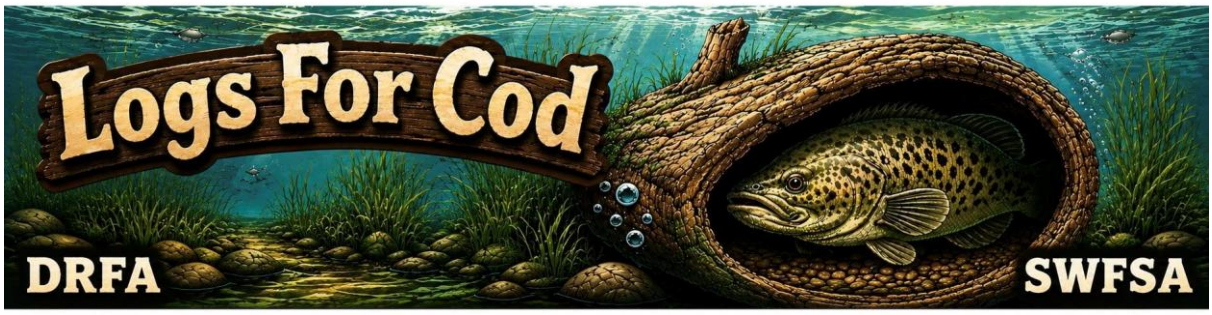
DRFA / SWFSA LOGS FOR COD PROJECT REPORT



Prepared by Garry Fitzgerald on behalf of the Somerset & Wivenhoe Fish Stocking Association. June 2026

PROJECT BACKGROUND & JUSTIFICATION

The Somerset & Wivenhoe Fish Stocking Association (SWFSA) gratefully acknowledges the support of the Australian and the Queensland Government through the Disaster Recovery Funding Arrangements (DRFA), which provided funding of $15,000 for the delivery of the *Logs for Cod* Project. This project aligns with the overall Brisbane River Cod Recovery Plan also assisted by DRFA funding.

The project was developed to address the loss of critical breeding habitat for the endangered Mary River Cod (*Maccullochella mariensis*) within the Brisbane River catchment. As one of Australia's most threatened freshwater fish species, the Mary River Cod relies on complex instream habitat, particularly large hollow logs and woody debris, for shelter, breeding and recruitment. The Brisbane River population of Mary River Cod is of particular conservation significance, representing an important component of the species' overall recovery in South East Queensland.

Over many decades, river management practices such as de-snagging, vegetation clearing and channel modification have significantly reduced the availability of large woody habitat throughout many river systems. More recently, major flood events in South East Queensland, including the 2011 and 2022 flood events, have further altered river channels, displaced instream timber and buried or removed natural hollow log structures that provide essential nesting habitat for cod. The loss of these structures has reduced the availability of suitable spawning sites and contributed to ongoing habitat degradation within native fish waterways.

Scientific research has consistently demonstrated the importance of hollow woody structures to the breeding ecology of Australian freshwater cod species.

In a study of Mary River Cod habitat use, Espinoza et al. (2020), used fine-scale acoustic telemetry to examine the movements and habitat preferences of breeding fish. The study found that Mary River Cod exhibited strong associations with large hollow logs, log jams and well-shaded woody habitat. The researchers identified a "large hollow log mid-channel" as a particularly important habitat feature utilised during the breeding season, providing direct evidence that hollow woody structures play a critical role in cod reproduction.

Research on the closely related Eastern Freshwater Cod (*Maccullochella ikei*) has reached similar conclusions. Butler & Rowland (2009), documented the reproductive behaviour of Eastern Freshwater Cod and observed spawning within enclosed cavities located beneath protective structures such as rock ledges, boulders and other sheltered habitats. Their work demonstrated that male cod actively prepare, guard and maintain nesting sites throughout egg incubation and larval development, highlighting the importance of secure cavity habitat for successful breeding.

Further work by Butler et al. (2014), investigated habitat selection by Eastern Freshwater Cod and found that the species preferentially utilised areas containing large woody debris, deep pools and structurally complex instream habitat. The authors concluded that maintaining and restoring these habitat features is essential to the conservation and recovery of threatened cod populations.

Recognising that the loss of natural nesting cavities may be limiting cod recruitment, Butler et al. (2025), developed and trialled artificial nest boxes for Eastern Freshwater Cod in northern New South Wales. The study concluded that the shortage of suitable nesting habitat was likely restricting breeding opportunities in some river systems and demonstrated that artificial hollow? structures could successfully replicate natural spawning habitat. Multiple active cod nests were subsequently recorded within the installed nest boxes, providing strong evidence that artificial structures can effectively replace lost natural breeding habitat.

More recently, this concept has been successfully applied to Mary River Cod. Carpenter-Bundhoo et al. (2026) installed and monitored artificial hollow log structures within the Mary River catchment and documented direct utilisation by Mary River Cod, including a confirmed spawning event within an artificial hollow log. The study concluded that artificial hollow logs can provide suitable nesting habitat and represent a practical tool for supporting the recovery of the species where natural habitat has been lost or degraded.

Collectively, these studies demonstrate that hollow woody structures are not simply shelter habitat, but are a critical component of the breeding ecology of Australian freshwater cod. Where natural hollow logs have been removed, damaged or displaced, the installation of artificial hollow log structures provides a scientifically supported method of restoring breeding habitat and increasing opportunities for natural recruitment. Enhancing natural recruitment is particularly important for long-term population viability, as sustainable cod populations ultimately depend on successful wild spawning and juvenile survival rather than on-going conservation or recreation stocking alone.

The *Logs for Cod* Project was therefore designed to restore this important habitat within the Brisbane River catchment through the construction and installation of artificial hollow log structures that mimic natural cod nesting sites. The project directly addresses habitat loss associated with historical river modification and more recent major flood impacts in 2011 & 2022, while supporting the recovery and long-term sustainability of native cod populations.

Through the support of DRFA funding, SWFSA volunteers were able to undertake this habitat restoration initiative and contribute to the recovery of critical aquatic habitat affected by natural disaster events. The project represents a practical application of contemporary fisheries research and demonstrates how targeted habitat restoration can support the conservation of one of Queensland's most iconic native fish species.

LOG PREPARATION

Utilising the network of local contactor A & M Civil, a truck load of hollow hardwood tree trunks was sourced from arborists & other contractors. These were consolidated & trucked to a holding property owned by A & M Civil that is in close proximity to the main target deployment area.

Tree hollows being unloaded at holding property near river at Fernvale

Each hollow tree trunk was a different length & diameter; both internally & externally. This mix would make a fair representation of what might occur naturally. Minimal desired internal diameter was determined to be 300mm. This was determined after informal consultation with hatchery operators & scientists across Qld, NSW & Victoria. No maximum internal diameter was chosen; weight and the ability to manually move extremely large hollows by hand being a determining factor. It is noted that a couple of the larger (older) tree

hollows delivered did develop longitudinal splits due to loading / unloading with heavy machinery. These were discarded.

Logs were measured & marked by SWFSA to get the most economical number of hollows from each tree trunk while ensuring the lengths were of a suitable size – not too small yet not so large that they could not be manually handled in the field. The desired lengths for this project were: minimum of 800mm long & no longer than 1600mm. At 1600mm in length it was decided that it was more desirable to have two logs at 800mm long rather than one at 1600mm in length.
The above lengths are also of a desirable size to fit inside a 8x5m heavy duty tandem trailer that was hired by SWFSA to move cut logs to various deployment sites.

Tree hollows measured & cut at holding property near river Fernvale

***IN SITU* LOG PLACEMENT**

Initially, the cut logs were loaded by hand into an 8x5 heavy duty tandem trailer. It is probably human nature to take the lighter, smaller (easier) cut logs at the beginning. However as we progressed, the larger hollows became very heavy & awkward to manually lift into the trailer, so a manually pumped hydraulic crane was also hired & bolted to the trailer to lift the logs. This made the operation much safer & easier. Recommend anyone reading this to begin with a hydraulic crane from the start.

On average seven (7) cut logs could be fitted per 8x5 trailer per load.

Loading 8 x 5 trailer at holding property for delivery to cluster sites. The use of a hand pumped dydraulic crane is advised.

Each load of cut logs was delivered to the site the day before if possible. In some locations with higher public-access it was decided that the risk of logs being stolen or burnt was unacceptable, therefore logs were pre-loaded onto the trailer in the week before & then delivered to the site on the day.

Each cut log would have a stainless steel eye bolt inserting into the log. This is where a chain would later be used to secure the cut log in place using a D shackle. Sites for individual logs was chosen using several criteria:

- Water depth. Target depth no deeper than 1.5m primarily for ease of installation.
- Suitable anchor point where chain could be attached to existing established tree or tree roots.
- Prefer to have over hanging trees of some sort for shade.

Cut logs were rolled into the water to begin the process of becoming water-logged at the start of a session. Some logs initially floated, however it did not take long for those few that did float to slowly sink as air pockets became flooded.

A 3x2" length of structural timber was inserted through the centre of the cut log. The 3x2" was cut to a length that allowed approx 1.5m of timber to extend from each end of the log. This was used as a handle / lever to manually lift the logs. This allowed two people to be lifting on each end of the log. A combination of methods was used to move from the launching point to each desired finish point.

A- Float / Swim method. Adapting a method used by Hannah Sherlock from HL&W. 2 x 20 litre plastic drums were attached at each end of the inserted 3x2" handle. The 2 drums were connected using simple rope tied so that the two drums' handles were close together. This was slung under one end of the 3X2" handle. Another pair of 20 litre drums was used at the other end of the 3x2" handle. It was found that the drums would float even the largest / heaviest of logs. The whole setup could very easily be walked along in the water or swim into the desired deployment site with minimal effort. When at the desired location, the drums could simply be slid off the end of the 3x2" timber handle and the handle removed from the log.

B- Boat method. Up to three cut logs could easily be loaded onto the front of the SWFSA boat at a time. The boat was motored to the desired deployment site. Each cut log could then be rolled off the bow of the boat into the water where volunteers waited to take the cut log.

Float Swim method Vs Boat method to move logs into place.

Once in-situ, each log would be maneuvered into the best location based on selection criteria. Usually the volunteers in the water had the SWFSA boat is support close by holding chain, d shackles, hand tools & safety gear. A suitable length of chain would be cut that provided enough length to be able to attach the cut log to an existing tree trunk or tree root. The chain would be attached using galvanized D shackles. In this case, all of the D shackles were provided to SWFSA in-kind from Somerset Regional Council. In the case of Bremer River, the SWFSA boat could not be launched due to steep banks and thick vegetation. Logs were rolled by hand through vegetation & rolled into the water. Volunteers needed to measure the desired length of chain, swim back to a utility vehicle to cut the desired length of chain and swim back to the log to secure it in place.

Overall, the cod logs were deployed in clusters. The areas chosen were based on several criteria.

- where a known population of re-introduced cod exist in close-proximity, and
- has reasonable access to the site.

SUMMARY

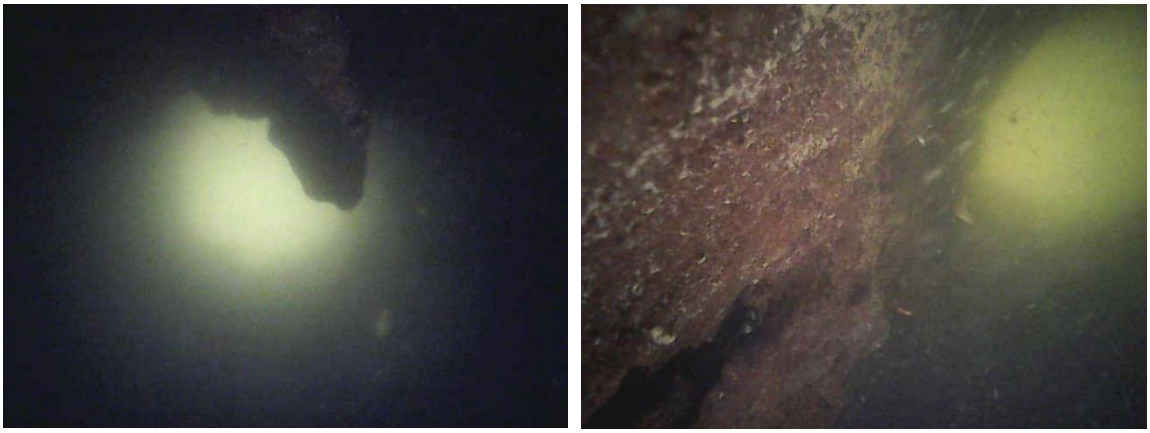
The project resulted in the construction and installation of 52 artificial hollow log structures “cod logs” at strategically selected locations within the Brisbane River Catchment.
The return on investment for the $15,000 grant from DRFA works out to under $300 per installed cod log.

A basic web-app was built for SWFSA volunteers to log hours invested in this project. Some volunteers declined to add their hours for various personal reasons. Others simply forgot to log their hours (this is common in volunteer community groups). The accumulated hours actually logged from volunteers into the app was 279.5 hours.
A total of 60m of 6mm galvanised chain was used with 90 x D shackles supplied by Somerset Regional Council.

Fuel used in vehicles to inspect sites, tow the 8x5 trailer and fuel used in the SWFSA boat was not factored in the project cost.
Lunches / meals & bottled water was supplied to volunteers by SWFSA.

SWFSA volunteers at one of the cod log deployment events

MONITORING
While monitoring was not part of the projects’ scope or budget, it is important to measure the effectiveness of the project. At time of writing, SWFSA are undertaking trials with various under water cameras & endoscopes so that evidence of cod occupation and/or egg laying may be observed in the breeding season. Various degrees of success have been achieved in obtaining usable footage so far. Further testing of under water cameras is needed to find the best option. Video / photo evidence will be the best way to effectively measure the success of this project and should be considered as a candidate for future grants / assistance in this regard.



Frames taken from endoscope video of deployed cod log

In March 2026 SEQWater monitoring team electro-fished a Mary River cod from the immediate vicinity of one of our recently installed hollow logs at Fielding Road Reserve, mid-Brisbane River. This possibly provides some evidence of occupation.

CONCLUSION

Through the support of DRFA funding, SWFSA volunteers were able to undertake this habitat restoration initiative and contribute to the recovery of critical aquatic habitat effected by natural disaster events. All project planning, construction and installation activities were undertaken by volunteers, maximising the on-ground habitat outcomes achieved from the grant funding. Installation efforts were also supported by staff from Ipswich, Scenic Rim & Somerset Council in their own time. The project represents a practical application of contemporary fisheries research and demonstrates how community-led restoration can support the conservation of one of Queensland's most iconic native fish species.

Australian Government

Queensland Government

Brisbane River Cod Recovery Project
SWFSA Inc
Bringing Back the Bumgur

Assistance for this project is being provided through the jointly funded Commonwealth – State Disaster Recovery Funding Arrangements.

References

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ANAGEMENT

Stainless steel eye bolts were screwed into the logs to secure in place with gal chain.