

Atkinson Center postdoc fellows address global sustainability

By Jennifer Savran Kelly | February 20, 2019

Cornell's **Atkinson Center for a Sustainable Future** (<https://www.atkinson.cornell.edu/>) is welcoming five new postdoctoral fellows to jump-start promising sustainability efforts that could have global impact.

Since 2014, Atkinson Center two-year postdoctoral fellowships in sustainability have been pairing early career scientists with Cornell researchers and external nonacademic partners to develop hands-on solutions to critical issues such as food insecurity, threats posed by energy pollution and endangered wildlife.

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“We approach sustainability as a complex set of practices that support human, environmental and ecological health and resilience. The threats we face today must be confronted from many different angles,” said David Lodge, the Atkinson Center's Francis J. Di Salvo Director. “Teaming postdocs and other researchers at Cornell with nonacademic partners creates meaningful connections that yield mutual benefits.”

The 2019–20 fellows are:

Adekunle Adesanya, sustainable agriculture and food systems

Food production in sub-Saharan Africa, where the population is expected to surge over the next 30 years, is performed mostly by small-scale farmers who make up a majority of the workforce. Despite recent successes in addressing the decreased yield of some staple African crops, the 2016 invasion of the fall armyworm (*Spodoptera frugiperda*) has caused significant problems. In an effort to find a sustainable and effective solution to this epidemic, Adesanya and Cornell's **Katja Poveda**

(<https://entomology.cals.cornell.edu/people/katja-poveda/>), associate professor of entomology, are collaborating with the International Center for Insect Physiology and Ecology in Kenya to optimize a biological control agent and address landscape components in order to reduce fall armyworm infestation and increase crop yield.

Gemma Clucas, achieving One Health

Healthy forage fish populations are vital for human food systems and for seabirds, marine mammals and recreational fishing. One effective method for monitoring these populations is through seabirds, which are highly sensitive to changes in the fish communities on which they feed. Working with **Amanda Rodewald** (<https://dnr.cals.cornell.edu/people/amanda-rodewald/>), professor of natural resources, and **Irby Lovette** (<https://ecologyandevolution.cornell.edu/irby-lovette>), the Fuller Professor of Ornithology, Clucas will develop metabarcoding methods to quantitatively determine seabird diets from their fecal material. They will work

in collaboration with Sarah Gaichas from the Northeast Fisheries Science Center; the data they gather will also be used in an ecosystem-based management framework to estimate the impact that forage fish harvests will have on seabirds and other marine predators.

Tomasz Falkowski, sustainable agriculture and food systems, sustainable communities

Slash-and-burn agriculture – a farming method that involves the cutting and burning of forests or woodlands to create a field, or swidden – is criticized for contributing to climate change. An increasing acceptance of traditional ecological knowledge, however, has inspired a growing number of researchers to reconsider the sustainability of swidden agroecosystems, an integral component of cultural landscapes throughout the “global south,” or the developing world, for centuries. Falkowski will work with **Laurie Drinkwater** (<https://hort.cals.cornell.edu/people/laurie-drinkwater/>) and **Johannes Lehman** (<https://scs.cals.cornell.edu/people/johannes-lehmann/>), professors in Cornell’s School of Integrative Plant Science; Ronald Nigh at El Centro de Investigación y Estudios Superiores en Antropología Social; and traditional Maya farmers to assess and quantify the ecosystem services that traditional Maya fire management provides in the context of slash-and-burn agroecosystems in Mesoamerica.

Katherine McClure, achieving One Health

Hawaiian honeycreepers – colorful birds that were once abundant in Hawaiian forests – have lost more than half of their species to extinction, and nearly two-thirds of surviving species are endangered or threatened. One threat is avian malaria, which is transmitted by the invasive southern house mosquito (*Culex quinquefasciatus*). There is an urgent need for landscape-level mosquito control efforts in native bird habitats. Together with **Steven Osofsky** (<https://www.vet.cornell.edu/research/faculty/steven-osofsky>), the Jay Hyman Professor of Wildlife Health and Health Policy in Cornell’s College of Veterinary Medicine; Chris Farmer and Brad Keitt at the American Bird Conservancy; and federal partners, McClure will evaluate and optimize a program that uses incompatible insect techniques, which suppress mosquito populations in order to reduce disease transmission.

Faraz Usmani, accelerating energy transitions

More than 1 billion people worldwide lack access to electricity, and nearly 3 billion rely on traditional stoves and dirty fuels for their primary energy needs. The resulting environmental burdens are exceptionally heavy in Senegal, where more than 95 percent of the rural population uses fuelwood for cooking and heating. Working with Cornell’s **Christopher Barrett** (<http://barrett.dyson.cornell.edu/>), the Stephen B. and Janice G. Ashley Professor of Applied Economics and Management; Carsten Hellpap at the German Corporation for International Cooperation; and local academic and policy partners, Usmani will study the effectiveness of policies that aim to foster local markets and robust supply chains for cleaner energy technologies in rural Senegal.

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