Physiological Stress Responses in Bonytail and Razorback Sucker to Handling and Transport

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Objectives

• Characterize the physiological stress response of bonytail and razorback sucker during harvesting, tagging, and before, during and after hauling for 12 hours in a fish transport truck by measuring plasma cortisol, glucose, lactate, chloride, and osmolality.

• Based on results: 1) evaluate SNARRC’s current handling and hauling protocols; 2) if necessary, develop and test revised protocols; and 3) submit handling recommendations for bonytail and razorback
Project Overview

1. Fish were harvested from outdoor rearing ponds
2. Allowed a rest period (7 days minimum)
3. Wire-tagged (bonytail) or pit-tagged (razorback sucker)
4. Allowed a rest period (7 days minimum)
5. Hauled to Achii Hanyo Native Fish Rearing Facility for simulated stocking run
6. Held at Achii Hanyo for 3 weeks to monitor level of recovery

Bonytail
avg. length 335 mm,
weight 319 g

Razorback sucker
avg. length 371 mm,
weight 621 g
Methods

Collect blood from subsample (n = 10) of fish at the following time points:

- Baseline fish before handling events
- **Immediately after harvest from pond**
- 12-, 24-, 48-hr post-harvest
- Pre-tagging after rest period from harvesting
- **Immediately after tagging**
- 12-, 24-, 48-hr post-tagging
- Pre-loading after rest period from tagging
- **Immediately after loading into hauling tanks**
- 6 hours into stocking trip
- Upon arrival at Achii Hanyo Native Fish Facility
- **Immediately after simulated netting and release**
- 24- and 48-hr, and 7-, 14-, and 21-d post-release
Methods cont.

- Fish sampled at each time point were removed from the study.
- Each handling event and recovery period was conducted in two replicates.
- Subsamples of fish for each recovery period were held in separate tanks to eliminate repeated sampling stress.
- A separate truck was used to transport fish for the 6-hr sampling point on the hauling trip to eliminate disturbing the fish being transported to Achii Hanyo.
Descriptive Summary

• Bonytail and razorbacks demonstrated elevated cortisol, glucose and lactate at each handling event.

• Recovery in varying degrees was observed between each event.

• Both species returned to pre-handling levels by 48 hrs recovery after stocking at Achii Hanyo.

• Increased cortisol levels in both species at the 21 day recovery period most likely an artifact from capture stress - glucose and lactate levels did not reflect a stress event.

• Statistical analyses will be completed early 2013.
Preliminary Recommendations

• Bonytail may benefit from a recovery period longer than 7 days between handling events

• Recovery and pre-stocking acclimation periods should be included in handling protocols for bonytail and razorbacks

• Both species would benefit from soft release strategies in protected channels or backwater areas after transport

Elimination of any type of handling stress 24-48 hrs before final release may support the ability of fish to resist disease and escape predators
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