WINTER 2019 VOLUME 20 ISSUE 2

Tracker News

MICROWAVE TELEMETRY, INC.

Declining Populations

Dear Customers and Friends,

As you all know, climate change and habitat loss have undoubtedly led to the decline of many species. In some cases the survivors of a species are those outlier individuals that have used non-traditional locations, or those that have ventured to these alternative habitats, possibly by accident. It has been very rewarding to know that satellite tracking has led to the discovery of some of these places and further conservation.

In this issue Baz Hughes and his colleagues update us on their efforts to save the diminutive spoon-billed sandpiper; they are using 2g PTTs to follow the migrations of these tiny birds. Some of their efforts are now being focused on newly discovered sites in an effort to protect them.

Bart Kempenaers and his team are on the trail of the missing whalebirds — perhaps these birds may have followed the bowhead whales to new locations.

Cathleen Thomas and Nigel Butcher report on their studies of the hen harrier, the decline of which has been shown to be directly related to misguided man.

Thank you to all of you who have contributed to these projects and taken the time to share your research.

Over the next twelve months we hope to introduce several new lighter devices that we have been working on. Hopefully these will be useful in the ultimate quest to understand the movements of more species as part of the mission to protect them.

May I wish you all a peaceful end to 2019 and success in whatever you strive for in the New Year.

Sincerely,

Paul and everyone at MTI

Photo by Nikolai Yakushev

Spoon-billed Sandpiper Lime 07, Russia, 11 June 2017. Learn more on Page 2.

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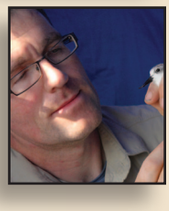
Saving the Spoon-billed Sandpiper – Finding and Protecting Unknown Sites



Baz Hughes has worked at WWT for 32 years. As Head of the WWT Conservation Action Department, he is responsible for WWT's reintroduction and headstarting programmes and has managed the Spoon-billed Sandpiper project for WWT since 2009. Nigel Clark acts as Chair of the UK Spoon-billed Sandpiper Support Group and as Scientific Advisor to the EAAFP Spoon-billed Sandpiper Task Force. Rhys Green has worked on the science needed to conserve bird populations for 40 years, mostly at the RSPB and the University of Cambridge. He studies the effects of conservation actions on Spoon-billed Sandpipers, and ways to make more accurate measurements of their population trends, survival and movements. Guy Anderson has worked for the Conservation Science and Species Recovery teams at RSPB since 1999 and has led and taken part in Spoon-billed Sandpiper surveys in Myanmar since 2011 and in Jiangsu, China, since 2014. Prof. Chang Qing, Professor of Zoology at the Life Science School of Nanjing Normal University, has been appointed by the Chinese government to lead Spoon-billed Sandpiper research and determine conservation activities in Jiangsu Province. Evgeny Syroechkovskiy initiated the Spoon-billed Sandpiper conservation programme in 2000 which led to the development of the wider international effort and the establishment of the EAAFP Spoon-billed Sandpiper Task Force, which he chairs.

The Spoon-billed Sandpiper is Critically Endangered on the World Conservation Union's Red List. In 2010, it was thought the species numbered no more than 100 pairs, was declining at a rate of 26% a year, and could be extinct within 10 years if urgent conservation action was not taken. The international conservation community swung into action. Saving this enigmatic species could act as a flagship for saving the 50 million waterbirds that use the East Asian–Australasian Flyway – the most important and most endangered flyway in the world.

Ewan Weston and Evgeny Syroechkovskiy attaching a satellite tag to Lime 07, 7 July 2018. Photo by Pavel Tomkovich

The Spoon-billed Sandpiper Task Force immediately began work to prevent illegal hunting on the wintering grounds in Myanmar, Bangladesh and China – the most immediate threat to the species – and to address the most important long term threat – reclamation of crucial staging sites in the Yellow Sea. In a landmark decision in 2018, the Chinese Government announced that it was banning any further reclamation of its coastal intertidal wetlands, though much work remains to be done to ensure that there are adequate feeding and, more importantly, roosting sites for Spoon-billed Sandpipers and other shorebirds along the Chinese coast.

As extinction appeared imminent, an emergency captive breeding programme was established at WWT's headquarters at Slimbridge, UK, with birds and eggs sourced from Chukotka in the far north east of Russia. In 2012 a "headstarting" programme began in Russia – taking eggs, rearing the chicks in captivity, and then releasing fledged juveniles – a process which results in five times more fledglings than the wild birds achieve themselves – as it prevents the natural losses due to predation and adverse weather conditions. A total of 186 Spoon-billed Sandpipers have now been released, representing about 20% of the productivity of the wild population. Headstarted birds are being re-sighted away from the breeding grounds at the same rate (ca. 25%) as wild birds, so are thought to be surviving as well as wild birds.

We don't know where 75% of Spoon-billed Sandpipers breed and where around 50% winter. In autumn 2016, we therefore began working with Microwave Telemetry Inc. to try to locate these "missing" sites. Twelve 2g solar-powered PTT tags were fitted to Spoon-billed Sandpipers – glued to the birds' backs, the tags were designed to fall off when the birds underwent their annual body moults. Six tags were fitted in China and six in Russia, leading us to new staging, wintering and breeding sites, including only the second known autumn moult site in the DMZ of North Korea. We confirmed that birds migrating to Myanmar do so overland, and have addressed

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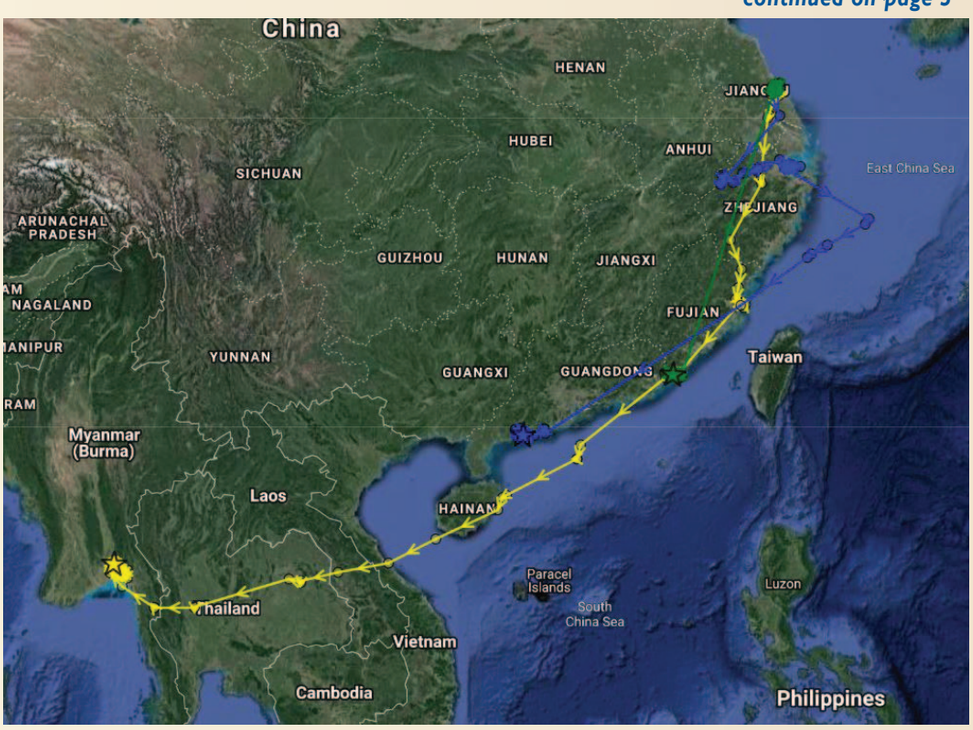


Migration routes of Spoon-billed Sandpipers ET, HU and CT tagged at Tiaozini, October 2016.

Tracking Hen Harriers Across the UK and Beyond!

Dr. Cathleen Thomas, Senior Project Manager, RSPB, is an experienced conservationist with a background in evolutionary ecology and education. She has led successful conservation projects helping to protect a diverse array of species including Atlantic cod, ladybirds, red squirrels and now hen harriers. Nigel Butcher, Senior Technical Officer, RSPB, has worked for the RSPB for nearly 20 years in their Conservation Science department. He studied electronics and his work is associated with technology, particularly telemetry but also audio and video. In recent times he has been heavily involved in the tracking of hen harriers and another project on turtle doves in both the UK and Africa.

The RSPB's Hen Harrier LIFE project team have fitted satellite tags to over 100 juvenile hen harriers during the past five years. Hen harriers are a ground-nesting bird of prey. In the UK, they usually spend their summers on upland moors, nesting amongst the deep heather. They are one of our most treasured upland species, with spectacular displays of aerobatic skydancing and food passes during the breeding season. Sadly they are also one of our most endangered species, with the latest population survey estimating just 575 pairs remaining across the UK and Isle of Man, despite there being sufficient suitable upland habitat to support over 2,650 pairs.

Around 50% of our British upland moors are managed for grouse shooting, where landowners and managers maintain artificially high numbers of grouse which are then shot annually during the shooting season from 12th August onwards. These landowners employ legal methods to control predators such as foxes, crows, weasels and stoats, but in some cases they also illegally kill predators such as hen harriers, golden eagle, peregrine, red kite and goshawk. An overwhelming body of scientific evidence now shows that the main reason for the hen harrier population decline is the illegal killing of birds associated with management of moorland for grouse shooting. We wanted to fit satellite tags to follow the fates of British birds and to attempt to understand their movements and the scale of illegal persecution.

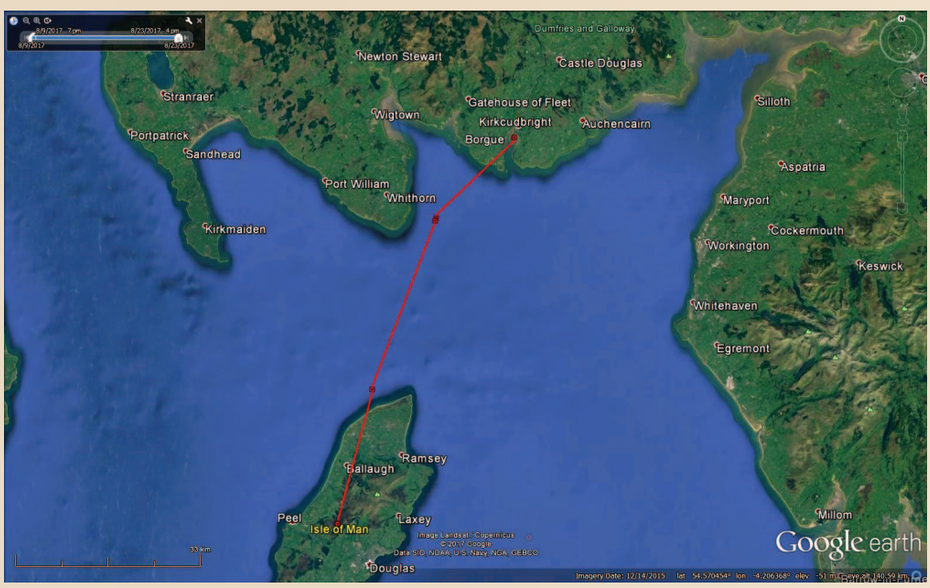
Monitoring satellite tagged hen harriers can be an exciting and interesting job – following an individual bird making its first flights away from the nest area, seeing it travel across the UK, and on occasions further including France and Spain. We can then also monitor its own nesting attempts and raising its own brood of young chicks but sadly, it has also brought into sharp focus the fates being met by many of our hen harriers. Thorough daily analysis of location and sensor data is vital and informs our decision on whether to go searching for potentially dead birds. GroundTrack (GT) and the goniometer have proved invaluable in our retrieval success and birds are immediately taken for post mortem.

A couple of stories to highlight outcomes are:

Mannin (male) was fitted with a 9.5g PTT solar tag on the Isle of Man in July 2017. After leaving the nest he explored his home island until 14th August, when the tag data showed he left the island and headed north towards the Galloway coast in Scotland. Sadly he never completed this journey and the data showed that he had gone down in the sea, approximately 5km off the Scottish coast. We were amazed to see the satellite tag continued transmitting and on 24th August the data showed he was located on the shoreline. Our team were able to locate his remains and the tag. We'll never know what caused Mannin to go down in the sea. Maybe he was caught in heavy rain, became waterlogged and was unable to complete the sea crossing? Whatever the cause, it was a sad end to his short life, but a testament to tag reliability.

Mannin and sister Grayse. Photo by James Leonard

This is in marked contrast to the disappearance of many of our birds, whose perfectly-functioning tags' transmissions end very abruptly, often over areas of land managed for grouse shooting. These disappearances are regarded as highly suspicious and reported to the police.



Map of Mannin's movements (image by RSPB)

Rannoch (female) was fitted with a 12g PTT solar tag in Scotland in July 2017. We watched her as she moved around Perthshire, then on 10 November 2018 she stopped moving in an area of moorland between Aberfeldy and Crieff. The tag battery drained before accurate location data could be gathered allowing her to be found, but after coming online again in May 2019 enough information was provided to locate her remains. We were shocked to discover she was caught in a spring trap. The post mortem report from SRUC veterinary laboratory said: "The bird was trapped by the left leg in a spring trap at time of death. Death will have been due to a combination of shock and blood loss if it died quickly or to exposure and dehydration/ starvation if it died slowly. Either way the bird will have experienced significant unnecessary suffering."

With the population so low, we are absolutely devastated whenever a bird is a victim of a crime. Satellite tagging has revealed the amazing journeys made by hen harriers but also uncovers how their journeys end. The project is nearing its 5-year conclusion and the data analysis is just beginning.

Photo by RSPB

Rannoch found caught in a spring trap.

Where Have All the Whalebirds Gone?

Bart Kempenaers and Mihai Valcu are behavioral ecologists interested in mating behavior and fascinated by shorebirds. They work at the Max Planck Institute for Ornithology in Seewiesen, Germany, and migrate to Utqiagvik every summer. Johannes Krietsch is their PhD student.

In the summer of 2017, we stood at the shore near Utqiagvik (Barrow), the most northern city of Alaska, talking to a local Inupiat family who had just returned from a boat trip. When they found out we were studying red phalaropes, they replied "Ah, whalebirds! We used to see them in big numbers, what happened to them?" Good question!

Pair of red phalaropes in Barrow, Alaska, in June – the female is on the right. Photo by Bruce Lyon

The red phalarope is a somewhat odd member of the shorebirds. It has coot-like lobed toes, hence the name *Phalaropus fulicarius*, spends seabird-like most of its life on the ocean and is one of few species in which the typical sex roles are reversed. Indeed, females are the brighter-colored and more aggressive sex and although they do lay the eggs, it is exclusively the male that cares for eggs and young. As students of avian mating systems, we were intrigued by this bird. In the footsteps of Douglas Schamel and Diane Tracy from the University of Alaska in Fairbanks, who in the late 1970s had published their beautifully detailed observations of color-banded individuals, we wanted to learn more about the phalaropes' polyandrous habits. We hoped to find some females that laid a clutch of 3–4 eggs for at least two males in succession on our small study site, but we also relied on the most advanced tracking technology to find out about the geographical scale over which females attempt to find a free male and willing incubator during the short arctic season.

Photo by Kim Teltscher, MPIO

Tagged female "blue-white red" while foraging in a shallow pond. The yellow band on the upper right leg indicates the year. Note the thin antenna sticking up from the back.

So, on 16 June 2017, we caught a female red phalarope at Emaikson (Freshwater) Lake, just south of the city and fitted her with a Microwave Telemetry 2g PTT tag. The season was late due to a thick layer of snow that took its time to melt, but the female stayed around and presumably produced a clutch. Whether disturbed by local festivities remains unknown, but on the afternoon of the 4th of July, she flew 200 km west, landed on the Chukchi Sea and drifted south-west towards Point Lay. Two days later, she moved 280 km back north-east along the coast and ended up on a tundra patch just 22 km south of the site where we had caught her. But the breeding season was already over and on the 10th of July, the female made her way to the Bering Strait, a quick trip of 800 km. For two weeks, she lived on the sea, drifting south past the Diomede Islands and around King Island. Surprisingly, she flew back north-east and inland, spending a few days in late July 45 km south of Shishmaref. Then, she flew north towards the coast again and was "seen" hanging out at a spit west of the Shishmaref Inlet. On the 3rd of August, she moved again, this time more than 100 km in a north-westerly direction, and drifted north of the Bering Strait. On 5 August, the female moved 175 km, east again, and on the 7th she was back at the coast, this time at the opposite side of the Shishmaref Inlet. On the 10th of August, she made her last trip, a 165 km dash to Great Diomede Island, from where we received the last signal on the morning of August 12th. We don't know what happened to her, but many of the tagged females in 2017 never made it out of the Bering Sea. Did they become victims of climate change? Unusually high water temperatures, resulting in a harmful algal bloom during that period, and many dead seabirds found along the coast in that area point in that direction.

The tracking data we collected in 2017 and 2018 will help in answering many fundamental questions about the behavioral ecology of the red phalarope. Between studies of their mating behavior, movement ecology and wintering habits, we may even confirm the Inupiat's suggestion that red phalaropes indicate the presence of bowhead whales. Will we be able to find statistical evidence for such a bird-mammal association? And will our data together with those of Richard Lanctot and colleagues at the US Fish and Wildlife Service on the presence (and disappearance) of birds in the Beaufort, Chukchi and Bering Sea help us understand the oceanographic conditions these birds need to survive? Soon, we might be able to answer why the elder Inupiats see fewer whalebirds now than during their youth.

Track of female red phalarope from Utqiagvik around the Chukchi Sea and Bering Strait.

Happy Retirement, Cathy!

Cathy, with whom many of you are familiar, first joined our team back in 1993. She and Chris Howey met while volunteering at their children's school. At the time, Microwave Telemetry was still in its early years (the company was founded in 1991) and had only a few staff members. Eventually, Chris asked her if she'd like to have lunch and suggested Cathy work part-time in our office. Cathy agreed to give it a try and see if it worked out.

Needless to say, it worked out. For many years, she helped Chris with a variety of administrative tasks and eventually became our main customer contact representative. She has helped keep us connected and on track (no pun intended), and after 26 years of heartfelt dedication, we would all like to say THANK YOU!

Cathy, we are forever grateful for the hard work you have contributed to Microwave Telemetry, the relationships you have fostered with so many of our fellow researchers, and the compassion which you have shown each of us as we've worked side-by-side. We will miss seeing you each day, but are excited for your retirement adventures to begin!

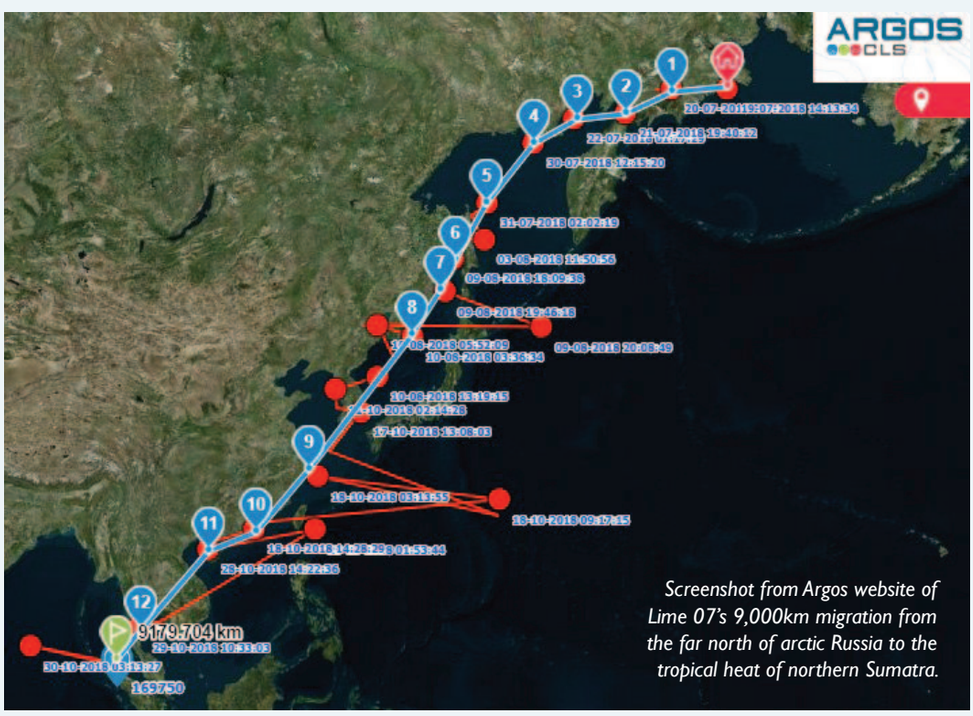
If you would like to extend your own good wishes to Cathy, email or mail them to our office and we will make sure she receives them.

A dynamic duo – Cathy (right) and Tracy

As Cathy heads off to enjoy her retirement, we would like to introduce **Tracy** as our new main customer contact representative. Her vibrant personality has already brought so much joy to our office and we're sure you'll enjoy working with her as well!

Saving the Spoon-billed Sandpiper *continued from page 2*

the threat of illegal mist netting at sites in southern China with local conservationists informing Chinese authorities who removed the nets – direct and immediate on-the-ground action. Sites on the Yellow Sea coast of China have recently been designated as World Heritage Sites, including the most important staging site for Spoon-billed Sandpiper – Tiaozini in Jiangsu Province – which was included after tagging data had confirmed its importance.



Screenshot from Argos website of Lime 07's 9,000km migration from the far north of arctic Russia to the tropical heat of northern Sumatra.

To date, our star bird has been Lime 07. After leading us to the new moulting site in North Korea, we expected his tag to fall off. However, he continued south leaving North Korea on 17 October 2018 for a non-stop 51 hour 2,400km flight to the south coast of Guangdong Province, China, where he settled on 19 October at a previously unknown staging/wintering site on the west coast of the Leizhou Peninsula. In the evening (local time) of 28 October, after 9 days in southern China, Lime 07 set off once again. We expected him to head to Bangladesh where he had spent the previous winter, but when his next fix eventually came in 19 hours later he was off the coast of Cambodia! He had continued on his south-westerly bearing and was still flying. And on he flew, eventually making landfall in northern Sumatra on the morning (local time) of 30 October after a non-stop 49 hour flight of 2,300km – almost the same distance in the same length of time (and thus at the same speed – 47km/h) as the previous leg of his migration. After a marathon 3½ month, 9,000km migration from the far north of arctic Russia to the tropical heat of northern Sumatra, he was subsequently located in the field, alive and well, by Chairunas Adha Putra (Nchay) – the first record of Spoon-billed Sandpiper in Indonesia.

In autumn 2019, we fitted another four tags to Spoon-billed Sandpipers at Tiaozini to try to locate more of their missing staging and wintering sites. At the time of writing, we have lost contact with two birds – AH in China, and EH as it was nearing Bangladesh – two others continue to transmit from southern China and Vietnam. Their migration can be followed on our live map (updated every ten minutes):

https://www.saving-spoon-billed-sandpiper.com/satellite-tracking/

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Christiane Howey Rising Scholar Award

2020

Photo by Jonah Gula

Throughout her life, Christiane Howey showed great dedication to both her local community and the tracking community. Each year, we offer this award to follow in her footsteps and support researchers who are beginning their careers. Once again, our panel was impressed by many of the submissions and had a difficult time choosing a recipient.

After much deliberation, we would like to congratulate **Jonah Gula** as this year's recipient of the Christiane Howey Rising Scholar Award!

Jonah is a graduate student at Texas State University San Marcos who plans to use Solar Argos/GPS 45g PTTs to track Saddle-billed Storks in western Zambia. Using Saddlebills as an umbrella species, he will examine the connectivity and importance of protected and unprotected wetland areas within the region.

Photo by Andre Botha

Congratulations, Jonah, and thank you to all those who submitted proposals! We wish you great luck with your studies!

Interested in applying for the 2021 Rising Scholar Award? See our upcoming Spring 2020 edition of *Tracker News* or visit www.microwavetelemetry.com/rising_scholar_award for more information.

30th Anniversary Photo Contest

Can you believe it?

Our 30th ANNIVERSARY is almost here!

Prizes include FREE transmitters, FREE refurbishments*, MTI gear, and more!

Help us capture 30 years of animal tracking!

Remember, all photo entries should

- depict animals tagged with MTI transmitters in the animals' natural environment
- include the photographer's name and affiliated organization (if applicable), as well as the species photographed
- be in high resolution digital format, preferably a minimum of 2100 x 3000 pixels (we understand this may not be feasible for older photographs, so please send the best quality image possible)

Groups and organizations, as well as individuals are eligible to enter. Multiple entries are permitted and encouraged. Photos previously used in our publications are ineligible.

Email entries to **support@microwavetelemetry.com** with "Photo Contest" written in the subject line. Submissions will be accepted through **October 2, 2020**.

All contestants submitting entries grant permission for the future publication of their photos by Microwave Telemetry, Inc.; appropriate photo credit will be given.

* of eligible transmitters

Photo by Eva Szyszkoski, LDWF

Bits & Pieces

When shipping transmitters back to us for refurbishment, pack them carefully and securely, preferably in their original packaging, along with their completed production form.

If you have a published work from this past year involving our transmitters, please let us know so we can add it to our online Reference Library, available at www.microwavetelemetry.com/reference_library

Our office will be closed from December 25th through January 1st for the holidays. See you in the New Year!