NUTRITIONAL ECOLOGY WORKING GROUP

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MESSAGE FROM THE CHAIR

Hello everyone,

I hope everyone has had productive summer and fall field seasons. The working group has certainly had a productive period since our last newsletter. We continue to search for new avenues to meet the needs of our diverse membership and promote nutritional ecology in the field of wildlife management and The Wildlife Society.

We recently held our working group elections and welcome back Katey Huggler (Secretary), Dan Thompson (Chair-Elect), and myself (Chair) for these positions' next term.

Our other board members continuing terms in 2024-2025 include Brittany Wagler (Treasurer), Colter Chitwood (Board Member at Large), Rachel Cook (Board Member at Large), Levi Heffelfinger (Board Member at Large), Jacob Dykes (Board Member at Large), Jocelyn Biro (Board Member at Large), Mary Hiney (Newsletter Editor), and Yasaman Shakeri (Outreach/Communications). Each of those positions, including Chair-Elect, will finish up their term limit in the next calendar year, which means we are looking for nominations to fill these positions. If you are interested in serving on the working group board, or becoming more involved, please contact us via the Nutritional Ecology Working Group email.

The Nutritional Ecology Working Group recently hosted a nutritional geometry symposium, "Dietary Balancing Acts: The Nutritional Geometry of Feeding Decisions in Wildlife Ecology", at the 31st Annual TWS Conference in Baltimore. The symposium featured a variety of charismatic fauna, including many primate species, moose, and snowshoe hare.

he studies highlighted during this symposium helped display the wide range of nutrient balancing and regulation that species use to meet their nutritional needs. **Continued on the next page.**

THE WILDLIFE SOCIETY
NUTRITIONAL ECOLOGY WORKING GROUP
… understanding wildlife populations from the bottom-up.

MESSAGE FROM THE CHAIR

The symposium was well received and generated plenty of interest from conference attendees. We would like to thank Jessica Rothman, Margaret Bryer, Julianna Balluffi-Fry, Dan Thompson, and David Raubenheimer for all their hard work organizing this fascinating symposium. We also held our annual Nutritional Ecology Working Group meeting during the final day of the conference this year and received a strong turnout. Lots of ideas for future webinars, symposiums, and workshops were tossed around from those in attendance.

Our winter webinar series is officially underway, and we have a great slate of speakers lined up. A total of 5 webinars will be given during this series with topics such as gut microbiome, plant secondary compounds, and fecal metabarcoding. As always, we are open to input from our members to help us put together webinars that meet the needs of the membership. If you are unable to catch a webinar, remember all recordings are available on our website.

Our next Skills workshop has officially been scheduled to take place in Palmer, Alaska from June 10-12th, with the optional half day on the 13th. Keep an eye out for registration to open in early 2025 and a call for scholarship applications to follow shortly after. This workshop has consistently received outstanding reviews and serves as an excellent platform for our working group members to equip other professionals with the skills to conduct nutritional ecology research in a scientifically rigorous manner. We look forward to another successful workshop this summer and welcome feedback on other workshop ideas our members have.

Finally, be on the lookout for a nutritional ecology focused special issue of The Wildlife Professional (TWP) to come out in late spring of 2025. We have solicited 8 articles, based on input from the membership, from various professionals in the field. These authors have been diligently working to put these articles together and we are excited for TWP to cover these topics to expose more students and professionals to the work we do. I would like to personally thank Jennifer Merems, as the Nutritional Ecology Working Group representative to the editorial board of TWP. She has put a ton of work into facilitating these articles and is ensuring that we all reach the finish line in a timely manner.

Marcus Blum
Chair, Nutritional Ecology Working Group

Upcoming Workshops and Meetings

2025 WAFWA Deer and Elk Workshop

The 16th Biennial WAFWA Deer and Elk Workshop will be held June 16-19, 2025 in Nanaimo, British Columbia at the Coast Bastion Hotel. The Western States and Provinces Deer and Elk Workshop is a biennial meeting held in odd numbered years sanctioned by WAFWA. The workshop provides a forum where leading deer and elk managers and researchers share research results, management strategies, and emerging issues in the realms of deer and elk management throughout North America. Stay tuned for updates and paper submission deadlines, which will be available on the WAFWA website soon.

2025 Desert Bighorn Council Meeting

The DBC was established in 1957 to advance desert bighorn sheep science and conservation. Membership is composed of wildlife biologists, scientists, managers, and others interested in the welfare of desert bighorn sheep. This meeting will serve as a forum for leading innovators, researchers, and practitioners to discuss research results, management strategies, and emerging issues in the realm of desert bighorn sheep management. This year's theme is "Management of Desert Bighorn Sheep in a Changing Landscape: Challenges and Opportunities." The meeting will be held at Gold Canyon, Arizona on April 22-25, 2025.

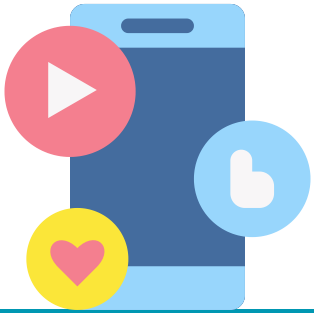
Board Members

Chair: Marcus Blum
Chair-elect: Dan Thompson
Past Chair: VACANT
Secretary: Katey Huggler
Treasurer: Brittany Wagler
Outreach & Communications Officer: Yasaman Shakeri
Newsletter Editor: Mary Hiney
Board Member: Rachel Cook
Board Member: Colter Chitwood
Board Member: Jocelyn Biro
Board Member: Jacob Dykes
Board Member: Levi Heffelfinger

Graduate Sub-Committee

The graduate student sub-committee is a platform for graduate students and early-career professionals to brainstorm ideas for how the NEWG can best support their growth in the field of nutritional ecology. The sub-committee meets every few months and is a fantastic opportunity to connect with peers and get involved with the NEWG.

If you are interested in joining or have any questions, **please contact Jocelyn Biro at biro6470@mylaurier.ca**.



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Special Issue of The Wildlife Professional

During the 2023 annual The Wildlife Society's Nutritional Ecology Working Group (NEWG) meeting in Louisville, NEWG members voted to pursue a special issue of The Wildlife Professional focusing on nutritional ecology. The NEWG board identified the following 8 topics to highlight nutritional ecology in this special issue.

1. Introduction to Nutritional Ecology
2. Stable Isotopes
3. Body Condition
4. Tractable Animals
5. Nutritional Geometry
6. Plant Secondary Compounds
7. Vegetation/Habitat
8. Integrating Nutrition into Management

Jennifer Merems is the NEWG representative on the editorial board of The Wildlife Professional and has been facilitating these articles, many of which are authored by NEWG members. This special issue of TWP on nutritional ecology should be published in late spring of 2025. The NEWG board thanks Jennifer for facilitating this monumental task, and all the authors that are contributing to this special issue. We look forward to expanding the knowledge of nutritional ecology to our fellow TWS members through The Wildlife Professional.

Election Results

Chair
Marcus Blum
Chair-Elect
Dan Thompson
Secretary
Katey Huggler

NEWG Winter Webinar Series

The Wildlife Society's Nutritional Ecology Working Group has facilitated a winter webinar series for the past 4 years show casing the diversity of nutritional ecology. The webinar committee, consisting of Keith Oster, Tamara Johnstone-Yellin, Scott McWilliams, and Dan Thompson, has secured the following presentations for 2024-2025 webinar series:

- **November 13th, 2024** – Phil Manlick and Claire Goodfellow – USDA Forest Service and Oregon State University. *Unraveling the spatiotemporal dynamics of Sitka black-tailed deer diet throughout Southeast Alaska's Tongass National Forest using DNA metabarcoding.*
- **December 11th, 2024** – Mark Edwards – California Polytechnic State University. *Curated Collections of nutrient composition data for the animal nutrition community.*
- **January 15th, 2025** – Robin Warne – Southern Illinois University. *Gut microbiome mediation of animal life histories.*
- **February 12th, 2025** – Lisa Shipley – Washington State University. *Plants to populations: Predicting diet quality and nutrient intake of deer from forage metrics.*
- **March 12th, 2025** – Marjorie Matocq – University of Nevada – Reno. Ecological and genetic interactions across hybrid zones in small mammals of the genus Neotoma.

Recorded webinars for this year's series, as well as the last 4 years, are available at the following link: https://wildlife.org/newg/webinar-series/.

If you have ideas for presentations for the 2025-2026 webinar series, please email them to tws.nutritional.ecology@gmail.com.

Nutritional Geometry at TWS Annual Conference

The Nutritional Ecology Working Group sponsored a symposium at The Wildlife Society's annual conference in Baltimore on nutritional geometry. The nutritional geometry committee, Jessica Rothman, Margaret Bryer, Juliana Baluffi-Fry, and David Raubenheimer organized the symposium, with Dan Thompson and Marcus Blum providing logistic support with national TWS.

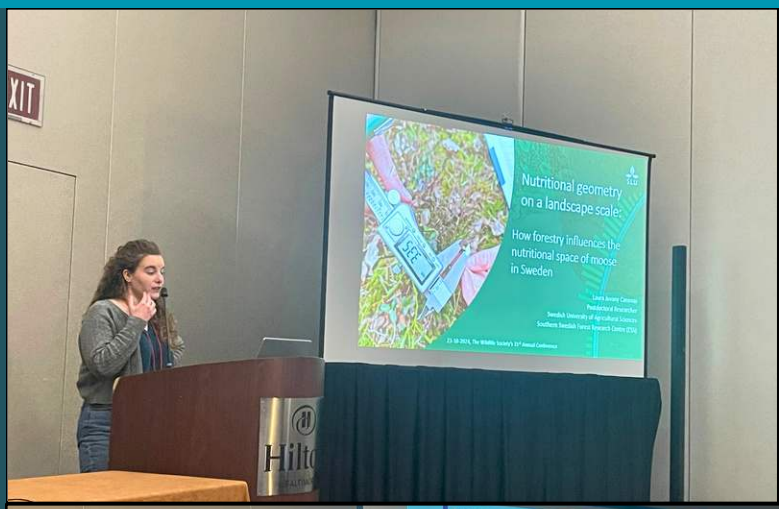
The nutritional geometry committee pulled together a diverse set of speakers for the symposium "**Dietary balancing acts: The nutritional geometry of feeding decisions in wildlife ecology**." Nutritional geometry has been used in recent studies to demonstrate that a variety of wildlife do not seek out single nutrients, but often balance and regulate multiple nutrients to meet nutritional needs. Speakers came from North America, Europe and Australia and gave presentations incorporating nutritional geometry in a variety of taxa.

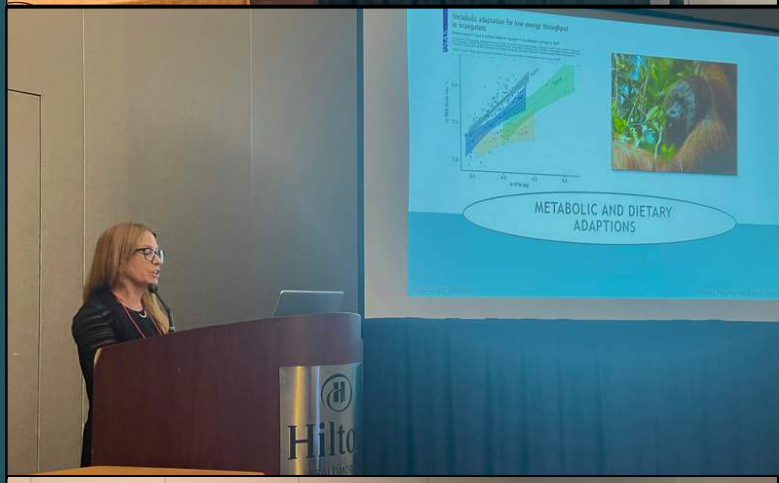
(see next page for more information)

Photos from Conference courtesy of Jessica Rothman

• Nutritional geometry in wildlife research: from lab to field – **David Raubenheimer, School of Life and Environmental Science, University of Sydney**
• Seasonal dietary and metabolic flexibility in wild Bornean orangutans – **Erin Vogel, Rutgers, The State University of New Jersey**
• The nutritional strategies and social behavior of an omnivorous forest monkey in Uganda – **Margaret Bryer, Department of Anthropology, University of Wisconsin-Madison**
• The fuzzy frugivore-folivore line: which leaves and fruits do lemur folivores and frugivores select? – **Mitchell Irwin, Northern Illinois University**
• Nutritional geometry on a landscape scale: how forestry influences the nutritional space of moose in Sweden – **Laura Juvany Canovas, Swedish University of Agricultural Sciences**
• The nutritional geometry of moose: new insights from Scandinavia – **Annika Felton, Swedish University of Agricultural Sciences**
• Feeding and body condition responses of a wild browser (snowshoe hare) to different nutrient balances within foods – **Julianna Balluffi-Fry, Department of Biological Sciences, University of Alberta**
• Atlas deer food selectivity and degree of grazing in Morocco – **Mohammed Diouri, Moulay Ismail University**
• Nutritional geometry in wildlife research: further afield – **David Raubenheimer, School of Life and Environmental Science, University of Sydney**

Photos from Conference courtesy of Jessica Rothman





Recorded presentations will be available sometime in the spring of 2025 at the following link: https://wildlife.org/newg/symposium/.

The Nutritional Ecology Working Group thanks both the nutritional geometry committee and the presenters in the symposium for advancing our knowledge of nutritional ecology through nutritional geometry!

NEWG SKILLS WORKSHOP

Mark Your Calendar! The TWS Nutritional Ecology Working Group, in collaboration with Alaska Department of Fish and Game, are pleased to announce the 3rd skills workshop focused on measuring forage quantity and quality for herbivores.

Photo courtesy of Rachel Cook

The workshop will be held during June 10th – 12th (June 13th for optional half day), 2025 at the Foraging Ecology & Wildlife Nutritional Analysis Lab in Palmer, Alaska.

The workshop will cost $500 (for 3 days) plus $85 for the optional half day. The workshop will be a mix of lectures taught by a diverse panel of instructors, hands-on exercises in the laboratory and in the field, and interactive group problem solving sessions.

Look for registration to open early in 2025 with a detailed agenda on the main workshop and the optional half day. A minimum of 14 attendees will be required and we will be offering travel scholarships.

Please contact Rachel Cook for any questions (rachierae@gmail.com).

Recently Published Research

The list of recent publications provided is for informational purposes only and inclusion on the list should not be considered endorsement by NEWG.

- Barboza et al. 2024. Robust Responses of Female Caribou to Changes in Food Supply. *Ecological and Evolutionary Physiology*. DOI: 10.1086/729668
- Bergman et al. 2024. Management considerations of moose life-history characteristics in Colorado, USA. *Wildlife Biology* DOI: 10.1002/wlb3.01310
- Carnahan et al. 2024. Ursids evolved dietary diversity without major alterations in metabolic rates. *Nature Portfolio*. DOI: 10.1038/s41598-024-55549-w
- Denryter et al. 2024. Migratory behaviours are risk-sensitive to physiological state in an elevational migrant. *Conservation Physiology*. DOI: 10.1093/conphys/coae029
- Hobbs. 2024. A general, resource-based explanation for density dependence in populations of large herbivores. *Ecological Monographs*. DOI: 10.1002/ecm.1600
- Lambert et al. 2024. How Primates Eat: A Synthesis of Nutritional Ecology across a Mammal Order. *University of Chicago Press*. DOI: 10.7208/chicago/9780226829746.001.0001
- Lopez et al. 2024. Linking summer nutrition to behavior and performance of black-tailed deer. *Journal of Wildlife Management*. DOI: 10.1002/jwmg.22679
- Manlick et al. 2024. Climate warming restructures food webs and carbon flow in high-latitude ecosystems. *Nature Climate Change*. DOI: 10.1038/s41558-023-01893-0
- Oster et al. 2024. Estimating Mineral Requirements of Wild Herbivores: Modelling Arctic Caribou (*Rangifer tarandus granti*) in Summer. *Animals*. DOI: 10.3390/ani14060868
- Pagano et al. 2024. Polar bear energetic and behavioral strategies on land with implications for surviving the ice-free period. *Nature Communications*. DOI: 10.1038/s41467-023-44682-1
- Rankins et al. 2024. Sociality modulates nutritional carrying capacity of an endangered species. *Frontiers in Ecology and Evolution*. DOI: 10.3389/fevo.2024.1417970
- Singer et al. 2024. The effect of size and density on the mean retention time of particles in reindeer (*Rangifer tarandus*). *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology*. DOI: 10.1016/j.cbpa.2024.111621
- Smiley et al. 2024. Infection–nutrition feedbacks: fat supports pathogen clearance but pathogens reduce fat in a wild mammal. *Proceedings of the Royal Society B*. DOI: 10.1098/rspb.2024.0636
- Tafelmeyer et al. 2024. Cannot outrun the past: age, nutrition, and cohort influence horn size in pronghorn. *Journal of Wildlife Management*. DOI: 10.1002/jwmg.22653
- Thompson et al. 2024. Seasonal somatic reserves of a northern ungulate influenced by reproduction and a fire-mediated landscape. *Frontiers in Ecology and Evolution*. DOI: 10.3389/fevo.2024.1433485
- Turnley et al. 2024. Cumulative costs of reproduction in a long-lived ungulate. *Journal of Mammalogy*. DOI: 10.1093/jmammal/gyae072
- Wagler et al. 2024. Disparate home range dynamics reflect nutritional inadequacies on summer range for a large herbivore. *Ecosphere*. DOI: 10.1002/ecs2.4864