



TWS MANITOBA CHAPTER NEWSLETTER

Chapter Business

President's Corner

Hello to our wonderful members!

We hope that you are doing well and getting the time to enjoy the outdoors this winter! We are excited to be in the finalizing stages of the Licencing and Affiliation Agreement with the Canadian Section of the Wildlife Society (CSTWS) which should be a hugely beneficial decision for us going forward. We are very excited to introduce free one-year memberships to our potential and current Black, Indigenous, and People of Colour (BIPOC) members. This is a very initial step for us to take but we are excited to have it underway!

We are currently looking for nominations for the new Executive and we hope that we hear from all who are interested! Becoming a member of the Executive has been an incredibly rewarding experience and I have learned so much from those involved in the community. Finally, it has been an odd year without the in-person get togethers. We will miss hosting the Annual Winter Getaway this year, but we look forward to planning more activities and webinars as we wrap up the term!

Justine Josephson-Laidlaw,
The Wildlife Society Manitoba Chapter President



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Financial Report

The Chapter is doing well financially. We currently have a total of \$11,287.29 in our bank accounts with \$7,149.45 being the total available to us, as we have some of our funds in a GIC account, as well as two business investor accounts. We are very thankful for all the donations we received in 2020!

Alyssa Reimer

Membership Report

The Manitoba Chapter of The Wildlife Society currently has 115 members, of which 70 are professionals and 45 are students. 16 members will be expiring at the end of January so make sure to renew your membership with us if you are one of them. Thank you to all of our wonderful members for your continued support in our Chapter! We appreciate every single one of you and your support throughout the years.

Stay safe and happy,
Emily Thoroski

Exciting News for BIPOC Wildlifers!

The Wildlife Society Manitoba Chapter is very happy to announce that we are offering a free one-year membership to BIPOC wildlifers. Free one-year memberships are an initial step in reaching out to communities and individuals that are underrepresented within the wildlife community and may have felt unwelcomed or discriminated against.

We would like all wildlifers, potential members and current members to feel welcome, included and supported within the wildlife society community. The Wildlife Society parent organization has developed a standing position statement on workforce diversity within the wildlife profession that is fully supported by the Manitoba Chapter (www.wildlife.org/dei/)

You can access your free membership at the following link: <http://www.tws-mb.com/register/tws-manitoba-membershiprenewal-form-pxgge>

If you have any questions, concerns or specific programming that you want to see from the Chapter – please reach out to us at any time.

Call for 2021/2022 Executive Positions

This is your chance to nominate yourself for a TWS MB executive position! See below for more details. Nominations must be submitted by **February 13th!**

We are looking for nominees for the following positions:

- President Elect (3 year term; the elected person would start as President Elect, would switch to the President position the following year, and Past President during the last year of the term; the position of President involves general supervision of the Chapter's business)
- Secretary (responsible for the files and records of the Chapter)
- Member at large (duties are determined by the President based on current Chapter's needs)
- Western Rep (acts as a liaison between the Chapter and western Manitoba members)
- Treasurer (responsible for the funds of the Chapter)
- Grad Student Rep (acts as a liaison between the Chapter and graduate student members)
- Northern Rep (acts as a liaison between the Chapter and northern members)
- Undergrad Rep (acts as a liaison between the Chapter and undergraduate student members)

Persons who run successfully for these positions will be announced at our AGM, and the new executive will officially take over at that time.

If you are interested in joining us, please send a short biography and the reasons for which you are running to tws.manitoba.chapter@gmail.com.

You can also obtain a more detailed description of each position on the article V, section 3 of our bylaws, accessible here: <http://www.tws-mb.com/new-page-2/>.

Please feel free to email us with any questions that you may have about the positions on our executive. We hope to see many of you running - serving on the executive is truly a rewarding experience!

Passing of Honorary Members

The Manitoba Chapter of the Wildlife Society has recently lost two very important members. Vince Crichton and Rick Riewe were both honorary TWS-MB members, both Vince and Rick contributed so much to our chapter over their careers and will be greatly missed by everyone. We would like to thank everyone who has donated to the TWS-MB chapter in honour of Vince and Rick. If you would like to place a donation to honour Vince or Rick please go to our website for more information.

Below are two features written for the Canadian chapter of the Wildlife Society. The feature on Vince Crichton was written by Jack Dubois, and the feature on Rick Riewe was written by Rick Baydack.

Dr. Vince Crichton "Doc Moose"

With heavy hearts we share the information with you that one of our Honourary Members, Dr. Vince Crichton has passed away. Vince was a dear friend and colleague to many and our thoughts are with his family and friends. He was a Certified Wildlife Biologist, served 40 years within the Wildlife Branch of the Manitoba Government, was a previous editor for The Wildlife Society Bulletin and received the TWS Manitoba Conservation Award in 2014 - just to name a few things. His contribution to science - in particular moose management in the province was outstanding. His expertise were recognized and celebrated internationally among many organizations.



A long-time member of the Manitoba Chapter of The Wildlife Society, Dr. Vince Crichton, passed away on December 3rd, 2020. Vince epitomized the wildlife professional. He contributed to the body of scientific knowledge in his field, he contributed to his profession and its institutions, he contributed to his community locally and internationally and most importantly, Vince brought heartfelt passion to everything he did.

Doc Moose, as he was known to many, was born and raised in the northern Ontario town of Chapleau, next to the largest game preserve in Canada. His father was the Fish and Wildlife Supervisor for the region and the time Vince spent with him in the bush as a child laid the foundation for a life-long love of nature and the outdoors.

Vince got his Bachelor's and Master's degrees at the University of Manitoba and his Doctorate at the University of Guelph studying wildlife diseases. Vince started his working career with the Manitoba Department of Natural Resources as the regional wildlife biologist in the Central Region, later becoming the Eastern Region Wildlife Manager. He eventually moved into headquarters in Winnipeg, retiring in April 2012 as Manager of the Game Fur & Problem Wildlife Section with Wildlife Branch of Manitoba Conservation.

In retirement Vince continued to pursue his passion for wildlife (especially moose) as a consultant, public speaker, environmentalist, conservationist, hunter and writer. Vince was always ready and willing to give a talk on his beloved moose, whether to an international conference, the annual meeting of the Manitoba Chapter of The Wildlife Society or to a class of elementary students at the local school. He was also a recorder for Boone and Crockett Club for many decades, measuring big game trophy heads at big game nights all over Manitoba, and, as a part of that activity, was a founder of the Manitoba Big Game Trophy Association.

In terms of The Wildlife Society, Vince was one of the earliest members of the Manitoba Chapter, and also one of the first Certified Wildlife Biologists in the province. In addition, he served as a previous editor for The Wildlife Society Bulletin. Vince was the Canadian Vice-President North American Moose Foundation and has been featured on Discovery Channel (Champions of the Wild) and Animal Planet (The Man Who Would be Moose). He was also a wildlife telemetry consultant and the Canadian distributor for Telonics Inc. telemetry equipment in Canada.

In September 2016 Vince co-chaired the 50th North American Moose Conference /Workshop and 8th International Moose Symposium in Brandon Manitoba. He was a past recipient of the Distinguished Moose Biologist Award, and was recipient of a special award at the aforementioned conference for his contribution to the conservation of moose and to the advancement of the study of moose and the dissemination of information at conferences.

Vince was the recipient of a meritorious award from Province of Manitoba for 40 years of service and was also the recipient of the 2014 Conservation Award from the Manitoba Chapter of The Wildlife Society for support of the conservation and management of wildlife and their habitats in Manitoba.

In November, Vince's contributions were recognized in the Legislative Assembly of Manitoba, through a



Private Member's Statement acknowledging his passion, dedication and commitment to moose management provincially, and around the world. He was also the first-ever recipient of an honorary moose hunting license from the provincial Department of Agriculture and Resource Development. This recognition provided great joy and pride for Vince, and his family, during his last weeks. On November 7, 2020 CBC aired the documentary titled - "Giants of the Boreal Forest" which documents Vince's work and passion and will serve as a special legacy for generations to come.

At a personal level Vince was one of the friendliest people you could meet and always a gentleman. Wildlife in Manitoba has lost a champion but his legacy will live on in our hearts and in the organizations and the excellent films and documentaries he left behind.

Dr. Roderick Ralph Riewe

Dr. Roderick "Rick" Riewe, 78, died on November 25, 2020, at his home in Winnipeg, Manitoba.

Dr. Riewe (BSc Wayne State, MSc and PhD UofMB) was born June 8, 1942 in Detroit MI to Laura and Ferdinand Riewe. He studied mice in Newfoundland, Inuit wildlife management in the Canadian High Arctic, and then throughout the circumpolar regions with his soul mate and research partner, Jill Oakes.



Rick taught Biology, University of Manitoba, published over 100 books including Nunavut Atlas, fished commercially, and loved teaching igloo construction, which is where he met his wife. Rick was a gifted storyteller and loved adventure. To minimize his Parkinson's symptoms, Rick cycle toured about 15,000 miles per year, exploring backcountry USA, Canada and Cuba. This year, thanks to Hercules-style 24/7 support from Colin Gisiger and Steven Walker, Rick canoed the Bloodvein and Manigotagan Rivers, and cycled throughout Manitoba, North West

Ontario and British Columbia.

“Study a topic that will take you where you want to be” was an Advisor’s wise advice to Rick. He followed that advice throughout his life, it took Rick to:

- Travelling on the land with Inuit across the circumpolar regions including Siberia, Northern Europe, Alaska, Greenland, and across the Canadian Arctic with his soul mate and research partner, Jill.
- Mapping Inuit land use for Inuit to claim as their new territory, Nunavut Territory.
- Flying across the north country in Jill’s homemade open cockpit biplane.
- Paddling world class river systems.
- Commercially fishing off the shores of Haida Gwaii; and
- More recently exploring backcountry North America and Cuba on a tandem ½ recumbent bicycle



Years ago, Rick wrote a summary of his academic life.

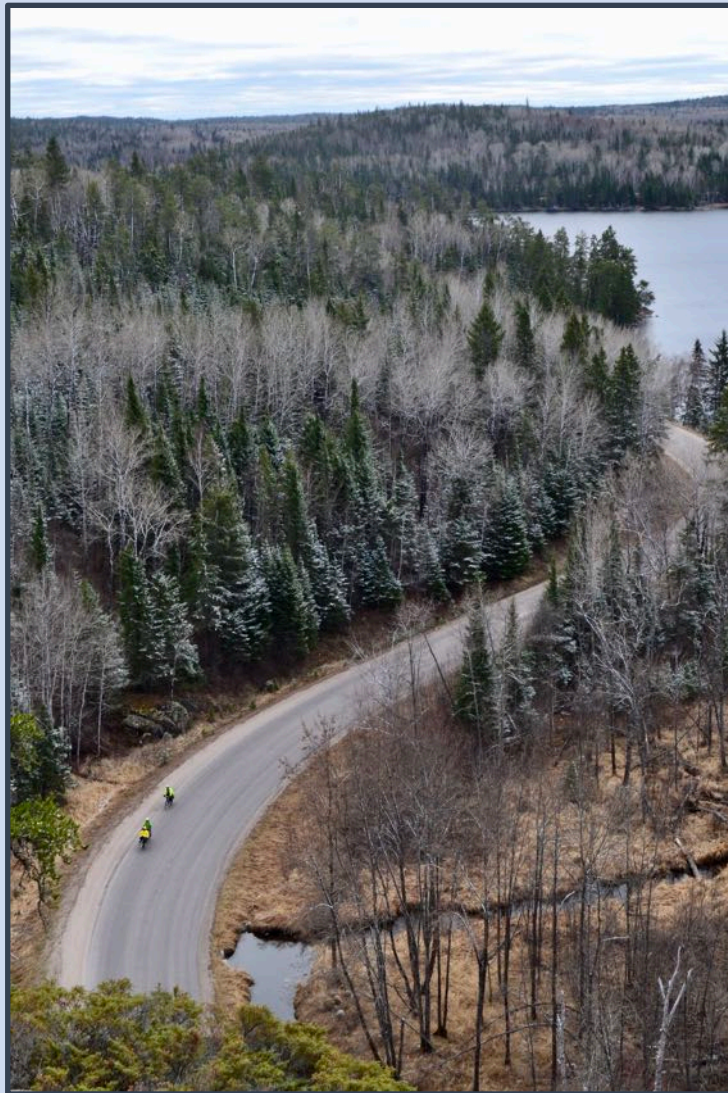
“In 1960 I graduated from high school in Detroit Michigan. I had always been fascinated about the natural environment. I fell in love with the Canadian Wilderness and wanted to be a naturalist. I enrolled at Wayne State University because I could not afford to attend the universities that had wildlife programs. Unfortunately, I could not stand the laboratory courses and research. After working 2 years on a physiology project, my advisor understood that I could not stand working in a lab and that I dearly wanted to work in the wilds. In 1965 he asked me if I would like to study under his friend, Dr. William O. Pruitt Jr., who was travelling across the Canadian tundra on skis following the caribou and studying their behaviour. I was thrilled to have the opportunity to do so...”

Many years ago, Rick was diagnosed with an aggressive type of Parkinson’s which had no medical treatment, his Neurologist suggested trying intensive, extensive, long term cycling. He had cycled around Italy with a high school buddy Ethan VanEck when they were 18; Rick had done very little cycling since. Following the doctor’s recommendations, Rick started cycle touring with a passion, cycling 15,000 miles per year, 6 to 8 or more hours per day. He cycled in all weather, using studded tires in the winter. Cycle touring did repress the symptoms, as well as introduce Rick to the freedom of exploring backcountry USA, Canada and Cuba, stealth camping, making new friends, seeing amazing country, and inspiring others with similar mobility challenges. It was a non-stop adventure, a

Cycle Party, to be part of what we fondly called “Rick Riewe’s Boot Camp”. As the Parkinson’s advanced, Jill found bicycles which met Rick’s changing mobility needs and attracted the Helpers needed to support Rick’s backcountry cycling as medicine.

November 10, Rick entered Palliative Care, unable to walk, stand, talk, and swallow, yet he continued to get up "at the crack of dawn" cycling his custom-built bicycle to track deer. Thank you to caregiver aids John Wider, Nancy Allen and Kira Eidse; and palliative doctors and nurses; they had never seen anyone in such good condition with such aggressively advanced Parkinson's symptoms. Rick's message to others "Just do it".

Rick is survived by Jill Oakes (wife); Gordon Riewe (brother); Linda Hatcher (sister); Nick Riewe (son); Jennifer Oakes, Judi Oakes, Linda Brooks (sister in laws) and nieces; nephews; grandson; grandnieces; grandnephews; and one great-grandson.



Webinar: *Peregrine Falcon Survival Rates Derived From a Long-term Study at a Migratory and Overwintering Area in Coastal Washington, USA*

Presented by Dan Varland, Ph.D., Executive Director, Coastal Raptors, Hoquiam, Washington U.S.A.



Photo by: Rob Palmer



Photo by: Dale Larson

February 23 at 7:00 pm

After a well-documented recovery following substantial population declines throughout most of North America, the Peregrine Falcon (*Falco peregrinus*) was delisted in the U.S. under provisions of the U.S. Endangered Species Act in 1999. Post-delisting monitoring for the Peregrine Falcon stipulated surveys of breeding locations and did not specifically emphasize other metrics of population dynamics such as survival.

Dan Varland and colleagues used banding data from Peregrine Falcons captured on the Washington coast during 1,212 vehicle surveys of raptors between 1995 and 2018 to: (1) evaluate trends in the occurrence of Peregrine Falcons and Bald Eagles, (2) evaluate the occurrence of Peregrine Falcons subspecies, and (3) estimate apparent survival probability and resighting probability for age and sex classes of peregrines for designated time periods. They also evaluated the effects of changing levels of observer effort and Bald Eagle abundance on apparent survival and on the probability of resighting falcons.

Their long-term mark-resighting analyses provide evidence of a reasonably high level of apparent survival that suggests good population performance. Dan will share the findings interspersed with amazing photos of Peregrine Falcons and more.

A little more about Dan..

Dan Varland was born and raised in Rockford, Illinois, U.S.A. He holds Bachelor of Science and Master of Science degrees in Zoology from Eastern Illinois University and a Ph.D. in Animal Ecology from Iowa State University. For 25 years, Dan has been surveying and banding raptors on Washington's coastal beaches. He is the Executive Director of Coastal Raptors, a non-profit organization focused on research, education and conservation programs for raptors in coastal environments. In December, Coastal Raptors research was featured on the US Geological Survey Bird Banding Lab website (<https://www.usgs.gov/center-news/notes-field-coastal-raptors>). Dan is co-editor of a book on raptors in human-altered landscapes and has co-authored 20 scientific publications and two book chapters.



Save the Date!

Manitoba Chapter AGM on March 18th!

We will be hosting our annual general meeting virtually on March 18th. Stay tuned for more details regarding the AGM.

R Workshop

Our Chapter held a virtual Intro to R Through Figures Workshop led by Independent Biological Consultant, R-Programmer, Dr. Steffi LaZerte in November of 2020. The event hosted 14 of our members who learned about the R Programming Software. Thank you to Dr. LaZerte for making this workshop possible! The paragraph below is from the perspective of one of our members, Michael Salazar and what he thought about the workshop.

"Dr. Steffi LaZerte's introduction to R-Workshop was incredibly informative. She did an amazing job presenting the material and assisting us as we followed along. I particularly enjoyed learning how to create graphs using the program. I would definitely recommend first time R users to take part in the next workshop."

-Michael Salazar

A few words from Dr. Steffi LaZerte:

"I'm very happy with how the workshop turned out. R's popularity, power, and cost (free!) make it a valuable resource for wildlife professionals, but it is challenging and does take time to learn. It's always a joy to see participants embrace the challenges of learning R and, in this case, learning R remotely!"

Webinar by Dr. Ryan Brook

Dr. Ryan Brook offered an amazing virtual webinar titled, "Pigs in Space: Canada and Manitoba Perspectives on Invasive Feral Swine Movements, Reproduction, and Disease Risk". The event was co-hosted with the CSTWS and we had 27 participants. Dr. Ryan Brooks is an amazing presenter and we all learned so much about his research. You can learn more about his research and report sightings at the Canadian Wildlife Pig Research Project (CWPRG) on Facebook.

Photo Contest

In December TWS MB hosted a contest for members to submit their photos to win prizes. The contest had 3 categories for photo submissions, an urban wildlife category, a fall and winter wonderland category, and an “other” category. Below are the winning photos for each category. Thank you to all that submitted, and we will try to showcase all photos taken on our social media, or website in various ways!



**Urban Wildlife:
Jessica Lang**

Other: Jim Duncan



Fall/Winter: Jessica Lang



Trivia Night

On January 21 we hosted a virtual trivia night to celebrate Aldo Leopold's birthday. The event ended up having 21 participants who tested their knowledge of wildlife related trivia questions. Thanks to all that participated and made the event such a hit!

The Manitoba Chapter of The Wildlife Society

TRIVIA NIGHT PRIZES

1st prize: Chasing Nature: An Ecologist's Lifetime of Adventures and Observations by TWS-MB member Robert E. Wrigley



2nd prize: Gift card for FortWhyte Alive (\$35 value)



3rd prize: Gift card for Wild Birds Unlimited (\$25 value)



Virtual door prize: Field Guide to Tracking Animals in Snow by Louise R. Forrest



The Winners of Trivia Night:


- 1st Place- Jessica Lang
- 2nd Place- Ken Kingdon
- 3rd Place- Marissa Berard
- Door Prize- C-Jae Breiter

Thank you to Robert Wrigley for the donation of his book and thank you to FortWhyte Alive for their donation of a free one-year membership.

Poster Competition


In the fall we hosted a poster competition for our members to submit posters on research they are working on. This competition allowed TWS-MB to showcase some of our members research on our website and through social media. There were 3 categories for poster submissions including habitat, social and environmental considerations, and wildlife and insects category. Check out the poster winners in each category below, or on our website.

Social and Environmental Considerations Category



Adaptive Management and the Environment Video Project

Researcher - Emily M. Thoroski Advisors – Drs. Rick Baydack and Erin McCance
University of Manitoba - Faculty of Environment, Earth and Resources



Project Objective

- To create a video that can be used to inspire and educate people on the environment and the importance of environmental conservation
- To gather various perspectives on the environment and it's resources and to prove that the environment matters to all of us

Project Significance – Why Should We Care?

- Populations of vertebrate animals – such as mammals, birds, and fish have declined by 58% between 1970 and 2012
- On a global basis, 239 million hectares of natural forest have been lost since 1990
- Increased human pressure threatens the natural resources that humanity depends upon
- Healthy ecosystems are vital to our survival, wellbeing and prosperity

(World Wildlife Fund, 2016)

Background

- Taking an interdisciplinary approach at documenting the different perspectives of university professors and students, as well as environmental professionals on the environment
- The final video hopes to be used as an educational tool that will be shown in a classroom setting and at conferences

Results – What I am Finding

- People are passionate about the Environment and its natural resources
- Everyone has their own perspective and their own story to tell
- Interviewees provide great advice for future conservation efforts
- Key finding - People link wildlife and the environment to their families and what matters most to them

Methodology – What I am Doing

- Video-taping and conducting interviews (including audio and visual)
- Auditing a Filmmaking course to study videography
- Traveled to 25th Annual Conference of The Wildlife Society in Cleveland, Ohio to interview wildlife professionals from across North America
- I have interviewed over 20 Environmental Professionals and Students

“A Change in Perspective”

Interviewees include:

- Professors
- Students
- Environmental Scientists
- Wildlife Biologists
- Indigenous leaders
- Policy makers
- Philosophers

Take Home Thoughts...

- Why does the Environment Matter to you?
- Why do Wildlife Matter to you?

(Please think about your answer and talk about it with your family and friends!)

References: World Wildlife Fund, 2016. Living Planet Report. Global Footprint Network.

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Habitat Category

Biological and Physical Observations of the Marine Environment near Southampton Island, Nunavut

Authors: E. Kitching¹ (kitchine@myumanitoba.ca), C. Michel¹, K. Gupta¹, and C. Mundy^{1,2}
 1-University of Manitoba, 2-Centre for Earth Observation Science, 3-Department of Fisheries and Oceans

Introduction and Objective

- Decreasing surface water salinity and increasing stratification is predicted to result in a decline in nutrient upwelling and primary production (Trenblay and Gagnon, 2009)
- Northern communities are increasing in size, growing the importance of the region for shipping and other maritime activities
- Surface water mixing and nutrient upwelling results in greater phytoplankton abundance and production near to islands (Doty and Oguri, 1956)
- The objective of this research is to quantify the temporal variability of processes that control phytoplankton production from one location south of Southampton Island over 2 time scales

Research Area and Methods

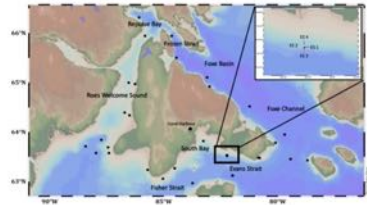
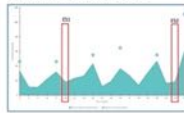


Fig. 1. Map of stations sampled during SIMEP 2018 and 2019, inset of 4 selected stations that were repeated in 2018 and 2019

- The research area was the waters around Southampton Island, Nunavut, Canada (Figure 1) during August of 2018 and 2019
- Research was conducted aboard the RV William Kennedy as a part of the Southampton Island Marine Ecosystem Project (SIMEP)
- Transects perpendicular to shore were sampled for measurements of water column structure:
 - CTD measurements, chlorophyll a and other pigment measurements, and pelagic bacterial and algal biomass measurements
- One location in Evans Strait was sampled twice during each expedition, these 4 stations were selected for this research to show the variability over two time scales for the water column measurements listed above

Wind Speed August 2018



Wind Speed August 2019

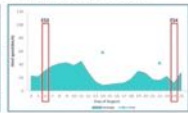


Fig. 3. Average wind speed in km/h from the New Canada's Coastal Weather measurement stations. Note daily wind speed is shown for 'Station' Area (about 40 km²). Red bars represent the 4 selected stations in Evans Strait.

- There were significantly more high wind/storm events occurring in 2018 than 2019 (Figure 2)
- N2 profiles (Figure 3) show the change in the overall stability of the water column
 - More extreme values indicate a loss of stability
 - Values closer to zero indicate stability in the water column

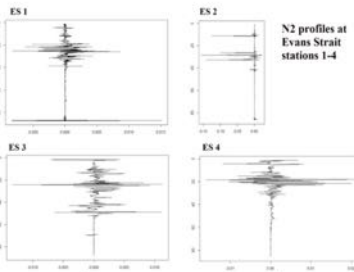


Fig. 3. N2 profiles (above 100m depth) Frequency counted for each of the 4 Evans Strait stations

	ES 1	ES 2	ES 3	ES 4
Mixed Layer Depth (m)	25.8	28.5	24.3	18.1
Average Temperature (deg C) over Mixed Layer	3.76	2.21	5.69	7.34
Average Salinity (psu) over Mixed Layer	31.70	31.80	29.82	29.65

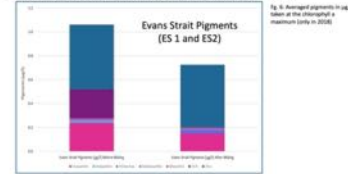
Fig. 4. Table showing mixed layer depths, average temperature and salinity over mixed layer for ES 1-4

- In 2018 the mixed layer depth decreased from 25.8 m to 28.5 m deep
 - This shows an overall slight decline in stability from the three storm events occurring between sampling
- In 2019 the mixed layer was pushed up from 24.3 m to 18.1 m deep
 - This shows the increase in stability from the overall lower number of storm events occurring between sampling

Results and Discussion

	ES 1	ES 2	ES 3	ES 4
Integrated Chl a in euphotic zone (0.2%) (µg/m ²)	54.5	58.4	75.7	24.4

- Integrated Chl a pigments (µg/m²) for each Evans Strait station
- Chl a pigments were seen to slightly increase between samplings during 2018
- Chl a pigments were seen to decrease significantly between samplings during 2019
- Pigments, however (only sampled during 2018 expedition), were shown to decrease. In particular Chl b was not observed in ES 2. (Figure 6)



Conclusions

- High wind events/storms maintain Chl a into the euphotic zone, as seen in 2018
- Reduced high wind events/storms result in a decline in Chl a due to increased stability in the water column, as seen in 2019
- There is a potential impact on individual phytoplankton species, as seen in the loss of Chl b pigments in 2018

Works Cited

- Trenblay J.E. and Gagnon J. (2009). The NATO Science for Peace and Security Program.
- Doty S. M. and Oguri M. (1956). ICES Journal of Marine Science.

Acknowledgements

Thank you to MEOPAR, NSERC, DFO, CEOS, University of Manitoba, the crew of the William Kennedy, and Keesha Peterson

Wildlife and Insects Category

The Unique High Altitude Adaptation of The Himalayan Wolf

Jeremy Mumford, Aditya Gandhi, Evan Maslanka

Executive Summary

The Himalayan Wolf is a unique species of wolf that has specialized adaptations that allow for survival in high-altitude environments. The taxonomy of the wolf is debated and research has shown a distinct lineage of their taxonomy. Unique genes found in the wolves are also found in humans through evolutionary adaptation to thrive in high-altitudes. Human activity has created a challenge for the Himalayan Wolf to sustain its population through poaching, habitat destruction and loss of prey species.

Objective

Examining the evolutionary adaptation of the Himalayan wolf in high altitude environment and the subsequent genetical variation.

Discussion

Research has found differentiations in the Himalayan Wolf compared to the Holarctic Grey Wolf in the hypoxia pathway suspected related genes EPAS1, ANGPT1 and KYR2 all of which are considered to be linked to hypoxia adaptation. These genes showed non-synonymous fixed mutations in the Himalayan wolves.

- EPAS1 is a hypoxia related suspected gene and is related to key genes such as erythropoietin (EPO) and the vascular endothelial growth factor (VEGF). It is associated with decreased blood flow resistance, which may help to improve haemorrhagic fitness and in humans it is associated with differences in hemoglobin concentration at high altitude.
 - ANGPT1 can increase tissue vascularization which promotes increased oxygen delivery.
 - The gene KYR2 is linked to cardiac excitation contraction regulation, i.e. heart function.
- These three genes also exhibit differentiation in high altitude human populations which is similar to the evolutionary drivers of natural selection have shaped wolves and humans of the Tibetan plateau and the Himalayas. [1]



Fig. 1: An adult Himalayan Wolf in the Trans Himalayan Region of Nepal.

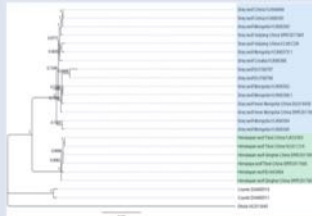


Fig. 2: Bayesian phylogeny built with full mitochondrial genome sequences.



Fig. 3: A) Study areas across the Himalayas. B) mtDNA verified samples (green) and Holarctic Grey Wolf (blue).

Background

The Himalayan Wolf is uniquely adapted to life in the high altitudes of the Himalayan region. As they are a unique sub-species research has confirmed the presence of Himalayan Wolves across the Nepalese Himalayas through phylogenetic evidence collected, based on mitochondrial and nuclear DNA. This was accomplished by collecting scat and hair samples and referencing them in relation to samples collected from other wolf species around the world. These wolves have been documented at 3,900-5,600 m a.s.l.

Genetic Data

Wolves in the Himalayan region form a monophyletic lineage distinct from the present day Holarctic Grey Wolf *Canis lupus* found across Eurasia and North America. We have reviewed analysis of phylogenetic relationships and geographical distribution of mitochondrial DNA haplotypes of the contemporary Himalayan Wolf (*Canis himalayensis*). This distinct branch in the phylogeny is believed to have started 800,000 years ago.

Conclusion

Functional Genes can provide an understanding of the evolutionary mechanisms that have triggered local adaptations and eventual genetic differentiation. These genes have allowed this species to survive and thrive in an area that would be inhospitable to many other wolf sub-species. The ability to survive in a low oxygen environment that requires intense physical activity to survive.

References

- Wurhahn, G. et al., The unique genetic adaptation of the Himalayan wolf to high-altitudes and consequences for conservation. *Global Ecology and Conservation*.
- Wurhahn, G., Seno, H., Ghantani, M., Karmacharya, D., Werhahn, A.M., Jishi, J., Koo, N., Lippa-Bao, J.V., Rosen, T., Kachel, S. and Silero-Zubiri, C. (2018). The unique genetic adaptation of the Himalayan wolf to high-altitudes and consequences for conservation. *Global Ecology and Conservation*, 16.
- Wurhahn, G., Koo, N., Silero-Zubiri, C., A Macdonald, D. W. (2017). Conservation implications for the Himalayan Wolf *Canis lupus himalayensis* based on observations of packs and home sites in Nepal. *Oryx*, 1-7.

We still have some calendars left for purchase!

2021 Wildlife Calendars are available for purchase! This calendar displays local Manitoba wildlife and one species from Alberta! Calendars are \$25 each and go directly towards the MB Chapter to put on future events! Thank you to photographer Victoria Scott from Canadian Shield Photography for donating these to fundraise for our chapter. Email or message if you're interested!

Wildlife Photographer: Victoria Scott - Canadian Shield
Photography



TWS-MB Merchandise

Baseball Tee



Ball cap



Hoodie



Travel Mug

Email us at: tw.s.manitoba.chapter@gmail.com for clothing