

WHOOPING
CRANE
EASTERN
PARTNERSHIP



2005 ANNUAL REPORT



U.S.G.S. NATIONAL WILDLIFE HEALTH CENTER



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FOUNDING MEMBERS

U.S.G.S. Patuxent Wildlife Research Center

International Whooping Crane Recovery Team

Wisconsin Department of Natural Resources

Wisconsin Natural Resources Foundation

U.S.G.S. National Wildlife Health Center

United States Fish & Wildlife Service

National Fish & Wildlife Foundation

International Crane Foundation

Operation Migration USA & Operation Migration Canada Inc.

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The fundamental purpose for the formation of the Whooping Crane Eastern Partnership (WCEP) was to plan and guide the reintroduction of a self-sustaining population of migratory Whooping cranes (*Grus americana*) in eastern North America.

The project also focuses strongly on efforts to promote environmental education. WCEP partners promote the development of public awareness and support for the protection and restoration of Whooping crane habitat to decision-makers and the public.

All activities are implemented through the coordinated joint and individual efforts of the WCEP partners, who work collectively with state and federal agencies with jurisdiction over the Whooping cranes and/or the habitats they use.

The goal of the project, as set by the International (Canada/United States) Whooping Crane Recovery Team, is to establish a discrete, self-sustaining population of at least 125 birds, containing a minimum of twenty-five (25) breeding pairs. This pioneer flock will augment two existing populations: the only naturally occurring population that migrates between northern Canada and southern United States in the west; and, the non-migratory flock reintroduced into central Florida beginning in 1993

The partnership is dedicated to a science-based approach, with emphasis given to the collection and review of data relevant to project goals. Collection and dissemination of such information is essential to evaluating reintroduction methods and results, and to assessing this restoration effort as a conservation model. Additionally, partners recognize the importance of engaging the public with the challenges and successes of the project, and in the lives and survival of the reintroduced birds.

Based on protocols and techniques researched and pioneered over a ten year span by Operation Migration with Canada geese, Trumpeter swans, and Sandhill cranes, WCEP inaugurated this multi-year reintroduction project in 2001.

Included in the protocols developed and incorporated are techniques that encourage human avoidance and encourage wild behaviour. To this end, each year, a new generation of captive-hatched cranes is costumed-reared in isolation from human environments and influence to every extent possible, as well as being conditioned to follow custom-modified ultralight aircraft.

Upon the arrival of the migration season, the juvenile cranes are ultralight-led along a +1200 mile pre-determined migration route. The migration begins in the north at the Necedah National Wildlife Refuge in Wisconsin and over-flies seven states enroute to its southern terminus at Chassahowitzka National Wildlife Refuge in Florida. The forty-one (41) surviving sub-adult Whooping cranes led along this route during the first four project years, continue to select suitable habitat, avoid humans, and unaided, self-initiate a migration twice yearly.

Since its inception, the project has received enthusiastic governmental, public, and private support, and on an ongoing basis, has stimulated interest in protecting and restoring habitats for Whooping cranes, as well as other wetland species / wildlife along the migration route.

WCEP celebrates the 'power of partnership', to which the credit is due for the tremendous advances in the work in restoring this endangered species and symbol of international conservation to Eastern North America.



2005 PROJECT YEAR IN SUMMARY

Submitted by Projection Direction Team Co -Chair, John Christian

We had an excellent year in 2005. While we had our ups and downs we succeeded as a partnership to expand the growing migratory flock by 23 birds – more than a 50% increase to the total population - and that wasn't the only good news! We also saw the first nests built at Necedah National Wildlife Refuge and the Meadow Valley State Wildlife Area this past spring, and to top it off 2 eggs were laid. Unfortunately these first eggs were lost; probably to predators. Newly formed breeding pairs of Whooping cranes need some experience to get it right. We are hopeful there will be a fast learning curve for our new parents and that we will see some chicks this coming spring, a possibility we are all very excited about.

There are currently 7 pairs that have formed. Our field biologists are predicting we could have as many as 12 pairs formed by this spring. The migration behavior has been outstanding for most birds, flying true from the release site at Necedah National Wildlife Refuge and other wetlands in central Wisconsin, to the wintering sites in Florida. The few birds that flew off course have generally ended up in the right place. Those that didn't were captured and moved by our exceptional field teams. A good example is bird 9-03 who strayed off course last spring and ended up in New York. This bird also sojourned in Canada, perhaps to pay tribute to our Canadian partner, Operation Migration.

9-03 was not heard from for much of the summer, but eventually our tracking team found her in North Carolina and returned her to Florida to complete the migration. I saw her at the Florida pen site and I can say she looks very beautiful and is doing fine. Our hope is that this course correction will allow her to migrate north this spring and end up back at the release site in Wisconsin with a better chance of finding a mate.

The Class of 2005 turned out to be very good birds. Hats off to the chick rearing facilities at the International Crane Foundation and the USGS Patuxent Wildlife Research Center for delivering so many healthy birds in 2006. Our Health Team made sure they were in great shape and Operation Migration did their magic to train and lead the birds on their annual migration. We started the migration with 20 birds and ended it with 19 birds. This is a testament to the skills of the pilots and bird handlers of our field teams.

In 2005 we also began an experimental program called "direct autumn release" (DAR). This program involves releasing chicks with older Whooping cranes with migration experience. An additional 5 birds were allocated to this historic release, and project staff from the Fish and Wildlife Service and the International Crane Foundation worked with the chicks during the spring and summer to prepare them for their unassisted migration in the fall.

Unfortunately, one chick was lost to an early accident, but the 4 remaining DAR birds continued on with the program. These birds began migration in November. Two wintered in Tennessee and two in Florida. We will continue to monitor the DAR birds and evaluate this technique. It is our hope that this supplemental method will allow us to build the growing flock at a faster rate.

Every year has its ups and downs and 2005 was no exception. With a project of this scope it is impossible for everything to go perfectly no matter how hard we try. Five birds were lost due to health concerns or accidents. In addition, we did have to recapture a few birds that had strayed off the migration route for two consecutive years. Early in the project we want the birds to stay in proximity to each other so there is a better chance of pairs forming. As the flock increases, and natural reproduction occurs, we will be more likely to allow birds to expand their movements into new territory.

Funding was a serious problem in 2005. With the pressures on the U.S. economy and other financial stresses in the world, it was very hard to put the needed funding together. This was felt by all organizations involved in the partnership. Our non-profit partners felt it the most since almost all of their activities require that funding be raised each year from scratch.

At one point, one of our key partners, Operation Migration, had to put out an emergency appeal for support. This was very stressful to all of us as it occurred during the migration. We don't need our pilots worrying about funding while they focus their tremendous efforts to keep the bird and themselves safe in the air. It is safe to say that all partners are feeling the pinch. Our fund raising partners, including the National Fish and Wildlife Foundation and the Wisconsin Natural Resources Foundation, came through with contributions and matching funds that really made a difference in keeping the project's "head above water," and for this we are very grateful. Many other donors and private individuals also came forward to help us get through the year.

Our overall budget for all partners is in the range of 1.6 million dollars per year. With the current economic stressors we have seen a tendency for some contributors to withdraw support, believing that with the size of the partnership that others will pull up the slack. It's the "someone else will certainly fix it" syndrome. The bottom line is we need continuing support from all of our partners and supporters each year to be able to accomplish our project goals.

Our project is evolving. Our early efforts were aimed primarily at training birds to follow ultralight aircraft using isolation protocols to retain their wildness, and getting the birds to learn the migration route and return to the release site. We now have proven that this can be done safely with the birds retaining acceptable wildness. The past few years of the project have been focused on refining chick rearing and ultralight training techniques, and increasing the numbers of our migrating flock to form a critical mass.

We are now entering the next stage of the project. The annual ultralight-led migration flights to increase the size of the population are still critically important, but many of our birds have now reached breeding age and we must gear up to assist the new parents in protecting their nests as well as to monitor reproduction. A new round of intense discussions are underway regarding how best to protect the breeding pairs, and to monitor the chicks including banding protocols. We will look to the Florida Fish and Wildlife Commission's experience with their non-migratory flock for advice. After all they were first to hatch a wild chick in Eastern North America----a chick called Lucky.

The direct autumn release project is also a new direction. With our growing flock of experienced birds migrating, it is now time to see if we can train chicks to follow the older birds. We do not see this replacing the ultralight-led migration technique any time soon. This proven technique will remain the primary method of reintroduction as we implement and test the direct autumn release technique over the next 5 years.

Another direction in the evolution of the project is to take a closer look at the genetic makeup of the WCEP flock. Since all Whooping cranes in existence today came from only 15 birds, there is some concern about genetic viability. It is crucial that we do our best to ensure that birds which can best sustain the genetic health of the species are added to the WCEP flock. WCEP has requested the assistance of geneticist Dr. Ken Jones, the flock managers at International Crane Foundation and Patuxent Wildlife Research Center, and the Whooping Crane Recovery Team, in developing strategies to maintain and improve the genetic health of the flock. We plan to use an "adaptive" approach that proceeds over a number of years with the goal of increasing the genetic viability of the flock. Birds that will move us in this direction will be paired in captivity, and their progeny released to the WCEP project. It is equally important to maintain significant numbers of birds for release each year to offset the impact of natural mortality, so this will also be taken into account by the Recovery Team in its allocations and genetic management strategies.

Finally, with a significant population building in the flyway, it is important to develop a management plan so that present and future wildlife managers, conservation organizations, and the public, will have the guidance and protocols to keep the growing flock healthy and protected. It is also important to have such guidance in place to ensure compatibility with human activities and to deal with potential conflicts.

The Wisconsin DNR is in the process of developing a management plan for Whooping cranes in that state in full coordination with WCEP, and an opportunity for public review and input is planned. Once completed, the Wisconsin DNR plan can serve as a model for other states, and potentially a flyway-wide framework management plan.

2005 PROJECT YEAR IN SUMMARY – CONT'D

Our WCEP goals remain the same for the present, that is, to achieve a minimum population of 125 birds in the eastern migratory population with 25 breeding pairs. With a current total of 64 birds in the flyway we are half way there in terms of numbers! And we have 7 pair formed with the potential for up to 12 pairs this year! Successful breeding of these pairs with fledged chicks is the next short term goal.

The Patuxent Wildlife Research Center has done some preliminary demographic analysis of our population based on our past success. The conclusion is that with the current average mortality rate of 10% loss each year, it will take a total of 10 years of releases of at least 20 birds to reach our population goal. Since we are 5 years into the project this means that if we can maintain our current success, and if there is successful breeding, we could reach our project numeric goals by 2010 or 2011.

Of course, much depends on a number of variables, including unforeseen environmental protection and reproduction issues. The re-establishment of an ongoing self-sustaining population will take careful management and monitoring for many years to come. But the strength of the power of our partnership is based on the optimism, dedication, hard work, and belief that we can overcome challenges and barriers; that we can achieve our goal of seeing this magnificent symbol of the plight of endangered wildlife flying free in Eastern North America — for future generations to enjoy. And we WILL succeed!



A summary of budgetary considerations.

UNITED STATES FISH & WILDLIFE SERVICE

The total Whooping crane budget for the U.S. Fish and Wildlife Service for 2005 was \$297,501

Necedah National Wildlife Refuge (NWR) contributed \$152,307 for the Whooping crane project in 2005 from direct funding and indirectly from grants received. Monetary support in addition to staff salary included electricity to nine trailers, telephone service for three lines, fuel, gravel, materials and supplies. Necedah NWR provided nine vehicles and nine trailers for the project along with maintenance and repairs. Site 3 had extensive capital improvement for the first year of the direct autumn release with funding primarily provided by the National Fish and Wildlife Foundation by a grant through ICF for \$6,250 and direct billing to the Natural Resources Foundation of Wisconsin for \$5,000.

At both Necedah and Chassahowitzka NWRs, most project costs have been absorbed under current operations. The U. S. Fish and Wildlife Service (USFWS), Region 3, Migratory Birds Office, provided \$10,000 for support of Whooping crane outreach and public use support and \$19,800 for regional office staff salaries, annual meetings, travel, and direct support for fall migration including a Tahoe tow package, one migration internship, and migration cell phone charges. The Upper Mississippi River and Great Lakes Joint venture, USFWS, provided its annual contribution of \$5,000 for project support while the USFWS, Region 3, Regional Office, National Wildlife Refuge System, provided \$110,394 for a biologist's salary and benefits, a 2005 Chevy Tahoe, and travel expenses for autumn migration and staff meeting attendance.

An ongoing critical need will be funding for replacement of project vehicles for the tracking team. Incredible miles occur each year on vehicles tracking and monitoring Whooping cranes from Florida to Wisconsin and return, not only during migration, but also tracking daily movements year round at Necedah NWR and the surrounding area. Base funding of \$25,000 per refuge is proposed for 2006 for both Necedah and Chassahowitzka NWRs to allow the refuges to properly support the reintroduction project. 2006 projected expenditures appear to be similar to last year's for the USFWS, Region 3—Migratory Birds.

As we anticipate the sixth migration of Whooping cranes to Florida in 2006, it is expected that the total of WCEP partner's budgets to continue to be in the \$1.6 to \$1.8 million range. Additional resources will be needed to support tracking and monitoring the increased number of adult cranes (now at 64 birds) returning to Wisconsin, assess habitat, protect, and monitor breeding cranes and their sites, and replacement of aging vehicles.

The U.S Fish and Wildlife Service's Chassahowitzka National Wildlife Refuge Complex continued to support the Whooping Crane Eastern Partnership in 2005. Staff prepared the winter pen site on Chassahowitzka NWR and assisted in the construction of the alternate winter/parking site at the Halpata Preserve. In cooperation with the Friends of Chassahowitzka, the refuge conducted outreach activities throughout the year at the refuge visitor center, during local festivals, and at 10 interpretive programs given to 728 people. Assistance also was provided to prepare for and conduct the annual arrival flyover event held at the Dunnellon, FL airport on December 13. A conservative estimate of refuge expenditures totaled in excess of \$31,000 for at least 600 staff-hours, materials for the winter pens on the refuge and at Halpata, and airboat and marsh master fuel and maintenance. Similar levels of funding and staff involvement will be needed during 2006.

RESOURCE DEVELOPMENT – CONT'D

During 2005, the U.S Fish and Wildlife Service's Jacksonville Ecological Services Office continued its support of the Whooping Crane Eastern Partnership. Through Hurricane Restoration Funds, Jacksonville ES was able to provide \$25,000 to the Chassahowitzka NWR to help offset costs incurred to repair the damage to the Winter Release Pen caused by the active 2004 hurricane season. Recovery staff also facilitated the identification and construction of an of the alternate winter release/parking pen site at the South Florida Water Management District's Halpata Tastanaki Preserve near Dunnellon, FL. It is estimated that the pen construction cost was \$25,000, of which 80% was through in-kind donations of materials and volunteer time (800 hours) from the Florida Fish and Wildlife Conservation Commission, USFWS, South Florida Water Management District, Jacksonville Zoological Gardens and Disney's Animal Kingdom.

The Jacksonville ES Public Affairs Officer co-chaired the WCEP Communication and Outreach Team (COT) and helped to facilitate associated activities. In cooperation with the Friends of Chassahowitzka, Jacksonville ES staff also assisted with the annual arrival flyover event held at the Dunnellon, FL airport on December 13. Jacksonville ES's in-kind salary expenditures for WCEP totaled \$35,000 in 2005. It is estimated that there will be similar levels of funding and staff involvement during 2006.

INTERNATIONAL CRANE FOUNDATION

In 2005 the International Crane Foundation (ICF) raised and contributed approximately \$312,000 toward ICF operations under the WCEP project. Another \$42,550 of funds raised was forwarded directly to partners to assist with WCEP activities. ICF contributes field personnel, supplementary staff and interns, and financial support for monitoring first year Whooping cranes after their initial southward migration and for tracking adult Whooping Cranes. Veterinary support for captive and released Whooping cranes is dedicated via an ICF partnership with the University of Wisconsin, School of Veterinary Medicine. Starting in 2005, ICF and USFWS staff tested a supplemental release method - Direct Autumn Release (DAR) - that led to the successful re-introduction of 4 chicks to the wild. With the approval of the Recovery Team, we and our WCEP partners hope to continue refining this method. ICF also contributes to outreach efforts in support of WCEP.

In 2006, with continuing fiscal challenges in the conservation community at large, ICF expects that our operational contribution will not grow but remain steady. We will continue to seek out opportunities to assist partners as opportunities allow. As the project grows and the population increases, we hope to continue and enhance our dedication to data collection and evaluation through monitoring as well as continue to support our avicultural, veterinary, and outreach functions.

OPERATION MIGRATION USA and OPERATION MIGRATION INC.

As in past years, Operation Migration (OM) provided staff, equipment, protocols and supplies to the WCEP project in the 2005 season. Responsibilities included working in association with the USGS Patuxent WRC to conduct early rearing and training, conducting training and rearing at the Necedah NWR, and leading the migration from Wisconsin to Florida.

Operation Migration provided staff, equipment and supplies to assist the Winter Monitoring Team and the Tracking Team. OM was able to rear, condition and teach the southern migration route to 19 additional Whooping cranes bringing the population of migratory birds in the eastern flyway to 60 individuals. With the addition of 4 DAR birds there are now 64 Whooping cranes in this flyway. Operation Migration supported the WCEP partnership through education, outreach and provided video and still images, to the partners and various media outlets.

Operation Migration staff and associates promoted the WCEP goals through our outreach program and presented to live audiences of in excess of 5000 people and reached another 750,000 through our website. OM provided support to WCEP for design and production of brochures and other material. Operation Migration raised and contributed \$474,553.00 (US) towards the WCEP project and dedicated 3240 volunteer hours in the 2005 season.



CHICK REARING AND EARLY CONDITIONING

Submitted by Dr. Glenn H. Olsen

In 2005, USGS Patuxent Wildlife Research Center, Laurel, Maryland, hatched 26 Whooping cranes for the Whooping Crane Eastern Partnership (WCEP) program. Sixteen of the eggs came from birds at Patuxent, while the other 10 from our partner organizations, International Crane Foundation (9) and Audubon Zoo (1). The first chick hatched on April 20, 2005, and the last chick hatched on June 3, for a spread of 44 days. Of the original 26 Whooping crane chicks that hatched, three died (see Health Team Report), and two were retained in the captive flock for genetic reasons, leaving 21 to be shipped to Necedah National Wildlife Refuge, Necedah, Wisconsin in June and July, 2005.

Once again, Patuxent and Operation Migration personnel put in many hours in silence in costumes and hoods in the training and behavior modification to develop the Whooping crane colts that would successfully migrate south with the ultralight aircraft in the autumn. This process begins with the playing of tape recordings of normal crane vocalizations and ultralight engine sounds to the chicks in the late stages of incubation and hatching. The ultralight aircraft, vocalizers, and some of the crane costumes are supplied by Operation Migration.

For the first few days chicks are taught to eat and drink on their own. Then they are led on foraging trips by costumed technicians. The first foraging trip begins on average at 5.8 days of age (± 1.4 days, range 4-9 days of age). These foraging trips continue until around 39 days of age (± 9.1 days, range 29-62 days of age). Shortly after their first foraging trip, the chicks are introduced to foraging with the ultralight aircraft (see photograph 1). Only 14 of the 21 chicks received this type of training, and 7 of those only had one session. Average onset of this training was at 7.5 days of age (± 2.0 days, range 5-11 days of age), while this training ceased at 8.6 days of age on average (± 2.5 days, range 5-14 days of age).



COSTUMED TECHNICIAN AT USGS PATUXENT WILDLIFE RESEARCH CENTER LEADS WHOOPING CRANE CHICKS ON FORAGING TRIP TO ULTRALIGHT.

This training was mostly a prelude to the more important circle pen training, where chicks are led around a circular pen by the costumed technician in the ultralight aircraft and using an elongated crane puppet head (see photograph 2). Circle pen training was initiated at 9.3 days of age on average (± 2.4 days, range 6-17 days of age). Chicks received an average of 3.2 hours (± 0.7 hours, range 1.8-4.3 hours) of this type of training during the next three weeks. Cessation of circle pen training was at 30.8 days of age on average (± 3.9 days, range 24-36 days of age).

The time for ending circle pen training was highly correlated with the next phase of training: open field training. In this type of training chicks are led out to a large (2 hectare) open mowed field. Down the middle of the field is a low (0.5 meter) black vinyl-coated wire fence. For safety reasons, the chicks were on one side; the ultralight aircraft on the other. The technician leads the chicks to the field, starts the aircraft, and taxis back and forth with the chicks running in pursuit flapping their stubby wings. This training began on average at 31.9 days of age (± 3.4 days, range 25-36 days of age) and ended on average about 2 days before shipment (45.4 days of age, ± 5.7 days, range 36-56 days of age). Whooping crane chicks received an average of 1.9 hours (± 1.1 hours, range 0.7-3.9 hours) of this training with the ultralight aircraft at Patuxent.



CIRCLE PEN TRAINING AT USGS PATUXENT WILDLIFE

CHICK REARING AND EARLY CONDITIONING – CONT'D

Another aspect of the chick rearing program at Patuxent is behavioral modification to induce Whooping crane chicks to form cohorts with conspecifics at a young age. In the wild chicks are reared singly and has no contact with other chicks until sometime after fledging. Even when a pair raises twin chicks, which is a rare event, there is evidence that the parent birds separate the chicks, each taking one chick, to avoid potentially fatal sibling aggression. Through a long supervised (by the costumed technicians) process, our chicks learn to tolerate and socialize with other chicks. The socialization process in 2005 began on average at 10.9 days of age (± 2.8 days, range 6-17 days of age), with chicks receiving an average of 49.3 hours (± 12.5 hours, range 30.8-69.7 hours) of this type of behavioral modification training.

Exposure to ponds and wetlands is important for Whooping crane chicks, both for foraging experience and predator protection as roost sites at night. Training to familiarize the chicks with standing water areas begins early, at an average of 8.9 days of age (± 2.6 days, range 6-16 days of age). Average time in the standing water environment in 2005 was 39.8 hours (± 12.5 hours, range 20.9-62.1 hours).

Whooping crane chicks at Patuxent were divided into three cohorts (groups) of 6, 6 and 9 birds and were shipped to Necedah National Wildlife Refuge on June 15, July 6 and July 13, 2005 courtesy of Windway Capital. Birds were shipped in crates identical to those used in 2004. The crates were designed and supplied by Operation Migration (see photographs 3 and 4). All crane chicks were reared and shipped in compliance with USGS Patuxent Wildlife Research Center protocols approved by our institutional animal care and use committee.



CRATING AND THEN LOADING A YOUNG WHOOPING CRANE INTO A VAN FOR AIR SHIPMENT FROM USGS PATUXENT WILDLIFE RESEARCH CENTER TO NECEDAH NATIONAL WILDLIFE REFUGE.

CRATES COURTESY OF OPERATION MIGRATION AND AIRCRAFT FOR THE SHIPMENT COURTESY OF WINDWAY CAPITAL.

Through the 2004 breeding and chick rearing season Patuxent relied upon small indoor/outdoor pens in our Propagation Building to house the Whooping crane chicks for the WCEP project. However, in 2004 we reached the maximum for this facility and it could not be expanded. To increase the number of chicks trained and released, Patuxent applied for and received a grant from the U. S. Fish and Wildlife Service, Region 3, to modify some existing nearby outdoor pens previously used for adult cranes into pens suitable for chicks as young as 4 weeks. Modifications included dividing the large pens in half with new fencing, dividing existing feed sheds in half with plexiglass (to allow visual contact between chicks), adding heat lamps to the feed sheds, adding new gates, and adding chick protective fencing to the base of the chain-link fencing. In addition, video cameras were mounted in the corners of the pens, and an observation and recording blind set up nearby.

CHICK REARING AND EARLY CONDITIONING – CONT'D

We believe there are advantages to outdoor pens for chicks over 4 weeks old including increased exercise and less contact during the day with the costumed personnel working with the younger chicks in the existing Propagation Building pens. In 2005 we initiated research to measure both physical and behavioral factors between chicks raised in the new pens and those raised in the traditional manner in the Propagation Building. The results will be reported at the North American Crane Workshop.

Even these new pens were not enough space during the period when the most chicks were present; some younger chicks spent days 2-17 of age at the Crane Chick Building. Here they continued to receive exercise and training in eating and drinking from costumed technicians, but were not trained with ultralight aircraft (foraging with ultralight or circle pen training) during this period. We will analyze the records of these chicks to see if this change in the very early rearing period had any long-term effects.

When comparing the 2005 training program with that of 2004, there are some similarities and some obvious differences. The age spread was almost identical, 46 days in 2004, 44 days in 2005. In both years, the Whooping crane chicks were divided in three cohorts and had similar shipping dates (June 19, 30 and July 15, 2004, June 15, July 6 and 13, 2005). In 2004 chicks were first introduced to the ultralight aircraft at an average of 7.7 days of age (n=16), and this was 7.5 days of age in 2005 (n=21).

In 2004 chicks received an average of 7.8 hours of training following the ultralight aircraft versus only 5.3 hours in 2005. The difference may be related to the over 30% increase in the number of chicks being reared. In 2004 chicks were given access to ponds and wetlands for an average of 56.4 hours versus 39.8 hours in 2005. Some of this difference may be due to the requirements of our behavioral observational study in the newly modified white series pens.

This study required the chicks be present in the pens before 10:00 AM and after 4:00 PM, thus limiting hours available in the middle of the day for pond exposure. Whether this was a statistically significant difference is unclear at this time. The ultimate impact of this training program on such key factors as one year survival of the released Whooping cranes is yet to be determined.

This year the Whooping crane chicks received more general exercise than in past years. Swimming exercise started as early as 8 days of age versus 10 days of age in past years. Chicks were swum at least once daily, some 2-3 times daily, especially if any growth problems were suspected. In addition, on many days chicks were taken on foraging trips twice daily, especially on rainy days or ultralight aircraft down days. Operation Migration provided a second ultralight aircraft for use in our training program at Patuxent. This helped increase training in early mornings on hot days and reduced the time that an aircraft would be unavailable during repairs.



COSTUMED HANDLER TEACHING / ENCOURAGING YOUNG CHICK TO FORAGE.

Medical problems with young chicks are discussed further in the Health Team report. All chicks were vaccinated for both West Nile virus and Eastern Equine Encephalitis, and no chicks died from these two diseases, unlike in past years when we were not vaccinating the chicks. In past years sometimes chicks ingested metal foreign bodies at Patuxent. In 2005 all crane chicks remained free of ingested metal, as determined by radiographs.

CHICK REARING AND EARLY CONDITIONING – CONT'D

The production of trained pre-fledging Whooping crane chicks at Patuxent for the reintroduction into the eastern migratory flock requires a great amount of dedication and effort. That effort at Patuxent starts with the management of the breeding season in mid-January. In fact, in some years it begins in early fall when we may form new pairs of Whooping cranes that we want to begin to breed. Close observation of new pairs is needed to ensure that the birds are compatible.

The training of colts to be ready for the migration begins in the egg by playing recordings of crane vocalizations and ultralight motor sounds. Crane technicians put in many hours silently wearing the crane costumes and hoods in order to raise and train the Whooping cranes.

This year, as in years past, the Patuxent crew was joined in the spring by 4 staff from Operation Migration and volunteers from Patuxent, all who helped with the many tasks during the chick rearing season. We are grateful to all for their dedication.

USGS Patuxent Wildlife Research Center Staff

John B. French, Research Manager

Robert Doyle, Biological Technician

Jane Chandler, Crane Flock Manager

Brian Clauss, Assistant Crane Flock Manager

Barbara Clauss, Biological Technician

Jennifer Green, Biological Technician

Coral Goad, Biological Technician

Jonathan Male, Aviculturist, Crane Flock Supervisor

Kathy O'Malley, Biological Technician

Glenn H. Olsen, Research Wildlife Biologist/Veterinary Medical Officer

Charlie Shafer, Biological Technician

Dan Sprague, Biological Technician

Lorie Shaul, Volunteer

Lilian Carter, Volunteer

Operation Migration Staff

Mark Nipper, Supervisor of Field Operations

Dan Rauch, Intern

Angie Maxted, Intern/Veterinarian

John Thompton, Intern



EARLY CONDITIONING AND ULTRALIGHT TRAINING

Submitted by Bird Team Chair, Joseph Duff

Between March 20th and June 3rd 2005, twenty one (21) Whooping cranes chicks were hatched at the USGS Patuxent Wildlife Research Center in Maryland. These birds were assigned to the ultralight-led portion of the WCEP reintroduction and received early conditioning to the aircraft of Operation Migration (OM). (See Chick Rearing report for details of early training)

Prior to fledging they were transported to the Necedah National Wildlife Refuge in Wisconsin by private aircraft courtesy of Windway Capital Corp. Because of an age difference of 44 days and the need to transport the birds at a specific time in their early physical development, three separate shipments were made.



CRATED JUVENILES ARE LOADED ONTO WINDWAY CAPITAL AIRCRAFT FOR TRANSPORT TO NECEDAH NWR FOR 'FLIGHT TRAINING'

The chicks in cohort 1 were an average of 48 days old by the date of shipping; cohort 2 birds were 49 days old, and the youngest birds were 42 days. Because of health concerns, number 8-05 was held back and transported to Necedah with cohort 3 but was reunited with flockmates in cohort 2 after arrival. This delay meant number 8-05 was 66 days old when it was moved to Wisconsin.



ONE-ON ONE CIRCLE PEN TRAINING AT USGS PATUXENT

Cohort one (C1) (6 birds) was transported to Necedah NWR on 15 June and the other two followed on 6 July (8 birds) and 13 July (7 birds). All the birds were shipped in compliance with the USGS Patuxent WRC, Protocol for Transporting Cranes. The birds were contained in individual crates designed and supplied by OM. Two oversize crates were also provided this year in an effort to minimize damage to the blood feathers of larger birds.

Immediately after their arrival, the birds were observed by the WCEP Health Team led by Dr. Barry Hartup. They were checked for signs of stress and injury. (See Health Team report) These procedures were performed while the chicks were still in their shipping containers and while at the Necedah airport. After this abbreviated exam they were moved to their respective pens and were not taken to the Annex for a more extensive exam as in previous years. The cranes were housed at three separate facilities approximately one kilometre apart, all located within a closed area of the refuge.



AERIAL VIEW OF NECEDAH WEST PENSITE

EARLY CONDITIONING AND ULTRALIGHT TRAINING – CONT'D

Prior to beginning the fall migration it is necessary to mix the individual cohorts to create one flock. Typically, when this merging begins, changes in behaviour such as aggression are often noted. The integration is attempted when one of the cohorts is able to fly well enough to cover the distance between sites.



INTRODUCTION TO FLIGHT TRAINING

Logically we would start with the oldest group, which is the first to fly, and mix them with C2. However, when the youngest birds are eventually introduced, they would face a well-established flock of older and larger birds. Confronting these odds, they may never integrate properly. To avoid this situation we mixed C2 and C3 first and let them establish a new dominance structure. Later we can add the oldest birds that now face a larger group in an unfamiliar pen. This seems to balance the odds and minimizes the amount of hostility.

Cohort 2 was led from the west site to join cohort 3 at the east site on 28 August. Their pens were separated by a chain link divider allowing them to interact without the danger of injury. They were trained separately but often let out onto the runway together and observed for signs of aggression. Their agonistic behaviour diminished with each socialization session and on 15 September the barrier was removed and they were allowed to mix.

On 17 September, cohort 1 was led to the east site and penned adjacent to the now combined cohorts 2 and 3. The separating divider was removed on 23 September and from then on all the birds were housed and trained together and treated as one flock.

On 12 September after a training session at the east site the aircraft landed and came to a stop in front of the pen. Bird number 15-05 had fallen behind and as it approached to land it struck the top wires above the wing of the stationary aircraft. This impact and subsequent fall caused an open fracture of the tibiotarsus in the right leg and the bird died within the hour (see Health Team Report)



FLIGHT TRAINING PROGRESSES FROM RUNNING BEHIND THE TRIKE TO FLYING

ULTRALIGHT-GUIDED SOUTHWARD MIGRATION

The target date for the start of migration 2005 was set for 10 October and later postponed to 14 October. This is the date when all the equipment and the crew are assembled at Necedah NWR and ready to begin, however, the actual departure date is dictated by the weather. Poor flying conditions, typical of the fall, curtailed training for many days prior to departure but we were able to leave on the day we targeted.

Each of the three sites consists of a closed pen (ca. 343.7sq metres) constructed of solid wall material to act as a visual barrier so the birds cannot see outside activity. These enclosures are built on an upland surface and are referred to as the dry pens. They contain a sheltered feeding station and fresh water is fed continually into as many as four cleanable water trays.

EARLY CONDITIONING AND ULTRALIGHT TRAINING – CONT'D

The primary pen site can be divided into four sections with two access gates. Attached to these compounds are chain link pens (ca. 1393.5 sq meters) constructed in water (10 to 30 centimetres deep) and referred to as the wet pens. These areas are used to encourage the birds to water roost. Both structures, at each site, are top netted and protected by three strands of electric fence wire. Adjacent are turf areas (ca. 184 metres X ca. 18 metres) from which the aircraft can operate.

In 2005 we continued to work closely with the refuge hydrologist, John Olsen to control water levels at all three sites and are grateful for his knowledge and cooperation. We are also appreciative of the effort expended by Refuge staff to ensure that the solar-powered water pumps, used to provide fresh water to the sites, now function properly.

From the date of arrival until we departed on migration, Cohort 1 stayed at the Necedah NWR for 121 days and were trained with the aircraft on 69 occasions. They received 28.08 hours of training. Cohort 2 spent 100 days and was trained 55 times receiving 21.42 hours, while Cohort 3 worked with the aircraft 49 of their 93 day stay for a total of 18.83 hours.

The design of the pens allows the option of locking the birds into the wet or dry area, or giving them access to both enclosures. We attempted to encourage them to water roost in the wet pens. However, observations at night cause disturbance which influences their behaviour so it is difficult to determine if they actually spent the night in water. During their time at Necedah they had access to the wet pen and therefore the opportunity to water roost on 113, 81 and 86 nights respectively.

For the purposes of this study and to facilitate comparisons to previous years we have defined “fledging” as the point in time when all the birds from a cohort are able to fly short circuits around the pen area. Cohorts one, two and three fledged on 15 July, 1 August, 14 August respectively, however, individual birds may have been able to sustain flight for short periods well before these dates.

The pre-migration health check and banding took place on 30 and 31 August. A handler dressed in a white costume herded individual birds to the gate where they were passed to handlers dressed in grey costumes. After a visual inspection of the head and mouth, the birds were hooded for the remainder of the exam. Temporary snap-on radio and identification bands were used to simplify the process. (These bands were replaced with more permanent markings after the birds arrived in Florida). Using the grey costumes and a radio band that is faster to attach, has greatly reduced the negative impact this procedure has on the birds. In the past, it has taken up to two weeks for us to regain their confidence on the ground and in the air. Using these new procedures the birds are performing normally after only a few days.



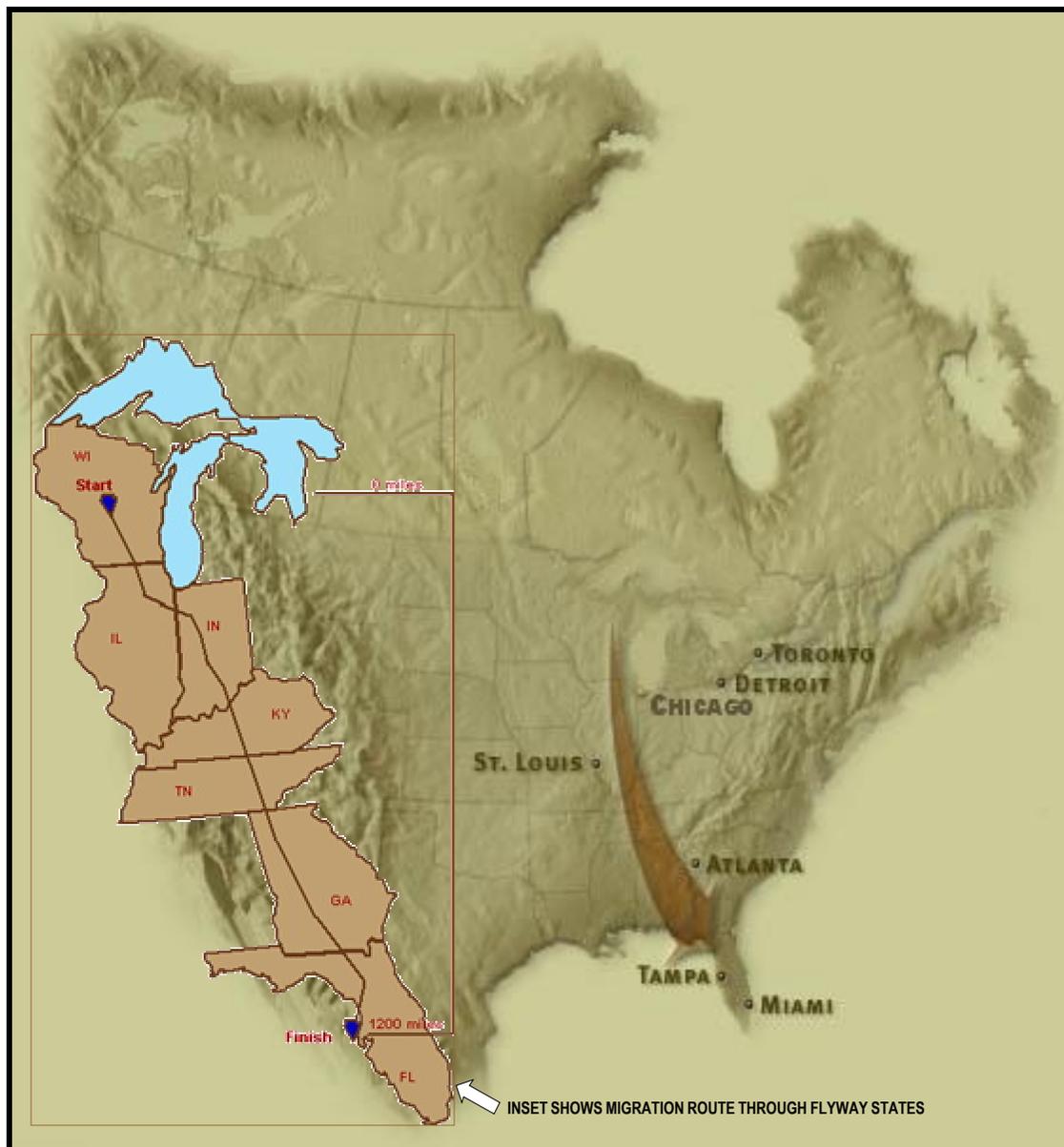
COSTUMED HANDLERS ACCLIMATIZE AND SOCIALIZE YOUNG WHOOPING CRANES

EARLY CONDITIONING AND ULTRALIGHT TRAINING – CONT'D



PILOTS AND HANDLERS WORK WITH CHICKS PRIOR TO 'TAXI-TRAINING'.

ULTRALIGHT-GUIDED SOUTHWARD MIGRATION ROUTE



EARLY CONDITIONING AND ULTRALIGHT TRAINING – CONT'D

Many birds are reluctant to leave the perceived security of the refuge on the first day of migration. Typically only a small percentage make it to the first site which is only 22 miles away. Many turn back and others land in unfamiliar territory. Day-one is normally a long and hectic ordeal for the entire team. The reluctant birds are crated and transported to the first site. Once off the refuge and into unfamiliar territory the birds seem to be more attentive to the aircraft and most, if not all, generally arrive safely at the second stopover.

To mitigate this situation we attempted to find a new first stopover closer to the refuge however the area immediately south of Necedah is heavily forested. We approached several land owners but were refused access to their property. Eventually we found a poor quality site 8 miles from the refuge and set up one of our travel pens. Our ambition was to land with the birds at the new site just when they were beginning to turn back.

At 7:47 am (CST), Brooke Pennypacker took off from the West site at Necedah with all 20 birds and turned south. Flying in the chase position were Richard Van Heuvelen, Chris Gullikson and Joe Duff. Heavy ground fog, warmer temperatures (11°C) and a 4 mph headwind slowed our progress and many birds turned back. To discourage the birds from simply landing back at the pen, the handlers cover their costumes with plastic camouflage tarpaulins which we refer to as swamp monsters. When they are paraded around the pen, returning birds will not land giving the pilots another opportunity to encourage them to follow the aircraft. This procedure was used along with many other techniques we have developed and eventually 15 birds were led to the new site however it took 32 minutes to cover 8 miles.



LEAD ULTRALIGHT AND 'CHASE' AIRCRAFT WITH WHOOPING CRANES ON MIGRATION

As expected the birds were more attentive the next day and 18 flew a distance of 17.1 miles in 27 minutes. The following day all 20

birds followed the aircraft covering 22.8 miles in 36 minutes.

As usual we experienced a number of weather related delays many of which were four days or better with one interruption of eight days. During this extended stay in Morgan County, Indiana one bird was found dead in the pen when the crew did the evening roost check. The carcass was still warm and the only visible sign of injury was severe damage to the area around the left eye. (See Health Team Report for more details). Necropsy results indicate the cause of death was a blow to the head and we suspect it was involved in a confrontation with another bird and received a single, powerful strike to the head. No other signs of a struggle or injuries were found in any of the birds and the general disposition of the flock seemed very calm.



DAWN FLIGHT ON 2005 MIGRATION.

EARLY CONDITIONING AND ULTRALIGHT TRAINING – CONT'D

Despite the long delays traditional obstacles like the Cumberland Ridge in Tennessee were cleared with all birds following us to the next destination. At the half way point in Hiawassee our birds were again reluctant to follow us and seemed to be attracted to the wetland habitat or the thousands of Sandhills present. Several had to be crated to the next site. (See figure 1) Our suspicions that they are distracted by water were reinforced during the second half of the migration. Unusually high precipitation levels produced standing water in many of our stopovers that are traditionally dry. Inevitably they would be reluctant to leave these areas. This was most notable at Terrell County, GA where 11 birds had to be crated to Cook County despite three attempts by the team. From the next site, which was dry, all the birds followed well.

At this writing there are 41 migratory Whooping cranes in the eastern flyway and many return annually to the release pen at Chassahowitzka National Wildlife Refuge. If the young-of-year chicks have already arrived when they pass through, the activity and food will often encourage them to stay. Aggression can be a concern to the chicks and some have been forced from the protection of the release pen.

To mitigate this situation another site was found and a new temporary pen constructed near Dunnellon 26 miles to the northeast. This property is owned by the South West Florida Water Management District and known as Halpata Tasthanaki Preserve. The new enclosure was intended to be used to hold the chicks until the older birds have left the Chassahowitzka pen or as a new site where the birds would spend the winter.

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HANDLERS COAX STRAYING BIRD BACK TO HALPATA PENSITE.

until the older birds have left the Chassahowitzka pen or as a new site where the birds would spend the winter.

On 13 December we arrived at the Halpata site completing the migration. Later that week the team dispersed and returned home. On 9 January 2006 a team of three Operation Migration pilots regrouped at Dunnellon and attempted to move the birds by leading them to Chassahowitzka. On the first day they managed to lead only one bird. Six more were led on the second day and on 11 January 11 birds followed

them to the final destination. This left one bird and avoided the need to transport the entire flock in crates. We hope after the 1200 mile migration that the effort to lead them the last leg will reinforce their knowledge of the entire migration route and assist them in returning to the introduction site.

SIX WHOOPING CRANES FOLLOW ULTRALIGHT ON 'POST-MIGRATION' LEG FROM HALPATA TO CHASSAHOWITZKA.



To reach the Halpata site the migration took a total of 61 days, covered 1183.4 statute miles and we flew 21 times making total of 21 stopovers. The final leg added one stopover, another 26.1 miles and three days to the total migration.

EARLY CONDITIONING AND ULTRALIGHT TRAINING – CONT'D



ENROUTE TO CHASSAHOWITZKA PENSIDE



EARLY CONDITIONING AND ULTRALIGHT TRAINING – CONT'D

Fig. 1 Comparison of Training and Migration History of First Five Generations of WCEP Whooping Cranes

EVENT	2005		2004		2003		2002		2001	
First / last hatch date	Apr 20	Jun 3	Apr 20	Jun 5	Apr 21	May 23	Apr. 12	May 21	May 7	May 24
Age spread	44 Days		46 Days		32 Days		39 Days		17 Days	
Gender	9F	12M	5F	11M	6F	11M	10F	7M	4F	6M
Age-first exposure to aircraft	Aver. 7 days		8 days		8 days		9 days		7 days	
Avg. # training hrs at PWRC	5 hrs 6 min		7 hrs 45 min		11 hrs 2 min		11 hrs 56 min		7 hrs 18 min	
Pond exposure at PWRC	39 hrs 48 mins		55 hrs 26 min		21hrs 42min		180 hrs 40 min		19hrs 6min	
Total chicks trans. to NNWR	21		16		17		17		10	
Avg. age at shipping	49 49 42		53 46 41 days		51 43 days		54 45 days		56 days	
Shipping Date (m/d)	6/15 7/6 7/13		6/19 6/30 7/15		6/19 7/1		6/12 6/27		7/10	
Cohort One (C1)	1, 2, 3, 5, 6, 7		1, 2, 3, 5, 6, 7, 8		1, 2, 3, 4, 5, 6		1, 2, 3, 4, 5, 7, 8		1, 2, 3, 5, 6	
Cohort Two (C2)	8, 9, 10, 11, 12, 14, 15, 16		12, 14, 15, 16, 17, 18		7, 9, 10, 11		9, 10, 11, 12		4, 7, 9, 10, 11	
Cohort Three (C3)	19, 20 21, 22, 23, 24 26		19, 20, 22		12, 13, 14, 16, 17, 18, 19		13, 14, 15, 16, 17, 18		NA	
Total days at NNWR	121 100 93		117 103 88		118 106		112 107		98	
# days trained at NNWR	65 – 55 – 49		57		69		52		41	
# nights water-roosting available	113, 81, 86		76		99		82		9	
Fledging Date C1, C2, C3 (m/dd)	Jul 15 Aug 1 Aug 14		7/17 8/02 9/16		7/19 7/22 7/30		8/18 8/24 9/30		8/29 9/ 6	
Pre-migration health check (m/dd)	Aug 30 ,31		9/5 & 6		8/27		8/26,27 & 29		9/11	
Cohorts united	Sept 15, 23		Sept. 6 Sept. 21		Aug 14 Aug 29		Aug 25 Sept 16		Sept 5	
Longest pre-migration flight	32 min		47 min		33 min		24 min		27 min	

EARLY CONDITIONING AND ULTRALIGHT TRAINING – CONT'D

EVENT	2005	2004	2003	2002	2001
Migration departure	Oct 14	Oct 10	Oct 16	Oct 13	Oct 17
#. cranes began migration	20	14	16	17	8
Total migration distance (miles)	1209.1	1204.4	1191	1204	1227.28
Total Flight Time	31 hrs 46 min	33 hrs 7 min	31 hrs 53 min	38 hrs 36 min	35 hrs 46 min
Total flight days	21 25*	21	20	22	26
Total days to complete migration	61 – 64*	64	54	49	50
Longest flight distance	115 miles	157 Miles	200	107.2 Miles	94.7 Miles
Longest flight duration	2 hrs 24 min	3 hrs	3 hrs 3 min	2 hrs 15 min	2 hrs 9 min
Arrival Date	Dec 13 / Jan 11 (06)	Dec 12	Dec 8	Nov 30	Dec 5
Total cranes to complete migration	19	13	16	16	7 (1 crated)
¹ 09-02 Retrieved from. Ohio.			¹ 14-02 Summered in Illinois.		
* = Arrived 13 Dec 2005 at Halpata. Moved birds 26.1 miles to Chassahowitzka NWR on Jan 9, 10 and 11 2006					

IMPROVEMENTS FOR THE 2005 AND 2006 SEASON

New Wing Design

During the 2005 migration we had the opportunity to test a new ultralight wing. The north Wing M-Pulse 175 Square Meter wing is manufactured in the US and designed without a king post and top flying wires. This superstructure is built above most wings and has in the past been a trap that entangles birds. In fact we lost a bird on the first leg of the first Whooping crane migration when it hit these wires and another this summer during our training season. All the pilots had an opportunity to lead birds while using this wing so we were able to properly evaluate its potential. Our hope is to convert all four aircraft to this wing for the 2006 season and we are confident it would almost eliminate injurious collisions with the aircraft

Travel Pen Modifications

Prior to the start of the 2005 migration we made extensive modifications to our two travel pens. We added extra pen panels to allow for a bigger containment area to accommodate the larger flock. Additionally we created test panels made of 1 inch X 1 inch vinyl covered wire screen to reduce the abrasion caused when stressed birds rub their beaks along the panels. These seemed to help and in 2006 we will convert all of our panels to this new material. Other improvements included new suspension and new tires to handle the increased weight.

Additional Pilot

Chris Gullikson joined us this past season as a new pilot bringing to four the number of aircraft that fly with the birds every day. We are certain this addition resulted in fewer birds having to be crated between stopovers. Chris flew an older aircraft that had been decommissioned two year ago and relegated to ground taxi work. It was refurbished and equipped with a rebuilt engine but we have ambitions to fund a new aircraft for the 2006 season.

New First Stop

We had difficulty finding a stop over site closer to Necedah for the first leg of the migration this year it is our ambition is to find a better location and hopefully work with the landowner and the refuge to make improvements to accommodate the aircraft and birds for 2006

Enrichment

The many weather delays during the migration caused the birds to be penned for long periods. We attempted to mitigate this situation by providing distractions such as pumpkins and other treats with which the birds could occupy themselves. We will continue to look for other methods to add enrichment.

EARLY CONDITIONING AND ULTRALIGHT TRAINING – CONT'D

With Thanks to our Many Volunteers

During the migration, OM relies heavily on volunteers. Most notably, Don and Paula Lounsbury have used their own motorhome and aircraft to provide top cover for the migrations since well before the inception of WCEP. They provide aviation weather reports and communicate with air traffic control. They are our connection to the ground crew when we are out of radio range; they guide us around restricted airspace and track errant birds when they drop out of formation with the ultralights. They have found us isolated fields in which to land when we needed to be on the ground, talked all the pilots into the same location so the birds are all together and brought the ground crew to our rescue. Despite our great admiration we like it best when we don't hear from Don and Paula while we are flying. It means everything is as it should be but when things begin to fall apart they are there -- always.

This year Don and Paula were only able to provide top cover services for the first half of the migration and David Mattingly joined us to fill in. David founded Touch our Planet, which is a registered 501 C3 that provides aircraft and volunteer pilots for environmental and humanitarian causes. He recruited Jack Wrighter and John Cooper to help out. All three are retired airline captains and they used Jack's Cessna 172 to fly for us. Unfortunately they were not able to overlap so the new team did not have the benefit of Don and Paula's expertise or advice and their first flights were interesting. We jokingly said we spent more time nursing the pilots than the birds but they soon became an integral part of the team. Their good humour, sound reasoning and easy mood ensured they were well liked. There was never a job too small or a challenge too great to intimidate them and whenever they were around laughter was part of the equation. We hope that in the future top cover responsibilities will be shared by the Lounsbury's and the fellow from Touch our Planet.

Walter Sturgeon is the president of the Whooping Crane Conservation Association and an Operation Migration volunteer. His duties during the migration included releasing the bird for early morning flights. However he assumed many more responsibilities from driving one of our vehicles to setting up pens. He was always the first in line to make repairs, shop for supplies prepare meals, clean equipment and de-ice aircraft. In fact Walter assisted with every aspect of the migration except the flying and we are sure he would have accepted that challenge if it had been offered. His good nature and easy humour was a joy and an inspiration to the entire team.

We thank Gerald Murphy for filling in for Walter when he had to be away for 10 days and hope he can join us again in the future.

Kirill Postelnykh is an aviculturist from the Oka Bio-Reserve in Russia where he works with many varieties of cranes. He joined us this season shortly before the migration was scheduled to begin and stayed for the duration. Kirill was of great assistance to the team and his bird expertise proved to be an international language unto itself. Despite difficulties with English, Kirill knew intuitively what was required and performed his duties flawlessly.

This was Kirill's first visit to North America and no other members of the team spoke any Russian, so it was a complete emersion. Kirill rose to the challenge and became a well respected and well liked member of the crew. Eventually Kirill and others hope to apply a variation of our techniques to safeguard Siberian cranes from extinction. We have pledged to offer whatever assistance we can.

We use this opportunity to thank the many people who have donated their time and effort to assist us but there are others like Angie Maxted, John Thompton and Dan Rauch who serve as interns during our training and migration season. This really means they work long hours for very little money. Angie recently graduated as a Doctor of Veterinary Medicine and took a year away from her post graduate work to assist us. She became a respected member of the team and is well liked by all. Additionally she used her school bus operators experience to drive one of our motorhomes on all the back roads from Wisconsin to Florida

Thank you to our migration hosts, who in the name of conservation remain anonymous. Your hospitality and generosity makes the long journey bearable.

OPERATION MIGRATION FIELD TEAM

Field team during early training while at USGS Patuxent Wildlife Research Center

Mark Nipper, OM Supervisor of Field Operations

Dan Rauch, Angie Maxted John Thompton, OM Interns

Field Team During Training at the Necedah National Wildlife Refuge

Joe Duff, OM Team Leader / Pilot

Mark Nipper, OM Supervisor Field Operations

Angie Maxted, OM Intern / veterinarian

John Thompton, OM Intern

Richard Van Heuvelen, Brooke Pennypacker, Chris Gullikson, OM Pilots

Charlie Shafer, Robert Doyle PWRC Aviculturists

Migration Team

Joe Duff, OM Team Leader / Pilot

Mark Nipper, OM Supervisor Field Operations

Angie Maxted, OM Intern / Veterinarian

Bill Lishman, Richard Van Heuvelen, Brooke Pennypacker, Chris Gullikson, OM Pilots

Jeff Huxmann, OM Videographer

Charlie Shafer, PWRC aviculturist

Walter Sturgeon, OM Aviculturist

Kirill Postelnykh, ICF Aviculturist

Don Lounsbury, Paula Lounsbury OM top cover pilots

Dave Mattingly, Jack Wrighter, John Cooper Touch Our Planet top cover pilots

Gerald Murphy, OM Ground Crew Support



L to R Front - Don Lounsbury, Paula Lounsbury with Breton, Charlie Shafer, Angie Maxted, Walter Sturgeon, Joe Duff
Back - Kirill Postelnykh, Richard Van Heuvelen, Jeff Huxmann, Brooke Pennypacker, Mark Nipper, Chris Gullikson
Missing: Bill Lishman, Gerald Murphy, Dave Mattingly, Jack Wrighter, John Cooper.



Submitted by Health Team Chair, Dr. Barry Hartup

SUMMARY OF WHOOPING CRANE HEALTH MONITORING 2005

2005 Cohort Pre-release Mortality & Withdrawals (genetic holdbacks not included)

- 4-05 6 Jun 2005, scoliosis, chronic respiratory disease. Euthanized.
- 13-05 Bill deviation. Withdrawn.
- 15-05 12 Sep 2005, aircraft strike, trauma. Died.
- 17-05 30 May 2005, intestinal intussusception and hemorrhage. Died.
- 18-05 28 July 2005, respiratory disease. Died.
- 25-05 22 Sep 2005, chronic respiratory disease. Euthanized.
- 26-05 9 Nov 2005, head trauma while in travel pen, pen-mate aggression suspected. Died.
- 30-05 July/Aug 2005, DAR, aspiration pneumonia, surgery. Withdrawn.
- 31-05 3 Aug 2005, DAR, handling trauma, subsequent self-trauma presumed. Euthanized.
- 34-05 26 Jun 2005, DAR, aspiration and aspergillosis. Died.

Pre-release losses = 10/34 = 29%

2005 Cohort Pre-release Clinical Problems

- Developmental wing and leg problems in at least 19 birds between PWRC & ICF.
- 3 toe fractures, all appear to have healed after varying management challenges.
- 6 cases of respiratory disease (4@PWRC; 2@ICF), complicated with aspergillosis.
- 1 insect sting that led to beak deviation and eventual withdrawal of 13-05.
- 1 mild beak fracture that led to persistent malocclusion in 26-05.
- 16-05 entangled in supporting wire on ultralight 18 Oct, 2005. Had been lame for 3d prior due to possible fractured toe. Physical therapy and treatment for pain used to overcome right wing injury during migration. The bird was boxed and driven along legs in WI, IL and IN (~190mi) of the migration. Possibly re-injured wing or overexerted during arrival examination/banding.
- Handling morbidity was observed in five cranes following exams and banding in FL. Four birds were handled over 30 minutes. All birds recovered, some required treatment over several days.



HEALTH TEAM CHECKS JUVENILE WHOOPING CRANE.

2005 Cohort Parasite Issues

- Ultralight birds de-wormed weekly since treatments begun at PWRC. DAR birds dewormed similarly once at Necedah. Gapeworm was not diagnosed (6-05 developed chronic cough 7d following arrival). Trematode and strongyle ova and unidentified larval nematodes have been observed in fecal samples.
- Delivery failure or under-medication is a continuing concern.
- Oral granulomas were observed in four birds, but no coccidia have been observed in fecal exams to date.

2005 Cohort Bacterial Disease Issues

- Non-pathogenic *Salmonella* *lexington* (E2) was detected in 5 birds at PWRC (2-05, 3-05, 5-05, 6-05, 11-05). Two of these were positive at Necedah arrival (5-05, 11-05). Another bird was positive on arrival but was negative previously (23-05). All six were negative at pre-migration health check. However, *S. braenderup* (C1) was isolated from one bird at pre-migration health check (16-05). 21-05 tested positive for *Salmonella* (C1) at arrival in FL, serotype pending.
- Water testing from Necedah release sites showed reasonable levels of coliform bacteria, with greatest variation at Site 1 since more birds were housed there.



TEAM DOCTORS PREPARE MEDICAL SUPPLIES

2005 Cohort Viral Disease Issues

- Six low titers for West Nile virus antibodies were found (5 from ultralight cohort Aug/Sep at Necedah; 32-05 Jul at ICF), probably the result of vaccination and not wild exposure to WNV.
- IBD results from PWRC are incomplete. Results from pre-migration testing suggest 7 seropositives (2-05, 3-05, 11-05, 12-05, 16-05, 22-05, 26-05). No WCEP bird has been observed with disease linked to IBD exposure to date.

ACTIVITIES RELATED TO POST-RELEASE WHOOPING CRANES**Recapture/Post-release Evaluations (opportunistic during transmitter change or relocations)**

5-01: 2 Mar 2005, Chassahowitzka NWR, FL. Seropositive for EEE.

16-02: 12 Mar 2005, locale unknown, FL. No problems identified.

7-01: Spring & summer WI. Observed with bilateral swelling of the upper beak. Cause unknown.

1-03 & 18-03: 30 Jun 2005. Both had IBD titers of 256.

7-03: 2 Oct 2005, Necedah NWR, WI. WNV titer 160, poxvirus-like nodules on hocks.

3-03: 1 Nov 2005, Necedah NWR, WI. No problems identified.

3-02 & 17-03: 11 Nov 2005, Necedah NWR, WI. No problems identified.

9-03: 16 Dec 2005, Beaufort Co., NC. Relocation to FL. No problems identified.

27-05: 25 Nov 2005, Bullitt Co., KY. DAR chick relocated to suitable habitat. No problems identified.

**Post-release Mortalities in 2005**

14-02: 2 Feb 2005, Chassahowitzka NWR, FL. Scavenged, COD unknown. Possible mitigating factors: intraspecific aggression, predation.

5-04: 14 Mar 2005, Chassahowitzka NWR, FL. Predation. Possible mitigating factors: encephalitis, enterocolitis, hepatitis (associated with disseminated visceral coccidiosis).

6-01: 4 May 2005, Jackson Co., WI. Predation. Mitigating factor: leg fracture, unknown cause.

14-04: 3 May 2005, Juneau Co., WI. Scavenged, COD unknown. Possible mitigating factors: predation, leg fracture. Final report pending from NWHC.

18-04: 1 Jul 2005, Green Lake Co., WI. Scavenged, COD unknown. Possible mitigating factors: powerline strike, trauma, predation.

4-03: 26 Oct 2005, Necedah NWR, WI. Open. Possible mitigating factors: poor condition, illness. No evidence of gunshot. Final report pending from NWHC

- The National Wildlife Health Center is scaling back serological testing for West Nile virus. A request from the Health Team to continue pre-migration screening of all WCEP birds prior to departure from Necedah has been agreed to. The vaccination program for arboviruses, including WNV and Eastern Equine Encephalomyelitis, will continue in all WCEP birds.
- The WCEP Health Team will continue to monitor the global spread of H5N1 highly pathogenic avian influenza (HPAI) and evaluate the potential risk to the WCEP program. We already conduct pre-release serological testing for influenza in all birds, as well as opportunistic screening of recaptured cranes and review pathology of deceased birds for the disease. We will review the applicability of various biosecurity measures during the field phases of the project (Necedah, migration, Halpata, Chassahowitzka) as the captive centers review protocols to prevent introduction of HPAI into their flocks, should H5N1 arrive in North America.
- Work with the Tracking Team to develop chick capture/handling/banding/health assessment protocols in the event of successful reproduction and chick survival in WI this year.
- The Health Team will provide an authoritative mortality report for WCEP in the coming year. The Health Team requests that all partners make available copies of relevant materials for archiving purposes in a timely manner relative to a bird death.
- A meeting with Charles Lovell of USDA/APHIS Wildlife Services in July 2005 was instructive for investigations of predation on cranes. Nancy Businga of the WDNR has subsequently updated the health team protocols with a recommended plan of action for the Tracking Team in cases of suspected predation.
- The National Wildlife Health Center is scaling back serological testing for West Nile virus. A request from the Health Team to continue pre-migration screening of all WCEP birds prior to departure from Necedah has been agreed to. The vaccination program for arboviruses, including WNV and Eastern Equine Encephalomyelitis, will continue in all WCEP birds.
- The WCEP Health Team will continue to monitor the global spread of H5N1 highly pathogenic avian influenza (HPAI) and evaluate the potential risk to the WCEP program. We already conduct pre-release serological testing for influenza in all birds, as well as opportunistic screening of recaptured cranes and review pathology of deceased birds for the disease. We will review the applicability of various biosecurity measures during the field phases of the project (Necedah, migration, Halpata, Chassahowitzka) as the captive centers review protocols to prevent introduction of HPAI into the captive flocks should H5N1 arrive in North America.

Many thanks are extended to ALL colleagues, including aviculturists, technical and laboratory staff, who have contributed to the health care of the WCEP flock. Special thanks to C. Kelley (ICF), N. Businga (WDNR), T. DeLaFuente (UF), A. Maxted and M. Nipper (OM).

WCEP Health Team veterinarians: Barry Hartup (ICF), Julie Langenberg (WDNR), Kim Miller (USGS NWHC), Glenn Olsen (USGS PWRC), Marilyn Spalding (UF -Gainesville)

WCEP RELATED PUBLICATIONS

Hanley, C. S., N. J. Thomas, J. Paul-Murphy and B. K. Hartup. 2005. Exertional myopathy in Whooping cranes (*Grus americana*) with prognostic guidelines. *Journal of Zoo and Wildlife Medicine*, in press.

Hartup, B. K., G. H. Olsen and N. M. Czekala. 2005. Fecal corticoid monitoring in Whooping cranes (*Grus americana*) undergoing reintroduction. *Zoo Biology*, 24(1): 15-28.

WCEP RELATED PRESENTATIONS

Hartup, B. K., J. Langenberg, G. Olsen, M. Spalding and K. Miller. "Health management for the re-introduction of eastern migratory Whooping cranes." National Wildlife Rehabilitators Association Symposium, Minneapolis, MN.

Olsen, G. H., K. J. Miller, D. Docherty, V. Bochsler, L. Sileo, B. K. Hartup and M. G. Spalding. "Pathogenicity and protection of cranes, including endangered Whooping cranes, from West Nile virus." USGS Manager's Meeting, Patuxent, MD.

Hartup, B. K. "Guidelines for Field Capture and Safe Handling of Whooping Cranes to Avoid Capture-Related Stress and Injury." International Whooping Crane Recovery Team, Patuxent, MD.



TRACKING AND DIRECT AUTUMN RELEASE

Submitted by Tracking and Direct Autumn Release Co -Chairs, Dr. Richard Urbanek and Monitoring Chief Lara Fondow

This report documents the biology of Whooping cranes in the reintroduced eastern migratory population during calendar year 2005. Movements and geographic distribution are emphasized. A new reintroduction technique, direct autumn release (DAR), is also described. Identification information for all Whooping cranes in the eastern migratory population as of January 2006 appears in Appendix A.

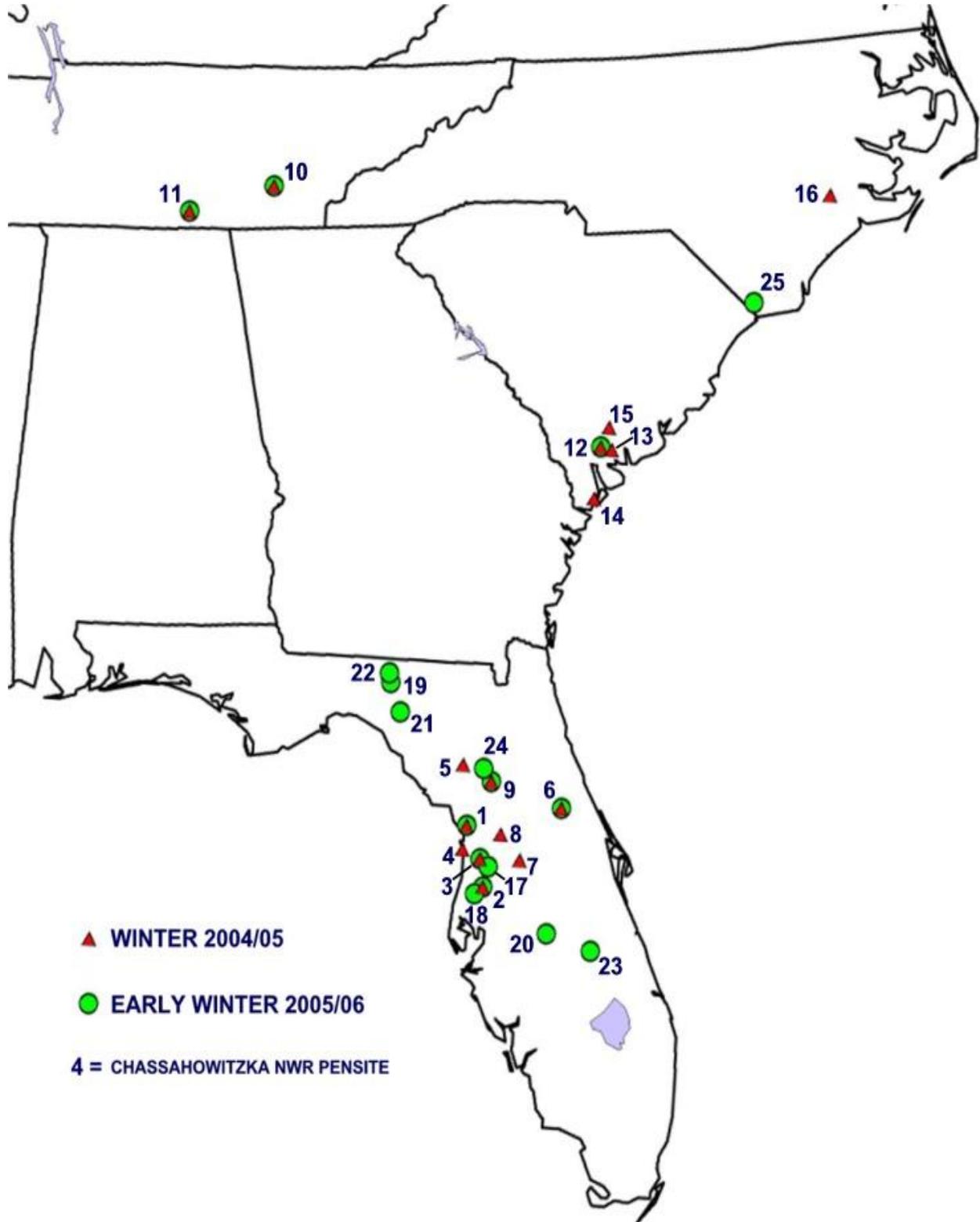
Winter 2004/05

Locations of the HY2001-03 cohorts during winter 2004/05 included 20 birds in Florida, 4 in Tennessee, 7 in South Carolina, and 3 in North Carolina (Table 1, Fig. 1). The latter 10 birds were all from the HY2003 cohort. The birds wintering in North Carolina, outside the range of both other project Whooping cranes and the wild Sandhill population, had summered in Lower Michigan during 2004. No released Whooping cranes had wintered in the Carolinas in previous years.

Table 1. Primary wintering areas of Whooping cranes in the reintroduced eastern migratory population, winter 2004/05. Location nos. refer to Fig. 1.

CRANE NOS.		LOCATION	COUNTY
Florida			
1-01, 2-02	(1)	Shamrock Acres	Citrus
2-01, 8-02	(2)	NE of Gowers Corner	Pasco
5-01, 4-02	(3)	Stafford Lake	Hernando
	(4)	Chassahowitzka NWR	Citrus
6-01	(5)	SW Alachua/NE Levy Counties	Alachua/Levy
1-02, 6-03	(6)	Lake Woodruff NWR	Volusia
3-02, 16-02	(7)	Big Prairie	Lake
5-02, 18-04	(2)	NE of Gowers Corner	Pasco
11-02, 12-02, 17-02	(2)	NE of Gowers Corner	Pasco
14-02	(8)	E of Rutland	Sumter
3-03, 12-03, 16-03	(9)	Long Pond	Marion
Tennessee			
7-01	(10)	Hiwassee Wildlife Refuge	Meigs
9-02, 13-02, 18-02	(11)	W of Winchester	Franklin
South Carolina			
2-03, 10-03, 13-03	(12)	Combahee Unit, ACE Basin NWR	Colleton
4-03, 11-03	(13)	Donnelley SWMA	Colleton
7-03	(14)	Bull Island	Beaufort
17-03	(15)	Waltersboro/Jacksonboro	Colleton
North Carolina			
1-03, 9-03, 18-03	(16)	Trent River	Jones

Fig 1. Primary wintering areas of Whooping cranes in the reintroduced eastern migratory population, winters 2004/05 and 2005/06. Location nos. refer to Tables 1 and 7.



TRACKING AND DIRECT AUTUMN RELEASE – CONT'D

Autumn migration 2004 was protracted and late. Migration of individual birds or groups to the Central Gulf Coast was completed in 5-58 days with arrival of the last birds on 2 January. The earliest returning crane (no. 14-02) arrived on 15 November (estimated) and moved inland on 25 November. Nos. 5-01 and 4-02 arrived at the Chassahowitzka pensite on the latter date and moved inland on 28 November. The next cranes to return to the pensite (nos. 11-02, 12-02, and 17-02) did not arrive until 15 December. A total of 13 older cranes stopped over at the pensite during early winter. These 13 birds were in groups of 1, 2, 3, 2, 2, and 3. Except for the local territorial pair (nos. 5-01 and 4-02), the last of these cranes left the pensite on 3 February to spend the remainder of the winter inland.

The HY2004 cohort consisted of 14 released birds (11 males and 3 females); 13 juveniles, led by Operation Migration ultralight aircraft, had arrived at the winter release pen on Chassahowitzka NWR on 12 December. All arrivals of the older returning birds occurred after arrival of the ultralight-led cohort except for no. 14-02, who left the site on 25 November and did not return until 29 January, and nos. 5-01 and 4-02, who had an alternate local winter site and frequently returned. Because autumn migration of older birds was late and these latter birds had not yet passed through the salt marsh to winter inland, the juveniles were held in a top-netted enclosure constructed just outside the northwest corner of the main pen. They were allowed out of the enclosure only when costumed caretakers were present or when no older, dominant cranes were present (some exceptions for the resident wintering pair). Older birds were also not given free access to supplied feed and fresh water. This regimen was continued until 2 March, after which no older cranes other than the resident pair appeared at the pensite and the juveniles were always allowed to roam freely.

Because of flight feather development problems, one juvenile male (no. 18-04) did not complete training necessary to follow ultralight aircraft on migration. He had been released on Necedah NWR in late October 2004 to migrate with older cranes. He migrated successfully to Florida, where he wintered with an older Whooping crane in Pasco County. No. 18-04 became the first reintroduced Whooping crane in the eastern migratory flock to complete his first migration by following older cranes rather than ultralight aircraft.

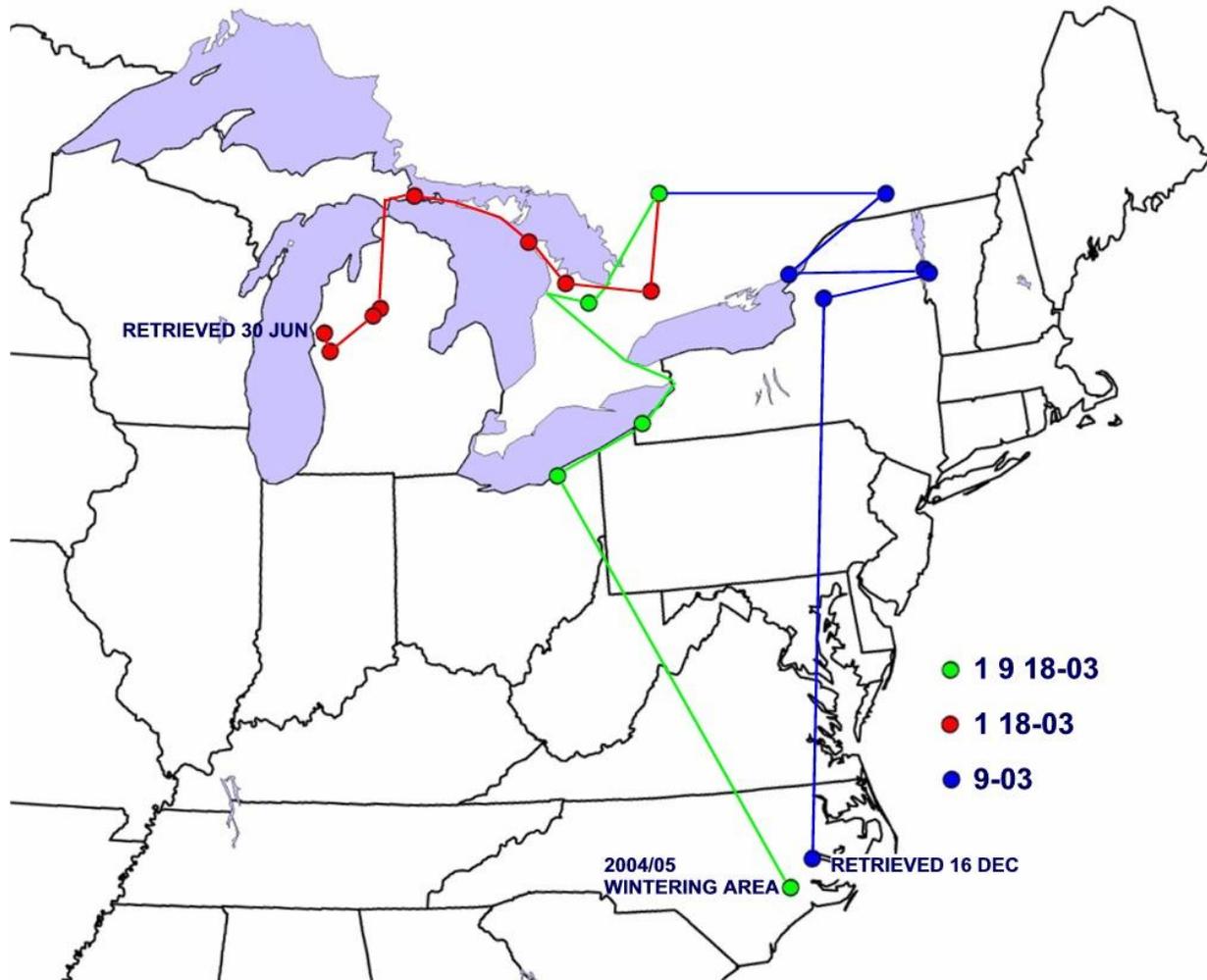
SPRING MIGRATION

HY2001-03 cohorts

The first of the older birds (HY2001-03) to begin migration were the two adults most closely associated with Sandhills: No. 7-01 was reported during migration in north-central Kentucky on 25-26 February. No. 6-01 was reported at Hiwassee Wildlife Refuge, Tennessee, on 7 March after last being observed on 3 March on Kanapaha Prairie, Alachua County, Florida. The earliest departures of the other Whooping cranes were a group of four birds from Pasco County during 10-12 March and the pair from Shamrock Acres, Citrus County, Florida, on 12 or 13 March. All adult Whooping cranes had begun spring migration by 30 March. Fifteen birds had completed migration back to Wisconsin by 29 March. Three birds that wintered in South Carolina were confirmed in Lower Michigan during spring migration: no. 17-03 in Berrien County on 18 March, and nos. 10-03 and 13-03 in Barry and Kalamazoo Counties on 2-14 April. Except for five birds remaining east of Lake Michigan (HY2003 nos. 10 and 13 and nos. 1, 9, and 18), all other older birds had completed migration back to Wisconsin summering areas by 7 April. Nos. 10-03 and 13-03 were eventually able to circumvent the Lake; they returned to Necedah NWR on 21 May.

The three surviving HY2003 birds that had summered in Lower Michigan in 2004 and wintered in North Carolina in winter 2004/05 were again impeded by geographical barriers during spring migration (Fig. 2). Flight paths this spring migration were influenced not only by Lake Michigan but also by Lakes Erie, Huron, and Ontario. The group of three separated while in south eastern Ontario. Nos. 1-03 and 18-03 eventually arrived via the Bruce Peninsula and Straits of Mackinac to the same areas they had occupied during the previous summer and autumn in west-central Lower Michigan. No. 9-03 proceeded eastward via Montreal, Quebec, to Vermont.

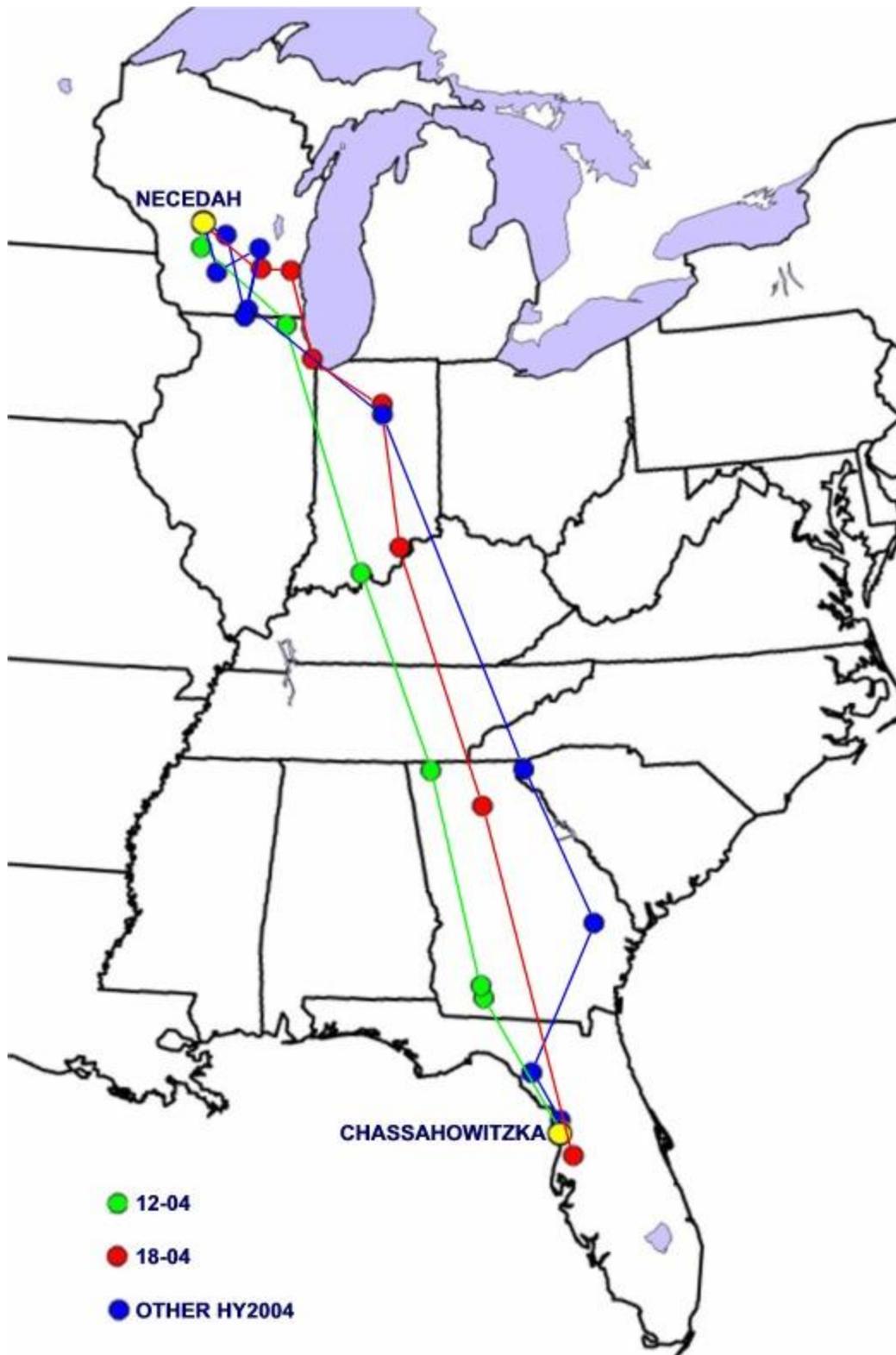
Fig. 2. Movements of HY2003 Whooping cranes nos. 1, 9, and 18 in 2005 and prior to retrieval and relocation to areas inhabited by other members of the eastern migratory population. These three cranes had summered in Lower Michigan in 2004.



HY2004 Cohort

Migration began when 11 birds (nos. 1, 2, 3, 7, 8, 14, 15, 16, 17, 19, and 20) left the Chassahowitzka pensite on 25 March (Fig. 3). They soon encountered heavy showers and thunderstorms. After being grounded at one or more coastal salt marsh locations for most of the day, they resumed flight in late afternoon and landed to roost at a pond in a cattle pasture adjacent to Crystal River Preserve State Park, 14 miles north of the Chassahowitzka pen. As rain continued, the group remained at this site through 26 March. They resumed migration and made the following overnight stops: Dixie County, Florida, on 27 March; Evans County, Georgia, on 28 March; Oconee County, South Carolina, on 29 March; and Miami County, Indiana, on 30 March. Amidst unfavorable weather, they remained at the latter stop until resuming migration to Rock County, Wisconsin, on 4 April and south western Fond du Lac County on 5 April. On 6 April the flock separated after taking flight. Nos. 1, 7, 8, and 14 returned to the roost site, while nos. 2, 3, 15, 16, 17, 19, and 20 proceeded to roost on Mazomanie Unit of Lower Wisconsin River SWA, Dane County. Nos. 1, 7, 8, and 14 left the site in Fond du Lac County on 7 April. They were later found near Raccoon Creek, Winnebago County, Illinois. On 25 April they proceeded to Adams County National Waterfowl Production Area near Brooks, Wisconsin. On 27 April they made the short flight to Yellow River Cranberry, just east of Necedah NWR, thus completing migration. The other group of seven returning yearlings left Mazomanie and completed migration to Necedah NWR on 3 May.

Fig. 3. Migration of HY2004 Whooping cranes in the reintroduced eastern migratory population, spring 2005.



No. 12 remained behind at the Chasshowitzka pensite when his flockmates left on 25 March. He associated with the adult pair nos. 5-01 and 4-02 and began migration with them on 30 March. The group of three birds proceeded to roost in Thomas County, Georgia, on 30 March and moved a short distance to Mitchell County, Georgia, on 31 March (Fig. 3). They remained at the latter site amidst unfavorable migration conditions until resuming migration on 3 April. They roosted that night in Catoosa County, Georgia. On 4 April they proceeded to roost in Perry County, Indiana. The pair separated from no. 12 early the following morning and continued on migration. Later in the morning, no. 12 resumed migration alone. He encountered and joined migrating nos. 4-03 and 11-03 in flight in south-central Indiana and the group proceeded to roost in McHenry County, Illinois. They continued on to roost near Wonewoc, Juneau County, Wisconsin, on 6 April. On 7 April they made the short flight to complete migration to Necedah NWR.

No. 18, the juvenile released during autumn on Necedah NWR, remained at the wintering site in Pasco County after his associate, no. 5-02, began migration on 10-12 March. No. 18 began migration alone on 18 April (Fig. 3). PTT readings and visual sightings indicated that he roosted along the migration route as follows: Forsyth County, Georgia, on 19 April; Scott County, Indiana, on 22-24 April; Fulton County, Indiana, on 28 April-6 May; Cook County, Illinois, on 8-9 May; Washington County, Wisconsin, on 10 May; and near Mud Lake SWA, Dodge County, on 11-15 May. He completed migration to Necedah NWR on 16 May.

SPRING, SUMMER, AND AUTUMN

With some exceptions (see below), released Whooping cranes generally migrated within the corridor between Wisconsin and Florida and summered in or near the core reintroduction area in Central Wisconsin (Table 2, Fig. 4). As in previous years, almost all birds returned to Necedah NWR or adjacent areas at the completion of spring migration. The spring wandering period, most pronounced in yearlings, then began (Table 3, Fig. 4). Subsequent summer distribution reflected the strong homing and natal site fidelity by males, while females tended to disperse unless they were associated with males. Spring wandering in 2005 was similar to that in 2004, which was much less than in 2003. This occurred because there were few yearling females in the population, and most older females were associated with males.

Two birds were retrieved from Mason County, Lower Michigan, and relocated to Necedah NWR on 30 June. As of 1 July, there were 43 birds (26 males and 17 females) in the eastern migratory population distributed as follows: core Central Wisconsin reintroduction area (35), south eastern Wisconsin (7), Vermont/New York (1). Approximately 30 Whooping cranes roosted regularly on Necedah NWR during the summer. Yearling groups persisted intact more than in past years. This may have been related to establishment and occupation of territories by older birds over much of the refuge. Autumn distribution was similar to summer distribution for most birds in the population. The main exceptions were 3 yearling males that spent most of autumn in central Minnesota and a group of 5 yearling males that moved to south eastern Wisconsin (Table 4, Fig. 4).

Pairing and Reproduction

As had occurred in previous years, the days immediately following return from spring migration were the most intensive period of social reorganization and new pair formation. During spring 2005, the following pairs formed: 11-02 and 17-02, 13-02 and 18-02, 16-02 and 3-03, and 17-03 and 3-02. The former two pairs had formed from autumn/winter triads.

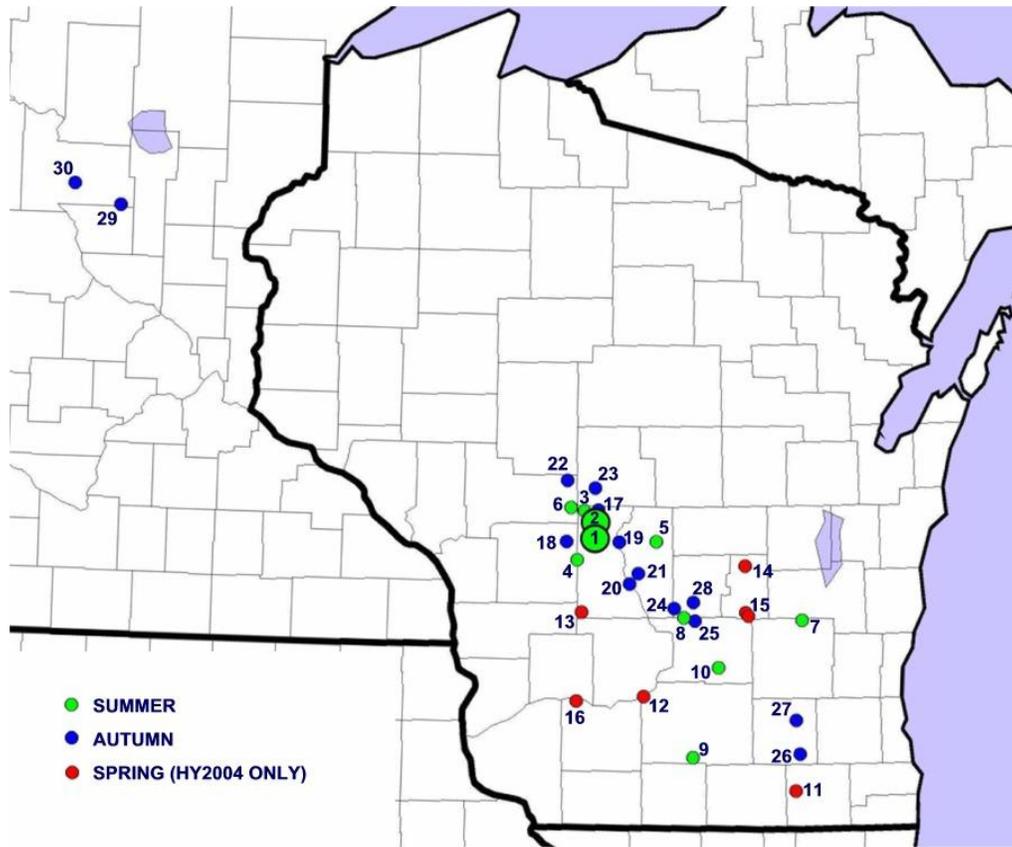
As indicated by copulation and/or nest-building, seven breeding pairs (6 on Necedah NWR and 1 on adjacent Meadow Valley SWA) were apparent during spring 2005 (Table 5). At least five of these pairs built nests, and two pairs each laid one egg. Neither egg was adequately attended by the young, inexperienced pairs, and both eggs were shortly lost. In addition to the existing confirmed pairs, five additional pairs formed or persisted during summer and autumn. Prospects are therefore good for reproduction in 2006.

TRACKING AND DIRECT AUTUMN RELEASE – CONT'D

Table 2. Primary summering areas of Whooping cranes in the reintroduced eastern migratory population, 2005. Location nos. refer to Fig. 4.

Crane nos.	Location	County
Central Wisconsin		
1-01, 2-02	(1) south Upper Rice Pool, Necedah NWR	Juneau
2-01	(5) W of Colburn SWMA	Adams
5-01, 4-02	(2) mid/north eastern Sprague Pool, Necedah NWR	Juneau
1-02, 6-03	(3) Meadow Valley Flowage, Meadow Valley SWMA	Juneau
3-02, 17-03	(2) Pool 19, Necedah NWR	Juneau
5-02	(1) Carter-Woggon Pool, Necedah NWR	Juneau
8-02	(1) southern Bee Cut, Necedah NWR	Juneau
9-02, 2-03	(4) Mill Bluff SP	Juneau
11-02, 17-02	(1) eastern East Rynearson Pool, Necedah NWR	Juneau
12-02	(2) Pool 18, Necedah NWR	Juneau
13-02, 18-02	(1) Site 2, northern East Rynearson Pool, Necedah NWR	Juneau
16-02, 13-03	(2) Goose Pool, Necedah NWR	Juneau
1-03, 11-03	(2) north eastern Sprague Pool, Necedah NWR	Juneau
4-03	(2) Rattail/western Sprague Pool, Necedah NWR	Juneau
7-03	(1) West Rynearson Pool, Necedah NWR, and south of refuge	Juneau
10-03	(1) West Rynearson Pool area, Necedah NWR	Juneau
13-03	(1) West Rynearson Pool area, Necedah NWR	Juneau
18-03	(1) Rynearson Pools complex, Necedah NWR	Juneau
	(2) Sprague Pool complex, Necedah NWR	Juneau
	(6) Bear Bluff	Jackson
1-04, 7-04, 8-04	(1) Rynearson Pools complex, Necedah NWR	Juneau
2-04, 3-04, 12-04, 16-04, 17-04	(1) Rynearson Pools complex, Necedah NWR	Juneau
South eastern Wisconsin		
7-01	(7) Horicon NWR	Dodge
12-03, 16-03	(8) Neenah Creek	Marquette/ Columbia
15-04	(9) Brooklyn SWA	Dane
19-04, 20-04	(10) Leeds Center	Columbia
Vermont/New York		
9-03	Lemon Fair River (refer to Fig. 2)	Addison (Vermont)
	Black River (refer to Fig. 2)	Lewis, NY

Fig. 4. Primary summer and autumn use areas of all Whooping cranes and primary spring wandering locations of HY2004 cranes in the eastern migratory population, 2005. Location nos. refer to Tables 2, 3, and 4.



One other Whooping crane demonstrated breeding activity in 2005. No. 6-01 was paired with a Sandhill crane on his territory in a cranberry wetland in the Crawford Creek watershed, Jackson County. The pair was observed nest-building and copulating on 9-10 April. On 22 April no. 6-01 was discovered with a broken left tarsus. Because of his limited mobility, he roosted on the open floor of a woodland adjacent to the wetland. He was killed by a predator on approximately 2 May.

Survival

Of 57 Whooping cranes released as juveniles during the reintroduction, 45 were alive as of December 2006. The 12 mortalities (Table 6) were due to predation (7), powerline strike (1), capture myopathy (1, euthanized), cause under investigation (2, details cannot be released), and not yet determined (1). Mortalities due to predation resulted from bobcats in south eastern U.S. (5), an undetermined predator in Wisconsin (1), and predation in Wisconsin of a bird that was roosting on land because of a broken leg. A protective protocol, initiated shortly after two birds in the first cohort were killed just after release, has been effective in reducing potential bobcat predation at the winter release site on Chassahowitzka NWR.

One half of the total mortalities of released birds occurred during 2005 (Table 6). No. 14-02 was killed by a bobcat after being chased from the Chassahowitzka pen by a dominant adult just before dark. No. 5-04 was killed by a bobcat on Chassahowitzka NWR when he roosted in an unsafe area outside the pen. No. 6-01 was killed by a predator after he broke his leg (suspected powerline strike) on his territory on a cranberry farm. No. 14-04 was killed by a predator on a wetland adjacent to a cranberry farm; this yearling had recently returned from spring migration and was roosting in a small, shallow, unsafe wetland. No. 18-04 died as a result of collision with a powerline on a farm in south eastern Wisconsin. He was the juvenile that had been released on Necedah NWR in the preceding autumn. No. 4-03 was found dead in late October on Necedah NWR; necropsy results are pending. This latter death was the only mortality to occur on Necedah NWR of the 12 total mortalities since the reintroduction began in 2001.

TRACKING AND DIRECT AUTUMN RELEASE – CONT'D

Table 3. Primary spring use locations of Whooping cranes in the reintroduced eastern migratory population, 2005. Only spring use areas which were different from summering areas are shown. Summering areas appear in Table 2. * = used alternately with summer territory during spring. Primary spring wandering location nos. of yearlings refer to Fig. 4.

CRANE NOS.	LOCATION	COUNTY
Central Wisconsin		
5-01, 4-02	Mill Bluff area *	Juneau
6-01	Crawford Creek	Jackson
7-01	SW of Colburn SWA	Adams
1-02, 6-03	Lemonweir River/New Lisbon*	Juneau
8-02	Brandy Creek*	Monroe
11-02, 17-02	Mauston wastewater plant	Juneau
12-02	Leola area	Adams
4-03	SW of Valley Junction*	Monroe
11-03	Little Yellow River*	Juneau
12-03, 16-03	Yellow River Cranberry	Juneau
South/south eastern WI		
HY2004 1, 7, 8	(11) Turtle Creek SWA	Walworth
HY2004 2, 3, 16, 17	(12) Mazomanie Unit, LWR SWA	Dane
12-04	(13) SW of Union Center	Juneau
15-04	(14) south eastern White River Marsh	Green Lake
18-04	(15) S of Manchester	Green Lake
19-04, 20-04	(16) Avoka Unit, LWR SWA	Iowa
18-04, 19-04, 20-04	(15) S of Manchester	Green Lake
Lower Michigan		
1-03, 18-03	west/north-central Lower Michigan	various
10-03, 13-03	south western Lower Michigan	various
South western Ontario		
9-03	widespread locations	various

Table 4. Primary autumn staging areas of Whooping cranes in the reintroduced eastern migratory population, 2005. Cranes which staged only on or near their summer use areas are not shown. Summer use areas appear in Table 2. Location nos. refer to Fig. 4. * = also staged in summering area (refer to Table 2).

CRANE NOS.	LOCATION	COUNTY
Central Wisconsin		
2-01	(1) East Rynearson Pool, Necedah NWR	Juneau
5-01, 4-02	(1) West Rynearson Pool, Necedah NWR; (4) Mill Bluff area	Juneau
1-02, 6-03	(17) Finley (2) eastern Sprague Pool, Necedah NWR	Juneau
8-02	(18) Valley Junction (1) Upper Rice Pools, Necedah NWR	Monroe
9-02, 2-03	(18) Valley Junction*	Monroe
11-02, 17-02	(1) south East Rynearson Pool, Necedah NWR	Juneau
12-02	(1) south eastern Necedah NWR (19) Petenwell Dam	Juneau
12-03, 16-03	(20) Wisconsin River, S of Castle Rock Lake (21) NE of Lone Rock Lake	Adams
13-03	(18) Valley Junction*	Monroe
18-03	(23) Sandhill SWA	Wood
18-03	(1) West Rynearson Pool, Necedah NWR	Juneau

TRACKING AND DIRECT AUTUMN RELEASE – CONT'D

Table 4. – cont'd

CRANE NOS.	LOCATION	COUNTY
South eastern, WI		
12-03, 16-03	(24) Widow Green Marsh	Marquette
2-04, 3-04, 12-04, 16-04, 17-04	(25) Neenah Creek/Fox River	Marquette
2-04, 3-04, 12-04, 16-04, 17-04	(25) French Creek SWA	Columbia
15-04	(26) Palmyra*	Jefferson
	(27) Farmington*	Jefferson
19-04, 20-04	(28) Endeavor Marsh	Marquette
Central Minnesota		
1-04, 7-04, 8-04	(29) south eastern Morrison County	Morrison
	(30) Skunk Lake SWA	Morrison

Table 5. Reproductive activity of Whooping crane pairs in the reintroduced eastern migratory population, spring 2005.

MALE	FEMALE	AREA	TERRITORY	ACTIVITY
1-01	2-02	Necedah NWR	Site 4/south Upper Rice Pool	Nest with 1 egg
11-02	17-02	Necedah NWR	East Dike, East Ryneerson Pool	Nest with 1 egg
13-02	18-02	Necedah NWR	Site 2/northern East Ryneerson Pool	Incomplete nest
5-01	4-02	Necedah NWR	NC/NE Sprague Pool	Established territorial pair but not accessible for observation
3-02	17-03	Necedah NWR	Pool 19	Several incomplete nests
16-02	3-03	Necedah NWR	NW Goose Pool	Copulation
6-03	1-02	Meadow Valley SWA	Meadow Valley Flowage	Complete nest

Table 6. Post-release mortalities of Whooping cranes in the reintroduced eastern migratory population, 2001-05.

HATCH YR	CRANE NO.	SEX	STUDBOOK	BBL BAND NO.	MORTALITY DATE	LOCATION	CAUSE
2001	4	M	1632	659-00216	17 Dec 2001	Chassahowitzka NWR, Fla.	Bobcat predation
2001	6	M	1634	659-00209	~2 May 2005	Jackson Co., WI.	Predation of injured bird
2001	10	F	1640	659-00217	10 Jan 2002	Chassahowitzka NWR, Fla.	Bobcat predation
2002	7	F	1667	599-32119	30 Aug 2003	n. a.	Euthanized after capture myopathy
2002	14	F	1675	599-32123	2 Feb 2005	Chassahowitzka NWR, FL.	Bobcat predation
2002	15	F	1676	599-32124	23 Dec 2004	Limestone Co., Ala.	Under investigation
2003	4	M	1699	599-34045	23 Oct 2005	Necedah NWR, WI.	Necropsy results pending
2003	5	M	1700	599-34046	13 Nov 2004	Cape Romain NWR, S.C.	Bobcat predation
2003	19	M	1714	599-34055	~23 Jul 2004	Oceana Co., Mich.	Under investigation
2004	5	M	1748	599-37452	14 Mar 2005	Chassahowitzka NWR, FL.	Bobcat predation
2004	14	M	1757	599-37456	3 May 2005	Juneau Co., WI.	Predation
2004	18	M	1761	599-34057	~9 Jul 2005	Green Lake Co., WI.	Powerline collision

TRACKING AND DIRECT AUTUMN RELEASE – CONT'D

AUTUMN MIGRATION AND EARLY WINTER

Departure dates from Wisconsin varied from 9 to 24 November with largest single-day departure (20 birds) on 17 November. The first birds arrived in Florida on 15 November, and the first birds arrived on Chassahowitzka NWR on 17 November. No. 9-03, the female that summered in New York, was retrieved from North Carolina and relocated to Florida on 16 December. Early winter distribution as of 1 January 2006 was as follows: Florida (35), Tennessee (7), South Carolina (1), North Carolina (1), and undetermined (1) (Table 7).

The yearlings migrated earlier than the older cranes. HY2004 nos. 2, 3, 12, 16, and 17 began migration with Sandhills from French Creek SWA, Columbia County, Wisconsin, and flew to central Indiana on 9 November and to central Tennessee on 10 November. This group of five Whooping cranes arrived at the Chassahowitzka pensite on 17 November. They stayed one night and then moved northward to San Pedro Bay, Taylor County, where they remained to winter.

Nos. 19-04 and 20-04 began migration with Sandhills from Endeavor Marsh, Marquette County, on 9 November. They were ahead of the group of five noted above and reached central Indiana or farther south on the first day. Tracking of this pair was resumed on 12 November, when they roosted in Washington County, Georgia. They continued on to Bacon County, Georgia, on 13 November and Clinch County on 14 November. They reached Hixtown Swamp, Madison County, Florida, on 15 November and remained to winter in that area.

Table 7. Early wintering areas of Whooping cranes in the reintroduced eastern migratory population, winter 2005/06. Location nos. refer to Fig. 1. Location of no. 7-03 was undetermined as of 1 January 2006.

CRANE NOS.	LOCATION	COUNTY
Florida		
1-01, 2-02	(1) Shamrock Acres	Citrus
2-01, 12-02	(2) NE of Gowers Corner	Pasco
5-01, 4-02	(17) Bystre Lake	Hernando
1-02, 6-03	(6) Lake Woodruff NWR	Volusia
3-02, 17-03	(3) Stafford Lake	Hernando
5-02, 13-03	(2) NE of Gowers Corner	Pasco
8-02	(2) NE of Gowers Corner	Pasco
11-02, 17-02	(2) NE of Gowers Corner	Pasco
16-02, 3-03	(18) SW of Gowers Corner	Sumter
1-03, 11-03	(3) Stafford Lake	Hernando
9-03, 15-04	(19) Indian Lake (S of Hixtown Swamp)	Madison
12-03, 16-03	(9) Long Pond	Marion
HY2004 1, 7, 8	(20) E of Lake Gordon	Polk
HY2004 2, 3, 12, 16, 17	(21) Fire Pan Sog, San Pedro Bay	Taylor
19-04, 20-04	(22) Hundred Acre Pond	Madison
32-05	(23) Kissimmee Prairie	Osceola
33-05	(24) Levy Lake	Alachua
Tennessee		
7-01	(10) Hiwassee Wildlife Refuge	Meigs
9-02, 2-03	(11) W of Winchester	Franklin
13-02, 18-02	(11) W of Winchester	Franklin
27-05, 28-05	(10) Hiwassee Wildlife Refuge	Meigs
South Carolina		
10-03	(12) Combahee Unit, ACE Basin NWR	Colleton
North Carolina		
18-03	(25) Seven Creeks/Waccamaw River	Columbus

HY2004 nos. 1, 7, and 8 were last reported near Skunk Lake, Morrison County, Minnesota, on 9 November. They were next found in Washington County, Indiana, on 22 November. Local residents indicated that they had been at the site for more than a week. They resumed migration on 24 November and landed to roost on the Tennessee River just northeast of Hiwassee Wildlife Refuge. They continued migration with Sandhills on 25 November and roosted near Lake Blackshear, Sumter County, Georgia. They continued on to Florida and roosted in Jefferson County on 26 November and Taylor County on 27 November. After two days of rain, they resumed migration on 30 November and arrived at the Chassahowitzka pensite. They stayed one night and flew the next day to near Lake Gordon, Polk County, where they remained to winter.

No. 15-04 began migration with Sandhills from Jefferson County, Wisconsin, and proceeded to Jasper-Pulaski SWFA (J-P), Indiana, on 17 November. She roosted on Kankakee River SFWA just north of J-P on 19 November but returned to J-P the next day. She apparently left J-P on 21 November and then arrived at Armstrong Bend, Hiwassee Wildlife Refuge, Tennessee, on the morning of 23 November. She departed on 25 November. On 26 November she roosted near Blue Sink, Madison County, Florida. By 28 November she had moved to nearby Hixtown Swamp. She remained in this general wintering area through the end of the year.

Autumn migration of most older birds was on a direct course to Florida. Five birds (nos. 7-01, 1-02 and 6-03, and 7-03, plus yearling 15-04) that were flying with Sandhills passed through J-P. A group of three pairs (nos. 2-01 and 12-02, 3-02 and 17-03, and 1-03 and 11-03) made an extended stay (18 November-17 December) at their second migration stop near Indianapolis, Indiana. Two birds, believed to be nos. 1-03 and 11-03, were sighted at the previous wintering area of no. 11-03 in South Carolina on 20 December. That pair arrived at the Chassahowitzka pensite two days later. Most older birds had either passed through the Chassahowitzka pensite or were already on final wintering areas by 25 December.

Two birds, nos. 10-03 and 18-03, wintered again in South and North Carolina, respectively. In the previous year, 10 birds, all HY2003, had wintered in the Carolinas. In early winter 2005/06, of the nine surviving individuals, five were in Florida, one was in Tennessee, and the wintering area of another had not yet been determined.

DIRECT AUTUMN RELEASE (DAR)

Year 2005 was the first in which Whooping crane chicks were specifically reared for release with older cranes on the northern reintroduction area. Rearing and release methods were based on much successful earlier work with Sandhill cranes, in which juveniles released during the autumn staging period learned survival skills and the migration route from older, experienced cranes.

Rearing

Five Whooping crane chicks (1 male and 4 females) were costume/isolation-reared at ICF for DAR. They hatched 5-15 June. Three eggs were produced at ICF and two at Patuxent. The chicks were transferred to the isolation-rearing field facility (Site 3) at Necedah NWR on 14 July when chicks were 29-39 days of age. The chicks were frequently attended by costumed parents in the chickyard and surrounding field and marsh during the day and locked in their individual compartments in the building at night. One female (no. 31) was euthanized after sustaining a serious handling injury on 27 July.

Chicks fledged (cleared 100 m without touching the ground) by mid to late August (70-73 days after hatching). They were moved from the rearing building to the top-netted wet pen on 3 September. They were allowed to roam freely in the immediate area during daytime with frequent checks by costumed parents, and the group was locked in the wet pen, where they roosted in water, at night.

The pre-migratory health check was performed on 23 September; results were normal. Chicks flew regularly by late September, making large loops over the field and often flying over the treetops bordering the rearing site. Five adult Whooping cranes (nos. 2-01, 11-02 and 17-02, 12-02, and 7-03) visited the rearing site in late summer/early autumn. The chicks most frequently associated with no. 12-02 and the resident Sandhill crane pair.

TRACKING AND DIRECT AUTUMN RELEASE – CONT'D

The male chick (no. 32) left Site 3 on 7 October and spent the day associating with different groups of Sandhills on Ryneerson Pools. In late afternoon he was retrieved by costumed parents and returned to Site 3. He was kept penned until 9 October. On that date his permanent color bands and VHF transmitter were attached. He was free to fly after that date but remained with the three females at Site 3. The three females were color banded on 21 October. In addition to a VHF transmitter, each female was also fitted with a PTT.

Release

All juveniles were released at sites occupied by older Whooping cranes. Movements and associations of juveniles with other cranes during the process of release and integration into the wild were complex. A much simplified chronology appears below. Unless indicated otherwise, released juvenile Whooping cranes roosted and foraged in appropriate habitats with older Whooping cranes and/or large numbers of staging Sandhills during the release period. All specified locations other than Mill Bluff and the Lemonweir River site were on Necedah NWR.

October

- 24 Nos. 27, 28, and 32 left Site 3 voluntarily and roosted on East Ryneerson Pool (ERP)
- 25 Nos. 27, 28, and 32 returned to Site 3 during morning. No. 27 was released on Killdeer Pool in late afternoon. No. 33 was released on Carter-Woggon Pool.
- 26 Neither no. 27 nor no. 33 remained with the adult Whooping cranes with which they were released. Both joined Sandhill flocks. No. 27 joined no. 33 at roost on West Ryneerson Pool.
- 27 Nos. 28 and 32 flew to ERP. No. 32 was retrieved and released at eastern Sprague Pool. No. 28 remained to roost on ERP.
- 28 No. 28 returned to Site 3; she roosted there alone that night.
- 29 No. 28 was released at north eastern Sprague Pool. She joined no. 32 at roost.
- 30 All four DAR juveniles (as two pairs) flew back to Site 3 and reunited. They roosted in the marsh north of the wet pen on that night.
- 31 The four DAR juveniles left Site 3 to feed with Sandhills in a cornfield south of the refuge. They returned to roost on ERP.

November

- 1 Nos. 28 and 32 separated from nos. 27 and 33. Nos. 28 and 32 flew to the Mill Bluff area.
- 3 All four DAR juveniles (two pairs) reunited at Mill Bluff. They always remained together as a group after that date until 16 November (see below).
- 9 The group of DAR juveniles began using a site along the Lemonweir River southwest of the refuge. They remained to roost there without other cranes.
- 10-15 The DAR juveniles continued to roost at the Lemonweir River site without other cranes. Older Whooping cranes and Sandhill cranes foraged in the cornfield at the site during the day.
- 16 No. 32 roosted on West Ryneerson Pool. The three females remained to roost at Lemonweir.
- 17 Nos. 27 and 33 roosted on West Ryneerson Pool. Nos. 28 and 32 remained at Lemonweir.
- 18 The four DAR juveniles roosted on the frozen surface of West Ryneerson Pool in the large flock of staging cranes.
- 19-21 The four DAR juveniles roosted at Lemonweir.
- 22 The four DAR juveniles roosted on Rice Pool.
- 23 The four DAR juveniles attempted to roost at Lemonweir. Because optimal migration conditions were predicted for the following day, project personnel attempted to flush the birds off the Lemonweir roost to rejoin the large crane flock on Necedah NWR. The DAR juveniles did eventually leave the area but only moved a few miles to roost in a cranberry reservoir without other cranes.
- 24 Migration conditions were optimal. Passage of a major cold front during the night resulted in clear skies and a strong tailwind. Many Sandhill cranes and the few remaining adult Whooping cranes in the area departed early. The four DAR juveniles left their roost and joined Sandhill cranes in a cornfield between the Lemonweir site and Mill Bluff at mid-morning. At 1033 EST they began southbound migration along with approximately 52 Sandhills.

Migration

No tracking aircraft were available on 24 November. With a strong tailwind, the juveniles had outdistanced three ground trackers by the time they reached Illinois, and additional tracking detected no signals. A PTT reading that night indicated that no. 27 was roosting just northeast of Speed, Clark County, Indiana, on the north side of the Ohio River across from Louisville, Kentucky. Ground tracking verified her presence in a quarry pond at that location on the following day (Fig. 5). No. 27 had flown 455 miles on the first day of her first autumn migration. She was not with the other Whooping cranes, and their roost locations were not determined. On 25 November air tracking found juveniles nos. 33, 32, and 28 on or in the immediate vicinity of Hiwassee Wildlife Refuge, Meigs County, Tennessee (Fig. 5). They arrived separately in the order listed among the large Sandhill flocks. They had reached Hiwassee on the second day of migration. Although they reunited as a group on 26 November, they were separate in later observations. The male, no. 32, resumed southbound migration on 30 November but was not tracked; nos. 28 and 33 remained at Hiwassee.

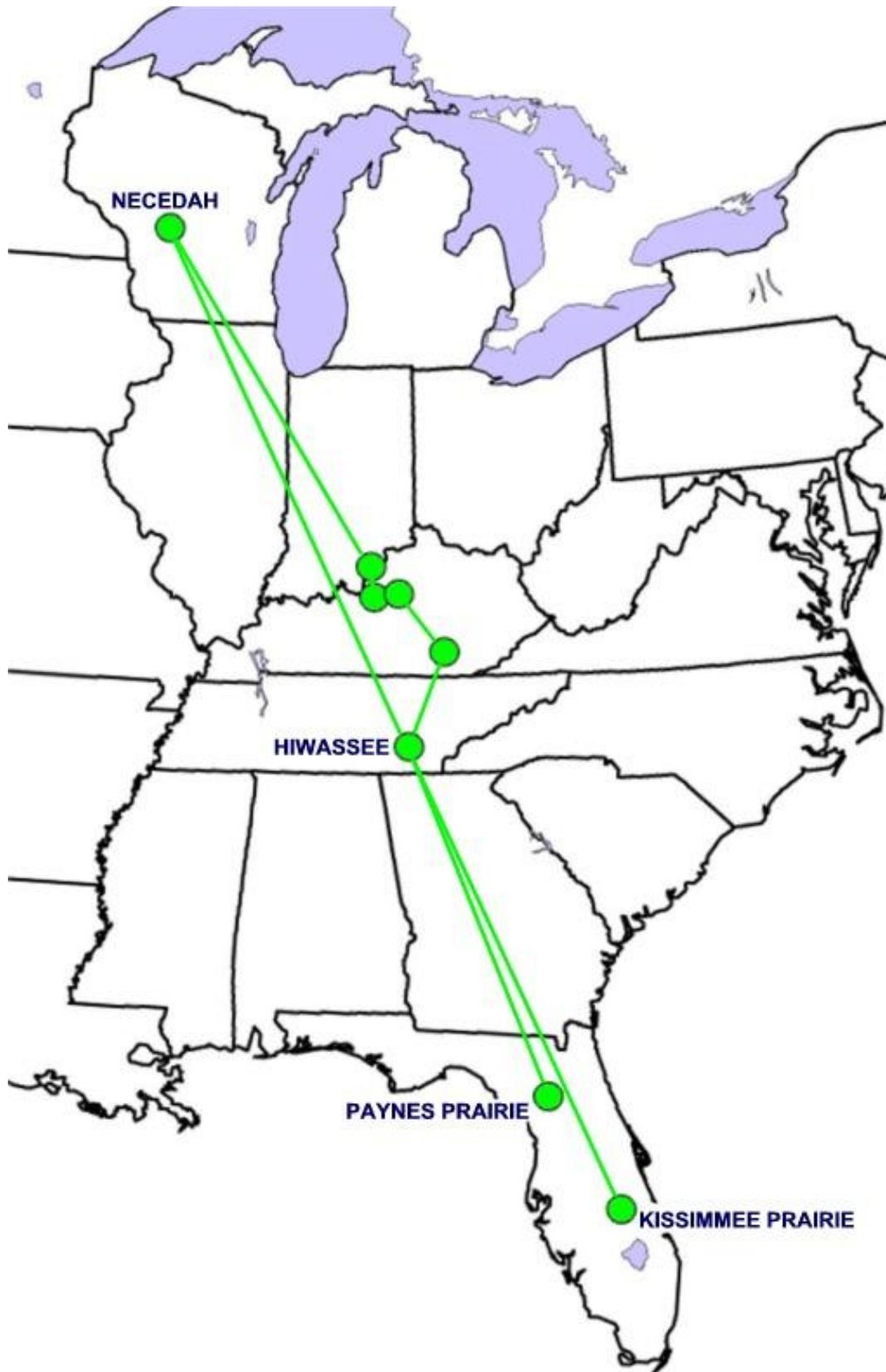
During afternoon on 25 November, no. 27 flew 35 miles southward and landed in Nevin Lake, Bernheim Arboretum and Research Forest, Bullitt County, Kentucky. She was highly visible and exposed at close range to the public at this site. Travel logistics made immediate intervention by project staff difficult. During early afternoon on 28 November, no. 27 was retrieved at Bernheim Forest by costumed personnel, transported 28 miles eastward, and released on Taylorsville Lake SWMA, Anderson County. The release site was a small waterfowl refuge consisting of river and mudflat and was currently closed to the public. A Sandhill family (two adults and a juvenile) were also present, but the two species did not associate. No. 27 resumed migration alone on 29 November and proceeded slowly southward while being blown eastward by the wind. She landed to roost in Laurel River Lake, Laurel County, Kentucky, in the Daniel Boone National Forest.

On 30 November she continued migration. She flew southward alone and in early afternoon landed at a pond on top of the Cumberland Escarpment 6 miles north of Dayton, Rhea County, Tennessee. She resumed flight in mid-afternoon, having likely heard or seen Sandhills, and flew the short distance to land on drawn down Mud Creek, Rhea County, directly across the Tennessee River from Armstrong Bend, Hiwassee Wildlife Refuge. She remained to roost on Mud Creek with more than 300 Sandhill cranes. During 29-30 November this juvenile Whooping crane had successfully completed the migration segment from north-central Kentucky to the major crane congregation area at Hiwassee in south eastern Tennessee without guidance of other cranes. She and the other two DAR females remained in the Hiwassee area but did not rejoin during the next few weeks.

No. 33 resumed migration from Hiwassee approximately 18-20 December. She arrived on Paynes Prairie, Alachua County, Florida (Fig. 5), on 21 December. She was in a large flock of migratory Sandhill cranes using marsh and wet pasture. Nos. 27 and 28 rejoined at Hiwassee at approximately the same time and remained associated.

The search for the DAR male, no. 32, on Sandhill crane wintering areas in Florida was temporarily discontinued on 12 December because of unavailability of tracking aircraft. When aircraft again became available on 31 January 2006, he was found in a large flock of migratory Sandhill cranes on a cattle ranch on the Kissimmee Prairie, west of Yeehaw Junction, Osceola County, Florida (Fig. 5). Local residents indicated that he had been present at this location since at least mid-December. As of January 2006, nos. 27 and 28 remained together among the thousands of wintering Sandhill cranes on Hiwassee, and no. 33 remained with Sandhills on cattle pasture and wetlands at Levy Lake or nearby wetlands, Alachua County, Florida.

Fig. 5. Migration of direct autumn release (DAR) juvenile Whooping cranes, autumn 2005.



HABITAT USE

Summer

Habitat use by reintroduced Whooping cranes in the core reintroduction area (parts of Juneau, Adams, Monroe, Jackson, and Clark Counties) has been relatively uniform and predictable in the early years of the project, with a few exceptions. Birds summering on Necedah NWR typically used the shallow waters and emergent wetland vegetation along the edges of the managed impoundments that comprise the majority of refuge marshes. Small numbers of birds have used the natural sedge meadows of the refuge for significant periods of time. Pairs from earlier release cohorts have established territories around the three ultralight training sites, precluding significant use by HY2003 and HY2004 birds. However, Necedah NWR supported approximately 30 Whooping cranes (most of the population) throughout the summer months of 2005. In addition to the emergent vegetation zones, the birds used palustrine and upland scrub-shrub areas associated with the marshes during daytime foraging and loafing activities. Oak savannah habitat was also used, primarily during late spring and early summer. This use often followed prescribed burns which opened the understory and exposed invertebrates.

In early and mid-summer, birds were often observed foraging on blueberries and sarsaparilla in the upland scrub areas, most notably the Bee Cut area. Pool drawdowns created ephemeral foraging habitat for cranes, as fish and other aquatic prey became trapped in the receding water. The birds also probed for food items in the mudflats exposed by the drawdowns. This type of foraging also occurred during natural drought conditions. The cranes appeared to shift their daytime movement patterns within the mosaic of habitats at Necedah NWR to take advantage of the shifting abundance of food resources.

Off-refuge summer habitat use within the core reintroduction area has been fairly similar to that on the refuge, although land use patterns were sometimes quite different. The managed wetlands and adjacent pine scrub habitat of Meadow Valley SWA provided a summer territory for a pair of Whooping cranes in 2005. This pair built a nest in marsh within one of the managed impoundments. Cranberry beds and reservoirs in the reintroduction area have provided foraging and roosting habitat for many Whooping cranes, particularly during the spring and autumn months. Marshes within the unmanaged impoundments of Mill Bluff State Park, along with surrounding agricultural areas, provided summer habitat for small numbers of cranes, and spring and autumn habitat for larger groups of birds.

A more atypical habitat preference was shown by two birds of the 2003 cohort. These birds spent significant portions of the spring and summer along sloughs and oxbow ponds associated with the Little Yellow River south of Necedah NWR. During spring birds generally foraged in the previous year's cornfields prior to planting and then briefly in the newly planted fields. A few observations have been made of birds foraging in cornfields greater than 3 feet tall. This may occur more often when there are bare patches or height variations within the field. During autumn birds were again attracted to cornfields after the crop had been harvested. Many birds often left their summer territories and used this rich food source as soon as it was available.

So far returning Whooping cranes have attempted to pack tightly into the Ryneerson Pools complex of Necedah NWR, the specific natal area where they had been reared and fledged. This behavior has been most beneficial to establishing a population because it has maximized opportunity for social interaction and pair bond formation. As territories have become filled by breeding pairs, new territories have formed in the nearest suitable wetlands, such as those in the Sprague Pool complex, Necedah NWR, and on Meadow Valley Flowage, Meadow Valley SWA. Because of the strong homing, only a small portion (perhaps as little as 10%) of habitat within the core reintroduction area has so far been occupied by territorial pairs, and much more habitat is available. If reproduction is successful, the area should be able to support a healthy, self-sustaining population.

During spring and early summer, non-nesting birds have often occupied areas outside of the core reintroduction area. Some birds remained in these more distant locations throughout the summer. Females and younger birds exhibited this pattern most often. Wandering juveniles in the spring used many different wetland types throughout Wisconsin and into Minnesota, Iowa, and Illinois, sometimes relocating each day.

TRACKING AND DIRECT AUTUMN RELEASE – CONT'D

Wetland habitats along the Lower Wisconsin River and the Mississippi River were most often used during this period of spring wandering. Lacustrine marshes, such as those associated with Puckaway, Rush, Yellowstone, and Poygan Lakes, among others, were also most often used during this time period, though a few of these areas have supported birds during the summer months. Small numbers of birds have used the marshes of the Briggsville area, particularly those associated with Neenah and O'Keefe Creeks during both the summer and autumn.

Migration

The majority of Whooping cranes demonstrated a direct migration route with opportunistic stops at whatever wetlands were available in the area they reached by the end of the flight day. These sites included natural or managed palustrine, lacustrine, and riverine wetlands as well as farm ponds, reclaimed surface mines, flooded agricultural fields, catfish production ponds, mountain reservoirs, and river sandbars. They often remained at such stops only overnight or for extended periods during days of poor flying weather, but they sometimes also stayed during longer periods of mild weather. Some Whooping cranes, because of their greater association with Sandhill cranes, also used large, managed, wetlands at Jasper-Pulaski SFWA, Indiana, and Hiwassee Wildlife Refuge, Tennessee, on the traditional eastern greater Sandhill crane migration route.

Throughout the year Whooping cranes preferred open country, e.g., grassland and savannah, lacking much woody cover and with numerous shallow wetlands. All Whooping cranes roosted in safe wetlands most of the time. The only major exceptions were some yearlings that were not associated with Sandhill cranes.

Roost habitat ranged from extensive, permanent wetlands to relatively small stock ponds. Sites used generally satisfied safe, short-term habitat requirements. In general, Whooping cranes improved roost site selection in their first unassisted fall migration over that in their first spring migration. Like Sandhills, Whooping cranes often fed in grain fields, especially harvested cornfields, near the roost sites. Because of the broad range of potentially usable sites and the need to use them for only a few days, adequate stopover habitat does not appear limiting even in mountainous parts of the migration route.

Winter

The salt marshes of Chassahowitzka NWR and surrounding central Gulf Coast were initially selected as wintering habitats for the reintroduced population. Site selection was an attempt to resemble habitat of Aransas NWR on the Gulf Coast of Texas. There, the diet of the natural Whooping crane population depends largely on an abundance of blue crabs. This food item is also abundant on Chassahowitzka. However, although Chassahowitzka NWR has served as a high-quality release area, tidal and other habitat conditions there have not been conducive to establishment of winter territories by returning birds. Many of the birds visit the salt marsh upon return from autumn migration but then move inland to winter.

Returning Whooping cranes have been fairly consistent in their habitat selection in Florida. After leaving the salt marsh the birds select inland areas containing freshwater marshes. The marshes used by the cranes have included some large highland marshes such as Paynes Prairie, Clermont Marsh, and Hawthorne Prairie. More often, the birds used smaller highland or flatwoods marshes adjacent to dry prairies used for cattle grazing. Many of the birds foraged in these upland cattle or horse pastures during the day, particularly where a nearby water source such as a ditch or pond was present. During winter of 2004/05, one pair of Whooping cranes foraged on dairy pastures and roosted on an impoundment at Lake Woodruff NWR, part of the formerly extensive St. John's River Marshes complex. The marshes used by Whooping cranes may contain plant assemblages characteristic of flag marshes, wet prairies, saw grass marshes, or cattail marsh. Most important appears to be the existence of shallow water suitable for roosting.

During several winters small numbers of Whooping cranes spent all or a significant portion of the season at Hixtown Swamp, a complex of cypress swamps, marshes, and ponds in north-central Florida. Agricultural fields with crops of rye or peanuts provided another foraging habitat opportunistically used by wintering Whooping cranes.

During winter 2004/05, 14 of the 34 birds in the population wintered in Tennessee (4), South Carolina (7), or North Carolina (3). No. 7-01 remained at or near Hiwassee Wildlife Refuge, Tennessee, where she roosted along river sandbars and foraged in cornfields. Number 6-01 had spent much of winter of 2002/03 in the same area. The remaining three Tennessee birds roosted together in a pond in an ungrazed pasture and foraged in a harvested cornfield. The seven birds that wintered in South Carolina included two lone birds, one pair of males, and one group of three.

The most unique habitat use was likely that of no. 7-03. He spent the winter on Bull Island, a private coastal island just west of Hilton Head. This island was managed primarily for dove hunting. The grain and cornfields planted for this purpose provided foraging habitat for no. 7-03, while the created ponds supplied freshwater. He typically roosted in a brackish impoundment marsh on the edge of the island.

The remainder of the South Carolina birds used areas in the ACE Basin project, which consisted of private, state, and federal lands managed for wildlife and human benefits. Much of the area consisted of former rice plantations (converted from intertidal marshes) that now contain, among other habitat types, flooded cornfields and brackish or freshwater marshes. The Whooping cranes primarily used each of these latter habitat types. Before settling into their final wintering areas, some of these birds temporarily utilized coastal salt marshes dominated by smooth cordgrass or islands along the Atlantic Coast of Georgia including some islands of the Savannah NWR complex. The three birds who wintered in North Carolina selected a small flooded clearcut in a river bottom for roosting. They also foraged in this flooding, in an adjacent harvested cornfield, and sometimes in farm fields in uplands about 1 mile from this site.

Improvements in Winter Management Strategy

Chassahowitzka NWR provides an excellent release site for juveniles because the pensite is not accessible by the public, naive juveniles can be effectively protected from predators, physical facilities are ideal, and movements of juveniles can be controlled because habitat conditions limit dispersal. Because of tidal fluctuations, salinity, unstable or rocky bottom substrates, and general habitat dominance by needlerush, most returning older Whooping cranes do not remain at the pensite but instead winter inland. This pattern has been advantageous to the reintroduction by allowing this release site to be used year after year. To remedy the problem of overlap between older birds still passing through Chassahowitzka after arrival of the new juveniles, a holding site has been established on Halpata Tastanaki Preserve, Southwest Florida Water Management District, Marion County, 26 miles north-northeast of the Chassahowitzka pensite. Juveniles will be retained at this site until as many older birds as possible have completed migration and moved inland to winter.

Human Avoidance and Conflicts with Human Activity

In general, released Whooping cranes satisfactorily avoided close proximity to humans and human structures. However, because they have been reared in captivity, they can be easily tamed after release if precautions are not taken. It remains critical that approach of birds by the public is carefully controlled on areas where this is possible, and that on other areas the public is aware of the need to view these birds only from a distance. The guidelines for viewing (no closer than 200 m for persons on foot or 100 m while in a vehicle on a public road) should continue to be emphasized.

Although the population of Whooping cranes has grown and the area near Mill Bluff has continued to be a major use area, there were few incidents of birds on nearby Volk Field during the year. Volk Field, a U.S. Air Force Base used for Air National Guard training, has had problems in the past, mainly associated with nos. 5-01 and 4-02.

There is major concern about wintering sites in Florida. Several cattle ranches in Pasco County have become major wintering areas for project birds. The most heavily used ranch is being sold to be subdivided and converted into residential property by developers. Many ranches face this threat. Another site is marginally close to human residences and contains non migratory Sandhill cranes that tolerate people and do not foster an environment that facilitates avoidance of humans and human activity by reintroduced birds.

TRACKING AND DIRECT AUTUMN RELEASE – CONT'D

There have been no significant conflicts noted between Whooping cranes and farmers. No significant crop damage has been apparent, and most farmers have expressed positive interest in having Whooping cranes on their properties.

Interaction with Non migratory Whooping Cranes

There have been two cases of interaction between reintroduced migratory Whooping cranes and members of the non-migratory flock. In winter 2004/05, no. 6-01 occupied two cattle ranches west of Okahumpka, Lake County. His roost site was one of the primary release sites used for the non-migratory Whooping crane reintroduction. He was the only migratory Whooping crane on an area inhabited by non-migratory Whooping cranes. He occasionally associated with the latter birds but more typically remained with wintering migratory Sandhills. He left that site during 6-11 January 2005 and moved to a site with wintering migratory Sandhill cranes southwest of Gainesville, Alachua County, near the wintering area that he had occupied one year earlier. He had no further associations with non migratory Whooping cranes during the winter. He later died in Wisconsin during the spring.

HY2004 males nos. 1, 7, and 8 occupied ranch land near Lake Gordon, Polk County, Florida, during early winter 2005/06. They consistently associated with a HY2000 non migratory female while at this site.

Land Ownership

Whooping cranes have used a mixture of federal, state, and private lands during summer, migration, and winter based on the habitat these areas provide in the geographical area that the birds occupy. Some localities, such as cattle ranches on wintering grounds or cornfields in the north and on migration, are almost all privately owned. Whooping cranes often use areas containing extensive wetlands. These habitats tend to be on public lands such as National Wildlife Refuges and State Wildlife Areas. Wetland Reserve Program wetlands have also been frequently used where they are available.

Summary and Conclusions

The winter management protocol, when rigorously implemented, continued to be effective in protecting newly released juvenile Whooping cranes from predators and exposure to humans. Problems involving conflicts between newly released and older birds at the release site have been greatly relieved by addition of a new site in which to hold birds until older returning Whooping cranes have cleared the Chassahowitzka release site and moved to inland wintering areas.

Although one half of all mortalities of released birds in the population occurred during 2005, total survival since the first birds were released in December 2001 remained high (79%). However, past concerns related to high bobcat densities in Florida, birds encountering geographical barriers during migration, birds off the migration route, and risk of shooting, both intentional and during otherwise legal waterfowl hunting, need to remain foremost in decision-making on management of the population.

Social behavior was normal, and pair bond formation was progressing. Seven breeding pairs had formed by spring 2005. At least five of these pairs built nests and two pairs each laid one egg. More pairs have since formed, and at least 12 breeding pairs are expected in 2006.

Habitat use, roosting, and foraging behavior of most birds were satisfactory. Only a small portion of suitable habitat has so far been used in the core reintroduction area, and there is much room for expansion by new territorial pairs.

Human avoidance was generally adequate but still a concern, especially for relatively naive yearlings during spring and early summer. Increased visitor interest in viewing released Whooping cranes also needs to be carefully managed to ensure that birds of any age in the population remain wild and do not become habituated to people.

Natal site fidelity remained high. All yearlings completed spring migration to the core reintroduction area in 2005. Winter site fidelity has also been good; all yearlings returned to Florida in 2005. Most adults, including several of those in the Carolinas during the previous winter, also returned to Florida in winter 2005/06.

The direct autumn release of four birds in Wisconsin has so far been successful. All four of the juveniles reached major wintering areas of Sandhill cranes in Tennessee and Florida.

After release of the 19 ultralight-led juveniles in January 2006, the eastern migratory population will number 64 individuals. Number of individuals in each year class will be as follows: HY2001 (4), HY2002 (13), HY2003 (13), HY2004 (11), and HY2005 (23).

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TRACKING AND DIRECT AUTUMN RELEASE – CONT'D

Appendix A. Whooping cranes in the reintroduced eastern migratory population, January 2006.

HATCH YEAR	CRANE NO.	SEX	BBL BAND NO.	FREQUENCY (MHZ)	COLOR CODE (LEFT:RIGHT) L=LONG BANDS WITH TRANSMITTER	PTT ID	STUDBOOK NO.			MATE
							OWN	SIRE	DAM	
2001	1	M	659-00215	164.465	L G/W:G/R/G		1629	1114/1144	1119	2-02
2001	2	F	659-00201	164.273	L G/W:R		1630	1147	1142	
2001	5	M	659-00213	164.063	L G/W:R/G		1633	1147	1142	4-02
2001	7	F	659-00214	--	L G/W:W/R		1635	1127	1154	
2002	1	F	599-32111	164.124	L R/W:L G(PTT)		1660	1133	1135	6-03
2002	2	F	599-32112	164.225	L R/W:G/W		1661	1133	1135	1-01
2002	3	F	599-32116	164.625	L R/W:W/G/W		1662	1114	1119	17-03
2002	4	F	599-32117	165.133	L R/W:R/G/W		1663	1114	1119	5-01
2002	5	M	599-32118	164.855	L R/W:G/R/W		1664	1133	1135	
2002	8	M	599-32113	164.345	L R/W:W/G		1668	1144	1136	
2002	9	F	599-32127	164.605	G/W:L R/W		1670	1133	1135	
2002	11	M	599-32114	165.222	L R/W:R/G		1672	1147	1142	17-02
2002	12	M	599-32121	165.671	L R/W:W/R/G		1673	1114	1119	
2002	13	M	599-32122	164.494	L R/W:G/R/G		1674	1127	1154	18-02
2002	16	M	599-32125	164.595	L R/W:R/G/R		1677	1147	1142	3-03
2002	17	F	599-32115	164.174	L R/W:G/R		1678	1144	1136	11-02
2002	18	F	599-32126	165.152	G:L R/W		1679	1128	1101	13-02
2003	1	F	599-34041	164.395	W:L G/R		1696	1175	1188	
2003	2	M	599-34044	164.356	G/W:L G/R		1697	1133	1135	
2003	3	F	599-34056	164.535	L G/R:W		1698	1144	1136	16-02
2003	6	M	599-34047	165.421	G/W/G:L G/R		1701	1133	1135	1-02
2003	7	M	599-34048	164.586	R/W/G:L G/R		1702	1133	1135	
2003	9	F	599-34042	164.284	L W/G(PTT):L G/R	62171	1704	1144	1136	
2003	10	M	599-34049	165.175	W/G/R:L G/R		1705	1175	1188	
2003	11	M	599-34050	165.193	G/W/R:L G/R		1706	1127	1154	
2003	12	F	599-34043	165.243	L W/R(PTT):L G/R	--	1707	1133	1135	
2003	13	F	599-34051	165.272	R/W/R:L G/R		1708	1133	1135	
2003	16	M	599-34052	165.304	R/G/W:L G/R		1711	1144	1136	
2003	17	M	599-34053	164.315	W/G/W:L G/R		1712	1144	1136	3-02
2003	18	M	599-34054	164.195	G/R/W:L G/R		1713	1147	1142	
2004	1	M	599-37449	165.105	R/G/W:L W/G		1744	1133	1135	
2004	2	M	599-37450	164.334	W/R/W:L W/G		1745	1127	1154	
2004	3	M	599-37451	164.644	G/R/W:L W/G		1746	1133	1135	
2004	7	M	599-37453	165.043	W/R/G:L W/G		1750	1144	1136	
2004	8	M	599-37454	165.064	G/R/G:L W/G		1751	1133	1135	
2004	12	M	599-37455	164.414	G/W/R:L W/G		1755	1127	1154	
2004	15	F	599-37446	165.123	L R/G(PTT):L W/G	38636	1758	1144	1136	
2004	16	M	599-37457	165.593	W/G/R:L W/G		1759	1144	1136	
2004	17	M	599-37458	164.872	R/G/R:L W/G		1760	1133	1135	
2004	19	F	599-37447	165.495	L W/R(PTT):L W/G	38637	1762	1128/1100	1263	
2004	20	F	599-37448	165.522	L G/R(PTT):L W/G	15331	1763	1133	1135	
2005	1	F	599-37231	164.383	L G/W:R/G/W		1782	1162	1167	
2005	2	F	599-37237	164.636	L R/W(PTT):L G/W	62169	1783	1144	1136	
2005	3	M	599-37232	164.525	L G/W:W/R/W		1784	1144	1136	
2005	5	M	599-37233	164.564	L G/W:G/R/W		1786	1133	1135	
2005	6	M	599-37234	164.704	L G/W:R/W/G		1787	1133	1135	
2005	7	F	599-37235	164.055	L G/W:W/R/G		1788	1144	1136	
2005	8	F	599-37239	164.995	L W/R(PTT):L G/W	44263	1790	1127	1154	
2005	9	M	599-37236	165.984	L G/W:R/W/R		1791	1162	1167	
2005	10	F	599-37240	164.425	R/G/W:L G/W		1792	1560	1135	
2005	11	M	599-37241	164.074	W/R/W:L G/W		1793	1041	1197	
2005	12	M	599-37242	164.804	G/R/W:L G/W		1794	1560	1135	
2005	14	M	599-37243	165.965	R/W/G:L G/W		1796	1182	1098	
2005	16	M	599-37244	164.775	W/R/G:L G/W		1799	1189	1195	
2005	19	F	599-24696	164.913	G/R/G:L G/W		1802	1560	1135	
2005	20	F	599-37238	164.435	L R/G(PTT):L G/W	62170	1803	1182	1098	
2005	21	F	599-24697	164.245	G/W/R:L G/W		1804	1189	1195	
2005	22	M	599-24698	164.784	W/R/G:L G/W		1805	1130	1292	
2005	23	M	599-24699	165.944	W/G/R:L G/W		1806	1130	1292	
2005	24	M	599-24700	164.405	R/G/R:L G/W		1807	1560	1135	
2005	27	F	599-32128	164.734	L G/W:L R/W(PTT)	15045	1811	1128	1263	
2005	28	F	599-32129	164.695	L G/W:L G/R(PTT)	15050	1812	1128	1140	
2005	32	M	599-37459	165.955	L G/W:G/W/R		1817	1560	1135	
2005	33	F	599-32130	165.935	L R(PTT):L G/W	38635	1819	1128	1140	



Submitted by Communications and Outreach Co -Chair, Rachel Levin

The fifth year of Whooping crane reintroductions by the Whooping Crane Eastern Partnership saw a continued successful effort by the Communications and Outreach Team (COT) keep the project in the media and public spotlight.

Comprising public affairs, outreach, environmental education, information and communications specialists representing all WCEP founding members and a number of other partners including volunteers, COT is key to building support for the project through education, media relations and coordinated public outreach efforts.

The team is responsible for and directs all aspects of external communications and public contact on behalf of the project. The WCEP partners' mandate to the team is to advance public understanding and continued support for the protection and restoration of Whooping cranes and their habitat in eastern North America.

The partnership recognizes that a cohesive voice is critical to the project's success. In keeping with the mandate, the Communications and Outreach Team is responsible for developing and implementing specific procedures and protocols for dealing with all communications aspects of the project.

Joan Garland, education outreach specialist with the International Crane Foundation, and Rachel F. Levin, public affairs specialist with the Fish and Wildlife Service's Midwest Region, assisted 2005 COT Chair, Chuck Underwood.

ACCOMPLISHMENTS

Redesign of WCEP Website Homepage

Just in time for the start of the fall migration, WCEP Webmaster Kim Mitchell redesigned WCEP's www.bringbackthecranes.org homepage, giving it a fresh new look. Plans are in the works to restructure and redesign the entire WCEP website.

VIP Visits to Necedah NWR

Necedah NWR hosted 18 "VIP" visitors who spent time touring and learning about WCEP. VIP visitors included Members of Congress; Department of Interior and U.S. Fish and Wildlife Service officials; staff from the Ijams Nature Center; an aide to U.S. Congressman Ron Kind; a number of media people from a variety of states; and, representatives of the Minnesota and Wisconsin Audubon societies.

Outreach Efforts for Direct Autumn Release Birds

The COT made a special outreach effort in 2005 regarding WCEP's new Direct Autumn Release (DAR) program. News: A link was placed on WCEP's website homepage to take visitors to questions and answers about the DAR technique.

Honors for Necedah NWR

Necedah NWR received an award from the National Audubon as the partner for Bird Life International for Important Bird Areas (IBA). Necedah was the first refuge to be presented this award. The IBA identifies a site with critical bird habitat. The Necedah refuge will also be featured in the 2006 "Watchable Wildlife" calendar.

Former COT Co-Chairs Recognized

At the September WCEP meeting, Joan Garland and Rachel Levin received appreciation awards from the partnership for their two years of service as co-chairs of the Communications and Outreach Team. Also, Heather Ray, formerly with Operation Migration and a member of COT, was presented with a special award in recognition of her outstanding contributions to the project.

COMMUNICATIONS AND OUTREACH – CONT'D

Public Flyover Events Attract “Craniacs” from Wisconsin to Florida

Public flyover events once again attracted the WCEP faithful all along the migration route. On October 14, people gathered in the early morning at Necedah NWR to see the departure of cranes and planes on their southward migration. En route to Florida, public flyovers were held at Muscatatuck NWR in southern Indiana and at Hiawasse state refuge in Tennessee. The arrival event in Florida once again saw hundreds of visitors.

New Location for Arrival Event

Because of a change in the site for the “drop-off” of the Class of 2005, the site of the traditional arrival event/public flyover changed for 2005. The new location, the Dunnellon Municipal Airport in Marion County, proved an ideal location. The Florida Arrival Reception Team– composed of staff from Chassahowitzka NWR and members of the Friends of the Chassahowitzka National Wildlife Refuge, the Citrus County Chapter of the Audubon Society and the Communications and Outreach team – worked with airport staff and local and county officials to organize the arrival. The more than 800 people who attended the event were treated to an up-close view of arriving planes and cranes, as well as the usual exhibits and informative talks by WCEP speakers from Chassahowitzka National Wildlife Refuge, Operation Migration, International Crane Foundation, and Friends of the Chassahowitzka National Wildlife Refuge. In addition, a local group satisfied peoples’ appetites with a pancake breakfast. Despite the change in location and the usual uncertainty about when the arrival would actually happen, this year’s event was a media and public relations success.

Websites

WCEP partner and related websites continue to be effective and efficient means of communicating up-to-date information to large numbers of stakeholders, news media, students and the general public.

Available statistics, below, show that WCEP-related websites received a combined total of more than 22 million total visits in 2005. (Where possible, figures for both total visits and unique visits are shown.)

Unique Visits	Total Visits	Website	Organization
298,212	12,813,223	www.savingcranes.org	International Crane Foundation
385,772	16,553,186	www.operationmigration.org	Operation Migration
49,804	n/a	www.bringbackthecranes.org	WCEP
9,401	26,544	www.whoopers.usgs.gov	USGS Patuxent Wildlife Research Center
n/a	11,000,528	www.learner.org/jnorth	Journey North

Booths/Festivals

WCEP partners and volunteers attended festivals, fairs and conferences around the country. These events allow partners to reach large audiences through distribution of WCEP materials including brochures, posters, CDs and videos. Staffed exhibit booths reached a combined total of more than 100,000 people in 2005. Highlights of events this year include:

Necedah Whooping Crane Festival

Some 2,700 people representing five counties and 12 states attended this annual event, held in partnership with the Necedah Lions Club. WCEP partners represented at this festival included Operation Migration Inc., U.S. Fish and Wildlife Service, International Crane Foundation, USGS Patuxent Wildlife Research Center, Wisconsin Natural Resources Foundation and Necedah National Wildlife Refuge.

More than 1,700 people participated in Whooping crane bus tours of the refuge. Speakers included: Curt Meine, Senior Fellow with the Aldo Leopold Foundation; Steve Norling, wildlife photographer and freelance writer; Tom Quilty and Yoyi Steele of the Wisconsin Department of Natural Resources; acclaimed wildlife artist James Rataczak; and Joseph Duff, CEO and Senior Pilot for Operation Migration.

Wisconsin Farm Technology Days

Approximately 4,000 people attended this three day festival held in Clark County, in central Wisconsin July 12-14. Visitors to the WCEP booth, most of whom represented the farming and agriculture industries, expressed strong support for the reintroduction project. Wisconsin Farm Technology Days (formerly known as Wisconsin Farm Progress Days) is the state's largest outdoor agricultural show.

Town of Necedah Summer parade

Necedah NWR, Operation Migration, Inc., and the Necedah Lions Club staff participated in the Town of Necedah summer parade, exhibiting the crane puppets and ultralights.

Experimental Aircraft Association's Oshkosh "Airventure"

This festival annually attracts hundreds of thousands of visitors to Oshkosh, Wisconsin in July, many of whom pass through the "Federal Pavilion," where government agencies have exhibits. A booth sponsored by the U.S. Fish and Wildlife Service featured information about WCEP, and many who stopped by the booth either knew about and supported the project, or wanted to learn more. The USFWS booth received about 10,000 visitors during the weeklong event.

Other booths and festivals: WCEP Communications and Outreach Team members, as well as other project partners, participated in a number of other outreach events, reaching more than 35,000 people. These included:

- Annual Art Show, Patuxent National Visitor Center, Laurel, MD.
- Festival of Wings, sponsored by Operation Migration, Tullahoma, TN.
- National Wildlife Health Center Open House, Madison, WI.
- Wildlife Festival, Patuxent National Visitor Center, Laurel, MD.
- Port Aransas Whooping Crane Festival, Port Aransas, TX.
- Wisconsin Tourism Convention, Madison, WI.
- Milwaukee Journal Sentinel Sports Show (Conservation Area), Milwaukee, WI.
- Midwest Birding Symposium, Davenport, IA.

Outreach booths at festivals at county fairs and festivals in Wisconsin alone reached 26,500 people. These included: county fairs in Trempealeau, Monroe, Jackson and Juneau counties, and the Ducks Unlimited Festival in Oshkosh Wisconsin.

Media Relations

News media from as close as Necedah, WI and Crystal River, FL, and as far away as India and New Zealand devoted ink, airtime, and bandwidth to the Whooping Crane Eastern Partnership project. Once again, media interest peaked in volume during the fall migration, with media on-site at many stopovers, and reporters tracking the ultralight-led migration on a daily basis. Throughout the year, however, the partnership was also spotlighted in regional, national and international news media, via print, broadcast, and the internet.

The Communications and Outreach Team distributed nine news releases and media alerts in 2005.

Media highlights include:

Cable TV: Lucky Duck Productions, which produces a segment called "Animal Planet Report" for cable's kids show Nickelodeon News, arranged video coverage of the Dunnellon Arrival Event and will air a 3 to 4 minute piece on the project in March of 2006.

Weather.com: Through arrangements made by Operation Migration, daily video footage of the 2005 migration was provided to weather.com for posting to their website.

Weather Channel: After five years of persistent pitching, WCEP finally succeeded in persuading the Weather Channel to feature a segment on the migration.

Multi-part newspaper series: The Milwaukee Journal Sentinel and the Ocala Star Banner were two of several newspapers that ran multi-part news stories on the project and the 2005 migration. The Journal Sentinel series focused on the Direct Autumn Release birds and the people who track them. A reporter from the Ocala newspaper spent several days travelling with the migration team.

COMMUNICATIONS AND OUTREACH – CONT'D

Birds and Blooms, Birdwatchers' Digest magazines: The November/December 2005 issue of "Birds and Blooms" magazine featured a four-page article on WCEP and the ultralight planes and pilots. The March/April 2005 issue of Birdwatchers Digest had an article by David M. Bird titled "Whooping Cranes Increase."

2005 Media Coverage

The following represents media inquiries and all *known* media coverage for January-December, 2005. In most cases it does not include coverage where WCEP was not the focus of the story. WCEP, and the individual partners' work with the project, was mentioned (by name and indirectly) in many more articles about Whooping cranes, migration, ultralight aircraft, and endangered species conservation.

Key: **Bold text** indicates where multiple stories were produced or used by a media outlet.

ABC 7 TV, Chicago, IL
ABC News **x3**
Akron (Ohio) Beacon Journal
Albany (Ore.) Democrat-Herald
Appleton (WI.) Post-Crescent **x3**
Ashland (WI.) Daily Press
Audubon Minnesota News
AVWeb
Banner Journal, Black River Falls, WI. **x6**
Baraboo (WI.) News Republic **x6**
Baraboo/Reedsburg Radio, Baraboo, WI.
Bay News 9 TV, Tampa, FL.
Beaufort (S.C.) Gazette
Beloit (WI.) Daily News
Birds and Blooms magazine
Birdwatchers Digest

Bradenton (FL.) Herald **x5**
Brocktown (Nev.) News
Buffalo (N.Y.) News
CANOE News, Canada
Capital Times, Madison, WI
Carlock (Ill.) Quill
Carroll County Comet, Flora, Ind.
CBS News.com
Central Florida News 13
Central Wisconsin Sunday **x2**
Centre Daily Times, State College, Penn.
Charlotte (N.C.) News and Observer
Chattanooga (TN) **x2**
Chicago Sun Times **x4**
Chicago Tribune
China Crane News
Citrus County (FL.) Chronicle
How I survived 7th grade" a novel by Denise Vega
CNN.com **x2**
Kenosha (WI.) News
KFMB TV, San Diego
KGET TV, Bakersfield, CA
Knoxville (TN) News Sentinel **x5**
KUSA TV, Denver, Colo.
KVOA TV, Tucson, Ariz.
La Crosse (WI.) Tribune **x6**
Lake Geneva (WI.) Regional News
Lakeland (FL.) Ledger **x5**

Corvallis (Ore.) Gazette-Times
Courier-Journal, Louisville KY. **x3**
Crystal River (FL.) Current
Daily Herald, Arlington Heights, Ill.
Daily News, West Bend, WI.
Daily Sun, The Villages, FL. **x4**
Daytona Beach (FL.) News Journal **x3**
Donga.com
Duluth (Minn.) News-Tribune **x14**
Ely (Nev.) Times
Emedia group, Canada
Evansville (Ind.) Courier & Press
Fort Worth (Tex.) Star-Telegram
Gainesville (FL.) Sun **x4**
Fond du Lac (WI.) Reporter
Foundation for Work on Nature and Environmental Protection,
Frankfurt, Germany
Grand Forks (N.D.) Herald
Great Lakes Radio Consortium **x2**
Green Bay (WI.) News-Chronicle
Green Bay (WI.) Press Gazette **x2**
Herald News Daily, N.D.
Huntsville (Ala.) Times
Inter-County Leader, Frederic, WI.
Irish Times Magazine
The Islander, South Hero, Vermont
Janesville (WI.) Gazette **x6**
Journal Gazette, Fort Wayne, Ind. **x4**
Journal Review, Crawfordsville, Ind. **x3**
Journal-Press, Aurora, Ind.
Juneau County (WI.) Star-Times **x22**
Kansas City (Mo.) Star **x3**
KARE 11 TV, Minneapolis, Minn.
KASA TV, Albuquerque, N.M.
KDSM TV, Des Moines, Iowa
Keralanext, India **x2**
Soo Evening News, Sault Ste. Marie, Mich.
South Marion Mirror, Ocala, FL.
Sparta (WI.) Herald
St. Paul (Minn.) Pioneer Press **x4**
St. Petersburg Times **x9**
State Journal-Register, Springfield, Ill.
Stevens Point (WI.) Journal **x2**
Sun-Herald, Biloxi, Miss.
Tallahassee Democrat **x3**

COMMUNICATIONS AND OUTREACH – CONT'D

Leading the Charge, Brisbane, Australia
Ledger-Enquirer, Columbus, GA.
Leesburg (FL.) Daily Commercial
Lexington (KY) Herald-Leader
Linton Daily Citizen, Linton, Ind.
Los Angeles Times **x2**
Macon (GA.) Telegraph
Magic 101.3 FM, Gainesville, FL.
Marshfield (WI.) News Herald **x3**

Milwaukee (WI.) Journal Sentinel **x12**
Minneapolis (Minn.) Star Tribune
Monterey (CA) Herald
Naples (FL.) Daily News
New Orleans Times-Picayune
New York Times
Newsday **x2**
Nickelodeon News “Animal Planet Report”
Observer News, Ruskin, FL.
Ocala Magazine
Ocala (FL.) Star Banner **x8**
Ocala Style
Orlando Sentinel **x4**
South Florida Sun-Sentinel (Ft. Lauderdale) **x2**
Oshkosh (WI.) Northwestern **x2**
Palm Beach Post
Philadelphia Inquirer **x2**
Phillyburbs.com
Pilot-Independent, Walker, Minn. **x2**
Plain Dealer, Cleveland, Ohio
Post and Courier, Charleston S.C. **x2**
Prescott (WI.) Journal **x2**
Rail Communities Messenger, WI. **x5**
Reporter Times, Martinsville, Ind.
Riverland News, Dunnellon, FL
Rockford (Ill.) Register Star **x2**
Rutland (VT) Herald **x2**
San Francisco Chronicle
San Jose Mercury News **x2**
Sarasota Herald Tribune **x3**
Seattle Post Intelligencer **x2**
Sheboygan (WI.) Press
Siliconvalley.com
Smithsonian Magazine
WOCA FM, Ocala, FL.
WOFL TV, Orlando, FL.
WOGK FM, Gainesville, FL.
WPRI TV Providence, RI.
WRGO FM, Crystal River, FL.
WRUF AM/FM, Gainesville, FL.

Tampa Tribune **x6**
The Bee, Phillips, WI.
The Country Today, Eau Claire, WI.
The County Line, Central WI.
The Daily Times, Maryville, TN **x2**
The Messenger of Juneau County, WI. **x22**
The Messenger of Necedah **x2**
The Newscaster, Yankeetown, FL.
The Sentinel Newspapers, Prince Georges/Montgomery
Counties, Maryland
The Tribune, San Luis Obispo, CA
Times Leader, Wilkes-Barre, Penn.
Tomah (WI.) Journal **x5**
Tomah (WI.) Monitor Herald **x4**
Trail Communities Messenger, WI. **x14**
Trailer Life magazine
Tuscaloosa (Ala.) News **x4**
WCJB TV, Ocala, FL.
VNN TV, The Villages, FL.
The Voice of South Marion, Belleview, FL.
Washington (N.C.) Daily News
Watertown (WI.) Daily Times
Waupaca (WI.) County Post
Wausau (WI.) Daily Herald
WAVY TV, Norfolk, VA.
WBAY TV, Green Bay, WI.
WBIR TV, Knoxville, TN
WFRV TV, Green Bay, WI.
WFTV TV, Orlando, FL.
WHBY radio, Appleton, WI. **x2**
WHO TV, Des Moines, Iowa
Wichita Eagle, Wichita, Kan.
WIND
Wiscnews.com
Wisconsin Ag Connection
Wisconsin Dells Events
Wisconsin Public Radio **x2**
Wisconsin Radio Network
Wisconsin Rapids (WI) Daily Tribune **x13**
Wisconsin State Journal, Madison, WI. **x6**
Wisconsin Waterfowl magazine
WKMG TV, Orlando, FL. **x2**
WKSG FM, Marion County, FL.
WTKK/WSKY FM, Gainesville/Ocala, FL.
WSTV AM, Steubenville, Ohio
WTHI TV, Terre Haute, Ind.
WTIP FM, Grand Marais, MN.
WUFT FM, Gainesville, FL.
WXXA TV Albany, NY.

Audio Recordings

EAA Timeless Voices

Audio tapes of Aviation Stories 2005

Newspapers

Linton Daily Citizen	Nov. 3/05	WI	Daily Sun	Nov.3/05	IN
Dong-a-Ilbo	Jan.1/05	Seoul, South	Lawrence Journal World	Jan 0 05	IL
Korea			The Wichita Eagle	Jan 27	KA
Journal Review	Oct.25/05	IN	The Bradenton Herald	Mar 16 05	
Kalamazoo Gazette	Oct.26/05	MI	Courier Press	Apr 10 05	IN
Journal Review X2	Oct.17/05	IN	The Sentinel Newspapers	Apr 15 05	MD
Green Bay Press Gazette	Oct.15/05	WI	Houston Chronicle	Jan 3 05	TX
Stevens Point Journal	Oct.17/05	WI	The Islander	Jul 17	TX
Wisc. Rapids Daily Trib.	Oct. 13/05	WI	Canton Republican	July 3 05	VT
Beaufort Gazette	Oct.12/05	SC	Lacrosse Tribune	Jul 24	WI
The Boston Globe	Dec 13	MS	Southeast Tennessee		TN
Columbus Ledger	Dec 29	AL	The Press Gazette		FA
Sentinel Star	Dec 5	IL	Schlastic News	Dec 6	
Corpus Christi Caller Times	Dec 4	TX	Portland Press Herald	July 1	Maine

ENVIRONMENTAL EDUCATION

Journey North partnership

Environmental education accomplishments in 2005 involved the continued partner arrangement with Journey North to extend educational outreach efforts into schools throughout North America. Journey North is an internet-based education project that links students across North America to track wildlife migration and seasonal change. Now in its 13th year, Journey North reaches more than 400,000 students in 11,000 classrooms. It is the nation's largest real-time, "citizen science" project specifically for children. (Journey North's work has been featured on the NBC, ABC and CBS national news, USA Today, the Washington Post, the Boston Globe, and other publications in the U.S., Canada and Mexico.) Through Journey North's website, students and teachers track the WCEP cranes' status and general locations during the fall and spring migrations.

Presentations

In 2005 the Communications and Outreach Team contacted registered Journey North teachers in the Southern flyway states prior to migration to inform them of WCEP's educational offerings, and an opportunity to have a member of WCEP present programs at their school. Communications and Outreach Team member, Joan Garland, travelled the southern half of the migration route providing education programs to these schools. More than **8,900** students and adults participated in these presentations.



Costumed bird handler does educational outreach along migration route.

Environmental education programs reach tens of thousands

WCEP partners provided environmental education programs to adults and children throughout the Eastern flyway and other states. These programs were given throughout the year to schools, universities, conservation and birding clubs, civic organizations, professional conferences, government agency staff, and museum visitors.

Environmental education outreach programs in 2005 reached more than **18,500** people in 14 states, the District of Columbia and two Canadian provinces, representing an **increase of more than 5,000** people from last year.

COMMUNICATIONS AND OUTREACH – CONT'D

The following table provides a breakdown by state:

Flyway states

STATE	# OF PEOPLE
WI	4,398
IL	260
IN	500
KY	1,680
TN	3,746
GA	3,080
FL	1,829
AL	120
MA	385
MD	293
MN	112
NE	420
SC	80
TX	1,258
Washington, DC	250
NT, Canada	37
ON, Canada	75
TOTAL	18,523

ICF, Necedah host visitors

Visitors to the International Crane Foundation and the Necedah National Wildlife Refuge received WCEP education programs included with their tour. Programs at the International Crane Foundation reached approximately **23,700** visitors. Programs at the Necedah NWR reached approximately **2,500** people.

During summer 2005, the Necedah National Wildlife Refuge crane blind at Site One was utilized by over **230** people. Approximately **100** people witnessed the ultralight migration departure on October 14 at the Necedah National Wildlife Refuge. About **75** spectators observed the cranes and ultralights as they left the Hiwassee National Wildlife Refuge in Tennessee on November 30.

Photo Highlights of 2005 WCEP Communications and Outreach Team Activities



Greeting the newly arrived ultralights and pilots at Dunnellon airport in Florida.



Enthusiastic schoolchildren learn about Whooping cranes.



SPECIAL THANKS FROM A SATISFIED 'CUSTOMER'



JOAN GARLAND HELPS TRANSFORM A STUDENT INTO A CRANE HANDLER.



Submitted by Chair Beth Goodman

Developing a Management Plan and Monitoring Database for Whooping Cranes in Wisconsin

2005 was a year of increased use of Wisconsin wetlands in at least 17 counties in central and southern portions of the state, including areas along the lower Wisconsin River, more than 15 State Wildlife Areas, private wetlands, and Horicon NWR and vicinity, in addition to the core reintroduction area of Necedah National Wildlife Refuge (see Monitoring Summary by Urbanek, et al.). In the first 3 years (2002-2004) post releases, Whooping cranes were observed in 35 of 72 Wisconsin counties, primarily within the lower two-thirds of the state (see attached figure) along major Wisconsin rivers and wetlands.

Management Plan

DNR initiated efforts with WCEP to draft a comprehensive Wisconsin Whooping Crane Management Plan to guide our continued success towards the goal of a self-sustaining population of 125 cranes and 25 breeding pairs by 2020. By midyear 2006, there will be over 80 Whooping cranes in this eastern migratory population, while we anticipate annual population growth of at least 20 birds.

Publication and distribution of a Whooping Crane Management Plan is targeted for mid-2006. Land owners/managers, Whooping cranes, biologists, educators and the general public in Wisconsin will all benefit when Plan implementation issues of habitat quality and management, landowner needs, Whooping crane biology, population goals and conservation, education and ecotourism are commonly understood and addressed.

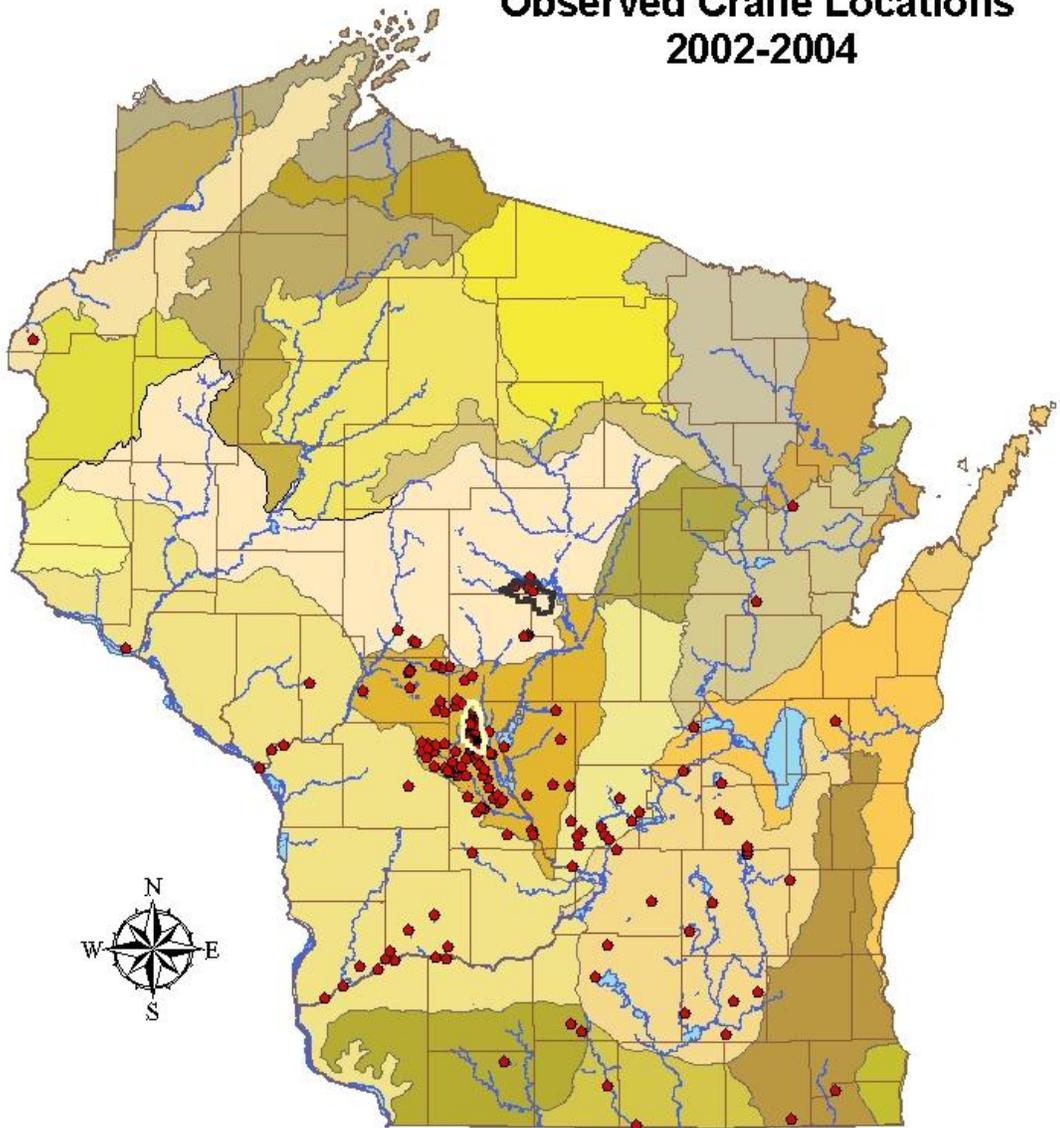
Management strategies and protocols contained in the Plan are being developed to maintain a high level of protection and ensure future success of Whooping cranes in Wisconsin, while considering the needs and interests of state citizens and communities. Its intended use will be as a guidance document.

WCEP Monitoring Database

A project to develop a monitoring database and GIS interface moved forward this year at DNR, via the hiring of a part-time assistant, Heidi Nelson. The attached map of crane observations was created as an example of future possibilities. This undertaking will someday provide decision-guiding tools for land management and acquisition for habitat conservation; it will serve WCEP member field biologists whenever monitoring-related issues of habitat quality, landowner needs, Whooping crane biology and conservation are addressed.

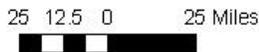
WCEP partners are interested in assessing habitat needs and land use practices for a successful restoration of Whooping cranes in Wisconsin. Once plans for consistent sharing of monitoring data are developed and implemented, Partners will be able to quickly account for and describe movements and habitat use of individual Whooping cranes, both for agency needs and also to provide meaningful summaries to private landowners where Whooping cranes are found. The expected outcome of this database project is a comprehensive database and GIS capability that will assist land managers and administrators with identifying and prioritizing conservation actions locally and at the landscape level.

Observed Crane Locations 2002-2004



Legend

- Crane Location
- ▭ Necedah National Wildlife Refuge
- ▭ Mead Wildlife Area
- ▭ WI Counties
- ▭ Major WI Rivers





CHAIRS & AUTHORS	AFFILIATION	TITLE
John Christian	U.S. Fish and Wildlife Service	Assistant Region 3 Director, Migratory Birds and State Programs
Kelley Tucker	International Crane Foundation	Vice President for Programs
Robert Lange	International Crane Foundation	Director of Development
Charles Luthin	Natural Resources Foundation of Wisconsin	Executive Director
Glenn H. Olsen	USGS Patuxent Wildlife Research Center	Doctor of Veterinary Medicine
Joseph Duff	Operation Migration Inc.	Chief Executive Officer
Barry Hartup	International Crane Foundation	Director of Veterinary Services, DVM, PhD
Richard Urbanek	U.S. Fish and Wildlife Service	Biologist
Lara Fondow	International Crane Foundation	Biologist
Sara Zimorski	International Crane Foundation	Aviculturist
Marianne Wellington	International Crane Foundation	Aviculturist
Charles Underwood	U.S. Fish and Wildlife Service	Public Affairs Officer, Jacksonville Field Office
Rachel Levin	U.S. Fish and Wildlife Service	Public Affairs Officer, External Affairs, Midwest Region
Beth Goodman	Wisconsin Department of Natural Resources	Conservation Biologist, Endangered Resources Program



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