@NESCent

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Newsletter of the National Evolutionary Synthesis Center, an NSF-funded collaborative research center operated by Duke University, the University of North Carolina at Chapel Hill, and North Carolina State University.

IN THIS ISSUE:

NEXT PROPOSAL DEADLINES:

NESCent has hosted nearly 5000 scientists from more than 50 countries. You could be one of them. We are now welcoming applications for the following:

Jan. 15: journalists-in-residence

April 1: short-term visitors

July 1: graduate fellowships, short-term visitors

July 10: sabbaticals, catalysis meetings

For more information, turn to page 6 or visit **nescent.org/science/proposals.php**

JOB OPENINGS

Interested in employment opportunities at NESCent? Our center runs with the help of a dynamic team of programmers, financial experts, event planners, and other specialists. To find out about job openings as they become available, visit **nescent.org/about/employment.php**.

RESEARCH HIGHLIGHTS

Clam fossils on the Alabama River, Monroe County, Alabama (*Venericardia densata*, 49-37 million years old). PHOTO BY PAUL HARNIK

Pinpointing extinction risks for ocean animals

What makes some ocean animals more prone to extinction than others? A new study of marine fossils provides a clue.

An analysis of roughly 500 million years of fossil data for marine invertebrates reveals that ocean animals with small geographic ranges have been consistently hard hit—even when populations are large, the authors report.

The oceans represent more than 70% of the Earth's surface. But because monitoring data are harder to collect at sea than on land, we know surprisingly little about the conservation status of most marine animals. By using the fossil record to study how ocean extinctions occurred in the past, we may be better able to predict species' vulnerability in the future.

"If the patterns we observed in the fossil record hold for species living today, our results suggest that species with large populations but small ranges are at greater risk of extinction than we might have expected," said study co-author and NESCent postdoc Paul Harnik.

> "...[R]eductions in range size—such as when a species' habitat is destroyed or degraded—could mean a big increase in long-term extinction risk."
>
> —Paul Harnik, NESCent

Researchers have long assumed that rare animals are more likely to die out. But "rare" could mean multiple things.

see EXTINCTION, p 8

ABOUT NESCENT:

NESCent is a scientific research center dedicated to cross-disciplinary research in evolution. The center's mission is to promote the synthesis of information, concepts and knowledge to address significant, emerging, or novel questions in evolutionary science and its applications. NESCent achieves this by supporting research and education across disciplinary, institutional, geographic, and demographic boundaries.

NESCent is a collaborative partnership between Duke University, the University of North Carolina at Chapel Hill, and North Carolina State University, and is funded by the National Science Foundation (award #EF-0905606). For more information about research and training opportunities at NESCent, visit **www.nescent.org.**

SENIOR LEADERSHIP:

Allen Rodrigo, Director

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Todd Vision
Associate Director of
Informatics

Brian Wiegmann
Associate Director
of Education and Outreach

STAY INFORMED

Subscribe to the NESCent quarterly newsletter to receive news about the Center, research and training opportunities, and upcoming events. Comments, story ideas and photo contributions are welcome. Please send corrections and suggestions for future newsletters to Robin Smith at rsmith@nescent.org

To unsubscribe fill out our online form at bit.ly/qIuEWu. You can also visit NESCent on Twitter, Facebook, and YouTube.

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Letter from the director

Happy New Year and greetings from NESCent!

In 2013, we continue our focus on the future – what happens to NESCent when our core funding from the National Science Foundation comes to an end in December 2014? We have been working with funding agencies, foundations and corporations, our partner institutions, and with the broader community to figure out how we can keep our activities going. We have suspended calls for postdoctoral fellowship applications and working group proposals until we know what our financial future is beyond 2014, but we are still accepting applications for short-term visitors, graduate and sabbatical fellowships, and catalysis meetings. We also expect a lively continuation of ongoing and recently-awarded projects.

ALLEN RODRIGO

In this edition of @NESCent, I invite you to read about the many exciting events planned for 2013. Highlights of the coming months include a range of research initiatives, from a working group on the future of landscape genomics, to a catalysis meeting on K-12 evolution education for underserved minorities. Please browse the list of recent award winners on page 5 for a sample of what lies ahead. We also received supplemental funding to host two additional meetings this year:

After a successful first run in 2011, NESCent will once again host "Women Evolving Biological Sciences" (WEBS), an annual three-day symposium aimed at helping women in the biological sciences through the critical transition period from early career stages to tenure-track and faculty positions in academic and research settings. WEBS will be returning to NESCent October 16-19, 2013. The symposium is organized by Claire Horner-Devine and Joyce Yen of the University of Washington, and Samantha Forde of the University of California at Santa Cruz. For more information visit advance.washington.edu/webs/events.html

We are also excited to host a meeting for the evolutionary developmental biology community, organized by Cassandra Extavour of Harvard University. The workshop will bring together national and international researchers to talk broadly about the status and future of evolutionary developmental biology: where evo-devo is going, and what tools — techniques, infrastructure, funding, training — the scientific community will need to get there.

This year we will also begin planning for Evolution 2014, to be held in Raleigh, North Carolina, June 20-24, 2014. NESCent is pleased to host the conference, in collaboration with faculty from the wider academic community in North Carolina. This meeting will be both an opportunity to celebrate the expanding breadth of evolutionary science, and an opportunity to thank the community for its support over the previous 10 years. We hope to see you there.

Finally, I want to congratulate Susan Alberts, NESCent's Associate Director of Science, for her election as a Fellow of the American Association for the Advancement of Science. Susan has worked tirelessly over the last three years to ensure that NESCent's science program continues to deliver what it promises – cutting-edge, interdisciplinary and transformative research. Those of you who know Susan will know that her election to the AAAS is a well-deserved honor.

Dr. Allen Rodrigo, Director of NESCent

COMING SOON

Celebrate Darwin Day 2013 at the NC Museum of Natural Sciences

Where: North Carolina Museum of Natural Sciences, Raleigh
When: February 16, 9 AM – 5 PM, FREE

If you're in central North Carolina and you're interested in evolution, the place to be on Saturday, February 16th is the North Carolina Museum of Natural Sciences in downtown Raleigh. Once again, NESCent is partnering with the museum to co-organize a day-long celebration of Charles Darwin and evolution. From 9:00 AM to 5:00 PM, the museum will open its doors (free of charge) and feature hands-on activities, booths, tables and stations designed to engage and inform the public about what evolution is and how it is relevant to all of us, and the many contributions Darwin made to our understanding of the field.

That afternoon, the keynote speaker will be Dr. Roland Kays, whose "Cooking the Tree of Life" program highlights the evolution of domesticated food. In "Some like it hot!" Kays will team up with a local chef to prepare foods and facts related to chili peppers. Learn about the

secrets of chili peppers while sampling delicious chili-inspired foods prepared live while you watch.

The museum expects to attract more than 2,000 visitors to this year's event, which marks its fourth annual NESCent co-sponsored Darwin Day. So, if you're looking to celebrate Charles Darwin's 204th birthday on February 16th, 2013, come to the NC Museum of Natural Sciences and check out all the fun. For more information, visit naturalsciences.org.

COMING SOON

Apply for a travel award to attend Evolution 2013

Faculty from minority-serving institutions, historically black colleges and universities, or other institutions with significant enrollment of under-represented minority students are encouraged to apply for a travel award to attend Evolution 2013, to be held in Snowbird, Utah, from June 21-25, 2013.

Sponsored by NESCent and the Society for the Study of Evolution (SSE), the funds are available to cover conference registration, travel, food and lodging for up to three individuals.

To apply, fill out the online form at nescent.org/Evo2013facultyapp. The application deadline is March 31st, 2013. Awards will be announced by April 8th, 2013. For more information, please contact Dr. Jory Weintraub at jory@nescent.org.

COMING SOON

NESCent hits the road for Darwin Day 2013

What: Darwin Day Roadshow
When: February 2013
Where: CA, FL, IN, KY, MA, NC, RI, VT

Every year on Feb. 12th, the world throws Charles Darwin a birthday party and celebrates the contributions he made to our understanding of evolution. NESCent celebrates by taking Darwin Day on the road and sending our scientists around the country to talk about their work in a program we call the "Darwin Day Roadshow."

The goal of the Darwin Day Roadshow is to promote an awareness of, and appreciation for, evolutionary science, by bringing NESCent scientists into classrooms and town halls all around the country. The focus is on smaller, more rural communities not typically served by universities,

museums, or other institutions. Our scientists also talk to students about the rewards and challenges of pursuing careers in science, and describe a typical day in the life of an evolutionary scientist.

This year, we received applications from 21 different states and the District of Columbia (as well as one from a small village in Spain!). We selected schools in California, Florida, Indiana, Kentucky, Massachusetts, North Carolina, Rhode Island and Vermont. The educators at these schools will act as local hosts, helping us organize events in their classrooms and in the surrounding community. In return, they will receive a collection of books, videos, and other resources to enhance the teaching of evolution in their classrooms. The California visits will be led by Dr. Lisa White, our friend and colleague at the University of California Museum of Paleontology (maintainers of the Understanding Evolution website). We are excited to be partnering with UCMP on the Roadshow for the first time this year.

To learn more about the Roadshow, and to see pictures and stories from last year, visit roadshow.nescent.org.

RESEARCH HIGHLIGHTS

Model sheds light on the chemistry that sparked the origin of life

The question of how life began on a molecular level has been a long-standing problem in science. However, recent mathematical research sheds light on a possible mechanism by which life may have gotten a foothold in the chemical soup that existed on the early Earth.

Researchers have proposed several competing theories for how life on Earth could have gotten its start, even before the first genes or living cells came to be. Despite differences between various proposed scenarios, one theme they all have in common is a network of molecules that have the ability to work together to jumpstart and speed up their own replication — two necessary ingredients for life. However, many researchers find it hard to imagine how such a molecular network could have formed spontaneously — with no precursors —from the chemical environment of early Earth.

"Some say it's equivalent to a tornado blowing through a junkyard and assembling the random pieces of metal and plastic into a Boeing 747," said co-author Wim Hordijk, a visiting scientist at NESCent.

"These results could have major consequences for how we think life may have originated from pure chemistry."

–Wim Hordijk, NESCent

Hordijk was one of 40 scientists from across the globe who participated in a meeting held at NESCent in 2011 on astrobiology, the origins of life and synthetic biology.

In a previous study published in 2004, Hordijk and colleague Mike Steel of the University of Canterbury in New Zealand used a mathematical model of simple chemical reactions to show that such networks might form more easily than many researchers thought. Indeed, biochemists have recently created such networks in the lab.

"Some say it's equivalent to a tornado blowing through a junkyard and assembling the random pieces of metal and plastic into a Boeing 747." –Wim Hordijk, NESCent, referring to the probability that a molecular network formed spontaneously from the chemical environment of early Earth.

In a new study published this year, Hordijk, Steel, and colleague Stuart Kauffman of the University of Vermont analyzed the structure of the networks in their mathematical models and found a plausible mechanism by which they could have evolved to produce the building blocks of life we know today, such as cell membranes or nucleic acids.

"It turns out that if you look at the structure of the networks of molecules [in our models], very often they're composed of smaller subsets of molecules with the same self-perpetuating capabilities," Hordijk explained.

By combining, splitting, and recombining to form new types of networks from their own subunits, the models indicate that these subsets of molecules could give rise to increasingly large and complex networks of chemical reactions, and, presumably, life.

"These results could have major consequences for how we think life may have originated from pure chemistry," Hordijk writes.

The study appeared in the December 2012 print issue of the journal *Acta Biotheoretica*. ●

CITATION: Hordijk, W., M. Steel, et al. (2012). "The structure of autocatalytic sets: evolvability, enablement, and emergence." Acta Biotheoretica DOI: 10.1007/s10441-012-9165-1..

Browse the Phenoscape Knowledgebase

Phenoscape is an NSF-funded project that grew out of a NESCent working group with the goal of linking phenotypic data from developmental genetics and evolutionary systematics. The recent beta release of the Phenoscape Knowledgebase contains over half a million phenotypes from over 2,500 fish taxa and over 4,000 zebrafish genes. Phenoscape is currently expanding its coverage in the vertebrates, with a focus on phenotypes involved in the fin-limb transition. Check it out at kb.phenoscape.org.

COMING SOON

Register for NESCent Academy 2013

If you are a grad student, postdoctoral fellow or junior faculty member, watch the NESCent website and Twitter feed as well as your favorite evolutionary biology news sources in early 2013 for information about registering for our next round of short courses through the NESCent Academy program. Each course is 1-2 weeks long, taught by experts in their fields, and includes lectures balanced by hands-on activities.

We are excited to announce the following short courses for 2013:

- Evolutionary quantitative genetics
- Next-gen sequencing: generation and analysis of high-throughput sequencing data for phylogenetics and phylogeography
- Anatomy ontologies in evolutionary biology and genetics

For more information about instructors, dates, and how to apply, visit academy.nescent.org/wiki/Main_Page or contact Dr. Karen Cranston at karen.cranston@nescent.org.

COMING SOON

Submit your best evolution-themed video for this year's Evolution meeting

Scientists of all stripes – graduate students, postdoctoral fellows and faculty – are invited to enter the third annual NESCent Evolution Video Competition. To enter, please submit a video that explains a fun fact, key concept, compelling question, or exciting area of evolution research in three minutes or less. Entries may be related or unrelated to your own research, and should be suitable for use in a classroom (K-12, undergraduate, graduate…your choice). Videos should be both informative and entertaining. (In other words, no taped lectures or narrated Powerpoint presentations!) Animations, music videos, and mini documentaries are all fair game. The finalists will be screened at the 2013 Evolution meeting in Snowbird, Utah. To enter your video, please visit filmfestival.nescent.org/.

AWARDS

Congratulations to the newest award recipients for 2013

NESCent is pleased to announce the following new awards:

CATALYSIS MEETINGS

Catherine Badgley (University of Michigan-Ann Arbor)
Integrating historical biogeography and phylogeography with the fossil record and landscape history

Lee Cronk (Rutgers University)
Synthesizing the evolutionary and social science approaches to human cooperation

Bette Loiselle (University of Florida)
Genome-enabled research on manakins

Samantha Price (University of California-Davis)
Integrating approaches to macroevolution: combining fossils and phylogenies

Joan Roughgarden (University of Hawaii)
Sexual selection studies: progress, challenges, and future directions

Andrew Storfer (Washington State University)
Developing a roadmap for the future of landscape gemonics

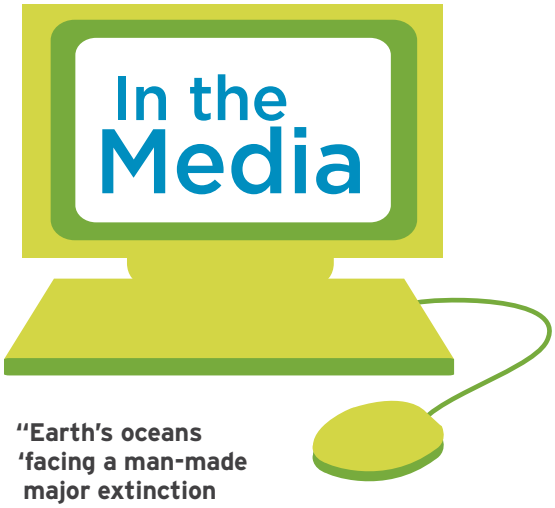
WORKING GROUPS

Tamra Mendelson (University of Maryland-Baltimore County)
Toward a unified evolutionary theory of decision-making in animals

Alexie Papanicolaou (CSIRO Ecosystem Sciences)
Building non-model species genome curation communities

Jason Wolf (University of Bath)
Testing theories for the evolution of genomic imprinting

For more information about these scholars and their research projects, please visit nescent.org/science/awards.php.



"Earth's oceans 'facing a man-made major extinction event'" (Huffington Post) Life in the world's oceans faces a grave threat of mass extinction – and it's largely the result of human activity, says a new study by NESCent postdoc Paul Harnik and colleagues. An international group of scientists warns that events which drove massive extinctions of sea life in the past are taking place right now in the seas and oceans around the world. The two main culprits are global warming and the acidification of the oceans, both of which drove three of the five largest extinctions of the past 500 million years. Other extinctions were driven by loss of oxygen from seawaters, pollution, habitat loss and pressure from human hunting and fishing – or a combination of these factors, the researchers write in an article in Trends in Ecology and Evolution. Learn more at huff.to/MJ8GGr.

"The CephSeq Consortium has a strategy" (Pharyngula) If octopuses, squids and cuttlefish are so cool, and so clever, how come there are no cephalopod genomes yet? A NESCent team aims to change all that. Read more at bit.ly/ZmhY26.

"Ethiopians and Tibetans thrive in thin air using similar physiology, but different genes" (Eurekalert) Scientists have pinpointed genetic changes that allow some Ethiopians to live more than a mile and a half above sea level without getting altitude sickness. The genes differ from those reported previously for high-altitude Tibetans, even though both groups cope with low-oxygen in similar physiological ways, the researchers say. The study adds to our understanding of how high-altitude populations worldwide have evolved to be different from their low-altitude ancestors: bit.ly/THbrY2.

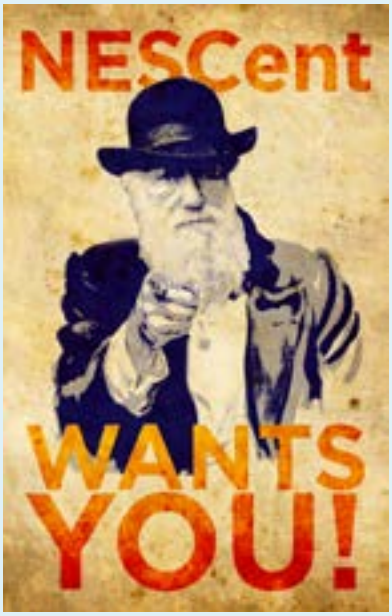
"New study examines how ocean energy impacts life in the deep sea" (Eurekalert) A new study of deep-sea species across the globe aims to understand how natural gradients in food and temperature in the dark, frigid waters of the deep sea affect the snails, clams, and other creatures that live there. Similar studies have been conducted for animals in the shallow oceans, but our understanding of the impact of food and temperature on life in the deep sea – the Earth's largest and most remote ecosystem – has been more limited. The results will help scientists understand what to expect in the deep sea under future climate change, the researchers say. Read more at bit.ly/REJyS9.

RESEARCH

Student software developers showcase their work

For the sixth summer in a row, NESCent offered a number of internships aimed at introducing students to open-source software development. This summer, seven interns from the 2012 Google Summer of Code™ program, and one independent intern, worked remotely on an evoinformatics project of their own choosing, each under the guidance of an experienced mentor. NESCent's 2012 Summer of Code students included Abu Zaher Md. Faridee, Daniel Gates, Pulkit Goyal, Elliot Hauser, Islam Ismailov, Michael Landis, Anne Ménard and Justs Zarins. Their projects ranged from machine learning for ecological genomics to optimizing R code for Approximate Bayesian Computing to tools for metadata extraction for phylogenetics.

Meet the students and learn more about their projects at: informatics.nescent.org/wiki/Phyloinformatics_Summer_of_Code_2012/Summaries



Call for proposals

Looking for support for a graduate student, faculty sabbatical, short-term visit or meeting? NESCent welcomes your proposals. We are looking to support innovative approaches to outstanding problems in evolutionary biology. In particular, proposals that have a clear interdisciplinary focus, or involve evolutionary concepts in non-traditional disciplines, are strongly encouraged, as are proposals that demonstrate international participation and a mix of senior and emerging researchers, including graduate students.

NESCent is now accepting applications for short-term visitors, graduate and sabbatical fellowships, and meetings. Proposals for short-term visits are 2 weeks to 3 months. Proposals for sabbaticals may be for up to a full year. The next deadline for short-term visitors is April 1. For graduate fellowships, the next deadline is July 1. For sabbaticals and catalysis meetings, the next deadline is July 10.

NESCent will not support collection of new data or field research, but encourages the synthesis of existing data and information resources. NESCent is committed to making data, databases, software and other products that are developed as part of NESCent activities available to the broader scientific community.

For more information, visit nescent.org/science/proposals.php, or contact Dr. Allen Rodrigo (a.rodrigo@nescent.org).

PUBLICATIONS

Recent publications by NESCent authors

Albertin, C., L. Bonnaud, et al. (2012). "Cephalopod genomics: a plan of strategies and organization." *Standards in Genomic Sciences* 7: 70-81.

Alkorta-Aranburu, G., C. Beall, et al. (2012). "The genetic architecture of adaptations to high altitude in Ethiopia." *PLoS Genetics* 8(12): e1003110.

Bik, H. and W. Thomas (2012). "Metagenomics will highlight and drive links to taxonomic data: reply to Murray." *TREE* 27(12): 652-653.

Buckley, L. and J. Kingsolver (2012). "Functional and phylogenetic approaches to forecasting species' responses to climate change." *Annual Review of Ecology, Evolution, and Systematics* 43: 205-226.

Buckley, L. and J. Kingsolver (2012). "Functional and phylogenetic approaches to forecasting the ecological impacts of climate change." *Annual Review of Ecology, Evolution, and Systematics* 43: 205-226.

Harnik, P., C. Simpson, et al. (2012). "Long-term differences in extinction risk among the seven forms of rarity." *Proceedings of the Royal Society* B doi:10.1098/rspb.2012.1902.

Hordijk, W. and M. Steel (2012). "Autocatalytic sets extended: dynamics, inhibition, and a generalization." *Journal of Systems Chemistry* 3(5).

Hordijk, W., M. Steel, et al. (2012). "The structure of autocatalytic sets: evolvability, enablement, and emergence." *Acta Biotheoretica*.

Kaiser, T., D. Müller, et al. (2013). "Hypsodonty and tooth facet development in relation to diet and habitat in herbivorous ungulates: implications for understanding tooth wear." *Mammal Review* 43(34-46).

McClain, C., P. Durst, et al. (2013). "Unravelling the determinants of insular body size shifts." *Biology Letters*.

Mullins, P., R. Kawada, et al. (2012). "A revision of Evaniscus (Hymenoptera, Evaniidae) using ontology-based semantic phenotype annotation." *ZooKeys*: 1-38.

Rueppell, O., S. Meier, et al. (2012). "Multiple mating but not recombination causes quantitative increase in offspring genetic diversity for varying genetic architectures." *PLoS ONE* 7(10): e47220.

Smith, A. and J. Clarke (2012). "Endocranial anatomy of the Charadriiformes: sensory system variation and the evolution of wing-propelled diving." *PLoS ONE* 7(11): e49584.

Soltis, P. and D. e. Soltis (2012). *Polyploidy and Genome Evolution*, Springer.

Stearns, S., D. Govindaraju, et al. (2012). "Constraints on the co-evolution of contemporary human males and females." *Proceedings of the Royal Society* B 279(1748): 4836-4844.

Stinchcombe, J., F.-v. T. W. Group, et al. (2012). "Genetics and evolution of function-valued traits: understanding environmentally responsive phenotypes." *TREE* 27(11): 637-647.

Stoltzfus, A., B. O'Meara, et al. (2012). "Sharing and re-use of phylogenetic trees (and associated data) to facilitate synthesis." *BMC Research Notes* 5: 574.

Urban, M., J. Tewksbury, et al. (2012). "On a collision course: competition and dispersal differences create no-analogue communities and cause extinctions during climate change." *Proceedings of the Royal Society* B 279: 2072-2080.

Vendrasco, M., D. Eernisse, et al. (2012). "Polyplacophora (Mollusca) from the San Diego Formation: a remarkable assemblage of fossil chitons from the Pliocene of Southern California " *Contributions in Science* 520: 15-72.

Wilkins, M., N. Seddon, et al. (2012). "Evolutionary divergence in acoustic signals: causes and consequences." *TREE*.

Young, R., A. Castelfranco, et al. (2012). "The "Lillie transition": models of the onset of saltatory conduction in myelinating axons." *Journal of Computational Neuroscience*.

NEW: Apply for open access publishing support funds

In an effort to reduce barriers to open access publishing, past and present NESCent-sponsored scientists are now eligible for open access publishing support funds from NESCent.

NESCent will provide reimbursement for Article Processing Charges for articles published in qualifying open-access journals. Funds can be used to support article-processing fees for publication in any peer-reviewed journal that is listed in the Directory of Open Access Journals, is a member of the Open Access Scholarly Publishers Association, and is published in a fully open access format based on a published schedule of article processing fees. The fund cannot be used to support "hybrid" open access publishing, where individual articles from journals that are generally subscription access only are made openly available when author fees are paid. Only journals that do not charge readers or institutions for access to peer-reviewed content are eligible.

Reimbursement for a single article may be up to $2000. Unused funds do not roll over to future years. All reimbursement is on a first come, first served basis up until the funding for a given year is exhausted.

To apply for reimbursement please contact NESCent's operations manager Barbara Mitchell (mitchelb@duke.edu) and cc our Associate Director of Informatics, Todd Vision (tjv@bio.unc.edu). ●

EXTINCTION, continued

The word "rare" could be applied to species that have restricted geographic ranges, or small populations, or that tolerate a narrow range of habitats, or any combination thereof, the authors say.

False killer whales, for example, are considered rare because they occur in small numbers, even though they're found in oceans throughout the world.

Erect-crested penguins, on the other hand, are considered rare because they're geographically restricted to remote islands off the coast of New Zealand—even though they're fairly abundant where they occur.

Harnik and colleagues Jonathan Payne of Stanford University and Carl Simpson of the Museum für Naturkunde in Berlin wanted to know which aspects of rarity best predict why some species survive and others die out.

"It's only through the fossil record where we have a long-term record of extinction where we can really see whether those relationships hold up," Harnik said.

To find out, the team scoured a fossil database for marine invertebrates that inhabited the world's oceans from 500 million years ago to the present—a dataset that included 6500 genera of sea urchins, sand dollars, corals, snails, clams, oysters, scallops, brachiopods and other animals.

When the researchers looked for links between extinction rate and measures of rarity, they found that the key predictor of extinction risk for ocean animals was small geographic range size.

Habitat breadth played a secondary role, whereas population size had little effect. The result: ocean animals that both had small geographic ranges and tolerated a narrow suite of habitats were six times more likely to go extinct than common animals were.

"Environmental changes are unlikely to affect all areas equally, or all individuals at the same time in the same way. If something terrible happens to some part of a species' range, then at least some populations will still survive," Harnik explained.

Life in the sea was once thought to be less prone to extinction than life on land. But with global warming, overfishing, and ocean acidification pushing sea life to its limits, growing evidence suggests otherwise.

"The findings don't mean that when populations dwindle we shouldn't worry about them," Harnik said.

"But the take home message is that reductions in range size—such as when a species' habitat is destroyed or degraded—could mean a big increase in long-term extinction risk, even if population sizes in the remaining portions of the species' range are still relatively large." ●

CITATION: Harnik, P.G., C. Simpson, et al. (2012). "Long-term differences in extinction risk among the seven forms of rarity." Proceedings of the Royal Society B.

Data deposited in the Dryad Digital Repository at dx.doi.org/10.5061/dryad.0mq69

COMINGS AND GOINGS

We proudly welcome several new staff members to our team:

Catherine Craver joined NESCent in October 2012 as our new Assistant Director for Administration and Advancement. Now in her 18th year at Duke, Catherine brings a wealth of experience with Duke's administrative processes, as well as strong knowledge of organizational best practices. Before coming to NESCent, Catherine held the role of Business Manager in the Center for Aging in the Duke School of Medicine. She has also served as a business management analyst and consultant in Human Resources, as well as director of administration for other research divisions. Catherine received her A.B. degree from Duke University Magna cum Laude, and a Master of Education degree in Counseling and Organizational Development from UNC-Greensboro. Since 2005, Catherine has served as an Examiner with the Baldrige National Quality Award Program. Baldrige Examiners are chosen annually to provide expertise to the US Department of Commerce's National Institute of Standards and Technology, which evaluates organizations across the United States as they seek to achieve the nation's highest award for Performance Excellence. Hobbies and interests include playing the piano, reading, travel, dance and cooking. Catherine and her husband Tony are the very proud parents of 4 children and 10 grandchildren.

(From L to R) Catherine Craver, Dan Leehr, Mercedes Gosby. Not pictured: Jonathan Rees, who joined NESCent as Software Architect for Open Tree.

Dan Leehr joined NESCent in November 2012 as a scientific application developer, contributing to Dryad and building applications for NESCent-sponsored science. He has a background in informatics, supporting research projects in the Department of Radiology at Duke. Most recently, he worked as a software engineer for a startup, developing iPhone applications that communicate with wireless sleep/fitness sensors. Dan has a Bachelor's degree in Computer Engineering from the University of Michigan, and lives in Morrisville, NC, with his wife and two dogs.

Mercedes Gosby joined our informatics team in November 2012 as a user interface and user experience designer. Her work at NESCent includes designing the interaction between users and web tools, and conducting user research to gather feedback from people on those designs. She is currently redesigning the Dryad Web site, and collaborating with the Tree of Sex working group to improve the system they use to store, manage, and share data. Before coming to NESCent, Mercedes did some contract design work for the UNC Center for Health Promotion and Disease Prevention and user research for UNC Health Sciences Library. She graduated from UNC with a BS in Information Science and a BA in Psychology.