WINTER 2016 VOLUME 17 ISSUE 2

Tracker News

MICROWAVE TELEMETRY, INC.

25 Years Later and 93 Grams Less!

Dear Customers and Friends,

The end of the year is always a time to reflect, to understand what has been accomplished, and to determine what needs improving, as well as to identify potential future goals. Thinking back to the early days of our company, I had no idea what we might be able to achieve. From being able to track a few dozen bird species with the then-revolutionary 95g PTT-100 in 1991, we now have the potential to track virtually half of all bird species with the introduction of our 2g Solar PTT.

These advances, made over the last 25 years, were not an individual effort — there are many team members whose expertise helped make this possible. To them, I am forever grateful for their support and help breaking through numerous technological barriers. As well, my colleagues here at MTI, our friends at CLS, and you, our loyal customers, have inspired me to develop new devices to address serious conservation issues. However, we're not done yet — we will continue to strive towards the impossible: a tracking device that weighs nothing and lasts forever.

This issue of *Tracker News* features more impressive research using our devices. Henri Weimerskirch describes his study of juvenile frigatebirds in the Indian Ocean. Sara Zimorski and Eva Szyszkoski discuss tracking reintroduced whooping cranes in Louisiana, while John Neill and Adam Brewerton share the results of their American white pelican study in Utah. Finally, Johannes Kamp, Ruslan Urazaliev, and Paul Donald explain their work with sociable lapwings using 5g PTTs. We can't thank you enough for your stories. It inspires us all to hear how our devices are being used to understand and conserve animals.

From our family, and the MTI Team, we wish you and your loved ones a Happy New Year!

Sincerely,

Paul and the Team at MTI

Photos by Jim Watson (top) and Ewan Weston (bottom)

Bald eagle tagged with an early 95g PTT-100 (top) and spoon-billed sandpiper fitted with a 2g Solar PTT (bottom).

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The Early Life of Seabirds: Tracking Juvenile Frigatebirds in the Indian Ocean

Henri Weimerskirch is a Research Director at CNRS in France and heads a team working on the ecology of seabirds and marine mammals based in Chizé, southwestern France. He has pioneered tracking studies of birds by employing successfully for the first time Argos satellite telemetry on wandering albatrosses in 1989.

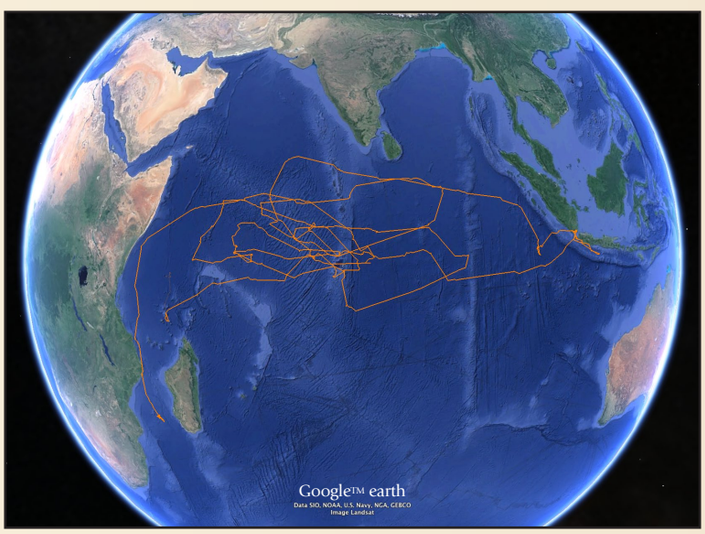
The juvenile phase remains a black box in our knowledge of the life history of animals. Yet these young animals constitute the future of populations, often have a wide dispersive behavior, and have the potential to emigrate and colonize new environments. Typically, mortality is high in offspring when they become independent of parents, probably because of poorer foraging performances. Improving our knowledge on this poorly known age class is a priority if one wants to make predictions on the future of animals in the context of climate change and human impact on ecosystems. Tracking juvenile phases is extremely difficult because individuals are small, have high mortality, and often disperse over wide areas. This is particularly the case in the marine environment. Over the past five years, we developed a program named EARLYLIFE, funded by the European Research Council, aimed at studying the juvenile phase of seabirds and seals over the world's oceans. Here I present results obtained on one of our study models, the great frigatebirds.

Henri Weimerskirch with frigatebird. Photo by Henri Weimerskirch

Among seabirds, frigatebirds are extreme in many aspects of their life history. First, their plumage is not waterproof and thus they cannot land at the sea surface, although they feed exclusively at sea, especially on flying fish that they catch on the wing. They have the lowest wing loading of any bird that provides them unique capacity for soaring flight using air currents. This capacity allows them to fly at extremely low costs, without landing or resting on the sea surface and thus travel over thousands of kilometers. We studied the dispersive movements of juvenile frigatebirds from several sites, including Europa Island in the Mozambique Channel, but also from the Galápagos and several sites around New Caledonia. A total of 55 juveniles were equipped with 9.5g Solar PTTs, and with 22g Solar Argos/GPS PTTs; the PTTs were attached with tape on the back feathers. The results from the Europa birds were particularly surprising. Indeed we found that juvenile great frigatebirds dispersed over the entire Indian Ocean. After an initial northward movement, they passed-by the Seychelles Islands and then circled the equatorial zone between the Seychelles and Indonesia. During the two first years of their lives after becoming independent of their parents, they make loops around the equator by staying aloft for months, and make very short stops on isolated islands, but only for a few hours, before resuming their flight (see map).

Juvenile frigatebird in flight. Photo by Henri Weimerskirch

That young, inexperienced frigatebirds stay aloft for months was a complete surprise for us. By superimposing the tracks of young frigatebirds to wind data, we found that the birds were circling the doldrum zone, a zone around the equator where winds are weak, often absent, and that were feared by ancient sailing boats because of the risk of being trapped there for weeks. Frigatebirds circle the edge of doldrums where they find a belt of winds that they follow. The equator is also a zone of strong convection that frigatebirds use to take altitude under cumulus clouds by soaring, before making long gliding descents over kilometers. Thus, by using winds for their horizontal movements, and thermals for climbing at altitudes reaching 4000 m, frigatebirds are able to stay aloft for months at low energetic costs. Such extraordinary performances pose a suite of new questions about navigation, foraging for food and sleep, all these having to be realized in flight. An additional challenge for the bird is that they are exactly in the zone of the formation of cyclones in the Indian Ocean. From January–March, powerful cyclones form south of the equator exactly in the zone used by frigatebirds. Our tracking data show they are able to avoid the cyclones by staying away from the center of the cyclone by climbing at 1000–2000 m and staying at this altitude using a circling rapid movement that brings them at speeds reaching 80–100 km/h away from the gale winds and heavy rains.



Large-scale movement of juvenile frigatebirds around the equitorial Indian Ocean.

After this dispersive phase, young immatures will settle regularly on remote islands to roost, still making long loops over the entire ocean. At the age of 7–10 years, they will return to their birthplace to breed.

Weimerskirch H., Bishop C.M., Jeanniard-du-Dot T., Prudor A. & Sachs G. 2016. Frigate birds track atmospheric conditions over months-long trans-oceanic flights. **Science** 353: 74–78

Whooping Cranes Are Back in Louisiana

Sara Zimorski has a Bachelor's degree in Biology from the University of Virginia. She began her career working with Whooping Cranes as an intern at the International Crane Foundation in 1999. While there, she ran the breeding program for the captive flock of cranes in addition to working on the eastern migratory Whooping Crane reintroduction project. In 2011, she moved to Louisiana to lead the Whooping Crane reintroduction project beginning there. Eva Szyszkoski has a Bachelor's degree in Biological Sciences from Michigan Technological University. She began working with Whooping Cranes starting as an intern with the U.S. Fish and Wildlife Service and the International Crane Foundation in Wisconsin in 2007, and has been working on the Louisiana project since June 2015.

Historically, a non-migratory population of the federally endangered Whooping Crane was present in Louisiana. They were located in the freshwater marshes of what is now known as the White Lake Wetlands Conservation Area (WLWCA), a 70,000 acre property owned and managed by the Louisiana Department of Wildlife and Fisheries (LDWF). The species was last known to nest in Louisiana in 1939, but in the following years the already small population declined until only a single crane remained in 1947. In 1950, that last bird was caught and released in Texas with other Whooping Cranes and the species remained absent from Louisiana until 2011 when LDWF along with the U.S. Fish and Wildlife Service and other partners began a reintroduction program.

The goal of the Louisiana Whooping Crane reintroduction project is to establish a self-sustaining population in southwest Louisiana. This project is part of the overall recovery plan to create additional populations, separate from the remnant population that survived nearly going extinct in the 1940s.

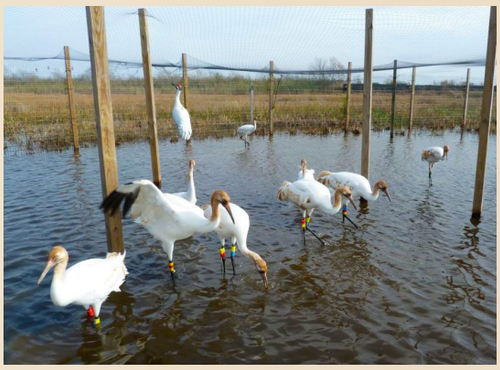


Photo by Sara Zimorski, LDWF

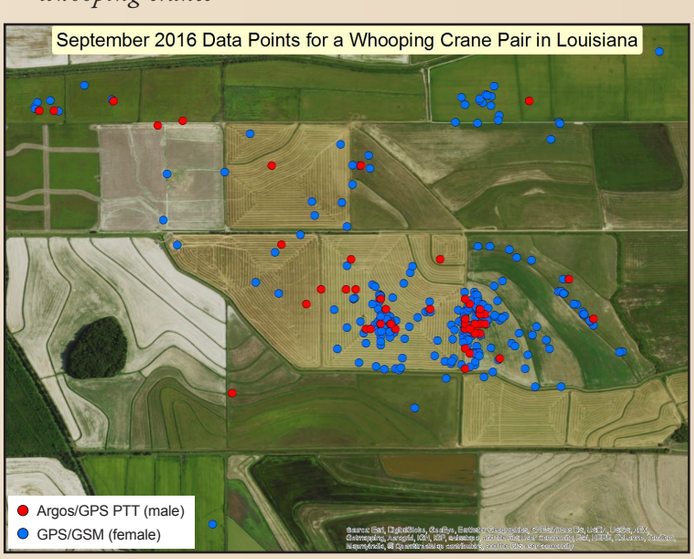
Newly banded juvenile Whooping Cranes remain in the netted portion of the release pen prior to being released at the White Lake Wetlands Conservation Area in December 2012.

Beginning in early 2011 and through December 2015, 75 juvenile cranes (32 males, 43 females) have been transferred to Louisiana from the Patuxent Wildlife Research Center, a captive breeding center located in Laurel, Maryland. The chicks ranged in age from 5–8.5 months old and arrived in six separate cohorts. Each cohort was initially placed in a netted section of the 1.5 acre release pen that had been constructed in the WLWCA marsh. While they are still penned, the cranes are banded with their permanent colored leg bands and transmitters. Using a combination of colors, we are able to create a unique ID for each crane while the transmitters provide us with data on their location and movement once they are released several weeks later.

We have deployed 55 22g Solar Argos/GPS PTTs that are programmed to collect three GPS points each day — morning, late afternoon, and an overnight roost point with the data being transmitted through Argos every second day. In 2014 and 2015, we deployed 11 25g GPS/GSM transmitters to test their functionality in our study area. In order to ensure we could still locate the birds if the GSM transmitters didn't work well, each juvenile that received one also received a VHF transmitter. Although the GSM transmitters work well while the juveniles remain in and around the release pen, we have discovered that other areas of the White Lake marsh are too distant from cellular towers and the transmitters are unable to relay collected data until after the cranes leave the marsh and move to other areas with GSM coverage. We will continue to use some GSM transmitters on new juveniles but are also deploying them more strategically on older birds which have established territories in agricultural settings where the transmitters are almost always within range of a cellular tower.

Although loss of wetlands and conversion to agriculture was one of the main reasons Whooping Cranes disappeared across North America, we are finding that many of the Louisiana cranes leave the marsh and use rice and crawfish fields, which are essentially managed as a shallow wetland — their preferred habitat. The PTT and GSM transmitters have allowed us to document the cranes travelling around the state, spending time in 25 of the 64 parishes in Louisiana. Additionally, we have documented them travelling into the neighboring states of Arkansas, Mississippi, and Texas with a small number spending the spring and summer in Texas before returning to Louisiana in the fall.

Whooping Cranes are slow to mature and typically do not begin breeding until they are 3–5 years old. In 2013, a pair consisting of a 3-year-old male and a 2-year-old female built two nest platforms but did not produce eggs. The following year, a pair of 3-year-olds produced eggs in Louisiana, in the wild, for the first time since 1939! Unfortunately, the eggs did not hatch and were later determined to be infertile. The number of nesting attempts increased in the following two years, and in 2016 a 4-year-old female and 3-year-old male, nesting for the first time, hatched two chicks! One chick disappeared after one month (which is not unusual) but the remaining chick survived, fledged, and remains with its parents. The male of this pair carries his original PTT while the female was given a GSM transmitter in November 2015 after her original PTT stopped transmitting. In September of this year, we received 267 GPS points from the female's GSM transmitter compared to 56 (of a maximum 88) points from the male's PTT. Since Whooping Crane pairs very rarely spend time apart, this provided us with a nice comparison of the two transmitters (see map). To get more information about the Louisiana Whooping Crane project, follow us on Facebook at *https://www.facebook.com/lawhoopingcranes* or visit the Department's website at *www.wlf.louisiana.gov/wildlife/whooping-cranes*



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

Comparison of data points received from different transmitters attached to a breeding pair of Whooping Cranes in Jefferson Davis Parish, Louisiana.

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Round Trip Flights: Salt Lake City to Mazatlán

John Neill works with the Utah Division of Wildlife Resources as an Avian Biologist for the Great Salt Lake Ecosystem Program. He began with the program in 2001 and has developed a deep appreciation of the Great Salt Lake and its abundant life by conducting lake-wide bird surveys. Adam Brewerton is the Conservation Wildlife Biologist with the Utah Division of Wildlife Resources. He enjoys working with bats and pelicans but focuses on the multitude of non-game birds and mammals found north of Salt Lake City, Utah.

Few people are aware of how important Utah's Great Salt Lake is to American white pelicans (*Pelecanus erythrorhynchos*). The largest pelican colony west of the Continental Divide lives on the Gunnison Island Wildlife Management Area in the remote, northwestern portion of the lake. Over the past 10 years, the colony has averaged 11,000 breeding adults each year. That places it among the top five largest pelican colonies in the birds' North American range.

Pelicans are listed as a Wildlife Species of Concern on Utah's Sensitive Species List, and conservation efforts have helped the birds immensely. At least 8% of the entire continental population of American white pelicans visits northern Utah during the breeding period, and many more visit the state during migration.

Although an inhospitable environment with no freshwater, Gunnison Island provides a safe area free of disturbances to raise young pelicans. Photo by Don Paul

While that's great news for biologists and those who love the birds, it's also led to conflicts as pelicans fly to and from Gunnison Island and surrounding wetlands, lakes, reservoirs, and rivers. The most serious concern is the potential for pelican-airplane collisions. The Salt Lake International Airport is near the southeastern side of the lake. Pelicans often feed on fish in freshwater marshes near the airport. They have also been observed circling in thermals at high altitudes near the airport. Pelican collisions with airplanes arriving and departing the airport have caused more than $1 million in damage. Even more concerning is the potential for a fatal airplane crash.

USDA-Wildlife Services personnel have used various forms of hazing and habitat modifications to keep pelicans near the airport at bay. But to ensure the techniques are effective as they can be, the movement patterns of pelicans need to be fully understood. More about that later.

Strawberry Reservoir, one of the nation's premier trout-fishing waters, is another place pelicans are posing a challenge. The reservoir is 190 km southeast of Gunnison Island. The number of pelicans at Strawberry Reservoir has increased dramatically between 2000 and 2013. Although a recent diet study showed that pelicans consume primarily non-game Utah sucker (*Catostomus ardens*) and Utah chub (*Gila atraria*), fisheries managers are concerned about pelicans deterring the spawning runs of Bonneville cutthroat trout (*Oncorhynchus clarkii utah*) into reservoir tributaries. Bonneville cutthroat trout are native to Utah and are listed as a Conservation Agreement Species on the state's Sensitive Species List.

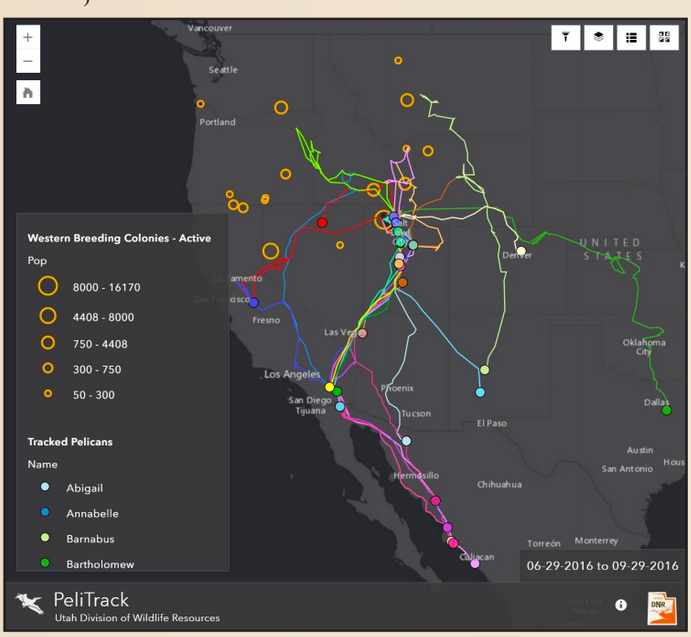
Photo by John Neill

"Chester" sporting his new backpack transmitter.

Studying the pelicans' movement, as they travel from Gunnison Island to foraging areas at the reservoir and the airport, will help wildlife managers target and prioritize management options to limit impacts from pelicans. Banding and patagial wing marking of pelicans since 2011 have provided some information on pelican movement patterns, but satellite tracking can provide much more information. Using a baited bow-net trap, foot-hold traps and a net gun, biologists with the Utah Division of Wildlife Resources (UDWR) have trapped 32 pelicans at Strawberry Reservoir and wetlands surrounding the Great Salt Lake over the last two years.

After being trapped, each pelican was fitted with a 70g solar-powered GPS PTT. The transmitters use satellites from the Argos Data Collection and Location System to track local and regional movements. And the movements aren't just done on a local basis; some of the pelicans have traveled as far south as Mexico.

Anyone with an internet connection can view these movements through an online pelican tracking map (*www.wildlife.utah.gov/pelican_webmap*) developed by the UDWR. Map features include a pelican colony layer, a resight location layer of wing tag data from Idaho and Utah pelican colonies, and the ability to filter the data by individual pelican and time period. Overlaying all the data at once provides a great tool to identify major foraging, stopover, and wintering areas and the migratory pathways that join them.



Screenshot of pelican tracking website created by the Utah Division of Wildlife Resources.

The Salt Lake City International Airport, USDA-Wildlife Services, Tracy Aviary, U.S. Fish and Wildlife Service, Utah State University, and the UDWR have joined together to make tracking the pelicans possible. Through this partnership, we hope to fit 39 more pelicans with transmitters, build awareness and support for pelican conservation and research by tracking their movement patterns, involve the local community in watching their movements, and lessen the potential for human-pelican conflict.

Satellite Tracking Provides Insight into the Migration Ecology and Conservation Needs of the Globally Threatened Sociable Lapwing

Johannes Kamp is an ecologist at the University of Muenster (Germany) and focuses on data management and analyses in the Sociable Lapwing project. Ruslan Urazaliev is the national coordinator of the project for Kazakhstan. Paul F. Donald of BirdLife International has been coordinating the project since its beginning.

Photo by Paul F. Donald

Large flock of Sociable Lapwings at stopover site in Turkmenistan.

The Sociable Lapwing (*Vanellus gregarius*) is a shorebird that breeds across the vast steppe grasslands of Eurasia. A range contraction and a precipitous and accelerating population decline were observed during the 1990s. This led to a reclassification of the species as Critically Endangered on the global IUCN red list in 2004. As the main threats were thought to occur on the breeding grounds, a research and conservation project was initiated in a remaining stronghold in Kazakhstan in 2004. Teams of the Royal Society for the Protection of Birds (RSPB) and ACBK, Kazakhstan's BirdLife partner, have since monitored the survival of the population. However, it turned out that nest and chick survival were sufficiently high to maintain a stable population. The main habitat of the species, heavily grazed steppe swards created by domestic livestock, had declined in extent, but there were no indications that habitat availability was a limiting factor.

So what was the reason then for the drop in numbers? An analysis of the return rates of color-ringed birds suggested that adult survival was rather low. Fewer and fewer birds returned to the breeding grounds, perhaps indicating problems during migration or on the wintering grounds. However, the wintering grounds and migration routes of the species were all but unknown. To shed light on the year-round distribution, the first three Argos PTTs were fitted to birds caught on the breeding grounds in 2007, and another 26 birds have since been equipped with tags.

The growth in knowledge achieved by the tracking was enormous. The migration routes of the species were quickly established: a western one runs through the Middle East and brings birds to their wintering quarters in Sudan, and an eastern route leads to Pakistan and India. The quality of the received coordinates was high enough to track down the birds on the ground. Through BirdLife International's global network, survey teams formed along the routes. In an inspiring, concerted effort, the teams managed to find tagged individuals at many remote sites that were often difficult to access (e.g. in Sudan, Russia, Turkey, Syria, Pakistan, and Central Asia). It came as a big surprise that some of these sites held massive concentrations of a bird that was thought to be close to extinction. The lapwings would stay weeks at stopover sites to refuel, and then leap forward to the next site, sometimes covering 1400 km non-stop. In 2015, the so far largest migration roost was discovered at Lake Talimarzhan. Here, at the border of Uzbekistan and Turkmenistan, a total of between 6000 and 8000 birds were counted in October. These flocks might represent up to 50% of the world population, highlighting the importance of such sites for the survival of the species.

Unfortunately, excessive spring hunting of the converging flocks at these bottlenecks became also apparent, especially in the Middle East — perhaps explaining the low return rates to the breeding sites in Kazakhstan. In response, awareness raising campaigns were launched targeting hunters and local land users. First successes are now visible, and main stopover sites were declared as no-hunting zones, for example in Turkey.

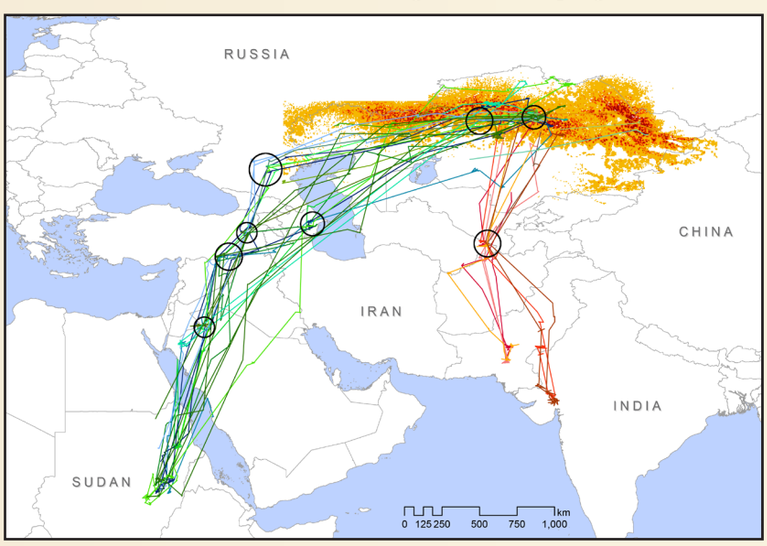
Photo by Johannes Kamp

Adult male Sociable Lapwing on the breeding grounds equipped with 5g Solar PTT.

Satellite tracking also shed light on the migration ecology of the species: tracked birds were little site-faithful on the breeding range and would return to areas up to 600 km apart in subsequent years. This strategy is perhaps an adaptation to the unpredictable weather and grazing levels on the steppe grasslands. On migration and in winter, birds often selected habitats similar to those on the breeding grounds, an example of 'niche tracking' through the annual cycle.

Follow the tracked birds on our project blog: *http://sociable-lapwing.birdlife.org/*

Funding: Satellite tracking is funded by Swarovski Optics within the BirdLife Preventing Extinctions programme.



Modelled breeding distribution (orange tones), migration routes, and key stopover sites (circles).

Photo Contest 2016

There were so many wonderful entries for our 2016 Photo Contest that it was difficult to decide on the winners. The submissions depicted a stunning array of species from across the globe in their natural habitats and tagged with MTI transmitters. Photos were judged anonymously by staff, and in the end, we had a tie.
Both of our winners will receive a free transmitter of their choice! Congratulations!

Thank you to everyone who submitted photographs, and please remember to always keep your cameras ready when in the field. Your picture could be our next winner!

Honorable Mentions

Black-bellied plover fitted with a 5g Solar PTT at the Polar Bear Pass National Wildlife Area in Nunavut, Canada.
Photo by Mark Dodds (Canadian Wildlife Service)

Caspian tern fitted with a 12g Solar PTT near Irrigon, OR.
Photo by Timothy Lawes (Oregon State Univ. & OR Cooperative Fish & Wildlife Research Unit)

Juvenile tiger shark tagged with an X-Tag in southeastern Taiwan.
Photo by Kuan Lun Chen

Winners:

Jonas Bonnedahl's beautiful photograph of a blue-winged teal in flight, tagged with a 9.5g Solar PTT by Andy Ramey, along the southeast Gulf Coast of Texas.

John McKean's stunning photograph of a Philippine eagle, tagged with a 70g GPS/GSM 20-70 Transmitter by Jayson Ibanez and the Philippine Eagle Foundation, at Mt. Apo in the Philippines.

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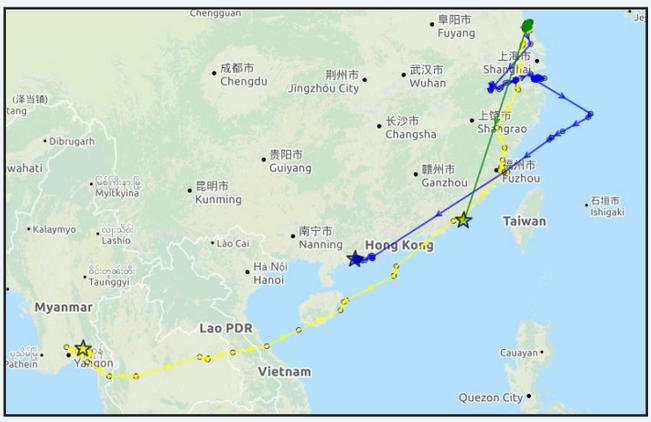
2g Solar PTT Update — Spoon-billed Sandpipers

Our 2g Solar PTT is currently being used to track several species in hopes of providing information with major conservation implications. The most recent species tracked with a 2g PTT is the spoon-billed sandpiper (*Calidris pygmaea*), one of the rarest bird species in the world, with an estimated 250 breeding pairs in 2014. Its precipitous population decline is linked to habitat loss (particularly at Yellow Sea stopover sites) and trapping. Clearly, this is a species on the brink of extinction. An international team of scientists, aviculturists, coordinators, and strategists is attempting to save this species. The goal is to reduce trapping practices, release captively bred and reared individuals into the wild, and work to conserve habitats critical to the species' existence.



Spoon-billed sandpipers CT, ET, and HU move away from Jiangsu, China.

Photo by Jonathan Martinez

Spoon-billed sandpiper HU near Xitou, China.

Another important aspect of conserving spoon-billed sandpipers is to identify previously unknown breeding and wintering grounds. As this bird weighs around 30 grams, the thought of tracking its migratory route via satellite transmitter was unfathomable until the advent of the 2g Solar PTT. This autumn, three individuals were released in China instrumented with our lightest PTTs yet, each tag weighing less than 2 grams. So far, these little birds are revealing some impressive movements. For recent updates about the project see *www.saving-spoon-billed-sandpiper.com*

MTI Attends French Argos User Meeting

On 6 October 2016, CLS held a one-day seminar for French Argos users focusing on animal tracking. The seminar took place at CLS Headquarters in Toulouse, France. A wide variety of material was presented on birds, fishes, turtles, and terrestrial wildlife with the common denominator — Argos PTTs. These presentations represented cutting-edge conservation science. Lance, attending on behalf of MTI, presented an overview of our company's history titled: *Miniaturization of Argos PTTs: enabling conservation 1000 species at a time*. The seminar was successful and it was great seeing old friends and meeting new ones. In addition to seeing some wonderful presentations, attendees were given a tour of the CLS "control room" where data are processed and stored. It was evident that Argos user data are handled with great care.

Merci de nouveau à CLS pour le gentil invitation!

Attendees of the French Argos User Meeting outside CLS Headquarters.

MTI Employee Spotlight

We have decided to feature one of our employees in each of our future issues so that you can meet the team behind the transmitters. This issue, we introduce you to:

Rorilyn Sarra – Production Technician

Q: How long have you been with our MTI family?

A: Over 8 years — I started here back in the beginning of 2008.

Q: And what is your role here?

A: Mostly, I work on finishing the transmitters, which includes painting on the labels and putting on the final protective coatings.We do our best to have them look pretty and polished since that is the first thing (or sometimes the only thing) that customers see when they get their transmitters.

Q: I hear you singing to your music a lot while you work. What are you usually listening to?

A: I love worship music. It's upbeat and uplifting, which is helpful, especially on really busy days!

Q: Our transmitters track species across the globe. If you could visit anywhere in the world, where would it be?

A: Switzerland. It's been my dream since I was a teenager to travel to the Alps. See, growing up in the Philippines, we didn't have any snow; the weather is mostly the same all through the year. Then, I did a report on Switzerland in high school and I fell in love!

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A Message that Bears Repeating — **The Argos Constellation Needs Your Help**

It's not often that we place such emphasis on a particular issue, but the effects of having a diminished Argos satellite constellation could be severe.

Problem: Two NOAA satellites carrying Argos modules are operating well past their expected mission lifetimes. Still functioning normally, NOAA-15 was launched in 1998 with a life expectancy of 3–4 years, while NOAA-18 continues its drift away from the early-morning orbit. These issues have the potential to **negatively affect thousands of Argos satellite tracking programs worldwide**.

Although no data exist indicating these aging satellites are failing, operational lifetimes of other similar satellites suggest that the end may be near. Loss of these satellites would create a significant gap in PTT positioning and data transmission. NOAA has received funding and has budgeted to launch an additional satellite. But there is great concern that the two current satellites might fail before the new launch.

Solution: Launch another satellite as soon as possible.

Problem with the Solution: NOAA budgeted (U.S. Administration's Fiscal Year 2017 budget) to launch an additional satellite carrying an Argos module, originally scheduled for 2019, but changes to the budget have **delayed this launch until 2021**.

How You Can Help: Join the Argos Alliance. Argos Alliance is a consortium of international Argos users who have a unified voice to support the continued investments in the Argos system. Please see the CLS America website for more information.

WWW.CLSAMERICA.COM

Christiane Howey Rising Scholar Award

To honor the life of Christiane Howey, her incredible dedication to our company, and her passion for conservation and helping researchers worldwide, we created the Rising Scholar Award. This annual award is intended to foster career development in researchers starting on their professional journeys.

In celebration of our 25th anniversary and the impressive quality of all of our applicants this year, our selection committee decided to award the scholarship to two candidates, one marine-related and one avian proposal. While both winners are Ph.D. students dedicated to environmental education and using integrative approaches to answer conservation questions, their species and study environments could not be more different. **Nishant Kumar**, from Oxford, U.K., will study black kites (*Milvus migrans*) in densely human-populated areas in, and around, India's capital city of Delhi and during their long-distance migrations. **Katrina Phillips**, from the University of Central Florida, U.S.A., will study juvenile loggerhead sea turtles (*Caretta caretta*) in the Gulf of Mexico to examine ontogenetic shifts between coastal and oceanic phases.

Nishant Kumar (top) and Katrina Phillips (bottom).

Congratulations to both of our winners! Your early career dedication and enthusiasm would make Christiane very proud, and we are excited to follow along with your progress throughout the year.

Interested in applying for the 2018 Rising Scholar Award?

See our upcoming Spring 2017 edition of Tracker News *or visit www.microwavetelemetry.com for our call for proposals.*

Bits & Pieces

Our office will be closed 24 December – 1 January 2017. Happy Holidays!

There are no longer any additional costs to add Ground Track to your transmitters. GT™ is FREE!

To celebrate the holiday season, we are making donations to initiatives that support budding scientists.

Contact us if you are organizing a meeting in 2017 and would like us to sponsor a student to attend your meeting.