A glimpse into wildlife and biodiversity conservation leadership at Duke’s Nicholas School of the Environment

Protecting our world’s creatures and habitats, on land and at sea

Wildlife & Biodiversity Conservation at Duke’s Nicholas School of the Environment

PHOTO BY: PETER CADA
Wildlife & Biodiversity Conservation at Duke

Unmatched Expertise and Leadership

Duke Environment focuses broadly on biodiversity conservation: the conservation of wildlife and the ecosystems on which it depends.
Two humpback whales near the Antarctic Peninsula bubble net feeding on Antarctic krill. This image was taken by a drone from the Duke University Marine Robotics and Remote Sensing Lab as part of an ongoing NSF-funded ecological study at Palmer Station, Antarctica, under NOAA permit # 14809-03.

At Duke University’s Nicholas School of the Environment, we believe it is mankind’s duty to protect our world’s plant and animal populations, especially species at risk of extinction due to human actions. To protect species, we also must protect their habitats and keep them safe from poachers, overhunting and overfishing. That’s why Duke Environment focuses broadly on biodiversity conservation: the conservation of wildlife and the ecosystems on which it depends.
Duke conservation scientists develop and apply the latest technologies to monitor and map the world’s most elusive and endangered species. We balance the needs and interests of diverse stakeholders, devising innovative solutions that balance economic development with the desire to protect natural habitats and the wildlife that resides there. And, importantly, we prepare the next generation of biodiversity conservation leaders with the knowledge, skills and experience they will need to continue this critical work into the future.
Duke Environment is unique in our ability to address biodiversity conservation both on land and at sea. Our faculty expertise in terrestrial biodiversity and conservation is matched by considerable marine conservation expertise and resources of the Duke University Marine Laboratory’s coastal campus, making the Nicholas School one of the only schools of the environment with the expertise to effectively cover biodiversity issues throughout the entire planet.

From wildlife management, biology and ecology, to natural resource finance, economics, legal and policy impacts and the social science of human-environment interactions – the Nicholas School approaches wildlife and biodiversity conservation from all angles, drawing together teams of faculty, students, and research staff not only within the school itself, but across Duke’s campus and beyond. Partnerships with leading conservation organizations and government agencies worldwide bolster our research and education enterprises so we can make a greater impact on wildlife management and habitat preservation issues.

At the Duke University Marine Laboratory – the Nicholas School’s coastal campus, located near Beaufort, North Carolina – Duke faculty and students work together in interdisciplinary teams to understand and address biodiversity issues that arise in our world’s oceans and coastal habitats.

The Duke Forest, owned and managed by Duke University, is a rare resource: a 7,000-acre living laboratory where faculty and students can study both forested and aquatic ecosystems and the creatures that dwell in these environments.
The Nicholas School boasts over 70 faculty members, as well as scores of postdoctoral researchers and doctoral, master’s and undergraduate students, working on biodiversity issues of critical importance to our planet.

Unmatched Expertise and Leadership

On Land

From the rain forest to the savanna, and in virtually every ecosystem on earth, you’ll find our faculty and students.

Saving animals from extinction
Duke conservation ecologist Stuart Pimm is a world leader in the study of present-day extinctions and what can be done to prevent them. He and his students work to understand and protect endangered elephants, lions and cheetahs (through National Geographic’s Big Cats Initiative) in Africa, jaguars in the tropical forests in South America, migratory seabirds in the Southeastern U.S. and Caribbean, giant pandas and the Amur tiger in China, and more. He and his fellow Duke conservation scientists and students use innovative remote sensing technology, geospatial mapping, crowdsourcing, and images from smartphones and drones to study the population and behavior of endangered species – particularly valuable tools to track animals in remote habitats. One of the world’s most highly cited environmental scientists, Dr. Pimm has testified before Congress on the re-authorization of the Endangered Species Act.

Balancing elephants, ecosystems, and economics in Africa
Duke tropical ecologist John Poulsen studies the effects of human-caused disturbances such as logging, hunting and poaching on forest structure and diversity, abundance of tropical animals, and ecological processes. He works with the government of Gabon – home to over half of Africa’s forest elephants, a species highly vulnerable to ivory poachers – to strike a balance between conserving these massive beasts and the remaining rainforests of equatorial Africa that they inhabit, while protecting the crops and livelihoods of local farmers and managing a growing agricultural industry. Duke students often accompany Dr. Poulsen to Central Africa to work with government officials on projects to sustainably manage natural resources in and around Gabon’s parks and reserves and limit negative consequences of industrialization.

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Mitigating mangrove loss in South Asia

An interdisciplinary team of Nicholas School faculty are leading a NASA-funded effort to monitor mangrove loss in South Asia and identify effective mitigation and protection strategies to help reverse the decline. South Asia’s mangrove forests provide essential ecosystem services, including biodiversity conservation, that benefit populations worldwide. They also help protect densely populated coastal regions in Bangladesh, India, Sri Lanka, Myanmar and Pakistan from storm surge and flooding. Environmental economists Jeff Vincent and Brian Murray, conservation ecologist Stuart Pimm, marine conservation biologist Brian Silliman, and remote sensing and spatial analysis expert Chandra Giri are working together to understand the rates, patterns, causes, and consequences of changes occurring to mangrove cover, including through the application of state-of-the-art impact evaluation methods for measuring the effectiveness of mangrove protection measures.

Using high-tech tools to assess habitat changes

Jennifer Swenson’s geospatial analysis lab uses state-of-the-art mapping software and satellite imagery to study ecological and human-induced changes to a variety of habitats, including remote regions where conservation efforts may be warranted. Dr. Swenson and students in her lab have used these tools to assess forest loss restricting the movement of Peru’s critically endangered San Martin titi monkey and help a local conservation organization pinpoint areas where reforestation has the best chance of success. Her team has also measured habitat decline in California’s Sacramento Valley for more than 400,000 birds migrating from Alaska to Argentina and back each year, and shown that large patches of tropical forest are being lost worldwide as governments and corporations clear more land to make way for industrial-scale agriculture – findings that underscore the growing need for policy interventions in developing countries.
What does humanity owe the creatures that share this magnificent planet with us?
What does humanity owe the creatures that share this magnificent planet with us?
Everywhere an aquatic environment thrives or is threatened, you’ll find our scientists and students...

Determining the effects of man-made noise on whales
Marine conservation ecologist Doug Nowacek works at the intersection of marine animal behavior and bioacoustics, studying the foraging and social behaviors of marine animals and how they use sound to communicate—and the effects of noise from human enterprises on these animals. Dr. Nowacek, together with marine biologist Andy Read, is working with the U.S. Navy to anticipate the potential effects of a new naval undersea test range and tactical sonar on the shrinking North Atlantic right whale population off the East Coast. With joint appointments in Duke’s Nicholas School and the Pratt School of Engineering, Nowacek also develops innovative technologies for marine conservation research, from waterproof sensor tags that attach to individual whales and dolphins, to drones that can be used to count animals, monitor their behavior, sample the environment and even do health assessments.

Assessing impacts of climate change on Antarctic seals, whales and penguins
Marine conservation ecologist Dave Johnston studies the impacts of climate change on marine megafauna in Antarctica, using drones to map the habitats of seals, whales and penguins and see how those habitats are changing as a result of global warming. Dr. Johnston and his students also attach video and satellite tags to animals so they can monitor their movement over time. His primary focus is on these species’ habitats—what kinds of foraging, roosting, breeding grounds and other elements they need to thrive—and how people are influencing those habitats, through everything from climate change to changing coastlines. Dr. Johnston also looks at the impact of threats like marine debris, and how sharing habitats among different species affects resources.

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Restoring coastal ecosystems to protect food webs
Marine ecologist Brian Silliman studies how food webs are structured and how changes to these structures by humans affect ecosystems like salt marshes, mangroves, coral reefs and seagrass and the services that they provide. In the U.S. Virgin Islands, Dr. Silliman is working with The Nature Conservancy to test how positive interactions between marine species (e.g., introducing lobsters that eat coral-eating snails and algae) can increase restoration success for reef-building corals. His lab is also studying whether a similar positive interaction between sea otters and seagrasses in Monterrey Bay, California can aid in the restoration and recovery of salt marshes by suppressing densities of burrowing crabs that eat marsh plants and increase erosion rates.

Protecting deep-sea biodiversity
Deep-sea biologist Cindy Van Dover, a renowned expert in hydrothermal vents, studies the biodiversity, biogeography and connectivity of invertebrates from deep-sea ecosystems, and works with international consortiums to develop policy and management strategies for deep-sea resources. She is a strong advocate for responsible deep-sea mining that rely on environmental management actions that will protect biodiversity and minimize loss.
Preparing Future Leaders in Biodiversity

The Nicholas School prepares the next generation of biodiversity conservation leaders with the knowledge, skills and experience they will need to continue this critical work into the future.
There are many reasons why protecting our world’s mammals, birds, fish and other species and their habitats is essential. The natural world provides practical benefits like ecosystem services, natural resources and economic and recreational opportunities. Equally important are ethical and aesthetic reasons: for its natural beauty, for future generations, as a spiritual or moral imperative.

For all these reasons, Duke Environment is a global leader in biodiversity conservation research, education, policy and practice.
The Nicholas School offers a Master of Environmental Management with concentrations in both natural and social science fields pertinent to conservation; an accredited Master of Forestry; master’s certificates in Community-Based Environmental Management, Geospatial Analysis, and Environmental Innovation & Entrepreneurship; doctoral programs that address conservation from multiple disciplinary angles; and an undergraduate Certificate in Marine Science and Conservation Leadership. International scholars and conservation practitioners come...
to Duke’s Global Marine Conservation Fellows program, then return home with the knowledge and funding to implement solutions in their own communities.

To gain practical experience, Nicholas students intern with conservation organizations like Conservation International, The Conservation Fund, The Nature Conservancy, E.O. Wilson Biodiversity Foundation, Environmental Defense Fund, National Geographic Society, Land Trust Alliance and World Wildlife Fund. They also participate in faculty research around the world, and work on cross-disciplinary faculty-student teams. Students play an active role in their education by inviting global conservation leaders to on-campus workshops and conferences to discuss and devise solutions to conservation challenges.

Nicholas School graduates are highly sought after by conservation organizations and government agencies seeking leadership in protecting wildlife and habitats. Our alumni, in turn, serve today’s Nicholas students as mentors, internship hosts and research partners. Nicholas alumni can be found in conservation organizations around the world, at all levels: local, state, national, and international.

While the emergence of the field of conservation finance has made careers in conservation more lucrative, compensation in many conservation jobs remains modest. The Nicholas School aims to provide as much financial aid as possible to minimize students’ debt so they can afford to pursue their passions and make a difference in this crucial field.

**Strong Partnerships**

Within Duke and with the world’s leading conservation organizations and agencies

Through joint faculty appointments, dual degree programs and collaborative research, the Nicholas School leverages the resources of Duke’s Schools of Public Policy, Law, Business and Engineering and centers like the Duke Lemur Center and the Triangle Center for Evolutionary Medicine to address complex conservation challenges. We also work in tandem with Duke’s Nicholas Institute for Environmental Policy Solutions to improve environmental policymaking worldwide.

*Partners beyond Duke include:*

- World Wildlife Fund
- Park Institute of America
- Regional, national and international conservation organizations and land trusts
- Federal agencies, which provide millions of dollars in research grants annually
To learn more about biodiversity conservation research and education at the Nicholas School, and see how you can help us protect the magnificent creatures that share this planet with us, visit nicholas.duke.edu, or contact the Office of Development & Alumni Affairs.

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