

PRAWN TAGGING STUDIES IN THE GULF OF PAPUA

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INTRODUCTION

The prawn trawl fishery in the Gulf of Papua is the country's second largest fishery in terms both of quantity caught and of export value. Between 800 and 1000 tonnes of prawn tails are landed each year by the commercial trawlers operating there. The most common species is the Banana prawn *Penaeus merguensis* although other species are also caught commercially.

The life history of the Banana prawn is similar to that of other prawn species. Spawning (egg shedding) takes place in open waters and larvae (young) hatch from the eggs. During the following weeks, they metamorphose (change) through four distinct stages. These are called the nauplius, zoea, mysis and post-larva stages. At each stage the larvae become more like the adult. During this time they migrate (move) towards the river estuaries and mangrove areas where the young prawns settle and develop in a protected environment with a good food supply. Later, the prawns leave the river mouths and migrate into deeper water.

The trawlers get their best catches of Banana prawns in the fishing grounds off Freshwater Bay, Kerema Bay and Orokolo Bay. In these grounds, a three mile limit has been set up to protect local fishermen and small fishing vessels. Eleven of the thirteen big freezer trawlers which fish in the Gulf are kept out of this three mile zone.

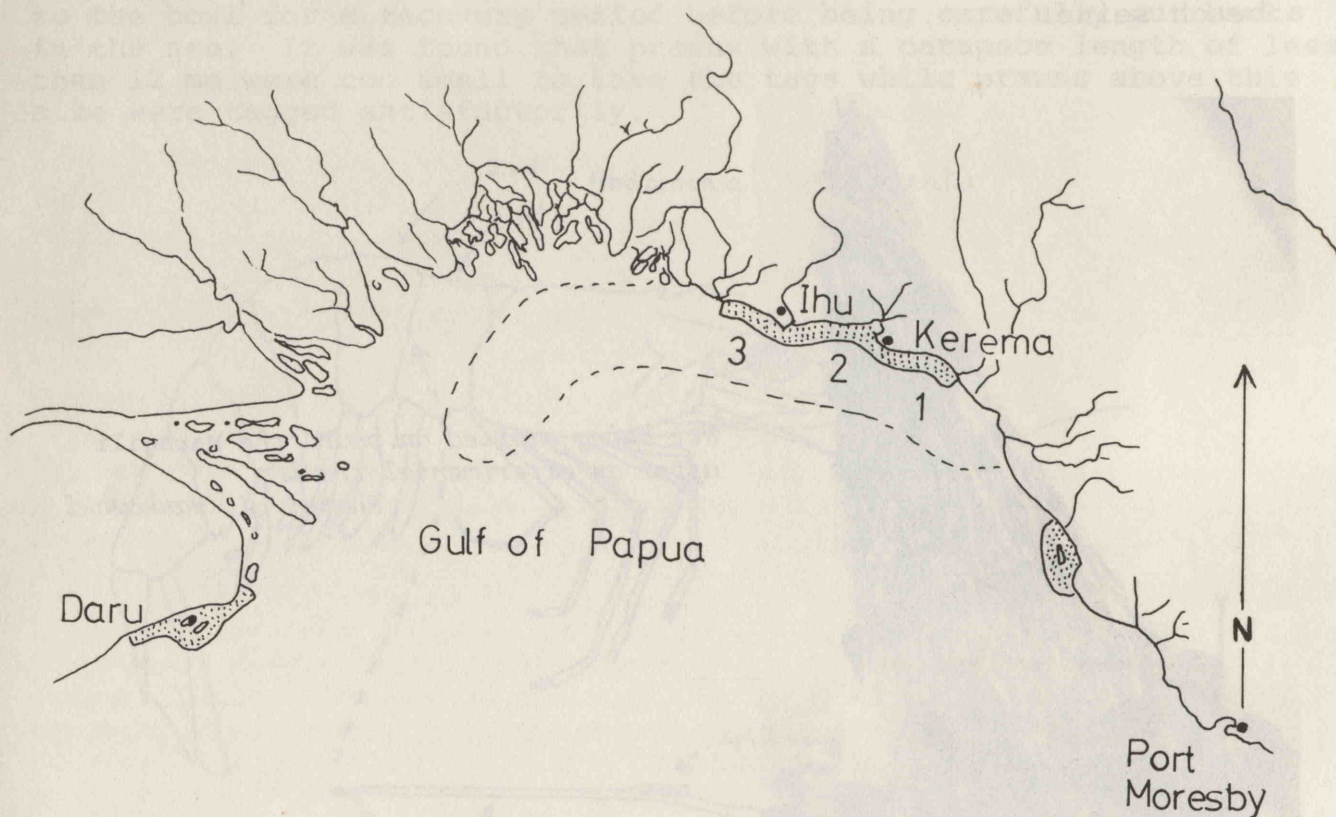
Because this fishery is so valuable to Papua New Guinea, it is important to find out how it works. One way of studying the fishery is by carrying out a tagging programme. This involves capturing live prawns, marking each one with a numbered tag, and letting them go again. Later some of them are recaptured by the fishing boats. The positions and dates of release and recapture are recorded so that the direction and speed of movement of each prawn can be found. The size of the prawns is also measured at release and recapture, allowing rate of growth to be found as well.

From these studies it should be possible to find out the pattern of the prawns' migration from the nursery and inshore areas into the offshore fishery and some background information on the relationship between the stocks in the protected three mile limit and those in the offshore fishery.

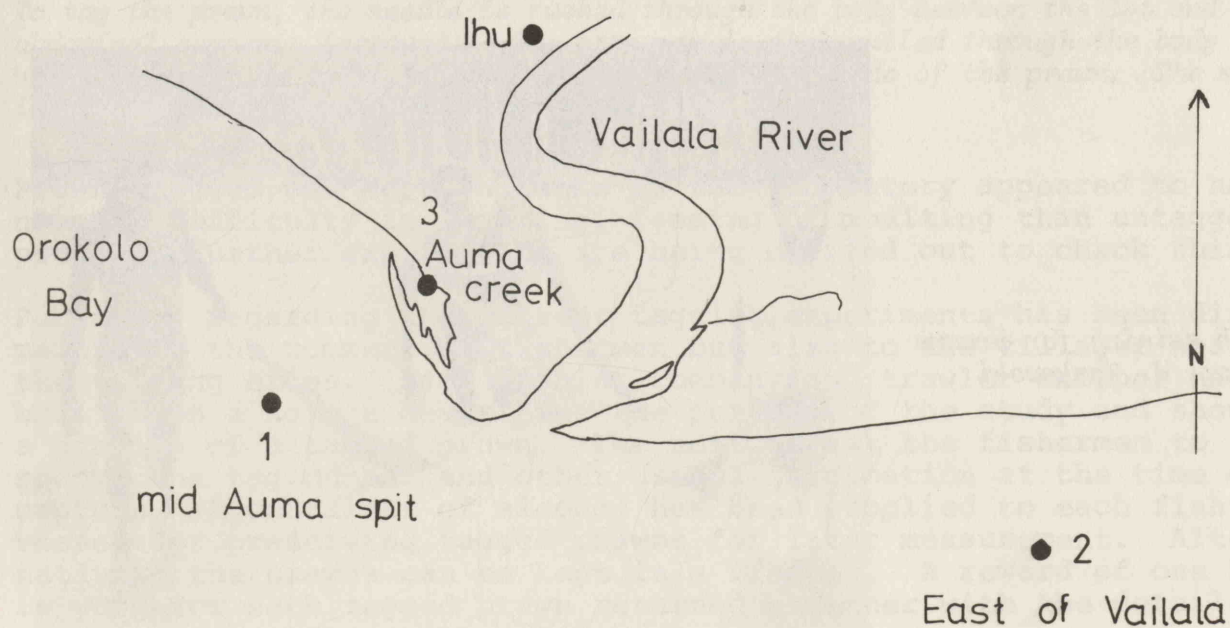
The timing and site of future tagging experiments will depend on the results of these first studies.

1 Freshwater Bay. 2 Kerema Bay

3 Orokolo Bay  3 mile restricted area



Trawl grounds in the Gulf of Papua



Tagging areas

TAGGING SITES AND TAGGING PROCEDURE

Three tagging sites were chosen close to the Fisheries Research Station at Ihu in the Gulf Province. They are shown in the map on the previous page. In areas 1 and 2, prawns were collected on board the Fisheries Research Vessel *Maragili* by means of trawling. Trawls lasted only a short time (5 minutes each) in order to minimise damage to the live prawns. In area 3, prawns were collected by means of a beach seine.



Net being emptied on board the Maragili after an experimental trawl

Photo: J. Wankowski

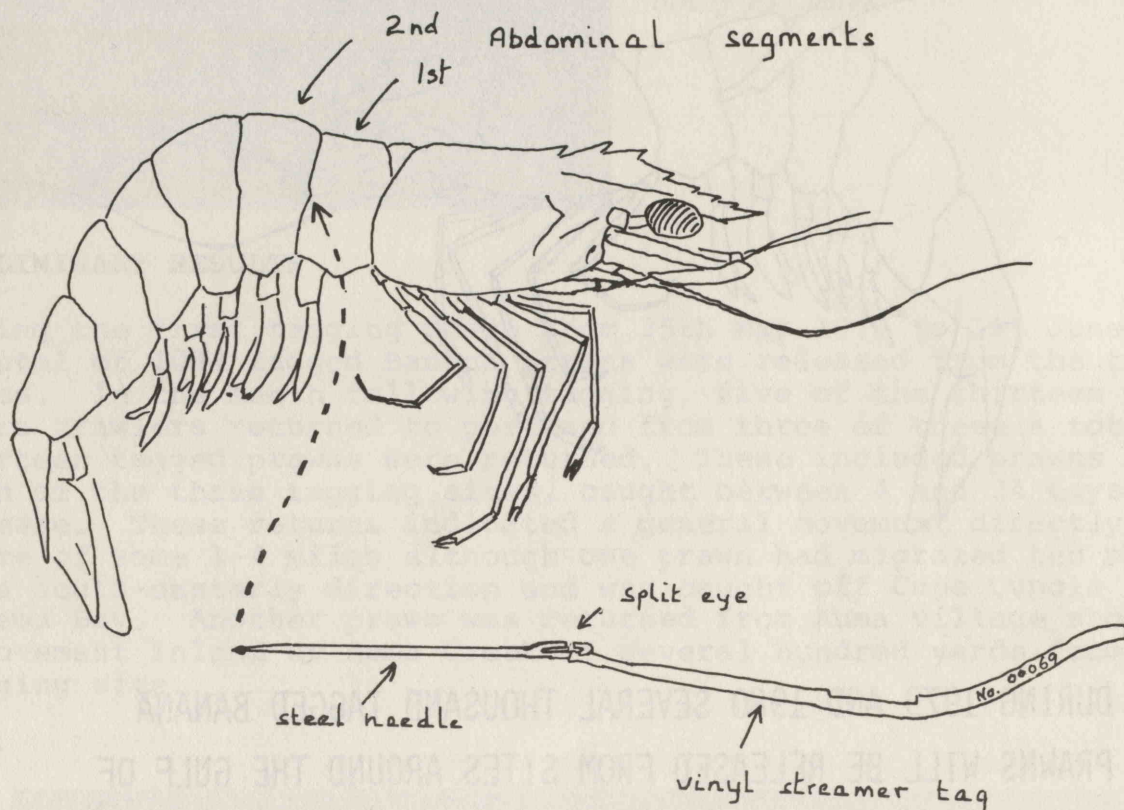


Beach seining for prawns

Photo: J. Wankowski

Live prawns were put into plastic bowls containing fresh sea-water immediately after capture. Details of carapace (head) length (measured by dial calipers), sex and ripeness of any eggs carried were recorded for each prawn before the tag was attached.

Numbered, Floy FTSL-73 vinyl streamer tags were inserted between the first and second abdominal segments using a disposable steel needle as shown in the diagram. Tagged prawns were then returned to the bowl for a recovery period before being carefully put back in the sea. It was found that prawns with a carapace length of less than 12 mm were too small to take the tags while prawns above this size were tagged satisfactorily.



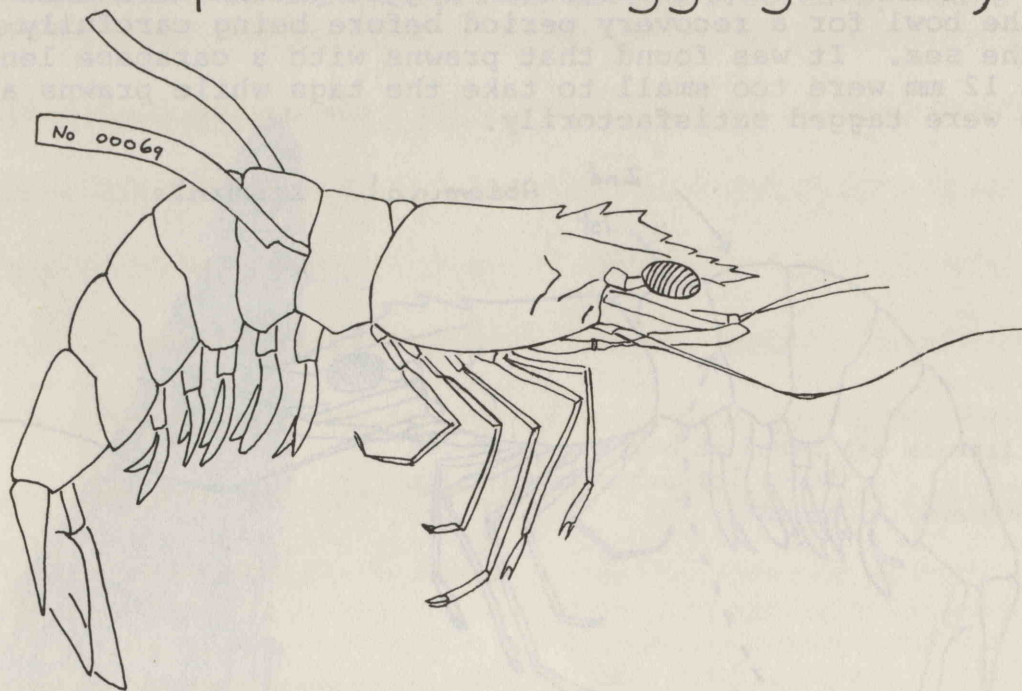
To tag the prawn, the needle is pushed through the body between the 1st and 2nd abdominal segments (arrowed). The streamer is then pulled through the body until there is an equal length of streamer on each side of the prawn. The needle is then taken off and thrown away

Prawns tagged and kept in tanks in the laboratory appeared to have no more difficulty in swimming, feeding or moulting than untagged prawns. Further experiments are being carried out to check this.

Publicity regarding the present tagging experiments has been directed mainly to the commercial fishermen but also to the villages near to the tagging sites. Each fishing company and trawler skipper has been given a notice describing the purpose of the study and showing a drawing of a tagged prawn. The notices ask the fishermen to record the tag number and other useful information at the time of capture. A container of alcohol has been supplied to each fishing vessel for preserving tagged prawns for later measurement. Alternatively the prawns can be kept in a freezer. A reward of one kina is paid for each tagged prawn returned together with the details

PAPUA NEW GUINEA

Gulf of Papua Prawn Tagging Study



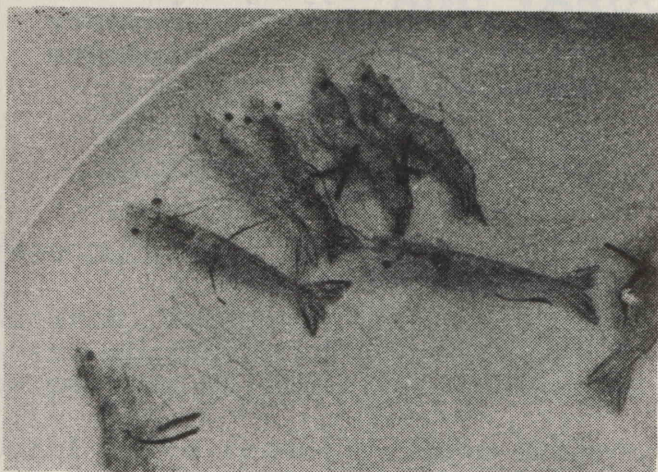
DURING 1979 AND 1980 SEVERAL THOUSAND TAGGED BANANA PRAWNS WILL BE RELEASED FROM SITES AROUND THE GULF OF PAPUA TO STUDY THEIR MIGRATION INTO THE FISHING GROUND.

IF YOU CATCH ONE, PLEASE KEEP WHOLE PRAWN IN ALCOHOL OR FREEZER AND RECORD THE DATE OF CAPTURE AND TRAWL NUMBER. A REWARD OF 1 KINA IS PAYABLE ON RETURN OF EACH PRAWN AND INFORMATION TO -

CHIEF BIOLOGIST, DPI, KANUDI RESEARCH STATION
BOX 2417, KONEDOBU, PAPUA NEW GUINEA.

Notice of tagging study given to all fishing vessels

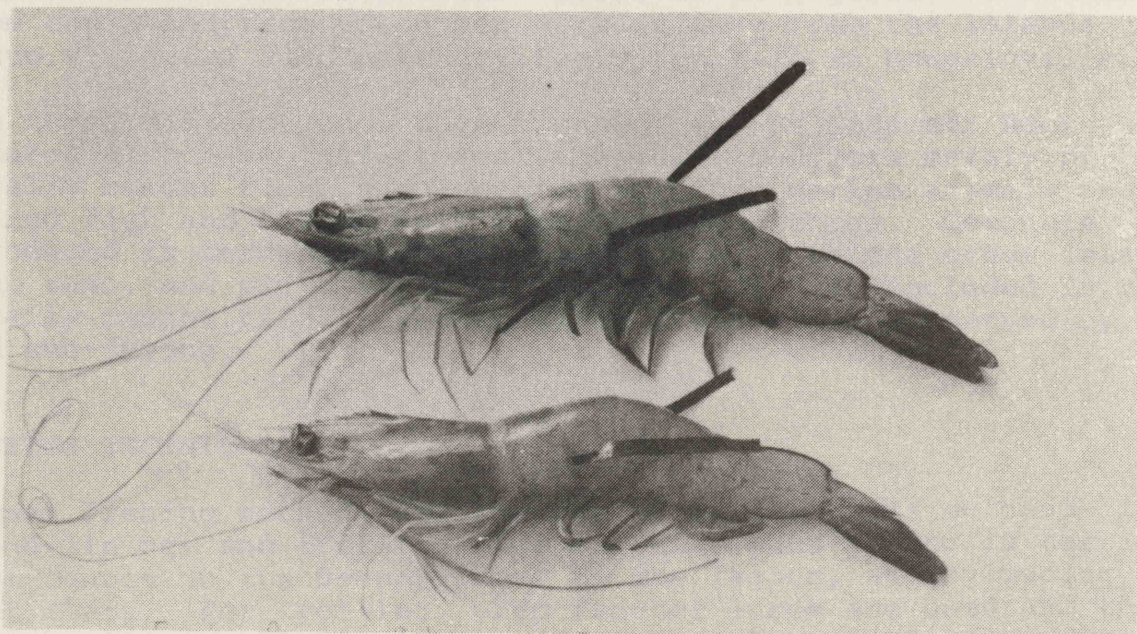
of catch date and position. Good co-operation and understanding with village people and fishermen is essential for the success of this study.



Tagged prawns in bowl before being released

PRELIMINARY RESULTS

During the first tagging phase from 25th May 1979 to 1st June 1979, a total of 1034 tagged Banana prawns were released from the three sites. In the month following tagging, five of the thirteen off-shore trawlers returned to port and from three of these a total of thirteen tagged prawns were returned. These included prawns from each of the three tagging sites, caught between 4 and 24 days after release. These returns indicated a general movement directly off-shore of some 1-4 miles although one prawn had migrated ten miles in a south-easterly direction and was caught off Cape Cupola in Kerema Bay. Another prawn was returned from Auma village showing a movement inland up Auma Creek of several hundred yards from the tagging site.



Recaptured tagged prawns

