**SUPPORTING INFORMATION**

**Supporting information A. GRIZZLY BEAR CAPTURE INFORMATION**

Culvert traps are metal enclosures that bears are baited into with meat or fruit. Leg restraints are made of 1/4 inch wire rope formed into a loop with a one-way locking mechanism (Flaa et al. 2009). Leg restraints are deployed on a bear when the animal triggers an Aldrich spring, which fastens the restraint around the animal’s wrist. We monitored culvert traps and leg restraints with cellular remote cameras so that crews could respond immediately—during daylight hours—to release a captured bear and reduce any impacts of prolonged restraint on the animal.

Grizzly bears were anaesthetized using Telazol (8-10 mg/kg) or a combination of Telazol (3.1 mg/kg) and Xylazine (2.4 mg/kg) (Cattet et al. 2003), delivered intramuscularly from either a Daninject or PneuDart dart gun. The effects of the Xylazine were reversed with Atipamezole (0.2 mg/kg) once handling was finished (usually about 45-60 minutes after immobilization) and the animal had been placed in a secure location and position. All animals were blindfolded during handling.

Once anaesthetized, capture crews affixed a telemetry collar and ear tags. During handling, animals were given supplementary oxygen and temperatures were monitored. If any signs of distress were noted—such as body temperatures outside 36-40 °C or poor respiration—animals were given reversal for the Xylazine that inhibits thermoregualtion. Individual measurements included weight, length, chest girth, zygomatic width and length, and body fat which was collected using body impedance analysis (Farley and Robbins 1994). A large clump of guard hairs was collected from the shoulder for genetic-derived individual and family relatedness identification (Wildlife Genetics International, Nelson, British Columbia) and future diet analysis, a premolar tooth was extracted to determine age through cementum analysis (Matson’s Lab, Milltown, Montana), and a tissue sample was collected via biopsy punch in the ear, creating a small hole where we inserted an ear tag. Round, black ear tags of 1” radius with unique numbers were applied to each ear. For animals that were at least 1.5 years old, GPS satellite collars were fitted around the neck.

Table S1. Capture-related measurements and sample sizes for each grizzly bear sex and age class collected between 2016-2022. Weights are in kilograms, lengths and circumferences are in centimeters, and fat is % body weight. Management signifies how many of the captures were done by conservation officers in response to conflicts.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sex | Ageclass | Individuals | Captures | Management | Age | Weight | Fat | Neck | Chest | Length |
| F | Dependent (0-1) | 4 | 4 | 2 | 0 (0-1) | 34 (34-34) | - | - | - | - |
| F | Subadult (2-6) | 18 | 23 | 4 | 4 (2-6) | 95 (46-130) | 24 (5-34) | 54 (43-61) | 94 (82-108) | 143 (118-155) |
| F | Adult (>6) | 20 | 30 | 1 | 11 (7-20) | 125 (84-163) | 25 (16-39) | 59 (48-68) | 100 (86-117) | 149 (130-162) |
| M | Dependent (0-1) | 4 | 5 | 0 | 1 (0-1) | 59 (30-83) | 35 (35-35) | 42 (36-48) | 72 (60-84) | 112 (96-128) |
| M | Subadult (2-6) | 17 | 21 | 3 | 4 (2-6) | 112 (76-156) | 23 (6-30) | 56 (48-67) | 96 (86-111) | 146 (128-170) |
| M | Adult (>6) | 17 | 27 | 2 | 12 (7-27) | 210 (139-269) | 26 (16-39) | 75 (61-86) | 121 (104-136) | 172 (154-183) |

**Supporting information B. SUPPLEMENTAL FIGURES**

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Figure S1. Study area extents. Larger unshaded area is the Elk Valley study area defined by 99% UD of telemetry data. Home range centers of collared bears shown as dots. Shaded is the study area used for genetic capture-recapture, which focuses on home range centers only. The genetic capture recapture study area was created with an interior 5 km buffer on the Elk Valley study area and meant to include only home range centers of bears within the Elk Valley study area.

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Figure S2. Reproduction observations for each age class of female. Sample sizes (n females) shown for each age and group.

**Supporting information C. SENSITIVITY OF CUB SIGHTING TIMING**

We estimate reproduction using cub observations mostly from the spring, but also some opportunistic sightings throughout the year. However, this could possibly reproduction low if cubs are lost before we observe them. To address this concern, we re-ran the analysis using only observations from the spring (April-June).

The original estimates with all the data included were as follows: Annual survival of dependent young, 0-1 years old, was 0.73 (90% CI: 0.61-0.83) for both sexes combined. Annual reproduction (female cubs/female/year) by females aged 5-6 was 0.15 (90% CI: 0.00- 0.31), and 0.24 (90% CI: 0.15-0.33) for females over 6 years old.

Filtering the data to spring only, the results changed as follows: Annual survival of dependent young, 0-1 years old, was 0.80 (90% CI: 0.60-0.93) for both sexes combined. Annual reproduction (female cubs/female/year) by females aged 5-6 was 0 (90% CI: 0.00-0.00), and 0.23 (90% CI: 0.13-0.33) for females over 6 years old.

In the end there was little effect on lambda, which originally was 0.94 (90% CI: 0.86-1.01), with 93% of bootstrapped estimates <1, and with spring-only data is 0.94 (90% CI 0.86-1.01) with **91**% of bootstrapped estimates <1. The only notable change with this level of rounding is that originally 93% of bootstrapped estimates were <1 and with spring only 91% are <1.

Due to the lambda results not being sensitive to including all data and not just spring-only, we have opted to keep the analysis as is. The results are the same either way, but we felt it important to include the data that did acknowledge 5- and 6-year-olds can reproduce, thus retaining the “all data” approach.