area of submergence for waterfowl use. They will be planted with *Acacia nilotica* trees and aquatic grasses as waterfowl shelter. As the acacia grows it may provide nesting trees to waterfowl.

5. These mounds are also expected to provide niches where aquatic life including fish can find shelter and breeding places.

The aim is to provide a self-sustaining food web that will replace the simplified unidirectional food chain operating at present. This is shown in the accompanying figure.

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**References**


US Dept. of Agriculture.


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Ron Sauey and the Siberian Cranes

Dr. George Archibald

On Christmas Day, 1986, while preparing a feast for his beloved family, Ron Sauey felt strange and confused. His parents lived nearby, and Ron called them and explained that he needed help. Soon after they arrived, Ron had collapsed into a coma. He never regained consciousness and he passed away January 7. He had suffered a cerebral haemorrhage, the consequence of the rupture of an arterial-venal mass that unknown to all, had been with Ron since birth. Such a mass is a time bomb that usually explodes between the ages of 35-40. Ron was 38. The loss of Ron leaves a void in the lives of the many who loved him, and it deprives our ravished earth of a gifted conservationist.

I write these details because many readers of this Journal knew Ron through his many visits to India and his research on Siberian Cranes at Bharatpur. Ron had a special place in his heart for India and his colourful circle of Indian friends.

The Beginning of the International Crane Foundation

Ron and I met in 1971 at the Laboratory of Ornithology at Cornell University in Ithaca, New York. Ron had just graduated with a Bachelor of Science from the University of Wisconsin in
north central USA. During his childhood at his home near Baraboo, Wisconsin, Ron had kept several species of pheasants, and at Cornell he hoped to pursue a doctoral degree through research on the biology of these colourful birds. That was, until he met me.

Cranes were my passion and my doctoral thesis is concerned with the evolutionary relationships of cranes as revealed by their remarkably loud calls. At Cornell, I had assembled 56 cranes of 9 species at a recently-vacated mink research farm that neighboured the Laboratory of Ornithology. The mink cages were sold. Small ponds were excavated and poultry netting fences erected to subdivide the compound into a series of enclosures for my valuable charges. The cranes arrived on loans from zoos. I lived in the vacated office building, a facility that provided winter shelter both for me, my Labrador retriever "Fuji", and the cold-sensitive African Crowned Cranes. I studied these captive cranes for three years.

During the autumn of 1971, I returned the cranes to zoos. I wrote my thesis, and prepared to depart for Japan to study the cranes in the wild. During those last few months at Cornell, I became friends with Ron Sauey and we volunteered to work together on a Sunday afternoon winter waterfowl census of Lake Cayuga.

Waves created by north winds hid many of the ducks and geese from our telescopes. That damp cold was so penetrating that we decided only to census from look-off spots readily observed from Ron's heated jeep. Finally, with a shrug we abandoned the census as an impossibility and we resorted to a country pub.

By the time I had met Ron, all cranes except a pair of Wattled Cranes has been returned to the zoos. I had shown him these five-foot-tall giants from Africa. He was taken by the beauty of their white necks, red faces and long trailing gray and black wing feathers. That Sunday afternoon Ron expounded on the beauty of those two cranes and he added that considering the endangered status of seven of the world's 15 crane species, it was unfortunate that there was not a world centre for crane conservation. I agreed, but added that surely a branch of the United Nations was needed because cranes migrated across so many tense international borders.

In my make-shift facilities at Cornell, a pair of endangered White-naped Cranes reproduced, and in 1971 I hand-reared five chicks. I mentioned this success to Ron and he suggested that perhaps his parent's farm in Wisconsin could be used as a breeding centre for rare cranes. Within two weeks we were walking over the snow-covered fields of the Sauey's 65 acres along City View Road just north of Baraboo. I liked the farm and was attracted to the Sauey family. That Sunday afternoon chat in the pub in November, and our visit to Wisconsin in December 1971, precipitated our decision to establish a crane centre. In March 1973, the International Crane Foundation — the "World centre for the study and preservation of cranes" was incorporated as a nonprofit organization qualified to receive tax-deductible contributions from the general public. The generous Sauey family built 15 crane pens and rented ICF their farm for one dollar a year. Then the cranes began to arrive. A dream was becoming a reality.

Ron and I decided that ICF should have five major programs: research, public education, crane and habitat conservation, captive breeding and restocking. Over the past two decades since Ron and I met, ICF matured through a five-year volunteer stage (we had no money to pay staff), to a move to our own land, the growth of staff to 21 paid employees, a population of captive cranes including representatives of all 15 species, and field research and conservation programs with colleagues on five continents.

We were particularly interested in the Siberian Cranes — those great white cranes that breed on the Russian tundra and that once wintered from Iran to China. Little was known about the number and exact locations of the Siberian Cranes, few were held in captivity, and they had never successfully reproduced in captivity.

By importing several old Siberian Cranes, by artificially illuminating their enclosures to simulate the long spring days of their arctic nesting grounds, and by applying artificial insemination, in 1981, ICF achieved the world's first successful breeding of captive Siberian Cranes. As a safeguard against the possible extinction of Siberian Cranes in the wild, we helped setup a "species bank" of these threatened Cranes at ICF headquarters.
Ron's Siberian Crane Research

Not long after we decided to found ICF, Ron abandoned his idea of studying pheasants and shifted his focus to the Siberian Cranes. Back in the early 1970s, the only known flock of Siberians was the group wintering at the bird sanctuary near Bharatpur in India's state of Rajasthan. Ron spent the winters of 1974-75 and 1976-77, and parts of other winters, with these cranes to document for science the details of the winter life of these elegant white cranes that traverse a 5000 mile migration between breeding grounds in the high arctic to winter on the Gangetic plain.

I especially remember Ron's account of the Siberian Crane's arrival at Bharatpur. Late one afternoon in November of 1977, Ron heard soft, flute-like calls floating down from the sky. White dots appeared, circling downward, dots that soon had black-tipped wings and long, salmon-coloured legs. On fixed wings, the great white cranes coasted rapidly earthward and, as if anxious to return to familiar turf, they plopped down in the centre of a large jheel. They looked exhausted and immediately began to drink. Some minutes later, after they regained their strength, they began to preen and then to probe in the mud in search of their favourite tubers.

For most of the next four months, Ron studied those 57 cranes from dawn to dusk. Ron was amazed at the Siberian Cranes dependence on shallow water, in contrast to Sandhill Cranes with which Ron was familiar in Wisconsin, and Sarus Cranes that were numerous in Rajasthan. During his two winters of observations, Ron seldom saw the Siberians walking on dry land, unlike the more adaptable Sandhill and Sarus that often forage on gleanings in upland agricultural fields. The Siberians' extraordinary long beak is used to probe in wet mud for the fleshy roots and nutritious tubers of aquatic plants. The Siberians were "tied" to wetlands, a bond that Ron concluded doomed Siberians over most of their former winter range in northern India where many wetlands have been drained for human use.

In winter the Siberian Cranes consist of unpaired birds, pairs without chicks, and pairs with chicks. Ron was impressed by the strength of the bond between paired birds, and the care they lavished on their single cinnamon-brown chick. The chick was always near its parents and they frequently passed their youngster food items they excavated from the shallows. At night the flock roosted together on one of the larger jheels and at dawn, in small flocks and family groups, they dispersed to other wetlands in the sanctuary where they spent the entire day. Some pairs were highly territorial and would not allow other Siberian Cranes within their feeding area.

Ron was able to identify each family group by the variation in the brown plumage of the chicks. Upon arrival in autumn, the chicks were uniformly brown, except for their white wing feathers. However, during their four months in India, the brown feathers were gradually moulted, and by the time of migration in March, the chicks were predominantly white. However, the rate of moulting varied, and each chick was easily identified by its patterns of the brown and white feathers.

In mid-March, Ron witnessed the departure of the Siberian Cranes. They left in small groups over several days, and their departure came in mid-morning after they had fed and when wind thermals aided their ascent. Suspecting that the cranes migrated from Bharatpur to Afghanistan's Lake Ab-i-Estada, Ron flew to Afghanistan; with the kind assistance of US Ambassador Theodore Elliot, an expedition was launched to search for the Siberians. Ron was thrilled to find 56 Siberians, including the 8 families, probing in the shallows of Lake Ab-i-Estada. He was dismayed, however, that crane hunting was widespread in Afghanistan and nearby Pakistan, a practice that Ron suspected was the primary factor responsible for the steady decline in the size of the flock from 125 birds in 1965. When Ron passed away in 1987, 38 Siberian Cranes wintered at Bharatpur. During the winter of 1990-91, there were 10.

New Hope for the Western Siberians

The breeding grounds of Siberian Cranes in West Asia were discovered in 1981 by Russian ornithologist, Dr. Alexander (Sasha) Sorokhin. He located several nesting pairs on wide wetlands on the basin of the Kunovat River, an eastern tributary of
the mighty Ob River that drains the lowlands immediately west of the Ural Mountains. During the 1980s, the numbers of pairs varied from 4 to 10, with more pairs present during years of high water.

In June of 1990, together with American ornithologist, Dr. David Ellis (of Patuxent Wildlife Research Center in Maryland), I had an opportunity to join Dr. Sorokin and his mentor, Professor Vladimir Flint, for a month with those Siberian Cranes. Life with close friends in that pristine wilderness, camped within a mile of the nest of a Siberian Crane, was one of the high experiences of my life. Our only regret was that Ron was not with us.

During those long subarctic days when the sun barely touched the northern horizon at midnight, and among a myriad of mosquitoes and occasional brown bears, we had plenty of time to strategize a plan to save the west Asian population of Siberians. There were two main problems to address: curbing the hunting, and increasing the number of cranes.

The Conservation Plan

Crane chicks migrate with their parents, and during that autumn flight they learn the migration route. Several years later, the young cranes return to their natal wetlands to breed. The remnants of the west Asian flock has the “knowledge” of a migration route unknown to other Siberians. Hunting along that route cannot be controlled until the migration path is known and public education programs targeted at problem areas. Satellite telemetry seemed the only feasible means of tracing the Siberian Cranes. Dave Ellis was the member of our wilderness team who had the required skills and equipment to implement such an ambitious program.

Dave’s colleagues at the National Aeronautics and Space Administration (NASA) graciously provided three tiny radio transmitters capable of sending signals to a satellite. First, the technique would be tested using Common Cranes that also nested in the Kunovat Basin. With the help of Dr. Yuri Markin, three of these non-endangered cranes were captured and fitted with the battery-powered radio backpacks. NASA immediately began receiving messages from the cranes and throughout the summer and early autumn, the movement of these birds was followed south along the Ob River and into the agriculture zone that borders the northern forest. Unfortunately, signals from two radios discontinued in early October, suggesting battery failure. However, the female Common Crane, Katya, was monitored to her wintering grounds along the Iran-Afghan border.

During the spring of 1991, Yuri Markin hopes to recapture the three marked Common Cranes to inspect the radio equipment and the effect of the backpack on the cranes. If all is well, improved radios may be saddled to several Siberian Cranes, thus revealing the mystery of their migration.

The second problem concerned the numbers of cranes. A way had to be found to increase the number of the dwindling flock before the “knowledge” of the migration route was lost for all time. Captive breeding of Siberian Cranes provided a hope.

In 1985, working at ICF, an ethologist, Dr. Robert Horwich developed an ingenious method for rearing Sandhill Cranes in captivity and releasing such birds with wild cranes. His chicks were reared in visual and vocal isolation from humans. Soon after we placed the chicks in a rearing pen, a hand puppet, resembling the neck and head of a crane, was extended through a hole in the wall, and the beak of the puppet manipulated food items while a tape recording of the feeding calls of Sandhills was played. A heat lamp over a stuffed Sandhill in brooding posture provided warmth and learning for the chick. As the chick developed and required more exercise, crane-costumed keepers led the birds through the fields and wetlands to strengthen their fast-growing legs and to teach them to feed on natural food items. After the chicks fledged, the costumed-parent disappeared and the chicks joined the wild Sandhills and successfully migrated with them to Florida. The following spring, five of the six cranes were back in Wisconsin. This historic experiment was subsequently repeated three times by Dr. Richard Urbanek, and the results have been consistently encouraging.

In 1989, Sasha came to the USA and observed Richard Urbanek’s simple crane rearing setup on a field in Michigan’s Seney National Wildlife Refuge. Why couldn’t a similar facility be constructed within the territory of one of the pairs of Siberian Cranes? Hatching eggs could be imported from the three captive
flocks, the chicks costume-reared on the wetlands, and in late summer, with radio backpacks intact, the juvenile Siberians could be encouraged to join their wild relatives.

This is the very program underway in 1991. Mini Nagendran, an Indian ornithologist who developed costume-rearing for Siberian Cranes at ICF, is responsible for the crane rearing in the Russian wilderness. (See page 55.) In August, David Ellis and Yuri Markin will join her to attach satellite radios to her Siberian Cranes before they are released. If they join and follow the wild Siberian Cranes, the migration route will be followed by satellite, and the numbers of cranes in the dwindling flock will be increased.

Although the west Asian flock of Siberian Cranes is on the edge of oblivion, we have hope that the 1990s will witness the gradual recovery of the population as science opens new doors. Ron Sauey would be pleased that there is hope for the Siberian Cranes he knew so well.

Epilogue

As a tribute to their son and the values dear to him, Ron's parents, Norman and Claire Sauey, together with Ron's twin brother Don, have supported the construction at ICF of the Ron Sauey Memorial Library for Bird Conservation. Eventually, it will contain a growing collection of the world's literature on cranes and their habitats. Scientists will be invited to bring their data to ICF and write their reports. As well as raising cranes, ICF will be helping to create literature to guide future generations in helping these sensitive creatures survive the gauntlet of challenges to survival. Although Ron will always be remembered at ICF, I like to think of his spirit soaring with those white dots in the blue, wild and free, in an Asian sky with the blue waters of Bharatpur on the horizon.

On Probable Sympatric Distribution of *Presbytis Geei* and *Presbytis pileata* in Bhutan

Dr. Anwaruddin Choudhury

Golden Langur (*Presbytis geei* Khajuria) has a limited distribution zone confined to a small area of Assam and Bhutan (Gee 1964). In Assam it is found in Kokrajhar, Bongaigaon (Choudhury, 1989) and Dhubri (Saikia *et al.* 1990) districts, where its east-west limits are the Manas and Sankosh rivers. Not a single record is there from north Bengal (west of the Sankosh River) or from areas in Barpeta district, east of the Manas river. Bulk of its range is covered by the core area and the buffer zone of the Manas Tiger Reserve. Inside Bhutan, near Assam border, it is also restricted to the west bank of the Manas river.

The Capped Langur (*Presbytis pileata* Blyth) on the other hand has a wide distribution in north-eastern India as well as Bangladesh and Burma. In Bhutan, it was an unrecorded species (Eudey, 1987). However, on 20 October, 1985 I observed a group on the high banks of the Manas Wildlife Sanctuary of Bhutan (Choudhury, 1990). This sanctuary is contiguous with Assam's Manas Tiger Reserve.

Inside Assam, especially in the Manas Tiger Reserve both the species are strictly allopatric, being divided by the Manas river (width at Mathanguri, c. 150). It is only from two small areas of