



THE ICF BUGLE

Editor: Jim Harris

International Crane Foundation Quarterly Newsletter

INTERNATIONAL CRANE FOUNDATION

Rt. 1, Box 230C
Shady Lane Road
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ICF's New Site Blooms

by Konrad Liegel, Site Manager

ICF gained a precious resource when we purchased our new property in 1979. Perched on the moraine north of Baraboo, the new site consists of rolling sandy meadows and broad kettlehole depressions. The scenic topography has developed varied soils that in turn can support a variety of vegetation types.

Since purchase, we have been transforming the worn-out farmland ICF acquired into a mosaic of native plant communities, including prairie, savanna, and wetland. These are the habitats cranes depended upon in Wisconsin before white settlement. Today, only a fraction of the state's original wetlands remain and hardly any prairie and savanna.

Habitat preservation is fundamental to the survival of cranes in the wild. Historically, preservation efforts have hinged on public awareness and support. Therefore a major thrust of ICF's education program has been to encourage the protection of crane habitat, by exposing the public to restored examples of these environments.

To be successful, restoration requires careful planning and execution. We first surveyed soils, prepared an herbarium collection, reviewed the original land survey accounts of the vegetation, and researched the site's land-use history. We then determined what plant communities were appropriate to the area and planned our restoration strategies. These strategies varied from plowing and disking hayfields before planting prairie, to cutting willows beside our two wetlands, to selective

use of herbicides against problem exotics such as black locust.

We gather by hand about 200 pounds of seed from over 125 different species of plants annually. Two hundred pounds may not seem a lot when compared to commercial production, but it represents almost 500 hours of collecting and cleaning time. We collect seed from native prairies along railroads and on restorations within a 50-mile radius of the ICF site to ensure the establishment of local genotypes. In all, we have re-established about 100 native grasses and wildflowers, ranging from the delicate pasque flower of the spring to the lovely mouse-eared aster of the fall.

We have restored over 25 acres in the last five years. Restoration, however, does not end with the planting of desired species. Short-term and long-term maintenance and in some cases replanting is necessary. But each year our land looks better.

Because the science of restoration is still in its infancy, ICF's habitat program has an experimental aspect. We have tried different techniques and carefully monitored the results. Our discoveries are helping projects elsewhere.

ICF's restoration has depended upon a group of dedicated students, interns, and volunteers. Some became involved through course work at the University of Wisconsin-Madison Department of Landscape Architecture and others through plant ecology internships at ICF. The Wisconsin Conservation Corps has also helped. This group of eight young adults accelerated our clearing of brush, cutting of exotic trees, collection of prairie seed, prescribed burning, and the establishment of trails.

The Wisconsin Garden Club Federation has long been a supporter of the ICF prairie. Their donation of \$4,000 of "seed money" allowed us to begin the 10-acre Federation Fields Prairie — the centerpiece of the restoration. Subsequent contributions from the Wisconsin Garden Club Federation and from six other state



Yellow coneflowers and prairie grasses have become common at ICF. The coneflower is one of over 100 wildflowers to be expected on a Wisconsin prairie.

Garden Club Federations (Iowa, Indiana, Illinois, Michigan, Minnesota, and Missouri) established a scholarship fund. The interest from this fund pays the salaries of interns who work on the project.

This spring, the Wisconsin Garden Club Federation won a prize for the Federation Fields project. This prize, the Bronze Seal, is awarded to a "member federation for an outstandingly unusual completed project worthy of national recognition." Garden Club member Gerda Debelak, a long-time promoter of the prairie, was "delighted that the project is receiving the recognition it deserves." Former Wisconsin Garden Club President Doris Swartz likened it "to winning the Olympic medal — the highest honor a state can achieve."

Other contributors have been the Helfaer Foundation and Wisconsin Power & Light. The Prairie Nursery and Prairie Ridge Nursery have donated native plants. And two special supporters receive the "Spotlight" later in this issue.

Restoration work is slow, requiring both patience and persistence. As with crane populations, plant communities are easier to preserve than to recreate. Yet our habitat project has taught all who have worked on it — and many visitors as well — the beauties of working with nature, to restore natural balances and diversity.

Next year is a turning point for the restoration. For the first time, we will burn its large expanse as a single ecological unit. The fires will depress weeds and encourage an outstanding prairie bloom. Restoration is a labor of love but it's worth all the effort.



The Wisconsin Conservation Corps burns the prairie restoration in early spring. Fire is an essential tool for getting a prairie started, and later for keeping out trees and shrubs.

Pakistan Curbs Crane Hunting

by Steven Landfried,
Environmental Education
Consultant

(Note: This project received support through the Special Foreign Currency Program of the U.S. Fish & Wildlife Service.)

New hope brightens the bleak horizon for the tiny flock of Siberian Cranes currently running their seasonal gauntlet to wintering grounds in India. Officials in Pakistan are cutting back hunting pressures on cranes generally, and on the Siberian Cranes in particular.

Recent research (see *ICF Bugle*, November, 1983) has revealed the magnitude of live catching of Demoiselle and Common Cranes along the Kurram River in the Northwest Frontier Province (NWFP) and the Zhob District of Baluchistan. As a result, Mumtaz Malik, Conservator of Wildlife for the NWFP, has worked with colleagues from the National Council for the Preservation of Wildlife, WWF-Pakistan, other conservationists, and this author to propose new crane hunting laws.

With strong support of the provincial governor, Lt. General Fazle Haq, the laws were announced on February 28, 1984 — just prior to the spring season for crane catching. According to Malik, "the new crane hunting restrictions were purposely announced at the last minute so the hunters could not organize before the commencement of the crane hunting season."

Within a day or two, many angry delegations descended upon Malik, the Governor, and the Provincial Assembly. The situation was exacerbated by the fact that hunters had successfully thwarted a previous attempt to impose crane hunting restrictions in the Frontier seven years earlier.

The government courageously stood firm, even though the hunters wield considerable wealth and influence. By the time it became apparent that their protests would not succeed, the season was nearly half over. Discouraged and facing new financial realities, only half of the hunters set up camps. Wildlife officials estimate that hunting pressures in the spring of 1984 were reduced to "one-third of the previous level."

REGULATIONS ARE COMPREHENSIVE, INNOVATIVE

Licenses are now required for hunting cranes. Rather than attempting the difficult task of licensing individual hunters, the government licenses each crane camp.

The crane hunting laws make it doubly expensive to hunt cranes in the spring. Camp hunting fees for the

spring are 1,000 rupees (Rs.); the fall fee is Rs. 500 per camp. The Wildlife Department hopes that the significant difference will serve as a learning tool to impress the hunters with the importance of allowing the cranes to migrate successfully to breeding grounds.

Crane possession fees have increased from Rs. 10 to Rs. 50 per bird. To discourage hunters from shifting to neighboring provinces, the NWFP has set a tax of Rs. 500 for each crane transported out of NWFP. Lest hunters be tempted to cross into Afghanistan 50 miles away or to pursue international trade, officials plan to assess a fee of Rs. 2,000 for each crane exported from Pakistan.

In addition, the law prohibits the sale of cranes. Heretofore, commercial traffic in cranes has occurred at moderate but profitable levels. Also outlawed is the use of firearms for the hunting of cranes — often a pastime for hunters during the day.

Malik's Wildlife Department is eager to utilize the crane catching to initiate migration studies. It has already enlisted the cooperation of a few hunters, who allow officials to tag cranes with color-coded plastic leg bands — complete with identification numbers and contact addresses in Pakistan, India, and the Soviet Union. For each crane released, the hunter will gain a two-year waiver of possession fees for one of his captive cranes.

Wildlife officials want to increase the low reproduction rate of the 6,700 cranes estimated to be in captivity in the NWFP. The laws therefore grant a lifetime waiver of possession fees for any crane bred in captivity.

Other provinces are contributing to crane conservation in Pakistan. Baluchistan has stepped up efforts at its borders to prohibit the entry of crane hunters into remote areas of the province. In 1983, eleven hunting parties were fined a total of Rs. 10,000 and returned to the NWFP. All crane hunting, trapping, and trade has been banned in the Punjab, the other province through which Siberian Cranes are believed to migrate as they pass between Lake Abi-Estada in Afghanistan to the world famous Keoladeo National Park in Bharatpur, India.

EDUCATION BOOSTS NEW LAWS

Substantial educational activities have been initiated to bolster support for the new legislation. Gatherings in the family compounds of key hunters in the Kurram Valley have provided wildlife officials a chance to explain personally the rationale for crane conservation and to address hunters' concerns directly.

A new audio-visual program helps hunters learn to distinguish the Siberian Crane from its more numerous Common and Demoiselle Crane cousins. In addition, it educates both hunters and wildlife field staff about the importance of preserving wetlands, for cranes and for people.

A flow of press releases, newspaper articles, and radio and television reports in local and regional dialects has increased awareness among all levels of the society. WWF-Pakistan provided a grant to the NWFP's Wild-



A captive pair of Demoiselle Cranes stands guard over two small chicks. The chicks hatched in a busy, walled family compound. Photo by Steve Landfried.

life Department to publish the crane hunting rules in an attractive booklet in Urdu and English with a striking picture of Siberian Cranes on the cover.

Tom Roberts, a distinguished naturalist and long-time resident of Pakistan, feels Pakistan has taken "a step forward from which there won't be a full retreat. The hunting will go on for quite some time but you've got all the top government officials in the Frontier, including the governor and chief secretary, conscious of the problem in a way they never were before!"

"This crane conservation program is very important," he adds, "because it is such a tough problem involving long term education to change attitudes. If you can make progress there, you will automatically open a lot of other gates. It's really a pilot project in getting at grass roots conservation in Pakistan."

Although the project still faces many challenges, Mumtaz Malik hopes that the spring hunting season can be reduced to half its current period from February 25 to April 15 — and that the significantly higher spring hunting fees will gradually encourage hunters to pursue their sport in the fall. Because the Siberian Crane probably migrates through Pakistan after the fall hunting season ends, this would represent a major contribution toward their safety on passage.

Pakistan can be proud of its recent achievements in crane conservation. As W. A. Kermani, former Inspector General of Forests, observes, "A firm foundation has been laid. It is a strong foundation. From this point we will be building up!"



A group of Pathan elders inspect four captive Demoiselle Cranes. They are returning their birds to the village after the fall crane hunting season.



A crane owner attempts to train Common Cranes so that they will call on command. These captives will lure passing migrant cranes in close enough to be trapped. Photos by Steve Landfried.

Spotlight: the Stedmans

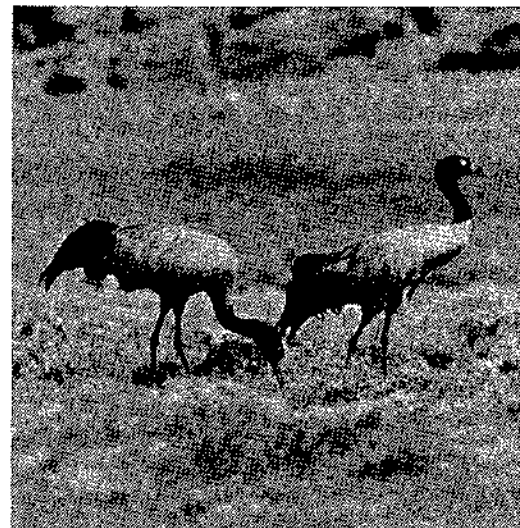
ICF's habitat restoration has had no better friends than John and Pat Stedman. In the early years, the program was coordinated by volunteers working almost without equipment and supplies. Mr. and Mrs. Stedman contributed funds for necessary purchases and small stipends for ICF's volunteer coordinator, Konrad Liegel, and his band of dedicated interns. More than that, they gave friendly encouragement that made the sacrifices worthwhile. As the project grew in scope and expense, the Stedmans continued to give. They boosted the scholarship fund for interns and more recently funded equipment for ICF's Wisconsin Conservation Corps crew and trail establishment through the restoration area.

John Stedman, a retired law professor at the University of Wisconsin-Madison, owned a farm nestled in the Baraboo Hills where he and his wife Pat would come to spend their weekends and holidays. John appreciated the natural beauty of his farm and strove to make it a model of responsible land-use. Unfortunately, a series of illnesses weakened John and ultimately led to his death a year ago, preventing him from fully realizing his ideas. Just before his death, he willed the wooded part of the farm to The Nature Conservancy. This enlarged the Conservancy's extensive holdings of prime deciduous forest in the area.

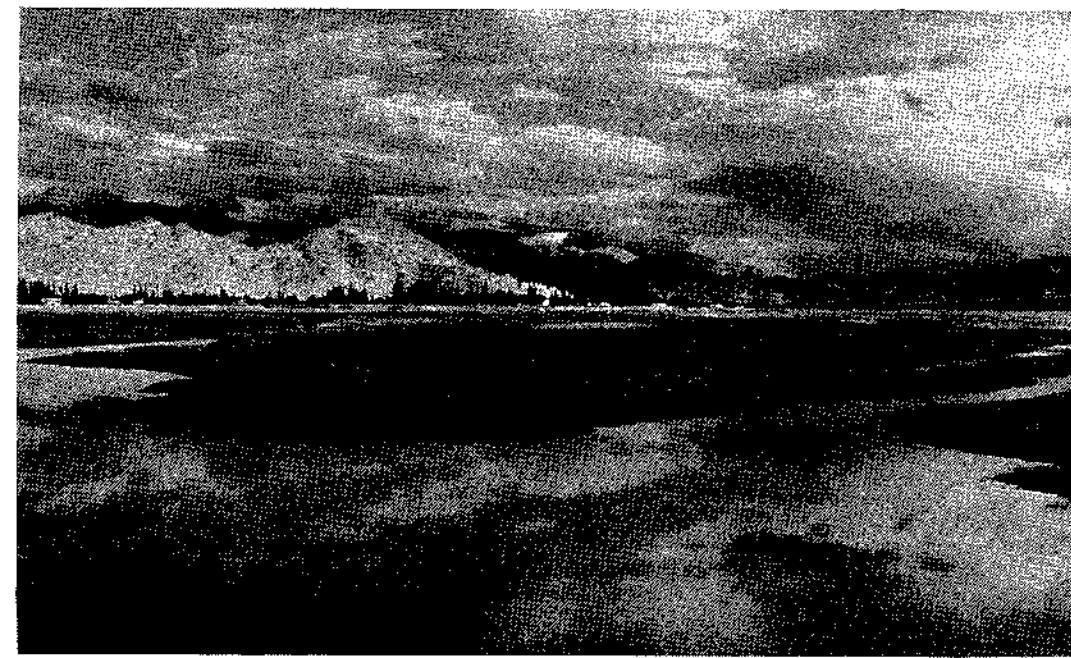
Using funds donated by Mrs. Stedman, we are restoring an additional 20 acres on the ICF site as a living memorial to this gentle and generous man. We will be working over the next three years on a broad kettlehole depression. Here we will re-establish tallgrass prairie and oak opening, and improve the cedar glade and wetland communities already present. With the help of the Stedmans, ICF is developing an educational and beautiful home.

Chicks at ICF 1984 Breeding Success

Crane Species	(males. females. unknown)	Total
Siberian	(2. 1. 2)	5
Florida Sandhill	(2. 3. 0)	5
Eastern Sarus	(8. 6. 3)	17
Brolga	(0. 1. 2)	3
White-naped	(1. 0. 0)	1
Red-crowned	(0. 2. 1)	3
Total Cranes Fledged		34



From April through October, 14 to 16 Black-necked Cranes visit the scattered wetlands of Ladakh. Photo by Prakash Gole.



Wetlands near Sheh once provided summer sanctuary for Black-necked Cranes. We hope to help the cranes return.

Ladakh, the Ladakhies, and the Black- necked Crane

by George Archibald,
ICF Director

Just west of Tibet, on a dusty valley floor between massive summits of the Ladakh and Zaskar ranges of the Himalayas, an ancient village called Hanle borders a hummock-sprinkled wetland. Here one of India's half-dozen pairs of Black-necked Cranes have nested and reared their young since times untold. A Buddhist gumpa (temple) crowns a small hill that shelters Hanle from sandstorms. At dawn a crimson-robed lama sits in lotus position outside the gumpa. Facing the village and wetland, he chants into a massive horn that amplifies his prayers across the valley.

At 15,000 feet above sea level, Hanle lies in the rain shadow of the Himalayas in a region called Ladakh, the "Little Tibet," and home for *Grus nigricollis*. Ladakh is an alpine desert that encompasses the eastern portion of India's most northern state, Jammu and Kashmir (J & K). This summer I had the privilege to visit Ladakh. My work there was supported by the Smithsonian Institution, the Science Office of the U.S. Embassy in India, the Department of the Environment of the government of India, and the J & K Department of Wildlife.

I went first to the summer capital of J & K, Srinagar. Here I met with India's legendary ornithologist, Dr. Salim Ali of the Bombay Natural History Society, and with officials from the State and Central governments and the Indian Army to discuss the cranes. All agreed that I should study the situation in Ladakh and propose a recovery plan. Two days later and after a breathtaking bus ride up to Leh, the capital of Ladakh, I was greeted by terrible news.

On July 19, two soldiers from a nearby garrison had shot Hanle's pair of Black-necked Cranes. Several shepherds, who had lived beside the cranes for as long as they could remember, witnessed the incident. The shepherds were Ladakhies and the protection of animal life was a part of their faith. The soldiers were outsiders and did not know the rarity of the cranes.

Anger and grief swept over the village. The soldiers were taken under citizen arrest and a report sent to the Divisional Forest Office in Leh, 120 km. northwest from Hanle. Indian officials reacted with admirable efficiency and thoroughness. A prompt investigation followed, and the offenders faced heavy fines and long

prison terms. The Indian government and military clearly were committed to the preservation of India's last Black-necked Cranes. But tears came easily when the villagers discussed the loss of their cranes and the tragic pattern that has reduced Ladakh's wildlife since the military build-up in the area over the past three decades.

Quiet Ladakh is bordered on the east by China and on the north by Pakistan. India has fought separately with these countries over the ownership of Little Tibet. Since then tens of thousands of military personnel from the three nations have occupied this rugged, although delicate landscape. Almost all wildlife has declined in this remarkable region that blends the Himalayan and Tibetan faunas. But recently many officers in the armed forces have taken interest in conservation, and their help is vital. But what can be done to save the cranes?

The Black-necked Cranes are spring, summer, and early autumn visitors to Ladakh, where they nest and rear their young in scattered wetlands near the China border. Like most cranes, they lay two eggs but usually rear only a single chick. There are 14 well-defined marshlands in eastern Ladakh and in recent years the cranes have abandoned 4 of the wetlands; nesting has been confirmed in just 6 others. Almost a century ago, ornithologists reported only scattered pairs of Black-necked Cranes, so perhaps the population has been relatively stable. Our Chinese colleagues, however, report a massive decline in the numbers of Black-necked Cranes in other areas of the Tibetan Plateau. They estimate that perhaps only several hundred cranes survive. These statistics place additional importance on the cranes in Ladakh.

I left Ladakh with the beginnings of a crane survival plan in mind. I believed that local Ladakhies should be hired as Crane Guards near each of the 10 marshes still inhabited by cranes, to protect against further poaching. Wetlands once and currently used by cranes required strict protection as special sanctuaries. And the second, "surplus" crane egg from certain nests might be collected, hatched under domestic chickens, and hand-reared. These young could be released at a wetland near Leh in an effort to start a new and nonmigratory flock. Finally, the pre-fledged chicks of the wild cranes could be color-banded and released. The Chinese, Bhutanese, Burmese, and Vietnamese could then search for and help protect the treasured flock of India during winter.

I worked closely with wildlife officials in Leh, Srinagar, Delhi, and Bombay to develop a preliminary proposal. This proposal, step by careful step, will now pass through a series of reviews and modifications before approval can be granted and the work begin.

Meanwhile, the chant of the lama floats over a silent marsh at Hanle. And as Indian and Chinese soldiers glare fearfully at each other, a crane call floats from high in that turquoise sky, down toward earth. The villagers are hopeful that cranes will return. And perhaps, someday, the cranes will help the Indians and the Chinese on either side of that tense border know and trust each other.

Watching Eggs Form with Ultrasound

by Michael S. Putnam, Department of Zoology, University of Wisconsin-Madison

(Note: Mike worked at ICF from 1980 to 1982 as the Supervisor of Aviculture.)

Several years ago I was discussing crane management with Dr. Bernard Wentworth of the Poultry Science Department at UW-Madison. I mentioned that while doing artificial insemination (AI) on the cranes I could feel hard-shelled eggs in the females 36 or more hours before they were laid. Dr. Wentworth was skeptical since no bird was known to have such a long period of egg formation. In domestic poultry about 26 hours elapse after ovulation, during which time the albumen is secreted, shell membranes form, the shell is deposited, and the egg laid.

I subsequently kept careful records of when an egg was palpated in a particular crane and the time the egg was laid. I was fairly certain egg formation took longer in cranes than in poultry. But I now wanted to know precisely how long the process took and what happened in the early stages that could not be studied simply by palpating the birds. Dr. Wentworth suggested I try using ultrasound to detect eggs in cranes.

This past spring I rented a diagnostic ultrasound machine from ATL/ADR Ultrasound for the 1984 breeding season. This equipment, most often used to examine human fetuses, operates on the same principle as sonar. A transducer sends high frequency soundwaves into the subject. Some of these sound waves bounce back to the transducer. Denser materials bounce back more sound waves. The transducer collects these returning soundwaves and the machine translates them into a visual image displayed on a small screen.

I examined breeding female cranes while they were being handled for AI three times each week. I plucked a small patch of feathers from the bird's left side behind the rib cage and below the pelvis. I applied a small dab of transmission gel to this area and then placed the transducer against the bird. The procedure lasted a few minutes after which the bird was released. But the image was frozen on the screen for closer inspection: I could take measurements and also a photographic record. When I detected an egg, I examined the bird every few hours until shell calcification began. I then carefully observed the female to ascertain the time of laying.

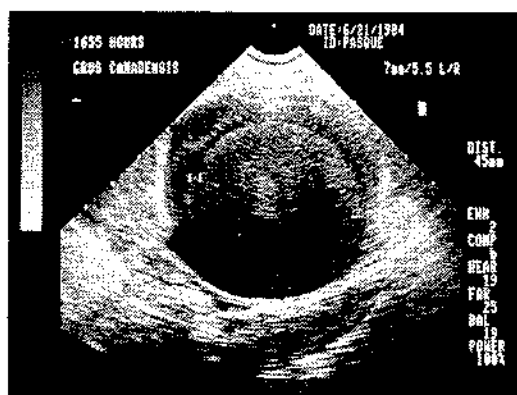
Although my data analysis is not yet completed, it appears that in Sandhill and Red-crowned Cranes, the egg spends about 40 hours in the shell gland. The entire egg formation process takes at least twice as long as the 26-hour formation period of chickens. Data collected by palpating laying females suggests a similar period of formation in Eastern Sarus, Siberian, White-naped, and Whooping Cranes.

An analysis of the laying patterns of some of ICF's regular breeders shows that egg-laying follows rather regular cycles each year. Coupling this information with our new knowledge of egg formation should allow aviculturists better to pinpoint when AI should be attempted since the egg must be fertilized shortly after ovulation.

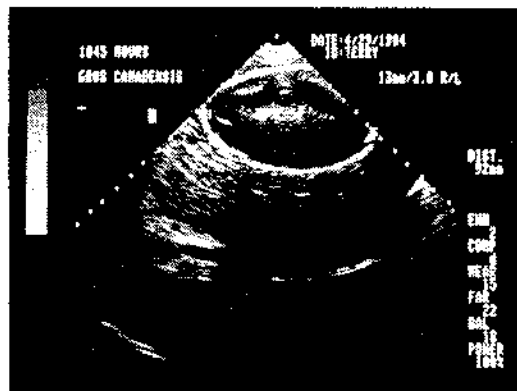
This research also explains an interesting feature of crane reproductive strategy. Cranes lay eggs at greater than one-day intervals and initiate incubation after the first egg is laid. Therefore, chicks hatch asynchronously. This asynchrony often results in the older chick out-competing and sometimes killing its younger sibling. This ensures that both chicks do not starve if food becomes scarce.

It was previously unknown whether cranes delayed ovulation after laying the first egg and then assembled the second egg in one day or whether the entire intervening period between first and second eggs was spent in egg formation. My data support the second explanation of how asynchrony is achieved.

Partial support from the Davis Fund and the Department of Zoology at the University of Wisconsin-Madison is gratefully acknowledged. Christine Labinsky of the University of Wisconsin Hospital kindly provided useful suggestions on the use of the equipment and interpretation of the resulting images.



ABOVE: An ultrasonographic end view of a Sandhill Crane egg. The circular object bordered by the two dots is the yolk, 45 mm. in diameter. Mike first detected the egg 7 hours earlier. The shell hasn't begun to form.



The Bottom Line

by Bob Hallam, Development Coordinator

Fall has come to the Baraboo Hills and ICF has just completed its first full season on the new site. This year brought us a record 14,621 visitors including 3,977 school children. Total income from sales and tours came to \$56,707, a jump of \$34,321 over last year. This increase, however, will not offset the mortgage for the Sauvey Hatchery and Chick-Rearing Complex. Next year our goal is to realize a break-even effort.

ICF Fun Run: The Other Seasons Committee of the Wisconsin Dells Chamber of Commerce sponsored the first annual ICF Fun Run to the Dells. On September 22, thirty-two runners competed in two races and raised \$180 for ICF. The ten-kilometer run started on our site and ended in the Dells. There was also a one-mile course in the Dells. We'll alert you well ahead of time about the dates for next year's Fun Run. Fall is a great time for running, and running is a great way to support ICF.

End of year contributions: We stapled a special envelope in this edition of the *Bugle*. This year ICF experienced its largest budget increase to date, and we will just about break even operationally. The staff and the cranes would deeply appreciate a special, year-end contribution. Because of the consistent support of thoughtful people like you, ICF has been able to make great strides over the past two years.

Texas Field Trip

The University of Wisconsin-Extension is offering a 7-day exploration of wetlands and other wild areas of south Texas. Jim Harris, ICF's own Education Coordinator, will lead the trip from March 16-23, 1985. Instruction will focus on birds, including a boat trip to see the Whooping Cranes wintering at Aransas National Wildlife Refuge. Management and biology of this remnant flock will be discussed.

The tour also includes Santa Ana and Laguna Atascosa National Wildlife Refuges, Padre Island National Seashore, the King Ranch, Bentsen-Rio Grande Valley State Park, and the Texas Sabal Palm Sanctuary. These areas contain a unique array of eastern and western birds along with species more typical of Mexico.

Registration deadline is January 25, 1985. For a flyer describing the trip in detail, write Doni Zintz, Environmental Resources Center, Rm. 212, 1450 Linden Drive, Madison, WI 53706; or call (608) 262-0142. Both camping and motel options are available.

LEFT: An ultrasonographic view of a Sandhill Crane egg beginning to calcify in the shell gland (not to same scale as previous picture). Mike had first detected this egg in the oviduct 20 to 24 hours earlier. Photos by Mike Putnam.

Grants and Awards:

Aid Association for Lutherans
Anonymous
Mary Burke
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Exxon
Johnson Controls Foundation
H. J. Hagge Foundation
Evan and Marion Helfaer Foundation
Oscar Mayer
NMC Projects Inc.
Dorothy Pain
Pepsi Cola Bottling Co. of Madison
Philip Morris
Anne S. Richardson Fund
Norman Sauvey
Sauk County Natural Beauty Council
Schlumberger Limited

Contributions

(Received July through September 1984)

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Webcrafters-Frautschi Foundation
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Wiscold
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