Meetings

Cat Conference

In the past 5 years there has been a tremendous surge of field research on several wild species of Felidae. The sudden growth of interest in ecology and comparative ethology of the felids and carnivores generally, coupled with a deep concern for the conservation status of the entire family, were the motivations behind the International Symposium on Ecology, Behavior and Conservation of the World's Cats, 15 to 17 March 1971, at Lion Country Safari, a private African wildlife preserve in Laguna Hills, California.

The goal of the symposium was to bring together cat experts and to determine the status of our present knowledge. To this end, 30 speakers and discussants presented 27 papers and held three open discussion sessions. Discussants included specialists on other carnivore groups, primarily the Canidae, for sake of comparative discussion. About 80 persons from 40 regional, national, and international conservation groups, and zoological and professional societies made up the audience.

The first area of concentration was behavior. R. F. Ewer (University of Ghana) presented an extended review of maternal care and education of the young in the Felidae. She elaborated on the innate mechanisms that inhibit normal killing behavior in mother cats of all species studied so far. By inhibition of part of the predatory sequence and the active behavior of bringing the captured prey to young or vice versa, the mother establishes the situation that permits her young to experiment with live prey and to perfect their predatory movements. Ewer made it clear that there is still no analysis of the external and internal factors that are responsible for eliciting the appropriate behavior in the mother at the correct time.

Paul Leyhausen (Max-Planck-Institut für Verhaltenphysiologie) discussed the evolution of threat display and fighting behavior in the Felidae. The methods of using the weapons—paws and teeth—are uniform throughout the family, but the threat displays preceding combat differ considerably between species. Leyhausen grouped species according to their characteristically different threat displays into the genera *Panthera, Prionailurus, Leopardus,* and *Felis.* At first glance these groups do not appear to have common roots to their threat displays. Comparative studies of fighting behavior in lower carnivores and more primitive mammals, for example, rodents, reveal that the seemingly widely differing displays of the felids originate from the same primitive patterns.

A field study on spacing mechanisms and predation by the Ceylon leopard was presented by N. Muckenhirn (University of Maryland) and J. Eisenberg (National Zoo–Smithsonian Institution). In Wilpattu National Park they estimated home ranges of adults at 8 to 10 km^2, which falls within the limits expected from prey biomass available. Home ranges of males overlap almost completely with those of females. The effect of pairing for mating appeared to result in an accommodating shift by a resident but unpaired male. Mechanisms for maintenance of home range included scent marking with urine, scrapes, vocalizing, and direct interaction.

Muckenhirn and Eisenberg conducted the first intensive study of any of the leopards, and the first ethological investigation of the cheetah was reported on by R. Eaton (Purdue University). He described courtship and mating behavior of 24 wild-caught cheetahs kept in a semicaptive environment at Lion Country Safari. Eaton presented a theoretical paper primarily based on his field studies and on studies of semicaptive cheetahs and lions. Emphasis was placed on the evolution of spacing and mating systems in lions and cheetahs. There was considerable discussion of the hypotheses raised to account for the high frequency of copulation in lions. A female lion mates for longer than does any single male and has hundreds of copulations with each male. The fact, as G. Schaller (New York Zoological Society) pointed out, that 80 percent of the estrous cycles in the wild are infertile corroborates the view that the lion's mating system is highly exceptional and that functions other than achievement of fertility are being met.

The paper of broadest perspective in the field of carnivore biology and behavior was given by D. Kleiman (National Zoo–Smithsonian Institution) and J. Eisenberg, who reconstructed the evolution of the canids and felids from primitive carnivores, emphasizing those morphological and behavioral changes that restricted or permitted the development of different forms of social systems. For example, the possibility of arboreality in felids is responsible for there having been much more speciation in the tropical rain forests than in canids, whereas in other biotopes a species ratio in favor of canids is the rule. Additional morphological and behavioral specializations allow many felids to hunt and live alone and to bring down prey larger than themselves. Only group-living canids are capable of killing large prey.

E. Provost, A. Nelson (University of Georgia), and A. D. Marshall (Georgia State Game and Fish Commission) summarized several years of bobcat research in Georgia. Data derived from radio-tracking indicated an average home range of less than 2 square miles, much smaller than previously estimated. Females appear to be less tolerant of other females than of males. Home ranges of females did not overlap whereas those of males did. Studies of ovaries provided information for a preliminary assessment of population dynamics.

P. Berrie (University of Alaska) described the ecology and status of the lynx in interior Alaska. Berrie radio-equipped several males and females and found their home ranges to be similar to those of the bobcat. Males had overlapping territories which overlapped those of females. Female territories did not overlap one another. Where hunting routes of lynx intersected, latrine piles were common.

F. C. Eloff (University of Pretoria) employed native Kalahari Bushmen trackers, followed several prides of Kalahari lions in the Kalahari Gemsbok Park, and mapped circuits of movement for all the prides in one area.

These circuits overlapped and all prides moved in a clock-wise direction. Eaton suggested the explanation for movement in the same direction is that maximized spacing is achieved. Markings would inform other prides that there are lions ahead, thereby avoiding confrontation or interference of hunting activities. Eloff described a unique killing behavior that minimizes potential injury from the dangerous horns of the gemsbock, the lions' major prey. The Kalahari lions appear not to require water for considerable periods except for females with young.

One of the few field studies of a felid in Asia was finished this year by P. Joslin (University of Edinburgh). The Asiatic lion remains only in a small area, the Gir Wildlife Sanctuary, Gunjarat State, India. An estimated 177 lions still exist, preying predominantly on cattle and domestic buffalo that are grazed in the sanctuary. Up to 90 percent of the lions' kills are scavenged for hides and meat by people—the Bhand Harijans. Encroaching cultivation and heavy grazing are lowering the carrying capacity of the Gir.

A round-table discussion was aimed at a review of our present ecological knowledge and definition of key studies and priorities for the big cats. The major point of agreement was that we should conserve now, ask questions later. Of all the big cats, only the African lion appears not to be in danger. The recommendation of the panel was that large areas be set aside immediately for the preservation of species and races. The areas must be large enough, at the suggestion of Leyhausen, to guarantee a viable gene pool capable of supporting an adaptable population.

B. Wright (University of New Brunswick Wildlife Station) spoke of his research on the northeast cougar or panther. The panther was officially extinct until recently, and it still does not receive legal protection in some provinces and states. It appears to have extended its range in recent years but the innovation of snowmobiles and hunting with dogs might counteract expanding population in some areas. N. Myers' research on the leopard in Africa and the ocelot and jaguar in South America suggest that these species and the cheetah deserve protection of the U.S. Endangered Species Law. Myers' results point to poaching for the skin trade as the primary cause for the decline of these species.

A. Singh reported on the status of the North Indian tiger. He stressed the high mortality from illegal poaching. The skin trade and hunting of tigers are now illegal in India. Although the hunting has declined, the illegal skin market is as great as ever and is endangering the tiger. Singh recommended that the only solution is an international embargo by all countries on accepting tiger skins. J. Pollon (Southern California Safari Club) argued that the former professional hunters in India, the Shikaris, were the only effective game wardens. By stopping tiger hunting, Pollon said, the door was opened wider for poaching and the skin trade.

L. Cahill (University of California, Berkeley) reported on the status and management of the cougar in the western United States where opposing groups are lobbying for protected versus game status. Eaton reported on the status and distribution of the Florida panther (race of the eastern cougar). Only 100 to 300 remain, and although protected by law, many are killed illegally. The panther's primary range is in southern and northwestern Florida but recent sightings have come from southeastern Alabama.

At the final round-table discussion H. Coolidge presented a resolution: "The Federal Government (U.S.) should back up the efforts of state governments in banning the importation and sale of skins and products made from the wild cats of any country of the world." The resolution received a unanimous affirmative vote and was sent to the Secretary, U.S. Department of the Interior. The symposium was supported by Lion Country Safari, National Parks and Conservation Association, and the World Wildlife Fund.

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Radiation Chemistry

The Third Symposium on Radiation Chemistry of the Hungarian Chemical Society was held 10–15 May 1971 at the Hotel Marina, Tihany Peninsula, Lake Balaton, Hungary. The program consisted of about 154 papers, presented in 16 sessions, and divided into three general categories as described below. The official languages were English and Russian.

Papers in category A were concerned with organic materials. The 53 papers in this section were devoted roughly to the following general subjects (the numbers of papers hereafter listed do not add up to 53, because some papers fit under two headings and some papers do not fit into any general heading): ions and ionic effects (9, mostly the work of Russian investigators); solid-state effects (9); oxidation, halogenation, and other organic reactions, mostly of a technological nature (7); gas phase (4); organic solutions (5); scavenger effects and kinetics (3); and direct radiolysis of pure organic materials, characterized by product analysis (12).

Papers in category B were concerned with polymers. The 62 papers were devoted to the following general subjects: solid-state polymerization (15); solution and emulsion polymerization (9); graft polymerization (8); modification of wood and concrete by radiation polymerization of organic monomers mixed with them (5); polymerization of pure liquid monomers (3); copolymerization (3); and radiolysis of polymers (10).

Category C was entitled "Aqueous solutions." The 39 papers can be sorted into the following general subjects: aqueous inorganic solutions (13); aqueous organic solutions (10); solutions of biological molecules (5); theory (5, all the work of American, British, and Russian investigators); solvated electron effects (3); pulse radiolysis (4); solid-state effects (3); LET effects (2); and photochemistry (1).

Although there were indeed a very large number of papers presented at this meeting, the sessions were nevertheless accompanied by unusually frequent, prolonged, and vigorous discussions. The consequence was, of course, some very long sessions, but these were well attended up to the very end, for the most part. Some of these discussions were almost entirely in Russian but there was always someone there to provide English summaries of the key points in the discussions. The excursions and entertainments provided for the participants by the arrangers of the symposium were interesting and varied, marked frequently by much singing of folk songs, in which the Russian, French, and Hungarian groups were outstanding.

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