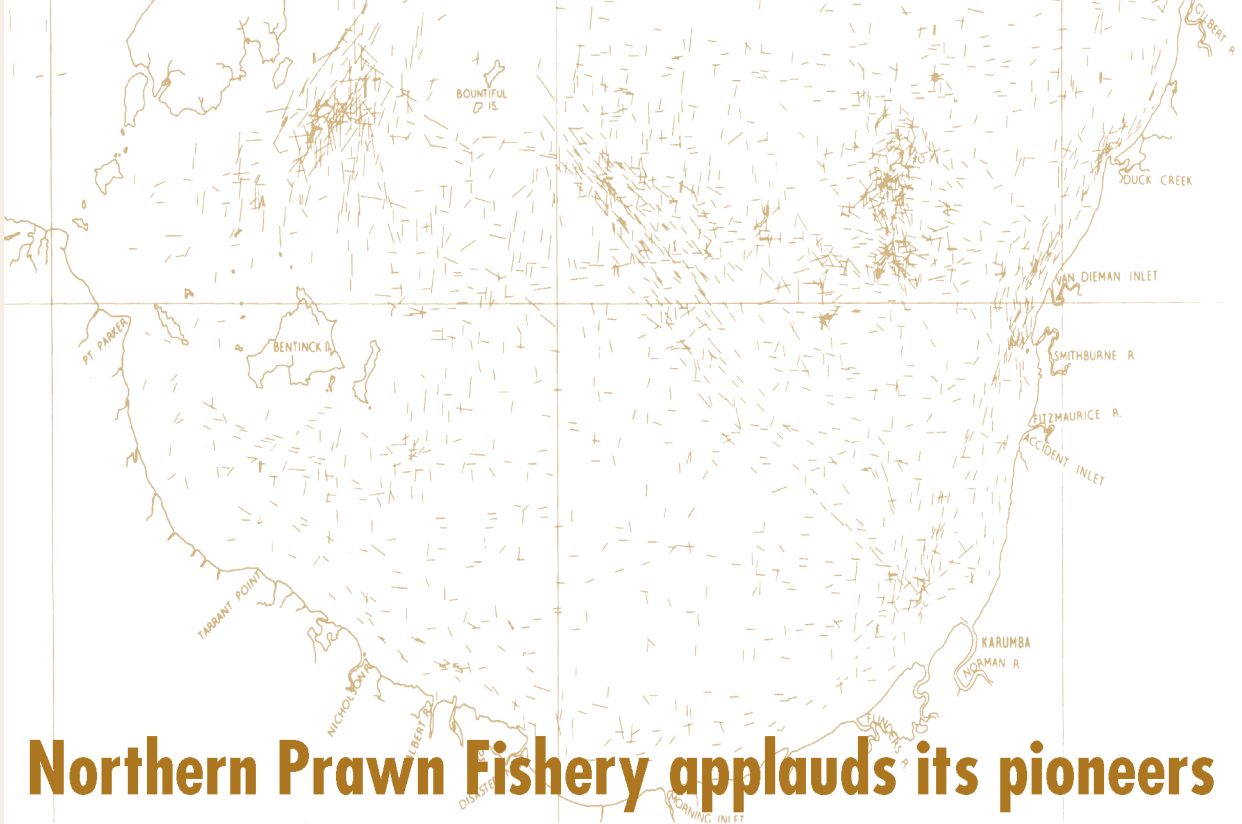




Gulf of Carpentaria Prawn Survey 1963-1965, a collaboration that spawned the Northern Prawn Fishery

The tracks of two years. Rama and her team made 122 voyages and 2324 experimental trawls from 1963–65, updating navigational charts and collecting information on tides, currents, sediments and depth contours, and the behaviour, biology and distribution of prawns and other marine species.



Northern Prawn Fishery applauds its pioneers

A 40-YEAR research partnership that spawned and sustains the northern prawn fishery (NPF) was celebrated in June 2005 at the CSIRO Marine Laboratories south-east of Brisbane.

The fishery was declared a commercial prospect in 1965 after an extensive survey of prawn stocks in the south-eastern Gulf of Carpentaria backed by government and industry.

It is now one of Australia's largest and most valuable fisheries, averaging more than \$100 million a year from the export of high-quality tiger and banana prawns to Asia.

Scientific foundation

"The NPF is one of the few commercial fisheries to begin with a scientific investigation," CSIRO Marine Research chief, Dr Haymet says.

"It remains one of our most intensively studied fisheries, with a strong scientific basis to its management, thanks to the continued collaboration of science, government and industry."

Northern waters beckon

The two-year Gulf of Carpentaria Prawn Survey began in 1963 and involved CSIRO, the Queensland Department of Primary Industry and the Queensland Department of Harbours and Marine. Fishing and export company

Craig Mostyn and Co provided processing and additional fishing facilities.

"East coast prawn fisheries were reaching their limits and the Commonwealth and Queensland governments were keen to develop the unexploited north," Dr Haymet says.

"Conditions in the gulf looked similar to rich prawn fishing grounds in the Gulf of Mexico so a team of scientists was sent to investigate."

Humble beginnings

The scientists set up a field station in the remote, one-pub town of Karumba and chartered the 14.6-metre wooden trawler Rama.

Their equipment was rudimentary and the prawns frustratingly elusive. Their sea charts were based on ones drawn by Matthew Flinders in the early 1800s. Initially they encountered more cyclones, crocodile hunters and pirates than prawns.

Nearly a year into the survey, the team's persistence was rewarded with the first major haul of banana prawns. From then on the catches became more frequent.

Commercial fishing operations based on the Port of Karumba began in 1966 and spread to other parts of the gulf in 1967. The fleet numbered 200 boats by 1970.

As well as injecting new life into prawning industry, the survey collected a unique set of biological and environmental data in an area virtually untouched by human activities, providing a baseline for later research.

Seeking sustainability

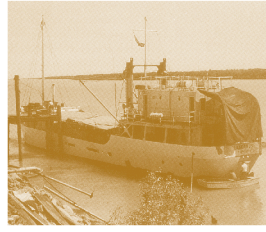
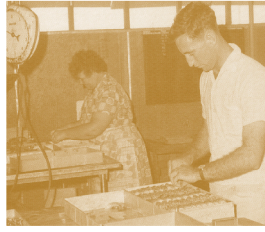
Dr Haymet says the research partnership has since progressed from a focus on the biology and assessment of prawns to understanding and managing the effects of fishing on other species and the environment.

"The fishery is managed for environmental and economic sustainability in every sense," he says.





Gulf of Carpentaria Prawn Survey 1963-1965, a collaboration that spawned the Northern Prawn Fishery



LEFT to RIGHT: The Governor-general Lord Casey (left), with Bob Mostyn (snr) and Karumba manager Jim Farrell at Karumba in the late 1960s with imported prawn unloading equipment. (Pownall 1994, from Australian Fisheries, Canberra)

Craig Mostyn and Co production manager Roger Clapin processes prawns with Mrs 'Dotty' Barnett. (Meredith 1998)

The *Laakanuki* berthed at Karumba. (Haysom 1988, courtesy Mac Storey)

Faith and dollars bear fruit for founding father

BOB Mostyn (snr), chairman of fishing and export company Craig Mostyn and Co, was convinced the Gulf of Carpentaria held promise as a trawling ground.

He discussed the region's prospects in 1962 with CSIRO Fisheries and Oceanography assistant chief, Geoff Kesteven.

When the survey began the following year, the company opened a small trawler base at Karumba

comprising jetty, fuelling facilities, generating plant, refrigeration and the mother ship *Laakanuki*.

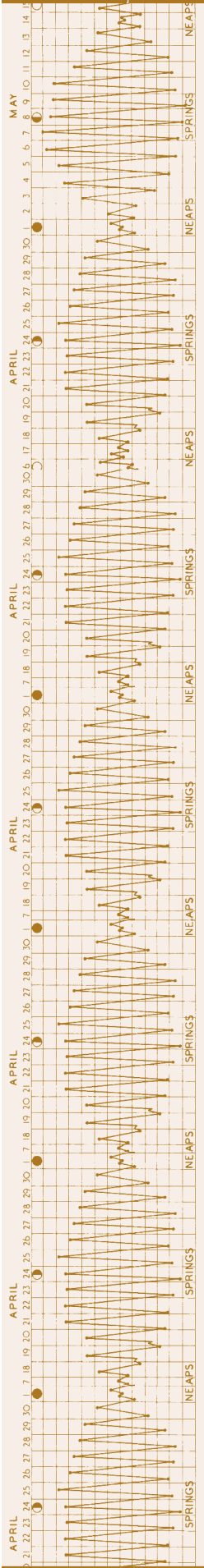
When *Rama* brought in her first major catch of prawns, a team of locals was recruited by the company to help with the processing. The prawns were exported via Townsville.

Craig Mostyn and Co brought in another trawler, *Toowoona Bay*, in an attempt to double the chances of finding commercial concentrations of prawns,

and encouraged other skippers to try their luck in the region.

Later the company built a processing factory, and took over or created much of the infrastructure at Karumba.

An aerial spotting service was added to their services in 1967, greatly improving the success of the trawling. From that point on the factory had more prawns that it could handle.



One of the first big landings of banana prawns in the gulf. (Pownall 1994, from Graham White, NT Fisheries, Darwin)

Skippers seek champagne catch

IAN Munro promised the magnum of champagne from behind the bar at the Karumba Lodge to the first skipper to land a substantial quantity of prawns.

At 11.33 pm on 25 May 1964, Peter Lorimer of the Department of Primary Industry spotted a big shadow on the echo-sounder paper, so the skipper of *Rama*, Noel Sykes, shot away for the 981st time and came up with a net full of banana prawns.

The champagne was never consumed, but the prospect continues to inspire reunions among the survey team.

Pioneering prawner

NANANGO, a trawler from New South Wales, was probably the first to fish specifically for prawns in the Gulf of Carpentaria. That was in 1954.

Noel Haysom, Ian Munro's deputy during the gulf survey, is pictured below on *Nanango* on the far left.

He is collecting specimens as part of a research program in Queensland's Moreton Bay fishery, which developed in the 1950s.



Research aboard *Nanango*. (Haysom 1988 from DPI collection, from Courier Mail)

Surveyors caught out with their nets down

THE initial survey team on the *Rama* had an encounter with a pirate lugger.

Communications were poor in the gulf area in the early 60s, but word had spread that an old pearling lugger and a crew of small-time pirates were on the loose in northern waters.

While virtually immobilised by the trawling equipment and

with no radio contact, *Rama* was approached by an old pearling lugger crewed by about six people under the shade of a tattered canvas awning.

In order to gain speed and maneuverability, the skipper of the *Rama* worked furiously at getting the trawl up.

The other two onboard *Rama* brought an old revolver and a rifle on deck for 'show', and prepared to sever the trawl wires should the lugger come too close.

The lugger came within 100 yards then turned towards the southern coast. There was no more trawling until the lugger was over the horizon.

No truck with this transport

THE survey team had to make do with some primitive equipment.

The opportunity to share a utility truck operated by the Queensland Department of Harbours and Marine boatman at Karumba seemed a good money-saving opportunity.

But the truck turned out to be a mass of rust held together by a few strips of metal, with no lights and a dodgy gear lever. It had been used for trips across the salt plains near the mouth of the Norman River.

A wheelbarrow was commandeered as backup and another vehicle acquired some months later.

A problem shared. (Haysom 1988)



Karumba awakens

IN July 1963 the fishing and hunting resort of Karumba consisted of about 20 people, two private homes, some sheds and a hotel.

Four years later it had become a busy commercial fishing port.



Karumba in the early 1970s. (Pownall 1994, from Australian Fisheries, Canberra)





Gulf of Carpentaria Prawn Survey 1963-1965, a collaboration that spawned the Northern Prawn Fishery

In the past four decades, the focus of NPF research has progressed from the biology and assessment of prawns to understanding the effects of fishing on other species and the environment. The next challenge is to provide the fishery with the knowledge and tools it needs to weigh the ecological consequences of management actions.



Collecting prawn samples from a float-plane in a remote gulf river.

Fishery gets first buoyancy test

IN 1969, banana prawn catches dropped to half that of the previous year, raising concerns the fishery had grown too fast.

A CSIRO project was begun to establish what quantities of prawns could be caught without overfishing, and predict catches by assessing juvenile in nursery areas.

Small boats were used to sample estuaries in Western Australia. In the Gulf of Carpentaria, float-planes were used to overcome problems of inaccessibility.

The planes flew from estuary to estuary, landing on the water and then towing a beam trawl to catch small prawns.



Technique or technology?

DESPITE advances in technology since the 60s, scientists engaged in NPF research still face the odd hazard.

In the picture above, John Salini demonstrates the use of prawn lug baskets as shoes during prawn predation research. The technique came in handy while retrieving a gillnet rope from a mangrove trunk in the soft mud of the Norman River.

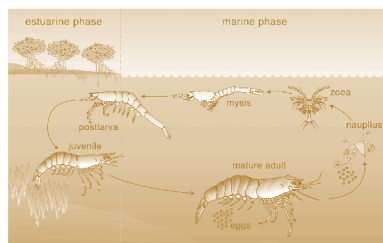
Ecological studies hint at sustainable yields

A FIVE-YEAR study in the late 1970s described the life cycle of banana prawns and the larval stages of most prawn species in the gulf, and produced models of egg production and larval dispersal.

The study found a relationship between rainfall and offshore recruitment of banana prawns that became the basis for subsequent CSIRO catch predictions.

A decade later it was discovered that banana and grooved tiger prawns produce two main sets of recruitment each year, although in the case of banana prawns, only one contributes significantly to the commercial fishery.

For the first time, estimates were made of the average long-term sustainable yields, contributing to a fleet rationalisation process in the NPF.



Life-cycle studies have offered clues to the sustainability of prawn stocks.

Try tagging 20 000 tigers

A LARGE-SCALE project at Groote Eylandt in the early 1980s tagged more than 20 000 prawns with plastic streamer tags.

Recapture information was used to calculate growth rates of brown and grooved tiger prawns and shed light on their different migration patterns and habitat preferences.



Seagrass beds are critical nursery areas.

Safety nets in place for bycatch

SINCE 1990, CSIRO has worked with research partners, management and industry to mitigate bycatch in the NPF.

The research has involved observer programs, industry-based data collection, risk assessment, and gear development and trials.

Mandatory use of turtle excluder devices and bycatch reduction

devices has since been successful in reducing catches of turtle, large sharks and rays, sawfish and large sponges.

The research has helped the industry formulate the first bycatch action plan for a Commonwealth fishery and encouraged its commitment to the long-term monitoring of bycatch and prawns.



Bycatch reduction devices and turtle excluder devices enable larger species to swim out of trawl nets.



Grounds for protection

A STUDY from 1992-96 investigated the carrying capacity of nursery habitats for juvenile prawns, and the environmental factors important to seagrass and nursery areas.

Mangroves and seagrasses were found to be critical juvenile habitats, and scientists, industry and managers subsequently agreed on a system of spatial and temporal closures designed to maximise the value of the catch and protect spawning grounds.

Stock assessments prompt industry-backed monitoring

CSIRO assessments of tiger prawn stocks showed the resource to be overexploited in the mid 1990s.

The assessments led to a 40% reduction in effort from the tiger prawn fishery after negotiation between industry and managers, and prompted industry support for the long-term, independent monitoring of prawn stocks.

Twice a year, a team of CSIRO scientists now boards commercial

prawn trawlers to survey the size and distribution of prawn stocks in the gulf before the start of the fishing season.

The surveys are largely industry funded, with additional support from CSIRO and the Fisheries Research and Development Corporation.

The results are made available to industry and the Australian Fisheries Management Authority to assist in the fishery's management.



An industry-funded survey assesses prawn sizes and distribution before each season.



The Southern Surveyor.

The modern quest for ecosystem understanding

IN February 2005, CSIRO, the National Oceans Office and Geoscience Australia joined forces to trace the physical and biological processes that sustain 'soft' seabed communities in the Gulf of Carpentaria.

One of the goals of the Southern Surveyor voyage was to quantify the effects of prawn trawling on seabed habitats, underpinning the development of modelling and predictive tools to support the fishery's environmental management.

