

SAIA - ACCLIMATION PROCEDURES

Note: This document outlines acclimation procedures SAIA recognizes and recommends as best practices in line with the Code of Best Practices.

Purpose of Acclimation:

There is one simple reason for acclimation: the transport water the organisms are arriving in has different temperature, pH, and salinity parameters than your aquarium system water. Fish, and especially invertebrates (including corals), are very sensitive to even minor changes in these parameters, so proper acclimation is the key to ensuring their successful relocation and animal health.

Moreover in the transport bags water is polluted by faeces and exhaled carbon dioxide, so the pH drops to unnatural levels over long time; a high concentration of ammonium can also be found. At higher pH levels ammonium is converted to highly toxic ammonia. Therefore it is extremely important to bring the fish from the polluted water in the transport bags to ammonium free water with a low pH, best with a pH similar to the one in the bags and then raise the pH slowly.

There are different ways to achieve successful acclimation. The method of preference will depend on:

- the difference in water parameters between transport and system water
- species to acclimate
- size/volume of shipment.

Acclimation Procedures

To all acclimation procedures applies:

- Avoid further delays in unpacking the shipment on arrival. Transport time was long enough!
- Organize what you need and prepare acclimation process.
- Do not rush, but don't dawdle!
- Ensure low stress environment (e.g. separate room and acclimation tanks, away from public eye)
- Dim the lights in the room where the shipping box will be opened. Never open the box in bright light - severe stress or trauma may result from sudden exposure to bright light. Ensure ambient temperature in room is warm and there are no drafts.
- Avoid touching organisms with bare hands and excessive exposure to air.
- Separate incompatible organisms during acclimation.
- Separate new arrivals from previously held stock.
- Do not transfer any water from transport bags into Quarantine or Acclimation systems.
- If water quality and animal condition is very bad - use ammonium-locking chemicals, reseal bags and allow levels to drop without sudden changes to pH until animal condition stabilizes.

A) pH controlled Carbon Dioxide (CO₂) system

Acclimation is done with the help of a pH controlled carbon dioxide system, where the pH in the tanks is lowered by adding carbon dioxide until a value of 6.75- 6.85 (depending on pH in transport water, but not lower than 6.75) and then increased slowly over at least three hours by evaporation of carbon dioxide through oxidation to a level of 8.1-8.4 (normal pH in your system).

Recommended for large shipments of fish (importer level), and/or where transport and system water differ significantly in pH and high Ammonium concentrations can be expected.

Needed are functioning acclimation tanks separated from general water circulation, carbon dioxide, tubing, and equipment to test pH (make sure it is calibrated accurately) , salinity and temperature.

1. Turn off ozonizer, air pumps, aquarium lighting and skimmer.
2. Introduce Carbon Dioxide with tubing into acclimation system water.
3. Open boxes and bags.
4. Transfer organisms from bags into buckets together with the transport water.
5. Test pH, temperature and salinity in transport water.
6. Continuously test pH in acclimation system until parameter is similar to transport water (but not lower than 6.75)
7. Turn off Carbon Dioxide.
8. Add system water to the buckets (approximately one third of water volume in bucket).
9. Repeat step 8 two times, every 5 minutes. (to allow adaptation to differences in salinity and temperature).
10. Net organisms from bucket and release them into acclimation tank.
11. Observe organisms' condition to take corrective action when needed (e.g. re-bagging).
12. Allow pH to slowly increase over at least three hours by evaporation of CO₂. After three hours you can turn on air pumps at minimum power. It is recommended to allow the pH to slowly rise overnight (8-12h).
13. Control organism's condition. Transfer them to quarantine (if applicable) or treatment tanks after successful acclimation.

Note: Acclimation is tied to quarantine procedures for new arrivals (see SAIA quarantine procedures).

If you use the same tanks for acclimation and quarantine, turn on skimmer, ozonizer etc after 12 hours latest.

B) Drip Method

Acclimation is done by slowly trickling system water into buckets with transport water and new arriving organisms thus allowing a slow adaptation of water parameters. Faster than method A.

Recommended for small to medium sized shipments, and/or where transport and system water parameters differences are minor. This method is especially suitable for sensitive species.

Needed are acclimation buckets (or other easy to clean containers), airline tubing, aeration, equipment to test pH, salinity and temperature.

1. Install a siphon drip line from the aquarium system to each bucket by using airline tubing (one separate airline tubing for each bucket). Either tie several loose knots in the airline tubing, or use an airline control valve to regulate flow from the aquarium.
2. Open boxes and bags.
3. Transfer organisms from bags into buckets together with the transport water. Organisms should be fully covered by water, thus when emptying the first bags the bucket might need to be tilted.
4. Test pH, temperature and salinity in transport water to roughly determine the trickling speed.
5. Start the trickling process by submerging tube into the bucket to start siphon). Then adjust the trickling speed (by tightening one of the knots or adjusting the control valve) to a rate of about 2-4 drips per second (depending on differences in water parameters).
6. Add system water until the bucket is nearly full. Ensure aeration of water in the bucket to avoid oxygen depletion. Always observe the organisms' condition.
7. Close valve or tighten knots.
8. Discard half of the water in the bucket.
9. Start trickling again.
10. When bucket filled up a second time or third time (depending on pH difference), net or scoop the organisms to transfer them into quarantine or treatment (when applicable) tanks.

C) Floating Method

Acclimation is done by floating the transport bags in the receiving system water to allow temperature adaptation. Through repeated adding of system water to the bag the water parameters in the bag will equal to the system water parameters.

Recommended for small sized shipments, and/or where transport and system water parameters differences are minor and ammonium is low. This method is suitable for hardy species only.

Needed is a pitcher, equipment to test pH, salinity and temperature.

- 1) Open boxes and take out sealed bag.
- 2) Float the sealed bag in the aquarium for 10-15 minutes (depending on temperature difference).
- 3) Open bag, but avoid release of transport water into the tank.
- 4) Test water parameters in bag.
- 5) Add system water to the bag (approximately one third of water volume in bag).
- 6) Repeat step 5 every five minutes until bag is full.
- 7) Discard half of the bag water (not into tank!).
- 8) Repeat step 5 and 6.
- 9) Observe organisms' condition and test water parameters again.
- 10) When water parameters in bag are similar to tank water, net or scoop organisms from the bag and introduce them to the quarantine tank.