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Whooping Cranes Return to Florida

by Steve Nesbitt,
Florida Game and
Freshwater Fish Commission

My 9-year-old son and I are in a blind watching five Whooping Cranes. The 14-month-old birds were released last April—part of an attempt to establish a non-migratory population of Whooping Cranes in Florida.

As we watch the birds, I think of my grandfather, Ira Gabrielson, who stimulated my interest in the outdoors, starting me on my career in biology. One of the last to see Whooping Cranes in his home state of Iowa, he went on to become a professional ornithologist and later Director of the U.S. Biological Survey/Fish & Wildlife Service, from 1935 to 1946. It was during this time that the Aransas National Wildlife Refuge was established, signalling the start of a slow but steady comeback for the Whooper. Later, in 1939, he worked to establish Patuxent Wildlife Research Center, today the largest of three breeding centers for Whooping Cranes. Watching the birds feeding contentedly, I wonder if my grandfather could have imagined the enormous effort that has gone into reversing the Whooper's slide toward extinction.

Whooping Cranes in the Aransas-Wood Buffalo flock have recovered from a low of 16 individuals in 1941-42 to 141 birds in the wild in December, 1993. Although the birds have increased with habitat preservation and protection from hunting, more remains to be done to minimize the risk of extinction. As long as the one remaining wild flock winters within a small area on the Texas coast, and migrates along a single corridor, there is always a chance that catastrophe—an oil spill,

hurricane, or disease outbreak—could devastate the population.

Plans for recovery

The Whooping Crane Recovery Plan sets several goals that must occur before the species can be "down-listed" from endangered to threatened status. First, the Aransas-Wood Buffalo flock must increase to a minimum of 40 nesting pairs. In addition, there should be two other, discrete flocks of at least 25 breeding pairs each.

Programs to save the species have involved both Canada and the United States. One of the first milestones was the establishment of Aransas National Wildlife Refuge in 1937. In 1945, the U.S. Fish and Wildlife Service and the National Audubon Society began a cooperative study of the Whooping Crane. One result of this study was R.P. Allen's land-

mark publication, *The Whooping Crane*. Captive propagation began in 1966 at the Patuxent Wildlife Research Center of the U.S. Fish and Wildlife Service, with the goal of releasing birds back to the wild. An attempt to establish a new migratory population in the Rocky Mountains began in the 1970's, and continued through the 1980's.

But adult Whoopers in the Rocky Mountain flock never attempted to breed, perhaps because they had imprinted on their Sandhill foster parents. So the Whooping Crane Recovery Team began to lay plans for a new flock. But where? There was a breeding population around the Great Lakes, and some of those birds wintered along the Southeast Atlantic coast. The last Whooper in Florida was shot in St. Johns County in 1927 or 1928. Although Louisiana once had a non-migratory

continued on page 2



Captive-reared Whooping Cranes released in Florida's Kissimmee Prairie may become the founders of a new, non-migratory flock of Whooping Cranes. The prairie is a patchwork of public and private lands. This photo was taken on the 33,000-acre Adams Ranch, where the Adams family is restoring habitat by eradicating invading exotic plants like *Melaleuca* and Brazilian pepper trees.

Whoopers Return to Florida

continued from page 1

population (the last survivor died in 1950), there are many arguments against reintroduction to Louisiana. The state hosts a substantial winter population of snow geese and other waterfowl in concentrations that could invite disease outbreaks. In addition, because Whooping Cranes superficially resemble snow geese, they have been mistakenly shot in the past. In contrast, Florida has few wintering snow geese, and no goose hunting.

A final argument for Florida has to do with Sandhill Crane populations in the proposed release areas. We reasoned that if Sandhill Cranes were present in the release area, they might model important behaviors for survival—showing the Whoopers by example where to roost safely. The largest population of non-migratory Sandhill Cranes (4,000-6,000) is now in Florida.

A non-migratory flock?

A second issue was whether a migratory or non-migratory population of Whoopers should be established. A non-migratory flock would have distinct advantages. Migration can cause increased mortality, particularly in the juvenile and subadult age classes, when they are exposed to many dangers during their wanderings. And, natal dispersal among migratory populations tends to be greater, so during a reintroduction attempt, dispersal could make it harder for birds to find mates.

But one possible obstacle to producing a non-migratory flock is the fact that all Whoopers alive today come from migratory stock. If reintroduced chicks from migratory parents have an instinctive urge to wander, they would disperse from the reintroduction area. Without an existing migratory flock of Whoopers to show them the route, the reintroduced chicks would experience all the dangers of migration, without the usual rewards of reaching a safe summer home.

Beginning in December, 1980, the Florida Game and Fresh Water Fish Commission began to investigate whether a non-migratory population could be produced from birds with migratory heritage. We used the classic cross-fostering technique to discover whether the onset of migration in Sandhill Cranes is primarily instinctive or learned behavior. Eggs of the Greater Sandhill Crane, a migratory subspecies, were exchanged with eggs in the nests of non-migratory Florida Sandhill Cranes.

Would the resulting chicks respond to the urge of their genes to migrate north, or would they follow the lead of their non-migratory foster parents and stay in Florida all year? To find out, the cross-fostered chicks were

captured at 60 to 65 days of age, just prior to fledging, and equipped with small radio transmitters. Each bird was monitored for at least two migration seasons. The experimental chicks would indeed have an opportunity to migrate, since 25,000 migratory Greater Sandhill Cranes winter in Florida.

Meanwhile, a new technique for reintroduction, called "soft release," was being refined through the Mississippi Sandhill reintroduction program. So in Florida we also tested the innate urge to migrate using the "soft release" technique, which involves acclimatizing young captive-reared birds to a release location by placing them in a large, topless enclosure. The birds are held in the pen for three to four weeks while they become used to local conditions. After this period, the birds are allowed to come and go from the pen. Food and water continue to be provided as long as the birds return to the pen.

Results of our studies in Florida showed that Sandhill Cranes of migratory stock, when raised and released by either of these techniques, did not migrate. Instead, they remained in the release area and exhibited a pattern of movement similar to the local Florida Sandhill Cranes. Therefore, we predicted that Whooping Cranes derived from migratory stock would demonstrate non-migratory behavior.

Best release site identified

While these behavioral studies were being conducted, Dr. Mary Ann Bishop evaluated several areas of Florida to determine which was the most appropriate site to begin a reintroduction effort. Her conclusion was that the Kissimmee Prairie region was best. Similar studies were being conducted in Georgia's

Okefenokee Swamp and the Upper Peninsula of Michigan. After evaluating the results of all studies, the Whooping Crane Recovery Team recommended establishing a non-migratory flock, and that the birds should be released on Kissimmee Prairie.

Deciding how and where to establish the next flock was only half the problem. Mathematical models predicted that we must release a minimum of 20 birds a year to establish a self-sustaining population. But where would 20 eggs a year come from? By the late 1980's, the captive population was nearly large enough to produce enough fertile eggs. In 1989, captive production was given an added boost when the captive flock was split, with 22 birds being moved from Patuxent to ICF.

The first winter's release

By January, 1993, all the years of scientific investigation, planning, and hard work paid off, when 14 Whoopers arrived in Florida in shipping crates from Patuxent and ICF. We introduced the chicks to the soft release conditioning pen after dark, when the birds are more easily handled, and they are less prone to stress. Each bird was fitted with a radio transmitter mounted on a leg band. While in the conditioning pen, the cranes' wings were bound (brailed) to prevent them from flying out of the pen.

The brailes were removed during the night of February 10, four to five weeks after the birds were introduced into the pen. At first, the birds seemed oblivious to their newly-acquired capacity to fly away. By the next evening, only two birds had left the pen, and it took almost a month before all birds left. Even after leaving, they returned to the pen as a source of food and water for several more



Newly released Whooping Crane fledglings forage along the shore of Lake Marian. To date, 33 birds have been released, and more releases are planned for the winter of 1994-95. Photo by Marianne Wellington.

weeks. The local Sandhill Cranes were less of an attraction for the young Whooping Cranes than we had anticipated; they showed more of an interest in other large white birds.

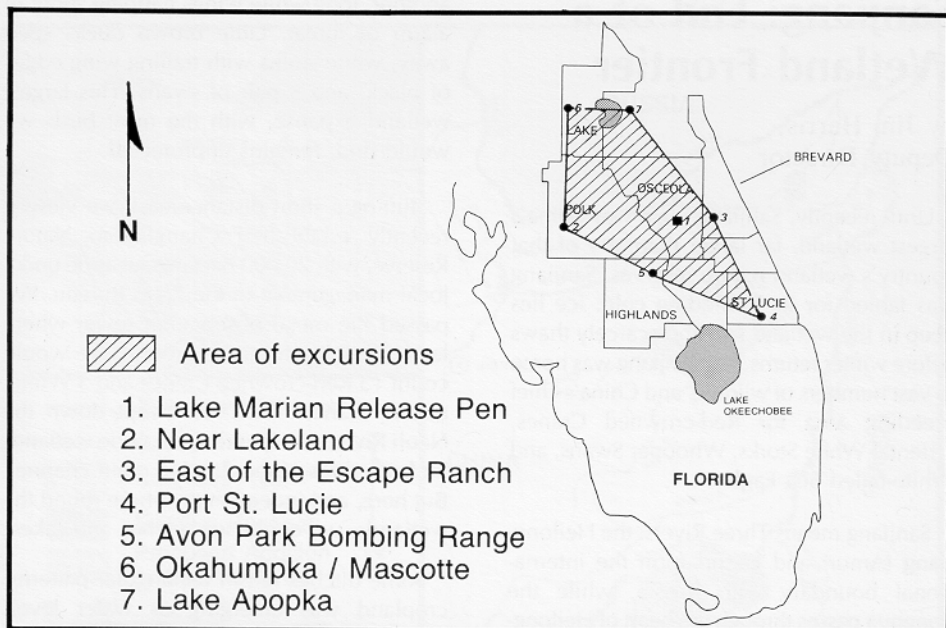
Based on our observations of the experimental Sandhills, we had expected that the Whoopers would be highly mobile during the first two years after release. The first Whoopers to leave the vicinity of the release pen left in May, 1993; we were able to locate them during much of their absence by searching for their radio signals from an aircraft. We don't think the Whooper movements (see map this page) reflect a migratory tendency; rather, they represented the same local or seasonal movements we had seen in the Sandhills.

As with Sandhills, we suspect that the boundaries of their lifetime home range are set during this initial period of wandering. This is when they learn where they can find food at different times of the year. Though they exhibited a greater home range during their first year than the Sandhills, this is consistent with the greater territory size and greater diversity of food preferences of Whoopers.

The second winter's release

In the summer of 1993, plans were laid for additional releases, but this time, we decided to release the birds in smaller groups, with substantial intervals between the groups (cohorts). This release in stages proved to have a number of advantages over the first winter's releases. First, handling smaller groups of birds, during capture for blood samples or removing brailes, resulted in less stress for both birds and personnel. Second, it was easier for the birds to establish their pecking order in a small group, and possibly there was greater loyalty to a smaller group. Third, there is evidence from Sandhill Cranes that all the birds released together may treat one another more as siblings, and fail to select mates from the group. Therefore, larger groups would restrict future choices of mates. Fourth, since we expect birds to learn from experienced birds already released, release in phases would provide additional "models" for birds released later.

In November of 1993, five cranes arrived—the first of several groups for release during 1993-94. They were greeted with "mixed enthusiasm" by the birds surviving from the first winter's release. Initially, there was a good deal of intimidation by the older birds, as the younger ones learned their position in the flock hierarchy. During additional reintroductions through March of 1994, 14 more birds were released from the pen. With 14 releases the first winter (1992-93) and 19 the second winter



Wanderings of Whooping Cranes after release at point #1, between May of 1993 and June of 1994. About four months after reintroduction, nine of the 14 Whoopers began to make long excursions away from their release area, eventually covering an area of 70 by 100 miles (hatched area). During these explorations, they always remained in habitat known to support Florida Sandhill Cranes.

(1993-94), a total of 33 birds have been reintroduced.

Of course, not all the released birds survived. The Sandhill studies had shown that initial mortality after the birds left the pen would be high. And we anticipated that predation by bobcats would be the main cause. Based on both the Florida and Mississippi Sandhill Crane releases, we had predicted 40% to 60% losses during the first year. Since 15 of the 33 birds released are now surviving at five locations, mortality has been 56%, all due to bobcat predation.

To reduce expected mortality, vegetation is being cleared in the vicinity of the release pen, depriving the bobcats of opportunities to hide while stalking cranes. In addition, birds will be conditioned before and after arrival in Florida to roost consistently in water, where they will be safer from predation.

This project, involving the U.S. Fish and Wildlife Service, The Canadian Wildlife Service, ICF, and the State of Florida, is the most ambitious crane reintroduction project

yet undertaken. The close cooperation among all these organizations helped prepare the way for a good outcome. Successes achieved so far have resulted from great attention to detail. The studies and exhaustive preparations were a necessary investment, helping to improve the chance of success. A diversity of methods for rearing chicks has allowed us to observe the advantages of each rearing technique. Even setbacks in the recovery program have provided valuable insights about how best to proceed in the future. We are still emphasizing this experimental approach for the releases planned for 1994-95. For example, the first birds to be released will have been taught by costumed human caretakers at ICF where to forage and where they can safely roost. We hope they will pass these adaptive behaviors along to birds released in later cohorts.

The success so far in Florida is another step back from the brink of extinction for the Whooping Crane. We hope our work will provide insights for reintroductions of other endangered cranes, including the Siberian Crane and the Eastern Sarus Crane.

Private Landowners Protect & Restore Habitat

The Kissimmee Prairie is a mixture of freshwater aquatic habitats and open grasslands. A large portion of the area is in public ownership. Many of the private holdings are large ranches devoted to raising livestock or crops. Some of these ranches have been held by the same family for generations.

The Kissimmee Prairie has high value for

cranes because so much of the area has been maintained in a natural condition. Many local landowners are actively involved in restoring native prairie grasses and suppressing the invasion of exotic plants. Thanks in part to the dedication of these landowners to wise land use practices, Florida Sandhill Cranes thrive on the prairie, and Whoopers are starting to make a comeback in Florida.

Sanjiang: End of a Wetland Frontier

by Jim Harris,
Deputy Director

Until recently, Sanjiang Plain was China's largest wetland, far larger than any of that country's wetland nature reserves. Sanjiang was fabled for its forbidding cold: ice lies deep in the wetland soil and scarcely thaws before winter returns. Yet Sanjiang was home to vast numbers of wildlife, and China's chief breeding area for Red-crowned Cranes, Oriental White Storks, Whooper Swans, and White-tailed Sea Eagles.

Sanjiang means Three Rivers: the Heilongjiang (Amur) and Ussuri form the international boundary with Russia, while the Songhua passes through the heart of Heilongjiang Province. In a populous country with scarce farmland, Sanjiang held irresistible promise. The Japanese established farms during World War II to feed their armies. After liberation, demobilized units of the Red Army were sent to this strategic wilderness; many new farms appeared in the 1980s. National plans call Sanjiang Plain the "Great Northern Foodbasket."

In 1984, biologists Feng Kemin and Li Jinlu of the Heilongjiang Wildlife Institute flew over Sanjiang to count Red-crowned Cranes. They found 294, out of a mainland population of just 713 birds. For major portions of Sanjiang, Feng Kemin also found that over 60% of the wetlands shown on his most recent maps had disappeared, drained for farmland. Yet he estimated that 1,500,000 hectares remained.

This May, I had the chance to visit Sanjiang, as a guest of Heilongjiang Forest and Farm Bureaus. While we expected to see cranes, our real purpose was roughly to assess what remained of the wild plain, and to develop conservation strategies. Small nature reserves have already been established. But could their varied ecosystems and rare wildlife survive in a transformed landscape?

The Heilongjiang Forest Bureau generously arranged for two half-day helicopter surveys. The first flight took us to the Naoli-Quixing River Basin, a sodden floodplain with 172 Red-crowned Cranes in 1984, more than any place on earth except Zhalong Nature Reserve in west Heilongjiang. But first, for almost an hour en route from the airport, we sped over reclaimed cropland.

Then ahead, sunlight shone off the Inner Qixing River, waters in flood across a 20-km width of shallows, islands, and reedbeds. We saw cranes take flight, one pair, another, then

another, long white wings flapping stiffly in alarm or threat. Little brown ducks sped away, white storks with trailing wing edges of black, and a pair of swans. This largest wetland expanse, with the most birds we would find, remains unprotected.

Shifting a short distance east, we viewed recently established Changlindao Nature Reserve, with 20,000 hectares set aside under local management of the Farm Bureau. We passed the metal observation tower where later, climbing from the ground, we would count 13 Red-crowned Cranes and 3 White-naped Cranes. Then we swept down the Naoli River, sun sparkling on wide wetlands on both sides of the flooded main channel. But here, and indeed everywhere round the wetlands, we could see ditches and dikes.

Some ditches ran in rectangular patterns; cropland was emerging as water levels dropped. But other ditches seemed crazy, starting and ending in the marshes, going nowhere but scarring the landscape. Later, on the ground, we found some ditches were parts of projects not yet complete, while others represented failures. Often we saw wet meadows bearing plowlines—land drained, farmed, and later abandoned to the water. Yet when we turned west up the Outer Qixing, flying back for an hour over lands ready for planting, no one could doubt the overall success of reclaiming the marshes.

The next day's flight took us up the Songhua River to circle Laodangshan Nature Reserve, another local reserve of 10,000 hectares, where the Dulu River empties into Songhua. Feng Kemin had counted 90 Red-

crowned Cranes here in 1984, including 17 nests. But we could see that the nature reserve, while important for migratory birds, lacked nest habitat for more than a pair or two of cranes, if any. Perhaps this patch is all that remains of the Dulu River marshes.

Another long flight over farmlands brought us to the wide green meadows of Hong He Nature Reserve. Just outside the reserve, we saw regular patterns of ditches through the marshes in areas being converted to croplands. The reserve itself held damp meadows interspersed with stands of birch and aspen, and shrub swamps. Some taller trees had large nests. Two, we discovered the next day, were occupied by storks, and another by the rare White-tailed Sea Eagle. Very few storks now nest in China, because few large trees remain near wetlands, and people disturb these shy birds. We saw cranes, and 6-8 Whooper Swans, but little open water or deep marsh. Water has diminished inside this reserve as agriculture and diversion ditches expand around it.

That afternoon, the helicopter set us down in a settlement of modern buildings, Hong He Farm, established in 1980. Unlike most of China, Sanjiang is dominated by state farms with huge fields and giant tractors.

Later, we would meet with Wang Zeyi, director of the Agriculture Division within Heilongjiang Farm Bureau. A highly informed man, he answered numerous questions, often with numbers out of his head. Working in Sanjiang for 30 years, he had the confidence of long accomplishment and great service to his nation. As he said, the farming here was quite like the Great Lakes region in



Waters of the Naoli River, a tributary of the Ussuri, feed vast wetlands that support one of the largest Red-crowned Crane populations in the world. Expansion of Changlindao Nature Reserve is necessary to protect nesting habitat and to buffer impacts of water diversion and agricultural development. The Wanda Mountains, in the background, are still visited by the imperilled Siberian Tiger. Photo by Jim Harris.

America, big fields of corn, soy beans, and wheat (but also rice paddies).

On Sanjiang, we witnessed a closing phase of frontier development. Wolves and brown bears still appear at Hong He, and tigers visit hill forests near the Russian border. The land, even under crops, looks new—a strong contrast to most of China, worn by millennia of human occupancy. Here, China has the chance to save the wild in the midst of farmlands. I felt I had stepped back 140 years, and could glimpse the wide and wild plains of Illinois and Iowa, forever lost. China can make a different choice.

Hope grows for conservation

Our flights over Sanjiang, and the ground surveys that followed, were a shock to those of us who love wetlands. The conversion of Sanjiang to agriculture appeared nearly complete.

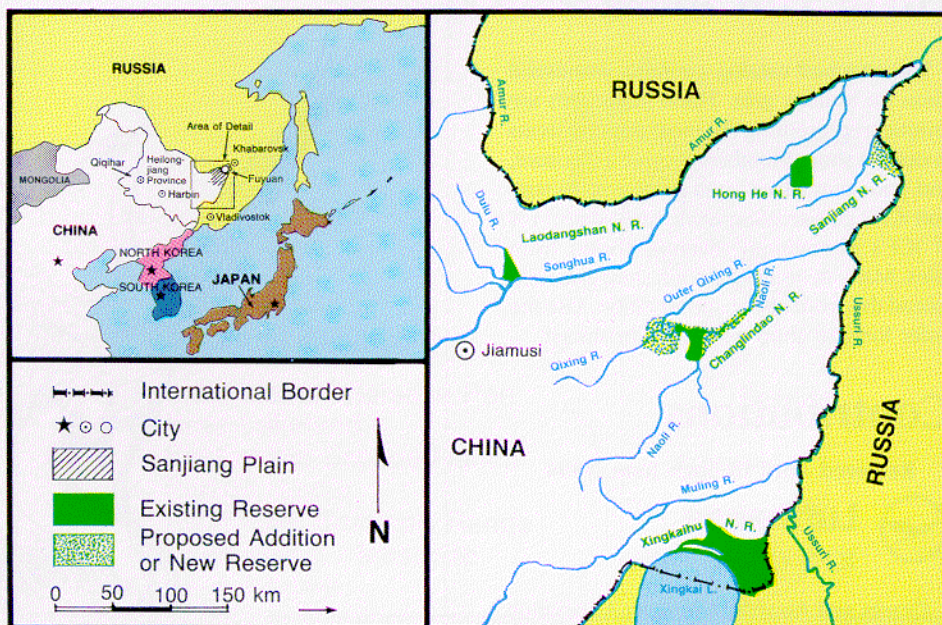
There are now good reasons, however, to hope that sizable wetlands can be preserved. Most remaining wetlands will be difficult and costly to drain. Moreover, Farm and Forest Bureaus are cooperating for conservation, as evidenced by their gracious reception of our group during the survey.

International interest in conservation of Sanjiang has grown. I visited Sanjiang as part of a six-person team. ICF was represented by Research Associate Su Liying and me. Yutaka Kanai came from the Wild Bird Society of Japan. Their Research Center has used satellite tracking to follow White-naped and Hooded Cranes from their wintering grounds in Japan to breeding areas in mainland Asia. Their data provide dramatic proof of the value of Sanjiang as breeding habitat for White-naped Cranes and a resting place for migrating Hooded Cranes (see *The ICF Bugle*, November 1993). The Japanese now know that their beloved cranes depend on the future of Sanjiang Plain.

Three members of our group—George Davis of Ecologically Sustainable Development, Inc., Bruce Marcot of the U.S. Forest Service, and Thomas Lumpkin of Washington State University—are participants in the Ussuri Planning Project, a Chinese-Russian-American effort to prepare a land-use plan for the entire Ussuri Basin, integrating conservation with economic development. This plan will recognize eastern parts of Sanjiang, including Hong He, and Changlindao Nature Reserves, as globally significant resources.

Our team makes four suggestions

While our survey did not include extreme northeast Sanjiang, we recommended four measures to safeguard the cranes, storks, and varied wetland ecosystems in Sanjiang Plain.



The Sanjiang Plain lies in extreme northeastern China, where three rivers meet along the international border with Russia. Several nature reserves have been designated or proposed, but their future depends on water management amidst newly developed croplands.

Enlarge Changlindao Nature Reserve. The current nature reserve protects only a small part of wetlands in the Naoli-Qixing Basin, and will be difficult to protect if surrounding wetlands are destroyed. We urged that the protected area be greatly expanded, to incorporate the best crane habitat west of the current reserve, and to follow the Naoli to its junction with the Outer Qixing River. Management of the reserve needs more support from provincial and national governments; the reserve should be elevated to provincial level protection.

Safeguard waters of Hong He Nature Reserve. The reserve protects ecosystems unique for China, but water diversions threaten its future—the wetlands are drying out. The reserve was expanded in 1993 from 16,000 to 21,000 hectares, but the boundary should be further expanded to high ground on the east. Ditches should not be constructed along its eastern boundary until a plan has been developed to protect and restore water flows into the reserve.

Develop a program for scattered wetlands. Small wetlands remain within the farmlands, and their value for cranes will grow as local people learn how to protect endangered wildlife. We suggest the Farm Bureau involve state farms in identifying small wetlands to be managed under simple guidelines, such as no hunting or further drainage. A primary purpose would be to use the sites for environmental education for nearby schools, teaching the children about their own past: farming and the transformation of Sanjiang.

Protect river corridors. Across China, river

banks have been devegetated and soils deeply eroded. Because Sanjiang has only recently been settled, most river edges have diverse vegetation, often including wetlands. The Farm Bureau is in a strong position to establish buffer zones for rivers before damage occurs, providing a national example for protection of wildlife, water quality, and soils.

At times during our survey, we sensed that local Chinese did not recognize that Sanjiang is unique in China and the world. Farm leaders do not understand that the last wide wetlands may soon be damaged forever. Formerly abundant wildlife cannot survive, even in their current small numbers, unless strong steps are taken for their protection.

Yet China's policies for Sanjiang are changing. The country has just adopted its Biodiversity Conservation Action Plan, and listed Sanjiang as a top priority. Both Farm and Forest Bureaus have been developing protected areas. Sanjiang Nature Reserve should soon be approved by the Heilongjiang Government, including 20,000 hectares near the Ussuri River.

All of us involved in the survey hope that local, national, and international conservationists can now work closely together, to safeguard winding rivers, eagle nests swaying in their treetops, and the cries of those marsh birds in the night. We thank Li Chunyuan and Wang Jinguan, who organized our trip, and also Bai Jingyu, Hu Zhengwu, and many companions. Financial support came from our Chinese hosts, and the Weeden Foundation.

Great Gift Ideas

The attached catalog contains wonderful ideas for holiday gifts. These crane gifts are unique, representing the most popular items in our gift shop. Members receive a discount, and your purchases are a great way to support ICF's conservation work. More than 11% of ICF's operational revenue comes from sales. Many items from the gift shop also help spread the word about conservation. Use the order form to shop early for Christmas!

Contributions

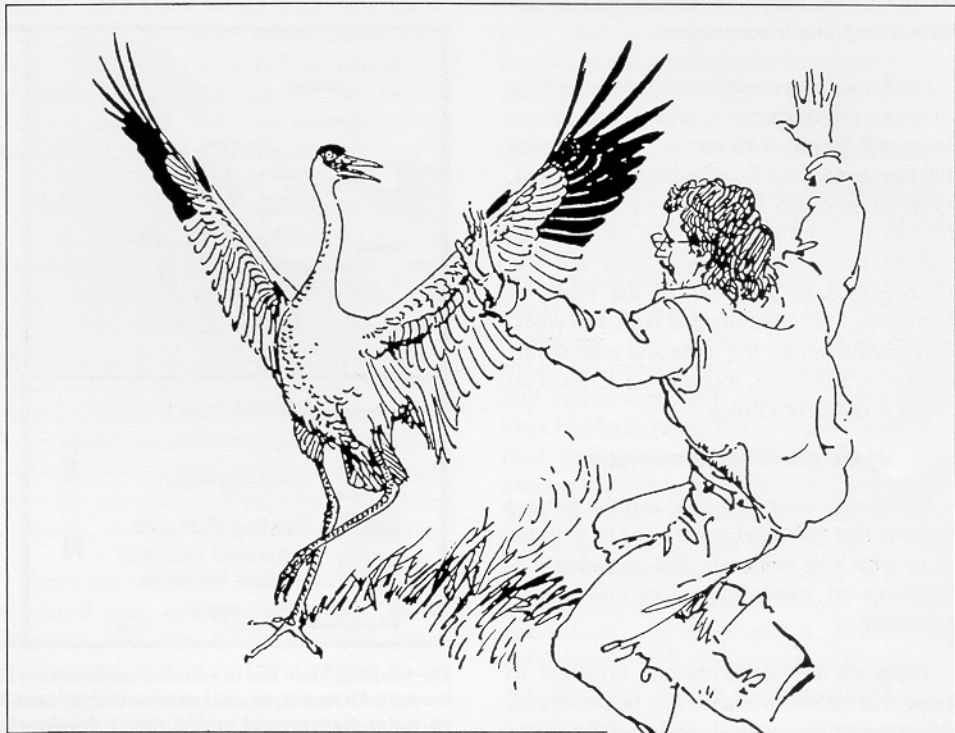
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ICF's Official Airline

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ICF's Artist-in-Residence, Victor Bakhtin, dances with a Siberian Crane. See story and poem on facing page. Illustration by Bakhtin.

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THE ICF BUGLE is the quarterly newsletter for members of the International Crane Foundation (ICF). Articles review ICF programs as well as crane research around the world.

Co-Founders: George Archibald
Ron Sauey

Editor: David Thompson

ICF offers memberships at the following annual rates:

Individual	\$20	Foreign	\$25
Family	\$30	Sponsor	\$500
Associate	\$100	Patron	\$1,000

ICF's Artist-in-Residence

Last spring, George Archibald worked with two female Siberian Cranes, named Ramsar and Tanya, that were more interested in courtship with humans than with cranes. By artificial insemination, Ramsar laid seven fertile eggs, but Tanya failed to lay. When George left for Russia in early May with 10 viable Siberian Crane eggs, Russian artist Victor Bakhtin continued George's efforts with Tanya. Dance they did, but Tanya never laid. When she molted her flight feathers (an indication that the egg production period is ended) and stopped dancing, Victor penned this delightful poem.

To Tanya

by Victor Bakhtin

That's all, my girl. My heart is broken.
You don't call me any more.
We stay beside without talking,
Your wedding dress is torn... Oh....

I understand you are too proud,
You can't afford to be in love.
Without feathers, no doubt...
You lost some beauty, slightly, Ah....

I love you still, forget your fear,
Do you mean to say all was in vain?
Just call me back, come on, my dear,
I wanna love a bald crane.

I am a gentleman. I understand your silence.
It's not my fault that you began to molt.
OK, OK, I won't resort to violence.
I am not "macho," not at all.

I can foresee some future: in a year
By any means (this world is pretty small)
I'll come again with open wings and here
I'm gonna dance with you until the
feather fall.

ANNOUNCING: The 20th Annual Meeting of the International Crane Foundation Saturday, October 8, 1994

ICF members and their guests are invited to attend the annual meeting and dinner. Reservations are required, so please use the form provided below. Be sure to respond by September 1, since space is limited.

SCHEDULE

10:00, 1:00, & 3:00. Regular tours.
11:45 a.m. ICF's new Flight Demonstration.

SPECIAL EVENTS for members & guests:

•12:30 - 1:00 p.m. **What's New for the Public.** See the new Whooping Crane exhibit under construction, and try your hand at radio-tracking.

•1:00 - 1:30 p.m. **Wada Photography Exhibit.** George Archibald introduces and discusses the exhibit of photos showing Red-crowned Cranes in Japan, and introduces Japanese guests.

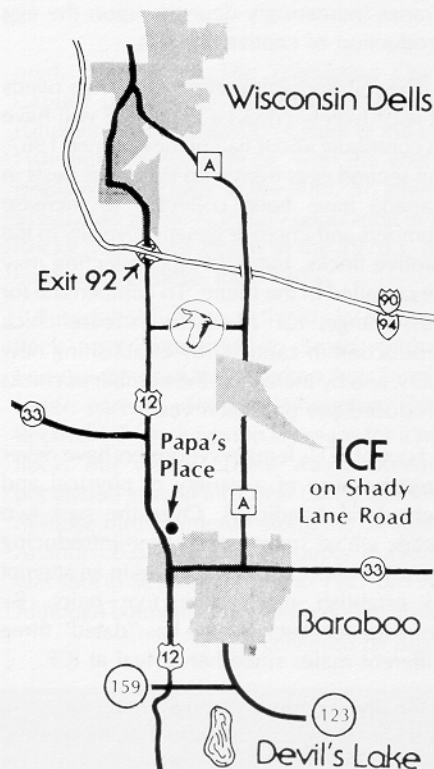
•1:30 & 3:15 p.m. **Crane City**—a rare opportunity to see ICF's breeding facility, and the video system for monitoring crane breeding behavior.

•3:00 - 3:15 p.m. **Flight Demonstration**—George Archibald.

•1:30 & 3:15 p.m. **Restoration Tour at ICF**—a new tour of ICF's prairie, oak savanna, or wetland restorations.

•5:30 p.m. **Hospitality Hour** (cash bar) at Papa's Place.

•6:30 p.m. **Annual Meeting Program** at Papa's Place starts with dinner, followed by a slide presentation by George Archibald focusing on ICF's work in Russia.



Volunteers Needed For China Work Trip

ICF is organizing an expedition to Cao Hai Nature Reserve in southwestern China for three weeks in late February and March, 1995. Volunteers will help with studies of Black-necked Cranes and education programs for local people. See the lead story in the last *ICF Bugle* for details about our Cao Hai work.

Volunteers do not need prior experience with crane study or China. Contact Jim Harris or Jeb Barzen at ICF for details, including exact dates and trip costs.

Please clip or copy, and mail to: ICF, P.O. Box 447, Baraboo, WI 53913-0447.
Reservation deadline—September 1

_____ Please make dinner/program reservations for _____ people.
My check for \$17.00 each is enclosed.

_____ This will be my first time attending an ICF annual meeting.

_____ I cannot attend the meeting, but please send me a copy of the Annual Report.

Name: _____

Address: _____

ICF Raises Whooper Productivity

by Ann Burke, Aviculturist

Sunrise is the time when cranes are most active. One early morning last May, the sun was just beginning to break through low-hanging mist as I walked through Crane City. I felt hopeful that the closed-circuit video monitor would reveal our four new pairs of Whooping Cranes engaged in courtship.

Although the females of these pairs have been at ICF since 1989, they have never laid. That day, I was worrying about their failure to lay, because the recovery of Whooping Cranes increasingly depends upon the egg production of captive females.

The reintroduction effort in Florida needs at least twenty chicks a year—ICF will have to contribute about half of these. Since 1967, the second eggs from wild Whooper nests in Canada have been collected to increase numbers and improve genetic diversity in the captive flocks, but wild egg collecting may be curtailed in the future. To compensate for this change, ICF needs to increase chick production in captivity by establishing new pairs, and by increasing the number of chicks produced per pair each year.

Four of ICF's female Whoopers have never bred because of a variety of physical and behavioral handicaps. Over the past two years, we've spent lots of time introducing these females to potential mates in an attempt to establish new productive pairs. By coincidence, each female has "dated" three different males since her arrival at ICF.

Finally, we found the right male for each, and I am delighted to report that, this spring, three of the new pairs produced a total of six eggs. All the eggs were infertile, but rates of natural fertility are normally low in pairs that have never laid before. Next year, we will monitor the new pairs closely for successful



ICF is increasing production of parent-reared Whooping Crane chicks by letting some birds raise two chicks. Rattler (left) and Riva have once again proven to be excellent parents. The chicks, Viola (left) and Sebastian, have followed completely normal development.

copulations and, if none occur, we will perform artificial insemination.

In another new development, we increased the number of parent-reared chicks by a new technique called "twinning," in which we allowed one of our reliable breeding pairs to rear two chicks at the same time.

Twinning will be used to supply adult females for the release effort. Among the birds released in Florida in early 1993, females had higher mortality than males. This means that, when lone males begin to establish territories, few females will be available for courting. To correct the imbalance, female "twins" will be safely held in captivity until they are 1.5—2.5 years old (the age at which pairing attempts start in wild birds), when they will be released onto the territories of lone males. One advantage of twinning is that resulting females may remain more "wild" despite prolonged captivity, and may be more likely

to bond with young males establishing territories.

One of the challenges for any reintroduction effort is building a self-sustaining, captive population that can reliably produce a large number of chicks each year. For the Whooper, attaining this goal has taken 28 years. Since 1966, the U.S. Fish and Wildlife Service's Patuxent Wildlife Research Center has been the leader in captive management of Whooping Cranes. This year, 18 Whooper chicks were reared at Patuxent. ICF joined the team in 1989, and during 1994, we expect to produce eleven fledged cranes. From the two centers, we hope that approximately 25 fledglings can be released in Florida this autumn.



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ICF's
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See Page 7.

