International Society for Neuroethology

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THIS ISSUE FEATURES

The Prez Sez

Cindy Moss

President of the ISN

Greetings fellow neuroethologists,

I'm writing to you from Hong Kong, where my first grandchild was born on April 26, 2025. It's been an amazing journey, and everyone is doing very well.

This wonderous experience reinforces with my commitment to serve the International Society for Neuroethology and support the needs and interests of our members. Many of you have responded to a survey designed to identify what ISN can do for its membership. The Executive Committee and Council members have learned a lot from your comments and suggestions. Thank you for your input! ***We will be posting the survey results on the ISN website and welcome your further comments and suggestions.*** We aim to use the survey results to formulate vision and mission statements and an actionable strategic plan that will help strengthen the ISN and the benefits it offers to its membership.

In my December 2024 column, I expressed deep concerns about political changes that could impact science and society. Indeed, the emerging U.S. government policies are creating both personal and professional challenges for individuals around the globe. This is a time when we must stay strong, turn to members of our communities, support our institutions, and fight back when possible. I feel encouraged by the growing protests and hope that we emerge stronger and healthier from the challenges we're encountering today.

What is the ISN doing in face of the current landscape? I want to assure you that we are committed to protecting our core values and supporting our diverse scientific community, as outlined below:

- **Scientific Inquiry & Discovery** – We champion curiosity-driven research, advancing the frontiers of neuroethology.
- **Interdisciplinary Exploration** – We integrate neuroscience, evolution, and behavior to generate transformative insights.
- **Global Collaboration** – We unite scientists worldwide to foster shared learning, open science, and groundbreaking discoveries.
- **Inclusivity & Career Support** – We cultivate a welcoming environment for scientists from all backgrounds and geographic regions at all career stages, providing mentorship and opportunities.
- **Knowledge Exchange & Innovation** – We facilitate the sharing of research and ideas, ensuring that scientific progress fuels both theoretical and applied advancements.
- **Recognition & Advancement of the Field** – We celebrate contributions that propel neuroethology forward and elevate its impact on science and society.

To pursue initiatives that align with these core values, we are actively seeking new sources of funding to support our global community. As part of this effort, we are assembling an ISN committee to raise funds for travel to the 2026 International Congress for Neuroethology in Vancouver, sponsor local Neuroethology hubs, award small grants and prizes, and launch outreach activities. If you are interested in joining the fundraising committee or would like to propose fundraising strategies, potential corporate sponsors, etc., please contact me: cynthia.moss@jhu.edu

Have you checked out the new ISN website? You'll note that it's been reorganized to enable easy access to important information on conferences, awards, mentoring, and other resources. Once you login, you'll be able to access a member hub, where you can enter your professional bio, address, and other information you'd like to share with other ISN members. Through the member portal, you will have access to the membership directory and other resources. There is also an app that you can download to your smartphone to access the ISN website and membership hub. ***I urge you to take a few minutes today to enter your information in the ISN membership hub to connect with colleagues and help build our network.***

I hope to see many of you at the Future of Neuroethology Webinar on May 20, 2025, the Neuroethology Gordon Conference in Tuscany, June 28-July 4, 2025, and the 2026 ICN in Vancouver, July 26-31, 2026.

Stay strong! Wishing you all the best!

Cindy Moss
ISN President

SPOTLIGHT ON EARLY CAREER RESEARCH

Early Career Representative **Alex Winsor** launches the first round of a new initiative spotlighting cutting-edge neuroethology research by early-career scientists in the ISN newsletter.

As introduced in the last issue, this new initiative highlights exciting work by early-career neuroethologists—showcasing their research and stories in the ISN newsletter and on social media. My goal is to strengthen peer connections, increase visibility for emerging scientists, and foster a vibrant, collaborative community within the ISN.

I'm excited to feature three researchers whose work spans sensory decision-making, visual development, and adaptive camouflage. From hunger-driven risk assessment in sea slugs, to osmoregulated eye growth in beetles, to motion-based deception in cuttlefish, these projects capture the creativity of early-career scientists in our field.

If you're an early-career researcher and would like your work to be featured in a future newsletter, please email me (amwinsor@umass.edu) with a brief summary of your research, a publication or preprint (optional!), and cool photos.

How does hunger shape decision-making in predatory nudibranchs? Recent work by Kate Otter in the Katz lab at UMass Amherst reveals neuromodulatory systems tuned by internal state.

How do internal states like hunger shape perception and behavior? Kate Otter investigates this question in the sea slug *Berghia stephanieae*, a specialist predator of stinging sea anemones. Kate showed that hunger modulates approach-avoidance decisions: hungry animals pursue prey, sated ones disengage after contact, and intermediately hungry individuals display mixed responses—drawn to odor cues but deterred by touch. Kate also identified two risk-mitigation strategies: *Berghia* saliva inhibits stinging nematocyst discharge, and collective feeding reduces injury. In another experiment, she found that hungry anemones behave more aggressively, and she's now exploring how venom gene expression varies with predator exposure and hunger.

To uncover molecular mechanisms, Kate mapped monoaminergic and neuropeptidergic systems involved in valence and satiety signaling. Using bioinformatics, Kate identified multiple insulin genes and mapped how their expression shifts with hunger state in identified neurons across the brain. Using in situ hybridization and immunohistochemistry, she localized dopamine, octopamine, serotonin, and neuropeptides like NPF, buccalin, and a feeding circuit activating peptide, revealing state-dependent expression patterns.

Together, this work demonstrates how hunger shapes decision-making in *Berghia* at behavioral, physiological, and molecular levels. You can find the first paper (of several in the pipeline) here: https://doi.org/10.1093/iob/obaf017.

Kate holding a spring peeper (*Pseudacris crucifer*), a charismatic frog that sings to the onset of spring (left), and sea slugs feeding together in one of Kate's behavioral assays (right).

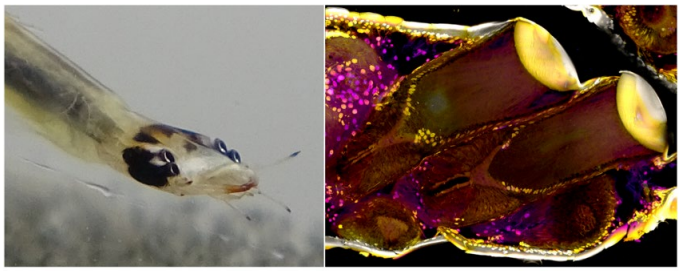
How do arthropods maintain focus as their eyes grow? Recent work by Shubham Rathore and Amartya Mitra in the Buschbeck lab at the University of Cincinnati reveals a mechanism driven by osmotic regulation, not visual feedback.

In aquatic *Thermonectus marmoratus* beetle larvae, the lens-to-retina distance increases by about 35% within just an hour after molting— crucial for maintaining sharp

focus. Shubham Rathore (now a postdoc at Janelia Research Campus) discovered that this rapid expansion is driven by a transient rise in osmotic pressure within the eye's support cells. Disrupting this osmotic shift post-molt leads to far-sighted eyes and significant behavioral deficits. Shubham also conducted transcriptomic profiling of larval eyes and found strong expression of osmoregulatory genes in these support cells, providing molecular evidence for this growth mechanism.

In a complementary study, PhD Candidate Amartya Mitra, together with Shubham, used RNA interference (RNAi) to knock down a cuticular lens protein secreted by the support cells. The result: centralized lens opacities that caused blurred visual input, but surprisingly did not alter the focal plane of the retina. This suggests that, unlike in vertebrates, image clarity does not guide retinal positioning in arthropods. Still, larvae showed impaired behavior in dim light, indicating that even if the focusing mechanism differs, the functional consequences of visual disruption is comparable.

Together, these studies highlight a unique, cell-intrinsic strategy for maintaining visual focus during growth in arthropods—one that operates independently of feedback from visual experience. Find the papers here: https://doi.org/10.1016/j.cub.2024.02.052 and https://doi.org/10.1101/2024.10.14.618264.



Thermonectus marmoratus larvae (left) and a cross section of the eye (right).

Shubham peering into arthropod eyes during his time at the University of Cincinnati (left), and Amartya visually inspecting a six-legged friend (right).

How do broadclub cuttlefish deceive their prey? Matteo Santon's field and lab studies reveal multiple hunting displays, including a unique form of motion camouflage.

Cuttlefish are masters of disguise, but recent work by Matteo Santon (Marie Curie research fellow with the Ecology of Vision group at the University of Bristol) reveals they also use dynamic motion to deceive. In a unique form of motion camouflage, Matteo found that broadclub cuttlefish pass dark, downward-moving stripes across their bodies as they approach crab prey—masking their looming advance by redirecting attention with non-threatening visual motion. Through fieldwork using SCUBA, he also captured fascinating images of a diverse range of hunting displays in wild cuttlefish, each potentially relying on different strategies to obscure movement and delay detection.

Together, these findings highlight cuttlefish as remarkably flexible predators—capable of fine-tuning their visual tactics to outwit vigilant prey. You can find the papers here: https://doi.org/10.1002/ecy.70021 and https://doi.org/10.1126/sciadv.adr3686 (the latter of which includes the predatory sequence below).

Matteo when he's not diving in the sea for cuttlefish (left) and the final mesmerizing views of a prey crab before being eaten (right).

Matteo's work was also supported by the ISN through the 2023 Konishi Neuroethology Research Award. If you're an early-career researcher working on an exciting project, I encourage you to apply for future ISN awards (including the ISN Diversity Award due May 31, 2025) to support and showcase your work! See: https://www.neuroethology.org/awards-of-the-isn/

REGIONAL CONFERENCE HUBS

Are regional hubs a solution to improve sustainability and inclusivity of international conferences? ISN Council member **Anna Stöckl** examines the benefits and experience from another society that has already implemented conference hublets.

Does your lab also start to humm and buzz with excitement when ICN year arrives, as everyone is getting eager to attend our bi-annual congress? International conferences are a cornerstone of science. They are important for exchanging the newest insights, discussing current discoveries, building networks and collaborations, and improving the visibility of your work (Sanderson 2023). Like science itself, our society is highly international, and does requires this venue for exchange. But, international conferences also come with significant downsides: first, the environmental impact (Leochico et al. 2021): a round-trip flight from Frankfurt to New York emits as much CO_2 as the average German produces in eight weeks—essentially extending our annual carbon footprint by two months. Additionally, the high costs of travel can exclude researchers from less well-funded institutions or countries with weaker currencies. Visa restrictions, personal circumstances – for example family duties, and health considerations can further limit participation, undermining the inclusivity that conferences aim to promote. Given the international nature of our community, these concerns are particularly relevant to our biannual meetings, where a significant portion of attendees must travel long distances to participate.

Virtual conferences, widely adopted during the pandemic, addressed many of these issues (Raby & Madden 2021, Raby & Madden 2021). They eliminated the need for flights and visas, significantly reduced participation costs, and dramatically increased accessibility across geographical, financial, and demographic barriers. They were sustainable and inclusive. Yet, the return to in-person meetings across many scientific fields—including our own—highlights the limitations of virtual interactions (Miller-Rushing et al. 2024). While online formats provide accessibility, they struggle to replicate the benefits of face-to-face networking, spontaneous discussions, and social engagement (Collins & Mason-Wilkes 2023).

A potential solution that balances the advantages of both in-person and virtual formats is a **hub model**, which emerged in several disciplines during the pandemic and continues to be explored today (Parncutt et al. 2021, Kremser et al. 2024, Jäger et al. 2024). This approach involves **regional hubs**—local gatherings where participants can interact in person while connecting virtually to a central conference. By reducing long-distance travel and visa barriers, this model enhances accessibility while retaining the benefits of in-person networking.

One society that has successfully implemented this approach is the **Association for the Study of Animal Behaviour (ASAB)** (ASAB Hublets). ASAB now has several years of experience with the hublet model, and has received great feedback from delegates. I spoke with ASAB's Meetings Secretary, Joah Madden (University of Exeter, UK), about their experiences with this model.

What are the logistics required for hublets?

The central requirement is that the main conference is run in a hybrid format: all talks are streamed, questions for the discussion sessions can be submitted via a chat, and there is an online poster room.

Anyone can volunteer to organize a hublet. The local organizers receive an access code to the virtual aspects of the conference and organize their local program individually (for example coffee sessions, evening program etc.). Currently, they do not receive any funds but can charge attendance fees to cover the costs. ASAB does not charge the local hubs a fee for attendance.

Do hublets reduce participation in the main conference?

ASAB did not observe that. Rather than reducing attendance at the main conference, hublets primarily attracted participants who otherwise could not have attended at all. They also opened new possibilities, such as using conference attendance as a teaching opportunity for local students.

What are the main challenges?

Creating engagement. Particularly, finding volunteers who organize hublets, as their number has been decreasing since in-person meetings have become popular again. There is also a balance to achieve between making hublets sufficiently local that many people can access them easily versus having too many or too tightly clustered hublets that people from different institutions do not mix, and thus negate the desired networking effect.

The multi-hub model presents an intriguing opportunity to **increase sustainability and inclusivity** at ICN. However, several open questions remain:

- **How can engagement be strengthened?** How do we ensure that hubs are integrated with the main conference rather than functioning as isolated local events?

- **Should hubs be geographically limited?** Would limiting hubs to one per country or major region (with good transport links) encourage broader networking rather than small, local research groups?

- **Should there be guidelines or flexibility?** Should local organizers have complete autonomy, or should a structured model guide hubs organization?

- **What incentives encourage hub organization?** Could the society provide funds for local organizers?

There are certainly many possible answers: there could be interactive sessions between hubs and the central event, plenary speakers could be distributed across regional hubs, to create incentives to organize and attend these, and travel grants for ECRs from local regions to attend the main conference could strengthen networking and integration.

I think the idea of **conference hubs** offers much food for thought. As we continue discussions about the future of ICN, it is worth exploring whether this model could help us create a conference experience that is **both sustainable and inclusive**, without sacrificing the invaluable benefits of in-person interaction.

NEUROETHOLOGY IN AN UNCERTAIN GEO-POLITICAL CLIMATE

Early Career Representative **Claire Rusch** shares her thoughts and tips on taking agency as a scientist when it feels like the world is trending toward anti-intellectualism.

Like many early career researchers, I've grown accustomed to living with a certain degree of uncertainty. The outcome of a grant application can determine how long I remain in a particular city, or even which country I call home. For my current role, I interviewed for positions across several European countries, fully aware that relocating my family was inevitable, and that we'd likely be packing up again in a few years.

Lately though, that familiar uncertainty has felt much heavier. Conflicts rage, the climate crisis accelerates, institutions wobble, and sometimes the small corner of the universe that is scientific research feels disconnected. When the current news cycle becomes overwhelming, dissecting a fly brain or analyzing the next batch of experiments can feel futile. When I catch myself thinking this, I try to remember that the work I do matters, not always in obvious ways, not always immediately, but I am contributing to the understanding of the world that surrounds us.

By now, you are probably realizing that this isn't an article full of tips. No "ten ways to optimize networking at a conference" or "how to land your dream job." Instead, I offer a few thoughts that have kept me grounded lately and maybe they will resonate with others feeling the same way.

First and foremost, as I said above, our work matters. I still feel incredibly fortunate to spend my day trying to make sense of a tiny piece of the world. In a time when distraction is the default, focusing deeply on anything, especially something as beautiful and strange as animal behavior, is radical.

Science is under attack everywhere. This reality is deeply unsettling. Not only as an attack on our livelihood but also as a reflection of the current state of our society. Barely five years after a global pandemic, we're seeing scientific funding slashed by many governments. It can be tempting to think that advocacy is for someone else, someone more senior, with a more secure position. But I believe we all have a role. Whether it's defending the value of basic research, pushing for sustainable science funding, or promoting ethical standards in animal research, our perspectives as scientists matter.

I want to acknowledge that many of us might not have the emotional bandwidth to engage in policy work, but if you would like to do so, here are a few entry points (turns out I *am doing* a tips and advice article after all):

- Know your landscape. What are the current science policies in your country? Who makes decisions about funding, education, or research ethics?

- Find allies. Join working groups, societies (like ours!), or early-career advocacy networks that help amplify your voice.

- Use your story. Data is powerful, but so is narrative. Your journey through science, your motivations, your questions, your challenges, can humanize the issues you care about.

Advocacy doesn't have to mean confrontation. Sometimes, it's simply showing up, speaking clearly, and staying present in the conversation. That said, I've witnessed and participated in many discussions that felt more like battlegrounds than conversations. When emotions run high, people can engage in a confrontational way, leaving everybody at best frustrated and at worst hurt. It's worth thinking deeply about how we talk to one another.

Nonviolent communication (NVC) is one approach that has resonated with me. It's not just about being "nice" – it's about being honest and compassionate. The framework emphasizes four key elements: observation, feeling, need, and request. In a diverse international community like ours, choosing words with care isn't just a kindness – it's a necessity. Try using the NVC Format: "When [observation], I feel [feeling], because I need [need], and I would like [request]". For example, "When you interrupt me, I feel frustrated, because I need to fully express my thoughts, and I would like you to listen without interruption". Practicing this kind of communication doesn't make conflict disappear, but it can transform it. It creates space for trust, collaboration, and deeper understanding. If you are curious about NVC and want to know more, simply type Nonviolent Communication by Marshall Rosenberg in your favorite internet browser and you should find a PDF version of this book fairly easily.

To conclude, I want to remind us all that the International Society for Neuroethology exists because we, hundreds of people all around the world, believe in something together. And just that is beautiful.

NEUROETHOLOGY CALENDAR

- ALBA-IBRO Workshop on "Recognizing and Mitigating Bias in Selection."
  - May 15, 2025, 09:00 - 11:00 EDT
  - https://www.alba.network/declarationworkshops-bias

- The Future of Neuroethology Webinar
  - May 20, 2025, 14:00 UTC
  - Register: https://shorturl.at/StWCL

- ISN Diversity Award Deadline
  - May 31, 2025
  - https://neuroethology.org/Awards/DiversityAward

- Animal Behavior Society Meeting
  - July 8 – 12, 2025
  - https://www.animalbehaviorsociety.org/2025/

- Gordon Research Conference on Neuroethology
  - June 29 - July 4, 2025
  - https://www.grc.org/neuroethology-behavior-evolution-and-neurobiology-conference/2025/

- The Future of Bee and Fly Neuroethology, Modeling and Robotics Conference
  - August 25 - 27, 2025
  - https://www.lin-magdeburg.org/research/conferences

- International Congress on Neuroethology
  - July 26 - 31, 2026
  - https://icn2026vancouver.com/

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Our ISN Social Media Team has fully transitioned to Bluesky! Our handle is @neuroethology.org so please follow us and tell your colleagues.