

ALBERTA WILDLIFE ANIMAL CARE COMMITTEE

CLASS PROTOCOL # 004

Adopted 11 February 2005

CLASS ACTIVITY: BAT CAPTURE, HANDLING, AND RELEASE

SPECIFIC ACTIVITIES: mist-netting, harp trapping

OBJECTIVES: to capture live bats, primarily for research and management purposes

PRIMARY CONTACT/AUTHORITY: Director of Wildlife

APPLICABLE PERSONNEL:

- ◆ Project leads must be biologists with experience in mist netting, identifying local bat species, and other related field procedures.
- ◆ Project team must include persons trained in general wildlife capture and handling as per an approved wildlife capture or animal care course.
- ◆ All crew members should be immunized against rabies and have had a suitable titre in the last two years.

SPECIES: all bat species

APPLICABLE GEOGRAPHIC RANGE: provincial

METHODS:

CAPTURE

- ◆ At least two crew members are needed for mist netting and harp trapping. Minimize other people on hand to only those needed for efficient handling.
- ◆ Wearing thin gloves may protect crew members from bites.
- ◆ Sampling can be conducted between the beginning of May and the end of August.
- ◆ Precipitation, strong winds, or temperatures below 10°C (5 °C in the north) tend to decrease bat activity; therefore, avoid setting nets under these conditions.
- ◆ Nets or traps are set up between dusk and dawn and removed at other times of the day.
- ◆ To avoid capture of pregnant or nursing bats, mist nets generally should not be set near maternal colonies (*i.e.*, directly in front of day roost openings), nor should roosts be disturbed.

1) Mist nets

- ◆ Mist nets are usually black, 6-36 m in length, 2-3 m high, have four shelves, have a mesh size of 36 mm, and are constructed from 50-70 denier/2 ply nylon. A variety of different materials can be used to support the nets, although 10' aluminum poles usually are used.
- ◆ Mist nets require constant monitoring (*i.e.* checked no less than every 10-15 minutes); captured bats quickly become entangled and should be removed immediately to avoid injuries or predation.
- ◆ Mist nets should be closed until dusk in order to avoid catching birds.

- ◆ Place nets at common foraging sites and commuting flyways such as trails, cut-lines, small roadways, small forest clearings, beneath bridges, and over standing water or small streams.
- ◆ If placing the nets over water, do not position the nets too close to the water surface or bats caught in the lower shelf may drown or become sodden.

2) Harp traps

- ◆ The preferred trap whenever a large number of bats could be captured because they help to avoid trauma associated with the use of mist nets.
- ◆ Various sizes, generally two 2 X 1.8 m frames of aluminum tubing with a bank of 6-8 pound (3-3.5 kg) monofilament fishing line strung 2.5 cm apart across each frame. The frames are aligned 7-10 cm apart with a canvas bag, partially or fully lined with polyethylene, attached to the bottom of the frame.
- ◆ Traps should be checked hourly, especially if pregnant or lactating females are likely to be captured, the weather is cold/wet or hot/dry, or the trap is set during feeding periods. Frequent checks are also required since: 1) predators may enter the trap bag; and 2) multiple bats captured in the trap might injure one another.

CAPTURE OF NON-TARGETS

Release all non-targets such as songbirds immediately. If an owl or other bird of prey is captured, remove it from the net while holding the feet.

HANDLING

- ◆ Handle the animal efficiently and without sudden movements, and avoid unnecessary exposure to bright lights when possible.
- ◆ Once the bat is captured in a mist net, immediately remove it from the same side it was captured on and place it in a cotton bag with a drawstring closure.
- ◆ Processing time should be kept as short as possible. Preferably bats should be held less than one hour, but no more than two hours.

Exceptions:

- Lactating females or bats in late stage pregnancy should be processed and released immediately at the site of their capture.
- ◆ Fecal samples are collected from the holding bag after one hour has elapsed.
- ◆ *Recording reference calls* – If light sticks are used, activate the inner capsule in the stick. Use a small amount of non-toxic Skinbond® adhesive and attach light tags to the back (for low-flying bats) or the abdomen (for high-flying bats). A spotlight is far better for showing where bats are and requires less handling.

RELEASE

- ◆ Let the bat fly from your hand or place it on a ledge or high place from which it can drop down.
- ◆ Ensure the bat flies off a distance and does not just fall to the ground in distress.
- ◆ Torpid bats may need to be re-warmed in hands before releasing.

PROCEDURES

The above handling protocol is appropriate for catching bats for basic body morphometrics, taking hair samples, collecting faecal samples, collecting tissue samples, attaching radio transmitters, recording reference calls, and banding under authority of a Fish and Wildlife Research Permit or Collection Licence. For all noted procedures, previous training and experience is necessary.

Tissue samples:

Small samples are taken using a biopsy punch from the wing near the tibia, avoiding major blood vessels. The site must be cleaned with a disinfectant such as ethanol. Ensure any bleeding has stopped before the bat is released. Fairly specific training is required.

Attaching radio transmitters:

Transmitters should weigh no more than 5% of the bat's weight, including wing bands, tags, or adhesives. To attach the transmitter, carefully clip an area of hair between the shoulder blades approximately the size of the transmitter. Apply surgical adhesive (*e.g.*, non-toxic Skinbond®) to clipped area and transmitter. Attach transmitter below the head, with the antennae oriented towards the posterior, and gently press in place 3-5 minutes. If skin of the bat is cut while clipping hair, do not attach radio transmitter; provided it is a small nick, the bat can be released; however, if the bat is severely injured, crew members should consider holding it overnight and treating the injury.

Radio collars are not appropriate for bats found in Alberta.

Transmitters should not be attached to adult females during late pregnancy, juveniles, or repeatedly to the same bat. Radio-telemetry studies should only be conducted when prey are abundant. Transmitters should be removed once required data are collected, if possible (often it is not, but in time the surgical glue will release the transmitter).

Banding:

Split-ring plastic, aluminum, or flanged bands may be placed around the forearm, but remove sharp edges or corners on the band first. Do not place multiple bands on the same forearm. Generally, hibernating bats or lactating females should not be banded.

If other more invasive procedures are proposed, specific details must be included in the research application and evidence of appropriate training provided.

EUTHANASIA:

Euthanasia must be done quickly and with minimal pain or stress. All team members performing euthanasia must be competent in the proper techniques. Acceptable methods of euthanasia in bats include:

- ◆ Inhalants: Carbon dioxide, carbon monoxide, halothane, isoflurane, sevoflurane are recommended. Animals should be placed in a closed container with a cotton swab soaked in the inhalant agent.
- ◆ Intraperitoneal injection of barbiturates
- ◆ Cervical dislocation is acceptable in animals <200g bodyweight.

Carcasses euthanized by chemical methods SHALL NOT be left in the field.

EVALUATION

If any severe bat injury or mortality occurs, the operation should halt and all activities should be reviewed. If corrective factors cannot be identified, the operation should be discontinued.

COMMUNICATIONS AND MEDICAL EMERGENCIES

- ◆ All members of the capture team should understand risks associated with fieldwork (*e.g.*, climbing, rabies).
- ◆ An emergency medical plan that includes evacuation to the nearest medical facility should be considered when significant field hazards exist.
- ◆ Communications may be necessary with the local community regarding general location of mist or harp netting activities.

ACKNOWLEDGEMENTS and REFERENCES:

The material for this protocol comes largely from the Handbook of Inventory Methods and Standard Protocols for Surveying Bats in Alberta prepared by Maarten Vonhof for Alberta Environment, Fisheries and Wildlife Management Division. R. Barclay and L. Wilkinson reviewed the document.

Other documents consulted include:

- 1) Canadian Council on Animal Care. 2003. Guidelines on: the care and use of wildlife. http://www.ccac.ca/english/gui_pol/GUFRAME.HTM (under 'List of CCAC Guidelines')
- 2) Canadian Council on Animal Care. 2003. CCAC species-specific recommendations on: Bats http://www.ccac.ca/english/gui_pol/GUFRAME.HTM (under 'List of CCAC Guidelines' and 'Species-specific Recommendations')
- 3) Resources Inventory Branch for the Terrestrial Ecosystems Task Force. 1998. Live animal capture and handling guidelines for wild mammals, birds, amphibians & reptiles <http://srmwww.gov.bc.ca/risc/pubs/tebiodiv/index.htm>
- 4) Resources Inventory Branch for the Terrestrial Ecosystems Task Force. 1998. Wildlife radio-telemetry. Standards for components of British Columbia's biodiversity No. 5. <http://srmwww.gov.bc.ca/risc/pubs/tebiodiv/index.htm>
- 5) 2000 Report of the AVMA (American Veterinary Medical Association) on Euthanasia. JAVMA Vol. 218, no. 5, March 1, 2001. <http://www.avma.org/resources/euthanasia.pdf>

Last updated: Jan 28, 2005