

ENDANGERED SPECIES

Technical Bulletin Reprint

Wildland Management Center
The University of Michigan



From the Brookfield Zoo

The Lion's Share

by

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Chicago Zoological Society

Once there were tens of thousands of Asiatic lions with a distribution ranging from eastern Europe, across the Middle East and the northern half of India. During the period of colonial expansion, the widespread use of firearms reduced their numbers to a few hundred and restricted their distribution to a single reserve, the Gir Wildlife Sanctuary, and its immediate surroundings in western India. Censuses every few years indicated that their numbers were remaining relatively stable until 1955. Afterwards various investigators reported that the number of lions was declining.

When I arrived in the Gir in 1968 to undertake a three year study of the lions, only an estimated 170 lions remained, reduced to about 60 percent of their original numbers. My study focused on unraveling the reasons for this decline. In the 1950's more than half of the population recorded had been outside of the park boundaries. By the end of the 1960's, these lions had largely vanished. Their disappearance correlated with the expansion of the "green revolution" which transformed the landscape. The lions needed land inhabited by either wild or domestic stock on which they could feed. When man planted such areas with ground nut, sugar cane, and other crops, the lion could no longer survive. Because these lands remained outside of the sanctuary, there was little that I could recommend to improve the situation, even though some 15 to 20 percent of the lions

still eked out an existence in these areas. Food for people had taken a higher priority than food for lions.

Within the sanctuary it was less clear whether the lions were declining, although there were good reasons to suspect so. The lion's natural prey, the wild ungulates, numbered about 5,000 to 6,000, enough to sustain only about 10 to 20 lions. They consisted mainly of spotted deer and smaller numbers of four-horned antelope, Indian gazelle, sambar, nilgai, and wild boar. By contrast, some 20,000 cows and buffalo also inhabited the sanctuary. A further 20,000 head of livestock came in to graze

each day from the surrounding villages. An additional 20,000 to 40,000 cattle were brought into the reserve during the annual monsoon rains. The supposed wildlife sanctuary was, in reality, a park for cattle. To make matters worse, the cattle were overgrazing the area to such an extent that several investigators had predicted that it would eventually become a desert.

Since far more than 20 Asian lions lived in this area, I had no doubt that their primary diet had to be cattle. To determine the extent to which the lions were preying on cattle, I collected over 500 lion feces, or scats, and used a micro-



Thanks to far-sighted government action, the Indian Lion has made a comeback.

photo by P. Joslin

Lion's Share continued

scope to identify the hair of what the lions had been eating. Approximately 75 percent of the scats collected within the sanctuary contained cattle hair, while those collected just outside the boundary contained even more.

In order to ascertain how easy it was for lions to get cattle, I offered a small reward to the cattle owners if they would show me any kills made by lions within 24 hours of their occurrence. Of the 330 losses I examined, I found that the lions had eaten very little (less than 20 pounds) and among a further 25 percent of cases they ate nothing at all. Why did the lions eat so little? One reason was the lions made many of their kills inside cattle compounds at night and were driven off before they had a chance to drag the prey out of the corrals. Less frequently they were chased off kills that were made during the daytime when the cattle grazers were tending their herds in the forest.



Unable to compete effectively, cubs went hungry.

photo by P. Joslin

Failure of the lions to eat what they had killed was also due to hide collectors. These people paid the farmers for the right to collect their dead animals. This gave the farmers an added incentive to drive the lions away and to send immediately for the hide collectors who, in turn, drove off any lions that had returned. Of those cattle examined in the survey, I found over half had been stripped of their hide and often their meat by hide collectors.

To add to the lions' frustrations, if people did not take the meat, then vultures usually did. They were able to feast on the lions' kills at a prodigious rate once the skins had been removed. When the hide collectors walked away, leaving the skinned carcasses to the vultures, it took anywhere from 13 to 30 minutes for vultures to consume all the meat. The lions, on the other hand, often did not return for an hour or more, too late to be of much benefit to them.

When food was in short supply, the lionesses often competed with their cubs during feeding. Whenever adult males were around they frequently took possession of kills from both the lionesses and cubs. Unable to compete effectively, cubs went hungry. Ten cubs out of a sample of 17 first seen between 1-3 months of age were missing and presumed dead within 12 months after birth.

Over the next several years the Gujarat Forest Department put in-

to operation a plan directed at improving the status of the lion. They built a rock wall around the 500 square mile park in order to keep cattle from entering. Roughly half of the cattle grazers living within the park along with their families and livestock had to move to the outside. Each translocated grazer was given seven acres of land, a new home, and encouraged to make cultivation his livelihood. By drastically reducing the number of cattle grazing within the park, the authorities hoped to increase the wild ungulate population sufficiently to become the lions' primary prey, while simultaneously ensuring that the area would not be destroyed by domestic grazing.

No one knew how the lions would react. Would they follow the cattle out of the park? Would they make a dramatic switch to wildlife and in the process so heavily prey upon it that the wildlife would be unable to recover, resulting in the lion population's own demise? Or would the shift be gradual, allowing sufficient time for wildlife numbers to respond adequately to ensure that the lion population would not only survive but increase?

Shortly before leaving the Gir in 1971, I established several easy-to-manage indicators of lion abundance which could be repeated at a later date. Recognizing that lions



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Lion's Share continued

commonly used roads as paths, a few men were hired to walk the hundreds of kilometers of road within the park, marking all lion tracks and fecal evidence. I followed along by jeep, stopping to check each piece of evidence and to determine both the ratio of kilometers having lion tracks to kilometers walked and the ratio of scats found to distance traveled. We surveyed 550 kilometers, amounting to substantially more than what it took to make the day-to-day variations significant on the overall results.

Assessing lion abundance on the basis of lion tracks was quite different from making such a determination from lion feces. Tracks made during the previous night usually remained intact only until about mid-morning when logging trucks began to traverse the roads. Feces, by contrast, were usually deposited along the sides



photo by P. Joslin

Regrowth of vegetation within the park (right) contrasts with overgrazed land (left of stone wall).

of roads away from traffic and generally lasted a week or more. Thus, one was simultaneously recording a measure of lion abundance based on a one night sample and a one week sample.

My crew and I followed the same procedures 12 years later. The results were encouraging. The amount of track and scat evidence we found had increased by over 30 percent. Moreover, the park was well vegetated and in good shape. Wild ungulates were noticeably more numerous than they had

been previously recorded, though the grass was so tall that it was difficult to make observations. The authorities had indeed made a right decision in reducing the number of cattle.

Captive breeding

To avoid dependence on a single small population of wild Asiatic lions as the only means of ensuring the future of the species, a second population was bred in captivity. At present 105 captive Asiatic



From the National Wildlife Federation

Please turn to Reprint page 4

Bald Eagles "Holding Steady"

The endangered bald eagle population is "holding steady" after years of decline, according to the results of the National Wildlife Federation's 1984 Bald Eagle Survey.

The year's survey, taken from January 2 to 16, counted 11,819 bald eagles in 42 of the continental states. Last year's count for the same states was 10,903.

"The bald eagle isn't home free yet," said Jay D. Hair, NWF Executive Vice President. Hair said the eagle needs years to recover from the drastic decline it suffered in the 1960s, primarily from DDT and dwindling habitat. "Slowly, but surely," he said, "the bald eagle is making a comeback, and this year's survey demonstrates encouraging progress."

The bald eagle is officially endangered in 43 states and threatened in five others. The bird is plentiful only in Alaska, and none live in Hawaii.

Considered to be the most complete midwinter bald eagle count available, the National Wildlife Federation survey provides eagle experts with data on where the birds live during the winter and the habitat they need to survive. The survey is conducted over a specified two-week period in January each year, and states participate on a voluntary basis.

In 1979, the Federation's first survey counted 9,815 bald eagles in 48 states. In 1982, the last year a count was taken in all 48 continental states, the survey reported 13,825 eagles.

Brian Millsap, biologist in the NWF Raptor Information Center and survey coordinator, said that this year's severe winter in the eastern half of the United States concentrated wintering bald eagles and made them easier to count.

"Eagles tend to congregate near open water," Millsap said. "This

accounts for the high concentrations of eagles near the Mississippi River and in the warmer, southern states."

According to this year's survey, the largest bald eagle population was in Washington state, with 1,525 birds; the next largest was in Missouri with 975, followed by Utah (901), Oklahoma (794) and Arkansas (639). Complete surveys were not done in California, Florida, Maine, Michigan, Oregon, or Rhode Island.

The survey was conducted by 2,800 state and federal conservation agency personnel and private volunteers.

The NWF, whose logo features a bald eagle in flight, has long been associated with eagle protection. It offers \$500 for information leading to the conviction of anyone who illegally kills a bald eagle.

Lion's Share continued

lions are officially registered in the international studbook, almost all of which are in North American and European zoos. Management of the species in captivity is led by Guy Smith, Species Coordinator and International Studbook Keeper for the Asiatic lion. A major concern he has is that, while the registered captive population has been reproducing well over the last few years, it stems from an original population of only seven animals. Hence, most of the animals are now inbred. He has stressed the importance of developing a cooperative arrangement with India which would lead to the introduction of new blood into the captive population.

In order to discuss this cooperative arrangement, I met with Digvijay Sinh, Deputy Minister of the Indian Department of Environment, and later with P.P. Raval, Superintendent of the Sakkarbag Zoo not far from the Gir Wildlife Sanctuary. The Sakkarbag Zoo is owned by the Department of Environment, and lions that are caught in the wild must first be transferred to it before being permitted to be moved any place else. I was pleasantly surprised to find that the zoo had 30 either wild-caught or captive-reared Asian lions. Mr. Raval was most anxious

to find new homes for some of them. Moreover, only one of the lions was officially registered, meaning that the other 29 constituted a sizable addition to the known captive world population.

At the time of writing, an agreement to create a cooperative breeding program between India and the West was still in its formative stages. Both India and the U.S. are signatories to the Convention on International Trade in Endangered Species. Under that convention Asiatic lions fall into the highest category of protection and, as such, require a special set of permits before any exchange can occur. While this is only one of several hurdles remaining, the outlook is encouraging.

A novel approach to creating a second wild population

Several decades ago, an attempt was made to translocate a few Asiatic lions to a second wild home in India. Although the area had a sizable wild prey population, the attempt failed. The area chosen was too small, the wild lions involved were more familiar with catching domestic stock than wild prey, and they were released before they had been given adequate time to adjust to the new area. They were subsequently poisoned by the local farmers.

Digvijay Sinh is anxious that more attempts be made using the best expert knowledge currently available. He has in mind not just

another location in India, but a more unusual site—Iran. The Asiatic lion is the national animal of Iran and, in former times, constituted an important part of the Iranian wildlife heritage. Unfortunately, the lion became extinct within that country in the 1940s as a result of overhunting.

In exchange for giving Iran Asiatic lions, India would like to import Asiatic cheetah. The last one in India was seen in the wild in the 1950s. Digvijay Sinh clearly recognizes that such an exchange would be a long term project. Quite apart from the political differences between the two countries, at most only one or two Asiatic cheetahs exist in captivity in Iran, while the single most intact wild population numbers perhaps 30 animals. Thus steps would have to be taken to ensure the cheetah's long term survival in the wild before risking removal of some of these animals to another area. If the proposal to make the lion-cheetah exchange succeeds it will add an important element to the wildlife heritage of both countries and be an example for other nations to emulate.

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