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Introducing the Rhode Island Plant Insect Community Network

By CASEY L. JOHNSON

A healthy network of plants and insects is the foundation of a healthy environment for all life on Earth, including people.

Introduction

The natural network of plants and insects, which encompasses various interactions such as herbivory and pollination, is crucial for maintaining ecosystem health and a functioning agricultural economy. Plants, insects, and numerous other organisms (e.g., birds) are inextricably linked in a complex web of relationships that sustains life on Earth, including human life. However, recent reports document both regional and global declines in our insect populations. National attention to the ill health of this plant-insect community has already inspired diverse initiatives in Rhode Island: some researchers and/or organizations inventory insects or research pollinators and pollinator habitat; some grow and promote native plants, create pollinator plantings, and promote sustainable food production; and some raise public awareness and educate people.

But are our efforts as connected as the plants, insects, and other organisms? Now there is a new initiative to support these diverse projects and create a community of mutual support: the Rhode Island Plant Insect Community Network (RIPICN, or "the Network"). The Network is a program of the Rhode Island Natural History Survey—created in 2024 with a generous grant from the One Hive Foundation. The goal was not to create one more program, but to lift up the many existing programs that were already working on the conservation of plants and insects and their ecological benefits. For more about the Network, visit the home page at https://picn.rinhs.org/ or check us out on Instagram at @riplantinsectnetwork.

Network Members

The Network is made up of organizations, programs, and projects (the Members) that work on pollinators or "pollinator adjacent" topics in the state. The Network is a program that connects these research and outreach efforts to leverage Members' strengths, identify knowledge gaps, and raise the profile of this community. While our community of Members is constantly growing, the current Members are:

- 15 Minute Field Trips
- Audubon Society of Rhode Island
- RIDEM Pollinator Atlas
- Rhode Island Natural History Survey (RINHS)
- Rhode Island Wild Plant Society (RIWPS)
- Roger Williams Park Zoo
- Roger Williams University Nicholson Lab
- Ocean Hour Farm
- Providence College (PC) Bonoan Lab
- Providence College Waters Lab
- University of Rhode Island (URI) Bee Lab
- University of Rhode Island Biocontrol Lab
- University of Rhode Island Preisser Lab
- University of Rhode Island Master Gardener Program

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Field Trips and Outreach Events

One of the central objectives of the Rhode Island Plant Insect Community Network is to foster an inclusive collaboration of groups and programs working on the plant-insect network in the state. We also wish to explore the ways that the Members, working together as a team, can increase public awareness and connection with pollinator conservation. Members participated in a variety of field trips and outreach events in 2024, with a few of these highlighted below:

An investigation of the state-listed plant *Sanguinaria canadensis* (bloodroot)

In April of 2024, five Network Members from various research labs and organizations gathered in a Rhode Island resident's backyard to investigate an exceptionally large, naturally occurring patch of *Sanguinaria canadensis* (bloodroot). Bloodroot is a low-growing spring ephemeral, typically found in shaded wooded regions in the eastern United States. However, this plant species is considered rare and of conservation concern in Rhode Island. Network Members conducted a field trip to this unique patch during peak bloom to document the pollinators seen visiting the flowers. Five bee species—*Andrena carlini* (Carlinville miner bee), *Bombus bimaculatus* (two-spotted bumble bee), *Bombus impatiens* (common eastern bumble bee), *Ceratina calcarata* (small carpenter bee), and *Nomada bella* (belle nomad bee)—were observed visiting or flying near the bloodroot flowers.

RINHS Executive Director David Gregg looking over the bloodroot patch (RIPICN file photo).

Once the bloodroot flowers went to seed, George Christie (RINHS) returned to collect over 200 seeds from about 75 plants. This seed was then sent to the Native Plant Trust seed bank, which helps to conserve the rare flora of New England. Bloodroot is an obligate myrmecochore, requiring ants to facilitate seed dispersal. In return, the ants gain a food source from the bloodroot seeds, which are covered by a fleshy structure called an elaiosome. Future visits to the bloodroot patch will explore the myrmecochory, or ant farming, of this plant species. Network Members hope to learn more about the success of this state-listed plant in this particular location.

Westerly Land Trust Pollinator Safari

The 3rd annual Westerly Land Trust Pollinator Safari commenced at Avondale Farm Preserve in Westerly, Rhode Island on July 10, 2024. This event brought together Network Members from the Providence Pollinator Lab at PC run by Rachael Bonoan, the URI Bee Lab run by Steven Alm, and Toby Shaya, RIDEM's Pollinator Atlas Entomologist. Others from the public and Westerly Land Trust attended the event, where they used insect nets and bug vacuums to collect bees, wasps, butterflies, flies, and more! Network Members spoke with attendees about various topics, such as the importance of insects and the host plants on which they rely, and attendees learned how to identify some of the common insects they can find in their own backyards.

A syrphid fly sits atop a flower (photo by Rachael Bonoan).

Woonasquatucket River Greenway Pollinator Event

In August of 2024, seven organizations jointly hosted a kid-friendly pollinator event along the Woonasquatucket River Greenway in Olneyville. Activities included a pollination game, bug hunting, various arts and crafts, and bug bingo. The Olneyville Public Library's bookmobile traveled along the Greenway to supply kids and caregivers with free nature-themed books and magazines to take home. This multi-organizational event, led by 15 Minute Field Trips, will be held again in May 2025 at Riverside Park.

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President's Corner:
Inspiration from Nature

We've enjoyed a wonderful cold winter in Rhode Island, with multiple snowy days and persistent snow coverage offering many opportunities for tracking our winter wildlife. Frozen ponds and swamps allowed us to get out and observe our local ecosystems from different perspectives along with our fellow species, taking advantage of different ways to enjoy our state's diverse habitats.

Sarah Gaines, President,
Board of Directors

Farther from home, I was honored this month to join the International Advisory Committee for Biosphere Reserves, serving in a technical role to review new applications and periodic reviews for the United Nations Educational, Scientific and Cultural Organization (UNESCO). The 759 sites in 136 countries raise global awareness of biodiversity and sustainable relationships with society. In fulfilling UNESCO's mandate, these sites were initially established by the US and Russia in the early 1970s as sites that could build peace in the hearts and minds of men and women through shared commitment to understanding, protecting, and living with our natural heritage. Although we currently do not have a globally recognized Biosphere Region in Rhode Island, we have plenty to learn and offer about the role of biodiversity in increasing ecosystem resilience.

On February 2nd, I was ice skating on a shallow pond with my school-age kids when they called me over excitedly. There was something—a lot of something—living under the ice! A crowded pink pulsating concentration of activity was visible under a clear window of ice, with white V-shaped tails especially noticeable against the brown leaf litter lining the shallows. Fairy shrimp are a native species of freshwater shrimp that hatch out in late winter to early spring in shallow pools, taking advantage of favorable conditions to reproduce and lay their eggs. They are famously ephemeral, and eggs can survive for years to decades of dry spells: a uniquely local harbinger of spring and celebration of plenty!

In this period of uncertainty for much of the funding that supports and protects nature, I take great inspiration in this model of resilience. I hope you all find hope, inspiration, and common understanding in the natural world around us this spring.

Young naturalists observing life below the ice. You can watch the video of what they saw on the RINHS Instagram account @rinaturalhistory.

Plant Insect Network (continued from page 2)

Network Members and participants at the Woonasquatucket River Greenway Pollinator Event (RIPICN file photo).

Lisa Lofland Gould Lecture

On November 23, 2024, Network Members gathered at the Lisa Lofland Gould Lecture to formally introduce the Network to the public. Representatives from several Member organizations (RIWPS's Reseeding RI initiative, URI Bee Lab, URI Master Gardeners, RINHS, 15 Minute Field Trips, PC Bonoan Lab, Roger Williams Park Zoo, and RIDEM Pollinator Atlas) presented rapid-fire updates on their projects.

The program also featured a presentation about Ocean Hour Farm in Newport, Rhode Island. Education Program Manager Beth Alaimo and Ecosystems Manager Brad Cheever discussed Ocean Hour Farm's focus on the connection between healthy soil and healthy seas. Ocean Hour Farm's mission is to use marine and climate science, experiential education, and leadership development to enable students, scientists, farmers, and partners to:

- interact closely with the watershed,
- promote regenerative stewardship activities through the lens of permaculture practices, and
- learn to create ecologically sound, socially just, equitable systems for their communities, homes, and organizations.

The Lisa Lofland Gould Native Plant Program Fund is sponsored by Rhode Island Wild Plant Society, Rhode Island Natural History Survey, and University of Rhode Island Master Gardener Program. Special thanks to Rhode Island College Environment Club for hosting this event.

RHODE ISLAND PLANT INSECT COMMUNITY NETWORK

State of the Pollinators Report

The Rhode Island Plant Insect Community Network, in collaboration with its Members, created the first annual State of the Pollinators Report in the fall of 2024. This report introduced the Network and summarized Network Members' research, projects, and discoveries related to pollinators and native plants. Included in the 2024 report are updates and interesting findings from the Providence Pollinator Lab (PC Bonoan Lab), URI Bee Lab, RIDEM Pollinator Atlas, RINHS, Audubon Society, RIWPS, and URI Master Gardener Program.

This annual report will be distributed to the leaders and funders of Members as well as Rhode Island's political leadership. The report is available for the public to download digitally at https://picn.rinhs.org/#state. To learn more about the work being done by each Member, please visit their respective websites and social media pages.

Annual Meeting

To hear the latest from Members and beyond, the Network will organize an annual one-day meeting. A keynote speaker and other guests will help bring outside perspectives, while Members and others will present findings and accomplishments from their work. The public is encouraged to attend to learn more about the various plant-insect projects happening in Rhode Island! The first meeting is scheduled to take place in early 2026. Stay tuned for more information by visiting our website or Instagram page for updates.

One Hive Foundation

Casey Johnson *is a research associate in the URI Bee Lab and the Project Coordinator for the Rhode Island Plant Insect Community Network. She studies plant and wild bee response in federally funded pollinator plantings and is part of a collaborative effort to document the bees of Rhode Island.*

Bees of Rhode Island: Carpenter Bees

By HOWARD S. GINSBERG and STEVEN R. ALM

The eastern carpenter bee, *Xylocopa virginica*, is one of the most familiar bees in the eastern United States. It is easily recognized by its large size and shiny black abdomen (Fig. 1). Bumble bees are usually smaller (except for some queens) and have hairy abdomens (Fig. 2).

Figure 1. Eastern carpenter bee, *Xylocopa virginica.* Top: Side view (photo by Sam Droege); Bottom: Rear view with shiny abdomen and scopa (pollen-carrying hairs on the hind legs) (photo by Steven Alm).

The eastern carpenter bee is a member of a large lineage of bees (subfamily Xylocopinae, in the family Apidae) that includes over a thousand species worldwide. Several species of carpenter bees are important pollinators of crops, including passion fruit in Brazil, tomatoes in Australia, and coffee in the Indo-Malayan region. In Brazil, passion fruit farmers hang boxes similar to the ones our beekeepers use to house honey bees, but instead of wax frames they use wooden frames for the carpenter bees to make their nests in. If we knew more about how and why carpenter bees choose certain sites for their nests, we might be able to keep them away from damaging wood around our dwellings.

Figure 2. Common eastern bumble bee, *Bombus impatiens*, showing the hairy abdomen (photo by Steven Alm).

Just two genera of carpenter bees are found in Rhode Island, the large eastern carpenter bee, *Xylocopa virginica* (there are hundreds of species of *Xylocopa* worldwide, but just one species here), and the small carpenter bees, *Ceratina* spp., with four species known from Rhode Island. These are fascinating critters, generally solitary in nesting, with interesting hints of social behavior, and they are broadly polylectic (i.e., will collect pollen from a wide range of flower species).

Eastern carpenter bee, *Xylocopa virginica*

Eastern carpenter bees are abundant in Rhode Island. The genus *Xylocopa* means "wood worker." They tend to make their presence known by aggressively buzzing you as you walk by. These aggressive individuals are the males, which set up mating territories in the spring, and each male wants to keep his territory clear for females to mate with. He doesn't want anybody else in his mating territory, including you. Fortunately, mating season lasts only a few weeks each spring, so no control is needed; the males will soon be gone on their own. Males, which are stingless, can be identified by the yellow face (Fig. 3). However, don't confuse it with a yellow pollen-laden face of a female bee.

Figure 3. Eastern carpenter bee male (photo by Steven Alm).

If you search the web for "eastern carpenter bee," you will most likely get one of several sites telling you how to kill this bee. The reason people want to kill carpenter bees is that they bore into the wood of our houses, decks, porches, etc. to make their nests. In the wild, they use trees and tree branches. Unless the damage is to structural wood it is mostly not serious, but it can be unsightly as woodpeckers will remove wood to obtain the large larvae living in the nest. We have been observing carpenter bees at URI's East Farm for 30+ years and the damage has been minimal over that period. If you need to control them, you could replace damaged boards with plastic lumber. A Penn State fact sheet mentions painting or staining new wood, or use of annual spring applications of almond oil to repel the bees. These bees are parts of our ecosystems and they perform a tremendous amount of pollination. If you can coexist with them, you will be able to observe some truly amazing bees up close.

Eastern carpenter bees are generally solitary with one female making and using one tunnel in wood. When nesting sites are limited, the bees will occasionally live cooperatively in small related groups. The primary queen will make and provision the nest cells, while subordinate queens will defend the nest from parasites, predators, and other carpenter bees while the primary queen is out foraging. The subordinate queens do not contribute to the care or feeding of the larvae. The primary queen may feed other subordinate queens in the nest in addition to feeding her own larvae and herself. This is a primitive form of sociality, which is the social structure in honey and bumble bee colonies. Eusociality (true sociality) has three conditions: 1) a reproductive division of labor (one queen and non-reproductive workers), 2) overlapping generations, and 3) cooperative brood care. Eusocial colonies, where individuals give up their ability to pass on their genes, was hard for even Darwin to explain. He commented on eusociality as "one special difficulty, which at first appeared to me insuperable, and actually fatal to the whole theory. I allude to the neuters or sterile females in insect communities: for these neuters often differ widely in instinct and in structure from both the males and fertile females, and yet, from being sterile, they cannot propagate their kind" (Darwin 1859). Darwin partially reconciled the "difficulty" to kin selection, an idea later expanded theoretically (see Hamilton 1972), which suggests that individuals can pass on copies of their genes indirectly, through assisting the reproduction of close relatives.

For his URI MS in 2016, Zach Scott collected the bees pollinating highbush blueberries at 15 different blueberry farms in Rhode Island from 2014 to 2016. He found that 41 species of native bees were pollinating the flowers and that the eastern carpenter bee was the fifth most commonly collected species (Scott et al. 2016). Blueberries have sticky pollen in poricidal anthers (releasing pollen through tiny pores) and are most efficiently pollinated by native bees that are able to "buzz pollinate" the flowers. About half of the world's 20,000 bee species, including eastern carpenter bees, are able to buzz pollinate flowers. This is accomplished by the bee uncoupling its wing muscles from its wings and vibrating the muscles. The vibration causes pollen grains to puff out of the tubular anthers, where they can be collected by the bee. You will be able to hear this buzzing if you get close enough to a carpenter bee or bumble bee pollinating blueberry, tomatoes, eggplant, cranberry, etc. Honey bees are not able to buzz pollinate flowers and are considered less efficient pollinators of plants that require buzz pollination.

Figure 4. Eastern carpenter bee three-tunnel nest (photo by Steven Alm).

Carpenter bee females bore into mostly coniferous wood; however, they will nest in deciduous wood as well (Krombein 1967). Sara Tucker, for a URI MS in 2018, studied the nest structure, pollen provisions, and nectar robbery of eastern carpenter bees from 2016 to 2018. Carpenter bee females use their mandibles to make an almost perfectly round 12-mm opening which goes into the wood approximately 15 mm before turning to make the main 15-cm tunnel. The length of each cell within the tunnel averaged 17.7 mm. There was an average of 5 cells (range 2–8 per tunnel). The bees will reuse tunnels made in previous years and make new tunnels off a common entrance opening (Fig. 4). Females provision a cell with a pollen loaf, lay an egg on it, and seal it off with a particle board partition made by removing wood from the sides of the tunnel and presumably mixing it with saliva.

Analysis of pollen provisions in nests showed that this species produced pollen loaves from 21 different genera of plants in 2016, 19 in 2017, and 39 in 2018 (Tucker et al. 2019a). *Antirrhinum majus* (garden snapdragon) pollen was the most common type collected in all three years (21.4%). Overall, pollen from wind-pollinated trees (e.g., oaks) comprised 22.1% of the pollen in all pollen loaves. Blueberry pollen was a minor component of pollen loaves (0.1%), despite abundant blueberry plants nearby. Unlike bumble bees, which carry their pollen in a corbicula ("pollen basket") on the hind leg (Fig. 5, left), Eastern carpenter bees carry their pollen in pollen-carrying hairs called scopa (Fig. 5, right).

Figure 5. Left: Empty pollen basket (corbicula) of a bumble bee; Right: Pollen carrying hairs (scopa) of the eastern carpenter bee (photos by Steven Alm).

Eastern carpenter bees sometimes display corolla-slitting behavior to rob nectar (Fig. 6). Bees that are known nectar robbers include some carpenter bees, bumble bees, and solitary bees. They use their blade-like maxillae to pierce the corolla of the blueberry flower at the base of the flower; thus they never get near and avoid transferring pollen to the stigma. It is interesting that honey bees are not able to make the slits but will learn to use the slits made by carpenter bees to rob nectar.

Figure 6. Eastern carpenter bee robbing nectar from a blueberry flower. Notice the hole in the corolla below and to the right of the bee (photo by Steven Alm).

Sara Tucker studied slitting behavior of *X. virginica* on 14 blueberry cultivars at URI's East Farm, and assessed factors related to slitting frequency, and the effects of slitting on fruit set and blueberry quality. Among 14 cultivars in bloom, an average of 35% (range 16–67%) of flowers were slit in 2017, and 39% (range 20–62%) in 2018 (Tucker et al. 2019b). Factors that affected the proportion of corollas slit included cultivar, anther length, flower volume, and number of days in bloom at or above 15°C. Corolla slitting did not affect fruit set. Average weight and percent soluble solids of fruit resulting from slit and non-slit corollas did not differ significantly in 2017. In 2018, average fruit weight and percent soluble solids resulting from slit and non-slit flowers did not differ significantly in most cultivars, but slit corollas resulted in berries with greater mass in two cultivars, and in one cultivar fruit from non-slit corollas had a higher percentage of soluble solids at maturity than fruit from slit corollas. Overall, corolla slitting and nectar robbery by *X. virginica* did not have a significant negative effect on fruit quality under the described growing conditions and pollinator community. Apparently, there was sufficient pollination of slit flowers from bees pollinating "legitimately" to compensate for the nectar robbery by carpenter bees.

While collecting some Japanese beetles in traps for a colleague to conduct experiments on strawberries, we noticed that bumble bees and carpenter bees were being captured in the yellow and green lure-baited traps. We decided to investigate this further as Steven Sipolski's URI MS research project. Steven found that of the three chemicals in the component blend of the floral lure, geraniol was the main attractant for bumble and carpenter bees (Sipolski et al. 2019). To survey bees, entomologists often use yellow, white, and blue bee bowls filled with soapy water. It is not surprising then, that a floral lure and yellow trap would attract bees. Steven tested several different colored traps and found that an all-green trap was the least attractive to bees. He also tested the different colored traps and lures for Japanese beetle captures and found that there was no significant difference in the beetle captures between the yellow and green traps. The floral lure was a much stronger attractant than the color of the trap. This research is important in western states like California where they set up 13,000 Japanese beetle traps each year to monitor for Japanese beetles. They do not want a pest insect in the state that feeds on over 300 species of plants. Trece, the company that worked with us on this study, does make an all-green trap and lure without geraniol, but you have to ask for it. This information could help maintain the Japanese beetle monitoring program, while limiting adverse effects on bumble bee populations.

Small carpenter bees, *Ceratina* spp. (*C. calcarata*, *C. dupla*, *C. mikmaqi*, *C. strenua*)

Small carpenter bees are quite common, but because of their diminutive size (about 7 mm length) they are less noticeable than their larger cousins. They are actually beautiful bees, with striking metallic blue bodies (Fig. 7), and they forage abundantly on numerous common flower species.

Figure 7. Small carpenter bee, *Ceratina dupla* (photo by Sam Droege).

They nest in twigs of plant species with soft piths (such as *Rubus* species and sumacs such as *Rhus typhina*), and as true carpenter bees, they excavate the nests themselves. Small carpenter bees typically cannot get through the bark of a woody plant, but if they can get at the pith because a twig has been broken, chewed off, or clipped, they can then excavate the pith and use the twig as a nest (Fig. 8). Other critters (including other bee species) often nest or hide in hollow twigs, but the other species don't excavate the twigs themselves, so abandoned carpenter bee nests are frequently used by other arthropods.

Figure 8. Top: *Ceratina* nest opening in hydrangea twig; Bottom: *Ceratina* twig nest with twig side removed to show bee inside (photos by Casey Johnson).

Males and females overwinter in chambers called hibernacula in the twig nests, and emerge in the spring (males first). They then mate and the females start to build nests. The

females excavate the pith a few inches deep from appropriately-sized twigs, and then forage for nectar and pollen to create a loaf to provision the deepest cell, lay an egg, then seal the cell with pith material and start a new cell. Provisioning cells and laying eggs takes much of the spring and summer, and each cell has everything needed for the larva to develop, pupate, and emerge as an adult. Rehan and Richards (2010) studied *C. calcarata* in Ontario, and found that nests averaged 108.4 mm length (4.27 inches), and included an average of 6.9 cells. They also found evidence of brood care (supporting some of the early findings of Rau 1928) and that the mother survived until the young had reached adulthood. These features, survival of the reproductive female until the young reach the adult stage, along with brood care, are fundamental characteristics of social behavior in bees. Therefore, even though the nests are solitary (just one reproductive female in each nest), the *Ceratina* species we have in Rhode Island are considered subsocial. The young adults emerge from the nest in mid-late summer, sometimes with a modest flurry of activity in late summer, and then settle in chambers within the nest (the hibernacula), where they overwinter, and emerge the following spring to start the next generation.

Ceratina species are abundant throughout Rhode Island (Varkonyi 2022), wherever plants occur with twigs appropriate for nesting. They are among the most abundant bees in coastal sites such as Napatree Point (Rothwell and Ginsberg 2019), presumably because twig nesting sites are abundant at these locations, while the sandy soil is not ideal for soil-nesting bees. Of course, numerous inland sites also have appropriate nesting and foraging resources, and *Ceratina* spp. are abundant at these sites as well (Rothwell and Ginsberg 2019).

The genus *Ceratina* is a diverse group with over 370 species worldwide, with representatives on all continents except Antarctica (Sless et al. 2024). They are identifiable by the metallic blue cuticle, but they can be confused with other small bees with metallic coloration, such as some sweat bees (Halictidae). The metallic sweat bees tend to be more greenish, or duller, but close examination is required for a reliable identification. Discoverlife.org provides excellent tools for ID's, but the characters for family, genus, and species identification are difficult to see on a specimen in the field (wing venation, length of anal lobe on hind wing, shape of hind femora, distribution of scutal punctures, etc.), so the best way to get a field ID (at least to the genus level) is to find an active nest in a twig.

Conclusions

The carpenter bees (*Xylocopa* and *Ceratina* in Rhode Island) are distinctive in that they excavate nests in solid wood. Some other local bee species build nests in rotting logs (for example, the sweat bees *Augochlora pura* and *Lasioglossum oblongum*), but only carpenter bees actually chew through live wood for nest construction. Carpenter bees in other parts of the world include the genus *Manuelia* (just a few species in South America), and the allodapines (a large group in Africa, southern Asia, and Australasia, which includes subsocial and social species). Rhode Island has just a small selection of the diversity of this broadly distributed and interesting group of bees.

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Howard Ginsberg *retired from the U.S. Geological Survey, Eastern Ecological Science Center, Rhode Island Field Station at URI, and is a former member of the RINHS Board of Directors. He is currently a Scientist Emeritus, and he studies the ecology of disease vectors, such as ticks and mosquitoes, as well as the foraging ecology and faunistics of wild bees.* ***Steve Alm*** *is a Professor in the Department of Plant Sciences and Entomology at URI. Dr. Alm studies the natural history, foraging ecology, and faunistics of wild bees, as well as the biology and management of honey bee colonies.*

Marine Mammals of Rhode Island: Atlantic Gray Whales

By ROBERT D. KENNEY

Introduction and Status

On the 1st of March in 2024, a crew from the New England Aquarium flew an aerial survey south of Rhode Island and Massachusetts—a project that has been ongoing since 2011. The next day the survey team leader, Orla O'Brien, sent out the usual follow-up report to an email distribution list. The report included a short summary of the survey, with a map (Fig. 1) showing the track-lines flown plus the sighting locations, which are color-coded by species. There was an unfamiliar color on the map, and when I looked at the key, it said "gray whale." I emailed Orla back and asked whether she was jumping the gun and celebrating April Fool's Day a month early. She replied by sending a picture of the whale (Fig. 2). It really was a gray whale. Gray whales are supposed to be in the North Pacific, not at Nan-tucket Shoals. But the sighting was not totally unprece-dented, since it was at least the fourth gray whale to show up in the Atlantic in the 21st century. What many people don't realize, however, is that gray whales used to live in the North Atlantic—not really that long ago.

The gray whale (*Eschrichtius robustus*) is a baleen whale that today occurs in two more or less separate populations on the eastern and western sides of the North Pacific (often referred to as the "California" and "Korean" stocks, respectively) (Swartz 2018). The California gray whale stock was formerly classified as Endangered under the US Endangered Species Act, but was removed from the list in 1994. It is classified as Least Concern on the IUCN Red List (www.iucnredlist.org), with about 27,000 animals in the population. The Korean stock was believed to have been extirpated in the first half of the 20th century, until it was revealed that 67 had been killed during 1948–1967 by Korean whalers. It had been classified as Critically Endan-gered on the Red List, but has been upgraded to Endangered based on an estimated population of 102–144 mature indivi-duals, which appears to be growing. Gray whales were extir-pated from the North Atlantic by the late 17th or 18th century (Mead and Mitchell 1984), and they apparently persisted long enough to have been hunted by early whalers on both sides of the basin.

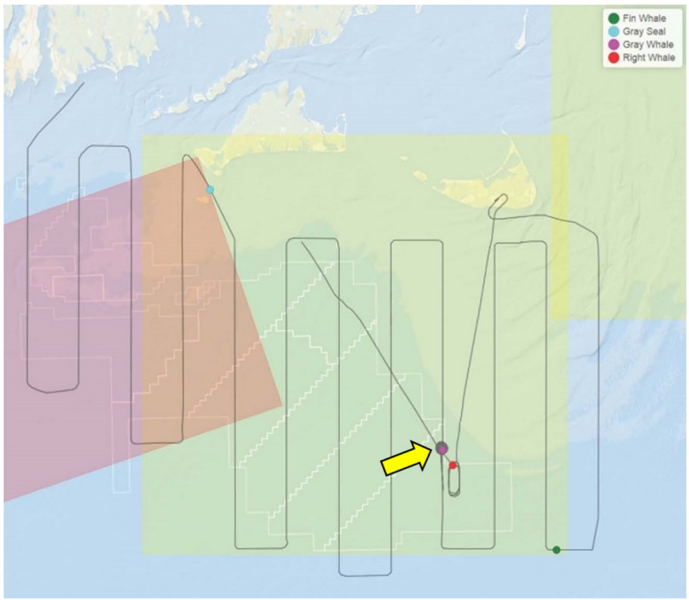

Figure 1. The map of track-lines (thin black lines) and sightings (4 colored dots) from the New England Aquarium aerial survey report for 1 March 2024. The arrow points to the gray whale sighting, sur-rounded by an extended period of circling for verification and photography. The white lines outline the offshore wind lease areas, and the colored boxes are areas with ship speed limits to protect right whales (pink = seasonal, mandatory; yellow = short-term, voluntary).

Description

A gray whale is more robust in form than a fin or minke whale, but less so than a humpback or right whale (Jefferson et al. 1993; Fig. 2). Calves are born at 4.6–5 m, and adults reach 11–15 m. The head is relatively short, with a moder-ately curved and tapered rostrum. There is no dorsal fin; there is merely a low hump followed by a series of raised "knuckles" going back to the tail. There are 2–5 short, deep creases on the ventral surface in the throat area, which allow

for quick expansion and suction during feeding (see Natural history below). The flippers are relatively broad and tapered to points. The color of the body is gray to brownish gray, lighter in adults and darker in calves, with extensive irregular mottling and patches of barnacles and whale lice. If there was a beauty contest for baleen whales, gray whales would probably finish in last place. There are 130–180 short, yellowish baleen plates on each side of the mouth, with very coarse fringes.

Figure 2. The gray whale sighted southwest of Nantucket Shoals during the 1 March 2024 New England Aquarium aerial survey shown in Fig. 1. (Map and photo courtesy of Orla O'Brien, New England Aquarium.)

Distribution

Gray whales occur only in the Northern Hemisphere, and today survive in two separate populations on the eastern and western sides of the North Pacific, primarily in waters relatively close to the shore (Swartz 2018). Gray whales undertake some of the longest migrations known for any mammal. California gray whales migrate between calving grounds near Baja California, Mexico, and feeding grounds in the Bering, Chukchi, and western Beaufort Seas. The Korean population migrates between calving grounds in the South China Sea and feeding grounds in the Sea of Okhotsk. Very little is known of the distribution and migration of the former North Atlantic population (see Historical occurrence below).

Natural history

Gray whales are primarily benthic feeders, specializing on ampeliscid amphipods—small (half-inch) shrimp-like crustaceans that live in dense mats of tubes in the sediment (Nerini 1984, Swartz 2018). A foraging gray whale swims to the bottom; rolls onto its side; and sucks up a mouthful of sediment, water, amphipods, and their tubes; then forces a cloud of muddy water back out through the baleen filter (Fig. 3). (If amphipods produced movies, their version of Godzilla rampaging through their city would probably look a lot like a gray whale.) Gray whale feeding leaves behind a sea floor pocked with 1-meter by 2-meter oval pits. Gray whales also can feed on prey up in the water column, more like a humpback whale (see the humpback article in the Fall 2024 issue of *Rhode Island Naturalist*). Potential prey species include krill, small schooling fishes, and squid, with a total of over 80 prey species recorded.

The reproductive biology of the gray whale is typical of baleen whales in general. Females mature at 5–11 years of age, the gestation period is about 13 months, calving and mating occur in winter, and calves are weaned in about 7 or 8 months (Swartz et al. 2023). The typical inter-birth interval is about 2 or 3 years.

Figure 3. A feeding gray whale in Peard Bay, Alaska leaving a trail of mud clouds, photographed with a cell phone during an aerial survey of the Chuckchi Sea in July 2017. The whale is visible at the surface just ahead of the last cloud in the line. (Photo by Vicki Beaver, NOAA National Marine Fisheries Service, Alaska Fisheries Science Center, National Marine Mammal Laboratory. Public domain—https://www.afsc.noaa.gov/Science_blog/ASAMM_2.htm)

Historical occurrence in the North Atlantic

There are historical accounts of living gray whales from New England in the early 1700s (Dudley 1725; see the sidebar on nomenclature) and from Iceland from the Viking Era to as late as the late 18th century (Lindquist 2000). Given the coastal distribution of North Pacific gray whales, it seems reasonable to presume that North Atlantic gray whales were similarly coastal animals. Mead and Mitchell (1984) speculated that early reports from the American colonies of whales using Delaware Bay as a calving ground, often presumed to have been right whales, may actually have represented North Atlantic gray whales.

Subfossil gray whale remains have been found at scattered sites in northern Europe and along the east coast of the US.

The youngest specimen from the eastern North Atlantic dates to 1655 ± 260 years (Bryant 1995). There have been two published records of gray whale bones discovered in our region—a mandible carbon-dated to the very early 18th century (± 35 years) found in Southampton, New York, in 1977 (Mead and Mitchell 1984), and another mandible dated to the 16th Century found in Toms River, New Jersey, in 1855. If, in fact, whaling were the cause of their disappearance, North Atlantic gray whales would be the only whale population known to have been hunted to extinction by commercial whaling. It seems more probable, however, that any impact of whaling was relatively minor and that they were rare and on the verge of extinction on their own.

Based on genetic analyses of multiple specimens of gray whales from both the Pacific and Atlantic, North Pacific gray whales colonized the North Atlantic during several different periods in the Pleistocene and early Holocene, when warmer climates permitted dispersal through the Arctic (Alter et al. 2015). The study also showed that genetic diversity of Atlantic gray whales declined long before the whaling era, and was more likely due to climate or ecological causes.

Recent Atlantic occurrences

We now know of four different gray whales that have been observed in the Atlantic Ocean during the 21st century (Fig. 4). In May of 2010, marine biologists conducting a survey off the coast of Israel sighted a whale that looked very strange, took some photographs, and were amazed when they looked closely at the photos later to realize that it was a gray whale. Three weeks later the same whale (recognized by matching the photos) was seen at the opposite end of the Mediterranean, off the coast of Barcelona, Spain.

Another gray whale was spotted by marine tour operations off Pelican Point, Walvis Bay, Namibia, in southwestern Africa on 4 May 2013, and it remained in the bay until 11 July. Comparing photographs again, scientists could see that it was a different animal than the one that had visited the Mediterranean. Like the 2010 Mediterranean whale, it appeared to be a juvenile and also looked thin. Genetic analysis of a biopsy sample from the whale confirmed that it came from the North Pacific (Hoelzel et al. 2021). No matter which route it took, it would be the longest documented whale migration—18,000 km via the Indian Ocean; 25,000 km via Cape Horn, South America; or 27,000 km via the Northwest Passage.

The next Atlantic gray whale sighting was in the spring of 2021. It was first seen in March or April off Morocco, then off the coast of Italy, and finally off southern France in early May—where researchers were able to estimate the size and age (8 m, 2 years old) and follow it for a time as it headed west. It got entangled in fishing gear once, but got out on its own. It looked emaciated, like the 2010 and 2013 animals, and appeared to be thinner at each sighting.

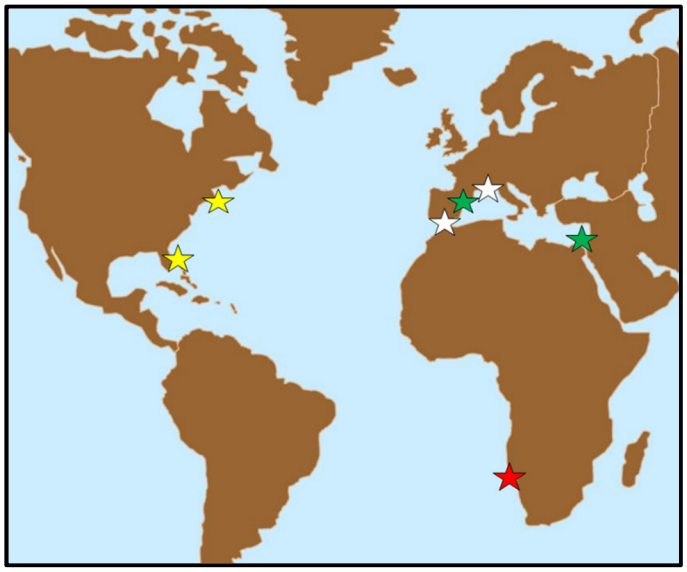

Figure 4. Sightings of four different gray whales in the Atlantic Ocean or Mediterranean Sea during the 21st century: 2010 (Israel and Spain, green); 2013 (Namibia, red); 2021 (Morocco and France, white); 2023 & 2024 (Florida and Nantucket Shoals, yellow).

The fourth whale was first seen and video-recorded by a couple of fishermen in December 2023 off Sunny Isles Beach in Miami. This was the first sighting that was not in the spring, and where the whale seemed to be in good condition. This is believed to be the same animal that showed up at Nantucket Shoals in March.

Conclusions

We know now that, during the 21st century, at least four gray whales from the North Pacific have wandered into the Atlantic. Warming temperatures likely have made it easier for a whale from the North Pacific to transit the Northwest Passage through the Alaskan and Canadian Arctic into the North Atlantic. Once there, following a "normal" migratory route for an animal from the California stock—down the eastern side of the basin—might naturally lead it to the Mediterranean or West Africa. Maybe we should expect that sort of thing more often in the future.

In 2005, two British scientists presented a proposal to a meeting of the Society for Conservation Biology. Their idea was to airlift 50 California gray whales from the Pacific to the Irish Sea off Cumbria in western England—thereby re-establishing a North Atlantic population. They believed that the project would enhance a British whale-watching indus-

try without any potential risk to fisheries given gray whale feeding preferences. So far the project has not advanced any further than the pipe dream phase.

Interestingly, areas of Block Island Sound are known to have dense populations of ampeliscid amphipods (Steimle 1982), and might have been a past gray whale feeding ground—the Southhampton bone came from not very far away. Maybe Block Island Sound would be a better option for translocating some Pacific gray whales, or we could just wait for them to do it themselves as global warming opens up the Northwest Passage even more. One would still need to look carefully at any proposal to re-establish gray whales in Rhode Island waters for possible impacts on fisheries. While it is true that gray whales do not eat commercially important fish species, the same benthic amphipods that gray whales eat are important food sources for some fish species, especially flounders.

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What's in a Name?
An aside for the nomenclature nerds

For many years North Pacific gray whales were called *Rhachianectes glaucus,* a name published by Edward D. Cope in 1868. When it became clear in the early 20th century that North Atlantic and North Pacific gray whales were the same species, the name *Eschrichtius gibbosus,* published by Johan C. P. Erxleben in 1777, was applied, since the oldest published name has priority under the rules. At one time it was believed that Erxleben had based his name on the "scrag whale" listed in a paper in 1725 by Paul Dudley, an early Massachusetts naturalist. Dudley had written about the whales hunted by New England whalers, and his description of the scrag whale does seem to fit the gray whale. However, a simple description has no nomenclatural authority, and Erxleben actually listed Dudley's whale as "species obscurae" (unknown reliability). Erxleben's name is considered to be a "nomen dubium" (doubtful name) because there was no designated type specimen or reference to any other publication. In 1861 Wilhelm Lilljeborg had described *Balaenoptera robusta* from subfossil skeletal material found in Sweden, but presumed that the bones were from an extinct fin whale. Once it was clear that the bones were from a gray whale, Lilljeborg's name had priority over Cope's because it was published 7 years earlier. The modern consensus is that the gray whale belongs in a different genus (and family) than the fin whale. Erxleben was the first to publish a different generic name, and the specific and generic names have to match in gender, so today the gray whale's accepted scientific name is *Eschrichtius robustus.* The bottom line is that the name of a whale species currently found only in the North Pacific is based on some old, originally misidentified bones from the North Atlantic, where the population is extinct (and was already when the description was published).

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Executive Director's Journal: The End of a Dam Era

By DAVID W. GREGG

In December 2023, after a heavy rain, one among the hundreds of old dams scattered across Rhode Island's historical landscape finally gave up the ghost. This one was on the Beaver River, in the remote, northeastern corner of Richmond. In a matter of days, what had been a weedy pond, mysterious with dark water and bristly with the bones of long dead trees, drained down until those sticks and stumps were jutting out of a field of mud crossed by a squiggly stream.

Shortly afterwards, The Nature Conservancy (TNC), which owns the pond as part of their Beaver River Preserve, contacted me. They wanted help telling the story of what happens, ecologically, when a pond drains either by accident or as part of a deliberate dam removal. What is the new ground like? What plants grow first? How do the animals in the area adapt?

I remember my first visit to the Preserve—back in 2005. Approaching the pond from the west, I looked down from a forested, boulder-strewn ridge onto water dotted with lily pads. On the far bank you could see game paths that cut down through thick, overhanging brush to a muddy shore. In places like this, I love to imagine that in the dark water, in a bottom formed from the mud of ages, are species new to science; relic populations of rare species; a primeval world of insects and worms, fungi, and fish living out inscrutable stories. What wonders this alien world must contain, how distant it must be from things we humans know, how fascinating it would be to explore.

When I heard that the pond had drained, my first reaction was what a shame to lose such an ecologically complicated and interesting place; what a mess that's going to be, with deep, wet ooze where the pond bottom had been. I thought it would be a bit sad to visit it, which I planned on doing the next time I was looking for an adventure. But then TNC called me at the Natural History Survey and asked if the Survey would participate in an official investigation of the site as it develops after draining of the pond. Specifically, would the Survey document the succession of plants that came to cover the suddenly exposed, bare pond bottom? Would we be part of an effort to bring in people of diverse expertise to document what happens when dams are removed, something that is increasingly viewed as ecologically desirable. Of course, the Survey would participate and how fascinating it would be, but I better bring my boots and I might even want to go with a buddy so we can pull each other out of the muck.

Before colonization by Europeans, many ponds in Rhode Island came and went with the successes and woes of resident beavers (*Castor canadensis*)—all part of a natural cycle crucial for producing patches of habitat required by all kinds of specialized plants and animals of all sorts—insects, other invertebrates, fish, amphibians, reptiles, birds, and mammals. By 1800, fur traders and habitat loss had largely extirpated beavers from Rhode Island. No other force short of the Ice Age glaciers drove such landscape-scale cycles. Increased human use of small-scale water management projects for mills, transport, and irrigation changed the kinds of habitats present and locked that change in. More recently, the return of beavers and the removal of abandoned or obsolete dams means forested stream/wetland/pond cycles are back.

North American beaver, *Castor canadensis* (from Wikimedia Commons, licensed under the Creative Commons Attribution-Share Alike 2.0 Generic license).

Now, however, as much of the landscape has been carved into patches that are locked in as either developments or preserves, there is little opportunity for landscape-scale natural cycles like beaver ponds and meadows (or fire) to play out. So even though the dam that broke in this case was human-built (with some beaver modifications), this was a rare event and a research opportunity not to be missed.

Doug McGrady, presently one of Rhode Island's most active field botanists, and a longtime Survey collaborator, undertook to do a plant inventory for us, visiting Beaver River Preserve at least monthly from spring through fall. We also worked with odonate expert Ginger Brown and Survey data clerk George Christie to get perspectives on the insects at the site. I visited the newly pondless site with Doug in August. We walked in from the trailhead to the east and spent several hours exploring. I have been back twice since and every time I find myself astonished by the rapidity of ecological succession on and around the old pond bottom.

A site of newly exposed earth as big as this pond is unusual in Nature. Absent human disturbance, there are only a handful of processes that can cut through trees, shrubs, and groundcover to produce a patch of bare soil—tree falls, river bank flooding, woodchucks, maybe—and these patches are small and don't stay bare for long. Plants that are adapted to colonize newly bare ground have to have rapid life cycles and special seed dispersal tricks so their progeny can "find" small, widely separated patches of suitable habitat before they get covered up again by "regular" plants. For example, seeds of American burnweed (*Erechtites hieraciifolius*) are surrounded by fluff and can sail on the wind, purple-stemmed beggar-ticks (*Bidens connata*) cling to animal fur, and the fruit of common blackberry (*Rubus allegheniensis*) is beloved by birds. These were some of the plants I expected to see scattered singly or in small patches across an erosion-riddled mudscape.

If I visited a site being newly colonized by plants, I'd first expect pioneer species to germinate in isolated patches. Only the next growing season, after the colonizers had grown and set seeds, would I expect to find the ground cover starting to thicken up. But what we found was amazing: a meadow of thigh-high grasses and sedges, amongst which were numerous flowers and hundreds or thousands of seedling trees and shrubs and only widely

Tim Mooney, TNC's Director of Marketing and Communication, inspecting the lush meadow that grew in the former pond bottom in the Beaver River Preserve after the failure of the dam (photo by Colleen Cronin, ecoRI News).

scattered patches of bare ground, all without there having been even one complete growing season since the pond drained. When I was there, the plants all around the pond had only just finished blooming and started dropping seeds, and so little if any of the evident plant explosion could be from this year's seeds. In fact, with few exceptions, every plant out there must have come from a seed already on the pond bottom by fall of 2023, in many cases for much longer than that. What the Beaver River pond site is telling us is that pond bottoms are jammed with seeds of all kinds, waiting, hope against hope, for something like a dam break to give them the chance to do what they were born to do—germinate and grow!

Buttonbush (*Cephalanthus occidentalis*), an iconic pondside and wetland shrub, is a great example of a plant adapted to this situation. It has intriguing pompom-shaped flower heads that attract legions of insects and birds and that yield spheres of fruit in late summer. The fruit is eaten by ducks and the excreted seeds sink to the pond bottom where they can persist for a long time. Sure enough, all across the pond bottom at our site, down amongst the grass stems, we found small rosettes of rounded leaves, the seedlings of buttonbush.

A buttonbush inflorescence being visited by a bumble bee. The spherical flower head is about 3 cm in diameter, and is covered by tiny 4-petaled flowers (photo by Bob Kenney).

Another surprising finding at the Beaver River site, at least to me, was the relatively firm soil across the former pond bottom. I once helped collect sediment cores from kettle ponds, where the sediment can be tens of meters deep with the consistency of pudding. But the pond at Beaver River is not a kettle, its bottom is the same mineral soil that underlies the surrounding forest, and it accumulated sediment for a far shorter period. So the bottom was not deeply muddy, and in fact it provides reasonably solid footing just months after having drained. What little mud there is will be modified by exposure to air and rain and soon the site will look like it did before the dam was built.

Stability in Nature can be a good thing. Habitats of long standing can be found and colonized by species with even the narrowest of niches. Frequent, large-scale disturbances are the opposite and favor just a small set of generalist species, but a little disturbance can be a good thing for biodiversity. To this end, Nature has agents of small-scale change that we can benefit from if we let them work, and the Beaver River's eponymous animal, the beaver, is one of the best. Beaver dams create ponds and raise the water level in wetlands, killing trees and creating mossy islands. But in ecological systems that are large enough and wild enough to retain the beaver's main predators, including fishers, coyotes, bears, bobcats, and birds of prey, dams are soon enough left vacant. The vacant dams break and the old pond bottom presents new ground for ecological succession and the whole system goes around again.

This natural cycle is very similar to what we are seeing at the pond now, only the dam was built by colonial era farmers who wanted to power a grist mill. The pond was not, in fact, primeval. While a boggy pond covered with the ruins of trees may signal antiquity to us short-lived humans, it may not be that old at all. It was a little over 200 years old, a snip on the scale of Nature. Over the years, as the dam was built, abandoned, reconditioned, and finally left to decline, trees grew when the water was low and died when it rose. All the while, the seeds of scores of plant species settled to the bottom. The lushness and diversity of the plants that sprung up at the pond site in less than one growing season is proof that Nature is adapted to this very cycle. The trick for us is to have faith that it will happen if we conserve enough space, enough ecological features, and enough biodiversity to allow it.

An earlier draft of this text was incorporated in the Survey's project report to The Nature Conservancy and is used again here with their permission. You can visit the site via a trailhead parking area on Hillsdale Road in Richmond.

David Gregg *has been the Survey's Executive Director for 20 years and was a Board member for 2 years before that.*

RINHS 2024 Awards

As part of its mission to advance public understanding of natural history and the role of naturalists in environmental conservation and management, the Rhode Island Natural History Survey has instituted three awards recognizing accomplishments of individuals from, or working in, Rhode Island, although all awards are not presented every year. To see more about all our awards and find complete lists of past awardees, or to learn how to nominate someone you believe to be deserving, go to https://rinhs.org/events/awards/.

The **Distinguished Naturalist Award** is presented by the Survey to an individual who has made significant contributions to scientific knowledge of Rhode Island's organisms, geology, and ecosystems; is recognized as an outstanding teacher and educator about the natural world; and/or has significantly enhanced public awareness of the importance of understanding Rhode Island's ecosystems.

The **Founders' Award for Exceptional Service** celebrates the organization's heroes: individuals, groups, or organizations that have made extraordinary contributions—time, things, money, expertise, all of the above—that substantially advanced the Survey's longevity and mission. It is our newest award—created in 2020. Recipients of both the Distinguished Naturalist and Founders' Awards can be living or deceased, and are selected by the RINHS Board of Directors from lists of nominations made from people both within and outside of the Survey.

The **Golden Eye Award**, established in 2008, recognizes someone for making a notable natural historical observation and bringing it to the attention of the community—a "good catch." It could be a new species for Rhode Island, a rare or otherwise unusual species, an invasive species, or some other natural historical phenomenon. RINHS staff makes the nomination, and the award is voted on by the Board of Directors.

The 2024 awards were presented at our 30th Anniversary Gala at the Quonset O Club on November 16th, 2024. We presented a Distinguished Naturalist Award to Howie Ginsberg, a posthumous Distinguished Naturalist Award to Walter Henry Snell, and a Founders' Award to Margaret Lamb and the Lamb Family Foundation. More about all three winners is in the following articles.

Call for Nominations: The 2025 nomination period is open for both the Distinguished Naturalist Award and the Founders' Award for Exceptional Service. Nominees can be living or deceased. Current members of the Board of Directors are not eligible, nor are members of the RINHS staff. To nominate someone, send a letter or email to the Survey office marked "Attention: Awards" or contact any member of the Board of Directors. In your correspondence please describe the ways in which your nominee excelled in the sort of contributions summarized above or provided in more detail on our website. Please include as much specific detail as possible, as we may not be personally familiar with your nominee's work. Past nominations are kept and reconsidered for up to five years, so if you've nominated someone unsuccessfully in the past, you are not required to re-nominate them. You may, however, wish to provide additional information on your nominee if you feel it would strengthen the nomination.

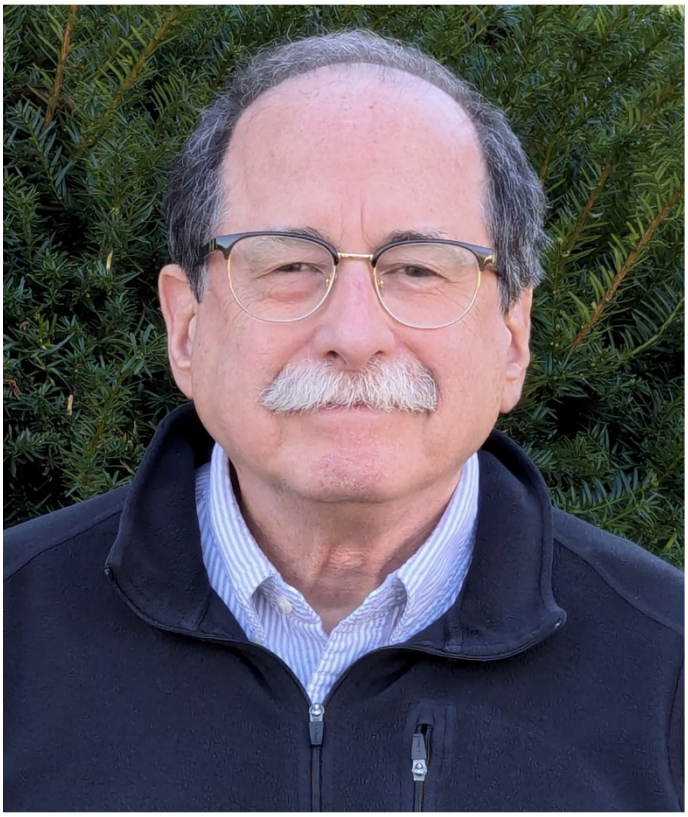
Howard Ginsberg
RINHS Distinguished Naturalist 2024

Nominated by ROGER LEBRUN

An insightful expert generously making time to contribute all he can to colleagues, students, and the public

Dr. Howard Ginsberg (Howie to most of the world) has excelled in every criterion of the Rhode Island Natural History Survey Distinguished Naturalist Award and is highly deserving of this distinction. He has significantly advanced scientific knowledge of Rhode Island's organisms and ecosystems as evidenced by his published books, scientific papers, and monographs—most notably through his seminal work on mosquito, tick, and pollinator ecology in the state, the region, and the nation. Ginsberg has put Rhode Island on the map as an international resource in vector-borne disease and pollinator ecology.

Howie Ginsberg is recognized as an outstanding teacher and educator to graduate and undergraduate students and the general public on the ecological significance of Rhode Island's insects and natural systems. His courses in insect ecology, emerging infectious disease, and bee biology have been highly praised and keenly sought after. He is also in great demand as a guest speaker in the classroom, town meetings, and government forums.



Howard Ginsberg

Howie earned a BS in Biology from the State Uni-ersity of New York at Stony Brook in 1971 and a PhD in Insect Ecology (with minors in Plant Ecology and Community and Ecosystem Ecology) from Cornell University in 1979. He came to the URI campus in 1990 as a Research Ecologist—originally with the National Park Service and then with the US Geological Survey, Patuxent Wildlife Research Center—and served as Leader for the USGS Rhode Island Field Station. He was one of the founding members of the RINHS Board of Directors. He was honored for his service to the Survey at the annual meeting in March 2023 (see the article on pp. 16–17 of the Spring 2023 issue of *Rhode Island Naturalist*). He has now retired from his USGS position, but is still busy (see his most recent article earlier in this issue).

For the past 20 years, Howie has enhanced public awareness of the importance of understanding Rhode Island's ecosystems. As a USGS Ecologist, Survey board member, and longtime member of the Rhode Island Mosquito Abatement Board, he contributed his expertise in vector ecology to protect both the environment and public health, sometimes a very fine line to walk. Dr. Ginsberg has walked this line with brilliant insight and considerable knowledge gleaned from decades of experience as a contributor to both local and national public health issues. National awards from the US Geological Survey and the National Park Service and Rhode Island awards from the Office of the Governor attest to his considerable service to the citizens of Rhode Island and the nation.

Howie Ginsberg always makes the time for new faculty, students, and the general public alike to share his considerable expertise in insect ecology and natural history. Whether it be a grant application, a draft manuscript, a colorful insect brought in by a graduate student, or a terrifying insect brought in by a local homeowner, Dr. Ginsberg will take the time and effort to generously contribute all he can and share his brilliant insight into the problem.

I know of no one better suited to receive this year's Rhode Island Natural History Survey Distinguished Naturalist Award.

Roger Lebrun is the Carnegie Professor of Life Sciences Emeritus, University of Rhode Island.

Walter Henry Snell
RINHS Distinguished Naturalist 2024 (posthumous)

Nominated by REBECCA KARTZINEL and KEITH KILLINGBECK

A highly respected botanist, mycologist, and athletic coach, a well-rounded researcher, author, and teacher

It was our privilege to nominate Dr. Walter Henry Snell (19 May 1889–23 July 1980) as a Rhode Island Natural History Survey Posthumous Distinguished Naturalist. Dr. Snell was a highly respected botanist, mycologist, and athletic coach at Brown University until his retirement from his teaching position in 1959.

Although Dr. Snell died in 1980, he resurfaced on our radar recently when important collections of fungi that he made were discovered in the KIRI Herbarium at the University of Rhode Island. Those specimens were part of a much larger

collection of plants and fungi that were as yet unprocessed and were being donated to the Brown University Herbarium. Our curiosity about Dr. Snell's career and accomplishments led us to discover that he was indeed a distinguished naturalist.

Walter Henry Snell (photo courtesy of Brown University).

Walter "Wally" Snell was born in 1889 in West Bridgewater, Massachusetts. He graduated from Brockton High School in 1907, where he played football, basketball, and baseball, as well as teaching himself to paint with watercolors and to play the guitar. He then spent two years at Phillips Andover Academy, where he won an award as best student and athlete, before enrolling at Brown University in 1909. He was again both a scholar (Phi Beta Kappa; AB with honors in biology, romance literature, and history) and an athlete (football, basketball, and All American catcher on the baseball team). He intended a career in professional baseball, but was injured in a commencement day game with the alumni. He did sign with the Red Sox and hit 3-for-12 in six games over three months, then gave up his pro career to start graduate school in plant science at Brown. He earned his master's in 1915, then started a PhD program at the University of Wisconsin.

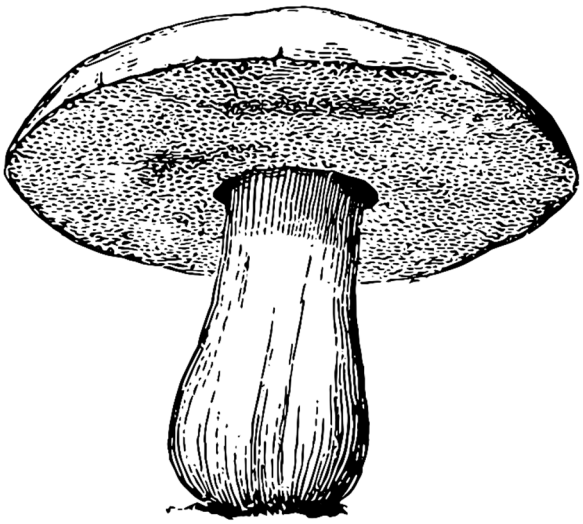
In 1920, before completing his doctoral studies at Wisconsin, Snell was first hired as an instructor by Brown and gained the title of Assistant Professor and Department Chair the same fall semester he officially earned his PhD. His study of Basidiomycetes during his doctoral degree research was just the beginning of a long, productive career in the field of mycology. He undertook decades-long studies on the basic biology of white pine blister rust—at the time, a recently-introduced pathogen threatening the economically important timber species *Pinus strobus* (white pine). Later, he began studies of the boletes, publishing taxonomic revisions and keys starting in the 1930s and becoming a renowned expert on the identification of these species. According to the MycoBank taxonomic database he is credited with describing and naming at least 41 new species of fungi, most of them in the Boletaceae.

During his years at Brown he never gave up his love of sports. He was varsity baseball coach in 1922–1926, freshman baseball coach in 1936–1939, and assistant football coach in 1921–1939. He also served as athletic director in 1943–1946 after the previous AD resigned to join the military during World War II.

Dr. Snell's publication record includes 74 journal articles and four books, three of which were co-authored by Esther A. Dick. The most significant of the books was *The Boleti of Northeastern North America* published in 1970, 11 years after he had officially retired. The illustrations in this compendium of boletes included more than 400 original watercolors of the fungi, all done by Snell himself.

We thank the Survey for considering Dr. Walter Henry Snell for a RINHS Posthumous Distinguished Naturalist Award.

Rebecca Kartzinel *is a Lecturer in Biology, Ecology, Evolution, & Organismal Biology and Director of the Herbarium at Brown University, and newly elected to the RINHS Board of Directors.* ***Keith Killingbeck*** *is Botany Professor Emeritus, University of Rhode Island, and a founding member of the RINHS Board. Additional information for this article was obtained from published obituaries.*



Boletus edulis, a typical bolete mushroom (1899 illustration, public domain, from Wikimedia Commons).

Margaret Lamb
2024 Founders' Award for Exceptional Service

Nominated by KEITH KILLINGBECK

It was my pleasure to nominate Margaret Lamb for a RINHS Founders' Award for Exceptional Service. Margaret was a student in my Seminar in Plant Ecology graduate course in 1993 at the University of Rhode Island. At that time, Peter August and several others of us were discussing the possibility of forming a home-grown natural history organization in Rhode Island. Margaret caught drift of the excitement surrounding this effort and decided that she wanted to help in some way.

Margaret Lamb

Out of the blue, Margaret went to her family's foundation in the Pacific Northwest (not surprisingly, The Lamb Foundation) and convinced them to make a one-time grant to help start what would become the Rhode Island Natural History Survey. That grant of $50,000 was instrumental in launching the Survey and supporting the Survey's initial foray into publishing important books focusing on the biota and geology of Rhode Island.

Margaret's foresight and determination to assist in making the Rhode Island Natural History Survey a reality merits recognition and a repeated "thank you" in the form of a RINHS Founders' Award for Exceptional Service.

Book Review
Birds of Rhode Island

By CHARLES E. CLARKSON

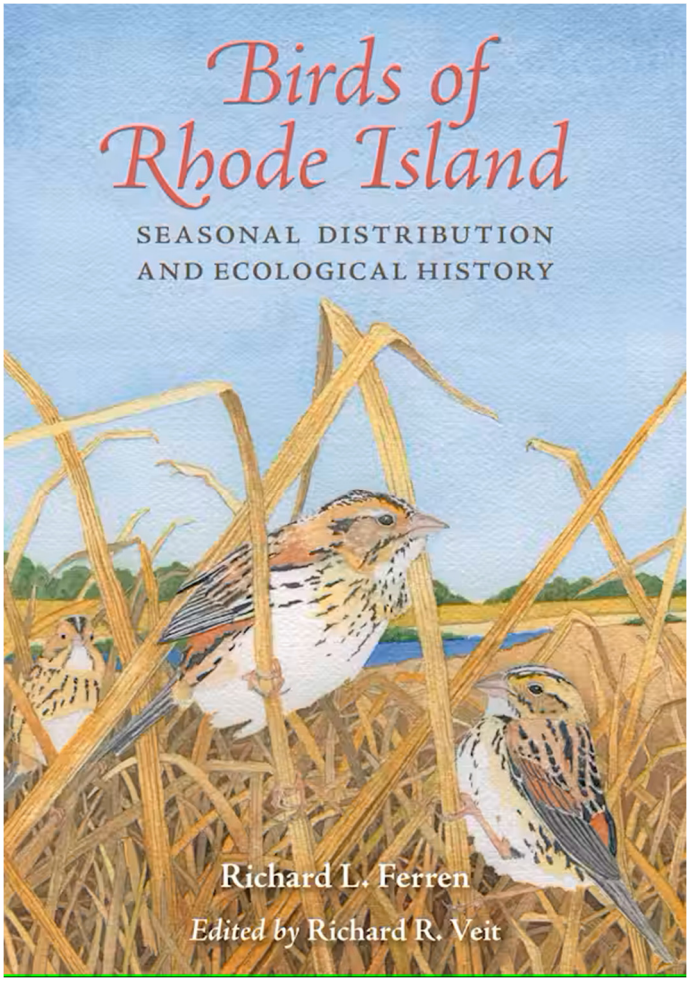
Birds of Rhode Island: Seasonal Distribution and Ecological History
By Richard L. Ferren; Edited by Richard R. Veit; Illustrated by Margaret La Farge.
Comstock Publishing Associates, Cornell University Press, Ithaca, NY; 2024. Xiv + 559 pp.
ISBN: 978-1501771330.

Birds of Rhode Island is a weighty tome and frankly indispensable for anyone interested in a thorough historical accounting of Rhode Island's avifauna. The 559-page book begins with an introduction of Rhode Island's ornithological past—an overview of the state's "vintage naturalists"—followed by descriptions of the state's habitats and a summary of data sources used to compile the hundreds of species accounts that follow. The introduction is a must-read for anyone interested in the progression of our state's many conservation organizations through time, such as the evolution of the Rhode Island Bird Commission into the state's Department of Environmental Management.

It is important to note that this book serves as a compilation of Rhode Island avian records and is not necessarily designed to be read cover-to-cover. Rather, the book, along with its meticulously compiled notes, is better used as a reference. While some descriptions of natural history are present throughout the species accounts, the book really shines as a complement to a field guide—used to gain a more thorough understanding of each species' historical presence and seasonal maxima in Rhode Island. The 470 pages of species accounts contained in this book are truly impressive, and each account deserves your time and attention to digest. Each account is divided into sections containing historical (when available), breeding, and nonbreeding records accumulated over nearly 200 years. The depth of the information used to create each species account paints a full and vivid portrait of how our avian

community has changed and, in some cases, what drove that change.

Midway through the book, a number of plates offer photographic proof of some of the notable species documented in the state through the years, with a clear bent towards recent photos (largely due, I would suspect, to the increase in photography as a tool for species documentation). I really enjoyed looking at the photos of vagrants found in our small state. This section also has a number of maps depicting land cover and ecoregions (as an unfortunate result of not being projected properly, the maps are stretched in an east-west direction).



The girth of the book serves to underscore the importance of the nation's smallest state for birds. Over the years, the changing physical and cultural landscape of Rhode Island has contributed to loss and gain in both migratory and resident species. One only need read the account for Northern Bobwhite (*Colinus virginianus*) to appreciate how the interplay between multiple factors—such as climate, habitat, predation, and hunting—can contribute to a species' zenith and nadir. Aside from the changes to the perennial avian community, the reader cannot help but be impressed by Rhode Island's lengthy history of hosting vagrants. And, unless you spend a considerable amount of time poring over the state's avian records, you will encounter a number of surprising accounts of "one-off" species that have wound up visiting Rhode Island over the years. Corn Crake (*Crex crex*), Long-billed Murrelet (*Brachyramphus perdix*), Phainopepla (*Phainopepla nitens*), and Virginia's Warbler (*Leiothlypis virginiae*) are some of my favorites. Undoubtedly, with habitat- and climate-driven changes in avian ranges and migration patterns, these novel records will just keep accumulating. Take, for instance, the American Flamingo (*Phoenicopterus ruber*), which appeared in the state for the first time since the publication of this book!

A handy appendix on page 519 lists all observers who contributed records used throughout the book. The list contains over 200 names, and highlights just how many dedicated birders there are in the "Ocean State." Without their contributions to the "Rhode Island ornithological infrastructure"—as Ferren puts it—a book like this could not exist. Thankfully, Rhode Island's birding community continues to grow as cadres of young birders, university birding clubs, and lifelong learners keep the tradition of celebrating and documenting our birds alive and well.

I do have a few small editorial comments. It would have been nice if the text had more objectively defined the eight abundance categories used throughout the species accounts ("abundant," "very common," "fairly common," "common," "uncommon," "rare," "rare but regular," and "rare and irregular"?). The same goes for the species status listed at the beginning of each account (the term "resident" was used for migratory species that do not overwinter in the state, whereas "summer resident" and "breeder" also appear throughout). Of course, this is nitpicking an otherwise rich and informative set of species accounts.

Birds of Rhode Island is a wonderful and thoroughly impressive resource for anyone interested in historical accounts of our state's birds and an excellent addition to any birder's library. For me as a conservationist, the neatly-compiled records are a real time-saver and the book has instantly become an indispensable tool for management work. Although I've read the book cover-to-cover, I anticipate referencing it many times in the coming years as I continue observing the birds of Rhode Island.

Dr. Charles Clarkson *is the Director of Avian Research for the Audubon Society of Rhode Island. He coordinated the 2nd Rhode Island Bird Atlas during 2014–2019 and was lead author of the resulting book (see the Spring 2024 issue of the* Naturalist *for a review).*

Departed Friends

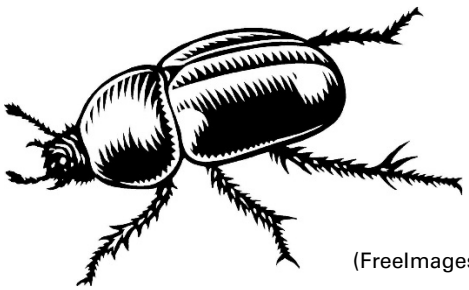
Over the last year the Survey lost two individuals who had made tremendous contributions to our successes.

Peggy Boyd Sharpe was a force of nature and a lifelong environmentalist. She passed away at the age of 96 on June 22, 2024. A memorial service in her honor was held at the First Unitarian Church in Providence on October 19th. The list of causes and organizations she supported, or sometimes led or even founded, was truly amazing—The Nature Conservancy, Conservation Law Foundation, opposition to a nuclear power plant at Rome Point, promoting the statewide recycling program, Rhode Island Garden Club, Providence Neighborhood Planting Program, Brown's Center for Environmental Studies, The Public's Radio, and, of course, the Rhode Island Natural History Survey. In 2020, after Survey Board had decided to create a Founders' Award for Exceptional Service, the very first Founders' Award was presented to the Sharpe Family—Peggy, her husband Hank (who died at age 99 in 2022), son Henry, and daughter-in-law Julie. To quote the award article we published (see page 24 in the Spring 2021 issue), "The Sharpes' contributions have been many and longstanding and, collectively, they have done much to get the Survey where it is today. Their support has taken all kinds of forms and the Survey would not exist without it." You can also find a video of the presentation on our YouTube channel, done via Zoom because of the pandemic.

We were all heartbroken to learn of the sudden passing of **Raul Ferreira**, whom many of us knew as "the beetle guy" from BioBlitz, one of the nicest, most interesting people we've ever had the pleasure to meet. In addition to advancing his many beetle research projects, he had been energetically making plans to boost the insect teams (especially the beetle team) at our BioBlitz.

Raul died at his home in Pawcatuck, Connecticut, on March 7th, at the age of 85. He was born in Portugal, and served with distinction in the Portuguese Army, before returning to the University of Coimbra to complete his undergraduate degree, then go on to earn a master's degree in biology with a focus on entomology. He came to the US and had a long and successful career in manufacturing, but never lost his passion for entomology, especially the beetles. Raul was a recognized authority in his field and continued to publish well-regarded research papers.

We have worked with his family to establish the *Rosa and Raul Ferreira Young Entomologists Fellowship Fund* at the Survey that will annually provide a fellowship to a 6th–12th grader to boost the insect team at BioBlitz and further their progress toward a career in entomology. Read more about the Ferreira fund at https://rinhs.org/events/awards/ferreira-fellowship/. You can contribute to the Ferreira Fellowship Fund now using the DONATE button and indicating your purpose in the notes, or by sending us a check with "Ferreira Fund" in the memo.



(FreeImages.com)

There are as many ways to build our knowledge of Rhode Island's animals, plants, and natural systems as there are people willing to help.

ANNUAL MEMBERSHIP in the Rhode Island Natural History Survey funds public events, helps conservationists and managers, and gives you a stake in our success! Joining now will beat the dues increases coming this summer.

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The **Rhode Island Natural History Survey** is a nonprofit organization dedicated to **Ecosystem Resilience Through Biodiversity**

Our Mission

To promote ecosystem resilience, the Rhode Island Natural History Survey collects, organizes, and disseminates information on the State's biodiversity and ecosystems. We engage curious observers of all ages—professionals and amateurs, scientists and artists—in field-based experiences that build connections to science, conservation, and the natural world.

Our Vision

To prompt a sense of wonder that inspires people to value and protect biodiversity through a deeper understanding of the world around us.

Notices

Board Changes: A quick glance at the previous page will tell you that the listing of the Survey's board members is notably longer than it was in the last two issues. We intentionally held the status quo at our 2024 annual meeting until our Strategic Plan was in place. At our recent annual meeting in March, we expanded the Board to 19 members. **Nelle Couret** decided to step down, and we added three new members. **Rebecca "Becky" Kartzinel** wears multiple hats at Brown University. She is a Lecturer in the Department of Ecology, Evolution, and Organismal Biology; Interim Director of the Plant Environmental Center; and Director of the Brown University Herbarium. **Heather Faubert** recently retired from URI, where she was a Research Assistant in the Department of Plant Sciences and Entomology and Director of the Cooperative Extension Plant Protection Clinic. **Tempie Thompson** is the Director of Development at Roger Williams Park Zoo. We are still searching for someone to take over as Treasurer from Stan Tragar, who has been in the position since 2014. So if you are someone with an accounting, financial, or bookkeeping background and a commitment to biodiversity and conservation, we can use your expertise.

Rhode Island BioBlitz 2025: Friday & Saturday, June 6th & 7th, Steere Hill/Phillips Farm Conservation Area, Glocester. These Glocester Land Trust properties contain a wide variety of habitats for us to explore. The Survey has the longest-running continuous BioBlitz series in the world—this will be our 26th. BioBlitz participation is open to ALL curious nature lovers, no matter your training or experience, or lack thereof. Everyone from check-in table helpers and able-bodied bucket carriers to species experts and everyone in between is welcome! Registration will be happening in May; watch the *News to Use* email newsletter for updates and announcements.

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