

Tough BREAM!

NSW Fisheries research shows that mouth-hooked yellowfin bream can survive significant air exposure and playing time. By DARREN REYNOLDS, PAUL BUTCHER and MATT BROADHURST.

YELLOWFIN bream (*Acanthopagrus australis*) inhabit eastern coastal and estuarine waters between Townsville and the Gippsland Lakes and are popular among recreational anglers, with more than 13 million fish caught each year. Owing to minimum legal sizes (23, 25 and 26-28 cm total length – in QLD, NSW and Vic, respectively) and daily bag limits (no limit, 20 and 10 fish, respectively) up to 63 per cent of all angler-caught bream are released. Until very recently, there was no information available on the fate of these fish.

As part of a two-year research project entitled, “Using recreational anglers to estimate and maximise the survival of released line-caught fish”, NSW Fisheries is quantifying the fate of key species released from capture by hook and line, and examining angling practices that improve survival. This work has already demonstrated that anatomical hooking location is one of the most important factors influencing the mortality of yellowfin bream, with typical survival rates greater than 96 per cent for mouth-hooked fish compared to between 53 and 80 per cent for hook-ingested fish. For the latter individuals, subtle differences in angling practices, such as cutting the line and immediately releasing the fish (with the hook) have significantly improved short-term survival. Also, different designs of hooks are being examined for their utility in minimising ingestion. It is hoped that by restricting hooking to the mouth or jaw whenever possible, released yellowfin bream will have a greater chance of survival.

While it's apparent that only a few released mouth-hooked yellowfin bream die, information is still required on the contributing factors, so that these can be mitigated via subtle changes to handling practices. Our aims were to address this issue by examining the influences of air exposure and extended playing time on the survival of mouth-hooked yellowfin bream.

This work was done during two



Removing a circle hook from a yellowfin bream after capture.

experiments at the Cronulla Fisheries Research Centre aquarium facility. In the first experiment, 205 yellowfin bream (between 18 and 28cm TL) were distributed among five 5000 litre fibreglass tanks positioned around a flow-through pool (30 x 14 x 2.5m) containing six cylindrical sea cages (2.3 x 2.5 m). Some 44 fish were hooked (using 1/0 Gamakatsu Nautilus circle hooks baited with prawns) and immediately removed from the holding tanks. Only mouth-hooked fish were used in the experiment. The hook was removed (see photo 1) and all fish were immediately placed into 100 litre plastic containers and exposed to air for either 2.5 or five minutes (22 fish for each exposure period) before being released into the appropriate sea cages (i.e. two cages for each exposure period) (see photo 2). Twenty-two control fish were removed from the 5000 litre holding tanks and placed into the remaining two sea cages. All fish were fed prawns and monitored twice daily for mortalities over 10 days.

In the second experiment, 31 fish were caught (using the same hooks as above) from about 400 individuals (between 17 and 32cm TL) distributed between two net pens (7 x 5 x 2.5m) located in the flow-through pool. All hooked fish were actively “played” for 30 seconds before being landed. The hooks were immediately removed and, like above, fish were exposed to air for either 2.5 (15 fish) or five (16 fish) minutes before being released into four of the sea cages. Sixteen control fish were transferred from the net pens to the remaining two sea cages. All

fish were monitored and fed for five days.

The majority of fish were hooked in either the right (40 per cent) or upper (30 per cent) parts of the mouth. All fish that were immediately landed and then exposed to air for 2.5 and five minutes in Experiment 1 survived. In contrast, two individuals that were played for 30 seconds and then exposed to air for 2.5 and five minutes respectively, died during experiment 2. This represents an overall survival rate of 97.3 per cent. Both fish that died did so within an hour of being released. During landing, these two individuals were observed to be bleeding from hook wounds in their mouth. The subsequent air exposure allowed the blood to clot around the gill filaments, and it is possible that this inhibited respiration after the fish were released.

The results support previous estimates of the survival of released mouth-hooked yellowfin bream and indicate that this species can withstand prolonged air exposure. While mortality rates were low, it may nevertheless be possible to maximise survival by minimising playing period and subsequent exposure to air, especially if fish are bleeding. Quick release might prevent any blood from clotting in the gills and suffocating the released fish.

Because all of the research done so far indicates that released mouth hooked yellowfin bream have a very high probability of survival, further work in this area will be restricted to (i) examining the influences of different hook designs on anatomical hook location (to identify those hook types less likely to be ingested) and (ii) the longer-term fate of yellowfin bream that do swallow hooks and the rate of hook decay. It is anticipated that this information will greatly contribute to the sustainability of recreational fishing for yellowfin bream throughout their distribution.



Editor's note: *Fisho* will publish the results of the gut-hooked fish experiment in the July issue.