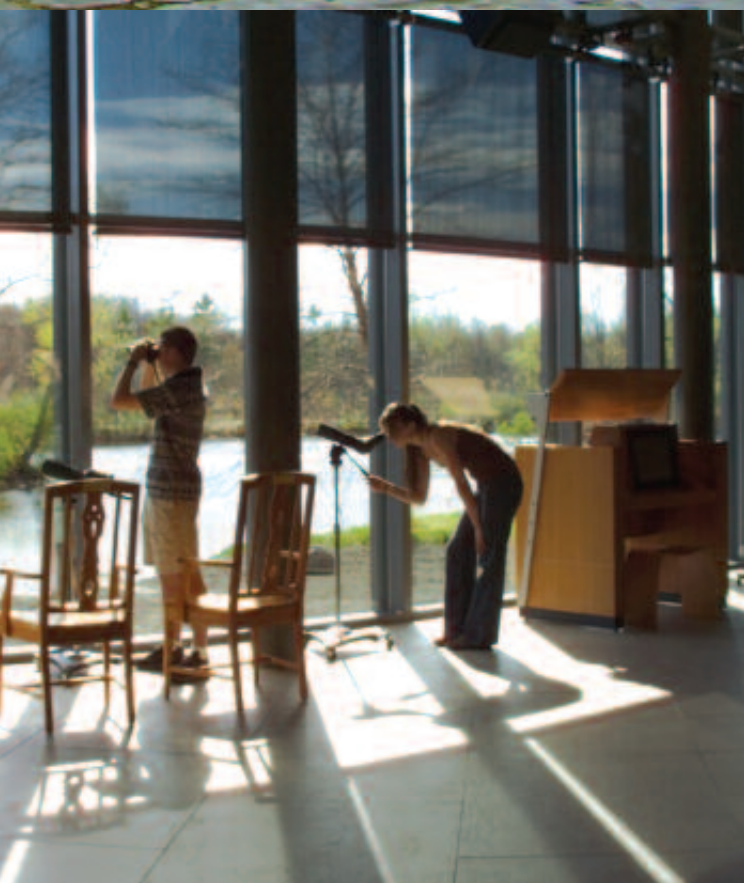
Diane Tessaglia-Hymes

Robert Barker/CU



The Birding Mecca

Cornell Lab of Ornithology

Tucked amid the trees and wetlands of Sapsucker Woods Sanctuary, the Cornell Lab of Ornithology is a testament to human curiosity and a passion for learning about and protecting nature. It is a home to people who make it their life's work to ask questions about birds, whales, elephants, frogs, and fish. It is a portal to appreciation of the natural world, whether you live a mile down the road or miles from anywhere.

University Photography

Diane Tessaglia-Hymes

Susan Spear

These autonomous recording units (ARUs) consist of a hard drive, housing, and microphone array that can be mounted in a forest or anchored to the ocean floor.

Planting the Seed

Arthur A. "Doc" Allen founded the lab. After earning undergraduate and graduate degrees from Cornell, he pushed for creation of the country's first graduate program in ornithology. The university responded, and in 1915, the Lab of Ornithology was born, although it was housed in the entomology and limnology department.

Indoors seems like outdoors in front of the observatory's 30-foot wall of windows, with handy spotting scopes nearby.

Birder, businessman, and friend Lyman Stuart helped Allen take the next step—creating a physical home for the Lab of Ornithology. He and others purchased and donated the farmland that became Sapsucker Woods Sanctuary. Stuart also helped finance the construction of the first building, dedicated in 1957. Freestanding trailers were added piecemeal on the lot as the lab grew ... and grew ... and grew.

A World-Class Institution

Today the Cornell Lab of Ornithology is housed in the new Imogene Powers Johnson Center for Birds and Biodiversity, which opened in summer 2003. Most often it is still called the lab or, affectionately, the Lab of O. Staff and students number nearly 200, working in a mind-boggling array of programs tailored to the lab's mission: interpreting and conserving the earth's biological diversity through research, education, and citizen science focused on birds. As a nonprofit administrative unit of Cornell University, work at the lab is supported in part by its 33,000 members. About 100,000 people pass through the visitors' center each year. Millions more visit vicariously via the lab's top-notch website: www.birds.cornell.edu.

Visiting the Lab

Sapsucker Woods is laced with more than four miles of wood-chipped trails meandering through trees, over boardwalks, near wetlands, and around the 10-acre pond. Visitors may see the stately great blue heron stalking the shallows for fish, a tangle of turtles sunning on a log, or some of the more than 200 species of birds that have been spotted here. Indoors seems like outdoors in front of the observatory's 30-foot wall of windows, with handy spotting scopes nearby. The bird song from the speakers is real, picked up by outdoor microphones. It's a peaceful place to ponder the pond or to monitor the bird-feeding garden. Wildlife artwork adorns the walls. Step into a reconstructed study featuring murals by renowned painter Louis Agassiz Fuertes. Go upstairs for a bird's-eye view of the sanctuary from the smaller "tree house" observatory and visit the Adelson Library. View high-definition movies about birds and nature playing in Bartels Theater. Listen to bird and animal voices in the sound studio, and record your own attempts to imitate them. Compare colorful sonograms that make sounds visible. Interactive kiosks offer an easy way to learn more about the birds here. Buy "birdy" things in the Wild Birds Unlimited at Sapsucker Woods gift shop. You'll come away from the 12-minute multimedia program in the Object Theater with a better understanding of what goes on at the lab and how you can be a part of it through citizen science.

An Army of Citizen Scientists

Collecting the observations of everyday birders for scientific use has been a hallmark of the Cornell Lab of Ornithology from its inception. Only by employing the eyes and ears of bird watchers can scientists gather the data needed to get the big picture about the distribution and abundance of birds, a process made infinitely faster by the growth of the internet and online data reporting.

The observations of citizen scientists have helped document the declines of some species, the range expansions of others, and even the spread of avian diseases across the continent. The observations of birders help the lab study birds in the city and birds in the forest and help answer questions about how proximity to humans, pollution, and loss of habitat affect different species.

The lab runs a dozen citizen science projects through all seasons, and these demand varying

CLO photo archive

Lab founder Arthur A. Allen, Louisiana expedition 1935

levels of time commitment—from as little as 15 minutes per year in the annual Great Backyard Bird Count, to as often as you like via the eBird online reporting program, which allows you to keep track of your observations over time and explore data posted from all over the country. By joining one or more of these citizen science projects you'll learn more about birds, habitat, and behavior. You can even peek into the lives of cavity-nesting birds with the nest box cams on our website—11 cameras follow the courtship, egg-laying, and chick-rearing behaviors of owls, osprey, bluebirds, and more.

Learning About Birds

In addition to the citizen science projects, the lab offers others ways to expand your knowledge of birds. Take a college-level course in your own place at your own pace with the lab's *Home Study Course in Bird Biology*. The new BirdSleuth curriculum is designed to help elementary and middle-school students discover science through bird projects. The first module was launched in 2006. You just have a question about birds? Try the lab's All About Birds website: www.birds.cornell.edu/AllAboutBirds, the best and most popular site about birds and birding on the web. It includes an online bird guide with pictures, sounds, and all sorts of cool facts about hundreds of birds. Those who live in the Finger Lakes region can attend the Monday night seminar series, enroll in the spring field ornithology course, and take part in special events with guided bird walks.

Peeps, Cheeps, Solos, and Serenades

From its earliest days, the lab has had a special interest in bird and animal voices and what they reveal about a creature's health and habits. Doc Allen and his students were pioneers in the field, recording the first bird songs on a film sound track. It used to take a wagonload of heavy equipment to mount a sound-recording expedition. Today's digital recording units, parabolas, and directional microphones are wonderfully sensitive and lightweight. Couple that with new sound analysis software, and a whole new world opens up before your eyes and ears.

The world's largest collection of natural sounds is held in the climate-controlled archives of the lab's Macaulay Library, which includes more than 165,000 recordings of birds, bats, whales, insects, frogs, elephants, and other creatures. Sound archivists are adding to the collection daily. These sounds are used by researchers around the world. They have also been used in everything from museum exhibits and Hollywood movies to singing alarm clocks and handheld PDAs that help users identify birds in the field. The Macaulay Library is putting the finishing touches on a new computer application that will allow the public to search the archive and listen to selected recordings. The marine collection is already online, with the birds soon to follow.

Actually watching behavior in its natural setting is a key part of learning about an animal. With that in mind, the Macaulay Library is now building its video collection. The high-definition movies in the Bartels Theater were produced in the Macaulay Library. A documentary-length production is now in the works, delving into the world of underwater sound and the impact human-generated noise may be having on the creatures of the deep.

Each year the experts from Macaulay Library hold a weeklong sound recording workshop in the Tahoe National Forest. Participants learn how to effectively handle a portable field recording system to make scientifically accurate recordings.

Building Electronic Ears

Sometimes electronic ears are needed to do what human ears cannot. The engineers in the lab's bioacoustics research program create remote recording devices used by researchers around the world. These autonomous recording units (ARUs) consist of a hard drive, housing, and microphone array that can be mounted in a forest or anchored to the ocean floor. ARUs have been used in the Elephant Listening Project in Africa, studies of whales, and in the search for the ivory-billed woodpecker in the dense forests of Arkansas. Once ARU recordings are downloaded and returned to the lab, they can be turned into sonograms

John Fitzpatrick

and studied with another lab invention: sound-analysis software called Raven. Programmers developed a user-friendly version for the public called Raven Lite. The lab's engineers are also working on a new programmable radio tag to track birds and other animals for longer periods of time or even to follow bird migration, about which so much remains unknown.

Conservation Matters

The whole point in collecting so much data about birds and animals through citizen science, research, and sound and video archiving is to learn what it takes to keep the earth in balance and perhaps undo some of the environmental trauma inflicted by pollution and destruction of habitat. The lab's bird population studies department takes raw data from research projects and extracts their meaning. Trends and insights become species-specific plans created by the lab's conservation science department. In addition to countless studies and published papers, the lab has produced land managers' guides aimed at conserving dwindling populations of scarlet tanagers, wood thrushes, and other forest birds. The lab worked with Partners in Flight to identify rapidly declining species and produce the first North American Landbird Conservation Plan, hoping to influence decision makers and revive vulnerable bird populations. The lab's neotropical bird conservation program is gathering baseline data about bird populations in Mexico, where so many North American birds spend their winters; working with biologists in Cuba to help with training and resources; and keeping tabs on the legal and illegal caged-bird trade, because of its impact on bird populations. The Cornell Lab of Ornithology leads the search for the ivory-billed woodpecker, rediscovered in Arkansas in 2004, and will be lending its expertise to other searches beginning in states where the bird once lived.

Fitzpatrick wants to grow membership in the lab, so a critical mass of people "thinking globally and acting locally" may preserve the environment and its creatures, keeping this a world in which birds will always be seen outside our windows and heard filling the woods with song.

So Many Questions

Aside from the work being done through citizen science projects, the lab's scientists, students, and visiting scholars are carrying on much original research. In the evolutionary biology laboratory, for example, researchers are extracting DNA from living birds or specimens to discover fascinating information about the relationships among species and their lifestyles. Paternity tests on chicks, for example, can determine if a female is standing by her mate or straying from the nest.

The Cornell University Museum of Vertebrates is also housed in the Johnson Center, with 1,000,000 fish; 45,000 birds; 3,200 eggs; and 15,000 specimens each of mammals, reptiles, and amphibians, some now extinct. Steel drawers, shelves, bottles, and boxes provide storage in climate-controlled rooms. Students and scientists use the collections in their studies. By taking a minute sample of DNA from a Bachman's warbler specimen, a species now believed extinct, scientists were recently able to reconstruct the warbler's family tree, finding some surprising twists. There are some amazing things tucked away in the museum: an orangutan, a baby whale, a platypus, a huge collection of handcrafted wooden eggs, and even the stomach contents of squirrels from decades ago. The latter were used in research that compared what squirrels eat now to what they ingested in the past. The collection even includes historic specimens of the ivory-billed woodpecker and the now-extinct passenger pigeon.

Accessible Bird Knowledge

The information technology wizards at the lab make the projects work and make the deluge of data accessible to everyone. They develop web-based interactive programs that collect bird data on a continent-wide scale for projects such as eBird, Project FeederWatch, and the Great Backyard Bird Count. They produce the analysis tools that turn raw

Susan Spear

Kim Bostwick, curator of birds and mammals

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Lab Membership

Diane Rasgorshek-Hynes

Members are crucial to the Lab of Ornithology. They participate in lab programs, support the lab's mission, and provide the single largest source of financial support for lab operations. The benefits of membership are numerous, including the award-winning magazine, ***Living Bird***, the quarterly newsletter, ***BirdScope***, and various lab discounts.

data into maps, graphs, and tables. Computer programmers at the lab built the infrastructure for the *Birds of North America* online edition, and are now coordinating the Avian Knowledge Network, an unprecedented effort to link more than 60 million bird data records kept at institutions all over the western hemisphere.

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A Vision of the Future

John Fitzpatrick, director of the Cornell Lab of Ornithology, envisions an even brighter future for this one-of-a-kind institution. "Our central goal is to promote environmentally sound decisions based on science," he says. "We strive to move human society toward investing in the permanent protection of natural systems all across our precious planet." To further that goal, Fitzpatrick is working to endow the citizen science projects, so they will no longer survive precariously on short-term grants. He wants to grow membership in the lab, so a critical mass of people "thinking globally and acting locally" may preserve the environment and its creatures, keeping this a world in which birds will always be seen outside our windows and heard filling the woods with song.

Pat Leonard
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