

Algoma University Animal Care Committee	
AU #0039 Lake Sturgeon husbandry (adapted from DFO “Sturgeon Care and Feeding” SOP)	
Issue date: September 9, 2025	Last revised: September 2025

1. Purpose

This protocol is designed to outline appropriate husbandry guidelines and protocols for juvenile Lake Sturgeon (*Acipenser fulvescens*) held in flow-through raceway tanks. In particular, it focuses on feeding, cleaning, and monitoring of water quality for fish in tanks at the Sea Lamprey Control Centre (Fisheries and Oceans Canada).

2. Policy

CCAC guidelines and regulations

3. Responsibility

It is the responsibility of the Principal Investigator to ensure that this SOP is followed and that those caring for fish (e.g., technicians, graduate students) are appropriately trained to do so.

4. Training Required

Animal Research Ethics
 Handling/training with Lake Sturgeon
 Methodology training in the relevant technique and species
 Safety training with the equipment

5. Materials Required

Freezer
 Commercial-grade frozen bloodworms
 Cutting board
 Knife
 Gloves
 Scale
 Weigh boats
 Dish soap
 Dip nets
 Bucket
 Scrubbing pads
 Flexible tubing/hose for siphoning

Water quality probe (e.g., YSI)
Water quality test kit with strips

6. Procedures

Location details: The Sea Lamprey Control Centre (SLCC) houses two fiberglass, flow-through raceways (tanks) designed for fish holding. Water is drawn directly from the St. Mary's River, leading to highly stable conditions. Fish are held on a 12L:12D cycle using fluorescent overhead lights on a timer.

Security clearance is required for all personnel working within the facility and no unauthorized personnel are permitted unless accompanied by a DFO employee. The hatchery gate and door should be locked at all times for safety.

Feeding

1. Juvenile sturgeon must be fed three times per day (e.g., 8:00 am, 12:00 pm, 4:00 pm). At each feeding, a line on the "Feeding" recording sheet should be completed to indicate the time of the feeding, the amount of food added, and the individual who has completed the feeding. Any other relevant information can be added to the column labelled "notes". Indicate which feeding event also involved the daily welfare check (see "Health and welfare monitoring" section below.)
2. Wash and dry hands prior to and after handling any food. Use gloves when handling frozen bloodworms.
3. Bloodworm packages must be kept frozen at all times.
4. The amount of food required varies based on the size of the fish and the temperature of the water. See Table 1 below for guidelines. For example, at ~21 degrees C, fish will eat ~14% of their body weight in bloodworms per day, allowing calculation of total food required over three feedings, given the average weight and number of fish in the tanks.

TABLE 1. Average percent body weight (AVG %BW) consumed per day and daily length increase (mm) for Lake Sturgeon fed bloodworms. The letters in parentheses preceding the temperatures indicate group ID; temperatures are mean \pm SD.

Temperature ($^{\circ}$ C)	AVG %BW consumed/d	SE	Daily length increase (mm)
(A) 11.97 \pm 0.46	2.76	0.47	0.50
(B) 16.93 \pm 0.26	9.63	0.81	1.42
(C) 21.62 \pm 0.38	13.69	1.01	2.01
(D) 26.83 \pm 0.56	14.22	1.36	1.75

(Aloisi et al. 2019 – North American Journal of Aquaculture)

5. Use the cutting board to chop the frozen bloodworm block into smaller pieces. Use the scale to ensure that an adequate amount of food is being added at each feeding. Add to each tank according to the number of fish held in the tank. Ensure that multiple chunks of food are added to each tank to allow relatively even dispersal throughout the tank area.
6. Once per week, monitor fish feeding for at least 15 minutes immediately following the addition of food. If fish are consuming all of the provided food, adjust the amount of food to ensure satiation. As fish grow, the amount of food will need to be adjusted to maintain health and growth.
7. If during subsequent feeds there is food waste in the tank, adjust the amount of food down to avoid the growth of mould, bacteria, and general fouling of the tanks with waste.
8. Wash the knife and cutting board after each feeding and set out to dry thoroughly.
9. Check that any unused blocks of frozen bloodworms have been returned to the freezer.
10. Monitor the feed supply in the freezer. As fish grow and eat larger quantities, the supply will be used more quickly and will need to be replaced/reordered more quickly.

Cleaning

1. If there is a large amount of food waste, it can be removed using a dip net daily.
2. Tanks should be fully cleaned at minimum once per week, but can be cleaned more often if there is excess food or algal growth.
3. Try to keep hands out of the tank as much as possible and wear gloves. Wash hands with soap and water and dry them thoroughly before and after placing hands in the tank to avoid transfer of any bacteria, skin lotions, etc. to the fish – or transferring any bacteria to yourself when finished.
4. The water can be turned off during cleaning events if necessary.
5. Clean the tank of any old food. If the tank is relatively clean (i.e., there is only a small amount of old food/waste), use a mesh dipnet to pick up the old food. If the tank has more food/algae in it, use a siphon hose “vacuum” and a bucket to clean out the tank (it is best to turn the water off when siphoning).
6. Use a scrubbing pad to wipe the bottom of the tank clean any additional algae, faecal matter, or food film.

7. If in use, check the aerators and clean any residue from them using the scrubbing pads.
8. Clean the screen between the main tank and the standpipe using the vacuum siphon. If it is very dirty, it may need to be removed entirely to rinse it with river water.
9. Clean the screens on the top of the standpipes with the vacuum siphon. To do so, gently remove the screen and cover the top of the standpipe temporarily with a net. Rinse off the waste and return the screen, ensuring that it is convex in configuration.
10. Double-check that all screens have been replaced properly and turn the water back on.

Health and welfare monitoring

1. Fish should be observed daily for overall health, signs of injury, and welfare.
2. At one of the feeding times, a visual inspection of fish in the tanks should be performed to survey for any signs of disease or injury (e.g., poor skin condition, damaged fins, eye irritation, colour change, spots). Other changes that may be observed that indicate potential clinical or welfare issues include low food consumption (lack of active feeding), increased or decreased respiration rate, surface breathing, difficulty maintaining equilibrium, rubbing/scraping. See SOP 0032 Fish Husbandry for additional details.
3. Record the daily welfare check details in the record sheet.
4. Any abnormal observations should be immediately reported to the principal investigator.

Water quality monitoring

1. Temperature and dissolved oxygen should be monitored once daily in each tank (e.g., along with one of the daily feedings) using a water quality probe. The values should be recorded in the associated “water quality record” sheet for each tank.
2. Additional water quality metrics should be monitored weekly, including pH, nitrate, nitrite, and ammonia using test strips. Each tank should be monitored and the values should be recorded in the associated “water quality record” sheet.

7. References (if applicable)

Aloisi, D. B., Eckes, O. T., & Von Eschen, A. J. (2019). Development of a growth model for lake sturgeon. *North American Journal of Aquaculture*, 81(4), 399-405.

REVISION HISTORY

Revision #	Revision Date	Summary of Changes
1	September 9, 2025	Submitted to ACC committee for review
2		
3		
4		