

# AMASS

*A new perspective on avian migratory corridors*





# SASKATCHEWAN



Dr. Bondar with her favourite Hasselblad camera for aerial photography in a Long Ranger helicopter.



Aerial image over an agricultural pond in southern Saskatchewan with 17 adults and two colts (brown plumage).



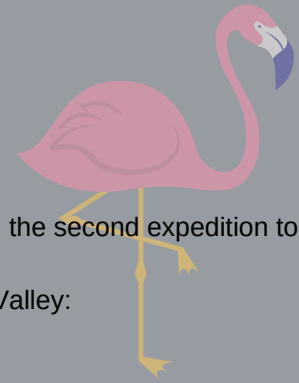
Two Whooping Cranes foraging in an agricultural field. Photo taken road side during sunset.

- The Roberta Bondar Foundation (RBF) executed several components of the AMASS project during **Fall 2018** and **Winter 2018-2019**.
- In **October 2018**, the RBF completed an expedition to southern Saskatchewan, a traditional Whooping Crane stopover site.
- Over **150** Whooping Cranes were documented at this time.
- John Conkin, of the Canadian Wildlife Service, accompanied Dr. Bondar (photographer) and Prof. Bonnie Patterson (videographer) during the helicopter flight.
- Whooping Cranes typically leave their breeding grounds in Wood Buffalo National Park in September or October. They tend to stage in Saskatchewan from one to five weeks.
- The Cranes feed on waste grains and roost on agricultural fields, ponds and wetlands.
- Unfortunately, wetlands are being drained (frequently illegally) for agricultural use, not only in Saskatchewan, but globally. Wetland drainage induces downstream flooding, which diminishes habitat quality both directly and indirectly for not only the Whooping Crane, but for migratory birds in general.





# TANZANIA & KENYA



- In **November 2018**, the RBF undertook the first AMASS expedition to Tanzania and the second expedition to Kenya, the first one completed during Summer 2015.
- The RBF photographed three Lesser Flamingo habitats within the East African Rift Valley: Lake Natron (Tanzania), Lake Bogoria (Kenya) and Lake Elementeita (Kenya).



- **LAKE NATRON** is the most important breeding site for the Lesser Flamingo, with 75% of the world's population breeding at this location.
- Lake Natron is a saline alkaline lake. This saline environment allows photoautotrophic organisms, like the cyanobacterium *Arthrospira fusiformis*, to thrive.
- The red pigment in the cyanobacteria gives both the Lesser Flamingo plumage and the deep open waters of Lake Natron their characteristic reddish pink colour.
- The Lesser Flamingo's tough skin protects them from Lake Natron's hot caustic water (capable of reaching a pH of 10.5 and a temperature of >40 degrees Celsius).
- For years, the possible development of a soda ash extraction factory threatened Lake Natron, however in March 2018, the Tanzanian government called off all plans for development (a definite success story).
- A dam along the river entering Lake Natron would divert water from nearby rivers which would increase water flow, reduce salinity and decrease the concentration of cyanobacteria, the favourite food of the Lesser Flamingo.

NASA Photo ID: ISS037-E-11559. Photo of Lake Natron taken on October 14th, 2013 with a 400mm lens.



- **LAKE BOGORIA** is an important foraging site for the Lesser Flamingo because of its mass populations of the cyanobacterium *Arthrospira fusiformis*.
- In 2018, the water levels at Lake Bogoria were higher than the water levels during the RBF's last visit in 2015, resulting in less food for the Lesser Flamingos.
- Higher water levels lengthen the water column, decreasing the amount of sunlight reaching the phytoplankton which Lesser Flamingos feed on.
- The Lesser Flamingo population at Lake Bogoria in 2018 included subadults. There were also Greater Flamingos interspersed within the flock.

World Wind satellite imagery of Lake Bogoria.



- **LAKE ELEMENTEITA** is another saline alkaline lake that supports large populations of Lesser Flamingo.
- During our visit to Lake Elementeita, we found both Lesser Flamingos and Greater Flamingos, closer and further away from the shore, respectively.
- Lake Elementeita is home to the iconic and highly photographed Sleeping Warrior geographical landform (pictured below).

World Wind satellite imagery of Lake Elementeita.





# FLORIDA



## RED KNOT



*Calidris canutus*

- The RBF has added two new migratory bird species to the AMASS project, the first being the Red Knot.
- For the purpose of this project, AMASS will focus on the *rufa* subspecies of the Red Knot, which breeds exclusively in the central Canadian Arctic.
- This Canadian subspecies has declined 70% in the last 15 years.
- The Red Knot can cover up to 15,000 km on their migration from their Canadian breeding grounds to their wintering grounds in the US Gulf Coast, the Caribbean and South America (travelling as far south as Tierra del Fuego which lies on the Chile/Argentina border).
- Survival of the *rufa* Red Knot is dependent primarily on the management of their food source, Horseshoe Crab, whose eggs they consume during their stopover at Delaware Bay, New Jersey.

Pictured here is Red Knot 511, captured and banded at Folly Island, South Carolina. 511 has been spotted 15+ times in South Carolina, New Jersey and Florida, where it was photographed by the RBF.

## PIPING PLOVER



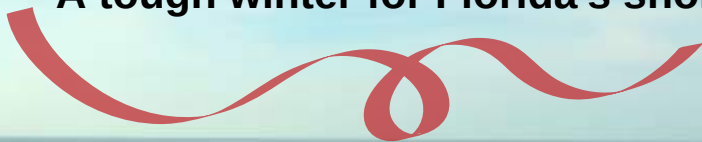
*Charadrius melodus*

- The Piping Plover is the latest addition to the AMASS project.
- This tiny wader breeds in three locations: the Atlantic coast, the Great Lakes and the lakes of the Northern Great Plains (of the USA and the Canadian Prairies).
- Like the Red Knot, the Piping Plover overwinters along the US Gulf Coast, coastal US and the Caribbean.
- In 2018, the Piping Plover bred on Toronto Islands for the first time in over 50 years! This is within the range of the Foundation's office.

Pictured here is Piping Plover 9E, an adult male, banded in Covehead, Prince Edward Island National Park, P.E.I. He was sighted in North Carolina during his fall migration and was found wintering on Bunche Beach, Florida by the RBF.



## A tough winter for Florida's shorebirds

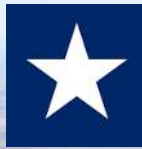


- The **red tide** phenomenon has wreaked havoc on Florida shorelines. These harmful algal blooms deplete oxygen and release potent illness-creating toxins.
- The toxin not only affects the nervous system of shorebirds but through bioaccumulation suffocates other marine life in the food web.
- This winter, the red tide has been prominent and longer lasting than in previous years. Along with cold wintry weather, it has made it very difficult to locate Red Knot populations.
- However, through tracking the Red Knots on ebird.org and through contacting professionals in the field like Audrey Albrecht (the shorebird program coordinator at the Sanibel-Captiva Conservation Foundation), the RBF was able to locate the Red Knots near beaches and causeways.
- More on the red tide and forecasts on the red tide in Texas and Florida available here: <https://oceanservice.noaa.gov/news/redtide-florida/>





# TEXAS



## *by Air*

- In **February 2019**, the RBF took flight to Texas to obtain photography and HD video of Aransas National Wildlife (NWR) and Attwater Prairie Chicken NWR.
- The R44 helicopter departed from Eagle Lake airport and followed a triangular flight path, flying to Attwater Prairie Chicken NWR (the Sprague's Pipits' wintering habitat), then to Aransas NWR (which hosts both the Sprague's Pipit and the Whooping Crane) and back.
- The helicopter encountered a powerful headwind on the way to Aransas, slowing the aircraft down to 90 knots. On the way back the helicopter experienced a tailwind, travelling upwards to 130 knots.
- The moisture-laden, hazy air degraded the coastal aerial imagery.

Left: Prof. Bonnie Patterson, chair of the board of directors of the RBF with pilot Eric.

## *Land*

- Texas was extremely wet this year because of heavy rainfall. This changed the habitat for grassland birds and expanded the habitat for wetland birds.
- Attwater Prairie Chicken NWR is known as one of the most consistent sites for detecting wintering Pipits (as per a USFWS report published in 2015).
- After an initial introduction to the NWR and non-public areas by the Assistant Refuge Manager, Jennifer Romero, the RBF explored Attwater Prairie Chicken NWR by car, with frequent stops on the NWR public road.
- The RBF ultimately reported the first Sprague's Pipit sighting found in the NWR during the 2018-2019 Winter season.



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## *and Sea*

- This year's boat trip off of Matagorda Bay was a great success, capturing many amazing shots of both adult Whooping Cranes and colts.
- This year, unfortunately, not as many colts survived their journey from Wood Buffalo National Park.
- This raises concerns regarding the stability of the Aransas-Wood Buffalo population.

Left: Dr. Bondar with the Royal Canadian Geographical Society (RCGS) flag. RCGS was a partner in funding the Texas expedition.



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# OTTAWA

*#ExploringEarth*  
*#SpaceForBirds*  
*#DareToExplore*

- On **January 22nd 2019**, the RBF took part in the Canadian Space Agency's #ExploringEarth event at the Canada Science & Technology Museum in Ottawa.
- Dr. David Saint-Jacques spoke with Dr. Bondar and Dr. Jenni Sidey-Gibbons via a video downlink from the International Space Station (ISS).
- During this conversation, Dr. Bondar was able to touch on the AMASS project, emphasizing how David's imagery will help protect #SpaceForBirds.
- To date, Dr. David Saint-Jacques has obtained imagery of ~15% of sites requested by the RBF for the AMASS project.
- The Exploring Earth software, which launched that day, is an interactive map allowing users to view photos taken by Dr. David Saint-Jacques from the ISS alongside blogs written by Dr. Bondar and other contributors explaining the science of the Earth and the contribution of satellite and space imagery to science.
- The Exploring Earth team created an eighth category for the interactive map to support AMASS.
- Dr. Bondar's blogs discuss migratory birds and their habitats within coastal and freshwater wetlands and how space imagery can be used to monitor them.
- Additionally, Dr. David Saint-Jacques held a Q&A with over 200 school children.
- After the video downlink, many space-themed educational activities were available for the students.
- A piece of history: Dr. Jenni Sidey-Gibbons and Dr. Bondar met in person that day for the first time.
- The RBF thanks the #ExploringEarth event partners for running an incredible event: Ingenium Canada, Canadian Space Agency, Western University, Royal Canadian Geographical Society and CanGeo Education.



AMASS banner and the #DareToExplore banner at the entrance of the auditorium .



From left to right: Sylvain Laporte, President of the CSA, CSA Astronaut Dr. Jenni Sidey-Gibbons and astronaut Dr. Roberta Bondar.



# Make a Difference with Your Gift Take Part in a Life Changing Experience

The Roberta Bondar Foundation is a registered charity in Canada – No. 80743 8759 R0001. Support for its educational mission comes from many donors, partners and sponsors who join us to invest in the future well-being of all forms of life on planet Earth.

Your contribution will go directly toward the development and delivery of programs that stimulate creativity and promote ethical responsibility and action to protect the natural environment.

Stable, ongoing support is critical for the Roberta Bondar Foundation to exercise its mandate to protect the natural world and to build healthier lives.

## *How can I help?*

Donations can be made in a way that is most suitable for you.

Directly, online through:

<https://www.therobertabondarfoundation.org/donate-2/> or  
<https://www.canadahelps.org/en/dn/14386>

By cheque payable to:

The Roberta Bondar Foundation  
276 Carlaw Ave., Suite 202A  
Toronto ON, M4M 3L1

For transfer of funds through another mechanism or if you wish to discuss your support in advance of a decision, please email [info@therbf.org](mailto:info@therbf.org)

## *How will it help?*

By donating to our Foundation, you will have a large impact across all generations. We work with all ages, cultures and abilities and deliver programming through numerous effective partnerships. Your donation will help us to continue these activities and to grow our impact through dynamic experiential learning opportunities. Help us to inspire participants to appreciate and protect the natural environment.

With your help, we will all be  
“Taking Care of Earth ~ Taking Care of Us.”





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