

THE BRUNSWICK RIVER

Ecology



Brunswick Estuary

Site description:

The Brunswick Estuary is located on the north coast of NSW. The mouth of the estuary is located at Brunswick Heads. The estuary comprises the tidal reaches of the Brunswick River, Kings Creek, Marshalls Creek and Simpsons Creek (Patterson, Britton and Partners 2007). These tributaries drain a catchment area of approximately 160km and have a waterway area of about 2.2km (Patterson, Britton and Partners 2007).

The Brunswick Estuary comprises three primary arms, namely:

- The main arm, which includes the Brunswick River and Kings Creek, both of which have their headwaters to the west of Mullumbimby and flow east to the ocean at Brunswick Heads:
- The north arm, which is known as Marshalls Creek; and,
- The south arm, known



Values:

There are a large number of different vegetation communities present in the Brunswick Estuary catchment. These communities include:

- Saltmarsh,
- Mangrove forest,
- Littoral rainforest,
- Lowland rainforest,
- Swamp creek, and
- Swamp sclerophyll forest



Threatened flora species in the catchment include; Davidson's Plum (*Davidsonia jerseyana*), Smooth Davidson's Plum (*Davidsonia johnsonii*),

White Lace Flower (*Archidendron hendersonii*), Stinking Cryptocarya (*Cryptocarya foetida*), Giant Ironwood (*Choricarpia subargentea*), Red Lilly Pilly (*Syzygium hodgkinsoniae*), Scented Acronychia (*Acronychia littoralis*), and Rusty Plum (*Amorhospermum whitei*)

Threatened fauna species in the catchment include; Wallum Froglet (*Crinia tinnula*), Magpie Goose (*anseranas semipalmata*), Australasian Bittern (*Botaurus poiciloptilus*), Black-necked Stork (*Ephippiorhynchus asiaticus*), Osprey (*Pandion haliaetus*), Brolga (*Grus rubicundus*), Bush-hen (*Amauromis olivaceus*), Comb-crested Jacana (*Irediparra gallinacean*), Beach Stone-curlew (*Esacus neglectus*), Pied Oystercatcher (*Haematopus longirosris*), Little Tern (*Sterna albifrons*), Rose-crowned Fruit-Dove (*Ptilinopus regina*), Glossy Black Cockatoo (*Calyptorhynchus lathamii*), Grass Owl (*Tyto capensis*), Masked Owl (*Tyto novaehollandiae*), Sooty Owl (*Tyto tenebricosa*), Collared Kingfisher (*Todiramphus chloris*), Mangrove Honeyeater (*Lichenostomus fasciolaris*), White-eared Monarch (*Monarcha leucotis*), Common Planigale (*Planigale maculate*), Koala (*Phascolarctos cinereus*), Long-nosed Potoroo (*Potorous tridactylus*), Red-legged Pademelon (*Thylogale stigmatica*), Black Flying-fox (*Pteropus Alecto*), Grey-headed Flying-fox (*Pteropus poliocephalus*), Common Blossom-bat (*Syconycteris*), and Little Bentwing-bat (*Miniopterus australis*).



Rose crowned Fruit Dove <https://au.pinterest.com/pin/223561568978518665/>

Threats:

Historically much of the catchment has been cleared for agricultural purposes such as dairy and cane farming. The townships of Mullumbimby, Brunswick Heads and Ocean Shores occur within the Brunswick Estuary catchment further impacting on the health of the Estuary. There are at present a number of threats to the Brunswick Estuary these include:

Fragmentation
Weeds and feral animals
Poor water quality
Erosion and sedimentation, and
Modified hydrological regimes



Coastal 20 rehabilitation actions:

Rehabilitation works have occurred at two sites within the Brunswick catchment through WetlandCare Australia's Coastal 20 Wetlands Project these sites were Ocean Shores Country Club and Kings Creek.

Ocean Shores Country Club:

There were three elements to the Coastal 20 Wetlands Project at the Ocean Shores Country Club.

- Native revegetation of drainage lines and lakes,
- Floodgate modifications, and
- Salvinia control

Initially there was little native vegetation along many of the drainage lines, lakes/dams at the Ocean Shores Country Club. The Coastal 20 Wetlands Project undertook buffer strip plantings along drainage lines and lakes to remediate areas of bank slumping. These works have; reduced sediment entering Marshall's Creek, reduced Cane toad breeding capabilities and provided habitat for native fauna species using the site.

Wetland Care Australia worked with Fisheries, Marine Parks, and the Ocean Shores Country Club to install two new tidal floodgates at the Ocean Shores Country Club site to improve tidal exchange at the country clubs waterways. Improving tidal exchange at the site will not only improve fish passage, but also reduce the impact from water weeds such as Salvinia.

Salvinia (*Salvinia molesta*) is a weed of National Significance (WoNS). Large areas of salvinia are present throughout the lake system at the Ocean Shores Country Club. WetlandCare Australia has assisted the country club in the release of salvinia weevils (*Cyrtobagous salviniae*) to help control salvinia at the site.



Salvinia Molesta and Salvinia Weevils <https://plants.ifas.ufl.edu/wp-content/uploads/images/salmol/salmoldr.jpg>
<http://bugguide.net/images/cache>

Kings Creek:

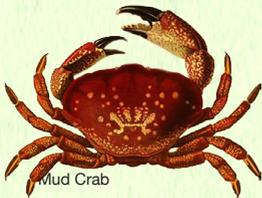
Wetland Care Australia partnered with Fisheries and a private landholder to undertake fencing along the riparian areas of Kings Creek. There are a number of areas of bank erosion at the property which is being compounded by a lack of riparian vegetation and poor mangrove community health. Fencing these areas has improved the riparian vegetation through the natural regeneration of mangroves.

Threats to Fish Stocks and Responses

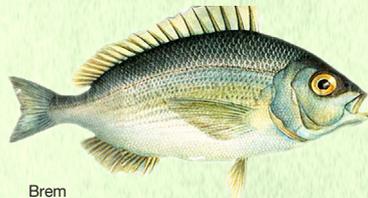
The late Bruce Hibbard, a resident of Ocean Shores, keen fisherman and retired crocodile hunter led an interesting and colourful life in the great outdoors. On moving to the region his love of recreational fishing saw him take a keen interest in the Brunswick, its spectacular diversity of fish and the ever present dangers of pollution and over fishing.

The following paper ‘The Brunswick River Rescued’” was written by My Hibbard around 1992. It outlines a problem and adopted solution to the illegal net fishing and crabbing of the river. It further mentions the establishment of a Brunswick River Protection Committee.

Brunswick Heads, a long time established family fishing holiday haven – the unique relaxing atmosphere of tranquillity surrounded by natural beauty. For generations, the river provided visitors and locals with a bounty of fish and crabs.



Mud Crab



Bream

Art Reproduced From An Antique Scientific Illustration - Nautical Art

When first visiting Brunswick Heads in 1977, I observed an angler fishing from a training wall near the middle of town, take seven 1kg.+ bream on live bait in about 30 minutes. About this time recreational catch potential was dropping off around the Sydney area. Such occurrences were first assessed as a poor season; factually the resource was in decline.



In 1881 we established a residency at Ocean Shores and like many other citizens, enjoyed a table catch taken from the Brunswick. By 1985 this had become a rare achievement. Fishing residents showed concern at the number and efforts of professional Tweed based netters' activities in the Brunswick. Their realisation of what was taking place surfaced when these netters took away two tubs of undersized jewfish (mulloway) from the river in 1996. The Tweed based Fisheries Inspector responsible for this area was immediately informed of the licensed fishing boat and the vehicle numbers involved. Details of time of the catch and information available from reputable citizens were ignored by the Officer contacted. This was a clear indication that the Fisheries Act was simply not working on the Brunswick – Something had to be done

The outcome of this incredible situation, although not recognised at time, was to change the future history of recreational fishing in NSW. A public meeting was held in August, 1987 to address the problem. Diminishing catches were not solely a self-interest angler concern. Local business persons indicated a downturn in visitor/tourist numbers. This low catch potential was seriously hurting the town's economy.

The regional Fisheries officer at the meeting explained that professional netter's annual catch from the river was about \$4/5,000. The attendance of 140 persons resolved that a Brunswick River Protection Committee be formed and to prepare a submission to the Minister requesting closure of the river to netters, to investigate the quality of treated sewerage discharged a three point into the river, also to find ways to eliminate local illegal sales of crabs by unlicensed persons.

Through the submissions – 7 pages, plus supporting documentation – it was establish recreational fishing a Brunswick Heads was worth \$1.5 mill annually. Illegal netting and crabbing was consistently occurring. Further, the river was receiving little of no protection from Fisheries patrol officers.

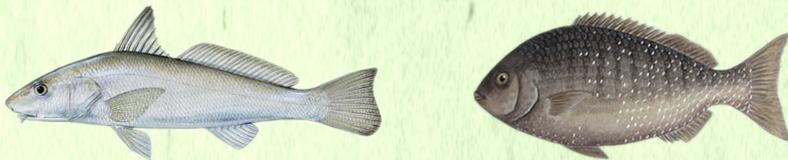


Jewfish (Mulloway) <http://www.westernangler.com.au/images/articles/fish-guide/mulloway.jpg>

Although a 400 metre fish netting and spear fishing protection area North and south of the Brunswick walls was proclaimed in 1982, Fisheries failed to identify this zone, consequently it was frequently netted. With the co-operation of Don Page (MP) this matter was rectified in 1991 and was further extended to 1,000 metres each side offering some protection to schooling fish entering and leaving the river.

A fish feeding program as established during 1992 in order to monitor the ongoing improvement of the Brunswick as a recreational fishery. Fish counts in the lower estuary now reveal 50+ bream, luderick and whiting per minute, moving upstream. A high percentage is at least of spawning size and approximately 25% are much larger.

The dramatic improvement of the river as a recreational fishery is now a fact.



However, pollution continued to be a threat and the growth of Ocean Shores residential development saw problems arising with effluent disposal. On 1st March 1995 'The Echo' reported the failure of the pumping station on the corner of Rajah Road and the Pacific Highway that allegedly saw effluent running down to the Brunswick for an hour and a half before it was fixed.

On 12 March 1996 'The Echo' reported a further pollution incident when residents of Left Bank Road, Mullumbimby had been warned by Council staff that a major fish kill in Mullumbimby Creek may have been caused by chemical contamination. Council and the EPA were investigating the kill.

12 February 1998 – A major chemical spill ups the ante

On Tuesday February 17, 1998
'The Echo' reported on a major chemical spill
in the Brunswick Valley.



The Brunswick Heads community has rallied to clean up the river and adjacent beaches after a catastrophic chemical spill killed most of the fish in a 4km stretch of water.



The spill occurred in the early hours last Thursday when a south bound tanker overturned on the corner approaching the Brunswick River bridge on the Pacific Highway. People at the scene said the truck's fibreglass tank burst through the back of the cabin and broke open, drenching the river with toxic sodium hypochlorite, a chemical similar to that used to chlorinate swimming pools. The driver, who suffered cuts, threw himself into the water to wash off the chemicals that the ruptured truck disgorged up to 9,000 litres of its load into the river.

Initially the chemical washed over the bar on the last ebb tide killing thousands of fish off the beach. Then the incoming tide washed it back into the river where most of the estuary fish – an estimated 30,000 of them, according to Southern Cross University researcher David Pont – were killed.

The spill is being investigated by the Environmental Protection Agency (EPA), whose Regional Manager Noel Peters told The Echo, "It is too early to comment on the investigation. This was an extremely serious spill and the EPA is very concerned." He would not be drawn as to whether any breaches of transport regulations for sodium hypochlorite had occurred or whether any prosecution would be initiated.



Shock and Anger

The carnage arising from the spill triggered shock and anger both in the community and on the part of investigators attending the scene. One local resident who decided to forego his daily dip at New Brighton last Friday said “It was like trying to swim in a cemetery.”

Brunswick Valley Sports Fishing Club president Bruce Hibbard said “The spill was a shocker. We have worked so hard to get fish in the river since commercial fishing was banned, and recreational fishing is an important part of the tourism industry in the town.” He said the club was seeking legal advice about getting some form of reparation for the loss of the fishery resource.

NSW Fisheries had attended the scene and were very sympathetic. They have been approached for assistance with fish re-stocking. “We have lost many big fish, which are the best spawners, and the potential loss of future stock is enormous,” Mr Hibbard said. It is estimated that at least 20 tonnes of fish have been collected and buried in a massive clean-up program.

“I would like to thank all those people who put their boats in the water and helped to clean up the river. I take my hat off to Council – They really did mobilise quickly and the clean-up was very competently done. It was a great response.” Mr Hibbard said.

Monitoring will continue

The EPA says the chemical dissipated quickly, but that fish are particularly sensitive to sodium hypochlorite. Crustaceans and shellfish in the river were not badly affected, as they have the ability to stop taking in water when they sense hazardous conditions. Monitoring of the river will continue.

Oyster farmers in the area will not know whether or not their stocks have been affected by the spill for about two weeks.

Mr Hibbard said that fish in some pockets of the river had survived, and more fish were already coming into the river from the ocean. However, he felt that without a restocking program the fishery would take years to recover.

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The fishing club has started a fund to purchase new stock and has already received several hundred dollars from individuals and local businesses. The money will be held in trust pending enquiries with NSW Fisheries, and as soon as possible will be used to purchase juvenile fish.

Notes made later by Mr Hibbard suggest the total fish kill was a minimum of 25 tonnes.

When reporting the incident the Byron Shire News commented that less reassuring (than the potential for fish stocks to recover) is the impact of the chemicals on Oyster growers, some of whose leases were in the direct line of the outgoing chemical tide.



Noel Baggeley of Byron Bay had up to 4 million oysters on his lease and says that first indications were that he was totally wiped out, but a second look suggests it might not be so dire.

“If I’ve lost them all, it means that three years’ work has gone,” he said.

“My oysters were at various growing stages up to those ready for the table. It will be up to 10 days before we know how great the effect will be.”

There are seven major oyster farmers using the Brunswick River, six of them in the main stream. They are meeting to assess the damage, but according to Mr Baggeley, it is unlikely that any of them will have escaped some damage to their leases.

We have sent oysters for testing and analysis and we are waiting for those results to come back,” Noel Baggeley said.

On 4th May, 1999 ‘The Echo’ reported that a Queensland company director had been fined \$750 for breaching the Dangerous Goods Act in relation to the spill. The EPA advised the defendants company was not licensed to carry materials classed as dangerous goods in the container that was on the vehicle. The EPA had considered taking action against the company under the Clean Waters Act until it became aware that the company had gone into liquidation.

Conflicting Views on Pollution

On 17th October 1998 ‘The Echo’ reported on two interestingly conflicting views as to the source of pollution causing ongoing water quality problems in the Brunswick.

CSIRO Probe Identifies poo-looters

Who put the poo in the Brunswick River?

Birds and cows are the main culprits, according to a special study by the Byron Council and the CSIRO.

The study finds humans only make a minor contribution to pollution of the river.

Brunswick Valley residents have protested for many years about poor water quality in the river, with most pointing the finger at the council’s Mullumbimby and Brunswick Heads sewage treatment plants.

But now our four-legged and feathered friends are found to be the foulest.

In August 1996 and Environment Protection Authority study found the Brunswick River was the worst of the northern rivers.

Unacceptably high faecal coliform counts were recorded in 100 per cent of observations, that report found. Fresh water upstream was not fit to drink and water quality in the tidal stretch deemed 'poor' or 'very poor' for edible seafood.

Cows 'not the biggest worry'

Cow poo is a lesser cause for concern than human or bird poo, according to the NSW Farmer's Association.

The group's conservation and resource management assistant director Malcolm Rowe said pathogens associated with high faecal coliform counts were the health problem, not the faecal coliforms.

Mr Rowe said all warm-blooded animals (including humans and birds) could carry parasites such as giardia and cryptosporidium. He said animals further up the food chain were likely to have higher concentrations of pathogens (agents causing diseases) in their faeces.

He said although cow poo may be washing into the Brunswick River, poo from humans and birds was more likely to pose a greater health threat.

"Cattle faeces are more likely to be more benign," he said.

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Written observations and comments by Mr Bruce Hibbard, President xxx 19xx.

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