



Curtin University Standard Operating Procedure

TRANSPORT OF FINFISH

Number: CARL 06

Version: 2

Date: 30/10/2014

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Date of Approval: 30/10/2014

Reviewed:

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| DATE | 11/10/2016 | | | | |
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Aims / Objectives: To provide guidelines on the transport of finfish on land for any research projects at Curtin Aquatic Research Laboratories (CARL). All use of fish in research projects must be approved by the Animal Ethics Committee prior to obtaining and transporting the fish. Any method of transport of fish must be fully considered prior to application to the AEC for approval, and all options considered to provide the safest and acceptable method of transport to reduce stress and mortality.

Definitions:

Transport: The movement of finfish or higher order invertebrates from one place to another for business (research or teaching) directly associated with Curtin University or partner organisations. Examples are, but not limited to, from animal's original habitat to CARL and from an approved supplier to CARL.

Procedures:

- Changes in environment, noise, movement and confinement all contribute to the stress for the fish being transported. The ability to cope with this stress can vary and depend on factors such as the species, age, sex, stocking density, state of health, period without food, duration of trip, mode of transport, and water quality.
- Each species and situation must be assessed before putting in applications for approval by the AEC. Researchers and staff responsible for the transportation of the fish must use their professional judgement on the mode/ type of equipment suitable for that particular fish to be transported.



- Depending on the mode of travel, fish can be transported in durable plastic bags, insulated containers- either plastic or foam, and purpose built fish transport vessels. They must escape proof and tamper proof.
- Department of Fisheries permits may be required if the animals are obtained from the wild. Fisheries have strict protocols in place for different species so visit the Department of Fisheries website to access the correct information. <http://www.fish.wa.gov.au/Sustainability-and-Environment/Aquatic-Biosecurity/Translocations-Moving-Live-Fish/Pages/default.aspx>
- CARL must have approved the space and allocated tanks prior to the arrival of any fish. Please use the Space Request Form available from the Facility Manager, CARL.
- Upon arrival at the facility fish need to be acclimatised to new tank environmental conditions. This should take between 40-60 minutes. Depending on the source of the fish, some fish may require quarantining for a period of time due to the risk of external infections into the facility. No fish should ever be immediately added to a system that connects to animals already residing in the facility without a quarantine period and /or approval from the Facility Manager.
- The risk factors to be aware of are:
 - Oxygen concentration - the oxygen can deplete due to the fishes' respiration
 - Accumulation of free CO₂ (end product of respiration) and ammonia (an excretory end product).
 - Temperature fluctuations, especially sudden
 - Hyperactivity and stress due to handling
 - Ion-osmotic confined imbalance due to stress
 - Physical injury due to handling before and during transport
 - Overcrowding issues

To minimise these risks

- Maintenance of good water quality.
 - For freshwater species - salt (NaCl) is added to transport water at 0.5-1.0%, to reduce the effects of transport stress
 - Supplemental pure oxygen (aiming to maintain dissolved oxygen concentrations at > 6mg/L), for all travel over 1 km
 - Ice can be added to the water prior to the fish being put in, to cool to the desired temperature to assist in reducing stress
 - "No foam" may also be used while hauling fish to reduce stress.



- Fish should be taken off food prior to transport, so they will void their digestive tracts and not foul their shipping water. Depending on the species and length of time in transit, this fasting period may last from 1-5 days
- Fish should be moved using nets that have been sterilised before use.
- Fish should not be transported in extremes of temperature. Attempts should be made to maintain temperatures as constant as possible with little or no rapid changes, such as the transportation container should be well insulated. This includes maintaining external temperatures as much as possible.
- Minimise any handling required.
- Sedation with anaesthetics (refer to SOP CARL 04) can be used if necessary.
- Regular inspections – the amount will depend on the stocking density and duration of the journey
- Appropriate size, design and construction of the transport containers.
- Minimising any noise, vibration, and visual disturbance.
- Separating any animals that are incompatible in terms of species, age, size, sex or reproductive status.

References:

Barker, D., Allan, G.L., Rowland, S.J., Kennedy, J.D. and Pickles, J.M. (2009): A Guide to Acceptable Procedures and Practices for Aquaculture and Fisheries Research for the Primary Industries (Fisheries) Animal Care and Ethics Committee, NSW Government.

NHMRC 2008 Guidelines to Promote the Wellbeing of Animals Used for Scientific Purposes