

Volume 31: Summer 2023



Martes Working Group NEWSLETTER

8th International Martes Symposium

*Conserving carnivores in a changing world:
what future for Martes?*



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Coming Soon!

From the Chair

Greetings everyone! I hope that all is well with each of you and, if summer field work is in your schedule, that you are having a fun time in the field.

Welcome to another fantastic version of the MWG Newsletter and the last before our International *Martes* Symposium that is coming up shortly in Scotland in September. It is going to be a brilliant conference, with lots of interesting and fun things happening in addition to the wonderful scientific talks, posters, and keynote speakers that are lined up. Much more information on the conference appears on the following pages.

One of the things that keeps me enthused about studying the *Martes* clad is that there are always new things to learn and better understand, particularly as we learn things about the species that we study. For example, in British Columbia, Canada where I work, fishers are a species of conservation concern (you'll hear more about this at the conference!) and recovery of their populations is challenging given that their reproductive output is doesn't offset the survival rate. But how to increase reproductive output? To do this, we need to understand what factors affect this vital rate. This is where brain-storming with other *Martes* scientists shows the relevance of the MWG and the upcoming symposium – great and new ideas and approaches bubble to the surface and we end up with a new way of looking at things.

I hope to see many of you in September in Aviemore! Here's to another conference filled with great conversations, ideas, and collaborations!

Cheers,

Rich Weir

MWG Chair



About the Cover

This issue is full of information about the upcoming Martes Symposium. Check out the great opportunities on pages 3 to 11.

Symposium Keynote Speakers Announced

The highly anticipated International *Martes* Symposium 2023 is just around the corner, and we urge you to join us for the thought-provoking event titled "Carnivores in a Changing World: What Future for *Martes*?" as we explore the fascinating lives and conservation challenges of these remarkable creatures. As always, the symposium will be an opportunity for experts, researchers, and enthusiasts passionate about all of the *Martes* species to exchange knowledge, share experiences, and foster collaborative efforts.

The first of our keynote speakers is Johnny Birks who has been championing mustelid conservation in Britain for over 30 years. He will tell the story of United Kingdom pine marten survival against the odds and describe how, having been rescued from extinction and set on a path to recovery, pine martens now face new challenges in the current era of global climate change. Johnny will discuss changing human attitudes in Britain and recent efforts to rebuild carnivore communities and repair broken ecosystems, which will be explored further during the field visits to the nearby Cairngorms Connect project.

Our next keynote address will be from Jenny Mattisson, from the Norwegian Institute of Nature Research at Trondheim. Jenny is going to talk about the ecology and management of Scandinavian wolverines, sharing combined knowledge from their extensive monitoring programme with research on the species. Wolverines are a main cause of wildlife-human conflict, as they predate on both free ranging domestic sheep and free ranging semi-domestic reindeer. So, although wolverines are red listed as endangered, management in Norway is mostly about keeping the numbers down, which is an interesting contradiction from an international viewpoint.

Angela Fuller, Leader of the U.S. Geological Survey New York Cooperative Fish and Wildlife Research Unit and a Professor in the Department of Natural Resources and the Environment at Cornell University, is our final keynote speaker. Angela's research encompasses a diverse array of mammal species across regions from the United States, Canada, Nepal, Ecuador, Peru, Colombia, Indonesia, and South Africa, but she holds a special affinity for *Martes*. She is going to examine how we can integrate science and management, highlighting the importance of evidence-based decision making, monitoring programs, and adaptive management approaches in *Martes* species conservation and management.

The Science committee were impressed by the number, quality and scope of the abstracts submitted and have put together a program of presentations from four continents with topics ranging from DNA to detection dogs. We have representation of almost all of the species in the *Martes* complex including yellow throated marten (*Martes flavigula*) and tayra (*Eira barabara*)

If all of that hasn't whet your appetite, there's also the 'must have' conference t-shirt which, this year, has been designed by Julia Bracewell. There is still time to register and we look forward to welcoming you to the Scottish Highlands for what promises to be a great symposium.



Johnny Birks

Photo: Forestry England



Jenny Mattisson

Norwegian Institute of Nature Research

Photo: NINA



Angela Fuller, PhD

U.S. Geological Survey

Photo:USGS



8th International Martes Symposium
*Conserving carnivores in a changing world:
what future for Martes?*

**Not long left
to register!**

Registration ends 15th August!
www.martesworkinggroup.org

8th International
Martes Symposium
12-15 September 2023
Aviemore, Scotland

Registration deadline extended to September 6! Don't miss out!

Registration is closing soon for the 8th International Martes Symposium, being held at Coylumbridge Hotel in Aviemore, Scotland from September 12-15. To register, please click on the following link: <https://www.eventbrite.com/e/8th-international-martes-symposium-tickets-599973355457>

Every 5 years, the conference is an opportunity for scientists and wildlife conservation managers from around the world to share the latest science and conservation actions on martens, sables, fishers, tayras and wolverines. The theme of this year's conference is Conserving Carnivores in a Changing World: What Future for Martes? The program will include scientific sessions (talks and posters), keynote addresses that span the Martes complex, a field trip to sites in the Cairngorms National Park where pine marten research is being carried out, and social events including opportunities to experience some local traditional music and dancing. As of July 19, we have over 90 scientists and conservation biologists from around the world converging for the conference, including delegates arriving from 14 countries covering Europe, North America, South America and Asia – presenting the latest science on the Martes clad!

Refreshment breaks and lunch are included in the registration fee. Delegates that are staying at Coylumbridge Hotel have their breakfasts and dinners included in the accommodation fees (paid directly to the hotel). The registration desk will open at 16:00 on Monday, Sept. 11th and be staffed in the mornings throughout the duration of the event. Stop by to sign in and get your conference materials (e.g., name badge, swag bag) and sign up for field trips, extra banquet or ceilidh tickets. Volunteers are needed to support the symposium function; if you are able to help, please stop by the registration desk to see where assistance is needed!

Schedule Symposium Social Events

Not only will the 8th International *Martes* Symposium be filled with fascinating and informative presentations and posters from top *Martes* scientists and conservation biologists, but we are also planning a variety of social events to ensure that delegates have enjoyable and refreshing breaks from talks and panel discussions. Please come join the social events that we have planned and build new friendships and relationships with other Martes researchers from around the world. For those who may not want to attend the conference but wish to attend the social events, lunches and refreshment breaks, a special “non-delegate” ticket option is available at the conference registration site and are available for purchase for each day of the conference.

No-Host Pre-Conference Social

Monday Sept 11, 7:00 – 9:00 pm

If you’ve arrived early in Aviemore and are looking to meet up with friends and colleagues before the conference gets underway, we will be having an informal no-host gathering in the Cairngorm Suite’s bar the evening before the conference.

Martes Working Group Welcome Social

Tuesday Sept 12, 5:00 – 6:30 pm in the hotel’s Cairngorm Suite

What better way to meet other Martes researchers from around the world than at the Martes Working Group Welcome Social? Please join us for a complimentary refreshment and snack while perusing the poster session, chatting with poster presenters, and mingling with delegates. A great opportunity to forge new relationships and collaborations with top Martes researchers and conservation biologists!

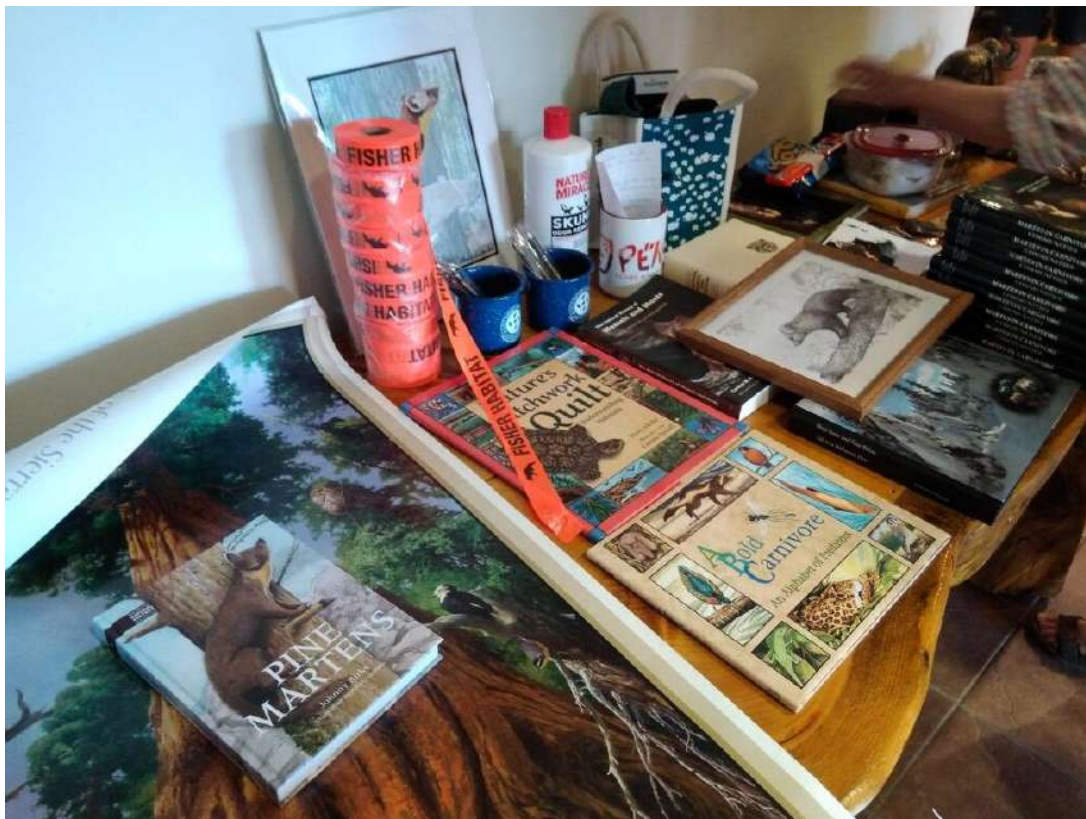


Ceilidh (traditional Scottish music and dance)

Wednesday 13th, 7:30 – 10:00 pm in the hotel’s Cairngorm Suite



Join us for a night of traditional Scottish music with renowned Highland musicians, Hamish Napier and Patsy Reid. We’ll start with a seated concert featuring Hamish’s own compositions, inspired by our Scottish woodlands and native wildlife. This will be followed by the option to get your dancing shoes on for a traditional Scottish ceilidh dance. The Cairngorm Suite bar will be open all evening to quench your dancing thirst! Non-delegates are welcome, please book extra tickets at registration. (£10).



Symposium Field Trip

Field trips are an integral part of the symposium and offer a great opportunity for delegates to learn more about important *Martes* work being conducted in nearby woodlands while getting to know fellow delegates in a friendly casual atmosphere. Field trips will leave from Coylumbridge Hotel with bus transport being kindly provided by Forestry and Land Scotland. Sign up for the field trips when you sign in at the Registration Desk at the start of the symposium.

Wednesday 13th September

Depart Coylumbridge Hotel at 0900, return to hotel at approximately 1600.

50 spaces available on the bus. At each stop, the group will be split into two and rotated between two sessions.

Stop 1: Cairngorms Connect

Learn about the Cairngorms Connect initiative, forest restoration and studies being carried out on the novel, reassembling vertebrate predator community.

Approximate timing: 09:30 to 10:30

Location: MacAlpine Plantation

Bus parking: On roadside next to bridge (unless bus can cross bridge?).

Hosts:

- Jeremy Roberts, Programme Manager, Cairngorms Connect
- Brian Duff, Strathspey Delivery Forester, Forestry and Land Scotland.
- Cristian Wagnershauser, Wildlife Researcher, University of Highlands and Islands.
- Kenny Kortland, Wildlife Ecologist, Forestry and Land Scotland & Cairngorms Connect Predator Project

Stop 2: Private Estates and Pine Marten Recovery

Seafield and Strathspey Estates is one of the oldest privately-owned estates in Scotland. Through their progressive approach, they endeavour to reconcile various land management objectives. Forest management for timber production and biodiversity is successfully carried out and we will hear about this from Will Anderson, Chief Executive. One issue for the estate is trying to balance the interests of legally protected predators, such as pine marten, with other conservation and sporting priorities, such as capercaillie and red grouse.

Approximate timing: 11:30 to 13:00

Location: Boat of Garten wood

Bus parking: Community Hall, then walk into forest.

Hosts: Seafield and Strathspey Estates.

Stop 3. Abernethy Forest Reserve

Abernethy National Nature Reserve (NNR) is one of the largest and most inspiring reserves. It stretches from the River Nethy to the top of Ben Macdui, high on the Cairngorm plateau. Abernethy NNR encompasses one of the largest remnants of Caledonian pinewood, as well as moorland, wetlands and mountains. The reserve is home to a host of specialist pinewood and upland plants and animals. During this visit, we will learn about how the reserve is managed and what research and measures are being undertaken to reconcile protected species with a diversifying vertebrate predator community. Members of the Cairngorms Connect Predator Project team will tell us about vertebrate predator research and forest conservation activities.

Approximate timing: 13:30 to 15:30; including lunch stop (packed lunches from hotel).

Location: Abernethy Forest Reserve

Hosts:

- Richard Mason, Senior Site Manager, Abernethy Forest Reserve, RSPB Scotland
- Jack Bamber, PhD student, Cairngorms Connect Predator Project and Aberdeen University.
- Xavier Lambin, Professor of Ecology, Cairngorms Connect Predator Project and Aberdeen University.

Symposium Field Trips Continued

Post-symposium excursions

We have also organized several post-symposium excursions for those hoping to explore the area around Aviemore after the symposium has wrapped up:

Saturday 16th September

Timing: Depart Coylumbridge Hotel at 09:30

Morning: Urquhart Castle (please book your tickets online, in advance).

Afternoon: Chanonry Point to look for bottlenose dolphins (*Tursiops truncatus*), harbour porpoise (*Phocoena phocoena*) and seabirds; possibly including gannet (*Morus bassanus*), guillemot (*Uria aalge*) and long-tailed duck (*Clangula himalis*).

Possible stop in Inverness on return, if requested and if time allows.

Sunday 17th September

Timing: Depart Coylumbridge Hotel at 08:30. Pick up at ski centre car park at 17:00.

Description:

Hiking trip to Ben Macdui. Please note that this is a straightforward, but serious hike that requires a good level of fitness and proper footwear and waterproof clothing. The hike will be guided, but participants should bring equipment for independent navigation if necessary. Possible wildlife includes mountain hare (*Lepus timidus*), reindeer (*Rangifer tarandus*), golden eagle (*Aquila chrysaetos*), red grouse (*Lagopus lagopus scoticus*) and rock ptarmigan (*Lagopus muta*).

Note that trip is weather dependent. If weather is unsuitable, an alternative, low-level walk will be organised.

For more information, please contact:

Kenny Kortland, Forestry and Land Scotland

kenny.kortland@forestryandland.gov.scot



THANK YOU!!

The *Martes* Working Group thanks the following individuals and organizations for their contributions to the 8th International *Martes* Symposium.

As sponsors, their support is maximizing symposium accessibility by reducing costs for disadvantaged groups such as students, early career professionals, and researchers travelling from distant parts of the globe. With their contributions we are supporting 10 delegates travelling from Asia, Europe, North America, and South America!

Please know that we do have additional requests for support that are currently unfilled so are still keen to hear from any relevant organisations that are ready to support and/or attend the symposium as sponsors and/or vendors. Please visit our [sponsorship webpage](#) for more information.

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Resource Stewardship

Gold Sponsors



Silver sponsors

Jon and Judy Gilbert
NATURESPY
Beth Winkle



Bronze sponsors



Opportunities to Sponsor

As our 8th symposium draws near we are keen for you - our lovely MWG members - to attract sponsorship offers from your own or other relevant organizations. We have already secured generous sponsorship from some fine organizations, but with your help we could involve a few more.

Their financial support will enable us to maximize symposium accessibility by reducing costs for disadvantaged groups such as students, early career professionals, and researchers travelling from more distant parts of the globe. We recognize that students and young professionals are key to our future, so we wish to build support for such delegates who would benefit greatly from attendance at this symposium.

So please use all your powers of persuasion and put any potential sponsors in touch with our Treasurer Scott Yaeger jscottyaeger@gmail.com. The contributions of our **Sponsors** will be recognized in our printed symposium material, at the symposium banquet, and via our social media channels and website.

Four levels of sponsorship option are available:

Platinum (£800 [\$950 USD] or more)

Gold (£500 [\$600 USD] or more)

Silver (£250 [\$300 USD] or more)

Bronze (up to £250 [\$250 USD])

Instead or in addition, organizations may secure a display stand as vendors at the symposium for a modest daily rate.

RAFFLE ITEMS STILL NEEDED

One of many fine traditions that we relish at our symposia is the raffle of bizarre items kindly brought and donated by delegates from all over the globe. The funds raised are used to support travel bursaries at future symposia. Don't forget to bring any desirable treasures you are willing to donate to the symposium!

Johnny Birks, on behalf of the *Martes* 2023 Organizing Committee.

Let's collaborate to increase Martes conservation around the globe!

We want to learn from your experiences to help with *Martes* conservation! A goal of the Martes Working Group is to increase collaboration among our members. With the theme of the 8th International *Martes* Symposium as "Conserving carnivores in a changing world: What future for *Martes*?", we could not think of a better opportunity to gather the collective knowledge of our global membership to outline how we can best conserve Martes into the future.

Throughout the symposium, we intend to create interactive collaboration opportunities for you to share your thoughts, knowledge, and experiences related to *Martes* conservation. For those of you unable to attend, we will create an online portal for you to add your contributions. On the final day of the conference, we will lead a group discussion to synthesize our collective knowledge and then begin drafting an article to publish in The Stacks alongside the rest of our symposium's proceedings.

In August, we intend to send out a pre-symposium survey to prime your thoughts to facilitate discussion. In the meantime, we challenge each of you to take 5 minutes right now and jot down on a sticky note your greatest challenge(s) to achieving *Martes* conservation and your greatest achievement(s). If you can spare two more minutes, please list some key actions/steps/people leading to successful *Martes* conservation. Bring these sticky notes to Scotland and post them at the symposium "*Martes* Recovery" table.

Have questions, ideas, or want to join us in organizing the effort? Send a note to david@stacksjournal.org or jscottyaeger@gmail.com.

Looking forward to a stimulating discussion!

8th Symposium *Martes* Recovery Working Group

Q: Why aren't martens good dancers?



Wanted: *Martes*-related content to help entertain and maintain engagement throughout the [8th International Martes Symposium](#). Have you got a great (or bad) photo, corny joke, haiku, comic, or other *Martes*-related media that symposium organizers can use during the event? If yes, please send them to jscottyaeger@gmail.com. If not, I encourage you to find some, else you're likely to get more of the following if I have to make them all up...

A: Martens are not good dancers because they have two left feet. C'mon...you can do better than that!!

STUMP YOUR COLLEAGUES

Calling all trivia enthusiasts! If you have any fun and interesting *Martes* trivia questions up your sleeve, please share them with me (jscottyaeger@gmail.com).

The topics can vary from general knowledge to specific research related to your favorite *Martes* species. Please send your trivia questions my way, along with the correct answers, and any additional information you think would be helpful. Your contribution will not only add a touch of fun to the conference but also showcase the collective knowledge and creativity of our community.

Looking forward to your brilliant trivia contributions!

Are you ready to make a difference?

Do you value the sense of community and camaraderie of being a Martes Working Group member? Do you want to build your professional network or leadership skills? Would you like the opportunity to make a positive impact on our community and contribute to meaningful projects?

If you answered yes to any one of these, you are in luck! We are pleased to announce the opening of nominations for the executive positions within the *Martes* Working Group. As an active member of our community, you are invited to nominate yourself or others who possess the enthusiasm and dedication necessary to contribute to the success of our group.

Available positions for nominations:

- ☐ President
- ☐ Secretary-Treasurer
- ☐ Membership Director
- ☐ Newsletter Editor
- ☐ Student Director

For a description of position responsibilities, please review the MWG Proposed Bylaws. Nominees must be current members of the *Martes* Working Group and should have a strong understanding of the goals, objectives, and activities of the group. Self-nominations are encouraged, but can be made by any member of the *Martes* Working Group. We encourage all members to actively participate in the nomination process and help shape the future of the *Martes* Working Group.

To raise your hand or nominate a candidate, please send an email to jscottyaeger@gmail.com before September 18, 2023; voting will commence shortly thereafter. If you have any questions or need further information, please don't hesitate to reach out to any of your current executive.

Thank you for your involvement and support!

Join the Monitoring and Methods Working Group

April 14th was the first meeting of the Working Group focused on Monitoring Methods for the *Martes* complex. The purpose of the group is to 1) synthesize existing methods used to detect species in the *Martes* complex 2) establish a set of best practices for developing scientific studies and monitoring programs, and 3) promote research that advances an understanding of detection methods. The group currently consists of 19 people, the majority of which are members of the MWG.

At the first meeting, the group was tasked with developing a set of outcomes for monitoring programs, a list of considerations for camera surveys, and a reference list for each monitoring method (Cameras, eDNA, etc.) for each species of the *Martes* complex. The group also discussed strategies for developing standardized protocols. Given the composition of the group, it was decided that initial efforts for the standardized survey protocols would focus on European pine marten (*Martes martes*) and fisher (*Pekania pennanti*). The group also decided to initially focus on cameras given their widespread use compared to other monitoring methods.

A second meeting was held May 15th where the group finalized the outcomes for monitoring, considerations for camera surveys, and discussed a plan forward. The group is currently developing drafts of camera protocols for *Martes martes* and *Pekania pennanti* for discussion at the next meeting.

To learn more about this working group and how you can get involved, please send an email to Paul (hapeman@ccsu.edu) expressing your interest.

Shifts in Fisher Diet in Response to Climate-induced Tree Mortality in California Assessed with DNA Metabarcoding

Kristy Pilgrim

A recent drought-induced tree mortality event in California, USA led to dramatic landscape-level changes in the southern Sierra Nevada. Widespread conifer mortality was documented in habitats occupied by fisher (*Pekania pennanti*), a mature-forest associated species of conservation concern in this region. This led to questions about whether fisher diets shifted in response to this broad-scale habitat change.

We used DNA technology to identify diet items found in fisher scats collected from the pre-tree-mortality period (PreTM, 2011 – 2013) and post-tree-mortality period (PostTM, 2017 – 2018) in the Kings River study area of the Sierra National Forest. Fisher scats collected PreTM were dominated by mammalian prey items, as 81.7% of scats contained DNA from at least one mammal prey item. In contrast, mammalian prey items in PostTM scats occurred at a much lower frequency, as only 49.0% of PostTM scats contained a mammal prey item. This dramatic reduction was primarily driven by a decline in the occurrence of two tree squirrels (Douglas squirrel and Humboldt's flying squirrel). Additionally, we found that only 19% of scats collected PreTM contained DNA from plants of the *Ribes* genus (gooseberries and currants), whereas 46.1% of PostTM scats contained these plants. Taken together, these results suggest a dietary shift from mammalian prey species prior to the tree mortality event to a diet dominated by plants after the tree mortality event.

This study revealed potential cascading effects of climate-induced tree mortality on fisher diet in the southern Sierra Nevada. Although fisher diet flexibility may allow resilience to ecological change, it is now imperative to understand if this

shift from mammals to plants will lead to reduced survival or reproduction due to energetic or behavioral changes.

The full paper is published in the Journal for Nature Conservation.

Pilgrim, KL et al. 2023. Shifts in fisher (*Pekania pennanti*) diet in response to climate induced tree mortality in California assessed with DNA metabarcoding. J. Nature Conservation 73:126408.

Pilgrim is Laboratory Supervisor for the National Genomics Center for Wildlife and Fish Conservation, United States Forest Service
<http://www.fs.fed.us/research/genomics-center/>



Widespread conifer mortality in the Sierra Nevadas
Photo: Sean Matthews

Next Newsletter...

Our next newsletter will focus on the fisher (*Pekania pennanti*). If you are working with this species and would like to share any updates on research projects or recently published papers, please send your information to Stacy Cotey at srcotey@mtu.edu. As always we welcome updates on other *Martes* complex species projects or any news you would like to share too. The deadline for our next newsletter will be January

2023 *Martes* Complex Publications

The following pages are a list of papers published from January 2023 to June 2023 using the search terms “*Martes*”, “*Pekania*”, “*Gulo*” and “*Eira*” in the Web of Science search engine.

Authors	Title	Journal	Volume	Issue	Start Page	End Page
Aronsson, M; Andren, H; Low, M; Persson, J	Wolverine denning behaviour and its implications for monitoring reproductive females	WILDLIFE BIOLOGY	2023	4		
Aubry, KB; Raley, CM; Shirk, AJ; McKelvey, KS; Copeland, JP	Climatic conditions limit wolverine distribution in the Cascade Range of southwestern North America	CANADIAN JOURNAL OF ZOOLOGY	101	2	95	113
Beklemisheva, VR et al.	Maps of Constitutive-Heterochromatin Distribution for Four <i>Martes</i> Species (<i>Mustelidae</i> , <i>Carnivora</i> , Mammalia) Show the Formative Role of Macrosatellite Repeats in Interspecific Variation of Chromosome Structure	GENES	14	2	489	
Burgos, T. et al.	Top-down and bottom-up effects modulate species co-existence in a context of top predator restoration	SCIENTIFIC REPORTS	13	1	4170	
Clear, E; Grant, R; Gardiner, J; Brasse, C	Baculum shape complexity correlates to metrics of post-copulatory sexual selection in <i>Musteloidea</i>	JOURNAL OF MORPHOLOGY	284	4	e21572	
Cui, JF; Zhang, YQ; Guo, JY; Wu, N; Zhou, YB	Conflicting selection pressures on seed size and germination caused by carnivorous seed dispersers	INTEGRATIVE ZOOLOGY	NA	NA	NA	
Deak, G; Ionica, AM; Gherman, CM; Mihalca, AD	Diversity of <i>Crenosoma</i> species in mustelids with the first molecular characterization of <i>C. melesi</i> and <i>C. petrowi</i>	FRONTIERS IN VETERINARY SCIENCE	10	2023	1094554	
Delheimer, MS; Moriarty, KM; Munro, HL; Early, DA; Hamm, KA; Green, RE	Structural complexity characterizes fine-scale forest conditions used by Pacific martens	JOURNAL OF WILDLIFE MANAGEMENT	87	4	e22388	
Ferretti, F; Oliveira, R; Rossa, M; Belardi, I; Pacini, G; Mugnai, S; Fattorini, N; Lazzeri, L	Interactions between carnivore species: limited spatiotemporal partitioning between apex predator and smaller carnivores in a Mediterranean protected area	FRONTIERS IN ZOOLOGY	20	1	20	
Ishii, H; Amaike, Y; Nishita, Y; Abramov, AV; Masuda, R	Phylogeography of the stone marten (<i>Martes foina</i> : <i>Mustelidae</i> : Mammalia) in Eurasia, based on a mitochondrial DNA analysis	MAMMAL RESEARCH	68	3	375	381
Kosintsev, PA; Yakovlev, AG; Plasteeva, NA; Gimranov, DO	Mammalian fauna of the Late Pleistocene from the Barsuchiy Dol Cave (Southern Urals)	RUSSIAN JOURNAL OF THERIOLOGY	21	2	180	191
Lafferty, DJR; et al	The gut microbiome of wild American marten in the Upper Peninsula of Michigan	PLOS ONE	17	11	e0275850	
Laliberte, J; Rioux, E; Lesmerises, R; St-Laurent, MH	Linking sexual size dimorphism to trophic niche partitioning in a generalist predator	CANADIAN JOURNAL OF ZOOLOGY	100	11	700	709

Authors	Title	Journal	Volume	Issue	Start Page	End Page
Lanszki, Z; et al.	Detection and sequence analysis of Canine morbillivirus in multiple species of the Mustelidae family	BMC VETERINARY RESEARCH	18	1	450	
Loxdale, HD; Harvey, JA	Generalism in nature: a community ecology perspective	COMMUNITY ECOLOGY	24	1	113	125
Mahmood, K; Morlo, M; Khan, MA; Abbas, SG	Late Miocene ' <i>Martes</i> ' <i>lydekkeri</i> (<i>Mammalia: Carnivora: Mustelidae</i>) from the Hasnot outcrops Punjab, Pakistan	HISTORICAL BIOLOGY	2023		1	10
Malygin, VM; Safonova, LD; Sergeev, EG; Levenkova, ES	Taxonomic Assessment of the Karyological Characteristics of the Sable (<i>Martes zibellina</i>) and Other Representatives of the Genus <i>Martes</i> (<i>Carnivora: Mammalia</i>)	BIOLOGY BULLETIN	50	3	416	425
Mergey, M; Kaerle, C; Helder, R	Variations in density of pine marten <i>Martes martes</i> populations according to forest fragmentation	MAMMAL RESEARCH	2023		1	13
Milleret, C; Dey, S; Dupont, P; Broseth, H; Turek, D; de Valpine, P; Bischof, R	Estimating spatially variable and density-dependent survival using open-population spatial capture-recapture models	ECOLOGY	104	2	e3934	
Moqanaki, E; Milleret, C; Dupont, P; Broseth, H; Bischof, R	Wolverine density distribution reflects past persecution and current management in Scandinavia	ECOGRAPHY	2023		e06689	
Newmark, WD; Halley, JM; Beier, P; Cushman, SA; McNeally, PB; Soule, ME	Enhanced regional connectivity between western North American national parks will increase persistence of mammal species diversity	SCIENTIFIC REPORTS	13	1	474	
Peraza, I; et al.	Diet and landscape characteristics drive spatial patterns of mercury accumulation in a high-latitude terrestrial carnivore	PLOS ONE	18	5	e0285826	
Petridou, M; Benson, JF; Gimenez, O; Kati, V	Spatiotemporal Patterns of Wolves, and Sympatric Predators and Prey Relative to Human Disturbance in Northwestern Greece	DIVERSITY-BASEL	15	2	184	
Pilgrim, KL; Green, RE; Purcell, KL; Wilcox, TM; McGregor, EL; Gleason, LE; Wasser, SK; Schwartz, MK	Shifts in fisher (<i>Pekania pennanti</i>) diet in response to climate-induced tree mortality in California assessed with DNA metabarcoding	JOURNAL FOR NATURE CONSERVATION	73		126408	
Shameer, TT; Mungi, NA; Backer, SJ; Raman, S; Reddy, SR; Easa, PS; Sanil, R	Distribution and conservation status of the endemic Nilgiri marten (<i>Martes gwatkinsii</i>)	MAMMALIA	87	4	360	366

Authors	Title	Journal	Volume	Issue	Start Page	End Page
Slade, A; White, A; Lurz, PWW; Shuttleworth, C; Tosh, DG; Twining, JP	Indirect effects of pine marten recovery result in benefits to native prey through suppression of an invasive species and a shared pathogen	ECOLOGICAL MODELLING	476		110216	
Smith, MM; Erb, JD; Pauli, JN	Reciprocated competition between two forest carnivores drives dietary specialization	JOURNAL OF ANIMAL ECOLOGY	2023	NA	NA	
Solheim, R; Brenni, SE	Wolverine(<i>Gulo gulo</i>) recorded as predator of nestling Great Gray Owls (<i>Strix nebulosa</i>) in Norway	JOURNAL OF RAPTOR RE-SEARCH	57	1	116	120
Su, TW; Li, Q; Wang, XJ; Cui, GF; Man, ZH; Li, WT; Zhao, MY	The Ecological Roles of Medium and Small Carnivores in the Terrestrial Animal Community in Liancheng National Nature Reserve, China	ANIMALS	12	24	3518	
Sugiyama, Y; Nishita, Y; Lansink, GMJ; Holmala, K; Aspi, J; Masuda, R	Diversity of the MHC class II DRB gene in the wolverine (<i>Carnivora: Mustelidae: Gulo gulo</i>) in Finland	PLOS ONE	17	5	e0267609	
Sullivan, TP; Sullivan, DS	Woody debris structures on large clearcut openings: Oases for small mustelids and prey species?	FOREST ECOLOGY AND MANAGEMENT	543		121117	
Suzuki, M; Watabe, R; Saito, MU	Forest road use by medium-sized mammals in winter snow environments in a hilly area	LANDSCAPE AND ECOLOGICAL ENGINEERING	19	3	549	557
Twining, JP; Springer, VL; Cooch, EG; Fuller, AK	Landscape-scale drivers of tayra abundance in the Ecuadorian Andes	BIODIVERSITY AND CONSERVATION	32	8-9	2925	2942
Tzortzi, M; Sianis, PD; Iliopoulos, G; Darlas, A	Carnivores from the late Pleistocene locality Melitzia Cave (Mani peninsula, Greece)	HISTORICAL BIOLOGY	2023		1	19
Veronesi, F; Deak, G; Diakou, A	Wild Mesocarnivores as Reservoirs of Endoparasites Causing Important Zoonoses and Emerging Bridging Infections across Europe	PATHOGENS	12	2		
Wereszczuk, A; Zalewski, A	COVID-19 lockdown splits activity peaks of two mesopredators and potentially relaxes interspecific competition in rural habitat	HYSTRIX-ITALIAN JOURNAL OF MAMMALOGY	33	2	8	8
Wereszczuk, A; Zalewski, A	An anthropogenic landscape reduces the influence of climate conditions and moonlight on carnivore activity	BEHAVIORAL ECOLOGY AND SOCIOBIOLOGY	77	5		
Wilson, EC; Cousins, S; Etter, DR; Humphreys, JM; Roloff, GJ; Carter, NH	Habitat and climatic associations of climate-sensitive species along a southern range boundary	ECOLOGY AND EVOLUTION	13	5		

Authors	Title	Journal	Volume	Issue	Start Page	End Page
Zakharov, ES; Safronov, VM; Zakharova, NN; Koryakina, LP; Grigorieva, NS; Filippova, VV	The Timing and Geographic Variability of the Sable (<i>Martes zibellina</i> , <i>Carnivora</i> , <i>Mustelidae</i>) Pelage Color in Yakutia	BIOLOGY BULLETIN	49	9	1647	1656
Zhang, W; Chipperfield, JD; Illian, JB; Dupont, P; Milleret, C; de Valpine, P; Bischof, R	A flexible and efficient Bayesian implementation of point process models for spatial capture-recapture data	ECOLOGY	104	1	e3887	
Zhao, D; Liu, ZH; Tan, MY; Wang, Y; Dai, WQ; Ge, JP; Feng, LM	Molecular dietary analysis of three sympatric <i>Mustelidae</i> in Northeast China	ANIMALS	12	23	3290	

PERSONALS

MARTES ENTHUSIAST (30s) seeking invigorating discussion on the use of artificial habitat structures for recovery and conservation of members of the *Martes* complex.

ME: Carnivore biologist developing conservation tools and strategies for fisher (*Pekania pennanti*) recovery in western Canada. Passionate about *Martes* research. Also very funny (see this ad).

YOU: Attending the 8th *Martes* Symposium in Aviemore, Scotland and interested/experienced in the implementation of artificial habitat structures (e.g., den boxes) to support wildlife conservation.

OUR RENDEZVOUS: For those interested in a collaborative discussion on the challenges, successes, and knowledge gaps on the use of artificial habitat structures for marten and fisher conservation, please reach out to Sandra.Frey@gov.bc.ca and cc Scott.Yaeger@gov.bc.ca to express your interest in a brief session on this topic. I want to take advantage of the global body of knowledge on this topic and explore opportunities for a publication that can help guide recovery efforts for members of the *Martes* complex worldwide. TBD if we will have a time slot dedicated to the discussion during the symposium, or just gather in a pub to share ideas.



The *Martes* Working Group, founded in 1993, facilitates communication among scientists with a common interest in research, conservation, and management. The *Martes* complex includes 7 marten species (*Martes* sp.), fisher (*Pekania pennanti*), wolverine (*Gulo gulo*), and tayra (*Eira barbara*).

Read more at: <https://www.martesworkinggroup.org/>