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The Siberian Crane: a status report

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Among the 13 crane species of the sub-family Gruinae, the Siberian Crane (*Grus leucogeranus*) has the distinction of being the most genetically distinct as evidenced by the structure of its DNA, its physical features and unusual behavior. The bone structure of the Siberian Crane is highly distinct, and its enormous beak outdistances all other cranes to give it a more stork-like visage. Whereas most other cranes have a trumpet-like voice that carries for great distances, the voice of the Siberian Crane is soft and flute-like, a character which when combined with gleaming white plumage, bright red face and salmon legs, endears the species to many as the "Lily of Birds." Unfortunately, although outranked in rarity by the Whooping Crane and the Red-crowned Crane, the Siberian is perhaps the most endangered of cranes as a consequence of its inflexible dependence on wetlands along three migration corridors that span the Asian continent.

Western and central flocks: on the brink of extinction

The Siberian Crane uses its enormous beak to dig in wet mud, where it predominantly forages on the tubers of sedges and the fleshy roots of other aquatic plants. If the mud is dry, it is difficult for the Siberians to penetrate the substrate. Consequently, these cranes require wide expanses of shallow water where tubers and roots are plentiful. With the explosion of the human population in southern Asia and the associated conversion of wetlands to croplands, the Siberian Cranes have declined from what once may have been many thousands of birds wintering on the Caspian lowlands, the Gangetic Plains of northern India and the lowlands of the lower reaches of the Yangtze River. In December 1992, there were a minimum of 10 cranes left on the Caspian lowlands, perhaps as few as 5 on the Gangetic Plains of India and perhaps as many as 3000 on the lower Yangtze floodplain. The western and central flocks are on the brink of extinction. The eastern population is now threatened by the proposed Three Gorges Dam on the Yangtze River that many fear will greatly alter the fragile hydrology of the crane's winter habitats downstream.

In contrast to the disturbed habitats cranes encounter on their wintering areas, their breeding grounds are pristine wilderness wetlands of the northern taiga and open tundra of the Russian Federation. Two breeding areas are known: the tundra and taiga region between the Indigirka and Kolyma Rivers in eastern Siberia, and the taiga wetlands just east of the Ob River in western Siberia. The eastern group migrates to China. We suspect that the Ob River group is the flock that winters in India because there have been parallel declines at both ends of the range. In addition, in 1992 the migration of a juvenile Siberian Crane was monitored by satellite from the Ob River breeding grounds on a southeast route across Kazakhstan to the Amu Darya River lowlands along the border between Turkmenistan and Afghanistan, a route seemingly headed towards India. Some consider that the breeding grounds of the flock that winters in Iran have yet to be discovered.

Obstacles to conservation

Politics and wars have encumbered co-operative international efforts to help these cranes. The remote nesting areas are difficult to reach. Helicopters must be used to survey nests, and costs are exorbitant. The wintering grounds of the western flock in Iran were discovered in 1978, but

conservation programs in that country have had to accommodate social change and the damaging effects of a lengthy war with Iraq. The war in Afghanistan has rendered conservation an impossibility at Lake Ab-i-Estada where the central flock rests in both autumn and spring migration. Not until the end of the Cultural Revolution in the 1970's were Chinese ornithologists able to search for the cranes wintering in China. In 1981, they found the now famous wintering area for cranes at Poyang Lake.

Efforts to save the species

As a safeguard against extinction of the species, Russian, American and German colleagues have collaborated in creating three captive flocks of Siberian Cranes. Today there are 28 birds at the Oka Nature Reserve in the Russian Federation, 29 at the International Crane Foundation (ICF) in the United States and 9 at Vogelpark Walsrode in Germany. Using artificial lights to simulate the continual light to which wild cranes are exposed on their breeding grounds, the captive cranes eventually were induced to breed. Unfortunately, because the age of first breeding for females occurs between 4 and 9 years, productivity in captivity has been slow.

A researcher at ICF, Dr. Robert Horwich, devised an unusual rearing technique whereby caged chicks are reared in visual and vocal isolation from humans. They are taught to feed with the use of hand puppets that resemble the head and neck of an adult crane. A crane-costumed human leads the juveniles into wetlands where they exercise and learn to forage on natural items. Sandhill Cranes, experimentally reared in this manner, have joined the wild cranes, have migrated and when mature have paired and reproduced with wild cranes. Efforts are now underway to use this technique to bolster numbers of the central flock of Siberian Cranes.

In recent years satellites have been used to monitor the migration of cranes. Tiny yet powerful radio transmitters harnessed to the cranes communicate with an orbiting satellite. The radios can reveal movements of the cranes that would be almost impossible to evaluate through ground studies, given the political and physical barriers to human travel across west Asian latitudes. In 1992, a joint Finnish-Russian-Iranian team unsuccessfully attempted to capture an adult Siberian Crane from the western flock. They hoped to attach a transmitter and monitor its migration to the breeding grounds. Perhaps efforts will resume during the winter of 1993-94.

The Iranian Department of the Environment strictly protects the cranes that winter on flooded rice paddies near the village of Fereydoon Kenar. Although thousands of wild ducks are trapped in that area, the hunters have traditionally protected the white cranes. When rediscovered 15 years ago there were a minimum of 15 birds, and since then their number has fluctuated between 10 and 11. By way of comparison, the North American Whooping Crane flock was reduced to 15 birds in 1941, and by careful protection throughout a range that stretches from breeding grounds in sub-arctic Canada to their winter area along the Gulf of Mexico, the population has slowly increased to 136 in the winter of 1992-93. Likewise, if protected throughout its range, the western flock of Siberian Cranes should increase. Perhaps by using satellite radios to determine the migration route, ground studies can be done and conservation measures enacted to reduce mortality.

The central flock wintering at the famous Keola Deo bird sanctuary near Bharatpur, India, is the most studied and the most threatened of the three populations. Comprehensive studies of the ecology and behaviour of this flock have been underway since 1974. Since counts were initiated in the 1960s, the numbers of cranes at Bharatpur progressively declined from 125 to 5 birds during the winter of 1992-93. In 1982 buffalo grazing and grass cutting were banned in the sanctuary, and subsequently the quality of crane habitat has been degraded by the invasion of aggressive grasses, raising the suspicion that some of the birds may have shifted their wintering area to some unknown location. However, ground searches to locate Siberian Cranes at other wetlands in northern India have thus far proved unfruitful. In January 1990 and in February 1991, limited aerial surveys were conducted. During the winter of those years, one and

two Siberian cranes, respectively, were located outside the known wintering grounds at Keola Deo National Park - giving hope that an expanded survey might locate more birds.

In 1991, and again in 1992, a Russian-Indian team isolation-reared and released a total of four Siberian Crane juveniles on the breeding grounds of the central population. Three birds reared in 1991 failed to join the wild cranes because of inadequate time for the development of social bonds between meeting the wild birds and the migration of the latter. The single bird reared in 1992 is believed to have joined and migrated with Common Cranes. In addition, during the winter of 1992-93, two Siberian Cranes captive-reared in Russia were released with the wild cranes on their wintering grounds in India. The captive-reared birds thrived in the wild, but once again there was inadequate time for the development of social bonds between the captive-reared and wild cranes. Efforts to release birds on the breeding grounds are being repeated in 1993, and during the winter of 1993-94, efforts will be made to release more captive-reared cranes on the wintering grounds in India.

In March 1993, three Eurasian Common Cranes were fitted with satellite transmitters at Keola Deo National Park. Two of these cranes provided very valuable information on migration and revealed for the first time the exact migration route of at least some of the cranes that winter in India. Some important stopover areas were also made evident that had not been documented previously. These two Eurasian Cranes are currently at their breeding area in southern Siberia, near the headwaters of the Ob River. As the population of Siberian Cranes wintering in India is on the verge of extinction, it might become necessary to use the more abundant Eurasian Cranes as guide birds for the juvenile Siberian Cranes released in Siberia, since migration in cranes is a learned behaviour. Eurasian Cranes in and around Keola Deo National Park are expected to be fitted with satellite transmitters for the next three years at least, thus leading to a more comprehensive recovery program for Siberian Cranes.

It is believed that in the passes of the Hindu Kush mountains which span Afghanistan and Pakistan, crane hunters are probably most responsible for the demise of the central flock. Afghans shoot migrating birds and sell them for meat in the bazaars. In the early 1960s, three Siberian Cranes were seen dead and hanging by their necks in a market in Kabul. The war in Afghanistan and subsequent instability have negated any conservation initiative.

More than 900 crane hunters in Pakistan use live decoy Common Cranes and Demoiselle Cranes to lure migration cranes to their traps and guns. However, wildlife researchers and conservationists in Pakistan have waged a vigorous effort to better manage crane hunting, to reduce the use of guns and to teach hunters not to harm white cranes. Efforts continue in Pakistan, and we hope the Pakistani conservationists can soon spread this good work to Afghanistan.

The eastern population

In the far east, enormous flocks of Siberian Cranes probe the winter shallows of Poyang Lake. In summer when the Yangtze swells, Poyang Lake likewise fills partly from the flooding of five small rivers that enter the lake and partly from Yangtze floodwaters. In autumn, when flow in the rivers is reduced, the waters of Poyang Lake drop. At first, grass-covered areas emerge, and then vast areas of mud are exposed. Shallow depressions in the mud flats create "winter lakes" whose boundaries often change as the strong winds move the lakes in various directions over the mud. Beneath the mud is an abundance of tubers of wild celery. At the borders of these winter lakes, great flocks of Siberian Cranes probe for tubers in the mud. They are joined by thousands of Swan Geese and White-naped Cranes. By late winter, the winter lakes are almost gone, and the cranes migrate north to several staging areas in northern China, and from there to their breeding grounds in the Russian arctic.

There are plans in China to construct the world's largest hydropower dam upstream from Poyang Lake at Three Gorges. This dam threatens to block flood waters that are partially responsible for the seasonal filling of Poyang Lake. Altering the fragile hydrology of Poyang Lake may threaten the quality of the habitat for wintering Siberian Cranes.

A tenuous existence: the need for urgent action

The Siberian Crane's conspicuous appearance, long migrations, inflexible foraging habits and wintering in populous areas all explain why the bird is endangered. While the eastern populations appear stable for the time being, saving the western populations requires immediate and forceful action. Given the critical status of the population wintering in India, steps have to be taken now, despite the lack of detailed information on the migration route. Strategies and materials for public education have to be developed. Mechanisms for action have to be developed, and personnel have to be hired or trained. Afghanistan's Lake Ab-i-Estada is a key area, but people over a wider area have to be notified of the critical importance of saving this species.

If we can succeed in determining the migration route in the near future, then these mechanisms for preservation can focus their energies. If we cannot determine the route, then at least there will be some action on a broader scale that may help tip the balance in favor of survival. We must do our utmost to save the western flocks because if this magnificent species is extirpated from western Asia, the knowledge of their long migration route will be lost, and it will be extremely difficult to reintroduce Siberian Cranes in the future. The conclusion of a memorandum of understanding between the countries frequented by these magnificent birds offers real hope that action will be taken to reverse the drastic decline in their numbers in recent years.