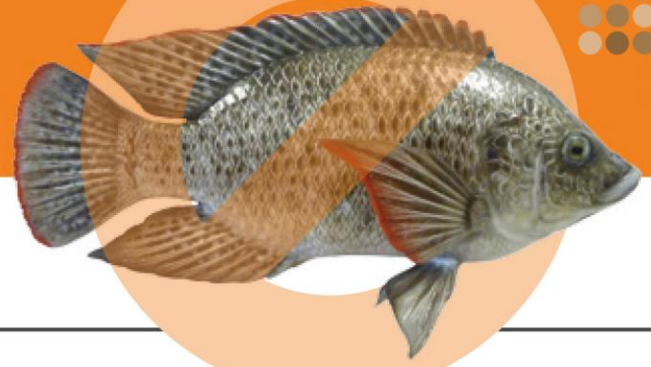




Mackay | Whitsunday | Isaac



# Stop the spread

## **Limiting the spread of Tilapia in the Southern Great Barrier Reef catchments - Update**

### **Gooseponds Predatory Control Trial**

To monitor the progress of the predatory control trial underway, Reef Catchments has contracted Catchment Solutions to sample the Gooseponds and collect data on the diets of stocked and natural barramundi, as well as other predatory fish in the lagoons. Catchment Solutions, with the help of volunteers from community volunteers, commenced monitoring in October 2014 and has continued on a monthly basis.

To assess the impact predators are having on the pest tilapia population present in the lagoons, dietary data is being collected via a technique known as Gastric Lavage (gut flushing). This process involves anaesthetising captured fish followed by filling the gut cavity with water using a low pressure pump. This causes the fish to regurgitate its stomach contents without causing any necessary harm to the fish, apart from the loss of its meal. The stomach contents that are collected are then categorised and processed to obtain dietary composition information. Due to the digestion process and subsequent state of some regurgitated prey items, it is not always possible to identify what is regurgitated, making it difficult to find direct evidence of predation on tilapia. By comparing the percentages of the various prey types against the total diet gives an indication of the likely effectiveness of predators as a control technique. In other words, if fish are found to make up a high proportion of the predators diet, then the effectiveness of predators as a control technique for tilapia will likely be higher.

To January 2016, 210 barramundi have been captured from the Gooseponds Lagoons as part of this monitoring. 182 of these fish were of suitable size (>300 mm) and physical condition to perform gut flushing. Of fish gut flushed, 103 produced a gut content sample, with several containing identifiable tilapia (Figure 1). The presence of tilapia in gut contents provides direct evidence that barramundi are preying on these fish. In addition numerous samples have contained mosquito fish, another declared noxious species in Queensland.



Figure 1. Juvenile tilapia (left), fly-specked hardyhead and unknown fish found in gut contents (Barra – 425 mm, April 2015).

Crustaceans comprised the majority of barramundi gut contents collected, contributing 74% by prey number and 66% by volume (Figure 2). Fish contributed 17% by number and 33% by volume, while insects and molluscs combined contributed 9% by number and only 1% by volume (Figure 2).

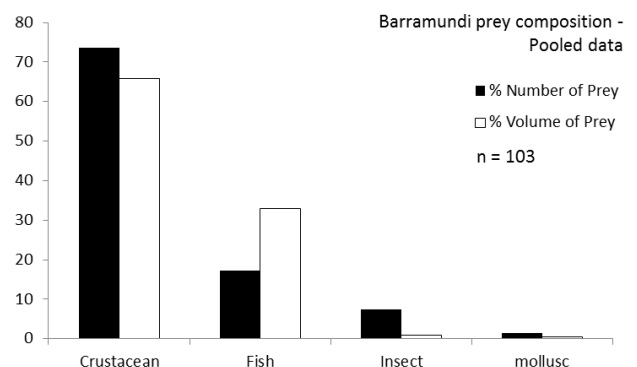


Figure 2. Dietary breakdown of barramundi sampled from the Gooseponds Lagoons, Oct 2014 – Jan 2016.



In addition to barra, forked-tail catfish and sleepy cod were also sampled for dietary analysis. Inconsistent gut content samples of sleepy cod have resulted in this species being removed from the monitoring program. To January 2016, 35 catfish have been processed for gut contents, yielding samples from all but 1 of these fish.

Catfish gut contents comprised 68% and 72% crustaceans by number and volume respectively. Insects contributed 25% by number and 17 by volume, while molluscs contributed 5% and 4% by number and volume respectively. Fish on made up 2% of prey numbers and 7% of prey volume (Figure 3).

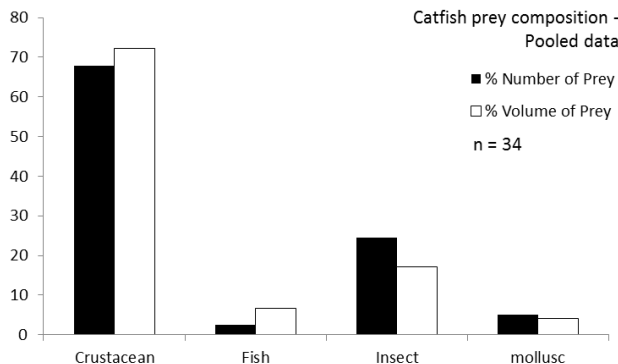


Figure 3. Dietary breakdown of fork-tailed catfish sampled from the Gooseponds Lagoons, Oct 2014 – Jan 2016.

From these preliminary results it appears that fish comprise approximately 1/4 of the diet of barramundi in the Gooseponds Lagoons and much less for catfish. It is important to note, however, that as samples increase results may vary.

Despite the introduction of additional predators as part of this trial the tilapia population appears to have continued to grow. Catch rates have increased from <10 fish/h when first discovered (Apr 2014) to ~70 fish/h (Jan 2016). The size class of fish been captured range from juveniles (<30 mm) to mature adults (>400 mm). The presence of tilapia over 400 mm (Figure 4) suggests the population may be older than first thought. Tilapia growth studies from the wet tropics found growth rates of tilapia in similar habitats to that of the Gooseponds to be 50 – 100 mm/yr, reducing to 10 – 30 mm/yr after 3 – 4 yrs of age<sup>(1)</sup>. It is most likely that tilapia have been present in the Gooseponds for 5 – 8 yrs.



Figure 5. Tilapia captured from the Gooseponds during electrofishing operations, August 2015).

Although indications from sampling suggest that tilapia control through predation may be limited, it is likely that at least some predation will occur. This is supported by the presence of tilapia in the gut content samples already collected. Further gut content sampling will provide the additional information required to accurately assess the use of predatory control on reducing tilapia populations in the Gooseponds Lagoons.

Stocking of the final 1000 barramundi as part of the control trial was completed in September with the assistance of Mackay Area Stocking Association. These fish were tagged to track growth rates and movements as well as differentiating stocked fish from wild fish.

With the support of Mackay Recreational Fishers Alliance, a kids fishing and education day was held in conjunction with the stocking. The day was a great success, with over 140 kids and their families participating. Habitat improvement and pest management displays and talks provided useful information, while a hands-on tagging demonstration, fishing session and release of the barra fingerlings helped engage the children. Events such as this create a sense of pride and ownership of local waterways and will go a long way in reducing the risk of the public spreading pest fish to unaffected catchments.

#### Planned activities as part of Gooseponds integrated tilapia management

- Continued monitoring of predatory control trial in the Gooseponds – Monthly sampling
- Seek project partners for the construction and installation log hotels at several locations in the Gooseponds

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(1) Russell, D. J., Thuesen, P. A., & Thomson, F. E. (2012). Reproductive strategies of two invasive tilapia species *Oreochromis mossambicus* and *Tilapia mariae* in northern Australia. *Journal of fish biology*, 80(6), 2176-2197.