

# Alberta Wildlife Animal Care Committee Class Protocol #012

Adopted 22 July, 2013

**Class Activity: Cougar (*Puma concolor*) Capture, Handling, Immobilization<sup>1</sup>, and Release**

## Specific Activities

Pursuit with dogs, immobilization

## Objectives

- Humane capture and handling of live cougars, primarily for research and management purposes.
- Safety to humans and cougars.
- Limited trauma and stress to cougars.

## Primary Contact/Authority

Director of Fish and Wildlife Policy

## Applicable Personnel

- **Project leads** must be an experienced Wildlife Biologist or Wildlife Veterinarian with NR 9 level or equivalent, Provincial Problem Wildlife Coordinator, Fish and Wildlife officers designated as Regional Problem Wildlife Specialists, or persons with appropriate experience and training.
- **Project team** must include persons trained in general wildlife capture and handling as per an approved wildlife capture/immobilization course.
- **Capture crews** should consist of at least three people and will include at least two persons with experience in capturing and handling cougars. At least one person who has completed an approved wildlife immobilization course must be present.
- Input from a veterinarian must be provided as a member of the capture crew or within direct contact during field operations. Preferably the veterinarian will have experience with wildlife handling and capture.
- All members of the capture crew must be trained in first aid and CPR.
- All members of the crew involved with chemical immobilization should be educated on the safe handling of drugs to be used, their effects, and emergency human treatment.
- When a firearm is carried, all members of the team should be familiar with the specific firearm being used.
- Before the capture program commences, a Regional Problem Wildlife Specialist, Provincial Problem Wildlife Coordinator, Provincial Carnivore Specialist, or the District Fish and Wildlife officer must be contacted and the project discussed in detail.

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<sup>1</sup> If using immobilization drugs, applicants should refer to Appendix A – Drug Dosages from the Chemical Immobilization of Wildlife – 3<sup>rd</sup> Edition (2009) Canadian Association of Zoo and Wildlife Veterinarians

## **Species**

Cougar (*Puma concolor*)

## **Applicable Geographic Range**

Provincial

## **Methods**

### **Capture Methods**

- Cougars will be captured using trained dogs to pursue and bay the animal in a location where it can be safely immobilized (typically in a tree). In some cases it may be possible to bay a cougar by pursuing it on foot.
- Dogs should be fitted with tracking collars in order to allow the capture crew to locate the bayed cougar as quickly as possible.
- Where possible, cougars should be captured when snow conditions permit the capture crew to examine the tracks prior to releasing dogs. Females accompanied by young kittens (less than 4 months old) should not be pursued as the dogs may kill the kittens.
- Once the cat is at bay, the dogs will be removed from the immediate vicinity and safely secured in order to reduce stress on the cougar.
- The cougar should be observed carefully to determine whether the sex and age of the animal meets project objectives. If not, the animal does not require immobilization and the capture crew should leave the site as soon as possible.
- The capture crew will be prepared to climb a tree in order to safely belay the cougar to the ground following immobilization. This requires carrying and being experienced in the use of climbing gear including spurs, climbing harnesses, belay devices, and ropes.
- If a cougar is at bay in a tree where immobilizing the animal poses undue risk of injury or death, either the cougar will be encouraged to leave the tree in the hope that it will tree again in a more suitable location, or the procedure will be abandoned entirely.
- In the event that the cougar jumps from the tree on initial injection, the capture crew will immediately proceed to track the cat on foot (following tracks if there is snow or using a leashed and carefully controlled dog if no snow is present) until they locate the cougar, or it is determined that the injection was not successful.
- While it is sometimes possible to encourage the cougar to jump from the tree after injection, this should be undertaken with caution as the animal may alternatively climb higher, increasing the risk of injury to both the animal and the field crew.
- At least one crew member should carry and be certified in the use of a 12 gauge shotgun or high-powered rifle.

### **Immobilization Methods**

**The use of supplemental oxygen for immobilized cougars has been shown to be extremely beneficial and is strongly recommended, but is not mandatory in field situations at this time.**

- Drug dosages will be based on body weight and deliver an adequate single-dose volume to ensure rapid, effective immobilization within maximum safe dose margins.
- Use known, recommended drugs (and drug combinations), reversal agents, and dosages, included in the attached species specific reference charts, see Appendix A – Drug dosages (Canadian Association of Zoo and Wildlife Veterinarians, Chemical Immobilization of Wildlife Course manual, 2009).

- Administer intramuscularly to the outer surface of the hind (preferred) or front leg. Drugs will usually be administered using a dart; however a syringe pole may be appropriate in some cases.
- Deliver darts using the lowest possible power setting to reduce risk of injury.
- The barb location should be marked on the dart prior to darting. Darts with barbs should be removed with a sterile scalpel and the dart entrance wound should be covered with hibitane.
- Record the time of injection.
- Once the injection is given, remain as quiet as possible to reduce stress on the cougar and increase the likelihood of successful immobilization.
- If more than one injection is required before an animal is safely immobilized, allow 10-15 minutes to elapse after the first injection. If the animal shows some drug effect, but does not go down, re-administer 50% of the original dose. If the animal shows no drug effect 15 minutes after the first injection, re-administer the entire original dose. If there is little or no evidence of induction after three injections, abort the capture attempt since this strongly suggests a problem with either the drug delivery system or the drug quality. Nevertheless, monitor all darted cougars to determine the extent of drug effects, if any. Over the next 24 hours, try to relocate the animal and assess its status.
- Make all reasonable efforts to collect unsuccessful darts.

## **Handling Drugs**

**NOTE – All scheduled drugs (e.g. Ketamine) must be properly secured at all times, including under field conditions.**

- Storage—refrigerate reconstituted drugs; store all other drugs at room temperature and out of direct sunlight.
- Transporting—carry drugs in a leak proof, un-crushable container. Carry a ‘sharps’ container for used needles.
- Labelling, handling, and documentation – label all drugs accordingly.
- Avoid cross-contaminating drugs and sterile water (i.e., one needle for one task).
- Document and account for all used or unused drugs or vials.

## **Handling Immobilized Cougars**

- Minimize the number of people to those needed for safe and efficient handling of the animal.
- Minimize sudden movements, as well as auditory, visual, and touch stimuli throughout the procedure, especially in the recovery phase.
- Ensure safety and comfort of the animal at all times, and personal safety of all people involved.
- Use gloves when reasonable to reduce potential risks to humans.
- Move the immobilized cougar out of direct sunlight and wind, and away from natural hazards.
- Lay the cougar in lateral recumbency.
- Monitor and record temperature, pulse, and respiration rate immediately and continue at five to ten minute intervals throughout the handling period.
  - Monitor mucus membrane color for oxygenation. A pulse oxymeter should be included as part of the handling kit.
  - Be prepared to counter hypothermia/hyperthermia with appropriate mitigations.
  - Address veterinary emergencies by personnel with appropriate training.
  - Develop protocols beforehand for injuries that result in extended care.
- Apply ophthalmic ointment to the eyelids to prevent drying; use a blindfold to reduce sensory stimuli.

- Complete a thorough physical examination to determine general health. Treat open and superficial wounds appropriately; consider topical antibiotics. Consider a long-lasting antibiotic if there are extensive lacerations or injuries. If major injuries are involved, consult a veterinarian before euthanasia is considered.
- Conduct painful (e.g., ear tag, tooth extraction) or manipulative (e.g., weighing) procedures first while cougar is still deeply anaesthetized.
- Complete handling within 30 minutes (See PROCEDURES below) and then monitor the animal from a safe distance until it is fully ambulatory.
- If anesthesia continues beyond 45 minutes, turn the animal over to prevent settling of fluids and congestion.

## **Procedures**

This handling protocol is appropriate for taking basic body morphometrics, collecting faecal samples, taking hair samples, drawing blood, attaching radio collars, attaching ear tags, and taking tissue samples or biopsies, under authority of a Fish and Wildlife Research Permit or Collection Licence.

For all noted procedures, previous training and experience is necessary.

### **Taking hair samples**

- Take 20-30 hairs with roots; avoid sensitive regions like the groin.

**Use of the following more invasive procedures should be limited to those necessary for the objectives of the study. Anesthesia is necessary if undue stress or pain is anticipated.**

### **Drawing blood**

- No more than 10-20% blood volume or 1.5-2.5% of lean body mass should be collected.
- Draw blood from the saphenous or cephalic vein using aseptic technique.
- Ensure bleeding has stopped before releasing the animal.

### **Attaching radio collars**

- Combined weight of transmitter and neck collar should not exceed 2-3% body weight.
- Collars should have a breakaway device or 'rot-off' insert appropriate to the life expectancy of the transmitter battery. It is recommended that rot-offs are used regardless of whether the collar has a timed or remote release mechanism, as these are prone to failure.
- Make appropriate modifications to radio collars for young animals that are still growing. If not possible, consider not radio-collaring the animal.
- Generally, animals in poor condition should not be radio-collared. Similarly, recaptured animals negatively affected by radio collars should not be re-collared.

### **Attaching ear tags**

- The size, shape, material, color, and placement should allow for normal behaviour and minimal potential entanglement on vegetation.
- Use sterile technique.

## **Taking tissue samples or biopsies**

- Take only the minimum tissue necessary to satisfy research goals.
- Minimize stress and pain while obtaining adequate samples for study purposes.
- Use sterile technique.

If other more invasive procedures are proposed, specific details must be included in the research application.

## **Evaluation**

If severe injury (extensive deep, penetrating wounds, severe bleeding, or any major limb bone fracture) or mortality is associated with capture and release projects, halt the operation and review all activities. However, even extensive superficial wounds should be cause for review. If corrective factors cannot be identified, discontinue the operation.

## **Euthanasia**

**In the event of unforeseen irreversible injury or intolerable pain to a captured individual, euthanasia must be performed safely and humanely.**

The preferred method for field euthanasia of cougars is gunshot to the brainstem of immobilized cougars or to the heart/lung area of non-immobilized cougars. If other methods are used, the researcher must provide details in the research permit application and receive approval of the proposed method.

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

## **Communications and Medical Emergencies**

- All members of the capture crew must be aware of risks associated with fieldwork and with using specified immobilization drugs. MSD sheets on the drugs being used should be provided to all team members.
- Develop an emergency medical plan that includes evacuation to the nearest medical facility before the capture and handling activity begins.
- Medical facilities in the area of the project should be provided with Medical Alert Information Sheets on the types of drugs being used for wildlife capture and handling.
- Establish an emergency medical plan, including evacuation to the nearest medical facility.
- If appropriate, notify the local community officials regarding general location of capture activities.

## **Acknowledgements and References**

Draft materials were supplied by C. Chetkiewicz and K. Knopff, and reviewed by K. Knopff, K. McAdam, and J. Allen.

### **The following documents were also consulted**

- 1) Canadian Council on Animal Care. 2003. Guidelines on: the care and use of wildlife.
- 2) Canadian Association of Zoo and Wildlife Veterinarians. 2009. The Chemical Immobilization of Wildlife –3rd Edition. Canadian Association of Zoo and Wildlife Veterinarians.

- 3) Resources Inventory Branch for the Terrestrial Ecosystems Task Force. 1998. Live animal capture and handling guidelines for wild mammals, birds, amphibians & reptiles.
- 4) Resources Inventory Branch for the Terrestrial Ecosystems Task Force. 1998. Wildlife radio-telemetry. Standards for components of British Columbia's biodiversity No. 5.
- 5) 2000 Report of the AVMA (American Veterinary Medical Association) on Euthanasia. JAVMA Vol. 218, no. 5, March 1, 2001.