Giant Freshwater Lobster Protocol

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1. Context

The planning and approvals phase for irrigation schemes developed by Tasmanian Irrigation (TI) contains comprehensive environmental assessments of each proposed project. The environmental assessments include the identification of habitat for giant freshwater lobster (*Astacopsis gouldi*) which is listed as vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* and the *Threatened Species Protection Act 1995 (TSP Act)*.

The protocol has been prepared in consultation with DPIPWE's Policy Conservation and Assessment Branch.

2. Protocol Objectives

The objectives of the protocol are:

1. To minimise harm to giant freshwater lobsters during construction activities; and
2. To ensure that there is no significant impact on the species.

3. Management of the Protocol

The protocol will be managed by TI's Ecologist with oversight from the Manager Environmental Services. The persons who hold these positions must have a working knowledge of the *EPBC Act*, *TSP Act* and the *Nature Conservation Act 2002* (NC Act) and hold current permits for the capture and translocation of the giant freshwater lobster. All personnel involved in the implementation of the Protocol will be suitably qualified and have experience in freshwater ecology and animal handling.

4. Transportation away from construction activities

Giant freshwater lobsters tolerate transportation well and are an extremely robust species. They are able to tolerate being out of water for considerable periods, especially during cooler months (R. Freeman, Inland Fisheries Service, pers comm 2016). The species is routinely transported by the Inland Fisheries Service for educational purposes with no ill effect on the individuals. This Protocol has adopted the transportation methodology used by the Inland Fisheries Service.

Tasmanian Irrigation will acquire the necessary *Permit to Take* and *IFS exemption* permit required for qualified TI staff and contractors to conduct translocation activities.

In accordance with these permits the following translocation method will be undertaken:

1. Captured and tagged animals will be transported to appropriate recipient sites, away from construction activities, in individual cool, damp containers to minimise heat stress. Juveniles may be transported in water-filled, partitioned boxes. Adults will be kept separated to eliminate aggressive behaviour between individuals. No animals will have their claws banded.
2. Lobsters can become stressed at temperatures greater than 16°C, and will regularly climb out of water that is 20°C (Forteath 1985). In order to ensure that the animals do not become stressed, they will be held and transported in cooled, insulated containers. The containers will be monitored at no more than hourly intervals to ensure that a temperature range of 6 - 16°C is maintained.
3. Water temperature and dissolved oxygen concentrations at the release sites will be tested immediately prior to the release of lobsters. Lobsters will not be placed in areas with water temperatures >16° or dissolved oxygen concentrations <6mg/L.

4. Animals will be placed separately, in areas of suitable habitat or supplementary refuge habitat, to enable them to find their own refuge without the risk of immediate territorial disputes.

5. Injured Animal Management

Captured lobsters will be observed for signs of stress or injury. Signs of stress include thrashing and autotomy (casting off of body parts, such as limbs).

Any animals showing signs of stress will be kept in the cool and dark until they can be transferred to a safe waterway, and released in accordance with this Protocol. Upon release, they will be observed to ensure that they move off and find suitable shelter.

Animals that are mortally wounded or do not recover from signs of stress will be humanely euthanized by chilling in an ice slurry.

Lobsters are rendered insensible when their body temperature is sufficiently reduced by chilling. Lobsters subjected to chilling do not show the behavioural signs of stress that occur when some other methods are used.

Methodology

1. Fill an insulated container (such as an esky) with crushed ice, then add water with a 3:1 ratio of ice to water. This will give a consistency of wet cement and a temperature of about –1 °C.
2. Place the lobster in the ice slurry.
3. Regularly check the lobster for signs of insensibility (at least 20 minutes is required). Signs of insensibility generally include:
    - no resistance to handling – for example, the abdomen or tail can be easily extended or manipulated, and the outer mouthparts can be moved without resistance
    - no control of limb movement
    - no eye reactions when the shell is tapped
    - no reaction when touched around the mouthparts.
4. Once insensible, lobsters freeze as soon as practicable. The ice slurry will be maintained until the animal can be transferred to a freezer, to ensure that the animal does not warm up and recover.
5. Any euthanized lobsters will be donated to the Queen Victoria Museum and Art Gallery collection.

6. References and Resources

Personal communications
Rob Freeman, Senior Fisheries Management Officer, Inland Fisheries Service

References
Forteath, N. 1985 Studies on the Tasmanian freshwater crayfish – Astacopsis gouldi. *Inland Fisheries Commission Newsletter* Vol 14 No 3 September 1985

Davies, P. 1991 The fishery for freshwater crayfish in Tasmania. *Inland Fisheries Commission Newsletter* Vol 20 No 1 March 1991

Inland Fisheries Commission 1997 The giant Tasmanian freshwater crayfish: Where to now? *Inland Fisheries Commission Newsletter* Vol 26 No 2 September 1997

Threatened Species Section 2006 *Giant Freshwater Lobster Astacopsis gouldi Recovery Plan 2006-2010*. Department of Primary Industries and Water, Hobart.