

Case Study: 4. The Lower Clarence Catchment River Fishing Industry

Why is the Clarence River Fishing Industry Important?

The Clarence River supports the largest concentration of commercial fishers in New South Wales, producing quality seafood for domestic and export markets. The seafood industry makes a large contribution to the local economy directly through the sale of product and indirectly through employment and benefits to seafood retailers, seafood restaurants etc. The estimated value of the seafood industry in the Clarence region is between \$40-60 million annually.



The Clarence River Fishermen's Co-operative, Yamba, source: OceanWatch Australia



Quality local seafood, source: OceanWatch Australia

The broader socio-economic benefits provided by the seafood industry to the community cannot be understated, with fishers spending an estimated 90% of their income in the area, allowing flow on effects to disperse to many local businesses. Furthermore, consumption of seafood has been shown to have many health benefits such as a reduction in heart disease and mental illness.



Ocean Trawl boats docked at Yamba (near the mouth of the estuary), source: OceanWatch Australia

Why is a Healthy, Sustainably Used Clarence Catchment Important to the Local Fishing Industry?

As with all river systems, the productivity of the Clarence River is very closely linked to the health of the estuary and the state of the surrounding catchment and the habitat contained within it, both terrestrial and aquatic.

Commercial fishers spend extended periods on the water and have an intimate understanding of the environment in which they work, and in many cases, knowledge that has been passed down through generations of fishing families.

Since fishermen are dependent on the health of the river system for a viable and sustainable livelihood, no other individuals have as great a vested interest in the health of these systems and are often the driving force behind advising government authorities about questionable development or habitat destruction.

What are the Main Fishing Methods Used by Commercial Fishers in The Clarence?

Fishers in the Clarence use a wide range of fishing methods to suit seasonal fluctuations, locations fished and the species targeted. Each commercial fishing license carries special approvals/endorsements, which dictate the methods and gear fishers are allowed to use. Fishers pay a large annual fee to the Department of Primary Industries for their licenses which entitle them to target species for commercial sale.

The Fisheries of the Clarence Northern Rivers Region include:

- **Ocean Trawl** – the ocean trawl fishery is divided into two sectors: prawn and fish. It is further divided into northern and southern areas of the State. The Ocean Trawl Fish is a sector that operates to the south of the Clarence but the Ocean Trawl Prawn sector (inshore) operates from the Queensland border south and takes in the Clarence/northern rivers region.
<http://www.fisheries.nsw.gov.au/commercial/commercial2/ocean-fish-trawl-fishery#fish>
- **Ocean Haul** – this is a type of fishing where fishers target specific coastal species that congregate in coastal ‘gutters’ or migrate at certain times of the year in nearshore locations. The species commonly harvested by this method in the Clarence are sea mullet and sand whiting. The mullet are harvested for their flesh and also the roe (fish eggs) which is exported to many Asian countries including Japan.
http://www.fisheries.nsw.gov.au/commercial/commercial2/ocean_hauling_fishery
- **Estuary Prawn Trawl** – this fishery operates within an estuary and uses specific fishing methods with approved nets that are pulled through the water by trawl boats. The main species harvested by this method are school prawns.
- **Estuary General** – this is a fishery that operates within an estuary using a number of approved methods including gill nets and traps for a variety of species including bream, luderick, flathead and crabs.
- **Ocean Trap and Line** – includes two fishing methods:
 1. line fishing using multiple hook rigs for both demersal (bottom dwelling) and pelagic (found in the ocean water column) species e.g. tuna; and
 2. using traps to harvest species such as snapper and spanner crabs.
http://www.fisheries.nsw.gov.au/commercial/commercial2/ocean_trap_and_line_fishery

Some of the fishers, who are licensed to operate in the above fisheries, may also have approvals or endorsements for Lobster trapping (however Lobster harvesting is not as common in Clarence/northern rivers region compared to the south). Furthermore, The Clarence River does not have an abalone fishery and the oyster industry is also quite small in the Clarence. This may be in part due to the incidence of Qx disease which affected many oyster growing areas in the Clarence.

Investigate Qx disease and its impact on the oyster industry.

Investigate aquaculture research on the north coast near Grafton by NSW DPI (Fishing and Aquaculture)

<http://www.dpi.nsw.gov.au/fisheries/aquaculture/publications/species-freshwater/silver-perch---aquaculture-prospects>



Estuary Prawn Trawling, source: Koen Dijkstra



An Estuary Prawn Trawler working on the Clarence River, source: Debra Novak

How are These Fisheries in the Clarence Regulated?

Each of the Clarence River Fisheries is regulated by the NSW Department of Primary Industries (DPI) Fishing and Aquaculture division. Each fishery has a number of complicated conditions that restrict the areas that can be fished, the equipment that can be used, the size of the boat, the timing or season during which the fishing can occur and quotas on catch (number of or weight of fish that can be caught).

Each fisher is required to fill in log books to record where they fished, the species and the quantity caught. This information provides vital data to researchers and managers about stock levels, and provides a good indication about the health of the waterway.

Many commercial fishers on the Clarence River go above and beyond their regulatory requirements and continue to design, experiment and adopt advances in environmental best practice fishing gear. For example the Clarence River commercial fishermen use of a range of bycatch reduction devices (BRDs) in various fishing gears to exclude unwanted catch or juvenile target species whilst fishing (see pages 4-5 for further details). They also have self imposed bans on fishing in known nursery grounds and seagrass areas. The fishermen of the region are also one of the only fishing industry groups in Australia that employ a full time industry representative. The representative voices industry's concern on various issues and decisions concerning the health and management of the Clarence River and its catchment, and the impacts of such decisions and activities on fish habitat, water quality and ultimately fish stocks.

What are Some of the Internal Issues of the Fishing Industry?

These include:

- the need to re-organise the way fishing operates and how it is regulated;
- the need to reduce the total numbers of fishers within each fishery;
- an aging industry (mainly older fishers, with few younger fishers taking their place);
- lack of encouragement for younger people to come into commercial fishing (costs and uncertainty); and
- removal of latent capacity/effort i.e. to remove licences which exist, but are not being used.

All these areas have been addressed in proposed changes and submissions to the regulatory authority (NSW DPI Fishing and Aquaculture) but as yet have not been addressed by government.

What are the External Factors Affecting the Fishing Industry in the Clarence?

The major factors external to the industry itself that affect the fishing/seafood industry in the Clarence relate to water quality issues that are generally the result of inappropriate or unsustainable landuse practices on industrial, agricultural and urban lands of the Clarence River catchment. Moreover, the loss or degradation of fishery nursery habitats including wetlands such as mangrove and saltmarsh areas as well as seagrass beds affects the productivity of the Clarence River fisheries.

Investigate where most of the mangroves, wetlands and seagrass habitats are located in the Clarence estuary.



Mangroves cleared from river banks along the Clarence River, source: Clarence Valley Council



Healthy mangroves on the banks of Clarence River, source: Clarence Valley Council

What are Some of the Initiatives Practiced and/or Promoted by the Fishing Industry in the Clarence?

The Clarence River region has established partnerships between the fishing industry, sugar growing industry, Clarence Council and other local sectors to undertake projects that aim to reverse the many years of altered estuary management and poor landuse practices which have resulted in degraded estuarine and marine ecosystems.

Programmes and other initiatives that are ongoing in the Clarence include:

Cooperative endeavours

This includes initiatives/partnerships between the fishing industry, agricultural landowners (cropping and grazing) and the Clarence Valley Council to return marginal lands back to being naturally wetted/inundated by tidal flows coming in and out of the estuary and river. Tidal floodgates and other structures have for many years prevented the saltier tidal water from coming up onto the land with the rising of the tide to protect agricultural land. However, recent initiatives have meant that both cane growers and cattle farmers have been managing these structures on their land to ensure that there is regular tidal exchange of water in the lower estuary and creeks. This not only returns areas to more productive wetland condition but also prevent the build up of deoxygenated and noxious 'blackwater' and associated diseases that become more prevalent in water that becomes stagnant behind closed floodgates. In the past when these situations have been allowed to persist, regular fish kills in the estuary were a more common occurrence and the Clarence estuary was much less healthy. See fact sheet Case Study: 2. Land and Water Management Issues in the Lower Clarence River – Clarence Floodplain Project).



An area of former broadwater wetland showing salt and acid sulfate scalding



The same area after changes that allowed normal tidal flushing and the removal of cattle. Much of the wetland vegetation is now returning, source: Clarence Valley Council

<http://www.clarence.nsw.gov.au/cmst/cvc009/lp.asp?cat=211>

Investigate red spot and causes of fish kills; types of floodgate structures in the Clarence

Use of Bycatch Reduction Devices (BRD)

Estuary Prawn Trawlers in the Clarence use a type of bycatch reduction device called a square mesh codend. This has special gates or mesh panels which are woven into the top of the net. This BRD allows fish and small prawns (bycatch), to escape out of the top of the net whilst still harvesting the targeted larger prawns (as prawns tend to collect at the bottom of the net, whereas fish tend to swim near the top). Reducing bycatch reduces the impact of the fishery on the environment, while also reducing the time the fishers have to spend sorting through their catch.



One type of BRD which is used by many prawn trawl fishing boats is the square mesh codend (part of the net where the catch collects). The square shape of the mesh means it remains open when it is full, allowing juvenile prawns and fish to escape, source: OceanWatch Australia

Turtle exclusion devices (TEDs) are a special type of bycatch reduction device which are used wherever marine turtles are found (Northern NSW and Queensland). TEDs allow larger animals like turtles to escape after entering the net. They are fitted into a trawl net in such a way that the TED separates target species such as prawns and scallops from non-target animals like sea turtles. Sea turtles and other large animals and debris slide along the TED to an exit hole cut in the top or bottom of the TED.

Note: marine turtles are also vulnerable to human disturbance at beach nesting sites, due to the activities of introduced animals like foxes that raid their land based nests and occasional losses from drownings in fishing nets. All marine turtles in Australia are protected.

<http://www.csiro.au/science/ps11j.html>

http://www.sea-ex.com/ted/html/about_us.html

Investigate which species of marine turtle regularly nest on the north coast of NSW

Fishing for Waste

Local fishers and the Clarence River Fishermen's Cooperative have been a pioneer in the Fishing for Waste project (run by OceanWatch Australia), which collects and recycles the commercial fishing industry's old nets and fishing line for recycling. In the past, the majority of disused gear would end up in land fill, however this program allows the old gear to be turned into useful plastic products such as fence posts used for farming and infrastructure used in oyster cultivation.

<http://www2.dpi.qld.gov.au/fishweb/18560.html>

<http://www2.dpi.qld.gov.au/fishweb/3387.html>

http://www.fisheries.nsw.gov.au/commercial/commercial2/bycatch_and_its_reduction

Investigate the different types bycatch reduction devices and how they work.



TED, source: James Lauritz



Fishers working with Clarence River Fishermen's Cooperative Association to collect old nets and line for recycling, source: OceanWatch Australia