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Port Denison Fishing Boat Harbour

Construction of a new fishing boat harbour at Port Denison commenced in September 1977. The initial stage requires the construction of two breakwaters (one 725 metres long and the other 485 metres long) and a harbour service area. They are being built from stone and natural materials obtained locally.

It is expected that the contractor will have completed construction by early 1979. The harbour will provide all-weather protection for up to 80 vessels at swing moorings. Vessels of up to 25 metres length and a loaded draft not exceeding 3.7 metres will be able to enter the harbour.

During 1976/77 other major works undertaken included additional pens at the Fremantle Fishing Boat Harbour, work on an additional land-backed berth at Geraldton and the completion of the Carnarvon boat harbour.

The work on pens at Fremantle and the berth at Geraldton will continue into this financial year. Completion of work at the Taylor Street Landing at Esperance and preliminary works for a new Emu Point Jetty will also be carried out.

Investigations and minor works to be undertaken in 1977/78 include—

1. Investigations into a fishing boat harbour at Esperance for local fishing vessels.
2. Investigations for Jetty, Navigation or Lead Lights and aids for Seabird, Ledge Point, Y Island, Hummock, Cervantes and Greenhead. (It should be noted that the location of navigation and lead lights is subject to investigations demonstrating suitable site locations.)
3. Investigation for facilities at Port Samson (John's Creek) and Port Gregory.

The Cobbler in South-Western Australia

Many Swan River fishermen will no doubt remember John Kowarsky, a scientist from the Zoology Department of the University of Western Australia. In the early 1970's John was undertaking a research programme on Swan River cobbler as part of his studies for his Doctor of Philosophy degree.

This thesis was completed in 1975 and Dr John Kowarsky is now a lecturer in the Department of Biology, Capricornia Institute of Advanced Education, Rockhampton, Queensland.

The following feature on cobbler was specially written by John for publication in F.I.N.S. and will most certainly be of interest to those fisherman who assisted him with much of the field work for his study.

The estuarine catfish *Cnidoglanis macrocephalus*, known as the cobbler in Western Australia, belongs to the family of "eel-tailed" catfish. Most members of this family are found only in Australian waters; the cobbler is such a species and has been reliably recorded no further north than the 28th parallel on the east and west coasts of Australia. It is found in shallow waters on the coast and in estuaries. Another species of eel-tailed catfish, *Tandanus bostocki*, is found in freshwater in south-western Australia and is sometimes called the freshwater cobbler. The estuarine species can be readily distinguished from the freshwater catfish by the presence of an external flowerlike appendage, the dendritic organ, situated underneath the fish just behind the anus, which is present on the estuarine catfish only.

The cobbler is probably known best for its "sting"—three extremely sharp spines which can lock at right-angles to the body and are located near the head. The respect with which prawners and fishermen treat cobbler when handling them is easily understood by people who have been stung by cobbler. Symptoms may include intense pain, sweating and swollen lymph glands; some people are, however, less sensitive to the poison than others. A wide variety of treatments for alleviating the pain have been suggested, for example, rubbing the wound with a cut onion, washing the wound with kerosene/urine, or keeping the wounded area immersed in

warm water. In my own experience the last suggestion has proved to be quite effective, but when the wounded part is removed from the warm water the pain immediately returns. The pain may persist for several hours.

Historically, cobbler were regarded as nuisance fish by amateur and professional fishermen. Perhaps because of their smooth (slimy) skin and the unusual (repulsive) appearance of the head with tentacular barbels surrounding the mouth, cobbler were not generally regarded as a table fish. Since the Depression, cobbler in Western Australia have become a popular fish sold in the



Swan Estuary cobbler showing location of tag.



Female cobbler from the Swan Estuary showing various stages of development of the ovaries

fish and chips shops and are now becoming increasingly accepted in restaurants as having fine eating qualities. In New South Wales they are still not widely eaten.

Apart from their commercial importance in Western Australia, cobbler are of biological interest as they appear to be able to tolerate the sudden and often drastic changes which occur in estuarines of south-western Australia in the winter months, following the onset of the rains. The following information is derived largely from a study of the biology of cobbler in estuarines and marine areas of south-western Australia between 1970 and 1973. During this period samples of fish from several localities were examined at intervals, studies of the growth and movement patterns of cobbler in the Swan Estuary were made, and laboratory investigations of the responses of cobbler to a range of different conditions were undertaken.

FISHING FOR COBBLER:

In areas other than the Swan Estuary professional fishermen generally use sunk gill nets set overnight to catch cobbler. In the Swan Estuary some professional fishermen use unbaited funnel traps. For maximum effectiveness these traps have to be placed skilfully alongside some sort of barrier, either natural (e.g. rock ledges) or manmade (e.g. jetty wall) which apparently acts as a guide directing fish to the funnel mouth. Some fishermen believe that traps are more effective if some shiny material or a piece of roof tile is placed inside the trap. Amateur fishermen catch cobbler with set nets, traps, hook and line (a good bait is river worms) or by wading in the shallows at night with a handspear and pressure lamp. Cobbler are active at night—during the day they are rarely seen but can be found under rock ledges and in weed masses.

DIET:

The main items found in cobbler guts fell into three broad categories; worms, molluscs and crustaceans. It appears that cobbler are opportunistic feeders taking whichever species within these groups are available. Cobbler are not, as described by some people "rubbish feeders". In aquarium studies cobbler would not eat red meat, fish flesh or grain products. If intensive aquaculture of this species were contemplated, the narrow food preferences of cobbler would have to be met. Cobbler were found to engage in feeding activity throughout the year.

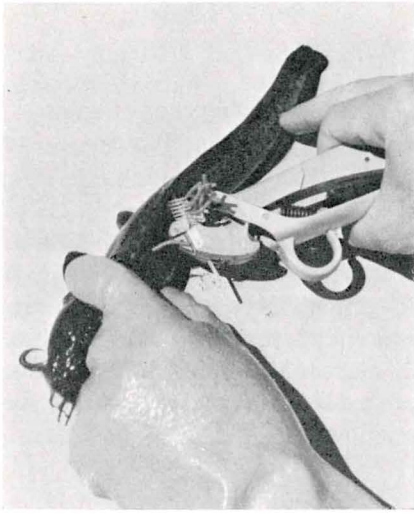
GROWTH:

Small cobbler, as small as 4 cm total length (from tip of snout to tip of tail), were found in the Swan Estuary at the beginning of the year. These "young-of-the-year", presumably the result of the immediately past spawning season, formed a distinct group. The growth of this group of fish could be followed by regular sampling and measurement. By April the young-of-the-year were between 10 and 15 cm total length. Over the winter months growth slowed down markedly; growth began to accelerate in November and December. At one year of age cobbler in the Swan Estuary were on average approximately 20 cm total length. There was evidence that at the end of two, three and four years cobbler in the Swan Estuary reached total lengths of 34, 45 and 52 cm respectively. The largest fish measured in the Swan Estuary was just over 59 cm total length; the largest fish from any locality measured was one of 69 cm total length from Wilson Inlet.

REPRODUCTIVE BIOLOGY:

There are two ways of determining the sex of cobbler externally. Firstly, in females there is separate opening for the reproductive products, eggs, situated behind the anus but in front of the urinary duct opening and the dendritic organ. In males no such opening is present, the reproductive products, sperm, being shed through the urinary duct opening. Secondly, the head of the mature female is pointed while that of the mature male is comparatively blunt with enlarged "cheeks".

Cobbler reach maturity at around 40 cm total length—in the Swan Estuary this is in their third year. In the final four months of the year mature females have bulging bodies due to the development of the



Applying a tag to cobbler by means of the tagging "gun".

ovaries. Although development of the ovaries takes place slightly earlier in cobbler from Albany than those from the Swan Estuary, it appears that spawning takes place at about the same time, that is December-January.

Details of the spawning behaviour of cobbler are hazy. The freshwater catfish *Tandanus* is known to construct saucer-like depressions or "nests" into which eggs are deposited; cobbler, being in the same family, may do likewise, but no firm reports of cobbler nests are available. Occasionally, a female "running-ripe" that is, with eggs streaming

out at the slightest pressure on the body, have been found in fishermen's catches. The eggs are sticky and would probably remain in a mass adhering to the bottom. Fertilisation of the eggs would be external. There is evidence that spawning of cobbler takes place in estuaries and the sea.

Compared to many species of fish, female cobbler produce relatively low numbers of relatively large eggs. In the Swan Estuary, for example, a female cobbler of 50 cm total length would produce about 1 500 eggs. Interestingly, it was found that cobbler from Albany of similar length produced about half as many eggs as their Swan Estuary counterparts, but that the Albany cobbler eggs were twice as heavy.

MOVEMENT PATTERNS:

The results of tagging of about 5 000 cobbler in the Swan Estuary plus evidence from other sources indicated that in the summer months cobbler spread over the Swan Estuary and were found even upstream of Guildford. However, during the winter cobbler moved downstream and were found only in the lower reaches of the Swan Estuary. Comparisons of cobbler from the Swan Estuary with cobbler from adjacent marine areas such as Cockburn Sound and North Beach revealed several differences, such as (a) cobbler from the estuary were heavier than cobbler of similar

length from the sea, (b) cobbler from the estuary produced more eggs than cobbler of similar length from the sea, and (c) cobbler from the estuary had different parasites to those from the sea. These differences indicated that interchange of individuals between the estuarine and marine populations of cobbler was minimal during the study, that is the estuarine cobbler population was a separate group from the marine cobbler population. The above and other evidence indicated that the cobbler life cycle could be wholly completed in either marine or estuarine areas.

SALINITY TOLERANCE:

It was found that cobbler could not survive in freshwater, but lived indefinitely in salinities as low as one tenth that of seawater. Experiments indicated that the dendritic organ, the flower-like shaped appendage situated behind the anus, was probably involved in maintaining the cobbler's internal salt balance.

ACKNOWLEDGEMENTS:

The co-operation, help and advice of professional and amateur fishermen, personnel from the Department of Fisheries and Wildlife, other Government Departments, CSIRO, the Western Australian Museum, University of Western Australia, and the public in general during the cobbler study were much appreciated.

ROCK LOBSTER SEASON SHORTENED

In the December issue of F.I.N.S. (Vol. 10, No. 2) the Minister for Fisheries and Wildlife, Mr. G. C. MacKinnon announced that the closure of the rock lobster season should be from July 1 to November 14, both dates inclusive.

The formal notice giving effect to this decision was published in the *Government Gazette* on March 19, 1978 and reads:

FISHERIES ACT, 1905-1975
Department of Fisheries
and Wildlife,
Perth, 10th March, 1978.
Notice

F & W 184/51.

THE Minister for Fisheries and Wildlife in pursuance of the powers conferred by Sections 9 and 11 of the Fisheries Act, 1905-1975, does hereby prohibit all persons from taking—

- (a) any species of fish known as or called "rock lobster" by any means of capture whatsoever in the waters specified in the First Schedule hereto during the period from and including July 1 to and including November 14 in every year;
- (b) any species of fish known as or called "rock lobster" by any means of capture whatsoever in the waters specified in the Second Schedule hereto during