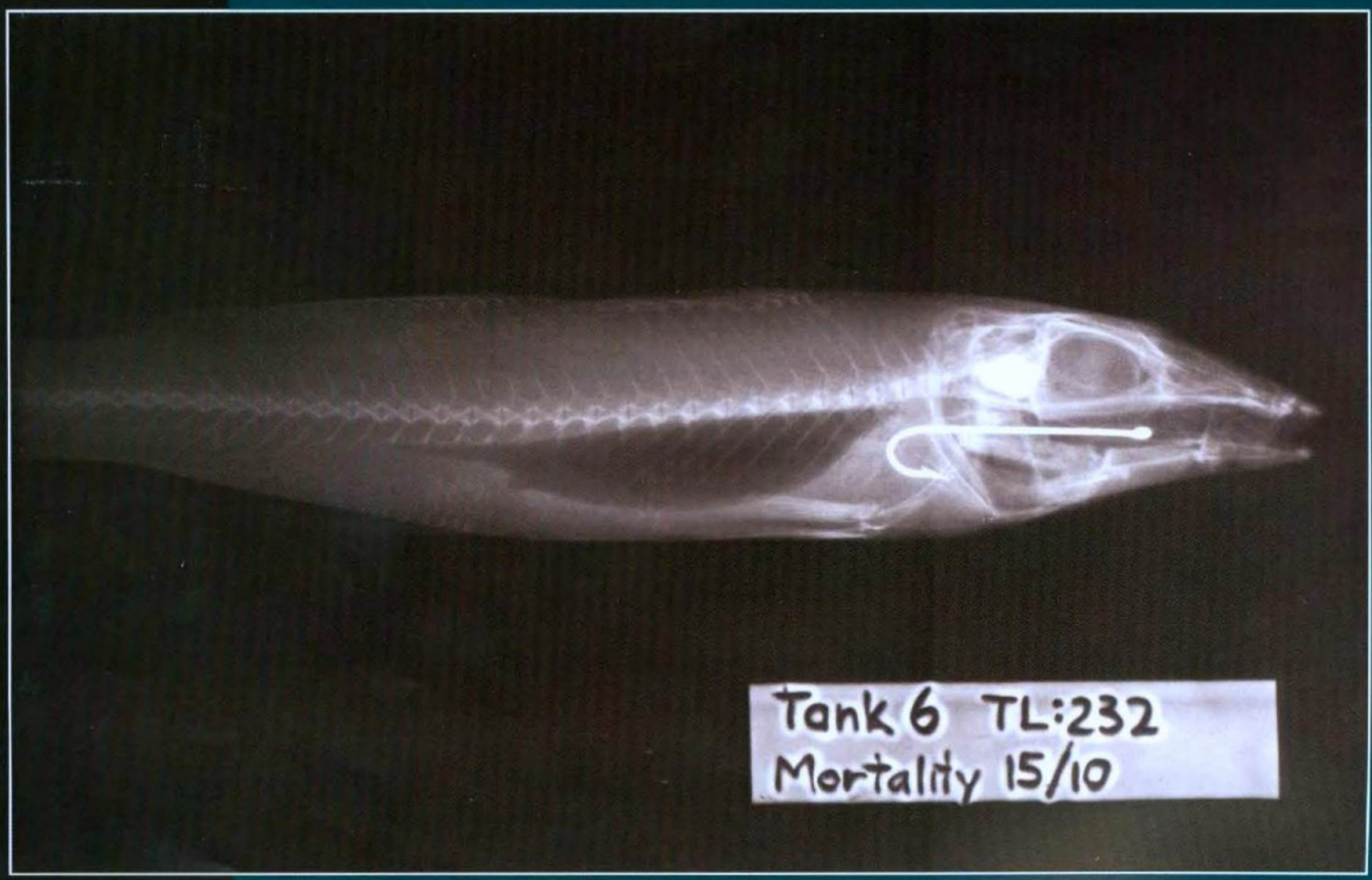
Each year at least 12 million whiting (Sillago spp.) are caught by recreational fishers throughout Australia. Up to six species are targeted, although more than half of the total catch comprises sand and trumpeter whiting angled off beaches and in estuaries throughout Queensland and New South Wales.

FROM TOP: The 110 litre tanks used to house gut-hooked and control sand whiting; An individual 110 litre tank used to hold gut-hooked and control sand whiting; The line being cut from one of the gut-hooked fish; BELOW: An x-ray of a gut-hooked sand whiting that died. OPPOSITE: Researcher Shane McGrath with a sand whiting.

Like many other local recreational species, sand and trumpeter whiting are mostly managed by a combination of bag limits (e.g. 20 to 40 fish per person per day) and size restrictions (e.g. 23 to 27 cm total length (TL) for sand whiting in QLD and NSW; there is no size limit for trumpeter in any state). These regulations, combined with a growing awareness of the need to conserve stocks, mean that anglers typically release more than a third of all the whiting they catch. An important assumption associated with the release of these fish is that most survive with few negative impacts on their health.

During the past five years, a lot of work has been done by different research agencies, including the NSW Department of Primary Industries (DPI) - using money from recreational licence fees - to find out what happens to key coastal species after being released by anglers, and the factors responsible for any mortality. While the results from this research have been quite positive, at least some individuals of all of the examined species have died (e.g. mortalities typically between 1 and 37%). These mortalities have been attributed to a range of different factors, although quite a few, including those observed for sand whiting, were caused by the anatomical hooking location and more specifically, the removal of swallowed hooks.

The actual numbers of gut-hooked whiting that are released throughout Australia (and their eventual fate) remains unknown, but the potential for at least some deaths justifies examining simple ways of promoting survival. One method that has been shown to benefit other recreational species throughout the world is to simply cut the fishing line and release gut-hooked fish with their hook still in place. Research done with yellowfin bream and mulloway



in NSW suggest that this approach can dramatically improve survival.

For example, during recent aquaria and field experiments, we observed that only 12 and 27% of yellowfin bream and mulloway, respectively survived after having their swallowed hooks removed. In contrast, long-term survival was increased to almost 85% simply by releasing individuals with their lines cut. Further, 76% of the surviving yellowfin bream subsequently shed their hooks over an average of 19 days, with few apparent negative effects on their health. Such positive results support an examination of the effects of cutting the line on the survival of other species that have swallowed hooks.

We aimed to provide this information for sand whiting during a recent aquaria experiment done at Coffs Harbour. This work involved distributing more than 200 fish (measuring between 14 and 27cm TL) among four 3000 litre tanks. Using conventional long shank J-hooks (size 4), baited with beach worms and attached to 3.6kg line, 26 fish were angled from two of the tanks and allowed to swallow their hooks. All fish were played for 15 seconds, removed, measured and then individually released with their lines cut 5cm from their mouths into 110 litre experimental tanks (all within 30 seconds). Twenty six 'control' fish were randomly scooped from the two unfished 3000 litre tanks and similarly released into individual 110 litre tanks. All fish were regularly fed yabbies and monitored over 21 days for (1) their mortalities, (2) when they started feeding and, for line-cut gut-hooked fish, (3) when they shed their hooks. Any dead, gut-hooked fish were removed from their tanks and x-rayed to provide information on the internal position of their hooks.

There were no deaths to the control fish. By comparison, six of the line-cut gut-hooked fish died (between three hours and 14 days after release), providing an overall survival rate of 77 per cent. In all of the dead fish, the hooks were located in the same lateral plane, with most positioned so that the barb was below the shaft. For some individuals it was clear that the barbs had penetrated vital organs. Most of the 20 surviving, line-cut gut-hooked sand whiting resumed feeding within seven days, and five shed their hooks between the first and 19th day. All fish appeared to be in good physical condition at the end of the 21-day monitoring period.

The survival rate of the line-cut, gut-hooked sand whiting was comparable to that observed for other species that have been similarly handled, including yellowfin bream (85%). Further, like yellowfin bream, at least some sand whiting were able to shed their hooks with few apparent negative effects on their health. While these results are positive, it is important to remember that they were done under aquaria conditions, and with only a few fish. There may be other causes of mortality to gut-hooked fish in the wild, such as increased predation or infection, that were not examined here. Notwithstanding the potential for such effects, like for other species, we recommend that anglers should not try to remove hooks that are deeply imbedded in sand whiting, but rather simply cut the line and release the fish. Doing so could significantly contribute towards improving their post-release survival.

The NSW DPI is continuing to closely work with recreational fishers to estimate and maximise the survival of released fish. Up-to-date information about the results of this research, including a poster describing best handling practices, can be obtained at (www.dpi.nsw.gov.au/aboutus/news/recent-news/fishing-and-aquaculture/47million-chances) or by contacting the Fisheries Conservation Technology Unit on 02 6648 3910.