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STRATEGY OF RAPTOR CONSERVATION IN THE USSR

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Nearly three decades have passed since the first volume of the fundamental handbook *Birds of the Soviet Union* (Dement'ev and Gladkov 1951) was published. Environmental changes since then have caused some changes in raptor populations and breeding ranges. The most important environmental factors affecting raptor populations are (1) modifications of habitats due to use and development of large tracts of land mostly in the north and east USSR; (2) growing influence of disturbance, in particular due to recreation, tourism, and other visitors to nature; (3) contamination by pesticides, mostly at wintering grounds (little influence by pesticides has been found for birds of prey on nesting grounds in the USSR); (4) electrocution of raptors (especially eagles) at towers for electro-transmission lines which form an expanding net and attract birds in the forestless southern regions; (5) changes in food resources for some species; (6) increase (up to the mid-sixties) and then definite decrease of hunting pressure upon birds of prey; (7) general improvement of nature conservation in the Soviet Union.

However, not all environmental changes caused by man are detrimental to populations of all raptors. Many modifications such as agriculture, hay-making, and clear-cutting in dense forests create a mosaic environment more suitable (especially for feeding) than is a homogeneous habitat. Therefore a strategy of raptor conservation must be based on thorough analysis of a wide range of recent environmental and man-made factors which influence populations of birds of prey. To identify the most dangerous factors and devise plans to mitigate them, various economic and conservation aspects have been studied regarding various species of birds of prey. It should be stressed that an estimation of an economic value is strictly confined to numerous or common raptors. Rare and endangered species are not liable to economic evaluation because of their limited numbers.

Special investigations revealed the main cause of raptor population decreases in the 1950s and 1960s was excessive shooting of birds of prey during the "struggle against vermin predators" as part of game management. By comparing raptor significance to agriculture, forestry, and game management, reliable arguments in favor of raptors were obtained (e.g., Galushin 1970). On the basis of these data, in 1964 a new hunting regulation was approved in the Russian Federation and later in other Union Republics. This legislation banned mass destruction of raptors. By this act, the legislative status of raptors in

the USSR was brought to conform with the real economic and ecological value of the birds. In following years this legislation was further improved. In particular, new regulations adopted in the 1970s contained some provisions for penalties (e.g., in Byelorussia a fine for destruction of a Golden Eagle (*Aquila chrysaetos*) or White-tailed Sea Eagle (*Haliaeetus albicilla*) is rather high; up to 300 roubles, approximately \$450), as well as special measures for protection. At present all species of falconiforms and strigiforms are granted protection in the Soviet Union.

One of the most important ways for conserving wildlife is creation of nature reserves which effectively protect raptor habitats. As of September 1979 there were 133 nature reserves (100,000 km²) in all landscape zones of the Soviet Union. Of these more than 30 reserves were set up during the last ten years, with plans for the establishment of about 25 more in the next decade. At the same time national parks, nature parks, and temporary or seasonal reserves have been set up to provide additional habitat for wildlife protection. Nests of rare raptors are also protected. Within the reserves and in some local areas, ornithologists, ecologists, students, teachers, school children, bird watchers, members of local societies for nature conservation, and officers of forest and game management services are involved in location and protection of nests. In some districts (Vitebsk, Moscow, and others) rather effective campaigns are organized annually for locating and protecting nests of rare species.

Examples of local measures to improve raptor habitats include feeding of wintering eagles and nesting vultures, setting up artificial nesting platforms and boxes, and attempting to develop methods to prevent the death of large raptors at electrotransmission towers. These efforts are the result of activity by a few local enthusiasts; thus, their effect is limited and not well known. Our immediate task is to widely publicize such efforts and to introduce effective measures for improving raptor habitats on a national scale. There are few attempts to analyze and control contamination of birds (including raptors) and their habitats by pesticides.

At present two projects for captive breeding of birds of prey are being developed. One of them is located in Kirgizia; another will be established near Oka State Reserve in the Ryazan district of Russia. Within the framework of the USSR-USA Agreement on Cooperation in the Field of Environmental Protection, there is room for fruitful cooperation and further progress on methods of captive breeding.

Ornithologists and ecologists are doing their best to publicize information about the ecology of birds of prey, to create support for their protection, to prevent occasional killing of raptors and destruction of nests, and to reduce factors of disturbance, especially on nesting grounds. Mass media is used extensively for this purpose (e.g., magazines, newspapers, radio, TV, films).

An especially important source for identification of rare and endangered plants and animals is the *Red Data Book of the USSR* (Boradin 1978). Included in this book are 14 species of falconiforms: the Lammergeier (*Gypaetus barbatus*), Gyrfalcon (*Falco rusticolus*), and Barbary Falcon (*Falco pelegrinoides*) are designated endangered species; Steller's Sea Eagle (*Haliaeetus pelagicus*), White-tailed Sea Eagle (*Haliaeetus albicilla*), Pallas' Sea Eagle (*H. leucoryphus*), Himalayan Griffon (*Gyps himalayensis*), Golden Eagle (*Aquila chrysaetos*), Imperial Eagle (*Aquila heliaca*), Tawny Eagle (*A. rapax*), Short-toed Eagle (*Circus gallicus*), Osprey (*Pandion haliaetus*), Peregrine Falcon (*Falco peregrinus*), and the Saker Falcon (*F. cherrug*) are designated as rare species. Similar regional Red Data Books have been published (Kazakhstan, Moldavia) or are under preparation in the Union Republics.

Effectiveness of raptor conservation proved to be different for various ecological groups of raptors. Repeated surveys on the same areas over 10, 15, or 20 years of study, as well as a summary of many studies in various regions of the USSR, show trends of stabilization for the Buzzard (*Buteo buteo*), Honey Buzzard (*Pernis apivorus*), Hen Harrier (*Circus cyaneus*), Sparrowhawk (*Accipiter nisus*) and Hobby (*Falco subbuteo*). To some extent local increases of some common species are reported: Black Kite (*Milvus migrans*), Upland Buzzard (*Buteo hemilasius*), Montagu's (*Circus pygargus*), Pallid (*C. macrourus*), Pied (*C. melanoleucus*), and Marsh (*C. aeruginosus*) Harriers, European Kestrel (*Falco tinnunculus*), Merlin (*F. columbarius*), and Red-footed Falcon (*F. vesperinus*). Relaxation of pressure from direct persecution by man has proven favorable to populations of species listed above and perhaps to some other species. There is reason to believe their populations will continue increasing until reaching a stable level at which the ecological capacity of the habitat is attained.

Legislative protection is not as effective for many other falconiforms. Among these, practically all are large and rare birds of prey: Peregrine Falcon, Golden Eagle, Tawny Eagle, White-tailed Sea Eagle, Pallas' Sea Eagle, Lammergeier, vultures, griffons, Short-toed Eagle, and Osprey. This group is still under negative pressure from many factors. Most important among them are probably habitat changes, disturbance by people (tourists in particular), occasional shooting, nest destruction, pesticides encountered mostly at wintering places, and shortages of food.

To summarize, a strategy of raptor conservation began with the achievement of fundamental changes and further improvements in the legislative status of raptors. It proved to be effective for stabilizing or increasing about half the falconiform species in the USSR. Populations of these species make up about 80–90 percent of the total number of falconiforms in the country. This situation encourages scientific and conservation organizations (like the Institute for Conservation of Wildlife and many others) to concentrate their efforts for conservation and management on rare species of birds of prey in our country.

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