

LONG DISTANCE MOVEMENT OF A FLORIDA BLACK BEAR IN THE SOUTHEASTERN COASTAL PLAIN

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Abstract: A male Florida black bear (*Ursus americanus floridanus*) traveled a minimum of 507 km from Eglin Air Force Base (Eglin AFB), Florida, to Baton Rouge, Louisiana, between 28 May and 1 July 1996. The bear moved at an average rate of 14.9 km/day (range = 1–123 km/day) and crossed a minimum of 4 interstate highways and 22 other major highways. Occasional long-distance movements by black bears may help explain the persistence of some disjunct populations and the potential for connecting other isolated bear populations in the Southeastern Coastal Plain.

Ursus 12:55–58

Key words: black bear, corridor, dispersal, Florida, fragmentation, Louisiana, movement, Southeastern Coastal Plain, *Ursus americanus floridanus*

In the southeastern United States, nearly 80% of the former range of American black bears has been lost (Pelton and van Manen 1997). Increasing human population densities and associated development have increased the isolation of several southeastern bear populations (Maehr 1984, Pelton 1990). Pelton (1990) stated that at least 30 relatively disjunct populations existed in 13 southeastern states, with varying degrees of isolation and vulnerability. Because roads may isolate habitats and further fragment the landscape, bears may alter movement patterns to minimize risks associated with road traffic (Brody and Pelton 1989). This isolation may decrease genetic variability and increase the probability of extinction due to stochastic events (Hellgren and Maehr 1993, Burkey 1995). The viability of these disjunct populations may ultimately rely on movements by bears between populations. Our objective was to document the unusual long-distance movement of an adult male Florida black bear in the Southeastern Coastal Plain.

BACKGROUND

Researchers from the Florida Fish and Wildlife Conservation Commission (FFWC) initially captured adult male black bear X3 in Apalachicola National Forest (ANF), Florida, on 28 March 1991 (Seibert 1993). The bear was ear-tagged, lip-tattooed, and released at the capture site. Bear X3 was 6 years old (Eagle and Pelton 1978) and weighed 161 kg at first capture. He was recaptured 3 times during the next 2 years on ANF; the last recapture on ANF occurred on 21 April 1993. Bear X3 moved 111 km west between 21 April 1993 and 26 May 1996.

On 26 May 1996, FFWC personnel immobilized bear

X3 near Tyndall Air Force Base, Florida, because of concern the bear might cross the highway or enter the adjacent residential development that separated it from occupied bear habitat (A. Kane, FFWC, Panama City, Florida, USA, personal communication, 1996). The bear was transported approximately 88 km northwest to Eglin AFB, Florida, radiocollared, and released. At this time, bear X3 was 11 years old, weighed 147.7 kg, and was in excellent condition. We used ground triangulation (White and Garrott 1986) and confirmed sightings to locate the bear. The bear was located 1–4 times per week with the exception of 13 days (5 June–17 June) when no confirmed location was collected.

RESULTS

The bear remained near the Eglin AFB release site for 2 days before starting his extensive move. Between 28 May and 1 July 1996, bear X3 traveled a minimum of 507 km based on cumulative straight-line distances between locations (Table 1, Fig. 1). The bear moved at an average rate of 14.9 km/day (range = 1–123 km/day). The most extensive movement occurred between Santa Rosa County, Florida, on 2 June and George County, Mississippi on 4 June when he traveled 228.2 km in <60 hr (\bar{x} = 3.9 km/hr). During a 10-hr period (0100–1100) on 2 June, the bear traveled 123 km.

On 1 July, personnel from the Louisiana Department of Wildlife and Fisheries trapped bear X3 in a residential area of Baton Rouge, Louisiana, because of concern it would enter a business district with high traffic volume. Personnel from the FFWC were contacted and they subsequently returned bear X3 to ANF. The bear again be-

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Table 1. Movements of a Florida black bear from 28 May–1 July 1996 in the Southeastern Coastal Plain, USA.

Movement interval ^a	Minimum distance traveled (km)
8–29 May	28
29 May–1 Jun	45
1–2 Jun	23
2–4 Jun	228
4–14 Jun	18
14–18 Jun	25
18–23 Jun	35
23–27 Jun	58
27–30 Jun	36
30 Jun–1 Jul	11
Total	507

^a = Multiple locations were collected within some movement intervals.

DISCUSSION

Although a similar distance (approximately 475 km) was traveled by a translocated bear from Great Smoky Mountains National Park (GSMNP), Tennessee (Kim Delozier, GSMNP, Gatlinburg, Tennessee, USA, personal communication, 2000), this may be the most extensive single movement by a black bear documented to date. Most long-distance movements by bears are associated with dispersal by subadults, adult males during the breeding season, food acquisition, and translocation. Such movements generally do not exceed 150 km (Rogers 1987, Pace et al. 1994, Shull et al. 1994). Average distances moved after translocation did not exceed 73 km for female and male black bears in Virginia (Fies et al. 1987).

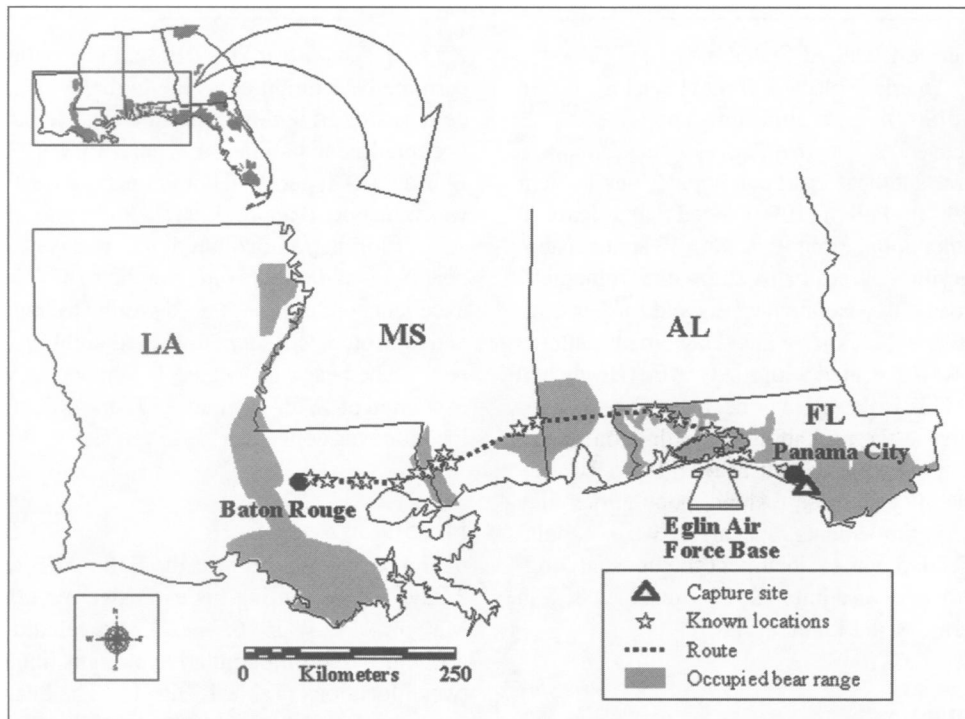


Fig. 1. Locations and movement of a male Florida black bear in the Southeastern Coastal Plain, 28 May–1 July 1996 (Occupied bear range modified from Pelton and van Manen 1997).

gan a move westward and was last confirmed 72 km west of the ANF release site near the town of Wewahitchka, Gulf County, Florida, on 13 July 1996. Subsequent attempts to locate the bear were unsuccessful, and its fate is unknown.

Bear X3 crossed at least 4 interstate highways, 6 4-lane, divided highways, 16 2-lane highways, and >100 other paved and unpaved roads. The bear was observed in 10 residential communities and many farmyards and backyards without incident.

Dispersal movements by brown bears (*U. arctos*) in Alaska were as much as 166 km for subadult males (Glenn and Miller 1980). Prior research indicated the bear was in excellent physical condition and had an established home range within an area that had a high population of bears. Therefore, this movement does not seem motivated by breeding activities. Also, food acquisition likely was not a factor because soft mast was abundant (Stratman and Pelton 1999). The translocation to Eglin AFB may have predisposed bear X3 to this extensive movement. How-

ever, X3's substantial movement (111 km) prior to being relocated suggests he may have had a propensity to move a long distance independent of the relocation to Eglin AFB.

This example and a few others (Rogers 1987, Maehr et al. 1988, Elowe and Dodge 1989) demonstrate that movements between remote and disjunct populations are possible. Laurance (1991) suggested that animal movements between habitat patches could stabilize populations in fragmented landscapes. Occasional long-distance movements by bears may help explain the persistence of some isolated populations and the reported increase in the distribution of black bears in the Southeast (Pelton and van Manen 1997). However, because of their infrequent nature, extensive movements by bears should not be relied upon for maintaining black bear metapopulation structure in the Southeast.

This long-distance movement may raise questions about the need for connective corridors between disjunct populations. The trapping of bear X3 in Louisiana, which prevented him from reaching occupied bear habitat, suggests the need for connective corridors so bears may have a better chance of reaching disjunct populations without human intervention. Miller et al. (1998) expressed the need for corridors to ensure the flow of genetic diversity and decrease the probability of local extinction. Likewise, corridor management was regarded as a main priority if long-term sustainability of black bears is to be achieved (Clark and Pelton 1998, Beausoleil et al. In Press). Ralls et al. (1985) stated that to maintain adequate gene flow between populations, there should be an exchange of 1 animal every generation to maintain genetic diversity and reduce the likelihood of extinction. Establishing travel corridors would provide a more reliable means for bear movements between disjunct bear populations in the Southeast.

This study demonstrates that male black bears can move between populations that are isolated by large distances. However, care should be used in concluding that corridors and landscape linkages are not necessary for connecting disjunct bear populations. The susceptibility of dispersing bears to highway mortality and other human-related conflict (Shull et al. 1994, Wooding and Hardisky 1994, Brandenburg 1996) suggest that the long-term viability of black bear populations can not be maintained with unpredictable, infrequent dispersals. Protecting movement corridors in southeastern bear range provides a buffer against increasing human populations and habitat fragmentation.

ACKNOWLEDGMENTS

We thank J. Johnson (Eglin AFB), B. Hagedorn (Eglin AFB), C. Shropshire (Mississippi), and D. LeBlanc (Louisiana)

for providing sighting information. We are grateful to P. Davidson from the Black Bear Conservation Committee for his assistance with tracking. A special thanks goes to A. Cane and S. Seibert for providing information on the history of the bear. Our appreciation goes to the Florida Fish and Wildlife Conservation Commission for their efforts in locating the bear by aircraft.

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