

AWCF NEWS

American Wildlife Conservation Foundation April 1, 2020

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An experimental test of the effects of LED lighting on the foraging activity of a Connecticut bat community

Chad Seewagen, Great Hollow Nature Preserve & Ecological Research Center; University of Connecticut

Amanda Adams, Texas A & M University; Bat Conservation International

Funded by AWCF 2018

The biological world is structured around natural rhythms of alternating day and night. The encroachment of *artificial lighting at night* (or ALAN) is now considered a global threat to biodiversity.

Global light pollution is escalating and nearly doubled over the 25 years before 2010 (Holker, Moss et al, 2010). Light encroachment will threaten biodiversity as 30% of vertebrates and >60% of invertebrates are nocturnal (Holker, Wolter, Perkin, & Tockner, 2010). Almost 90% of Europe and approximately 50% of the U.S. now experience light-polluted skies (Falchi et al, 2016).

ALAN can have myriad effects on wildlife by altering circadian rhythms, and may cause wide-ranging behavioral changes affecting foraging, risk-taking, predator-prey interaction, communication, migration, roosting, and reproduction. Nocturnal animals, such as many bat species,



Little Brown Bat. Photo by batworlds.com

**American Wildlife
Conservation
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www.awcf1911.org

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Mission Statement:

To enhance fish and wildlife resources in North America through funding conservation, research, and education initiatives with the goal of ensuring that the present and future generations can continue to enjoy these resources.

To join AWCF and help fund our projects, please contact our website

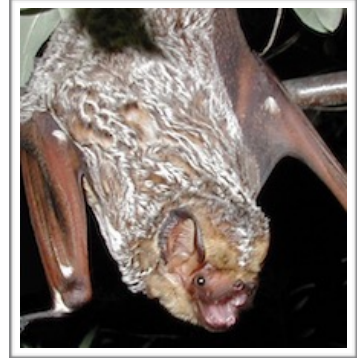
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and become a member.

Thank you!

may be particularly affected as they have adapted to navigate and feed in the absence of light. While some bat species may benefit in illuminated areas by taking advantage of insects attracted to light sources, other species are known to avoid and be negatively affected by light.

Much of what is known about bat responses to light pollution comes from several experimental studies that have been conducted in Europe in recent years, while much less remains known about the effects of artificial lighting on North American species of bats. In this AWCF-funded study, we experimentally tested the effects of nighttime LED lighting on the foraging activity of five bat species at Great Hollow Nature Preserve in Connecticut. Our experiment has provided some of the first data on the effects of light pollution on a community of free-living bats in the northeastern U.S. The preserve is approximately 335 ha (825 acres) of second growth and mixed hardwood forest surrounded by an additional 1330 ha (>2,050 acres) of protected forest in both Connecticut and neighboring New York. ALAN at the site is therefore mainly limited to minor, regional sky-glow.

Our study focused on bat species that are nocturnal, aerial insectivores that commonly feed over open spaces and along forest edges, streams, and other lineal landscape features. This includes the big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), hoary bat (*L. cinereus*), little brown bat (*Myotis lucifugus*), and silver-haired bat (*Lasionycteris noctivagans*). We collected acoustic recordings of the five species of bats over a freshwater wetland on 65 nights in 2016 and 2017 that were randomly assigned to one of three treatments: Light (nights when the recording area was illuminated with three 55-watt, 4,400 lumens LED floodlights), Dark (nights when the lights were off), or Control (nights when the lights and poles were taken down entirely and removed from the area to avoid any potential influence of the lighting infrastructure itself). Our objective was to study the responses of bats when light is introduced into a habitat that previously didn't have



Hoary bat roosting on tree branch. Photo by Paul Cryan, USGS.



Floodlights set up on the edge of a wetland. Photo by Chad Seewagen

Conservation Book Report

by Daniel Leete, President

Extreme Landscape: the Lure of Mountain Spaces

edited by Bernadette McDonald,
published by the National
Geographic Press ©2002

When you see or hear the word “mountains,” does your mind immediately conjure up a scene... of a mountain, or mountain range, from somewhere in your past? That’s what this book will do for you, from a variety of perspectives.

The United Nations declared 2002 the International Year of Mountains. The Banff Centre for Mountain Culture held a summit, “Extreme Landscape: Challenge and Celebration.” This book was the result of that gathering.



Denali, AK. Photo by K. Stuart

With a remarkable introduction by Terry Tempest Williams, this book is a collection of seventeen essays from many famous people from all over the world. Williams argues, “We must honor the wild or we stand to lose it.” You may have heard of Barry Lopez (famous author), or Yvon Chouinard (mountain climber extraordinaire), or Reinhold Messner (worldwide master of the high peaks). These three essayists exemplify the quality of background, the passion and purpose shown

light pollution, simulating new development such as expanding urban/suburban areas or newly lighted roadways. We chose to study the effect of LED lighting in particular because it has been suggested by some studies in Europe to be more “bat friendly” by attracting fewer insects and having less impact on light-avoiding bat species than traditional mercury and sodium vapor lights.

We found lighting to be associated with lower activity of silver-haired bats, big brown bats, and little brown bats, and a decreased likelihood that little brown bats would be present. In contrast, there was no apparent effect of lighting treatment on the activity or presence of eastern red bats or hoary bats. The negative effect of lighting on little brown bats that we found is consistent with two other studies involving little brown bats (McGuire & Fenton, 2010; Craven & Boyles, 2019) and research from Europe that shows other species in the genus *Myotis* to be particularly averse to lighting (Rowse et al, 2016). However, observed effects of artificial lighting on big brown bats, eastern red bats, and silver-haired bats, and closely related European species are inconsistent throughout the literature, suggesting that lighting effects may be population- or landscape-specific for some species. In species that occur both inside and outside of cities, for example, the urban bats that have habituated to lighting over generations might react differently to lighting than rural conspecifics that are accustomed to relatively dark landscapes.

Our results add to a growing body of evidence that *Myotis* bats, such as the little brown bat, are averse to a variety of lighting types, including LED. Little brown bats have recently experienced dramatic population crashes due to white-nose syndrome and are now a species of high conservation concern. Further research will be needed to help natural resources managers and regulators develop solutions that minimize impacts of lighting to little brown bats and other negatively affected species in a rapidly urbanizing world.

References:

Cravens, Z. M. and J. G. Boyles. 2019. Illuminating the physiological implications of artificial light on an insectivorous bat community. *Oecologia*. 189:69-77.



Acoustic recording (spectrogram) of a silver-haired bat. Photo by NPS.gov

Book Report Continued:



The Pueblo Mountains, OR. Photo by Amy Stuart

in every essay.

The “why they write” is different in every case, and that difference gives me new perspectives on the reasons that mountains seem to draw so many of us into their mythology, their power, and their remoteness. While reading these essays, I have thoughts that hadn’t occurred before, and I become surprised, led forward to the next essay, wanting to learn more, and thinking more deeply and enjoying the experience.

You will read the thoughts of anthropologists, mountain climbers, naturalists, geologists, ethnologists, and various scientists, and you will encounter the terrain of mountains all over the planet. Oh, how I would love to experience so many of these places myself (and that probably won’t happen), but I so appreciate how these authors gave me the opportunity to vicariously be there with them.



Steens & Alvord Rims, OR Photo by Amy Stuart

Holker, F., Wolter, C., Perkin, E. K., & Tockner, K. 2010. Light pollution as a biodiversity threat. *Trends in Ecology & Evolution*, **25**, 681–682.

Holker, F., Moss, T., et al. 2010. The dark side of light: a transdisciplinary research agenda for light pollution policy. *Ecology and Society*, **15**: 1-11.

Falchi, F., Cinzano, et al. 2016. The New World Atlas of artificial night sky brightness. *Science Advances*, **2**: e1600377.

McGuire L.P. and M.B. Fenton. 2010. Hitting the wall: light affects the obstacle avoidance ability of free-flying little brown bats (*Myotis lucifugus*). *Acta Chiropterologica* **12**:247-50.

Rowse EG, Lewanzik D, Stone EL, Harris S, Jones G. 2016. Dark matters: the effects of artificial lighting on bats. In: *Bats in the Anthropocene: Conservation of bats in a changing world*. Springer Publishing.

Editor’s Note: Great Hollow Nature Preserve & Ecological Research Center (greathollow.org) is a newly established organization in New Fairfield, CT that is dedicated to biodiversity conservation, applied ecological research, experiential environmental education, and passive outdoor recreation. Its researchers and collaborators conduct conservation-driven studies of wildlife in Connecticut and beyond to better understand human impacts to the environment, and provide science that can help guide management decisions and public policy. In addition to the bat study above, other current projects involve area requirements of wood turtles, the impacts of mercury pollution on migrating birds, the effects of non-native plants on forest songbirds, and more. Great Hollow’s 825-acre preserve features a 4-mile trail network that is open to the public year-round. Program offerings include environmental education, citizen science events, a nature-based summer day-camp, and guided hikes.



Chad Seewagen is the Executive Director of the Great Hollow Nature Preserve & Ecological Research Center in New Fairfield, Connecticut. Prior to joining Great Hollow in 2016, Dr. Seewagen was a Senior Wildlife Biologist and Technical Director at a New York City-based environmental consulting firm, and before that, worked as a Research Scientist in the Department of Ornithology at the Wildlife Conservation Society’s Bronx Zoo. He has a B.S. in Wildlife & Fisheries Conservation from the University of Massachusetts-Amherst, an M.A. in Conservation

Biology from Columbia University, and a Ph.D. in Biology from the University of Western Ontario. He is an Adjunct Research Scientist in the University of Connecticut’s Department of Natural Resources & the Environment and its Wildlife & Fisheries Conservation Center. His primary research interests include the physiological ecology of bird migration, the impacts of mercury pollution on birds, and the effects of invasive plants on wildlife habitat quality.

Summer Quarterly AWCf Board
& Member **VIRTUAL** Meeting

*June 11th, 2020 9:00 a.m. - 3:00 p.m.
or so*

*This will be a virtual meeting. As
always, all members of the AWCf
are welcome to attend.*

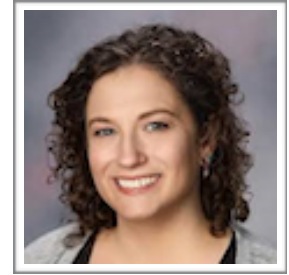
*If you are a member and would like
to attend, send an e-mail to the
AWCF Secretary - Dr. Paul Curtis at
pdcr@cornell.edu - and let him know
that you would like the information
so you can attend the June 11th
Board meeting with Zoom. He will
then send you the contact information
via e-mail. Also, please send an e-
mail to the President (Daniel Leete)
to let him know that you plan to
attend. His e-mail address is
leetedaniel4@gmail.com.*

Our members wear many hats!

In an article titled "Seed Treatment helps win battle against Crows" written by Kara Lynn Dunn in the Feb. 2020 edition of the American Agriculturist Magazine, a portion of the article referred to Dr. Paul Curtis, a Cornell University professor of natural resources and wildlife Extension specialist, who has been testing a product called Avipel Shield. This project was coordinated by Extension personnel in eight counties in New York State.

Dr. Curtis also just happens to be the Secretary for the American Wildlife Conservation Foundation. If you know of someone, or if you, yourself, have recently published an article or have had one published about you, let us know!

Amanda Adams is a Conservation Research Program Manager at Bat Conservation International and a Lecturer in the Department of Biology at Texas A&M University. She has a B.S. and M.S. in Biology from UC San Diego, and a Ph.D. in Biology from the University of Western Ontario, where she studied spatial-temporal variation in bat activity patterns. She completed postdoctoral research at Ben-Gurion University of the Negev and Texas A&M University. Dr. Adams has worked with bats for 13 years and trained individuals in acoustic monitoring and analysis techniques around the world, including Australia, Canada, Costa Rica, Jamaica, and Israel.



Do Leg Bands Affect Survival of Common and Roseate Terns?

Carolyn Mostello,
Massachusetts Division
of Fisheries & Wildlife

Patricia Szczys, Eastern
Connecticut State
University

Kiah Walker,
Massachusetts Division
of Fisheries & Wildlife

Funded by AWCf 2019

Leg bands form the backbone of nearly all avian studies that rely on individuals of known origin and age. Banding studies have made important contributions to our knowledge of the endangered Northeast population of the Roseate Tern (*Sterna dougallii*), but may have negative impacts on survival by increasing susceptibility to entanglement and capture. However, the extent to which these factors affect survival and population dynamics is unknown. In 2018, with support funding from AWCf, we conducted a pilot assessment of the effects of PIT-tags (Passive Integrated Transponder-tags) on productivity and behavior of Common Terns (*S. hirundo*, a surrogate species) as a precursor to work with Roseate Terns.



An adult Common Tern at Nantucket
National Wildlife Refuge,
Massachusetts. Photo by Amanda Boyd
of USFWS

Nature Sleuth

by Daniel Leete, President

In the previous edition of the AWCF Newsletter, you were shown the following photo:



Could you guess what the artifact is? Answer: Fulgurite (from the Latin fulgur, meaning “lightning”, from Wikipedia) are natural tubes, clumps, or masses of sintered, vitrified, and/or fused soil, sand, rock, organic debris and other sediments that sometimes form when lightning discharges into ground. This item was found near the washed out bottom of a sand dune in the state of eastern Washington. It is made of pure fused sand.

Here comes the next item for you to identify: Each of these four objects are about an inch (2.5 centimeters) across from point to point. Here’s a hint: They were found in the Hudson River. Good luck!



PIT tags can be attached to birds in a number of ways. The most common way is to glue the tag to a band (a metal or plastic ring) that a bird carries on its legs. Tags can also be placed under a bird's skin or even injected into the bird using a small needle. The ultimate objective of this work is to investigate whether leg bands affect the inter-annual survival of Roseate Terns.

METHODS:

Study sites: This study was conducted at 2-acre Bird Island, and 3-acre Ram Island, both in Buzzards Bay, Massachusetts. In 2018, Bird Island supported 2,079 pairs of Common Terns and 1,175 pairs of Roseate Terns; Ram Island supported 3,053 pairs of Common Terns and 1,093 pairs of Roseate Terns.

Nesting parameters: We delineated Common Tern study plots in which to assess nesting chronology, egg weights, and productivity and monitored them on every visit (approximately every other day) during May – July. We marked nests with numbered paint sticks, marked eggs in sequence of laying, weighed the first egg in each nest (the “A-egg”), and checked nest status. We used hardware cloth to fence-in “productivity plots”—subsets of nests in study plots—for chick growth studies. We banded all chicks within productivity plots with USGS Bird Banding Lab (BBL) bands. We weighed chicks at each visit until they fledged, died, disappeared, or until the fencing was taken down. Outcome (fledged, dead, presumed dead) was predicted by age-weight criteria (MassWildlife, unpublished.)

Trapping and tagging of adults: We inserted PIT-tags (Biomark APT-12) subcutaneously alongside the keel and banded approximately half of those birds with BBL and field-readable bands (white with black code); adults left unbanded served as controls. We collected a small volume of blood for sexing. Using 7”-diameter ring antennas (Biomark Terrestrial Antenna) placed around nests, we attempted to re-detect a subset of transponders after implantation to evaluate loss rate.



PIT-tagged common terns incubating with receiver antennas at Bird Island in Buzzards Bay, MA. Photo by Mostello, Szczys, and Walker

The Use of Drones in Wildlife Conservation Conference

Friday, July 31, 2020
Paul Smith's
College

Sponsors: AWCf
Paul Smith's College
NY Chapter of The
Wildlife Society



Drones or Unmanned Aerial Vehicles (UAVs) will play an ever expanding role in research and management of natural resources. This new technology is currently being used for real-time and remote sensing surveillance of wildlife, habitat analysis, search and rescue of outdoor recreationists, wildlife and conservation law enforcement, and beautiful and thrilling panoramas of natural ecosystems.

Researchers, natural resource managers, agency personnel, educators, students, and the general public are welcome to attend this conference on the beautiful campus of Paul Smith's College in New York's Adirondack Park. The agenda will include six indoor presentations followed by three outdoor demonstrations on the use of drones by practitioners. Seats will be limited. Participants must register ahead of time. Attendees are encouraged to make this mid-summer event a family recreational vacation.

Lodging: Dorm rooms at Paul Smith's College will be available – contact Sarah Wheeler at swheeler@paulsmiths.edu if interested. You can also choose to reserve a room at Saranac Lake. You may also camp at locations such as NYSDEC Fish Creek Campground.

Dining: On July 31, lunch will be provided by Paul Smith's College to

Observations: We observed behaviors of PIT-tagged and untagged birds from blinds, collecting instantaneous observations every 5 minutes. The behavior categories were: sit on nest, sit off nest, stand over nest, walk/run, fly, preen, mate interaction/courtship, chick rear/feed, aggression/defense, eat, stretch, maintain nest, adjust eggs, and out-of-sight.

ANALYSIS:

Nesting parameters. We calculated mean or median values for several parameters for nests at which an adult was PIT-tagged, as well as nests at which no adults were PIT-tagged.



Roseate tern by roseatetern.org

Observations. We grouped data into two super-categories: (1) to reduce ambient temperature bias, we combined 'sit on nest' and 'stand over nest,' both temperature maintenance behaviors; (2) all other behaviors were very infrequent, so we grouped them (other than 'out-of-sight') into a second super-category to increase the power of the analysis. We used Chi-square analysis to assess whether there were differences in the proportions of observations in the two super-categories between adults with PIT-tags vs. non-PIT-tagged adults, and nests where one adult was PIT-tagged vs. nests in which no adults were PIT-tagged (i.e., observations in the "tagged nests" group included the mates of PIT-tagged birds).

RESULTS AND DISCUSSION:

Trapping and tagging: We PIT-tagged 80 Common Terns, approximately half of which were also banded. Sexing of trapped birds is ongoing. Due to equipment issues, we have not yet analyzed data on detections.

Nesting parameters. Values for PIT-tagged birds were generally comparable to those for non-tagged birds. On Bird Island, we started tagging fairly late and thus many of the nests we sampled were later nesting attempts, resulting in a later median date of clutch initiation for PIT-tagged vs. non-tagged nests and perhaps negatively influencing productivity values (early nests are generally more successful than later nests). On Ram Island, we started earlier and consequently many of the nests we sampled were early nests, resulting in an earlier median date of clutch initiation for PIT-tagged vs. non-tagged nests, which may have biased productivity results positively.

*The Use of Drones in Wildlife
Conservation Conference
(continued)*

registered participants. Other meals are on your own and can be obtained at the college cafeteria or in Saranac Lake which is about 20 minutes away from campus. On the registration form, please check meals you're likely to purchase on campus.

Participants can earn Continuing Education Unit credits (CEU) through the national chapter of The Wildlife Society.

For questions, contact Jorie Favreau at: jfavreau@paulsmiths.edu
Online registration coming soon!
<https://www.paulsmiths.edu/visit/wildlife-drones/>

Early bird registration by
June 4, 2020

Agenda

Titles and abstracts of speakers will be posted as finalized

Thursday, July 30

5:00-7:00 p.m. Registration and room check-in

Friday, July 31

7:00-9:00 a.m. Registration and room check-in

8:00 a.m. Open displays/vendors and registration

9:00 Welcome and Introductions

9:10 Three speakers

10:25 BREAK – light refreshments

10:45 Three speakers

NOON Catered lunch – deli buffet

1:15-5:00 p.m. Three simultaneous one-hour demonstrations in a round-robin format with one-third of the pre-assigned attendees

6:00 p.m. Dinner on your own (PSC cafeteria or on your own)

7:30-9:00 p.m. Presentation on use of drones in recreational photography followed by a social

Observations: Some of the birds were hesitant to incubate within the ring antennas, so we partially buried the antennas to increase acceptability. We detected no difference in behavior between PIT-tagged and non-PIT-tagged adults ($p=0.84$, $df=1$) or PIT-tagged and non-PIT-tagged nests ($p=0.84$, $df=1$). (Tabular data available upon request).

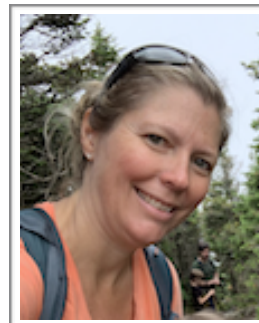
FUTURE WORK: In the future, we will attempt to re-detect Common Terns tagged in 2018. Because not all terns readily accepted the antennas, in the future, we will consider a different type of antenna to reduce “antenna fear” and maximize detections. Given the apparent lack of negative effects of the PIT-tags on Common Tern behavior and nesting parameters, we hope to expand the work to Roseate Terns.

ACKNOWLEDGEMENTS: We thank the American Wildlife Conservation Foundation, for providing funding for this work, Susi von Oettingen (USFWS) for permitting assistance, and many field assistants for data collection.

Carolyn Mostello is a Coastal Waterbird Biologist with the Massachusetts Division of Fisheries and Wildlife. She has studied Common and Roseate Terns since 1998 and has directed the program to monitor and conserve them at their breeding sites in Buzzards Bay, Massachusetts since 2001. Carolyn Mostello was awarded the inaugural 2018 Hemenway + Hall Wildlife Conservation Award.



Patty Szczys is Professor of Biology and Director of the University Honors Program at Eastern Connecticut State University. She mentors undergraduate students conducting studies in the field and in her population genetics lab with a focus on the conservation of tern species across the globe. Patty started her dissertation work with Roseate Terns in 1997 at Bird Island, Massachusetts and met Carolyn Mostello a year later when they both worked on Falkner Island, Connecticut. Patty and Carolyn have collaborated on several projects over the years.



Kiah Walker is a Coastal Waterbird Specialist and contract biologist at the Massachusetts Division of Fisheries and Wildlife. She is also pursuing a M.S. in Conservation Biology at Antioch University New England. She is broadly interested in endangered species management and conservation, habitat management, and science communication.



*AWCF Grant Committee
Report - Spring 2020
by Robert Gotie*

The Grants Committee received 20 grant applications by the close of Feb 1, 2020. Fifteen of the 20 applications reviewed were received from colleges or universities, while five were from other institutions or organizations. The applications ran the gamut from wildlife rehabilitation to climate change on the Nassau grouper to an evaluation of urban wildlife curriculum for K-12. All had some or all of the AWCF components (Conservation, Research & Education) in their proposals.

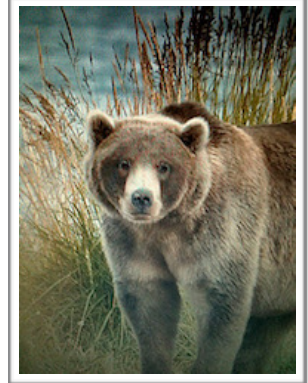
All proposals were well written, but not all met our whole mission and focus on wildlife research, wildlife conservation, habitat conservation and management, human-wildlife interaction and public education. It is those proposals that meet all or most of AWCF's mission and focus, at least by our committee's selection protocol, that will receive funds from the foundation.

Selecting a grant recipient incorporates a process of evaluating the merits of each proposal by each member of the committee. Individual evaluation by the committee forms the first stage of the grant selection process. Our job of evaluation is helped by a numeric scoring system that began in 2018.

*Guest Writer:
Adventures in Alaska with Brown
Bears*

by Bill O'Neill

The first professional position I had after completing my Master of Science degree in Conservation Biology from Antioch University New England in 2008 was with the National Park Service in King Salmon and Brooks Falls, Alaska. I was a biological science technician at Katmai National Park and Preserve (the Park). My duties ranged from data management at the main office in King Salmon, to bear monitoring at Brooks Camp, to educating visitors at the Park. Living and working in Alaska provided me with beauty and adventure with every hike, fishing trip, and float plane excursion, along with seeing and photographing the quintessential creatures of the landscape, brown bears, aka coastal grizzly bears. Brown bears appeared to be around every turn, path, and window when I was at Brooks Camp. This amazing opportunity gave me the drive to pursue a full-time career as a wildlife biologist. The following article provides information about the Park and the majestic brown bears that inhabit Katmai, along with a couple of my most memorable adventures while living and working in southwest Alaska.



Brown Bear
"Backpack" at
Katmai NP. Photo
by Bill O'Neill



King Salmon, located in southwest Alaska and home to

Katmai National Park and Preserve, has a year-round population of 400-500 people. During the summer months the

*AWCF Grant Committee
Report - Spring 2020
Continued*

Although it is not perfect, it does allow for greater objectivity when reviewing each grant application. The second stage employs the "Cavanaugh Protocol", whereby we rank each proposal across each committee member's review of the merits for funding a proposal. Selection then becomes a matter of those proposals receiving the highest rank and fitting into our budget for the cycle.

Our collective review revealed only one proposal unanimously selected by all 5 members as worthy of funding. Eight other proposals received four "worthy of funding" or "maybe worthy of funding" committee member votes.

The three proposals that best met our selection protocol are featured below. Included is a brief summary of their proposals:

1) Dr. Amber Roth, Assistant Professor, Department of Wildlife, Fisheries and Conservation Biology, University of Maine, Orono, ME.

"Assessing the long-term effects of an expanding gap silvicultural system on the avian assemblage at the Acadian Forest Ecosystem Research Program" (\$2,000)

The goal of this proposal is to understand long-term impacts of two experimental silvicultural systems and their ability to maintain mature forest bird diversity on a long-term study begun in the mid 1990's on the Penobscot Experimental Forest in

population increases due to the fishing industry and tourism. There is a main road known locally as the "peninsular highway" that connects King Salmon to the small town of Naknek which has a population of 600-700 people. Most of the fish canneries are located in Naknek at the eastern end of Bristol Bay.

The most common way to get to King Salmon is via airplane from Anchorage. Getting to Katmai requires a short float plane ride from the King Salmon River or a boat ride via Naknek Lake, driving is not an option. With the summer influx of field-going seasonal hires and law enforcement officers, the Park has their own float plane to efficiently get employees to and from King Salmon to Brooks Camp and isolated locations within the Park.

On September 24, 1918, the Katmai area was designated a national monument in response to the 1912 eruption of Novarupta, a volcano which formed the Valley of 10,000 Smokes. On December 2, 1980, the Alaska Native Interests Land Conservation Act was passed by Congress and signed into law by President Jimmy Carter and Katmai National Monument was changed to a national park. Located in the remote southwest corner of Alaska, the Park encompasses over 4.5 million acres and is home to North America's largest protected population of brown bears, and home to Brooks River Falls, one of the best bear viewing spots in the state. Visitors to Brooks Falls witness the iconic and widely photographed scene of bears snagging unsuspecting salmon leaping upstream into an expectant bear's gaping maw.



Brown bears catching fish at Katmai National Park & Preserve, Brooks River Falls. Photos by Bill O'Neill

Upon arriving in King Salmon in May of 2010, I settled in and the first couple weeks were training - both online courses and field training. Before new seasonal employees could fly in the Park, we had to take water ditching and survival training, also known as "dunker training". The class was to prepare us to survive if our airplane went down in the water: to stay calm and successfully escape underwater. This training not only included Park Service seasonal employees but students from local high schools. It was culture shock for most of us to see high school students from the local villages training with us, but they could only compete at

**AWCF Grant Committee
Report - Spring 2020
Continued**

Maine. The Acadian Forest Ecosystem Research Program (AFERP) uses two variations of silviculture, mimicking stand-level impacts of natural disturbance that generally represents 1-2 % loss of canopy trees per year and a harvest prescription that retains mature canopy trees. Standardized spot mapping will be used to map breeding bird territories within each experimental area.

Understanding the impacts of distinctive forestry practices on forest birds is vital to future forest management supporting forest birds facing broad-scale declines. Long-term studies like this will potentially provide the means to sustain forest bird diversity while allowing a viable timber industry to continue. AWCF funds will be used to pay a qualified field technician to assist in bird diversity data collection and observation/ marking of retention trees.

2) Lucas Haralson, Master's Student, School of Biological, Environmental and Earth Sciences, University of Southern Mississippi, Hattiesburg, MS.

"Assessing mercury concentrations in Alligator Snapping Turtles (*Macrochelys temminckii*) and Red-eared Sliders (*Trachemys scripta elegans*) in Mississippi" (\$2,000)

The goal of this study is to determine the presence and suspected differences in concentrations of mercury and methyl mercury at different

various sporting and academic events by flying to other high schools. Dunker training was a hands-on course where we wore normal clothes with a helmet and were seat-belted in a makeshift cockpit with a partner. This cockpit was pushed into the water while instructors shouted, "dunking, dunking, dunking!" When the cockpit hit the water, the instructors tumbled us from side to side to simulate an actual plane hitting the water. We would need to stay calm until the tumbling stopped before we could remove our seatbelts, exit the cockpit, and swim to the surface. Everyone took turns crashing into the water several times, and we never were in the same orientation when the makeshift fuselage came to a stop underwater. You could be upside down or your side, and sometimes the instructors would block the exit nearest to you so you would have to go out a different way. This was very intense training but I was grateful that I had it. I continue to utilize the knowledge I gained in the class every time I board an airplane: I am immediately aware of the locations of the exits and how far I am away from them. The biggest take-away from the training was that if there was a plane crash in water, it would be difficult to clearly see where the exits were, especially if it was murky water. The only way to find the exits would be to count, by hand, the number of seats in front of you

to the nearest exit or the number of seats behind you. I will never forget that!



Brown bear by Katmai
NPS float plane. Photo
by Bill O'Neill

Data management was part of my office duties and mostly entailed going through databases on Park visitation numbers and bear-visitor interactions. However, my favorite, most memorable Alaskan days were when I was out in the field. This was not only my first job out of graduate school, but my first time in Alaska, so I was thrilled anticipating every adventure that lay ahead. Each day that I saw a bear, no matter how gloomy, rainy, and cold, was a perfect day that I never took for granted.

Landing at Brooks Camp via the Park float plane or boat, my camera was out and ready for anything. I like to think of Brooks Camp as the unofficial entrance to the Park. Brooks Camp is the hub of the Park where the staff housing, visitor cabins, a rustic restaurant, and national park visitor center are located. Upon

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trophic levels/age between a long-lived apex predator, like the alligator snapping turtle, and a shorter-lived omnivore, like the red-eared slider. Both turtles occupy abundant freshwater ecosystems in Mississippi. Both are consumed by humans and provide an excellent model for pollution studies due to their widespread distribution and longevity.

Mercury and methyl mercury have been shown to accumulate in greater quantities and at higher trophic levels and ages in aquatic organisms. While methyl mercury can cause acute and chronic toxicity in wildlife, the threshold for these effects is still unknown in turtles. This proposal will allow for an instructive comparison of mercury concentrations between two very different turtle species. It will also shed light on the serious neurological threats to humans consuming these animals. AWCF funds will be used to analyze a subset of blood and claw samples from the Tombigbee, Pascagoula, Pearl and Yazoo river drainages.

3) Leyna Stemle, PhD Student, University of Miami, 1301 Memorial Drive, Coral Gables, FL

“Assessment of immature Gopher Tortoise Survivorship, spatial ecology and habitat use using novel technology” (\$2,500)

This proposal plans to use a new technology called “Life Tags” to track demography, habitat use and activity patterns of immature

arrival at Brooks Camp, tourists go straight to the visitor center for a bear orientation that teaches bear safety, bear facts, and safe conduct in bear country including keeping a safe distance. I’d go to the iconic Brooks Falls overlook every day when I was in the Park, working or not working, to be greeted by the sounds of visitor’s camera shutters snapping away which seemed to overtake the natural sounds of Brooks River. I would also hike the nearby mountains and explore the moonscape that was the Valley of 10,000 Smokes on my days off, but mostly spent off days in one spot viewing and taking many pictures of bears and that never got old.

Brown bears are the only bears at Katmai. Brown bears and grizzly bears are the same species (*Ursus arctos*) but are distinguished based on their location. Brown bears are found along coastal areas with access to salmon runs and other coastal food sources whereas “grizzly” bears are located inland, e.g., a landlocked state like Montana is known for grizzly bears. Brown bears can live up to 20 years in the wild with a body length of up



Brown bears at Katmai National Park. Photos by Bill O'Neill

to 10 feet long and up to 5 feet tall at the shoulders. Adult males can weigh up to 900 pounds and females can weigh up to 600 pounds. When bears come out of their dens in early spring, the majority of their time is spent eating. Bears need enough calories to sustain them before they den up during the late fall/early winter.

In late September/early October, bears go through *hyperphagia*, a period where bears are obsessively consuming more calories in preparation for winter hibernation. With the salmon no longer running, bears consume different types of food not present in their usual summer diets and may even view people as a menu item, making brown bears more unpredictable in the fall. The Park closes in mid-September as winter weather closes in and bears are looking for winter dens. During this time, Park employees winterize the buildings in preparation for the winter months. Because brown bears are more unpredictable and hungrier around people, employees in the fall are required to

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gopher tortoises. The Life Tag system uses solar powered GPS transmitters that are tiny enough to place on hatchling tortoises and an array of poles (nodes) covering the entire study area. These nodes can then triangulate the position of nearby tags attached to immature tortoises, providing a GPS fix every 2 seconds and real time data on movement.

Gopher tortoises act as a keystone species, dispersing plant seeds and creating burrows that are used by more than a hundred other commensal species.

Data collected in this long-term study will provide a better population viability analysis than currently exists with only adult population data available. It will help fill in the gaps about habitat use, age related survivability and viable population size that can be utilized by management agencies in Florida and beyond. Because the Archbold Biological Station is committed to conservation education and public outreach, most of AWCF's mission and focus will be met. AWCF funds will be used to purchase half the number of Life Tag Nodes and 5 pilot tags.



Gopher tortoise. Photo by NPS

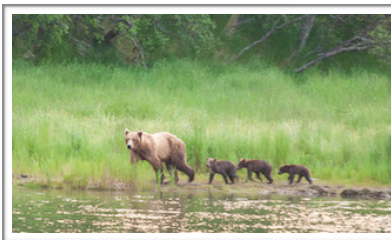
carry fully loaded shotguns while at Brooks Camp for safety. Fortunately, as far as I know, no one has ever needed to discharge their shotgun at a bear.

The days I monitored brown bears at Brooks Falls helped the Park identify both known and unknown bears, and gain valuable insights over time on their life history and behaviors. While at the falls, I also educated the public on who the bears were, noted the feeding hierarchy at the falls, and explained why the Park monitors the bears. Katmai has several observation areas, and a consistent sampling protocol is used by all biological technicians every year. This includes recording the time and date a bear arrived and left the area, their size, color, any scars or identifying physical attributes, behavioral traits such as aggressive versus submissive, and favored fishing spots and techniques. For example, some bears like to catch salmon jumping out of the water at the top of the falls while others prefer to wait below the falls for salmon to swim by. This data is utilized by Park staff for future decisions relating to the management of Brooks River.



Brown bears fighting.
Photo by Bill O'Neill

During the season I was there, none of the spring cubs and yearlings observed and recorded survived the summer; most died from being eaten by male bears, predated by other carnivores, as well as other natural causes. I witnessed firsthand a male bear attack a female bear trying to protect her cubs while at the falls platform. The male lunged at the female bear, knocking her back and into the water which gave him enough time to grab her screaming cub that did not survive for much longer as the screams slowly dissipated. That was the quietest time at the platform that I can remember. Visitors gasped in awe, camera shutters were hushed, and even the bears and other



Sow & her cubs. Photo by Bill O'Neill

wildlife seemed unusually quiet after the cub was attacked. The constant rumble of Brooks Falls was eerily enough. Infanticide is a gruesome reality for the bears and for visitors who witness a spring cub being helplessly eaten. The exact reasons why infanticide occurs in brown bears is not fully understood. Some of

Progress Report: Black Bears

Density, dispersal, and source-sink dynamics of black bears (Ursus americanus) in Massachusetts

Thea Kristensen
(2019 AWCf Funding)

Since the 1970s, the Massachusetts black bear population has been growing and expanding eastward, recolonizing their historic range and moving closer to the Boston metropolitan area. Massachusetts is the third most densely populated state in the US (US Census Bureau 2010), and with the expansion of the black bear population, there has been a subsequent increase in human-bear interactions and human-bear conflict.

The last study on black bear densities in Massachusetts was conducted west of the Connecticut River more than 25 years ago when the density was estimated at 18 females / 100 km². The findings of our research will provide information that supports science-based management of black bears in Massachusetts and will help with targeted education efforts to reduce human-black bear conflict. Our objectives include: 1) Estimating density and abundance of black bears in different habitat types across the Commonwealth of Massachusetts, 2) Identifying black bear population dynamics and source / sink populations across the state, 3) Exploring patterns of black bear relatedness, population structure, and dispersal, and 4) Conducting citizen outreach and incorporate citizen sightings of black bears.

the possible reasons large male bears kill spring cubs and yearlings are for food, to decrease mating competition in the future when the male cubs mature, and to get the nursing females back in estrus and ready to mate.

Aside from monitoring bears at Brooks Falls, another important job was to help other park rangers at Brooks Camp by monitoring both bears and visitors. Brooks Camp can get busy with visitors, and when a bear is close by, people start congregating and jockeying for the best photo position. Sometimes people tried to get too close and part of the ranger's job is to control the crowds, remind the visitors of their distance, and also haze a bear if one is too close to visitors. Hazing a bear might sound bad and harmful, but it is needed if a bear starts associating people with food leading to negative outcomes if a bear becomes too "friendly" around people. Hazing can be as simple as shouting at the bear and clapping (most common forms) to extreme forms such as loud bangers and shotguns that fire rubber bullets. These noises are to deter bears from getting too close to people so they associate a negative experience such as loud noises with people rather than food. Leaving Brooks Camp to go back to King Salmon was always a sad day, but at the same time it was good to get back to civilization and the creature comforts of a warm shower and a good burger.

A 2-hour flight southwest of Katmai, Aniakchak National Monument and Preserve reaches the region around the Aniakchak volcano in the Aleutian Range. The 600,000-acre monument is one of the least-visited parks in the National Park System due to its remote location and difficult weather, with only 100 documented recreational visits in 2017. Most visitors fly into Surprise Lake inside Aniakchak Crater but the frequent fog and other adverse weather conditions make landing on the lake difficult. The majority of flights from King Salmon to Aniakchak are aborted halfway due to unpredictable incoming weather.

My single favorite impromptu adventure was getting an hour-notice invite by the pilot to accompany National Park law enforcement officers on a patrol to Aniakchak. Going to the least visited National Monument was an incredible feeling, especially when landing on Surprise Lake in the Aniakchak caldera. During the flight in the 6-seat Park Service plane, we frequently spotted bears and



Flying through "the gates" in a float plane to Aniakchak.
Photo by Bill O'Neill

Progress Report: Black Bears continued

Our primary sampling method is black bear hair snares. Hair snares offer an accessible and inexpensive way to gather demographic data on black bears. We completed our summer field season in August of 2019. Students collected 1,886 hair samples over the 10-week study period and have finished processing all the samples and extracted DNA when there were enough follicles in a sample.

Using taq polymerase multiplex



Photograph of a typical hair corral with two strands of barbed wire, signage and flagging, debris pile, and scent lure hung over the center.

kits provided by this grant, we have run species identification PCRs (polymerase chain reactions) on all samples that had enough follicles (1045 samples).



Student working on cutting follicles for DNA extraction

moose. Getting closer to the volcanic crater, the clouds and deep fog slowly descended on us, limiting our vast views of the landscape. Clouds were so low that the pilot asked us *three times* if we were comfortable going through “the gates”. If anyone had said they were not comfortable, we would have turned around and headed back to King Salmon. Luckily, everyone was excited to land on Surprise Lake and set foot in the 5-mile diameter caldera. When we passed through “the gates,” the crater encircled us as we landed on the aqua-green colored lake next to a cinder cone. Due to the incoming weather, we could not stay long because we were not fully prepared to stay overnight. Even though it was a short stay inside Aniakchak, we could all say that we had been there!



Coming into Surprise Lake at Aniakchak. Photo by Bill O'Neill

I recently viewed the Katmai National Park website and found free, downloadable e-Books the Park staff publishes annually on the bears of Brooks River beginning in 2015. The website has a link so people from all over the world can view the bears via webcams at different locations that the Park has placed in high-activity bear areas such as Brooks Falls. You can stream live webcam imagery and watch brown bears no matter where you are (<https://www.nps.gov/katm/learn/photosmultimedia/webcams.htm>). The annual e-Books “Bears of Brooks River, A Guide to their Identification, Lives, and Habits”, explain bear life cycles with high resolution photos (<https://www.nps.gov/katm/learn/photosmultimedia/ebooks.htm>). The last chapter of each eBook is about bears that are no longer seen at Brooks River. As I was reviewing this chapter in the 2015 e-book, I learned that my favorite subadult bear, the playful Tundra that I photographed often and simply enjoyed watching, was found dead in 2014. She was easily identified because of the large scar above her left eye. The trauma that had she endured early on never stopped her from running on the beach and playing with sticks she found. See link <https://www.nps.gov/katm/blogs/death-of-bear-130.htm>.



Tundra with a scar on her forehead. Photo by Bill O'Neill

Progress Report: Black Bears continued

PCRs are a simple enzymatic assay, which allows for the amplification of a specific DNA fragment from a complex pool of DNA. PCRs let you select the piece of DNA you're interested in and have as much of it as you want. PCRs can be performed using source DNA from a variety of tissues and organisms, including skin, hair, saliva, and microbes. Only trace amounts of DNA are needed for PCRs to generate enough copies to be analyzed using conventional laboratory methods.

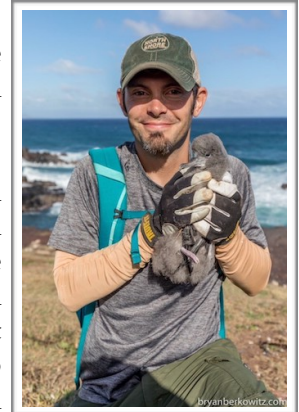
We are beginning to run multiplex PCRs, using our series of microsatellite primers to identify individuals. We have run 3 PCRs for 188 bear samples so far. During fall semester, eight students contributed to this project. A similar number will likely participate this spring semester. One student will complete her undergraduate thesis with data gathered from this study.



Student preparing a DNA gel sample for viewing

My experience in Alaska is one I will never forget. It was such an amazing opportunity for a young wildlife biologist just starting out in the field, and I truly found my passion. It was difficult work pursuing my goal of obtaining a full-time permanent position as a biologist with the federal government, but I am glad I did it. I have had some great positions over the years and continue to do what is best for wildlife when it comes to land management activities and decisions.

William O'Neill is a Wildlife Biologist for the United States Forest Service, White Mountain National Forest, in Gorham, New Hampshire. His academic background is in wildlife biology, conservation biology, and anthropology with degrees from Purdue University and Antioch University New England. Early in his career, he traveled abroad and lived with the Iban tribe in Borneo, studying captive orangutan behavior at a rehabilitation facility. He researched troop dynamics of spider, howler, and capuchin monkeys in Central America. Since finishing his master's degree, he has worked for various federal agencies. His first position was as a bioscience technician for the National Park Service in King Salmon, Alaska, where he monitored brown bears and visitor interactions at Katmai National Park. Since then he has banded waterfowl and studied alligators in Texas, banded piping plovers in North Dakota, protected various endangered species in Palm Springs, California, worked with the greater sage-grouse in Nevada, and was an endangered species biologist with the US Fish and Wildlife Service in Hawaii. Bill lives in Shelburne, NH and enjoys photography, hiking, and playing the upright bass.

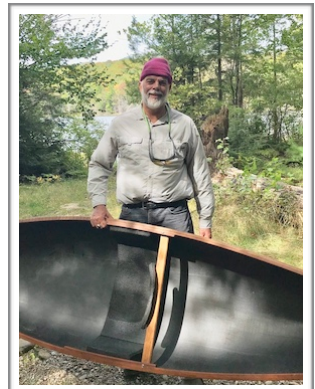


Bill banding wedge-tailed shearwater seabirds along the coast in Pa'ia, Maui. Photo courtesy of Bill and bryanberkowitz.com

President's Message

by Daniel Leete

I don't know where or when I heard the phrase first, but the words: "Don't just sit there, do something!" has been a thought-provoking and motivating message for me for many years. A recently published book has given me some new thoughts about opportunities to "GO DO SOMETHING" - do a number of things, all of which I believe will help our environment.



Daniel Leete and his solo canoe. Photo by Linda McLyman

CALENDAR OF EVENTS

Since Covid-19 has turned our world upside down, we have deferred posting of educational events, meetings, and conferences. We hope to be back soon!

HELICAT CANADA UPDATE

by Ross Cloutier
Executive Director
HeliCat Canada Association



Executive Director Ross Cloutier
from HeliCat Canada. Photo by
Pat Morrow

As you know by now, the AWCf and HeliCat Canada Association (HCC) have entered into an agreement to cooperate in advancing wildlife research as it relates to the ski industry in Canada. I had an excellent meeting on February 7 with the AWCf Board in Cazenovia, NY, and while it was in the middle of a big blizzard that cut things a little short, the Board made me feel right at home.

HeliCat Canada is not an operating ski business, instead it is the trade association for the helicopter and snowcat skiing in Canada. Our primary mandate is to promote the continual improvement of the industry through research, education, and advocacy, and by overseeing a trade accreditation program.

In my opinion, Douglas W. Tallamy's newest book, Nature's Best Hope is an excellent read. I am impressed by the research in this book well as by the common sense and practical applications suggested throughout each chapter. Thus, I will draw upon Tallamy's work in much of this article. I will refer to six projects that each of us can do ourselves and teach others to do as well.

1. If it is in your area, plant a native oak tree in your yard, your neighbor's yard or in a friend's yard. For example, the white oak tree (*Quercus alba*) offers a lot of diversity and provides help to the environment, in fact, more than I initially realized. Oaks found in the mid-Atlantic region of the United States support as many as 557 different species of caterpillars. Many other insects besides caterpillars live in oak trees and many birds need these caterpillars to feed their young. A newborn Carolina chickadee may require up to 9000 caterpillars from birth to fledging. So go buy a native oak tree sapling and plant it this spring (Tallamy and Shropshire 2009). A few hours of your time and money will reap great rewards over the coming years.

2. Stick with native plants when planting. I admit that I have not thought enough about planting natives rather than exotics, invasive or alien plants. Here are two examples. I've seen many advertisements for "butterfly bush" plants, and so I've purchased several, thinking that they are pretty, they are relatively easy to care for, and also butterflies feed off them. Now I have learned that - out of North America's 725 butterfly species, only one species found in southwestern U. S. uses the butterfly bush for larval development. Most insects are particular about the plants they use. It can take tens of thousands of years and tens of thousands of generations for a species to adapt to a new plant, whether to lay eggs on the plant, adapt its digestive system to use the plant for food, use it for protective camouflage, etc. So those butterfly plants in my yard may not be doing what I had hoped. I simply didn't know enough information when I planted them. I've wanted to have ginkgo trees in my yard. After all, they have an amazing history and they look interesting. And, now I know that ginkgo trees are another poor choice for attracting caterpillars as well as other insects. I guess that I'll plant a black cherry (*Prunus serotina*) instead because they can host to up to 324 species of caterpillars. Research the plants you want to plant or ask questions about the species. It will be worth your time and be much more beneficial to your local environment.

3. Turn off the lights, use a night shield, or buy a downward-facing light. A few decades ago I helped sponsor some "Right to

HELICAT CANADA UPDATE *continued*

While we set the standards for helicopter and snowcat skiing in Canada as well as inspect and accredit operators, we are very involved in research and education related to wildlife, climate change, sustainability, First Nations reconciliation, and safety. Over the past 30 years, Association members have funded many millions of dollars of research in these areas.

As part of these efforts we know that our guests, the skiers, are also concerned with protecting the spectacular remote and wild lands environment in which we operate. To this end, we have recently implemented a new skier-funded Wildlife and Environmental Research Fund (WER Fund) to enable skiers to participate in funding our research efforts. The core financing of this fund is a \$5.00 per skier day contribution collected by operators. Our



Heli-skiing in British
Columbia Photo by
cmhheli.com

members generate approximately 130,000 skier days per season so the potential upside is significant. In addition to the per skier day funding model, we are hoping that some skiers will make lump sum donations as well. Because

Night” legislation. I know we all need safety lights and I am not in favor of getting rid of all lights in our yards. However, I think it is an act of courtesy to determine how often our lights might infringe on someone else’s privacy. Personally I like to see the stars at night. Many people do. However, we have all begun to condition ourselves into letting too much light surround our homes. I’ve spent many hours with my telescope checking out the moon, watching the transit of planets, finding galaxies, etc. It is difficult to enjoy this hobby with light emanating from the various lights that shine from someone else’s property onto your property, or into your yard. Come to find out, those lights are also impacting the environment. As the lead article in this newsletter notes, several species of predators (including bats), have learned that moths and many other species of insects are drawn to lights, offering up a concentrated food source for those predators. However they are also reducing the presence of other bat species, especially species at risk. Research is demonstrating that night lights are, and have been, altering the environment, and probably not in a healthy way. Do the environment a favor: see if you can do with less lighting in your yard. By the way, introduce a young child to night without light. It is a great adventure.

4. Reconsider the size of your lawn. Mounting evidence shows that hundreds of thousands of years ago the African Savannah imprinted upon us the desire for wide open spaces, commonly known as grasslands. Some anthropologists speculate that this DNA-related concept may still show up in our desire for open spaces now known as lawns. Turf grass lawns now comprise more than 40 million acres in the United States alone (Milesi, et. al. 2005). There’s a lot of conflicting news about lawns. Consider the amount of energy (gas, diesel, electric) used to mow the average lawn. Are the plants associated with the lawn native or not? What creatures choose NOT to live in your yard because of the lawn (insects, birds, amphibians, etc.)? What chemicals - including fertilizers - are used to control the look of the lawn? It is pretty simple - consider reducing the size of your lawn. It will be less work for you and better for the ecosystem.

5. Reconsider bee hotels. In the world of honeybees there is a phenomenon known as Colony Collapse Disorder (CCD). In the various studies about this alarming situation, many of us have come to realize the importance of having many species of native bees in our neighborhood. In the past few years, “bee hotels” have come to the public’s attention. You’ve seen them in garden stores, feed stores, even in big box stores. A bunch (sometimes hundreds) of cardboard tubes are clustered and glued in boxes

HELICAT CANADA UPDATE *continued*

over 80% of our skiers are U.S. citizens, we have partnered with the AWCF hoping to do joint research projects with any lump-sum funds that might be collected. However, we have no way of predicting what this funding might look like. I expect it to take some time to make this funding option well-known to our guests.

The WER Fund is up and running this year and we will be funding projects as of summer 2020. If you are a researcher with interests in our five funding areas:

- 1) wildlife/habitat conservation,
 - 2) climate change impacts,
 - 3) sustainability initiatives,
 - 4) indigenous capacity building and reconciliation,
 - 5) or avalanche safety,
- please check our WER Fund webpage: <http://www.helicat.org/wildlife-and-environmental-research-fund>.



Preparing for a day heli-skiing. Photo by Scarver at German Wikipedia. <https://commons.wikimedia.org>

On our webpage, we have posted RFPs (Request for Proposals) and are calling for research projects in these five core areas that will contribute to how the sector operates. We are hoping our relationship with the AWCF, and its network, will broaden the level of research interest in the helicopter and snowcat skiing sector in Canada.

for you to hang in your yard or on a fence, with the intended noble use of providing homes for a variety of native bees. There is a problem with this new bee hotel idea however. Those bee hotels provide overly concentrated sites for predators, making it easy for mites and other critters to focus on decimating certain populations of varieties of species of native bees. Here's an alternative. When walking around your property, take a battery-powered electric drill with a 1/4" bit. Find some dead wood, and drill ten holes, scattered an inch or so apart, then move on and do the same at another site. It will look natural, still provide places for native bees to create their new home, and won't be a concentrated place for other problems to occur.

6. Don't fertilize, don't spray. When we use fertilizer, we're causing three problems we might not have considered. Unless you are creating your own compost, you are probably using extracted chemicals in the fertilizer that comes from far away places. Many of the materials (NPK) that are used for fertilizer are not found naturally; they are modified in some way. When fertilizer is spread or placed, it is frequently concentrated, causing run-off problems when it rains. So, three problems occur. (1) much of the fertilizer is manufactured from chemicals, (2) the material travels distances to get to the use site, and (3) improper use causes excess chemicals to enter the natural cycle in the neighborhood. When planting and using or enjoying native plants, you don't have to fertilize, nor do you have to spray. Most natives have, over eons, developed their own way of growing and protecting themselves, making sprays and fertilizers unnecessary in most instances.

There you have it: a list of six things you can do as an individual, as a family, or as a community, to move toward a more healthy, local ecosystem. Douglas Tallamy (author of Nature's Best Hope) writes about an intriguing process of creating a "Homegrown National Park" with connecting corridors all across the land. You may want to read this book. I suggest that you pick one of the projects, accomplish it, then once completed, let me and your friends and family know how it goes.

References:

- Brewer, R. 1961. Comparative notes on the life history of the Carolina Chickadee. The Wilson Bulletin.
- De Kiriline Lawrence, L. 1967. A comparative life-history study of four species of woodpeckers. Ornithological Monographs.
- Milesi, C., S.W. Running, C.D. Elvidge, J.B. Dietz, B.T. Tuttle, and R.R. Nemani. 2005. Mapping and modeling the biogeochemical cycling of turf grasses in the United States. Environmental Management.

HELICAT CANADA UPDATE *continued*

Having said all the above, the COVID-19 situation has thrown a significant, but survivable, kink into these plans. Canadian helicopter and snowcat ski businesses shut down almost two months early this season and so revenues into the WER Fund will be considerably lower in our first year than we originally anticipated. We won't know what this impact really looks like until businesses report their skier days to us in May. However, we will be funding some projects this year. I look forward to working with the AWCF as we move forward together.

Ross Cloutier
Executive Director
HeliCat Canada Association

Tallamy, D.W., and K.J. Shropshire. 2009. Ranking lepidopteran use of native versus introduced plants, *Conservation Biology*.

Tallamy, D.W. *Nature's Best Hope*, 2019, The Timber Press, Portland, OR.

Photographer's Corner:

Heidi Wight

Each newsletter, we would like to highlight wildlife and landscape/habitat photography. If you or someone you know is interested, please forward my contact information. katiestuart33@gmail.com to them.



Heidi Wight, Freelance Photographer
<https://natureandwildlifephotography.net>

I am a native of New Hampshire, always inspired by the beauty of nature.... capturing unique moments in nature is my passion. Photography, including birdlife, wildlife, landscape, wildflowers, mushrooms, butterflies and all things wild. Celebrate life, celebrate nature! I have always been fascinated by nature, our mother earth, our natural resources that connect us all. To appreciate the beauty that surrounds us, we must protect and take care of our natural world. Photography can be a tool to educate people regarding habitats, conservation, and land ethics, the web of life, our interconnectedness, and how to touch the earth. Respect and compassion is all!

