



# Fish Health Survey

Gladstone Harbour  
As at 1 March 2012

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## Background

On 16 September 2011, Fisheries Queensland put in place a temporary closure on all fishing in an area centred on Gladstone while the Queensland Government investigated illnesses affecting some locally-caught fish.

The closed area was between Deception Creek at the top end of The Narrows down to Rodds Peninsula and to the outer edge of Facing Island, and applied to all tidal waters including rivers, creeks and other waterways (refer to map 1).

Fisheries Queensland commenced monitoring fish health in Gladstone Harbour after the closure of the Harbour was declared. The monitoring was based on a visual examination of fish. The initial monitoring focused on understanding the distribution and severity of external symptoms of fish within the Harbour. Samples were also provided to Biosecurity Queensland to undertake further tests and investigations.

This information formed part of the bigger picture that was being developed with information collected on water quality, human health and seafood quality.

The temporary closure was lifted on 7 October 2011 as Queensland Health found no evidence of any relationship between conditions identified in fish and illness in humans.

Fisheries Queensland has continued to monitor fish health in the Gladstone Harbour and adjacent areas in conjunction with commercial fishers to assess the status of fish health, and continues to provide samples of a wide range of fish, crustacean and mollusc species to Biosecurity Queensland for more detailed studies.

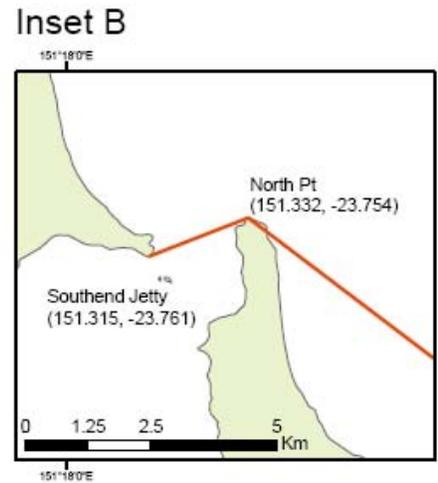
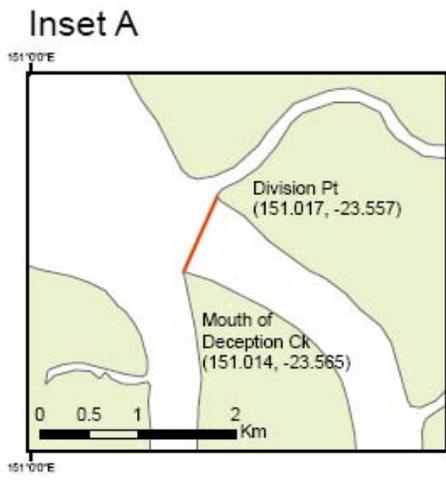
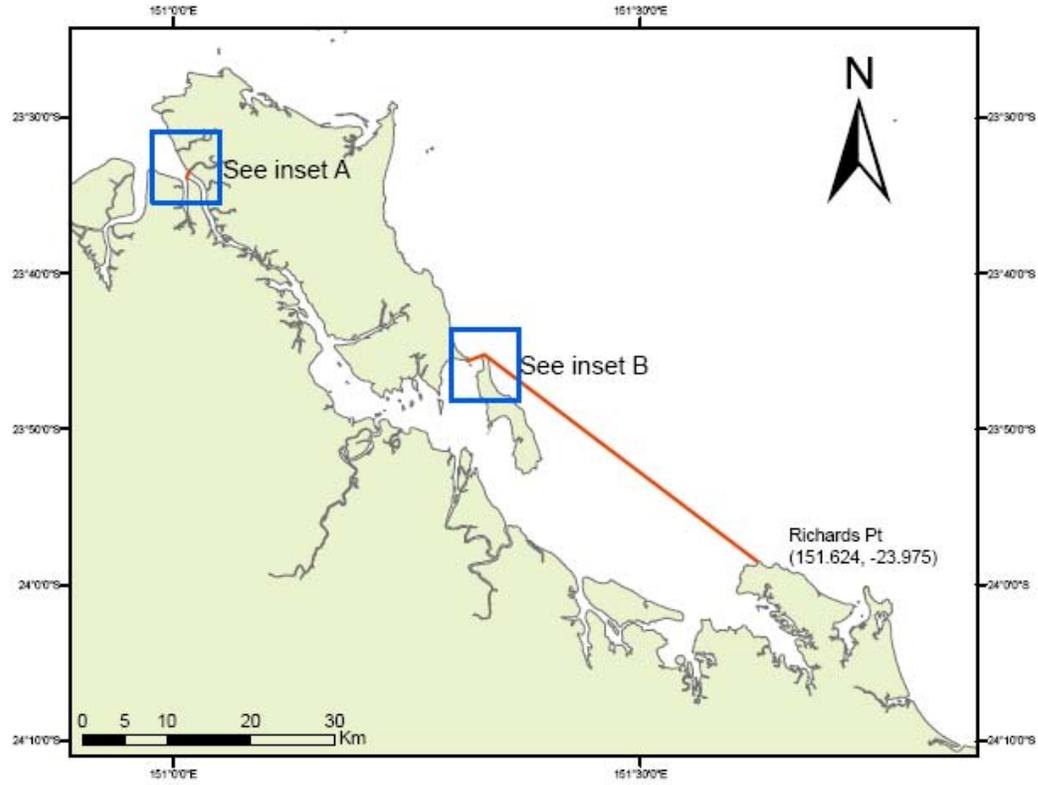
This report details the results of fish health monitoring conducted in the Gladstone area up to February 2012. The fish samples collected for laboratory testing as part of the ongoing survey are reflected in Biosecurity Queensland's Fish Health Sampling report.

## Current situation

Fisheries Queensland has:

- completed the base line survey of fish health in the Gladstone area including the Boyne River and Awoonga Dam in October 2011 and mapped the results
- conducted targeted surveys:
  - of barramundi to establish infestation levels of *Neobenedenia* parasites
  - to collect trawl-caught samples of scallops and prawns for testing by Biosecurity Queensland
- provided whole fish and tissue biopsies and parasites to Biosecurity Queensland
- tagged approximately 500 barramundi in the freshwater section of the Boyne River below Awoonga Dam
- conducted monitoring by Fisheries Queensland Observers of the mud crab fishery
- conducted ongoing monitoring of fish health in Gladstone Harbour and surrounding areas since September 2011
- conducted at sea monitoring of the commercial crab fisheries and the net fishery after the commencement of the barramundi season (1 February) in Gladstone.

**Map 1: Map of the Gladstone fisheries closure**



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## Phase 1 – Baseline surveys

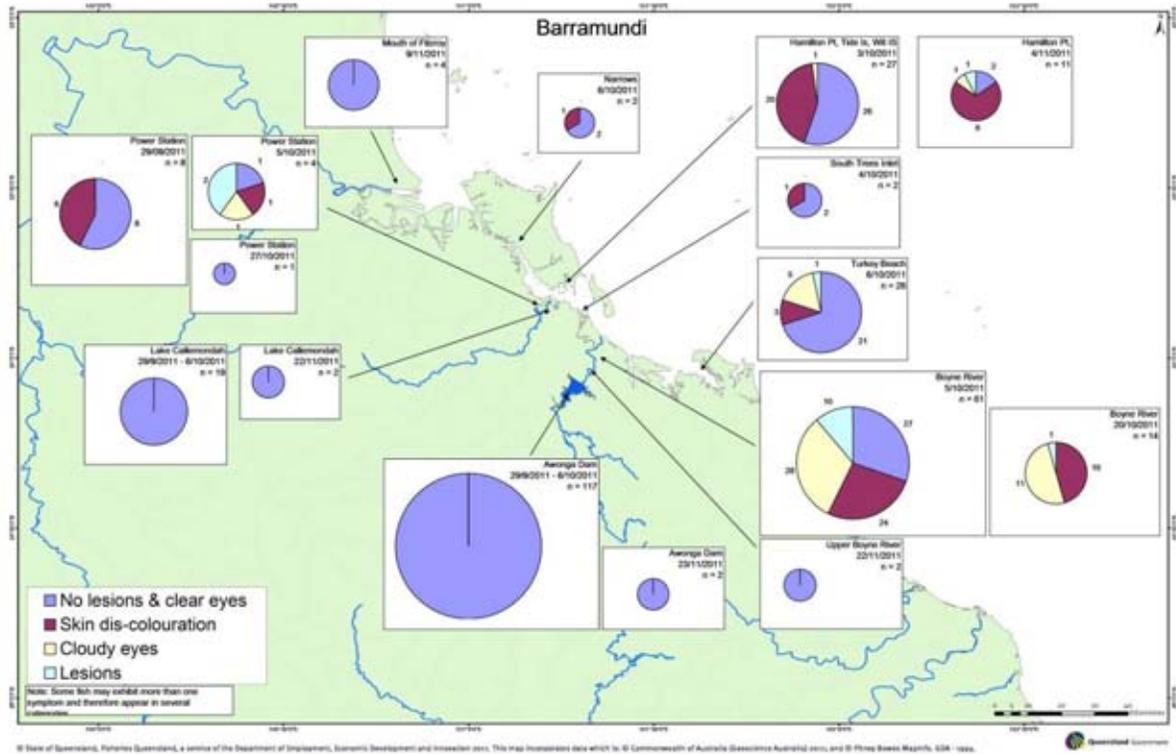
To undertake the baseline surveys, questions that needed to be answered included:

1. What was the distribution of fish exhibiting poor health within Gladstone Harbour?
2. What was the level of poor health exhibited by fish in the Gladstone Harbour?
3. Are there locations (hot spots) that exhibit a higher incident of poor health in Gladstone Harbour?

To answer these questions, Fisheries Queensland worked with commercial fishers using commercial fishing apparatus to fish in their normal fishing locations to capture a range of fish species within Gladstone Harbour. Captured fish were examined to visually identify symptoms of disease (i.e. lesions/ulcerations, skin discolouration, and cloudy, red or ruptured eyes). In later samples, the presence and abundance of external parasites were recorded.

# Barramundi

Map 2: Distribution and frequency of symptoms in barramundi monitored up until November 2011



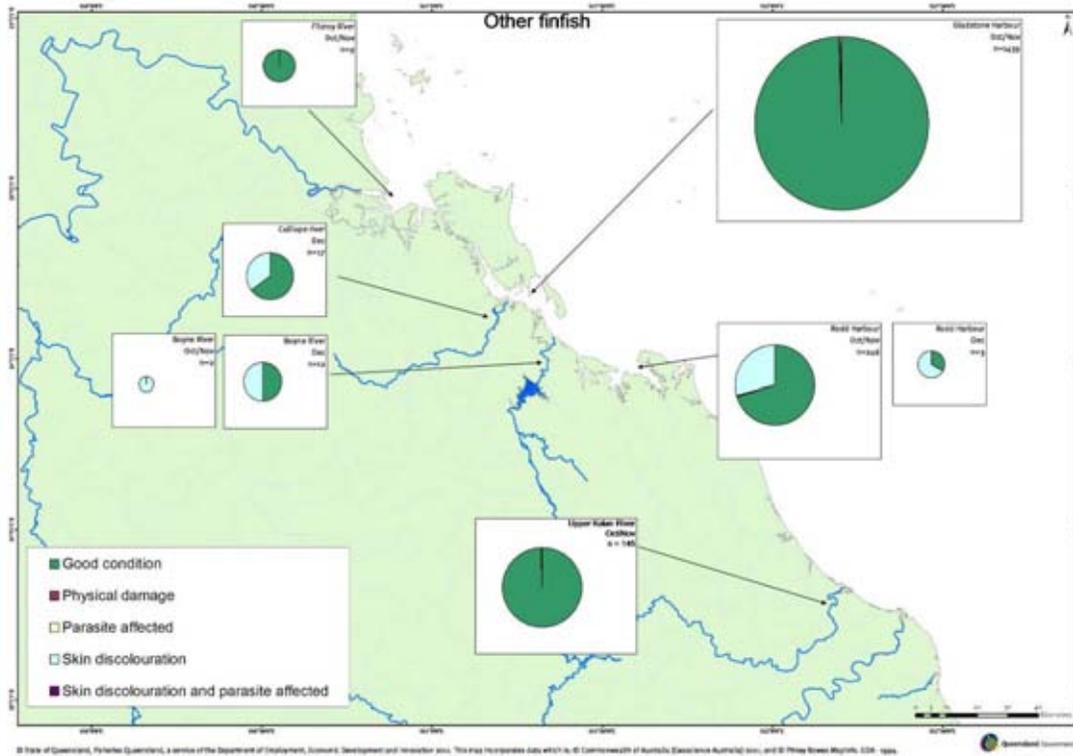
The above map shows the distribution and frequency of occurrence of skin lesions, cloudy eyes and skin discolouration in barramundi up until November 2011.

Barramundi caught in the tidal section of the Boyne River generally showed the highest incidence of ill health. Barramundi caught in the Boyne River had the majority of lesions (10 out of 14 fish with lesions observed by Fisheries Queensland in October 2011) and exhibited the highest number of eye problems (42 out of 132 fish with eye problems observed by Fisheries Queensland in October 2011). Barramundi in Gladstone Harbour were healthiest at Turkey Beach, while all barramundi caught in the Fitzroy River, outside the Harbour, showed no symptoms of illness.

In addition to barramundi caught by commercial fishers in the marine and estuarine environment, barramundi were also caught in freshwater using an electrofisher. All barramundi caught in freshwater (Awoonga Dam freshwater section of the Boyne River and Lake Callemondah) showed no evidence of illness, although less than 10% did show evidence of anchor worm which is considered normal in wild populations of barramundi.

## Other fin fish

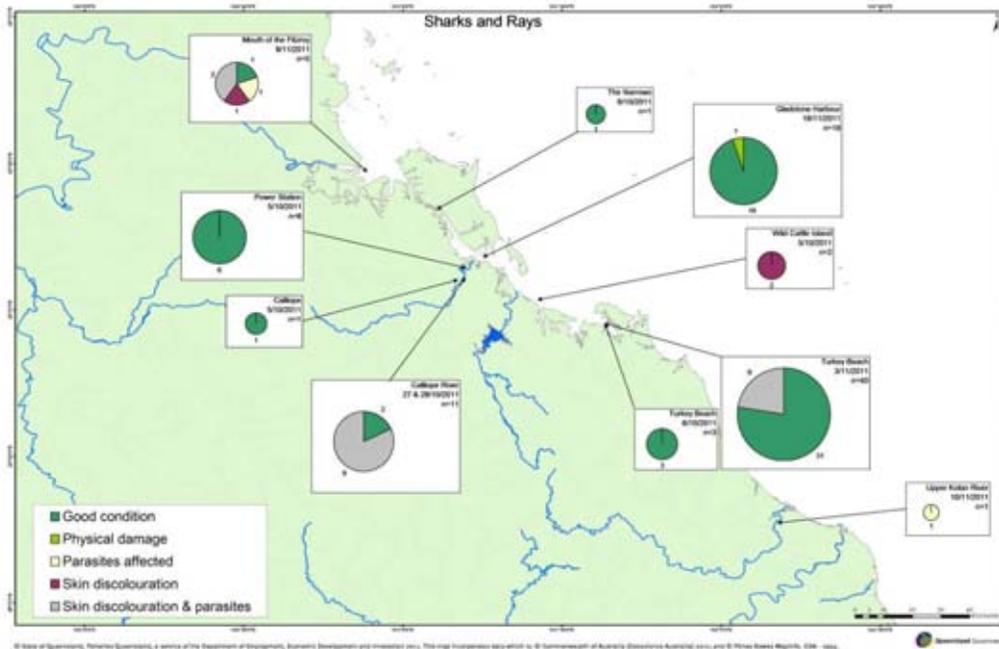
Map 3: Distribution and frequency of symptoms in other fin fish up until December 2011



As part of the initial phase of understanding fish health, Fisheries Queensland sampled other fin fish caught either in trawl, gill or seine nets. The fish health of other species monitored by Fisheries Queensland Observers in December 2011 was in general good. Five per cent of the other fin fish exhibited illness ranging from mild skin conditions and fin damage to skin discolouration. The majority of the mild skin conditions were seen in a single school of whiting caught at Turkey Beach where approximately one third (55 fish) showed areas of slight discolouration often consisting of a single red dot under a scale. Mullet exhibited significant areas of skin discolouration on three individuals caught at Turkey Beach and Upper Calliope River.

## Sharks and rays

**Map 4: Distribution and frequency of symptoms in sharks and rays monitored up until November 2011**



Sharks and rays caught in October and November 2011 showed a range of abnormal conditions that were not restricted to the Gladstone Harbour, as they were also found in sharks caught at the mouth of the Fitzroy River and in the Kolan River. Caught sharks can display varying levels of red, discoloured skin depending on the length of time in the net and post-harvest handling.

A number of sharks had areas of lighter skin discolourations. It appears from examination that the placoid scales (or tough scales that cover the skin of sharks and rays) had been removed, exposing the dermis. Some of these areas were bleeding. Many of these sharks also had significant numbers of a flatworm (monogenean) parasite.

A report from an independent expert stated 'it is well established that fish infected by monogeneans on the skin may 'flash' (i.e. rub affected parts of the body against substrate), presumably in an attempt by the host to remove the source of irritation' (Whittington & Chisholm 2008)<sup>i</sup>. It is possible that the clinical signs (e.g. skin reddness described in sharks) could be caused by the parasites. These parasites occur naturally, although normal parasite loads are not well documented, so it is not possible to determine whether observed infections are abnormal.

<sup>i</sup> Whittington I.D. & Chisholm L.A. 2008. Diseases caused by Monogenea. In: *Fish Diseases Volume 2*. Eiras J.C., Segner H., Wahlii T. & Kapoor B.G. (Eds.), pp. 683 – 816 (Chapter 103). Science Publishers, Inc., New Hampshire, USA.

## **Trawl species**

### **Scallop survey (29 October 2011)**

Targeted sampling of scallops was conducted in and around the spoil ground on 29-30 October 2011. A number of scallops were caught as well as prawns.

Scallops that were identified by the fisher as appearing abnormal were retained and preserved.

In addition, scallops from an area approximately 10 and 15 nautical miles south-east of Gladstone Harbour were also collected.

Scallops from all areas have been submitted for laboratory testing. Samples of prawns from the catch in both areas were also submitted for testing.

### **Targeted prawn survey (18 November 2011)**

Targeted sampling of prawns was conducted in Gladstone Harbour on 18 November 2011.

A total of 85 banana prawns were caught. A gill parasite was noted on one prawn, and a slight blemish on another. The remaining 83 prawns were in good condition.

Approximately 350 of each of the following species were caught as incidental catch: river jew, anchovy, puttynose perch and ponyfish. Three river jew displayed some minor redness on the belly, and all other fish caught were in good condition.

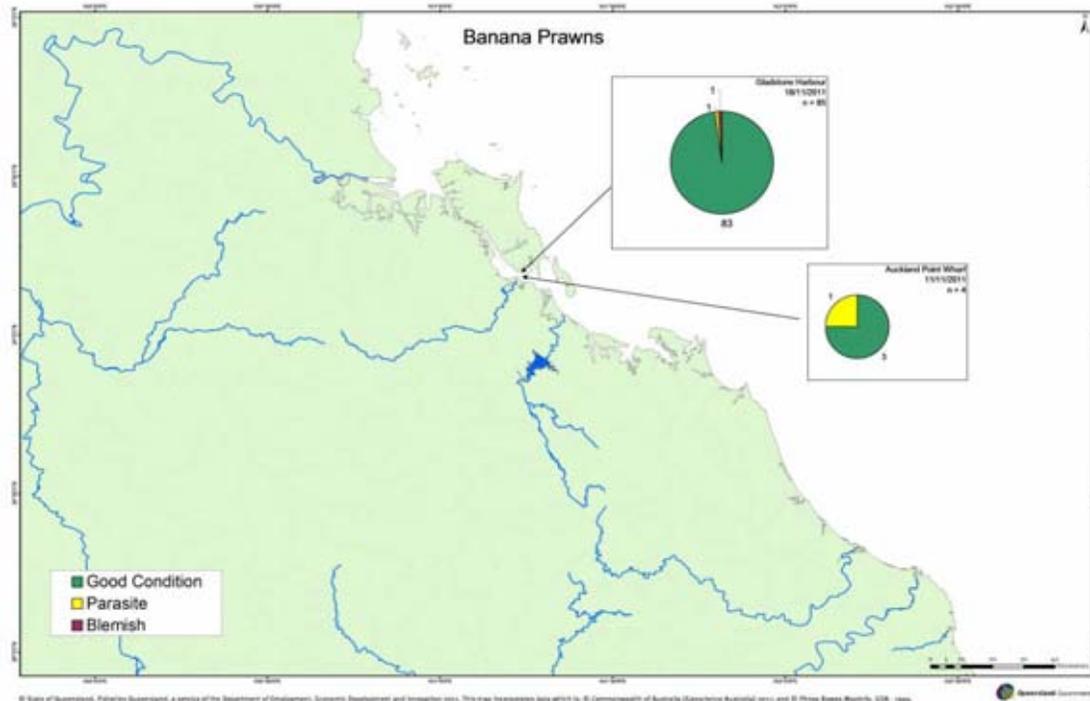
Three out of 31 herring caught showed injuries on the dorsal side between the dorsal fin and head. Samples were provided to Biosecurity Queensland for further testing.

One stingray was caught and it had an injured, shortened tail with the barb missing.

Several species of shark were captured, none of which had any observed abnormalities.

One queenfish was captured and displayed damage to the snout and lower jaw.

**Map 5: Condition of prawns in Gladstone Harbour monitored up until November 2011**



The above map shows the condition of banana prawns caught in the Gladstone Harbour.

Four banana prawns were collected from the Gladstone Fish Markets for testing. These prawns were caught on 11 November in an area opposite Auckland Point Wharf. A preliminary examination of one of them revealed a large parasitic isopod under the carapace, which is not unusual in prawns. These prawns were provided to Biosecurity Queensland for further testing.

## Mud crabs

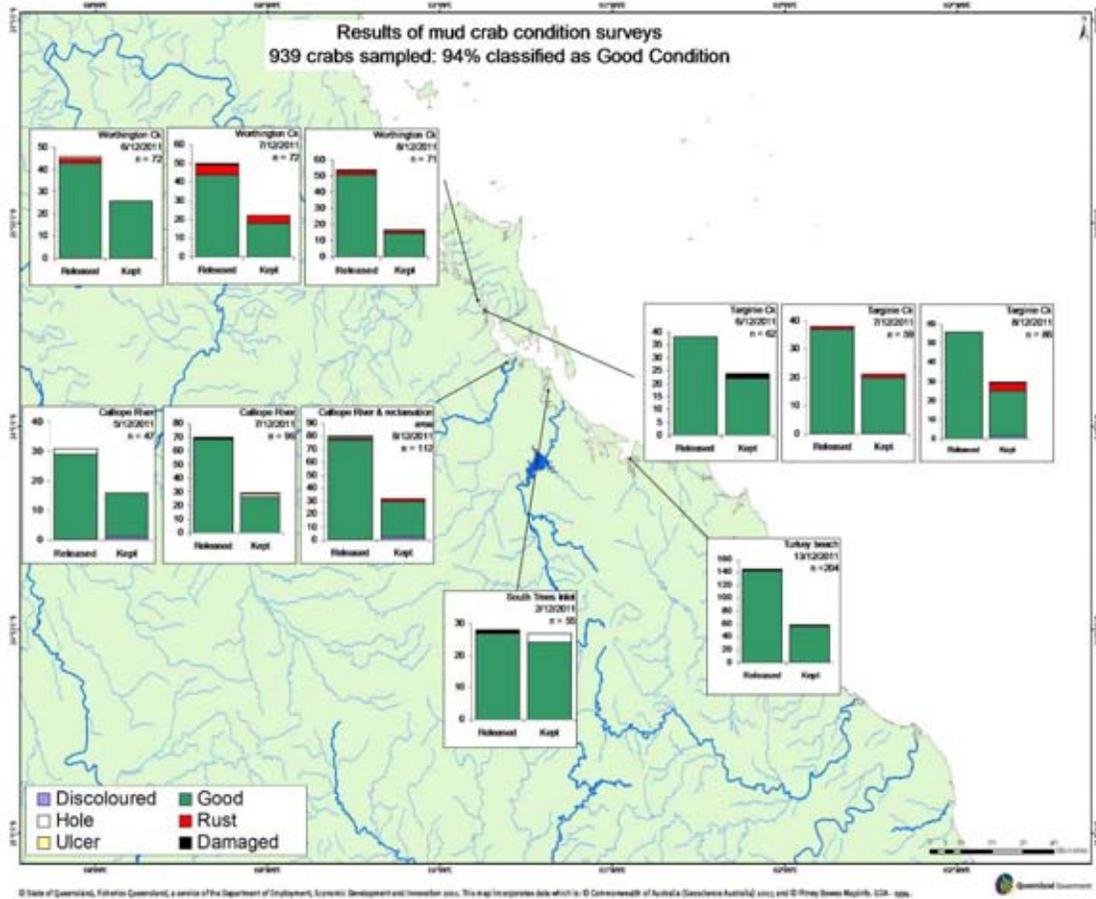
After reports from commercial fishers that the occurrence of shell (carapace) abnormalities within the Gladstone mud crab fishery had increased, Fisheries Queensland Observers were placed with a number of commercial mud crab fishers to monitor the situation in the fishery from the Narrows south to Turkey Beach.

Rust spot shell disease was first reported in 1994 in mud crabs in the Port Curtis area. In a follow-up study, of the 673 mud crabs examined between October 1998 and April 1999, 146 (21.7%) had shell lesions, of which 18.3% were caused by rust spot shell disease. The level of infection decreased to 10.2% by 2000/01. This provided the baseline for the current survey.

Of the 939 mud crabs observed in December 2011, 6% were identified as having shell abnormalities, the majority being classified as having rust spot disease. Although some of the mud crabs had significant shell damage, similar levels of shell damage had been previously documented in the late 1990s.

The results of the survey of mud crab condition from normal fishing operations are shown in the next map.

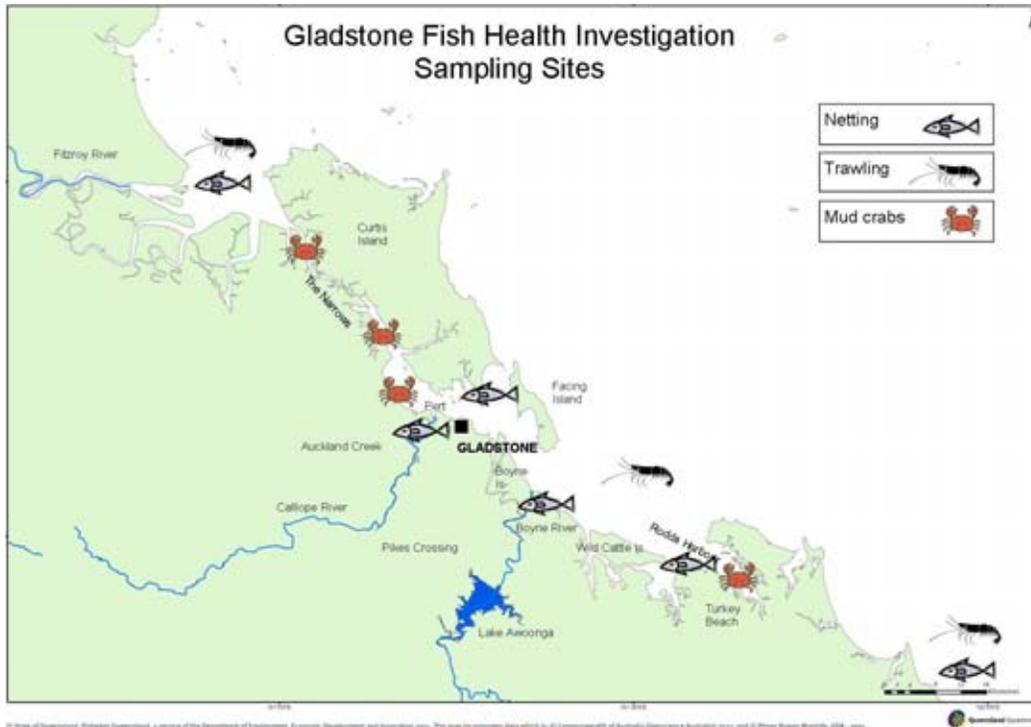
**Map 6: Distribution and frequency of symptoms in mud crabs monitored in December 2011.**



In January 2012, Fisheries Queensland Observers were placed with commercial mud crab fishers to monitor the situation in the fishery in the Narrows and at Turkey Beach. At the Narrows, a total of 185 crabs were examined of which 14 (8%) displayed shell abnormalities, while at Turkey Beach 170 crabs were examined of which 4 (2%) displayed shell abnormalities. Combining both sets of observations, 5% of the crabs displayed shell abnormalities. These results are similar to those observed in 2011.

## Phase 2 – Monitoring of fish health

Map 7: The locations of the monitoring sites for phase 2.



### Monitoring barramundi health

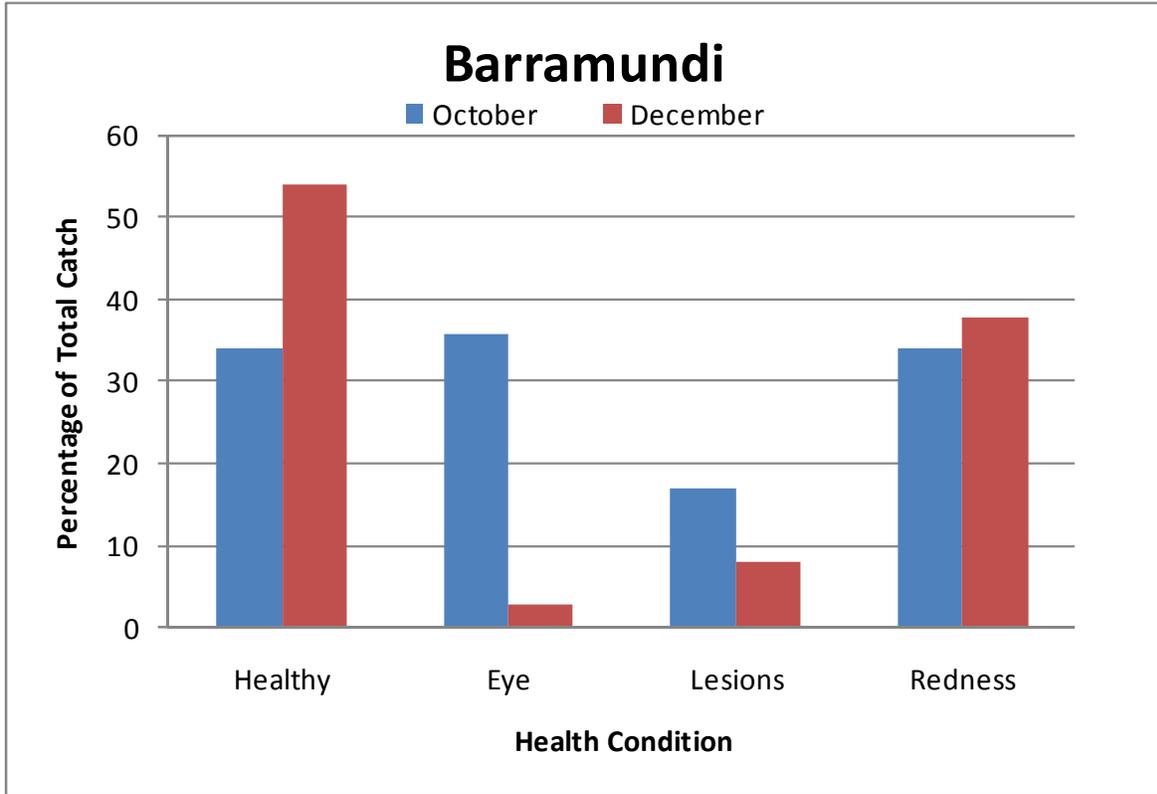
Fisheries Queensland established a number of sampling locations to monitor changes in fish health in Gladstone over time. The sampling locations were in the Boyne and Calliope Rivers, at Hamilton Point (including the adjacent Tide and Witt Islands) and Turkey Beach. It was proposed that the sites would be monitored monthly. The results obtained in October 2011 would form the baseline for comparison.

Reference sites outside the Gladstone Harbour in the Fitzroy and Kolan Rivers were also sampled at this time.

The number of barramundi caught per month varies significantly (106, 11, 37 and 14 for October 2011; November 2011, December 2011 and January 2012, respectively) which limits the interpretation of the results. In addition, the relative catch at each location also varies. For example, in November 2011 there were 11 barramundi caught and all were caught at Hamilton Point. Consequently, information for November and January has not been presented.

Following is a graph of the comparison of the visual clinical signs of health of barramundi in October and December 2011 from within Gladstone Harbour. Although the number of fish examined in these months are still relatively small, the data does show a general improvement in the health of barramundi from October to December.

**Figure 1: Comparison of the external visual signs of barramundi health in October and December 2011**



A comparison of the health of barramundi caught at Hamilton Point, Calliope and Boyne Rivers in October and December 2011 showed the following trends:

- There has been an improvement in the percentage of barramundi that were observed to be healthy:
  - The percentage of totally healthy barramundi increased from 32% in October to 54% in December.
  - There was a reduction in the percentage of barramundi with eye problems and lesions. One fish (3%) was observed with an eye problem in December compared with 39% in October.
  - The percentage of barramundi with lesions/ulcerations decreased from 17% in October to 8% in December.
- Although the percentage of fish displaying any signs of skin discolouration has effectively not changed (34% and 37% in October to December respectively), the extent of skin redness observed has decreased. The majority (17 out of 19 fish) of the skin discolouration was classified as minor (small area of discolouration) and none were classified as covering the majority of the body.
- No external parasites were observed in December 2011 or in January 2012 compared with October 2011 when parasites were observed.

In January 2012, Fisheries Queensland caught and monitored the clinical signs of 14 barramundi from within Gladstone. Of these fish, 6 barramundi displayed slight skin discolouration with one fish exhibiting skin discolouration over a larger area. An additional barramundi exhibited skin discolouration over the majority of its body. Two of the barramundi caught in the Boyne River also had cloudy eyes. The barramundi caught in the Burnett area showed no external clinical signs of ill health while 2 of the 8 barramundi caught in the Fitzroy area had skin discolouration on the majority of their bodies and one fish had a lesion (area of missing scales).

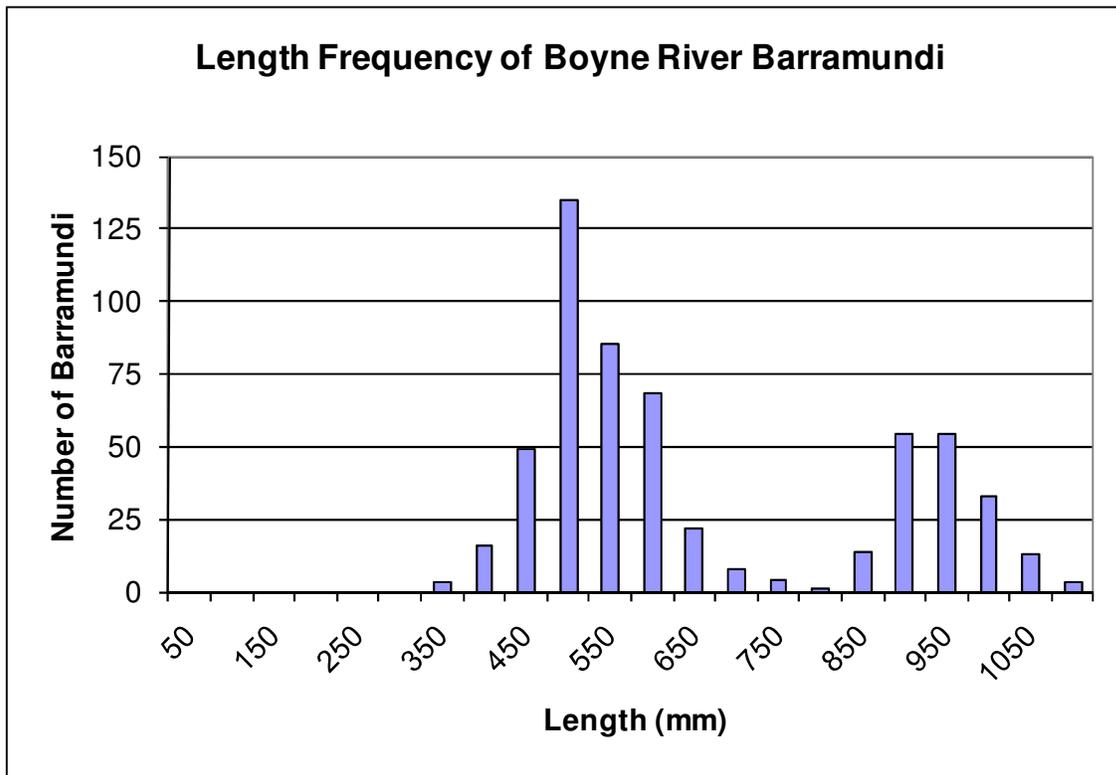
In February 2012, at sea observations were conducted on two net fishing operations for two consecutive nights. The fishing was conducted at Turkey Beach and at Colosseum (halfway between Turkey Beach and the mouth of the Boyne River). The fishers caught 48 barramundi over the four nights. Nine of the barramundi exhibited small areas of skin discolouration. One barramundi exhibited skin discolouration around anal fins with three areas of lesions (missing scales) and one had damage to the caudal fin.

Appendix 1 shows the changes of fish health over time at all locations sampled within Gladstone Harbour.

## Tagging of barramundi in the Boyne River

In December 2011, a survey of barramundi in the freshwater section of the Boyne River below Awoonga Dam was undertaken using an electrofisher. In a section of water approximately 5km long, 517 barramundi were captured. 27 of these fish had been tagged before the survey by a number of different people at a variety of locations, mostly in the Fitzroy and Port Curtis catchments. All other barramundi caught during the survey were tagged by Fisheries Queensland. A number of these fish were recaptured at least once during the survey. All barramundi caught were assessed as being in a healthy condition, were measured and then released.

**Figure 2. Length frequency of barramundi caught in the freshwater section of the Boyne River during the period 13-15 December 2011**



The frequency distribution length of barramundi caught shows two peaks at 500cm and 950cm. The tagging of the barramundi will allow for the monitoring of movement and any change in the health condition of these fish over time.

On 28 January 2012, water flowed over the Awoonga spillway and reached a height of over one meter. On the 14 February 2012, the water was still flowing over the spillway at a height of 20cm. This flow resulted in fish in the freshwater section being able to move into the tidal section of the Boyne River.

Since this flow and as of 19 February 2012, five of the fish tagged during the electrofisher survey have been recaptured and reported. Three of these fish were recaptured in the same area that they were tagged and one was recaptured approximately 22km downstream, but still in the Boyne River. The other barramundi was recaptured at Turkey Beach by a commercial fisher. No fish showed external clinical signs of ill health and the latter barramundi was marketed.

## **Other fin fish**

Up until December 2011, approximately 2000 fin fish, in addition to barramundi, have been assessed since monitoring of Gladstone fish health commenced in October 2011. Of these fish, 95% were assessed by external examination as being healthy.

In December 2011, 95% of the 197 fish examined in Gladstone Harbour were assessed as being healthy. All fish (62 fish) caught by trawling were assessed as being healthy with no skin discolouration. 121 of the 135 fish caught by netting were assessed as being healthy with no skin discolouration, with an additional 12 fish showing discolouration on a small area of the body (discolouration on the nose; slight redness to the ventral side; redness to edge of fins etc). One fish was described as showing a large area of skin discolouration and one other fish displayed skin discolouration over the majority of the body.

In January 2012, Fisheries Queensland observed and assessed the external clinical signs of 103 fin fish caught in nets within Gladstone. The majority of the species showed no external clinical signs. One blubber lip and four queenfish showed small areas of discolouration. In addition, 41 of the 46 queenfish had ectoparasites (provisionally identified as calanoid copepods).

Of the 27 catfish captured, 19 exhibited small areas of skin discolouration with an additional 2 showing discolouration more broadly across the body; one of these fish also had an abnormal eye. One catfish also had areas of skin missing.

All the finfish caught outside Gladstone (Burnett and Fitzroy areas) displayed no clinical signs of ill health except for two barramundi in the Fitzroy, which showed major discolouration, and one barramundi with a lesion.

In February 2012, at sea observations were conducted on two net fishing operations for two consecutive nights. The fishing was conducted at Turkey Beach and at Colessium (halfway between Turkey Beach and the mouth of the Boyne River). Over the four nights, the fishers caught 114 commercial fin fish. Of these fish, three fish exhibited small areas of skin or fin discolouration.

In February 2012, Fisheries Queensland monitored the health condition of fish caught in Gladstone by trawl net. In total, approximately 490 bycatch fish were caught. None of these fish showed any signs of skin discolouration.

Fisheries Queensland is continuing to conduct monitoring in the Harbour and surrounding areas to collect more samples to fully assess the status of fish health.

## **Sharks and rays**

In December 2011, 29 sharks or rays were captured. Of these, 14 were assessed as being healthy with no skin discolouration, 13 sharks showed discolouration on a small area of the body, one was described as showing a large area of skin discolouration and one displayed skin discolouration over the majority of the body. No sharks or rays had lesions or ulcerations.

In January 2012, 38 sharks and rays were captured. Of the black tip whaler, bull, lemon, milk and weasel sharks caught, some had skin discolouration. Most of these sharks also had the ectoparasites.

In areas outside Gladstone Harbour in January 2012, all the bull sharks (12) from the Fitzroy had ectoparasites and skin discolouration. No sharks or rays were caught in the Burnett area (Kolan and Burnett Rivers).

In February 2012, at sea observations were conducted on two net fishing operations for two consecutive nights. The fishing was conducted at Turkey Beach and at Colosseum (halfway between Turkey Beach and the mouth of the Boyne River). Over the four nights, the fishers caught 52 sharks or rays. Of the 21 bull sharks caught, 19 had ectoparasites and skin discolouration. Four of the other sharks and rays exhibited redness on the ventral surface.

## **Prawns**

In December 2011, two prawns were caught in the trawl sampling in Gladstone Harbour. These prawns were in good condition. In the samples of prawns caught in the Fitzroy, all 462 prawns were in good condition.

The trawling in Gladstone Harbour in February 2012 caught 25 kg of banana prawns and 15 kg of Tannum tiger prawns. Two prawns were found with the common gill parasite, but all prawns were in good condition.

At the Burnett, approximately 4 kg of banana prawns were caught and all were in good condition. In the Fitzroy, 56kg of banana prawns were caught. All prawns were in good condition.

## Appendix

### Barramundi

#### Barramundi baseline survey

Saltwater and estuarine sampling

Barramundi	Fish caught	Cloudy <sup>ii</sup> eyes	Lesions <sup>1</sup>	No lesions & had clear eyes	Skin dis-colouration <sup>1</sup>
<b>29/09/2011</b>					
Hot Water, Calliope River	8			8	6
<b>3/10/2011</b>					
Hamilton Pt, Tide Island and Wit Island	27	1		26	20
<b>4/10/2011</b>					
South Trees Inlet	2			2	1
<b>5/10/2011</b>					
Boyne River <sup>iii</sup>	61	28	10	27	24
Power Station Calliope River	4	1	2	1	1
Narrows (from midnight to 6/10/2011)	2			2	1
<b>6/10/2011</b>					
Turkey Beach	26	5	1	21	3
<b>Total</b>	<b>130</b>	<b>35</b>	<b>13</b>	<b>87</b>	<b>56</b>

#### Freshwater sampling

Barramundi	Fish caught	Cloudy eyes	Lesions	No lesions & had clear eyes	Skin dis-colouration
<b>29/09/2011 – 6/10/2011</b>					
Awoonga Dam and Boyne River	117			117	
Lake Callemondah	19			19	
<b>Total</b>	<b>136</b>			<b>136</b>	

<sup>ii</sup> Fish may exhibit more than one symptom

<sup>iii</sup> Boyne River is currently closed to net fishing until 30 April 2012 as part of standard annual closures.

## **Targeted fish survey to examine level of Neobenedenia (20 & 21 October 2011)**

Targeted fish surveys in the Boyne River undertaken by Fisheries Queensland over two nights caught approximately 28 barramundi. Of this total, fourteen fish were retained for closer study. The remainder were tagged and released alive.

Of the 14 retained fish, one had lesions, 11 fish had cloudy or red eyes and 10 fish had noticeable skin discolouration. Parasite counts were conducted on each fish and ranged from none to nearly 200 on the worst fish. Samples of the gills and skin were taken from each of the 14 fish. Water samples were taken at the site as well.

This survey was designed to collect barramundi that exhibited the widest range of health conditions. In addition, the time to examine each fish and the need to do so within a short time frame meant that some caught fish were excess to requirements and were released. These fish were tagged to allow us to determine upon recapture if they moved out of the Boyne River and if their health status changed. None of the fish released had lesions or ruptured eyes.

## Barramundi fish health survey

Date	Location	Number of Barramundi	Condition
27/10/2011	Calliope River	1	Good condition
4/11/2011	Hamilton Point	1	Good condition
		2	Slight discolouration Redness on pelvic region Red spot on right-hand side
		1	5 red spots on body
		5	General skin discolouration across body Red spot and redness – caudal peduncle
		2	Laceration behind operculum Deep laceration caudal peduncle
12/12/2011	Boyne River	15	Good condition
		3	Slight discolouration Redness pelvic region Slight redness base of fin Redness under scales
		2	2 patches of discolouration Discolouration patches
		2	Lesion; damaged peduncle
13/12/2011	Calliope River	1	Good condition
		2	Slight discolouration Redness pelvic region Slight redness base peduncle
16/12/2011	Fitzroy	1	Good condition
		5	Slight discolouration on pelvic region, base peduncle and fins
17/12/2011	Hamilton Point	1	Good condition
		4	Slight discolouration Redness on pelvic region Slight redness base peduncle Redness to fins
		1	Lesion on caudal peduncle
	Calliope River	3	Good condition
		3	Slight discolouration Redness pelvic region Slight redness base peduncle Redness to fins

## Monitoring fish outside Gladstone Harbour (9-23 November 2011)

Fisheries Queensland continues to work with commercial and recreational fishers to monitor fish health outside the Gladstone Harbour. Tissue samples, swabs and parasites are being collected and provided for laboratory analysis.

Date	Location	Species	Condition
9/11/11	Mouth of Fitzroy River	4 x barramundi	Good condition
		6 x blue threadfin salmon	Good condition
		2 x king threadfin salmon	Good condition
		1 x triple tail	Good condition
		1 x bull shark	Skin discolouration and grey patch with parasite
		1 x pig eye shark	Skin discolouration and grey patch with parasite
		2 x small narrow saw shark	One in good condition and one with a single parasite
		1 x great shovelnose shark	Skin discolouration (red patch on nose)
10/11/11	Upper Kolan River	around 30 mullet	Good condition
		90 x whiting	One whiting with an old wound (not a lesion) that was healing well, and the rest were in good condition
		10 x undersize bream	Good condition
		14 x undersize barred javelin	Good condition
		1 x giant queenfish	Good condition
		1 x bull shark	Parasites
		22-23/11/11	Lake Callemondah
20 x bony bream	Good condition		
Upper Boyne River	2 x barramundi		Good condition
	30 x fork-tailed catfish		Good condition
	20 x bony bream		Good condition
Lake Awoonga	2 x barramundi		Good condition
	>50 fork-tailed catfish		Good condition
	10 x bony bream		Good condition

## Sampling of different fish species in Gladstone Harbour

The following table lists the fish and invertebrate species (not including barramundi) caught as part of fish health surveys by Fisheries Queensland.

Date	Location	Species	Condition
4/10/11	South Trees Inlet	2 x king threadfin salmon	Skin discolouration
5/10/11	Power Station	6 x bull sharks	Good condition
	Boyne Bridge	1 x golden trevally	Skin discolouration
	Upper Boyne	1x catfish	Skin discolouration
	Calliope	1 x giant ray	Good condition
	Wild Cattle Island	2 x lemon shark	Skin discolouration
6/10/11	Narrows	1 x king threadfin salmon	Good condition
		1 x hammerhead shark	Good condition
		2 x blue threadfin salmon	Good condition
	Bird Island Turkey Beach	2 x oyster cracker (snub-nosed dart)	Good condition
		1 x blue threadfin salmon	Good condition
	Turkey Beach	2 x graceful shark	Good condition
		1 x black tip shark	Good condition
		2 x queen fish	Good condition
1 x golden trevally		Good condition	
27/10/2011	Calliope River	2 x bull sharks	Good condition
28/10/2011	Calliope River	9 x bull sharks	Different unidentified parasites and skin discolouration
29-30/10/2011	Off spoil grounds	2 x flatheads	Minor skin discolouration
		1x Moreton Bay bug	Good condition
		prawns	Good condition
		1 x sea snake	Good condition
		Scallops	Being tested
3/11/2011	Rodd's Harbour, Turkey Beach	7 x black tip sharks 1 x graceful shark 1 x whitecheek shark	Different unidentified parasites and skin discolouration
		31 sharks (various species)	Good condition
4/11/2011	7 Mile Creek, Turkey Beach	50 kg of whiting	Approx. 30% had minor skin discolouration
		10 kg of mixed mullet species	1 had damage to its caudal, and approx. 30% had minor skin discolouration
4-5/11/2011	Hamilton Island – Turtle Island, Gladstone Harbour	1 x blue threadfin salmon	Good condition

<b>Date</b>	<b>Location</b>	<b>Species</b>	<b>Condition</b>
18/11/2011	Gladstone Harbour	85 banana prawns	1 had gill parasite, 1 had slight blemish on exoskeleton
		14 milk sharks, 2 scalloped hammerhead sharks, 1 black tip shark, 1 spot tail shark	Good condition
		Approximately 80 kg of small fish species (e.g. puttinose perch, river jew, ponyfish, anchovy, herring, trevally)	3 river jew with slight skin discolouration (redness) on belly, 3 herring with physical damage to dorsal side
		1 x stingray	Damaged tail, barb missing
		1 queenfish	Damaged lower jaw and snout
		1 bar tail flathead	Good condition
2/12/2011	South Trees Inlet	4 x goldspotted rockcod	Good condition
		5 x yellowfin bream	Good condition
		3 x pikey bream	Good condition
		1 x pikey bream	Cloudy/enlarged eye and fin redness
5/12/2011	Calliope River	4 x estuary cod	Good condition
6/12/2011	Targinie Creek	6 x yellowfin bream	Good condition
		1 x goldspotted rockcod	Good condition
	Worthington Creek	1 x goldspotted rockcod	Good condition
7/12/2011	Targinie Creek	1 x goldspotted rockcod	Redness on fins
	Calliope	3 x goldspotted rockcod	Good condition
8/12/2011	Targinie Creek	1 x goldspotted rockcod	Good condition
		1 x goldspotted rockcod	Redness on fins
	Worthington Creek	1 x yellowfin bream	Good condition
	Calliope River	1 x goldspotted rockcod	Good condition
2 x yellowfin bream		Good condition	
14/12/2011	Fitzroy River	173 x banana prawns 289 x rainbow prawns 1 x barred yellowtail scad 77 x Bombay grinner 1 x dusky flathead 53 x river jew 17 x river scad 1 x yellowtail flathead	Good condition

<b>Date</b>	<b>Location</b>	<b>Species</b>	<b>Condition</b>
15/12/2011	Gladstone Harbour	2 x banana prawns 3 x black pomfret 4 x blotched javelin 1 x endeavour prawn 3 x grinner 5 x Hamilton's anchovy 16 x ponyfish 16 x river jew 11 x seven fingered threadfin 2 x southern herring 4 x swimming crab 1 x tongue sole 1 x whiting	Good condition
15/12/2011	7 Mile Creek	8 x whiting	Good condition
		70 x mixed mullet	Good condition
		4 x mud flathead	Good condition
		1 x lemon shark	Good condition
		14 x yellowfin bream	Good condition
		6 x scat	Good condition
17/12/2011	Calliope River	1 x oxeye herring	Good condition
		2 x blue threadfin salmon	Good condition
		1 x blue threadfin salmon	Redness to nose
	Hamilton Point	1 x jew	Laceration on left hand side

**The clinical signs of the health of fish caught in nets within Gladstone in January 2012.**

Location and fish species	No Signs	Discolouration			Lesion	Cloudy Eyes	Total
		Slight	General	Major			
<b>Boyne</b>	<b>8</b>	<b>2</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>19</b>
Barramundi	5	1		1	1	2	8
Catfish	1	1	5	2		1	9
Queenfish	2						2
<b>Calliope</b>	<b>5</b>	<b>13</b>	<b>5</b>		<b>4</b>		<b>27</b>
Bull Shark	2		5				7
Catfish	1	13			4		18
Queenfish	2						2
<b>Gladstone Harbour<sup>iv</sup></b>	<b>46</b>	<b>7</b>	<b>1</b>				<b>54</b>
Black Tip	4		1				5
Blubber lip	1						1
Milk Shark	1	1					2
Queenfish <sup>v</sup>	38	4					42
Weasel shark		2					2
Spinner Shark	2						2
<b>Hamilton Point</b>							<b>10</b>
Barramundi		4					4
Batfish	<b>1</b>						1
Blubber lip		1					1
Blue Threadfin	<b>2</b>						2
Bull Shark	<b>1</b>						1
Herring	<b>1</b>						1
<b>Turkey Beach</b>	<b>24</b>	<b>6</b>	<b>1</b>				<b>31</b>
Barramundi	1	1					2
Black Tip	1	4					5
Blue Threadfin	4						4
Bull Shark			1				1
Lemon Shark	2	1					3
Milk Shark	2						2
Spotted Guitar	3						3
Giant Trevally	1						1
Stripped Snapper	1						1
Sand Whiting	1						1
Eagle ray	2						2

<sup>iv</sup> The net was in the water for 12 hours

<sup>v</sup> Fish only showing net marks where classified as “no clinical signs”

Grey carpet shark	2						2
Stripped scat	1						1
Shortfin batfish	1						1
Great Hammerhead	1						1
Moses perch	1						1
<b>Grand Total</b>	<b>88</b>	<b>33</b>	<b>12</b>	<b>3</b>	<b>5</b>	<b>3</b>	<b>141</b>

### General observations

- Boyne River is still showing the highest percentage of fish with external clinical signs.
- 2 of the 8 barramundi and 1 catfish from the Boyne had cloudy eyes.
- Observers caught a number of catfish with significant lesions and they appeared to be in poor condition.
- All but five queenfish caught in Gladstone had ectoparasites (provisionally identified as calanoid copepods).
- Sharks caught in all areas within Gladstone Harbour had areas of discolouration (areas of lighter colour where the placoid scales had been removed) and parasites.
- All fish caught as bycatch in trawling undertaken on 12 February 2012 showed no external clinical signs of ill health.

### The clinical signs of the health of fish caught outside Gladstone in January 2012

Location and fish species	No Signs	Discolouration		Lesion	Total
		General	Major		
<b>Burnett</b>	<b>84</b>				<b>84</b>
Barramundi	1				1
Barred grunter	3				3
Bony Bream	33				33
Forktail catfishes	26				26
Mullet	3				3
Silver Grunter	14				14
Spotted Scat	1				1
Golden Trevally	3				3
<b>Fitzroy</b>	<b>16</b>	<b>12</b>	<b>2</b>	<b>1</b>	<b>31</b>
Barramundi	5		2	1	8
Bony Bream	9				9
Bull Shark		12			12
Forktail catfishes	1				1
Mullet	1				1
<b>Grand Total</b>	<b>100</b>	<b>12</b>	<b>2</b>	<b>1</b>	<b>115</b>

### General observations

- All fin fish caught outside Gladstone showed no clinical signs of ill health except for two barramundi in the Fitzroy, which showed major discolouration, and one barramundi with a lesion.
- The bull sharks caught in the Fitzroy all had areas of discolouration (areas of lighter colour where the placoid scales had been removed) and parasites.