THE FIRST CITIZEN SCIENCE PROJECT
As the conservation movement evolved in the late 1800s, Frank Chapman — an ornithologist active in the nascent National Audubon Society — proposed a new tradition to replace the Christmas-time “side hunt.” Instead of joining teams (sides) to go afield in a competition to kill as many creatures as they could, participants would count birds.

On December 25, 1900, 27 birders conducted Christmas bird counts in 25 locations. Over 100 years later, annual participation exceeds 70,000 observers in more than 2,300 places, 17 of them in counties along the estuary. The world’s longest running citizen science effort, the Christmas Count has become a source of critical data on bird population trends and a highly anticipated and enjoyable tradition for birders.

HOW MANY AMPHIBIANS?
Frogs, toads, and salamanders are sensitive indicators of environmental change. They are not able to move across the landscape as quickly or freely as most birds, and many have very specific habitat requirements.

The North American Amphibian Monitoring Program, begun in 1997, surveys frog and toad populations using the unique calls of each species. Adopting its methods, the Estuary Program and Cornell University have engaged volunteers since 2008 to develop an index of frog and toad distribution and abundance in the Hudson Valley; the information also goes into a national database.

In 2009, the Estuary Program and Cornell began the Amphibian Migrations and Road Crossings Project to monitor amphibians that depend on woodland pool habitat. On rainy spring nights, volunteers search for migrating salamanders, frogs, and toads on local roads. Their observations help researchers locate critical habitat and road crossings where mortality is high, and inform local plans to conserve biodiversity. Over the years, we can also learn whether the timing of spring migrations may be shifting due to climate change.

UNRAVELLING THE MYSTERIES OF EELS
The American eel is among the Hudson’s most familiar fishes, but much of its life history remains a mystery. Its populations are shrinking over much of the fish’s range. Strategies to address this decline require baseline information. The Hudson River Eel Project involves teams of scientists, students, and community members in collecting young eels as the fish enter tributaries each spring. They count, weigh, and release the eels; at season’s end, the data are compiled and submitted to state and federal biologists to inform management decisions. Since 2008, the project has expanded from 3 sites to 12; over 500 volunteers now participate in the project annually. More than 250,000 eels have been counted since the project began.

PADDLING FOR SCIENCE
In partnership with the Estuary Program and the Hudson River National Estuarine Research Reserve, the Cary Institute of Ecosystem Studies has recruited volunteer teams of kayakers and canoists to collect data on the estuary’s submerged aquatic vegetation [SAV]. Their observations track year-to-year changes in extent of the plants, and has been especially valuable following Tropical Storms Irene and Lee, when the volunteers first detected dramatic loss of SAV.

Participants in the SAV study receive training in the necessary protocols and are encouraged to attend a season-ending session in which researchers discuss the year’s results. Such training is a part of all these projects, as it is essential to ensure data quality. The season’s end gatherings offer opportunities for scientists...
Swamp white oak leaves.

WAVE volunteers collect stream macroinvertebrates to assess water quality.

Since 2007, the Hudson River Trees for Tribs (as in tributaries) Program has provided landowners with free native trees and shrubs and engaged volunteers in plantings to restore streamside buffers. From 2009 through 2014, the program planted 29,600 trees and shrubs along 12 miles of streams. Another 3,100 were planted by partnering groups in the watershed. Since DEC adopted this program as a statewide model in 2011, 13,000 trees and shrubs have been planted in seven other New York watersheds.

THE HUDSON RIVER ALMANAC
The Hudson River Almanac, a free natural history journal covering the river and its watershed from the Adirondacks to New York harbor, has compiled observations from thousands of volunteers since 1994. Contributors range from elementary school students to professional biologists. Originally published annually as a book, it began weekly distribution via e-mail in 2003. By the end of 2014, circulation had grown to 7,997 subscribers.

Rather than pursuing narrow research goals, this journal captures multiple dimensions of people’s interactions with nature. While the sightings reported often contain information useful to scientists, it aims at a broader audience to promote public understanding of the river, put contemporary observations in historical perspective, and — like all the projects described here — encourage people to look more closely at the Hudson and share what they see.

PLANTS Database.