

NATURE NOTES

Possible Grizzly Cub Adoption in Yellowstone National Park

Mark A. Haroldson, Kerry A. Gunther, and Travis Wyman

WE SUSPECT that two females with cubs-of-the-year (COY) that have been observed frequently in the Dunraven Pass-Antelope Creek areas of Yellowstone National Park (YNP) were involved in a COY adoption during early August 2007. One of the females was radio-marked (#125) and has an extensive research history. First radio-collared as a three-year-old in Antelope Creek on August 6, 1986, she was subsequently captured and re-collared five times (1990, 1993, 1995, 2000, and 2006) in the Antelope Creek drainage, and she has been radio-located during 18 of the 21 years since her initial capture. Her life range, computed using VHF (Very High Frequency) telemetry locations ($n=272$) and employing a fixed kernel estimator (95%), is centered on the Antelope Creek-Mount Washburn area (Fig. 1). We know of four previous litters that she has produced (in 1990, 1994, 1997, and 2002). During 2007 she was observed with three COY during aerial telemetry and observation flights seven times between June 3 and August 3 (Fig. 1, where observation and telemetry locations coincide). She was last seen with three COY during a telemetry flight on

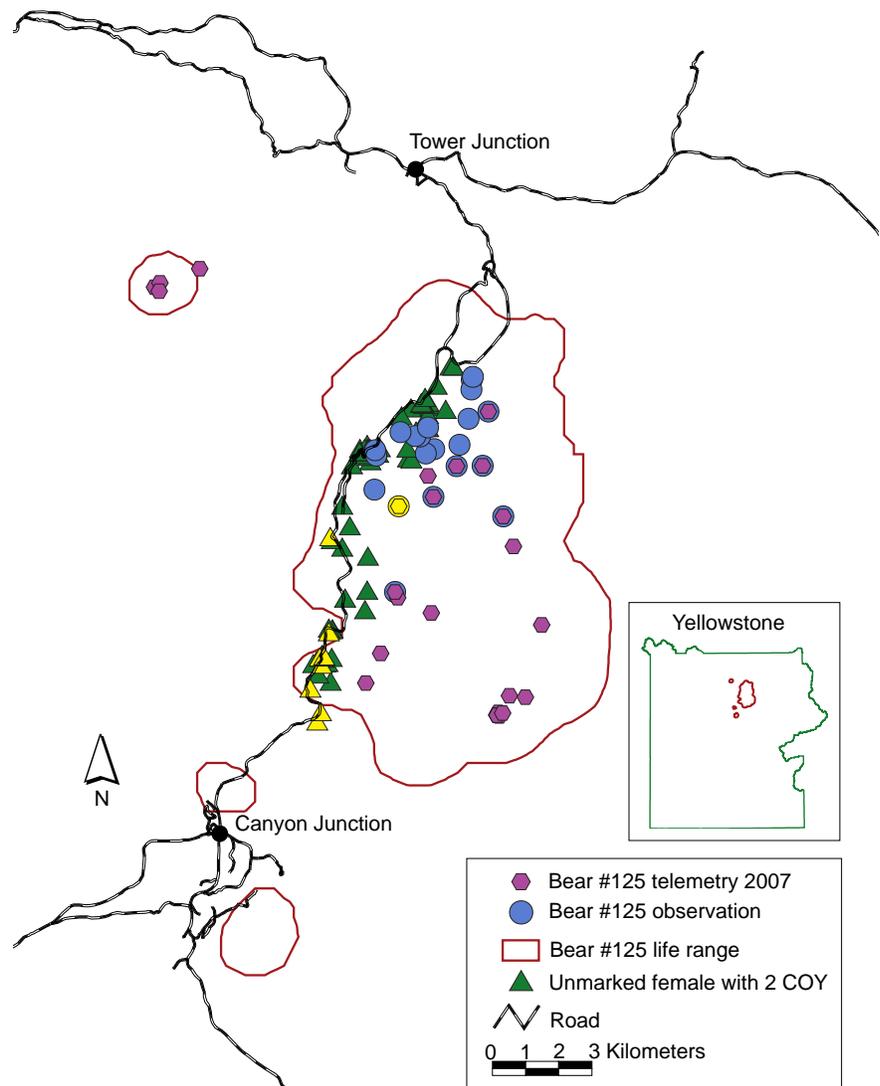


Figure 1. Distribution of observed locations of the female bears apparently involved in an adoption of cubs during August 2007. Yellow shapes depict observations after the number of young accompanying each female changed. Also shown (red polygon) is the 95% fixed kernel life range (272 locations over 18 years) for female #125.



Figure 2. Female grizzly bear #125 accompanied by three cubs-of-the-year on August 3, 2007, in Antelope Creek, Yellowstone National Park.

August 3 (Fig. 2). YNP personnel provided an additional 14 verified observations of a collared female with three COY (Fig. 1) in the Antelope Creek drainage that we considered re-sightings of #125 using the rule set devised by Knight et al. (1995) to differentiate unique females with COY.

The second female (Fig. 3) was not marked but was observed by YNP staff with two cubs on 68 occasions between May 29 and August 7. She was easily distinguishable because she was highly habituated to people, frequently foraged native vegetation within 30 to 100 m of the Dunraven Pass road, and was the only habituated female grizzly bear with cubs that regularly foraged along that section of road. On August 11, a female with four cubs (Fig. 4) was observed frequenting the same roadside habitats (Fig. 1, yellow triangles), exhibiting the same behavior, and identical in physical characteristics as the second female. On August 16, female #125 was seen with only one cub (Fig. 5). There were no further observations of a female with two cubs in the area, suggesting that the second female had adopted or was fostering two of female #125's cubs. We obtained eight additional observations of an unmarked female with four COY after August 11. Although possible, we think it unlikely that a previously unobserved, highly habituated female with four COY

would appear in these roadside habitats this late in the season.

On August 19, in an attempt to obtain samples for DNA analysis, we set hair snares and a remote camera at a location between two areas frequented by the female with four COY. We installed one strand of barbed wire at adult bear height (approximately 60 cm) and four strands at cub height (approximately 25 cm). Inside each hair snare we applied one of a variety of call lures to pieces of downed timber debris. Hair samples were collected from the adult- and cub-height hair snares on August 22. Remotely triggered photographs taken on August 20 show a female with four COY inside the wires (Fig. 6). Genetics analyses on the sampled hair and archived samples from the most recent capture

of bear #125 (September 25, 2006) are being conducted by Dr. David Peatkau (Wildlife Genetics International, Nelson, B.C., Canada) and may reveal if this was indeed a case of adoption and possibly whether the females are related.

Cub adoption in grizzly bears has been documented in Yellowstone National Park, but not since bears congregated at the open pit dumps during the late 1960s (Craighead et al. 1995). Natural cub adoptions have been observed primarily where bears congregate at abundant food sources, such as salmon streams (Dean et al. 1992). Adoptions are generally thought to result from mistakes made by females with young following the confusion and stress caused by confrontations with other bears (Erickson and Miller



Figure 3. Unmarked female grizzly bear accompanied by two cubs-of-the-year on June 11, 2007, near Dunraven Pass, Yellowstone National Park.



Figure 4. Unmarked female grizzly bear accompanied by four cubs-of-the-year on August 11, 2007, near Dunraven Pass, Yellowstone National Park.

1963). In this case, there were unconfirmed reports that an antagonistic encounter between a pack of wolves and bear #125 led to her separation from two of her cubs. The adoptive mother may have happened by these cubs and accepted them as her own. Because bears typically occur at low densities, mother-offspring recognition may not be as well developed as with more gregarious species (Lunn et al. 2000). During 2008, we hope to obtain additional observations of these two families that may help determine if this was a case of long-term adoption or temporary fostering.

YS



USGS/STEVE ARD

Figure 5. Female grizzly bear #125 accompanied by one cub-of-the-year on August 16, 2007, in Antelope Creek, Yellowstone National Park.

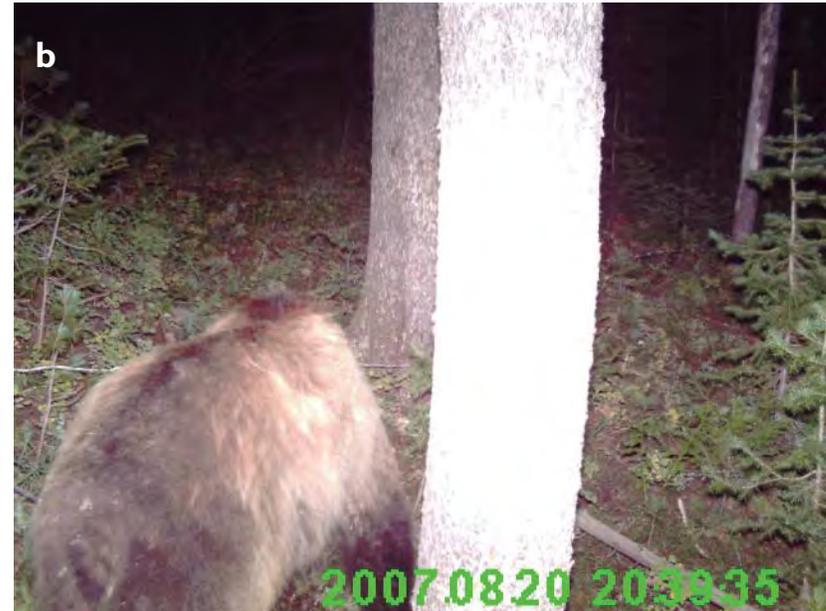


Figure 6. Remotely taken photograph of four cubs-of-the-year (a) and adult (b) at a hair snagging site on August 20, 2007.

Literature Cited

- Craighead, J. J., J. S. Sumner, and J. H. Mitchell. 1995. The grizzly bears of Yellowstone, their ecology in the Yellowstone Ecosystem, 1959–1992. Island Press, Washington, D.C., USA.
- Dean, F. C., R. McIntyre, and R. A. Sellers. 1992. Additional mixed-age brown bear, *Ursus arctos*, associations in Alaska. *Canadian Field-Naturalist* 106:257–259.
- Erickson, A. W., and L. H. Miller. 1963. Cub adoption in the brown bear. *Journal of Mammalogy* 44:584–585.
- Knight, R. R., B. M. Blanchard, and L. L. Eberhardt. 1995. Appraising status of the Yellowstone grizzly bear population by counting females with cubs-of-the-year. *Wildlife Society Bulletin* 23:245–248.
- Lunn, N. J., D. Paetkau, W. Calvert, S. Atkinson, M. Taylor, and C. Strobeck. 2000. Cub adoption by polar bears (*Ursus maritimus*): determining relatedness with microsatellite markers. *Journal of Zoology* 251:23–30.