

DO GRIZZLY BEARS STILL LIVE IN MEXICO?

JOSE C. TREVINO, Direction General de la Fauna Silvestre, S.A.R.H. Arquitectura 919, Col. Universidad, Chihuahua, Chihuahua 31170 Mexico
CHARLES JONKEL, School of Forestry, University of Montana, Missoula, MT 59812

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The lack of recent data on grizzly bears (*Ursus arctos*) in Mexico has hampered efforts to confirm or deny their presence. Reports and observations from earlier investigators concluded that grizzly bears were common in Baja California, Sonora, and Chihuahua in the early 1900s (Kennerly 1856, Baird 1859, Tinker 1903, Mearns 1907, Sheldon 1925, Baker and Greer 1962, Leopold 1965), but in recent years have become scarce or extinct (Leopold 1967, Koford 1968, Jonkel et al. 1977).

The most recent confirmed reports of grizzly bears in Mexico come from the Sierra del Nido Mountains (central Chihuahua), where 3 grizzly bears were killed in 1955 and 1 in 1957 (Leopold 1965). Additional tracks and bear sign were found in the same area between 1957 and 1961 (Leopold 1967), and Jonkel et al. (1977) reported claims of poisoned grizzly bears in the Sierra del Nido during the winters of 1960-61, 1963-64, and 1973-74. Koford (1968) visited the northern side of Sierra del Nido for 49 days and concluded that there was insufficient evidence to confirm that grizzly bears inhabited the area, but he also pointed out that his search was not conclusive. Jose Damian Garcia, Delegate of Wildlife, Chihuahua, reported to Dr. Rodolfo Hernandez (then Director of Wildlife in Mexico) that the time selected by Koford was not the best season to observe grizzly bears, tracks, or sign (J. Garcia, pers. commun.).

Aubrey Stephen Johnson, Southwest Representative of the Defenders of Wildlife, also surveyed the Sierra del Nido area. He searched for 6 weeks in the spring and fall of 1974 but found no evidence of grizzly bears (Jonkel et al. 1977).

As part of a Mexico-United States cooperative agreement to investigate the status of the Mexican grizzly bears, the Univ. Mont. Border Grizzly Project conducted an extensive reconnaissance and live-trapping program during May 1979. We worked 51 trap-days on the eastern side of Sierra del Nido. Our evaluation was that "the habitat is good and has potential for grizzlies, the range is isolated, and the natural ecotones constitute the kind of abrupt gradient in physical environment to which grizzlies of the northern Rocky Mountains seem to be attracted."

The extent of wild areas (seclusion) and the food supply appeared sufficient for grizzly bears to exist without detection. The present work, also part of an informal Mexico-U.S. cooperative agreement, investigated the status of the Mexican grizzly bear during May 1980.

STUDY AREA

The Sierra del Nido Mountains are in north-central Chihuahua. They are an isolated mountain chain oriented generally along a northwest-to-southeast axis. The highest elevation is at the northern end (3,000 m); the range gently decreases in elevation to 1,800 m in the south. The name changes to the Sierra de la Campana at the southern end.

The eastern slope rises abruptly and drains into the Rio Encinillas; the western side is drained by the Rio Santa Clara, and it rises more gently. The Sierra del Nido Mountains are composed primarily of highly metamorphosed limestone, overlaying large, intruded igneous masses that probably are the product of massive block faulting and volcanic action (Lee and Thier 1979).

The climate is dry, and summers are warm; average annual temperatures range from 12 to 14 C, and the average annual precipitation is 400 mm. The dry season lasts 6-7 months, and the frost-free season lasts 171 days (Alvarez 1971).

Vegetation types include grasslands of grama (*Bouteloua*)-mimosa (*Mimosa*)-mesquite (*Prosopis*) at 1,750 m; a grassland/oak (*Quercus* spp.) woodland at 1,900 m; an oak woodland at 2,500 m; and a chaparral/pine (*Pinus* spp.) forest from 2,400 m to higher elevations (COTECOCA 1978, Lee and Thier 1979).

Eastern slope habitats are dry, and the vegetation is sparse except for shaded areas; in more mesic canyons, however, the vegetation is dense.

Part of the area was logged in the late 1940s and early 1950s. The area is used only for grazing now. A system of reservoirs aids wildlife and livestock. There is no current measure for the intensity of livestock use.

METHODS

During May 1979, the Border Grizzly Project team surveyed the eastern side of Sierra del Nido and portions of the central plateaus. The area selected for the present research was the western side, which is more remote from human activities than is the eastern slope.

We hired 2 guides, Sabino Martinez Camarillo and the Indian "Crucito," both of whom live alone in the northern part of Sierra del Nido and have extensive experience with grizzly bears. We surveyed the areas of Ojo del Alamo, Canon de los Prietos, and Arroyo Hondo on horseback and on foot.

We set 3 Aldrich foot snares in wooden cubbies for 8 days using burro meat as bait. The snares were approximately 3 km apart. Trap sites were on old trails and near springs; we checked the traps daily and searched the adjacent canyons and mesas each day with the aid of binoculars.

RESULTS

Only 1 snare was disturbed by a small bear. Its tracks were partially visible, but the poor soil features did not give us a good chance to identify them. A few white hairs were found on the sides of the cubby. The other 2 traps were untouched, even by small scavengers.

We observed several tracks along the trails, the biggest measured as follows: hind paw tracks, 24.1 by 12.7 cm; front paw tracks, 15.3 by 14 cm. We found claw marks 1.9–5.6 cm in front of the toes. The claw indentations were blunt and resembled those of grizzly bears, rather than sharp black bear (*U. americanus*) claws. The track measurements were longer than those reported by Leopold (1958). We often observed rocks removed from the trails by bears during their search for food; the estimated weight of large rocks was more than 50 kg.

We found a mud bath along a water course. Nearby, a ponderosa pine (*P. ponderosa*) had mud and bear hair on it 204 cm above the ground. We also found teeth marks 170 cm above the ground on small pine trees.

We collected hair in beds and from scratching poles and trees. The length of the longest was 8.9 cm; the color varied from brown to pure white. Analysis of the hairs have shown them to be from black bears.

We observed a large bear for about 25 min with the aid of binoculars at an estimated distance of 300 m. We estimated its weight to be 200 kg and its

shoulder height to be 100–110 cm. It was golden-brown in color with iridescent tones. The ears were rounded and short, and the front claws positively reflected light. The research team and guides judged it to be a grizzly bear. We did not find tracks once the bear moved because of loose gravel.

Forty-five minutes later, we saw a 2nd bear at about the same distance. The color of this bear was cinnamon, and it had typical black bear features. We estimated its weight to be 100 kg.

DISCUSSION

The evidence we found (tracks, claw marks), the bear we observed, and our review of historical data suggest that grizzly bears may still be present in Mexico. Jonkel (1980) in his final conclusions and recommendations, based on available data and a broad understanding of grizzly bear biology, concluded that "evidence is strong that grizzlies may persist in Mexico." We concur that grizzly bears may still exist in Mexico. We base our conclusions on the following key points:

1. Brown bear populations elsewhere demonstrate a special ability to remain viable even though isolated and at low population levels (Elgmork 1978).
2. The longevity of grizzly bears (20–25 years in the wild) and the relatively recent records of grizzly bears in Mexico means that a few survivors could still exist, even if a viable population is not present.
3. Because of their remarkable ability to use cover, grizzly bears could survive without being detected.
4. Several likely areas for grizzly bears in Mexico have not been studied.
5. Grizzly bear habitat is adequate and abundant in Mexico.

Jonkel (1980) cited the remoteness and isolation of the area, the good quality and abundance of available habitat, and the intelligence and wariness of grizzly bears as further evidence that grizzly bears may still exist in this region. Although no recent, confirmed records exist for vast areas of potential habitat, no studies have focused on these areas and disproved the existence of grizzly bears within them.

Our recommendations based on this work and the available literature include the following:

1. More field work to determine whether grizzly bears exist in Mexico.
2. Continued habitat identification and quantification.

3. Protection of key bear habitat areas by purchase or lease; improvement of bear management and enforcement of existing regulations.
4. Initiation of a public education program.
5. Establishment of a recovery plan for the Mexican grizzly bear, based on other plans and on experience from other study areas.
6. Consideration of population augmentation.

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