

 Policies & Procedures Manual	# Pages: 12	Policy Number: AN-02-03
	Approved by: UCN Animal Care Committee	
Section: Standard Operating Procedure (SOP) Title: Live Fish Capture	Effective Date: August 27, 2021	
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1 PURPOSE

The following standard operating procedure (SOP) describes methods used to humanely capture fish in the field when conducting aquatic surveys within the Natural Resources Management Technology (NRMT) program at UCN. This procedure specifically focuses on seining, minnow trapping, hoop/trap net and gill-net methods of fish capture.

2 RELATED DOCUMENTS AND REFERENCES

- Canadian Council on Animal Care 2005. Guidelines on: the care and use of fish in research, teaching and testing.
- Water Protection Act, Aquatic Invasive Species Regulation (W65 — M.R. 173/2015). The Province of Manitoba.

3 RESPONSIBILITY

The Principle Investigator, technicians and participants are responsible for being appropriately trained to humanely capture fish according to this SOP.

3.1 Instructor and Technicians

The instructor and technicians are responsible for ensuring that:

- local Fisheries Branch, First Nations, Conservation Officers and District Park Supervisors must be consulted regarding concurrent activities within the given area.
- proper permits and approvals have been obtained from key stakeholders prior to collecting any fish. Stakeholders include UCN's Animal Care Committee (ACC), and the appropriate provincial government agency.
- all animal use protocols and schedules are in place prior to the collection of fish.

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- all relevant documentation be available on site either in electronic or hardcopy format.
- participants are trained on the various methods of fish capture described within this SOP prior to execution.
- participants follow the current SOP on capturing live fish, as well as any associated permits/protocols issued.
- any deviations from procedures outlined in this SOP, as well as any associated study protocols and permits, will be documented and submitted to UCN ACC.

3.2 Participants

Participants are responsible for:

- obtaining Animal User Training Certification PRIOR to handling fish in the field. Without this certification, students will **NOT** be permitted to participate in fish capture.
- they have read and understood the procedures described in this SOP.
- deviations from procedures outlined in this SOP, associated study protocols and permits, will be documented in participant field notes and reported immediately to the instructor.
- treating and handling of fish in line with standards described by the Canadian Council on Animal Care (CCAC).
- they conduct themselves in a manner that ensures their well-being and safety prior to, during and after each procedure is executed.

4 PROCEDURES

Follow the general procedures described in **section 4.1** below for fish capturing methods employed at UCN.

In addition to these general procedures, each individual fish capture method has additional requirements. See sections:

- 4.2 Fish Capture Using Seines,
- 4.3 Fish Capture Using Minnow Traps,
- 4.4 Fish Capture Using Hoop/Trap Nets, and
- 4.5. Fish Capture Using Gill Nets

4.1 General

A description of general equipment requirements and methodologies shared is provided in the following subsections.

All individuals instructing, participating, and handling fish must satisfy the following in addition to what is described for each method separately.

4.1.1 Documentation and Notification Requirements

The following required documentation must be obtained by the PI or technician prior to conducting any fish capture method described in this SOP.

- A valid Collection Permit issued by Agriculture and Resource Development – data collected to be submitted to Fisheries Branch, along with information regarding Species at Risk Act (SARA) species and Aquatic Invasive Species (AIS) found.
- A valid UCN ACC protocol(s) for various activities.

All relevant documentation must be available on site either electronically or as a hardcopy

4.1.2 Participant Equipment Requirements

Participants are responsible for obtaining/having the following general supplies for all fish collection activities:

- Global Positioning System (GPS)
- field notebook and writing utensil (e.g. pen, pencil, etc.)
- life jacket
- camera – to document unique fish and/or diseases and deformities
- flagging tape – to mark items e.g. minnow trap ropes
- permanent marker

4.1.3 General steps to be followed for each method described in sections 4.2, 4.3, 4.4 and 4.5.

The following steps must be followed when conducting any of the fish capture methods described in this SOP:

- a) The instructor and/or technician will:
 - review the purpose of the exercise and what data needs to be collected with participants.
 - inform participants of permit requirements and conditions (timing, number of fish, etc.).
 - explain the activity on dry land first. This must include all procedures and descriptions of safety hazards. The need for efficient, proper, and safe fish collection and handling must be reinforced.
 - once in the boat, review the activity and procedures prior to lifting any traps or nets out of the water.
 - demonstrate to participants how to use all equipment prior to starting the activity.
 - provide training to participants such that they are able to identify fish abnormalities and signs of clinical illnesses as described in the animal care certification.

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- review with the participant, the equipment requirements prior to leaving for the field to ensure students have all of the appropriate safety gear and equipment listed in section 4.1.2.
 - ensure participants are recording appropriate data in their field notebooks: date, times, crew names, GPS coordinates, substrate type, water depths, orientation of gear, shoreline conditions, water conditions (including temperature and secchi disc depth), weather conditions and aquatic vegetation.
- b) Fish handling should be minimized as much as possible.
- When conducting the studies, do not handle the fish any longer than the time necessary to perform required measurements. Ensure that fish are kept in the water when handling, e.g. keep part of the seine net in the water when removing the fish.
 - Handlers must keep their hands wet to avoid damage to the fish.
 - Avoid squeezing the fish and putting fingers in the fish's or eyes.
 - When handling larger fish, ensure that the body is fully supported in the horizontal position with two hands placed ventrally on the fish i.e. support tail and opercula region (beneath the pectoral fins).
 - When measurements are completed, release the fish gently, head first into the water body.
 - If required, assess injured or ill fish according to SOP AN-02-05, and euthanize where appropriate according to SOP AN-02-04. Place euthanized specimen in a container containing preservative.
 - In the event that other fish species are captured or numbers of fish exceed (i.e. by 20%) those listed in the approved protocol, UCN's ACC will be contacted as soon as possible.

4.2 Fish Capture using Seines

Seining is a fish capture method used in the littoral zones to capture a representative sample of aquatic life.

The following sections describe required equipment and the method for setting and using seines.

4.2.1 Equipment requirements for seining

The following equipment is provided by the instructor/technician for seining:

- seines (2) stored in red tubs – length to use based on water body structure and vegetation and student safety considerations e.g. 3/16"x4'x12' for steeper areas
- waders (student responsibility)
- 30-meter tape (student responsibility)

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- fish measuring board, weigh scale and cradle
- preservative and collection bottle (s) if incidental fish mortality
- fish bat

4.2.2 Method

When using seines for fish capture, follow the described procedure below:

- Travel to location. Fill the collection tub with clean water from the water body. It must be filled just prior to the fish coming out of the water.
- Where bottom substrate and shallow depths allow, have:
 - one person standing near the shoreline holding the float line bridle in one hand, while the lead line bridle is looped around bottom of foot. The loop should be attached in a manner which allows for the net to drag along the substrate, but can be removed quickly.
 - a second person, with seine net attached in a similar manner, walking straight out away from the shoreline. If the substrate is too soft, the second person can be on a boat with the end tied off to a pole.
 - additional people follow behind the net to assist if it becomes snagged or if one of the people at the ends of the seine net needs assistance. They will also be involved in measuring total area seined once each sweep is complete. One of the additional people can assist on shore when pulling up the net.
- Once the net is extended out, sweep it back in towards shore. Alternatively, the net can be swept through an area parallel to shore before being brought on to shore.
- Bring the net onto shore by having one additional person stand on shore, while two persons on the end of the net walk up on alternate sides of the person standing on shore. Pull the net up, keeping the lead line on the bottom until the net is almost out of the water (i.e. net with fish in it is still in the water).
- Collect the fish out of the net and place into the collection tub. Once all the fish have been removed from the net, they are identified, counted, and measured as required.
- As soon as they have been processed, release each fish as gently as possible back into the water body.

4.3 Fish Capture Using Minnow Traps

Minnow trapping collects a sample of pelagic fish from a water body.

The following sections describe required equipment and the method used for setting and using minnow traps.

4.3.1 Equipment requirements for minnow traps

The following equipment is required and provided by the instructor/technician for minnow trapping:

- commercial minnow traps – 9" x 16" (5), bait
- sideline, anchors if required
- floats (with permit number on float) if float required, otherwise flagging tape to label traps
- depth sounder,
- fish measuring board, weigh scale
- 70-liter collection tub (s) and cover(s), bucket to add additional water as required
- preservative and collection bottle (s) if incidental fish mortality

4.3.2 Method

When using minnow traps for fish capture, follow the described procedure below.

- Travel to location. Once at location, bait the trap.
- Tie an anchor line (with anchor) and float line to the minnow trap and place trap into the water body with the long axis parallel to the shoreline. Feed out the appropriate length of float line and attach float. Release the float.
- Measure depth of trap set using depth sounder.
- Leave trap in place for the required amount of time as per Animal Use Protocol (AUP). (i.e. 12 to 24 hours).
- Check nets every couple of hours to ensure no mortality.
- For off shore sets where required, tie line to the baited trap and secure sufficient length of line to the trap. Place the long axis of the trap parallel to the shoreline in the water. Secure the end of the line to a tree or other secure object on or near the shore. Mark the line with required permit information using the flagging tape.
- Fill the collection tub with water from water body.
- When checking/retrieving the trap, haul in the trap and remove the fish. Place the fish in the collection tub for assessment (identify, count, and measure).
- Check/release the fish without removing the trap from the water.

4.4 Fish Capture using Hoop/Trap Nets

Hoop/trap nets are employed when fish mortality is not acceptable to the study requirements. Hoop nets are generally used in flowing water and trap nets are generally used in stagnant water.

The following sections describe required equipment and method for setting and using Hoop/Traps.

4.4.1 Equipment requirements for Hoop/Traps

The following equipment is required when employing Hoop and Trap nets for capture fish.

- a) For Hoop nets, the following equipment must be available:
 - Hoop net with both wings
 - sideline
 - anchors, floats (with permit number on float), depth sounder
 - 70-liter collection tub (s) and cover(s)
 - fish measuring board, weigh scale and cradle
 - preservative and collection bottle (s) if incidental fish mortality
 - fish bat
- b) For Trap nets, the following equipment must be available:
 - trap net with leader
 - sideline, anchors, floats (with permit number on float), depth sounder
 - 70-liter collection tub (s) and cover(s)
 - fish measuring board, weigh scale and cradle
 - rubber dip landing net
 - preservative and collection bottle (s) if incidental fish mortality or collection tub for larger fish
 - fish bat

4.4.2 Method

When using Hoop/Trap nets for fish capture, follow the described procedure below.

- Arrange trap on land, so students are aware of the setup and how the trap functions.
- Travel to location. Ensure that at least one of the floats to be used has the required collection permit information. Tie an anchor line (with anchor) to the end of the net and the float line (with float) to the opening of the device.
- Place the anchor end of the trap into the water. Extend the trap out. Extend the wings into the correct position, i.e. 45° angle. Release the wings after ensuring the wing anchors and floats are attached.
- Measure the depth of trap.
- Leave the net in place for the required amount of time as per AUP. (i.e. 12 to 24 hours).

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- Check nets every couple of hours to ensure no mortality.
- Fill collection tub with water from water body.
- Retrieve net in a manner that allows fish to move into the end containment compartment in the hoop net while this compartment is still in the water. Pull the compartment end of the net in, open up release rope and place fish immediately into the collection tub(s). If using the “zipper top” trap nets, pull up the trap box until the zipper is at the surface. Open the zipper and remove the fish with a rubber dip net and place in tub.
- Identify, count, and measure fish if required.
- Release each fish back into the water body as soon as they have been processed or are healthy enough to be released.

4.5 Fish Capture using gill nets

Gill nets are used to sample fish from any depth and location except the near shore zones to capture a representative assortment of fish from the particular location. Gill nets are the traditional methods of fish sampling used in most aquatic studies.

The following sections describe required equipment and method for setting and using Gill nets.

4.5.1 Equipment requirements for gill nets

The following equipment is required for using gill nets for capturing fish:

- Gill net
- Sideline
- Anchors, floats (with permit number on float), depth sounder
- 70-liter collection tub (s) and cover(s)
- Fish measuring board, weigh scale and cradle
- Preservative and collection bottle (s) if incidental fish mortality

4.5.2 Method

When using gill nets for capturing fish, follow the described procedure below.

- Travel to location. Ensure that at least one of the floats to be used has the required collection permit information. Tie an anchor line (with anchor) to the end of the net and the float line (with float) to one end of the net.
- Extend the net into the correct position. Tie an anchor line (with anchor) to the other end of the net and the float line (with float) and set into the water.
- Measure the depth of net.
- Leave the net in place for the required amount of time as per AUP. (i.e. 12 to 24 hours).
- Check nets every couple of hours to ensure no mortality.

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- Fill collection tub with water from water body.
- Retrieve net while removing fish from it and placing them into the collection tubs.
- Identify, count, and measure fish as required.
- Release each fish back into the water body as soon as they have been processed or are healthy enough to be released.

4.6 Cleaning and Use of Water-related Equipment

This section describes the cleaning and use of water-related equipment in fresh-water aquatic environments for fish capture whether or not they are located within a given AIS Control Zone in Manitoba (Appendix I).

For the purposes of this SOP, water-related equipment refers to any equipment that comes into contact with water from a water body and includes, but is not limited to:

- watercraft (e.g. boats)
- fishing gear (e.g. lures, nets, bait buckets, augers)
- Gill nets
- Personal Floatation Devices (PFD's)
- anchors
- paddles
- ropes
- any scientific equipment

Participants **MUST** be aware of the AIS Control Zone (Section 4.6.1) for each water body subject to fish capture, as well as the invasive aquatic species (Section 4.6.2) associated with each water body.

4.6.1 AIS Control Zones

An AIS control zone is any watershed area where:

- aquatic invasive species (Section 4.6.2) already occur, or
- where an AIS is expected to spread to.

There are six (6) AIS control zones in the Province of Manitoba (Appendix I) including Central, Nelson River, Whiteshell, Buffalo Bay, Winnipeg River and Saskatchewan River/Cedar Lake.

The detailed description of each AIS Control Zone provided in Part 3 of the Province of Manitoba's Water Protection Act, Aquatic Invasive Species Regulation (W65 — M.R. 173/2015).

For purposes of this specific SOP, the AIS Control Zones associated with teaching, research and testing at UCN include, but are not limited to:

- **Saskatchewan River – Cedar Lake Control Zone**

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This AIS Control Zone was established to prevent the introduction and to control the spread of zebra mussels and includes water bodies in and around The Pas, Manitoba general area.

- **Nelson River Control Zone**

This AIS control Zone was established to prevent the introduction and to control the spread of zebra mussels and the spiny waterflea.

Regulations require decontamination (Section 4.6.4), in addition to general cleaning procedures (clean, drain, dry) (Section 4.6.3), to ensure all water-related equipment are free of AIS before being placed into a different water body.

While Non-Control Zone water bodies are also utilized by UCN, they do not have the same government requirements as those within an AIS Control Zone.

4.6.2 AIS

AIS in Manitoba are organisms, whether fish, invertebrates, plants or algae, that are not native to a given region of the province and introduced, either intentionally or accidentally, to a water body.

Following introduction to a water body, the invasive species may out-compete native species for available resources such as food and space. Therefore it is important to remove these species from all water equipment used.

A list of all AIS of concern/interest in the Province of Manitoba is provided in Schedule A of the Water Protection Act, Aquatic Invasive Species Regulation (W65 — M.R. 173/2015).

Majority of the invasive species of concern in Manitoba are fresh water organisms including:

- Zebra Mussels, Quagga Mussels
- Spiny Waterflea,
- Rusty Crayfish, and
- Asian Carp

4.6.3 Clean, Drain, Dry

To prevent the spread of invasive species follow the described procedures prior to placing all water-related equipment into a water body.

- If cleaning boats, use government provided cleaning stations as directed.
- Inspect for the presence of aquatic invasive species, aquatic plants (e.g. weeds and algae), and mud. If present, remove.
- Drain any residual water away from the water body or storm drain.

- Dry completely by placing all water-related equipment in the warehouse (indoors) with heat on them. Leave items open for as long as necessary or decontaminate as required (see Section 4.6.4).
- Once dried, store in water proof tubs.

Note: If returning to the same water body on the next trip, drying and decontamination is NOT required.

4.6.4 Decontamination

Decontaminate water-related equipment as follows:

- a) For all non-watercraft related equipment used in fish capture:
 - Expose to temperature below -10°C for a minimum of three (3) consecutive days indoors.
 - Store in appropriate water-proof containers.
- b) For watercraft only:
 - Expose to temperatures below -10°C for a minimum of three (3) consecutive days outdoors
 - Store under roofed storage facility provided until use
 - Ensure that the watercraft is completely dried before placing into another water body

5 HEALTH AND SAFETY

NRMT students and staff participating in these activities are required to possess a Pleasure Craft Operating card, WHMIS certification, as well as valid First Aid certification including CPR.

Students will be reminded of safety rules of these activities including the Fall Field Practicum Red Rules (i.e. Red Rules regarding safety and disrespect for wildlife and environment) prior to any activities. Specific safety lectures will be given in relation to particular equipment and potential hazards (e.g. algae on rocks, sudden substrate drop-offs).

Students also are reminded to wash their hands after handling animals. Sanitization wipes plus potable water and soap will be made available at the study site for hand cleaning purposes.

