



Black Bear Research Center (BBRC)



Standard Operation Procedures: Cub Handling and Morphological Measurements

1. **Preparation of transport carrier.** Personnel: at least one person. Tools: carrier, and straw.
 - 1.1. Locate carriers in barn by straw bales.
 - 1.2. Cover the bottom of the carrier with straw.
 - 1.3. Bring carrier to target pen.

2. **Cub removal from maternal female.** Personnel: at least two people. Tools: carrier, and gloves.
 - 2.1. Approach the culvert with fully anesthetized target female bear.
 - 2.2. Handlers should wear examination gloves before handling cubs.
 - 2.3. Locate cubs and remove cubs before the maternal female is pulled out of the culvert.
 - 2.4. Cubs, one at the time, should be placed in carrier prior to leaving the pen.
 - 2.5. Bring cubs to the laboratory building; door of the carrier must remain closed.

3. **Cub identification.** Personnel: at least two people. Tools: cub data sheets, nail polish, and carrier.
 - 3.1. Doors and windows in the laboratory must remain closed while processing cubs. Cubs must remain in the carrier unless they are being handled for measurements.
 - 3.2. Look at cub measurement sheet for marking identification references for each cub.
 - 3.3. Handlers should wear examination gloves before handling cubs.
 - 3.4. Take cubs out, there should be at least two people per cub: one holding the cub and the other(s) measuring and recording the information.
 - 3.5. Paint nails with corresponding color and limb code for each cub. Create a color code the first time handling that cub (e.g. newborns). Repaint nails if necessary in subsequent sampling periods.

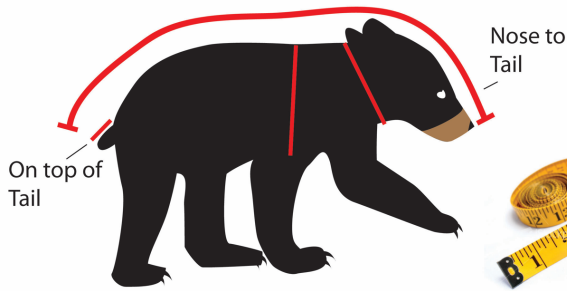
4. **Morphological measurements.** Personnel: at least two people. Tools: carrier, data sheets, pen, gloves, digital scale, weighing tub, hanging scale, fabric metric tape, ruler, and small calipers.
 - 4.1. Tare digital scale to account for the weight of weighing tub.
 - 4.2. Place cub in weighing tub, and close the lid.
 - 4.3. Place tub on scale and record weight in grams.
 - 4.4. Take the cub out of the tub and proceed with morphological measurements (see diagram in page 3).
 - 4.5. Once all measurements have been collected, make sure that nail polish is dry before placing cub back in carrier.

- 4.6. Place cub in carrier and repeat the process with subsequent cubs.
 - 4.7. All cubs from the same litter must be kept in the lab until work with maternal female is finished.
5. **Cub reintroduction to maternal female.** *Personnel: at least two people. Tools: carrier and gloves.*
- 5.1. All personnel must wear examination gloves while handling cubs.
 - 5.2. Cubs should be taken in carriers, with the door closed, from the laboratory to the holding pen.
 - 5.3. Take cubs, one at the time, out of the carrier and place them close to the maternal female, near the nipple area, around the ventral side of the thorax and abdomen.
 - 5.4. Remove carrier from pen and follow final procedures described in the chemical immobilizations SOP.
 - 5.5. Remove straw from carrier and place it back by straw bales in the barn.

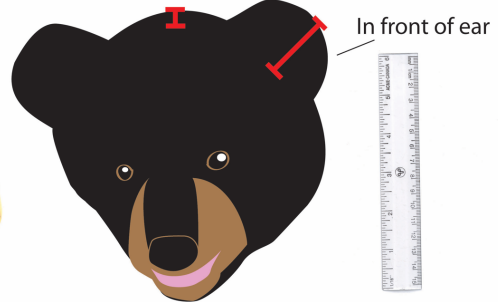
Diagram Illustrating Morphometric Measurements and Tools

Measuring Cubs (cm)

Measuring Total Body, Tail, Neck and Chest



Measuring Hair Length and Ear Length



Measuring Front Paw



Measuring Palmar Pad



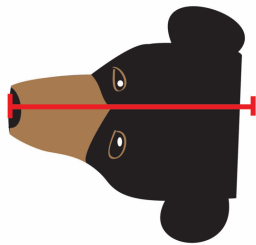
Measuring Hind Foot



Measuring Plantar Pad



Measuring Cranial Length



Nose to back of skull



Measuring Zygomatic Arch

