



2014 Louisiana Whooping Crane Report

Louisiana Department of Wildlife and Fisheries

Coastal and Non-game Resources

1 June 2014 to 30 June 2015



3 August 2015

EXECUTIVE SUMMARY and RECOMMENDATIONS

The Whooping Crane reintroduction program in Louisiana continued significant positive progress during this reporting period. First, the current population has a 61% survival rate (39 of 64 individuals), with the status of six cranes currently unknown. Survival of cranes within the 2011-2014 cohorts continues to be high after one year (70-75% survival), with minimal mortality following this one year period. To reduce costs associated with satellite PTT services, we evaluated cellular, GSM transmitters this year to track four juveniles and one adult crane; we will continue the trial in 2016-2017 to determine their utility in this region. At the end of the reporting period, 27 cranes were located in Louisiana and 6 in Texas. As in previous years, many cranes continue to heavily use the working wetlands – rice and crawfish agriculture – of the historical Cajun Prairie region of southwestern Louisiana (Jefferson Davis, Vermilion, Acadia Parishes). We have also seen an expansion of habitats used in the Mississippi River Alluvial Plain of northeastern Louisiana; these habitats are primarily being used by individuals from the 2013 and 2014 cohorts. Habitat use data continues to indicate that they are habitat generalists, with likely generalized diets.

We observed increased nesting activity in spring 2015, with four pairs nesting (five attempts including one re-nest). The nest locations were scattered across a wide spatial area in southwestern and central Louisiana in widely different habitats. For the latter, nesting was confirmed in coastal marshes on White Lake Wetlands Conservation Area (WLWCA, Vermilion Parish), in an actively fished crawfish pond on private land (Avoyelles Parish), in a riparian freshwater marsh/swamp (Allen Parish), and in an impounded, inland wetland (Allen Parish). The diversity of habitats used is encouraging and is similar to the diversity of habitats (e.g., in coastal wetlands, agricultural lands, seasonal wetlands, etc.) used by reintroduced cranes in Louisiana during the non-nesting period. Where possible (i.e., non-marsh habitats) we continued conducting time activity budgets of nesting pairs. The nesting pairs observed exhibited high levels of nest attendance, with three of the five nesting attempts incubating nests to full term. However, none of the nests produced a hatched chick in 2015. Two nesting attempts by the same pair failed due to egg infertility (the same pair that laid two infertile clutches in 2014), one failed due to flash flooding associated with heavy rainfall (fertile egg), and two failed for unknown reasons after 16-37 days of incubation. We have not observed any incidence of biting black flies or other horsefly species interrupting observed nesting attempts in the Louisiana flock. We have observed 6 breeding pairs formed at the end of the reporting period, with potentially several more pairs forming going into the 2016 nesting season. Therefore, we expect to observe additional nests in 2016.

Public education remains a high priority of the reintroduction program. LDWF staff participated in over 50 festivals and events. A major focus of the education efforts centered on six teacher workshops with 74 middle and high school teachers from Louisiana. The Alexandria Zoo (Alexandria, Louisiana) has shown interest in providing education/outreach opportunities to zoo patrons, with LDWF highly supportive of this cooperative effort. The Whooping Crane public awareness media plan for 2014-2015, funded by a grant from Chevron, included the use of billboard space provided by Lamar Advertising, radio commercial space purchased through the Louisiana Association of Broadcasters, and television commercial space purchased on cable television systems in Alexandria, Lafayette and Lake Charles. Billboards alone were estimated to reach almost 850,000 viewers. A survey of licensed hunters was also conducted to determine awareness and source of awareness of the reintroduction program. Within the survey group (2,165 licensed hunters), 56% had heard about the reintroduction. When asked how they heard about the reintroduction their responses were as follows: TV 29%, radio 16%, website/social media 14%, newspaper 11%, billboard 8%, teacher workshop 1%, and festival 1%. Landowner relationships also remain a high priority, with continuing education efforts ongoing within the crawfish industry. LDWF staff continues to receive high support from farmers with cranes on their property, and no landowner to this point (since 2011) has denied access to their properties.

However, as with prior reporting periods, we were not immune to some setbacks. We had 4 confirmed/likely mortalities during the reporting period, but this was less than the 7 reported last year. Mortalities in 2014-2015 included one via power line collision, one via gunshot, and two likely mortalities with unknown fate.

We will continue to find new and exciting ways to ensure that this reintroduction succeeds, including activities associated with our management, research, and education/outreach programs. During late 2015, a new release pen will be constructed on Rockefeller Wildlife Refuge into a newly refurbished 90 acre marsh unit. This is being completed to facilitate the ability to split the 2015 cohort, additional capacity of future cohorts, and to determine if cranes released “deeper” into the marsh will avoid venturing to the north where all gunshot mortalities have occurred.

Recommendations to the Whooping Crane Recovery Team (WCRT)

- Larger Cohorts – The Louisiana Whooping Crane Team is prepared to accommodate larger cohorts (25-36) into the future with the construction of a second release pen at Rockefeller Wildlife Refuge. Therefore, we recommend to the WCRT that larger cohorts be provided in 2016 and beyond (as per the WCRT 2015 egg allocation letter dated 13 April 2015). Larger cohorts are more desirable because they are 1) more cost effective with the annual resources being invested into the program and 2) better able to fill the vast amounts of suitable habitat in the region (as evident in Figures 1 and 4). Ultimately, larger cohorts will increase the probability of reintroduction success in Louisiana. Cranes reintroduced in Louisiana have shown high survivorship, utilized multiple habitat types across a large spatial area, exhibited diverse nesting habitat preferences in the first two years (without observation of black fly pestilence), and shown capabilities to incubate eggs to full term. Therefore, we advocate and concur with the WCRT 2015 egg allocation letter that the captive flock resources would best be utilized by bolstering the Louisiana reintroduction program in 2016 and into the future.
 - Genetics – Along with larger cohorts, we request that future cohorts also be genetically diverse relative to the existing Louisiana flock on the landscape. Currently, the Louisiana flock is genetically overly represented by three captive breeding pairs (16 of 39 birds from the 3 pairs), with one full sibling pair already observed. Even though we would like to receive all captive-reared birds in the future, this may not be compatible with improving the Louisiana flock’s genetic diversity. In order to improve genetic diversity, it may be necessary to make egg exchanges between the three captive centers and WCEP.
- Early Hatched Captive Birds – In all prior years of the Louisiana reintroduction, we have consistently received a majority of chicks that were hatched in the middle to late stages of the captive nesting season. These later-hatched chicks are less resilient than the early-hatched chicks. As a result, Louisiana’s allocation has consistently dropped lower than expected by the end of the season due to chick mortality or ailments. Also, Louisiana birds have already shown early nesting tendencies (late February – early March), with the nesting period more naturally aligned with earlier-hatched chicks. We argue that a fair and well-conceived allocation would dictate that the Louisiana reintroduction receive early-hatched chicks to insure equitable allocation numbers and the most robust chicks. This would facilitate the greatest opportunity for the Louisiana reintroduction to succeed.
 - Separate Cohort Deliveries – With the inclusion of early-hatched chicks, it may be difficult to socialize chicks with a wide range of hatch dates. Thus, it will be necessary to make two or more separate cohort deliveries during the fall. This is now acceptable for the Louisiana reintroduction with the addition of the second release pen.
- Fertile Captive Eggs for Infertile Pairs – In the last two nesting seasons, we have experienced a nesting pair that has consistently laid infertile eggs (n = 8 eggs in 4 clutches). This is uncommon as fertility in the WCEP flock has been ~77% for even early breeders (E. Szyszkoski, unpubl. data). Further, in both years, this pair has incubated all 4 clutches to term, indicating appropriate nesting behaviors and attendance. In future years if this pattern continues with this pair (or another pair exhibits similar infertility), we recommend that a captive fertile egg be allocated for the second nesting attempt. This methodology would be preferable because the chick would be “parent reared” with learned behaviors rather than a naïve, costume-reared chick upon arrival. Further, in one instance with an infertile WCEP pair, a fertile egg was given to them to incubate two years in a row (one to fledging), with natural fertility observed the two years later (E. Szyszkoski, pers. obs.).
- Educational Display Crane – We recommend that a crane or pair of cranes – possibly deemed not suitable for wild-release – be devoted to the Alexandria Zoological Park (Alexandria, Louisiana). They are a new partner with LDWF in providing education and outreach on Whooping Cranes, and this would provide for further education, outreach, and appreciation for the species in Louisiana. The zoo currently holds three other species of cranes in their collections (Black-crowned Crane, Demoiselle Crane, and Florida Sandhill Crane).

RECENT COHORT SUMMARIES, PEN MANAGEMENT, AND SOFT RELEASE

2013 Cohort

In early June 2014, a group of 3 males (L1, 3, & 6-13) left WLWCA, initially moving ~14 miles to the southeast before moving northwest and settling down on private ag land near the border of Jefferson Davis and Allen Parishes. They remained in this area during the summer, made a brief trip to WLWCA in late October, returned to their previous location, and again returned to WLWCA in mid-February 2015. While at WLWCA, L3-13 separated from the other two males, but all three (now in two separate groups) returned to their previous area in early March. In late March, a longtime solitary female (L14-11) met up and briefly associated with L1 & 6-13, with L3-13 was also seen with the group on one occasion. By the end of April, L1 & 6-13 met up with a trio of 2011 birds and L3-11 left with them. Over the next few weeks, L3-11 paired with L1-13, they separated from L6-13, and thereafter nested in a nearby, small isolated wetland. This left L6-13 to rejoin L3-13 in mid/late May on private property in Allen Parish where they remained through the end of the report period.

Conditions in the WLWCA marsh were excellent and the rest of the cohort remained until L9-13 left by herself in late July, moving north and settling on private ag property in Calcasieu Parish for several weeks before moving northwest into Jefferson Davis Parish. In early October, she moved a short distance to the east with some of her data points indicating overlap/proximity to two adult pairs in the area. She returned to WLWCA at the end of December and stayed until leaving in late January with two males, L7 & 8-13. The group returned to WLWCA in late March and stayed for several weeks before heading north in mid-April, this time with two juvenile females (L9 & 11-14) following them. One week later the trio headed south, returning to WLWCA, while the juveniles remained behind. L8 & 9-13 left WLWCA by early June and moved to private property in Jefferson Davis Parish where they remain. L7-13 was later discovered with two females, L11-12 & L10-13. We hope L9-13 will remain with L8-13, and they will become a breeding pair next spring.

L7 & 8-13 left the WLWCA marsh in mid-August and moved ~160 miles north to private property in Franklin Parish; this property was previously catfish ponds but now is currently enrolled as CRP lands. They remained at this location until early/mid-November, returned briefly to WLWCA, returned to the north, and then once again returned to WLWCA in mid-December. By late January they returned north, but L9-13 accompanied them. They returned to WLWCA in late March, stayed several weeks, and then returned north in mid-April with L9 & 11-14. About a week later, L7, 8, & 9-13 headed back to WLWCA while the 2014 juveniles remained behind. L8 & 9-13 left WLWCA in early June and moved to private property in Jefferson Davis Parish where they remain. L7-13 was later discovered with L11-12 & L10-13, both of whom are females. We hope L8 & 9-13 will remain together and become a breeding pair next spring and L7-13 could pair with L11-12 or L10-13.

In early September L4-13 left WLWCA and moved to private ag land in Acadia Parish. In mid-October she was caught and briefly restrained to clean off her satellite transmitter that was not functioning due to the solar panel being covered in mud. This resolved the situation and we began receiving data again. She remained at this same location until late October when she moved south into Vermilion Parish (north of Gueydan) and then was unfortunately shot (see Morbidity and Mortality section below).

In mid-November L10-13 left WLWCA and moved north to private ag property in Acadia Parish. This was the first time she left WLWCA since arriving and being released. By the next week she had moved back into Vermilion Parish (southeast of Gueydan), remained there for several weeks, and then returned to WLWCA at the release pen shortly after the 2014 cohort arrived. She left several days later and ultimately returned near the area she had previously been using in Acadia Parish. She again returned to WLWCA at the end of December and began associating with newly released L8-14 as well as L11-12 (possibly other birds who were coming and going from the refuge impoundment); some of the latter had non-functional transmitters and could not be tracked. By mid-June she left WLWCA and was found with L11-12 and L7-13. After some localized movements, they settled in an area of private property in Acadia Parish.

2014 Cohort

As with prior Whooping Crane cohorts, the 2014 cranes (n = 14, 6 males, 8 females; 4 from ICF and 10 from Patuxent) were transported from Patuxent Wildlife Research Center (PWRC) in Maryland to Louisiana on 4 December. They were transported in individual crates by airplane, truck and trailer, and finally by boat. Once at the release site at White Lake Wetlands Conservation Area (WLWCA), each bird was unloaded and examined by state wildlife veterinarian, Dr. Jim LaCour, before being carried and placed into the 100 foot diameter top-netted pen. On 6 December, the birds were banded and received their transmitters. This year we tested six Microwave Telemetry solar powered GSM (cell)/GPS transmitters; these are almost identical to the PTTs previously used, but the GSM transmitters rely on cell towers to transmit the data rather than satellites. Ultimately, if this technology proves effective, this could result in significant savings on the data costs. Four chicks received the new GSM transmitters and 10 received the standard GPS PTTs that we have been using since the 2011 cohort. Eight birds, including all four with the GSM units, also received a VHF transmitter to allow real time tracking and observations, while also providing a backup method of tracking if the GSM units did not function properly. After banding, the temporary fence was rolled back and the birds were given access to the entire top-netted pen. Food was provided and the birds were checked each day.

On 29 December 2014, the birds were released into the 1.5 acre open pen and allowed to begin exploring the surrounding marsh. Food was provided in the open pen and the birds continued to be checked each day. Evening roost observations were conducted on 10 nights after the birds were released, but similar to previous years, very little effort was made to encourage them to roost inside the pen. Instead we simply observed and documented where the birds settled down to roost in the evenings.

Similar to last year, numerous birds from prior cohorts returned to the WLWCA marsh shortly after the new cohort arrived. At one point in early January, 18 of the 26 older Whooping Cranes were present in the WLWCA refuge impoundment. There was interest and aggression from some of the older birds towards the juveniles through the fence and aggression between various adults as well. However, the difference this year was that the older birds did not leave, so once the juveniles were released from the top-netted pen, there were more interactions between them and the adults. Several pairs of adults were successful in driving the juveniles out of the pen and preventing them from accessing the feeders. Thus, due to the aggression of some of the adults, we had to adjust our management of the chicks. In order to encourage the adults to leave and not become territorial over the pen, the feeders were removed periodically for several weeks starting just three days after the chicks were released. During this time the juveniles were only allowed access to food when a costumed caretaker was present once per day. The juveniles remained in the area and eventually the adults moved elsewhere in the marsh or left the area entirely. This permitted us to return the feeders and for the juveniles to access the pen again. With time the juveniles gained confidence and were later able to defend themselves, the pen, and the feeders from some older birds when they returned again later in the winter.

Although the presence of the adults created challenges for the chicks it also created opportunities for interactions and new associations between various adults who previously had not encountered each other. It also gave us the opportunity to observe the interactions and behavior of adult cranes. This included several copulation attempts by two different pairs and the opportunity to catch one bird to replace her failed PTT. In the future, this may present the best opportunity we have to observe and to capture older birds who need their transmitters replaced.

Food was provided more intermittently throughout the winter due to the presence of various adults but was discontinued after 16 March. All juveniles as well as several adults remained in the area until mid-April when some of them began to leave, likely in response to higher water levels due to heavy rains and flooding conditions earlier in the month. The two ICF females, L9 & 11-14, apparently followed older birds north. Later they separated from the older birds, but they remained in the area, moving locally between Franklin, Richland, and Caldwell Parishes through the end of the report period.

A group of three birds, L5, 6, & 10-14, left at the same time and spent several days in Calcasieu Parish before moving to and settling in Jefferson Davis Parish, an area that has had high crane use since 2012. Several birds remained in the WLWCA marsh and a total of six in two different groups moved into TX.

EXTENDED USE OF TEXAS HABITATS BY HATCH YEAR (HY) 2012 & 2014 BIRDS

Starting with the first cohort of Whooping Cranes released in Louisiana, some individuals from every release group have made short, exploratory trips into eastern Texas but typically returned within several days. Beginning in May 2013, seven members of the 2012 cohort spent approximately six months in areas around Dallas, Texas. As with all previous border crossings, we informed our USFWS and TPWD colleagues, but the lengthy stay of the birds in 2013 raised some concerns, as the birds are considered fully endangered while in Texas. Because of the logistics of monitoring these groups, we rely heavily on TPWD and USFWS colleagues, USFWS Whooper Watch volunteers, and private citizens to help monitor the birds along with the data from their transmitters. A smaller number of those original seven HY2012 birds returned to Texas in 2014 and 2015, again spending significant amounts of time in the Dallas area. Additionally, this year six 2014 birds have also spent time in southeast Texas with details described below.

HY2012

L5-12

2014 – In mid/late August, L5-12 left Lewisville Lake (LL) and first moved east to the Lake Fork Reservoir in Rains County. She remained there ~one week before leaving on 6 September and returning to Louisiana. By the next week she had returned to the private farm in Acadia Parish where she spent time the previous fall. In early October we stopped receiving location data for her and discovered her PTT was no longer attached. She was caught on 10 November and given a new PTT; her feathers were examined and it was determined she had likely molted during the spring while in Texas. Just after the capture and again in early December she made brief trips to WLWCA, each time returning to the farm in Acadia Parish. She returned to WLWCA again at the end of December.

2015 – She remained in and around the WLWCA refuge impoundment early 2015, and was occasionally seen near the pen associating with other cranes in the area. She was seen on 8 April at the release pen with a male (L14-12) unison calling and exhibiting pre-copulatory behavior together. She left WLWCA on 22 April and flew to Angelina County, TX before continuing on several days later to Smith County. She was confirmed alone at this location and remained here until 4 June when she continued towards Dallas, spending a day on Lake Ray Hubbard before moving to a private ranch north of LL in Denton County. Many habitats she previously used at LL (e.g., shallow lake margins due to drought) were not suitable due to significant rain this spring. She remained in Denton County through the end of the reporting period (on 30 June a volunteer reported two cranes at this location, but a follow up flight on 8 July confirmed only L5-12).

L6, 8, & 14-12

2014 – Early/mid-May L8 & 14-12 left WLWCA and returned to Texas. They moved frequently for several weeks before settling down on private property in Kaufman County, ~8 miles east of where they spent the summer and fall of 2013. On 31 May 2014, L6-12 also left WLWCA and ultimately moved to private property in Ellis County, Texas, very close to where she spent the summer and fall 2013 (~7-10 miles of the two birds in Kaufman County). In late June/early July she made a short trip to an area south of Fort Worth before returning to Ellis County. In early September L8 & 14-12 moved and found L6-12 and the three birds remained together in Ellis County until leaving on 7 November for Louisiana. They returned to areas formerly used on WLWCA (leased ag sections), remained there for several weeks, and then returned at the end of November to the National Audubon Society's Paul J. Rainey Sanctuary (RWS) to remain until the end of 2014.

2015 – In early February the trio of L6, 8, & 14-12 began to separate. Initially L8 & 14-12 came to WLWCA and L6-12 remained at RWS. Around this same time L14-12's PTT failed (we later confirmed the antenna was missing) so it became difficult to keep track of him. Shortly after arriving at WLWCA, L8-12 began moving frequently and was seen alone during a flight on 16 February. Throughout much of the spring and through the end of the reporting period, her frequent movements continued, mostly in central Louisiana but also briefly into TX. She settled by herself in Acadia Parish during May and June. By mid-February L6-12 left the RWS refuge and briefly came to the leased ag section of WLWCA, returned to RWS, and then returned to WLWCA again in early March. In mid/late March, L14-12 was found at this location with L6-12, but then on 8 April he was seen at the release pen with L5-12. He has not been seen or confirmed since then but he is not trackable without a functional PTT. In mid/late April L6-12 moved to several different locations in Louisiana before leaving in mid-May and heading to TX, arriving in Ellis County near where she spent the past two summers. She remained at this location through the end of the reporting period (confirmed alone at this location during a flight on 8 July).

HY2014

In mid-April many of the yearlings who had remained in the WLWCA marsh began to leave the area, likely in response to rising water due to heavy rains and flooding in the previous weeks. A group of four yearlings (L1, 12, 13, & 14-14) arrived in Texas on 22 April and settled on private ag land southwest of Beaumont (Jefferson County). Movement into Texas has not been unusual for yearlings first dispersing away from WLWCA, but they typically return to Louisiana after several days. However, these birds stayed for about one month, moved northwest several miles into Liberty County, and then moved again weeks later to the northeast. They have settled to the south of Nome (Jefferson County) where they currently remain, having now been in Texas for ~3 months.

Also in mid-April, a pair of 2014 males left WLWCA and spent several weeks on private property in Cameron Parish before moving on 14 May to Texas and settling near Devers (~16 miles west of the four yearlings already in TX). These birds were observed at this location on 3 June, but one bird's PTT failed to turn on again after 8 June; another's GSM unit has not provided new location data since 24 June. A ground search on 30 June and aerial searches on 8 and 27 July failed to detect these birds at this location so their current location and status is unknown.

Additional information (e.g., individual band colors, radio frequencies, etc.) on surviving reintroduced Whooping Cranes is summarized in Appendix 2.

COHORT DISTRIBUTION AND HABITAT USE

Cohort Distribution

Crane movements were monitored weekly through the use of remote monitoring devices. During this reporting period, two types of remote transmitters were deployed on the cranes. Most cranes (n=34) had GPS satellite transmitters and a smaller number (n=5) were included in a test group that received GSM transmitters (described above). The satellite transmitters are programmed to collect data at three time periods every day (8AM, 4PM, and 12AM GMT time) and transmit the data every 48 hours. GSM transmitters collect numerous points throughout the day with data transmission occurring every day when within range of cellular towers. Only data points that match those collected via the GPS satellite transmitters as closely as possible are included in the analyses. When satellite data were unavailable, high quality Doppler readings were used to indicate location. These readings are included in the distribution information.

Of the more than 19,000 data points transmitted by remote monitoring devices between 1 June 2014 and 30 June 2015, 88.1% were located in LA while the remaining 11.9% occurred in TX with hatch year (HY) 2012 cranes spending the most time in TX (Table 1, Figure 1).

Habitat Use

Of all the points collected between 1 June 2014 and 30 June 2015, only 57.9% were used in the habitat calculations because all points have not been classified at this time. Habitat type was classified either remotely by using the most recent satellite imagery on Google Earth or directly making site visits to inspect the area (i.e., ground truth). There was no method for random selection of the points and not all points were ground-truthed, so biases may exist. Because habitat changes rapidly in the working wetlands of the Cajun Prairie, the habitat was grouped into four major categories: agriculture, wetland, pasture, and other. Doppler data points were excluded from the habitat analysis. Points representing HY2014 cranes only include data after their release from the top-netted pen in late December 2014.

Total data collected and analyzed for habitat use throughout cohorts was fairly equal (Table 2). While habitat use between HY2012 and HY2013 cohorts appeared similar, HY2011 and HY2014 birds spent significantly more time in one specific habitat type (Figure 2), with HY2012 birds preferring agricultural areas and HY2014 using wetlands. For the latter, this is likely due to the time period covered by this report when they were still associated with food at the pen. By the end of the reporting period, all HY2014 birds had dispersed away from WLWCA so future analysis of their habitat use may be different than reported herein. If habitat is analyzed by state, cranes show a tendency to use wetland and agricultural habitat in Louisiana and wetland and pasture in Texas (Figure 3).

MOLTING

One of the four birds documented molting in spring/summer 2014 was found dead, likely killed by a predator while molting. The other three successfully completed their molt. Based on data from her GPS PTT, it was suspected that L5-12 (a 2 year-old) may have molted while in TX. In November after returning to Louisiana, she was captured to replace her PTT which had fallen off. While in hand, the condition of her primary and secondary feathers was evaluated and these suggested she had indeed molted while in TX. We were not able to confirm whether two additional birds who summered in Texas in 2014 molted or not.

We have not confirmed any birds molting in spring 2015 despite numerous birds (2, 3, and 4 year-olds) who could have molted for the first or second time. Because of increased nest monitoring, we could not devote as much time to observe birds for molt. Further, other birds are missing or have non-functioning transmitters, and therefore, they cannot be tracked. During captures this fall and winter, we may be able to evaluate the feather condition of birds and confirm whether they molted (but without knowing the time it occurred).

PAIRING AND REPRODUCTION

Nesting activities in 2015 included four pairs and five nesting attempts (for Nesting Summary see Table 3). Nests occurred in three parishes (Allen, Avoyelles, and Vermilion) in central and southwestern Louisiana (Figure 4). Details of nesting and reproduction occur below. We are well aware of the black fly pestilence issue with the WCEP flock, and to this point, we have not observed any evidence of biting black flies or other horsefly species that are inhibiting proper nesting behaviors of reintroduced Whooping Cranes in Louisiana.

L1 & 6-11 –The pair used the WLWCA marsh in the early spring, using the refuge, the east-side marsh, and the hunting marsh. We did not receive much data from L6-11's GSM transmitter but in early-mid April, overlapping data points from L1-11's transmitter indicated they may have a nest (Vermilion Parish). Unfortunately, from 10-14 April, the area received ~10 inches of rain. When we were able to investigate on 16 April, we found the nest had flooded. A small piece of egg shell was present along with one whole egg indicating there had been two eggs (Figure 5). The intact egg was candled and determined to be fertile, so it was transferred to ACRES that day for further incubation and evaluation. However, it was later determined to be non-viable, likely due to water inundation and >24 hr abandonment by the pair. The pair remained at WLWCA through the end of the report period but did not re-nest.

L7 & 8-11 –In early-mid January they returned to the same farm (Avoyelles Parish) where they nested in 2014. In mid-February the landowner informed us that the birds constructed a nest platform in one of the crawfish fields, but no eggs were laid. During a check at mid-day on 27 February, the birds were not defending the nest they had built, but the next morning the landowner reported that the birds had built a new nest and were sitting on it. Two eggs were later confirmed in that nest, and the birds successfully incubated the eggs past full term before they were collected and determined to have been infertile. Just as in 2014, the birds re-nested ~2.5 weeks later and again incubated two eggs past full term. These eggs were also found to be infertile.

L10 & 11-11 –Starting in early December and through early June 2015, the pair began making regular, almost weekly trips, back and forth from agricultural lands in Jefferson Davis Parish to WLWCA. Although transmitter data never suggested the birds were incubating, there were two clusters of points in the WLWCA refuge and hunting marsh from April and May that were investigated during a flight in late May. At one of the locations a crane nest was seen and later investigated from the ground. Because the birds did not remain at this location for very long, we do not believe they produced any eggs.

L1 & 7-12 –Starting in late November the birds began making periodic trips back to WLWCA. They were aggressive to the newly released chicks and territorial of the pen/feeders until other adults arrived and likely displaced them. No evidence of nesting was observed in spring 2015, but they are considered a breeding pair because they have been associated for over one year and have been observed copulating. They remained in the WLWCA marsh through the end of the report period. This pair are full siblings.

L2 & 13-11 – During a flight on 29 April, four nest platforms were seen in a wetland (Allen Parish) occupied by this pair, but upon observation, the pair was foraging in a nearby pasture. The nest site was in an impounded wetland consisting primarily of herbaceous vegetation surrounded mostly by pasture and bordered by a wooded area to the south. The next week while the birds were elsewhere those four platforms were examined and two additional platforms were discovered. There was no evidence of eggs at any of those platforms, but when next checked on 14 May, the birds were incubating on a new nest. The nest was not visible from the ground and during the next flight the bird remained sitting so the number of eggs was unknown. Observations were conducted and the birds continued to incubate normally through the last observation late on 9 June. During the next check early on 12 June the birds were no longer sitting and there was no evidence of a chick. A small piece of egg shell was found at the nest, with the cause of the failure unknown.

L3-11 & 1-13 – Beginning with a roost point on 16 May this newly formed pair were exclusively staying in a small wetland (Allen Parish), approximately one mile from the farm fields they had been formerly utilizing. A flight over the area on 28 May found the pair on a nest with 2 eggs, with several other possible nest platforms elsewhere in the wetland. A ground check the following week confirmed that observations of this nest would not be logistically feasible (i.e., tall vegetation precluded the ability to observe the nesting behaviors from a distance without disturbing the birds). A flight on 17 June found the adults off the nest, in a field ~1.5 miles to the south. One egg remained in the nest and was collected later that day (Figure 6); no evidence or remains of the second egg were located. The intact egg was transferred to ACRES the next day to be evaluated and incubated. However, it began to rot and when opened, the fertility could not to be determined. Later evaluation of the transmitter data indicated the male had left the wetland on 13 June and this is likely when the nest failed for unknown causes.

Nest Monitoring

A total of 18 nest monitoring sessions (54 observation hours) were completed in 2015 on three nest attempts in locations that were conducive to visual observations (Table 4). One additional nest was investigated from the ground after being discovered during an aerial survey (see *L3-11 & 1-13* above), while a final nest failed due to flooding (see *L10 & 11-11* above). As in 2014, nest monitoring was alternated among three time periods – morning (0700 – 1000 hrs), midday (1100 – 1400 hrs), and late afternoon (1500 – 1800 hrs). The amount of time an adult spent on the nest was recorded and detailed notes were made on the behavior of the incubating adult, as well as that of the non-incubating adult and its distance from the nest. General habitat conditions, weather conditions, predators, bird species in the nest vicinity, and various behaviors displayed by the nesting pair were also documented.

The first nest attempt by *L7 & 8-11* in 2015 was initiated on 28 February, nearly a full month before their first attempt the previous year. Despite the earlier start, the average temperature and nest attendance times of the female and male in 2015 were similar to those in 2014 (Table 4). When comparing their first nest attempts in each year, the average time spent within close range of the nest (i.e., <50 m) while not incubating tended to be greater for both the female and male this year compared to last year. The time spent far from the nest (i.e., >50 m) for the female or male during their first nest attempt each year were not different. During *L7 & 8-11*'s second nest attempt in 2015, the average nest attendance time of the female was greater than that of the male, demonstrating an inverse relationship when compared to their first attempt this year. The female's nest attendance time during the second nest attempt averaged more than 2 hours for the monitoring period, while the male's average nest attendance was less than 1 hour. However, the male did spend considerably more time close to the nest when not incubating during this nest attempt compared to the female.

The first nest attempted by *L2 & 13-11* was initiated between the afternoon of 5 May and 14 May. Their nest attendance times were fairly comparable to those recorded for *L7 & 8-11*'s first nest attempt this year. During the monitoring period, the female's nest attendance averaged approximately 1 hour, while the male's nest attendance averaged slightly less than 2 hours. The female and male spent similar amounts of time close to the nest when not incubating, but the female tended to spend more time far away from the nest.

MORTALITY, MORBIDITY, AND HEALTH ISSUES

To date, we have experienced mortality in all crane cohorts (Table 5). As transmitters fail it will become increasingly difficult to keep track of every individual and our certainty about the size of the population and the survivorship of the various cohorts will not be as strong.

Total survivorship for all cohorts is 61% (39 out of 64), but survivorship has increased dramatically since the first cohort with one year survival increasing from 30% with the 2010 cohort to 75%, 71%, and 70% for the 2011, 2012, and 2013 cohorts, respectively (Table 5). Six mortalities are attributed to wanton shooting by people (24% of mortalities), 4 to presumed predation (16%), 2 to disease (8%), 2 to power line collision (8%), and 11 for unknown causes (44%). Even though shooting has contributed significantly to our mortality numbers, Louisiana has not been the only region with wanton shooting of Whooping Cranes and thus, it unfortunately appears to be an increasing problem nationwide.

Whooping Cranes that are handled for any reason (primarily transmitter change) receive a cursory physical examination and samples are obtained for the following routine tests: fecal parasite examination, cloacal culture, complete blood count, serum chemistry, and serological testing for Inclusion Body Disease of Cranes (IBDC). To date, fecal examinations have detected *Capillaria* spp. (nematodes) and *Salmonella* Litchfield was cultured from the cloaca of L6-11 but was not causing disease. IBDC tests have been negative and the only hematological abnormality detected has been an eosinophilia possibly attributable to parasite infestation. The number of birds recaptured and sampled thus far has been small (9 captures of 7 different birds), but extra serum and blood samples have been saved for future testing, research, or disease screening.

Mortality (Mortality Table – see Appendix 3.)

Overall survival continues to be satisfactory and appears to level off after the initial months following the release of juvenile cohorts (Table 5). Unfortunately, there was an additional shooting incident that resulted in the death of one bird (L4-13). This most recent case remains open and under investigation. The two previous cases remain open and unsolved with large financial rewards still offered for information leading to the arrest and conviction of the person(s) responsible. Predation (or suspected predation) of newly released birds is expected and is currently at an acceptable level. Below is a summary of mortalities observed throughout the reporting period (all mortalities to date in Appendix 2).

L13-12 – Completed his molt and was confirmed flying again by 4 July when a roost data point indicated he had flown across a road to a new, nearby location. He was last seen alive mid-day on 23 July. His GPS PTT turned on normally through 25 July and gave a 1600 point on that day. The PTT failed to turn on as scheduled on the 27th and 29th, and then again on the 31st even though weather had been clear and sunny and all other PTTs were turning on as scheduled. A ground check on 30 July could not detect a VHF signal from local roads bordering fields where he was last located and from which his signal could previously be heard. A flight to determine his status on 1 August detected a weak VHF signal still in the area, but no bird was seen and indicated he was most likely dead. During a ground search of the area, his carcass was found near a small power line crossing the field. Examination of the remains was consistent with a power line strike. Based on the condition of the carcass and the timing of PTT failure, we suspect the bird died after 1600 on 25 July or on 26 July before the PTT should have turned on again on 27 July.

L5-13 – Mortality for this bird has not been confirmed through recovery of remains or his transmitter, but he is presumed dead and is no longer counted in the population total. As of 25 March 2014 when he was last observed up close, his previous eye injury was still resulting in tissue above his eye drooping down and possibly reducing his field of view. It is unknown if or how much this compromised his vision though he did appear to fly and forage normally. However, as a result of his injury and temporary isolation during treatment, he lost his place in the flock and once returned he was often alone or only loosely associated with the other juveniles. His PTT had not been working properly and last gave a GPS point on 21 May and a low quality Doppler point on 16 June; the transmitter turned on, on 19 June for the last time but providing no new data. He was last seen and positively identified through photographs during a flight on 27 June 2014. At this time he was in the northwest end of the WLWCA refuge, not far from a pair of adult cranes. He had been in this area, occasionally near and possibly loosely associated with them since early April when he moved away from the pen after food was discontinued. He was not observed during flights over the refuge on 10 July, 4 Sept, and 26 Sept or during an airboat search of the refuge on 22 July.

L4-13 – After being picked up with a significant injury to her left leg on the evening of 2 November she was held in a transport crate overnight and taken to the LSU vet school on the morning of 3 November. Radiographs revealed a badly broken/shattered left tibiotarsus that could not be repaired so she was euthanized. Radiographs also revealed the presence of metal particles in/around the wound indicating the cause of the injury was gunshot. Law enforcement

personnel were notified and her carcass was sent to the USFWS Forensics Laboratory where necropsy results confirmed she had been shot. A \$10,000 reward was offered for information leading to the arrest and conviction of the person(s) responsible for shooting this bird. This case remains open and under investigation. See morbidity section below for additional details on initial reported injury and capture.

L2-14 - Mortality has not been confirmed for this bird through recovery of remains or transmitters, however she is missing and presumed dead and is no longer counted in the population total. She had a new GSM/cell transmitter as well as a VHF transmitter. The GSM transmitters on this bird and others had not been working well while the birds were in the WLWCA marsh. She was last seen during a flight on 23 March with the other juveniles and several adults in the eastern marsh at WLWCA. Her VHF signal was last detected still in the area on 2 April. We last received data from the GSM transmitter on 3 April; the transmitter turned on again on 10 April but no additional data was received. We suspect she was dead by 19 April when most juveniles dispersed away from WLWCA and this bird was not found with any of them. A flight on 29 April and subsequent ground and aerial searches have failed to detect a VHF signal in the WLWCA area or in the vicinity of any of the other cranes in the population.

Morbidity

L4-13 – Last seen on 28 October on private property (Acadia Parish) and was walking normally. Transmitter data from 30 October indicated she had moved ~17 miles southwest into Vermilion Parish, just north of Gueydan where she was later reported to be injured. On the afternoon/evening of 2 November two different people reported seeing this bird close to a road and reported that she appeared sick or injured. She was observed standing at the eastern edge of a plowed dirt field, ~50-60 yards south of a rural paved road. She was alive, not moving, and appeared to have an injured left leg. There were no power lines or fences noted in the immediate area. She was in a dry field and many of the surrounding fields were also dry, although there was a field with a second crop of rice just east of where she was initially located. While a costume and crate were picked up in order to capture and transfer her, the sun set and she moved a very short distance into the rice field. She was easily approached and picked up. Her breathing sounded labored and “gurgling,” and swelling and dried blood could be felt on her upper left leg. She felt thin and was weak, but she was kept in the crate overnight because she was calm. She was alive but weaker the next morning prior to being transported to the LSU vet school for evaluation of her injury. Radiographs revealed a badly broken leg that could not be repaired so she was euthanized.

EDUCATION, OUTREACH, AND MEDIA

Landowner Sentiment

We continue to be pleased by landowner cooperation and enthusiasm for the project and thus far, no landowner has denied our request to access their property. The vast majority of landowners have been fully engaged and excited about cranes on their land. Once a crane is located on a new property and remains there for several days, we attempt to find the owner or farmer for the property, then contact them and set up a meeting to discuss the project. We discuss the individual bird or birds that are on their property, as well as our needs or requests for accessing their property in order to monitor the birds. Additionally, we gather information on the management activities in their fields (to assist with habitat evaluations), while providing them with information about the project and landowner appreciation gifts (e.g., coffee mugs and t-shirts). Additionally, a thank you card from LDWF’s administration is sent to the landowner or farmer thanking them for their support of the project and our efforts. To date, we have met and worked with ~120 individual landowners and farmers.

Teacher Workshops

As with the 2013-2014 Whooping Crane education and outreach program, the 2014-2015 season was similar with a large portion of outreach centered around hosting “Give a Whoop!” educator workshops. Six workshops were provided across Louisiana between 11 June 2014 and 14 March 2015. A total of 74 educators from Louisiana participated in the professional development workshops, with the group primarily consisting of middle and high school teachers.

LDWF staff conducted four formal/non-formal educator workshops and a Master Naturalist Whooping Crane workshop for the New Orleans and Acadiana chapters. This workshop provided them with six hours to be used toward their Master

Naturalist certification. The sixth workshop served participants of the Osher Lifelong Learning Institute (OLLI). As with the Master Naturalist workshop, the agenda was modified to reflect the needs of this specific group.

Outreach

A large component of the education initiative is devoted to outreach. LDWF staff participated in over 50 festivals and outreach efforts where literature and information were delivered to the public. An estimated 4,000 individuals were exposed to information regarding Whooping Cranes in Louisiana. Outreach efforts typically consist of Whooping Crane exhibits with related items and literature at state wide festivals/events. Because our message spreads through attendance at festivals and other events, requests for presentations has significantly increased. Statewide requests for presentations range from audiences including school age children, members of Rotary/Kiwanis, and local conventions. Participation in state-wide events is vital in both informing and updating the residents of Louisiana about the reintroduction project. As with our education strategy, outreach will be ongoing in order to effectively increase the level of awareness and appreciation with the general public.

During this reporting year, the LDWF administrative coordinator mailed 153 solicitation letters to Louisiana attorneys as part of our annual WC program outreach effort. The letter briefed them of the reintroduction program and asked that they consider purchasing a framed print entitled "Taking Flight" (by R.C. Davis, a Louisiana artist) for display. In previous years, print solicitation letters were sent to other groups having public offices in the state including veterinary clinics, dental offices, and restaurants. In support of this wildlife reintroduction project, R.C. Davis donated his painting and copyrights to the Louisiana Wildlife & Fisheries Foundation.

LDWF was contacted by the Education Curator of the Alexandria Zoo, who requested materials for distribution to zoo guests inquiring about the reintroduction of Whooping Cranes in Louisiana. The zoo currently houses three crane species (Black-crowned, Demoiselle, and Florida Sandhill) and hopes to eventually acquire a pair of Whooping Cranes to add to their exhibit of animals. Upon further discussion, it became apparent that the Alexandria Zoo would make an ideal partner in Louisiana Whooping Crane education, based upon their desire to aid in our efforts and their proximity to areas where our reintroduced cranes inhabit. Education initiative money was used to purchase the majority of the same items used by LDWF in our Whooping Crane education trunk. These items included a replica skull, egg, crane chow, leg bands, and brochures. We have agreed that the zoo will keep these items with the intent to renew this agreement each year so long as they document how many times the program is given and the number of individuals educated using the zoo's Whooping Crane trunk. This partnership will result in a substantial number of zoo visitors becoming educated about the Louisiana Whooping Crane reintroduction.

Several new items were created to help promote the project and spread our message. These items were used during the "Give a Whoop!" educator workshops as well as various outreach events around the state. New items for 2014-2015 included promotional stadium cups, new Whooping Crane magnets (Figure 7), tape measures (Figure 8), and a new flyer regarding Whooping Cranes and crawfish fields (Figure 9).

Media Public Awareness

The LDWF public outreach media plan included the use of billboard space provided by Lamar Advertising, radio commercial space purchased through Louisiana Association of Broadcasters (LAB), and television commercial space purchased on cable television systems in the Alexandria, Lafayette, and Lake Charles market areas.

LDWF purchased nine vinyl signs from Lamar in July 2014 in sizes ranging from 10 x 36 to 14 x 48 feet. These were displayed in five markets around the state on billboard space donated by Lamar. The targeted markets (and # of boards per market) included Alexandria (1), Hammond (1), Houma (2), Lafayette (2), Lake Charles (1), and Shreveport (2). These billboards resulted in an estimated 850,270 weekly views by the traveling public during the time frame all signs were in place. The new design featured a photo of a single Whooping Crane walking in a shallow marsh (Figure 10).

The 30-second LAB radio ad was broadcast 7,642 times around the state by LAB member stations in Alexandria, Baton Rouge, Carencro, Crowley, Hammond, Lafayette, Lake Charles, Leesville, Monroe, New Iberia, New Orleans, Ruston, Shreveport, Ville Platte, and Winnsboro for five weeks spanning 5 January to 9 February 2015. The message again

stressed the presence of cranes now in the state, the need to observe them from a distance if encountered, and a call to action to alert LDWF's Enforcement Division if anyone was observed harming Whooping Cranes.

Cable television viewers were targeted with a new 30-second PSA featuring Louisiana musician Zachary Richard. Time purchased on cable systems in the Alexandria, Lafayette, and Lake Charles market areas included rural locations in parishes where the crane population spends considerable time. A total of 9,461 television spots were scheduled from February to May 2015 on cable networks including Animal Planet, County Music Television (CMT), ESPN, ESPN2, Fox Sports South, FX, Headline News, History Channel, MTV, NBC Sports, National Geographic Channel, The Weather Channel, Tru TV, TV Land, and the SEC Network.

LDWF once again included questions about the Whooping Crane reintroduction in the 2014-2015 Post-Season Hunter Survey. Two questions were included in the survey: 1) Have you heard of the Whooping Crane reintroduction project? And 2) how did you hear about it? In a random sample of licensed Louisiana hunters, 2,165 responded to the mailed-out survey and 56% of those responding said they were aware of the Whooping Crane reintroduction. When asked how they heard about the project, the responses noted the following information sources: TV 29%, radio 16%, website/social media 14%, newspaper 11%, billboard 8%, teacher workshop 1%, and festival 1%.

RESEARCH PRODUCTS

Along with formal and informal public outreach, our program also produced a peer-reviewed publication in the reporting period. In addition to published articles, we also have several manuscripts in preparation, particularly a manuscript regarding the habitat use and movements of reintroduced Whooping Cranes (below); we hope that this manuscript will be submitted by 1 September 2015. Additional manuscripts are being considered with existing data, particularly one focusing on home range and movements of juvenile reintroduced cranes in Louisiana and one on time activity budgets of reintroduced juvenile cranes.

Publications

Kang, S. R., and S. L. King. 2014. Suitability of Coastal Marshes as whooping crane Foraging Habitat in Southwest Louisiana, USA. *Waterbirds* 37:254-263.

Perkins, T.L., S.L. King, W. Selman, and S. Zimorski. In Prep. The spatial and temporal use of broad and novel habitats by a reintroduced population of whooping cranes (*Grus americana*) in southwestern Louisiana.

Selman, W., S. Zimorski, C. Gaspard, C.C. Smith, and P. Vasseur. 2015. Emydid turtles. Unusual basking location (on Whooping Crane nest). *Herpetological Review* 46:78-79.

Presentations

Vasseur, P., C. Smith, S. King, S. Zimorski, and C. Gaspard. 2014. Nesting activity of whooping cranes reintroduced to Louisiana. Louisiana Association of Professional Biologists Fall Symposium, Baton Rouge, Louisiana. Poster Presentation.

Table 1. Distribution of points collected via remote transmitter devices for the Louisiana non-migratory population of Whooping Cranes, 1 June 2014 – 30 June 2015.

Cohort	No. of points collected	No. of points in TX (% of total)	No. of points in LA (% of total)
HY2011	5363	5 (.1)	5358 (99.9)
HY2012	5393	1773 (32.9)	3620 (67.1)
HY2013	4517	0 (0.0)	4517 (100.0)
HY2014	4094	521 (12.7)	3573 (87.3)
All cohorts	19367	2299 (11.9)	17068 (88.1)

Table 2. GPS and GSM data points collected for habitat analysis of the Louisiana non-migratory population of Whooping Cranes, 1 June 2014 – 30 June 2015.

Cohort	No. of cranes	No. of data points collected	No. of points used for habitat analysis	% used for habitat analysis
HY2011	7	5356	3452	64.5
HY2012	10	5332	3248	60.9
HY2013	8	4495	2540	56.5
HY2014	14	4093	1930	47.2
TOTALS	39	19276	11170	57.9

Table 3. Nesting attempts of Whooping Crane pairs in the reintroduced Louisiana non-migratory population, 2014-15.

Year	Male	Female	Nest Location - Parish	Nesting Attempt	Incubation began	No. eggs	Outcome of nest, fate of eggs	Number of days of incubation	Number of days to renest
2014	L8-11	L7-11	Avoyelles	1	24 March	2	Full term, collected 30 April - both infertile	37	18
2014	L8-11	L7-11	Avoyelles	2	19 May	2	Full term, collected 26 June - both infertile	38	-
2015	L8-11	L7-11	Avoyelles	1	28 Feb	2	Full term, collected 9 April - both infertile	40	18
2015	L8-L11	L7-11	Avoyelles	2	28 April	2	Full term, collected 4 June - both infertile	37	-
							Failed via flooding on ~13 April, eggs collected 16 April		
2015	L1-11	L6-11	Vermilion	1	~3-4 April	2	1 fertile, non-viable egg & shell fragment of second egg	~9-10 max	-
2015	L2-11	L13-11	Allen	1	6-14 May	1 or 2	Failed (?), collected 12 June - egg fragment	27-37	-
2015	L1-13	L3-11	Allen	1	16-28 May	2	Failed by ~13 June PM, collected 17 June - 1 egg (unk fertility)	16-28	

Table 4. Mean nest attendance for the LA non-migratory Whooping Crane population, 2014 - 2015. Monitoring sessions consisted of 3-hr observation periods alternated among 3 time periods - morning, midday, and late afternoon.

Crane Pair	Monitoring Dates	Monitoring Sessions*	Nest Attempt	Avg. Temp (°F)	Nest Attendance (min)		Time Spent <50 m Away From Nest (min)		Time Spent >50 m Away From Nest (min)	
					Female	Male	Female	Male	Female	Male
2014										
L7 & 8-11	3 Apr – 25 Apr	7	1 st	68.5	69.0	107.9	17.1	2.4	59.3	65.0
L7 & 8-11	22 May – 18 Jun	7	2 nd	79.6	50.0	120.3	5.0	4.8	114.4	45.3
2015										
L7 & 8-11	13 Mar – 2 Apr	7	1 st	68.0	68.0	109.9	50.1	22.4	61.9	47.7
L7 & 8-11	4 May – 1 Jun	6	2 nd	79.4	123.3	51.5	7.7	58.8	43.5	75.2
L2 & 13-11	15 May – 9 Jun	5	1 st	82.3	56.0	109.8	47.8	43.0	76.0	27.2

Table 5. Post-Release survival of each cohort up to 30 June 2015. Green shaded cells represent current survivorship of last four cohorts. Because some cranes have not recently been seen, located, or have non-functional transmitters, these numbers reflect the maximum survival at this time; these numbers may be adjusted later if the birds are not located or observed again.

Post-release Survival	2010 Cohort (3/14/11)	2011 Cohort (12/27/11)	2012 Cohort (12/17/12)	2013 Cohort (1/2/14)	2014 Cohort (12/29/14)
3 months	8/10 = 80%	15/16 = 93.75%	13/14 = 92.9%	9/10 = 90%	14/14 = 100%
6 months	7/10 = 70%	14/16 = 87.5%	12/14 = 85.7%	8/10 = 80%	13/14 = 92.8%
9 months	3/10 = 30%	12/16 = 75%	11/14 = 78.6%	8/10 = 80%	
12 months	3/10 = 30%	12/16 = 75%	10/14 = 71.4%	7/10 = 70%	
15 months	2/10 = 20%	12/16 = 75%	10/14 = 71.4%	7/10 = 70%	
18 months	2/10 = 20%	12/16 = 75%	10/14 = 71.4%	7/10 = 70%	
21 months	2/10 = 20%	12/16 = 75%	9/14 = 64.3%		
24 months	2/10 = 20%	12/16 = 75%	9/14 = 64.3%		
2.5 years	1/10 = 10%	10/16 = 62.5%	9/14 = 64.3%		
3 years	0/10 = 0%	10/16 = 62.5%			
3.5 years		10/16 = 62.5%			

Figure 1. Locations for all Louisiana reintroduced Whooping Cranes between 1 June 2014 and 30 June 2015.

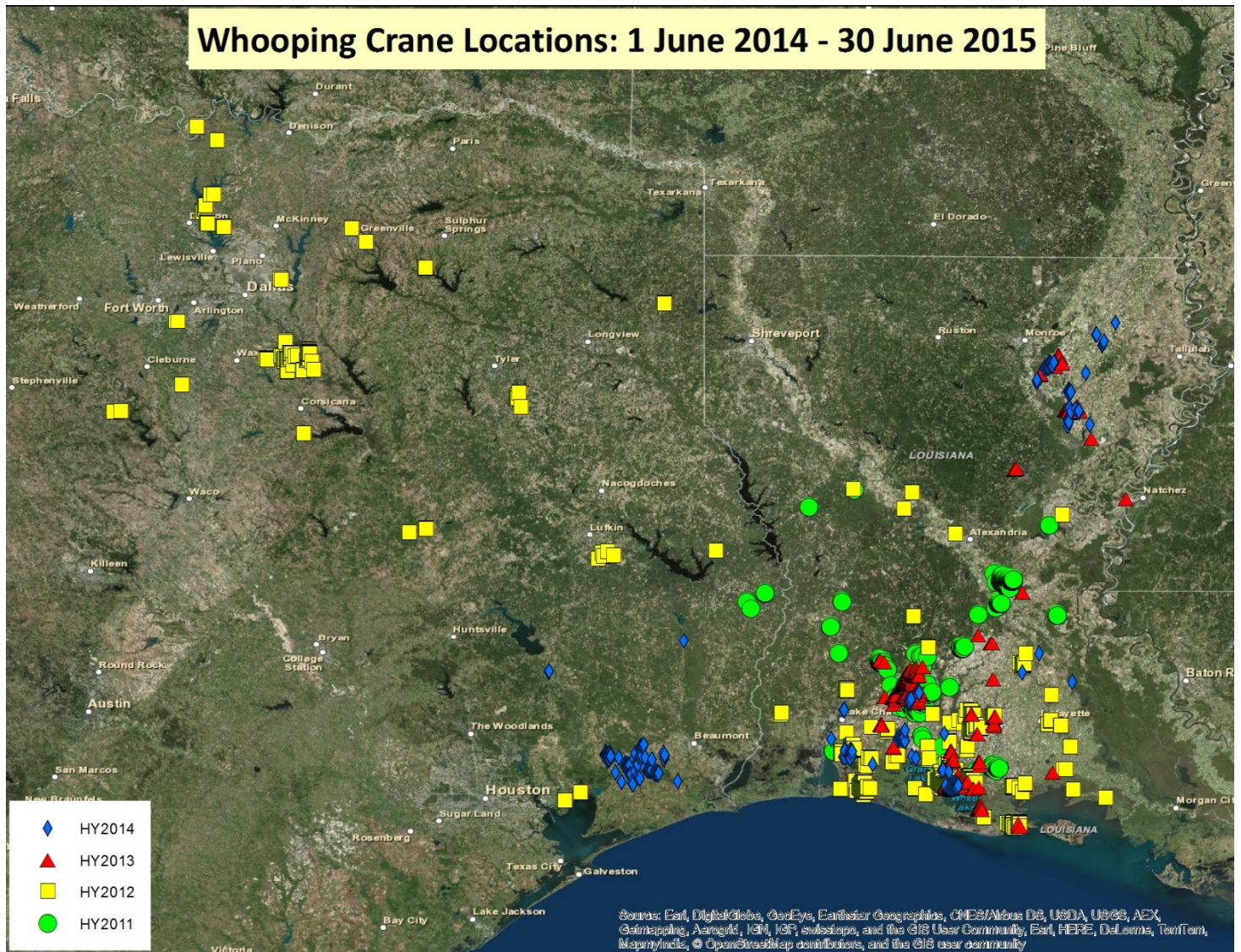


Figure 2. Habitat use by cohort in the Louisiana non-migratory population of Whooping Cranes, 1 June 2014 – 30 June 2015.

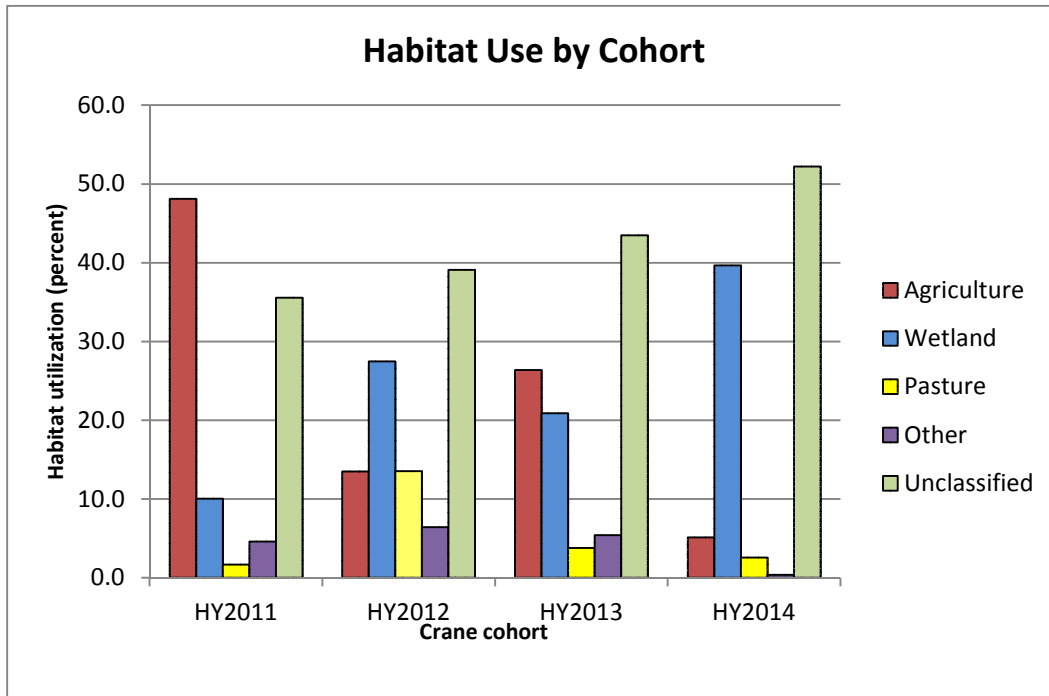


Figure 3. Habitat use by state for the Louisiana non-migratory population of Whooping Cranes, 1 June 2014, 30 June 2015.

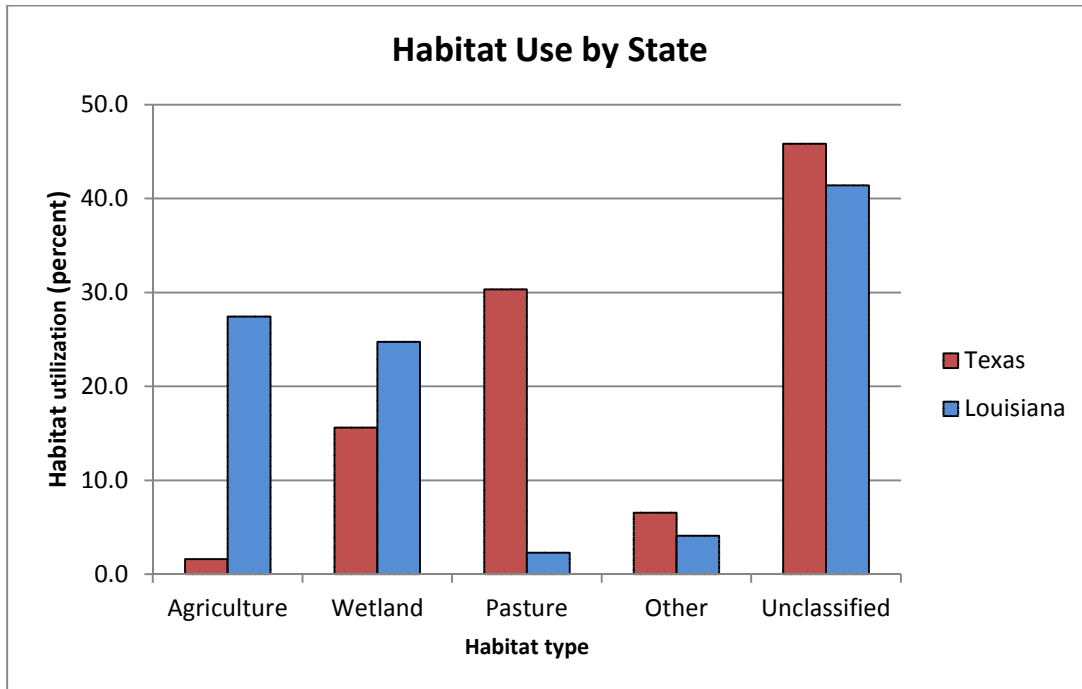


Figure 4. Approximate locations of reintroduced Whooping Crane nests during the 2015 nesting season. Note the distances between nearest nest location points.



Figure 5. Failed/flooded nest of L1 & 6-11 at WLWCA with one intact, fertile, but non-viable egg remaining.



Figure 6. Failed nest of L3-11 and L1-13 on private property in Allen Parish with one intact egg of undetermined fertility remaining.



Figure 7. New Whooping Crane magnet.

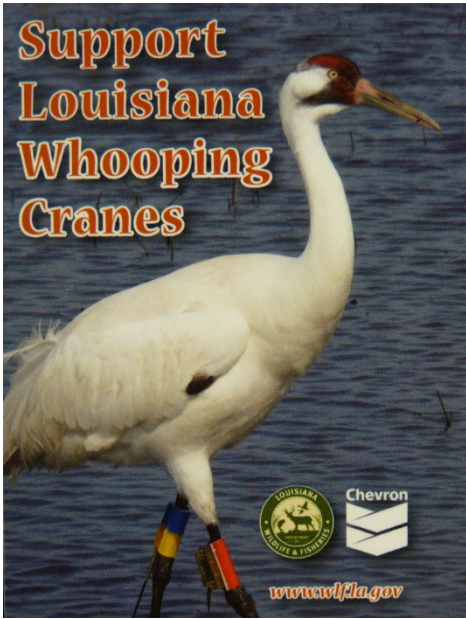


Figure 8. Five foot long tape measure used to promote the height of the cranes and emphasize that they are the tallest bird in North America.



Figure 9. New information sheet about Whooping Cranes and crawfish farms.



Whooping Cranes & Crawfish Farming

In 2010, the Louisiana Department of Wildlife and Fisheries (LDWF), along with the LSU AgCenter and other partners, began a whooping crane re-introduction program in southwestern Louisiana. The goal of the re-introduction program is to establish a population within its historic range, but outside of its current range. Our objective is to establish a population in Louisiana, consisting of at least 120 individuals and 25–30 reproductive pairs, and to sustain those levels for 10 years without further reintroductions.

Achieving our goal would restore an iconic wildlife species that was once more abundant in Louisiana than anywhere in North America. Reintroduced populations of whooping cranes are designated as nonessential experimental populations (NEP), which provides management flexibility as the species is not treated as endangered but as threatened. As a result of this designation, farm management activities can continue as planned. Intentional killing, harming or harassment of a whooping crane, however, is illegal as they are still protected under both state and federal laws.

LIFE HISTORY

The whooping crane is a large white bird but its size (up to 5 ft tall) and the red patch on its head distinguish it from other white wading birds. The whooping crane is a long-lived species that can live up to 30 years in the wild but has a low reproductive capacity. Whooping cranes begin breeding at 3–4 years of age and lay one to two eggs, which are incubated for about 30 days. They may hatch two chicks but usually only one survives.



Whooping cranes may initially nest from February to April, but may re-nest into June if the first nest fails. They build floating platforms of wetland vegetation; young pairs may build nest platforms without laying eggs the first season. Chicks are flightless for about 90 days and are susceptible to predation by snakes, turtles, birds and mammals.

Adults are also flightless for about six weeks during a molt of all their flight feathers. They first undergo this molt at 2–3 years of age and then again every two to three years. In Louisiana, molt can begin in mid-April but most will begin in late May with birds being able to fly again by early July. The birds are susceptible to predators at this time and they often become shy and secretive and will not open their wings. Stable water within walking distance is an important habitat component to facilitate escape from predators.

Whooping cranes reintroduced to Louisiana utilize a wide range of habitats including coastal marshes, crawfish ponds and rice fields. They are non-migratory; therefore, they are present on these landscapes throughout the year. Whooping cranes often forage in shallow water and have a varied diet consisting of frogs, snakes, turtles, mice, crawfish, aquatic and terrestrial invertebrates, tubers, and seeds. They also depend on shallow water environments when roosting at night and for nests to provide protection from predators. Thus far, whooping cranes released in Louisiana have molted in marsh, rice fields and crawfish ponds. Whooping cranes will flock together in small groups (usually < 10) when young, but as adults they are territorial. Whooping cranes have never existed in large numbers due to their low reproductive potential, thus they are not likely to exist in great numbers on the Louisiana landscape into the future. Further, their territoriality as adults will limit the number of birds in a single location.

Figure 10. New billboard design used in 2014. Nine of these billboards were produced.



Appendix. ID sheet for Louisiana Whooping Cranes. Birds in gray are missing and presumed dead but no remains to confirm their death have been recovered. They are not counted in the population total.

Louisiana Whooping Cranes June 2015

Hatch year	Crane no.	PWRC ID	Sex	BBL Band no. Below left hock	Color code (left:right) T=long band with transmitter	VHF Frequency	PTT ID	Studbook no.			Mate
								Own	Sire	Dam	
2011	L1	8	M	1098-00882	T B/Y (VHF) : T B/R (PTT)			2103	1254	1156	6-11
2011	L2	11	M	1098-00883	T B/R (PTT) : B/Y/B			2106	1702	1904	13-11
2011	L3	14	F	1098-00884	T B/R (PTT) : T Y (VHF)			2109	1717/1420	1168	1-13
2011	L6	18	F	1098-00887	T B/R (cell) : T B/Y (VHF)			2113	1127	1154	1-11
2011	L7	19	F	1098-00888	T B/R (PTT) : T R/Y (VHF)			2114	1254	1156	8-11
2011	L8	20	M	1098-00889	T B/R (VHF) : B/Y/R			2115	1147	1119	7-11
2011	L10	22	M	1098-01101	T B/R (PTT) : T Y/R (VHF)			2117	1147	1292	11-11
2011	L11	23	F	1098-01102	T Y (VHF) : T B/R (PTT)			2118	1165	1164	10-11
2011	L13	29	F	1098-01104	T B/R (PTT) : T Y/B (VHF)			2124	1147	1210	2-11
2011	L14	30	F	1098-01105	T B/R (PTT) : R/Y/B			2125	1133	1135	
2012	L1	9	F	1098-01109	B/Y/R : T Y/B			2149	1127	1154	7-12
2012	L2	12	F	1098-01110	T Y/B (PTT) : T R (VHF)			2152	1674	1679	
2012	L5	15	F	1098-01113	T Y/B (PTT) : T R/B (VHF)			2155	1731	1219	
2012	L6	17	F	1098-01114	T Y/B (PTT) : T Y/R (VHF)			2157	1267	1261	
2012	L7	18	M	1098-01115	T Y/B (PTT) : Y/R/Y			2158	1127	1154	1-12
2012	L8	19	F	1098-01116	T Y/B (PTT) : B/R/Y			2159	1267	1261	
2012	L9	21	F	1098-01117	T Y/B (PTT) : R/Y/B			2161	1189	1195	
2012	L10	22	M	1098-01118	R/B/R : T Y/B (PTT)			2162	1775/1737	1593	
2012	L11	23	F	1098-01119	T Y/B (PTT) : Y/R/B			2163	1133	1135	
2012	L12	24	F	1098-01120	T R (VHF) : T Y/B (PTT)			2164	1127	1154	
2012	L14	28	M	1098-01122	T Y/B (PTT) : B/R/B			2176	1794	1900	
2013	L1	10	M	1098-01123	T R/Y (PTT) : T B (VHF)			2195	1138	1440	3-11
2013	L3	12	M	1098-01125	T R/Y (PTT) : R/B/R			2197	1422	1366	
2013	L5	14	M	1098-01127	Y/B/Y : T R/Y (PTT)			2199	1672	1904	
2013	L6	15	M	1098-01128	T R/Y (PTT) : B/Y/B			2200	1147	1119	
2013	L7	18	M	1098-01129	T R/Y (PTT) : T R/B (VHF)			2202	1731	1219	
2013	L8	25	M	1098-01130	T R/Y (PTT) : T B/Y (VHF)			2208	1439	1818	
2013	L9	26	F	1098-01131	B/R/B : T R/Y (PTT)			2209	1731	1219	
2013	L10	29	F	1098-01132	- : T R/Y (PTT)			2211	1100	1263	
2014	L1	5	F	1098-01151	T R/B (PTT) : Y/B/Y			2239	1147/1127	1154	
2014	L2	12	F	1098-01152	T R/B (cell) : T Y (VHF)			2245	1439	1818	
2014	L3	34	M	1098-01153	T R/B (cell) : T B/Y (VHF)			2263	1731	1219	
2014	L4	35	M	1098-01154	T R/B (PTT) : R/B/Y			2264	1677	1894	
2014	L5	14	F	1098-01155	T R/B (PTT) : T R/Y (VHF)			2247	1147	1292	
2014	L6	15	M	1098-01156	T R/B (PTT) : T Y/B (VHF)			2248	1267/1386	1261	
2014	L7	16	F	1098-01157	B/Y/B : T R/B (PTT)			2249	1731	1219	
2014	L8	17	F	1098-01158	T R/B (cell) : T Y/R (VHF)			2250	1581/1737	1593	
2014	L9	37	F	1098-01159	T Y (VHF) : T R/B (PTT)			2268	1731	1193	
2014	L10	22	F	1098-01160	B/R/Y : T R/B (PTT)			2255	1267/1386	1261	
2014	L11	38	F	1098-01161	R/Y/R : T R/B (PTT)			2269	1731	1219	
2014	L12	28	M	1098-01162	T R/B (PTT) : Y/R/Y			2259	1267/1386	1261	
2014	L13	30	M	1098-01163	T B/Y (VHF) : T R/B (cell)			2260	1182	1195	
2014	L14	33	M	1098-01164	T Y/R (VHF) : T R/B (PTT)			2262	1182	1195	

2012	L3	M	2153	~3 Nov 2013	Acadia Parish	10.5+	Powerline collision – severed wing, broken leg
2012	L4	M	2154	~7 May 2013	Cameron Parish	4.5+	Trematodiasis (Cyclocoelum sp.) resulting in hepatitis and bacterial septicemia Emaciation
2012	L9	F	2161	~10 August 2013	Rockefeller Refuge	7.5+	Mortality unconfirmed (transmitter stopped working, no carcass found)
2012	L10	M	2162	18 February 2013	NE Rayne Acadia Parish	2	Mortality unconfirmed (transmitter stopped working, no carcass found)
2012	L13	M	2165	~26 July 2014	Gillis, SE Beauregard Parish	19+	Powerline collision
2013	L2	M	2196	~1-2 April 2014	WLWCA refuge	3	Unknown (scavenged) – likely predation – coyote bite mark in femur
2013	L4	F	2198	3 Nov 2014	Captured – broken leg, N of Gueydan, Vermilion Parish	10	Euthanized at LSU vet school – severely broken left leg due to gunshot
2013	L5	M	2199	After 27 June, by ~10 July	WLWCA refuge, NW corner	~6	Mortality unconfirmed (PTT stopped working 6/16/14, bird seen on 6/27/14 & not again after that)
2014	L2	F	2245	After 2 April 2015, by 29 April	WLWCA?	3+	Mortality unconfirmed (Cell transmitter – last data 3 April, last turned on 10 April, VHF last detected @ WL on 2 April) Dead - possibly by ~19 April when other juvies left WL, by 29 April when VHF not heard during flight over WL