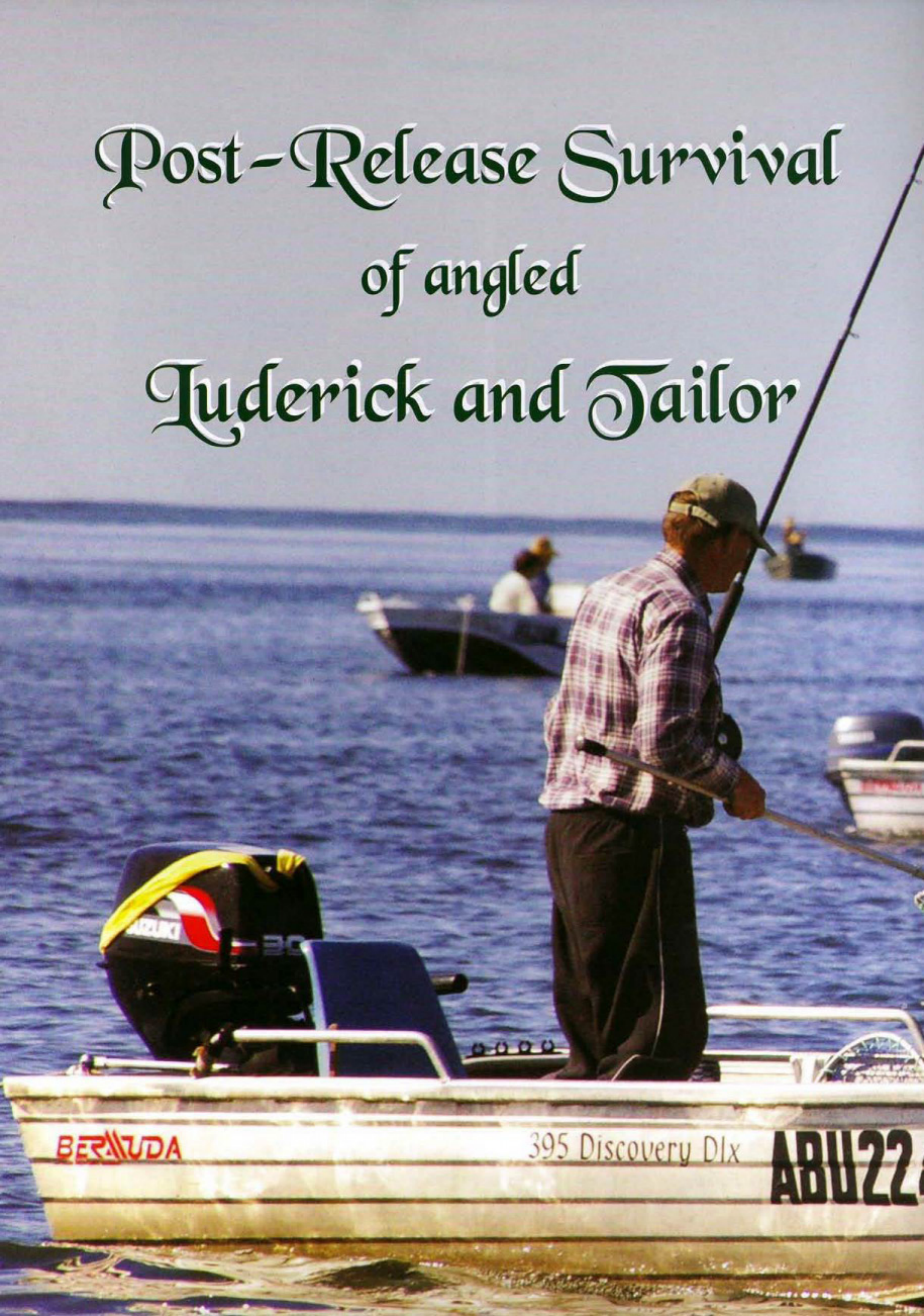
Post-Release Survival of angled Luderick and Tailor



A Research Article by

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ABOVE: Cages used to monitor the angled and control luderick and tailor during the events with a landing net (top) and then placed on the side of the boat (bottom) to remove the hook BELOW LEFT: Angler Ron Waterson playing a luderick near the middle wall at the mouth of the Clarence River during the research BELOW RIGHT: Luderick anglers Ray Connolly and Tom Bushell with fish in their catch bag

ABOVE RIGHT: A luderick that was lifted

Since 2004, the NSW Department of Primary Industries (DPI) has done many experiments to estimate, and examine ways of improving, the post-release survival of popular, angler-caught species, including yellowfin bream, dusky flathead, mulloway, snapper, Australian bass, golden perch and Murray cod. For many of these fish, hooking location, handling and live-well water quality were identified as some of the factors most likely to contribute towards lethal and sub-lethal impacts. Based on this information, simple practices have been recommended to maximise post-release survival and health, such as: avoiding targeting fish when they are spawning, or during hot air and water temperatures; using the right rig to minimise hook damage and ingestion; removing mouth hooks, but cutting the line on ingested hooks; and minimising handling, air exposure and the time fish are kept in live-wells (which also need to have appropriate aeration and water flow).

An up-to-date poster describing these practices is available from www.dpi.nsw.gov.au/fisheries.

The most recently-examined species were luderick and tailor. Like nearly all angled fish throughout Australia, large percentages (between 33 and 38%) of the total catches of these fish are released; either voluntarily, or more typically, due to bag and size limits. For luderick, upsizing is also a common practice, with smaller individuals released once their bag limit (20 in NSW) is reached. These fish are often held in knotted-mesh catch bags attached to the side of a boat (for up to four hours).

Two important criteria supporting the release of luderick and tailor are that the majority (1) survive the process and (2) suffer few negative impacts to their health. We tested these assumptions during two separate events involving volunteer anglers in NSW. After being angled, all luderick and tailor were released and monitored in floating cages (measuring 2.3 x 2.5 m) over five and 10 days, respectively. These experiments are described separately below.

Tailor event

Tailor were examined during an event in May 2008 at Coffs Harbour involving 11 anglers fishing from beaches, rocks or boats. Most terminal rigs comprised either blue pilchards on ganged hooks or lures (plastic and metal) attached to single or treble hooks

ABOVE: Tailor that were captured on barbless single hooks sustained little or no damage during hook removal
ABOVE RIGHT and BELOW LEFT: Anglers targeting tailor from Boambee beach, Coffs Harbour during the research
BELOW RIGHT: Cages used to keep tailor after capture

(barbed and barbless). Angled fish were separately released into aerated 70-l live-wells and transported by boat or 4wd to one of six cages moored in the Coffs Harbour marina (within 20 minutes). Relevant data was recorded for each fish, including their total length (TL), anatomical hook location, handling methods and capture-related damage (including the amount of scale and fin loss). Sixty 'control' fish were also transferred from tanks at the National Marine Science Centre (NMSC) to the marina and similarly confined in cages. All fish were monitored for 10 days.

A total of 85 tailor (between 23 and 54 cm TL) was caught; of which seven died providing a survival rate of 92% (no controls died). Four of the angled tailor died immediately after capture; all of which were damaged and lost blood after being hooked in the gills. The remaining three fatalities were hooked in the eye, gills and lower jaw, respectively and died within 24 hours. None of the fish ingested hooks and only seven were hooked in the gills. More than 74% of fish lost at least some blood, which typically occurred during hook removal. In particular, barbed-treble hooks were the hardest to remove and caused the most damage and bleeding, whereas single, barbless hooks were less destructive. Although 75% of the angled tailor lost at least some scales during handling, this did not affect their mortality or cause visible skin infections over the monitoring period.

Luderick event

The second event was held in July 2008 on the Clarence River at Iluka. Eight anglers targeted luderick using conventional gear, comprising light lines with a float and a small hook baited with green or black weed. After capture, each fish was immediately measured.

All legal-size individuals (> 27 cm TL) were held in a netted catch bag (to a maximum of 20 fish per bag), while undersize fish were placed into individual 20-l cages. The cages and catch bags were placed in the water and secured to the sides of the boats while anglers recorded catch information for each fish (as above for the tailor event).

As soon as an undersize or 20 legal fish were caught and confined, they were collected by researchers in a boat, held in onboard live-wells and transported to the monitoring cages within five minutes. Ninety control fish were also transferred from tanks at the

NMSC and similarly confined in cages. All fish were monitored for their survival over five days.

All of the controls and all but one of the 111 angled-and-released luderick (23 - 38 cm TL) survived (i.e. 99%). The single fatality was still alive after spending 88 minutes in a catch bag, but died within two hours of being caged.

A post-mortem examination revealed that, although the hook had penetrated the upper jaw, bleeding and damage occurred around the gills. Very few of the 110 surviving fish were damaged (e.g. hook lesions, or scale and fin loss).

Overview

Although only preliminary, the results from these two events suggest a high post-release survival for both species. A key reason for the few fatalities is that no tailor and only two luderick ingested hooks. However, some tailor were hooked across other critical areas (gills), which caused extensive bleeding and a few deaths. Such hook-related impacts might be reduced by following the recommendation of choosing the correct rig; which in this case would be barbless-single or -treble hooks.

While the outcomes of these studies are positive, they are limited to the specific conditions examined. Further research is required at different locations and times using a variety of anglers, gears and techniques to fully investigate the range of factors affecting the post-release fate of each species.

Over the next three years, the NSW DPI will continue research of other species including yellowtail kingfish, blue groper, snapper, mud crabs, blue swimmer crabs and eastern rock lobster.

If you would like to be involved with this research, please send an email to paul.butcher@dpi.nsw.gov.au Like all of our previous work, the results from this proposed research will be available from www.dpi.nsw.gov.au/fisheries.