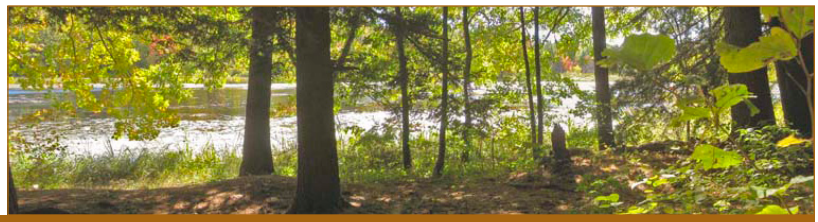
Broad Brook Coalition



www.broadbrookcoalition.org Volume 34, Issue #2, Fall 2022

ABOUT US

Broad Brook Coalition (BBC) is a nonprofit, all-volunteer organization incorporated in 1988 with the mission of preserving open space and promoting affordable housing. Under a memorandum of understanding with the Northampton Conservation Commission, BBC is responsible for the day-to-day management of the 936-acre Fitzgerald Lake Conservation Area. BBC's goals are to maintain and enhance the diversity and integrity of wildlife species and habitat at FLCA, promote outreach and education, and provide public access for passive recreation that is compatible with habitat protection.

Our work in trail maintenance, stewardship, education, and land preservation to expand FLCA is funded by the generous support of our members and occasional grants.

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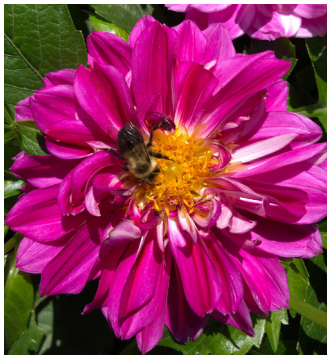
Broad Brook Coalition Annual Meeting

Sunday, Nov. 6 — via Zoom — 5:00 to 7:00 PM

Members and friends are cordially invited to attend Broad Brook Coalition's annual meeting on Sunday, November 6. Due to the continuing coronavirus pandemic, this year's meeting will again be virtual. Members will receive information about how to access the meeting, as well as about the election of board members, by email prior to the date. If you did not include your email address in your renewal application, please email info@broadbrookcoalition.org.



This year's speaker is environmentalist Joan Milam of UMass-Amherst. Her November 6 talk, titled "The Diversity and Natural History of Bees in New England," will focus on the complex role bees play in the environment. There are over 20,000 bees found worldwide and roughly 4,000 species in North America. The highest diversity of bees is found in dry, Mediterranean climates such as Arizona and New Mexico. Massachusetts can boast an impressive 400 species of bees that represent an astonishing assortment of colors, sizes, shapes, and lifestyles. This presentation will introduce you to the lifestyles and habitat preferences of several of the common and specialist bees in Massachusetts and touch on the natural and human stressors impacting bee health.

Joan Milam is an Adjunct Research Fellow at the University of Massachusetts-Amherst in the Department of Environmental Conservation. She conducts research on bee diversity and bee response to habitat management. She enjoys working with UMass undergraduate and graduate students on their pollinator-related projects. Joan has conducted pollinator research from West Virginia to Maine and with the Great Lakes Forest Service Biodiversity Initiative in Michigan, Wisconsin, and Minnesota. One of her great joys is her annual bee collecting trips in Arizona in association with the Southwest Research Station. Joan has published scientific papers on her research.

President's Message: Pesticides, Pollinators, and Beyond

The widespread use of pesticides has been a key element in the increase of agricultural productivity worldwide through the control or elimination of plant and insect pests, broadly defined as those organisms that compete with or damage crops. They have not been an unalloyed success, however, in that their effects often go well beyond the suppression of the intended target weed or insect. **Glyphosate**, for instance, which is the active component of popular broad-spectrum herbicides such as Roundup and Rodeo, and is the most heavily used herbicide on the planet, kills almost any kind of plant and is toxic for numerous invertebrates—even humans under certain circumstances. **Neonicotinoid** and **organophosphate** insecticides have similarly widespread effects, and their use has evoked a great deal of controversy in recent years. Some are classified as *contact* agents that are generally sprayed on plants and kill beneficial as well as harmful insects that pick them up directly from treated leaves, flowers, and stems. Others are known as *systemic* insecticides which are usually used to treat seeds, or the soil around them, and are transported throughout the plant as it grows. As such agents can harm far more organisms than their targets, their use and regulation have been matters of debate and challenge.

Neonicotinoids—often referred as neonics—are a class of systemic neurotoxic insecticides whose structures contain a nicotine core linked to a variety of different substituent groups that irreversibly block nicotinic acetylcholine receptors in the nervous system, overstimulating and destroying them. This results in abnormalities in foraging and other behaviors, paralysis, and eventually death. Initially developed for commercial use by Bayer in the 1980s, these substances (e.g., imidacloprid) were initially used to treat corn, soybeans, and later a wide variety of fruits, cereal grains, and vegetables. In the ensuing years, neonics became some of the most widely used insecticides in the U.S. and throughout the world. As broad-spectrum insecticides, they indiscriminately kill many beneficial insects in addition to insect pests. At the same time, numerous studies indicate that neonicotinoid treatment provides little economic benefit for growers.

Despite protestations to the contrary from neonic manufacturers and some farm organizations, it became increasingly apparent that these broad-spectrum insecticides were extremely harmful to honeybees, perhaps even contributing to colony collapse disorder. They are most often applied to seeds or directly to the soil around a plant's roots and are subsequently transported to all of the tissues of the growing plant, including nectar and pollen. Thus, the entire mature plant is potentially toxic to any insect that feeds on it. What's worse, only a small fraction of neonics make it into the target plant (about 2 to 5 percent for most seed coatings), leaving most in the soil, where they can persist over long periods and, because they are water soluble, contaminate groundwater, streams, and wetlands.

Consumption of a neonic-treated kernel of corn is enough to kill a songbird by interfering with its metabolism, reproduction, and migration

While highly toxic for honeybees, solitary bees, and bumblebees as well as many other invertebrates, neonics were at one time thought to be relatively safe for birds, mammals, and other higher organisms. Recently, however, they have been persuasively linked to neurological disorders—and death—in birds. Consumption of a neonic-treated kernel of corn, for example, is enough to kill a songbird by interfering with its metabolism, reproduction, and migration.

Although the European Union banned the three most commonly used neonics (imidacloprid, clothianidin, and thiamethoxam) from outdoor use in 2018, primarily because of their high toxicity for both domestic and wild bees, their regulatory fate in the U.S. has been significantly different. In 2013, a suit filed by a coalition of food safety and conservation organizations requesting that the EPA suspend neonic use stalled. A blanket ban on the use of neonics on National Wildlife Refuges was enacted by the Obama administration in 2014 but reversed by the Trump administration in 2018 (although a year later the EPA did revoke approval for certain neonics). In 2020 the EPA supplemented its policy with a proposal to restrict the use of neonics on residential lawns and turf, but otherwise confirmed that they would remain in use for other purposes. Earlier this year, the EPA ruled that pesticides applied as a seed coating, unlike other pesticide uses, can continue to be used with minimal oversight and regulation despite their harm to birds, other wildlife, and even humans.

Chlorpyrifos is one of numerous organophosphate compounds developed as nerve gas weapons in World War II that act on the nervous system of insects and many other organisms by inhibiting the enzyme acetylcholinesterase and leading to an accumulation of the neurotransmitter acetylcholine at nerve synapses. Chlorpyrifos was marketed by the Dow Chemical Company in the 1960s as an insecticide for use in agriculture, as well as in residential gardens and commercial buildings. By 2016, chlorpyrifos, a *contact* insecticide that acts only when it comes into direct contact with the target, had become one of the most widely used insecticides in the U.S. Extensive testing revealed that it is highly toxic for honeybees and other insects, and at least moderately toxic for crustaceans, fish, birds, rodents, and humans, causing neurological and developmental disorders when used at higher than recommended levels.

Although the use of chlorpyrifos on food crops has now been banned in the U.S.—and its production by the Dow spinoff, Corteva Agriscience, terminated in 2021—the history of how the ban came to be is illustrative of regulatory inertia combined with the reluctance of industrial and political interests to remove toxic insecticides from commerce. In 2007, the NRDC (Natural Resources Defense Council) and the Pesticide Action Network petitioned the EPA to halt the agricultural use of chlorpyrifos, a position later adopted by the Obama administration with the goal of a total ban by 2017. That same year, the incoming Trump administration reversed this decision, and chlorpyrifos remained on the market. In response, Earthjustice, together with NRDC and a number of labor and health organizations, sued the EPA to ban the use of chlorpyrifos on food crops. In 2018, the lawsuit prevailed in the U.S. Circuit Court of Appeals, largely on the basis of the potential harm to children's brain function by the consumption of residual chlorpyrifos on fruit and vegetables. (Note that its high toxicity for honeybees and other insect pollinators did not seem to have played a role in this decision!) The EPA issued a final rule prohibiting the use of chlorpyrifos in food production in 2021—14 years after the ban was initially proposed by NRDC. Nonetheless, the EPA still permits some non-food uses of chlorpyrifos, e.g., on golf courses, ornamental plants, non-bearing fruit trees, and for mosquito control. A ruling on the admissibility these uses is expected imminently.

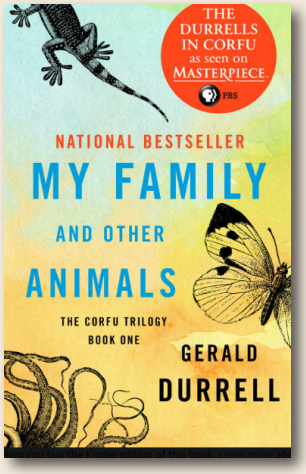
There are many lessons to be learned from the history of pesticide use and its regulation. **(1)** Always read the labels on any insecticide you plan to use in your garden to determine what the active components are. **(2)** Do not apply insecticides containing neonicotinoids and organophosphates to flower blossoms during the day, when bees are actively visiting them; if absolutely necessary, use in the evening or at nighttime when bees are far less likely to be foraging. **(3)** Avoid the use of seeds that have been treated with neonicotinoids or other pesticides. **(4)** Bear in mind that the best way to limit the exposure of pollinators to toxic substances, avoid collateral harm to birds and other wildlife, and prevent contamination of soil and waterways, is to not use them at all!

— Bob Zimmermann

Book Review

My Family and Other Animals

Gerald Durrell • 1956



The book that has most inspired and influenced me is My Family and Other Animals by Gerald Durrell, the first book in his Corfu trilogy. The TV shows and movies inspired by the book have mostly taken out the natural history aspects and increased the drama of the people, so they do not represent what I find so wonderful about the book. Stories of young Gerry's time living on Corfu, where he spent days observing and often capturing animals to keep in his room, are enchanting. His dedication to each individual, whether a gecko, scorpion, the owl, or magpies, as having its own character and personality opened my heart and rang true. The lyrical descriptions of the island, the sea, and the welcoming support he received from the locals and his family always feels like a warm embrace when I dip back into the book. I learned about many interesting animals—for example, the spider that constructs a web underwater to trap air, and the full life cycle of the tortoises, hibernation to hatching. Most of all, I laugh out loud every chapter. Gerald Durrell went on to found the Jersey Zoo in Great Britain, a world-renowned conservation center, and wrote many more books about his adventures collecting the animals, but his memories of his boyhood on Corfu are full of delight.

—Tina White

Do you have a favorite book of natural history or environmental study? We invite our members and friends to send us your review of a book that may have inspired you to learn more about or engage more deeply with the natural world. Reviews can be sent to info@broadbrookcoalition.org.

Indigenous Land Acknowledgment

BBC has created the following land acknowledgment statement, written and researched by board member Yamila Irizarry-Gerould, for inclusion on our website.

Acknowledgment

We acknowledge the Indigenous peoples that are the original inhabitants of Turtle Island and what is now known as Massachusetts and Northampton. We also acknowledge the displacement of Indigenous communities at the hands of European colonists. Native peoples and their descendants are still part of the Connecticut River Valley community, and we respect that.

Why

We feel this acknowledgement is important because native communities have so succcessfuly and carefully stewarded the land for generations, and we hope to honor that knowledge and tradition as Broad Brook Coalition. Thousands of people spend time in these woods annually, and we feel it is crucial for visitors to know the Indigenous history of this area.

History

Fitzgerald Lake Conservation Area is located near to where the Indigenous communities of the Nipmuc, Nonotuck, and Pocumtuck lived. Different Indigenous communities settled around the Oxbow to FLCA's south and in Deerfield to its north. While there was never a permanent native settlement in Northampton, there was an Indigenous encampment at Fort Hill for a period of time, and many native families lived and worked in the area. A large number of Indigenous artifacts were recently discovered on the edge of FLCA at a site that is estimated by archaeologists to be 10,000 years old.

Learn More

We encourage visitors to explore the following resources to learn more:

- Works of Margaret Bruchac, Indigenous Historian: https://anthropology.sas.upenn.edu/people/margaret-bruchac
- Nolumbeka Project, a local group that celebrates the histories, cultures, and persistence of Northeastern Indigenous Peoples: https://nolumbekaproject.org/
- Reports on Archeological Site: https://rivervalley.coop/files/assets/img/news-and-events/coop-news/Northampton%20Phase%20I,%20II%20and%20expanded%20II%20report%20with%20highlights.pdf
- News on archeological site at proposed King St. roundabout: https://www.thereminder.com/localnews/northampton/motives-tactics-questioned-as-northampton-roundabo/

The BBC website (broadbrookcoalition.org) has a wealth of information about Fitzgerald Lake Conservation Area. Please visit us to find upcoming events, learn about the history and ecology of FLCA, renew your membership, and much more. Contact us by email at info@broadbrookcoalition.org, or write us at P.O. Box 60566, Florence, MA 01062.

Herbivorous Insects of Fitzgerald Lake Conservation Area

The following text is adapted from the report that Charley Eiseman made for BBC regarding his survey of herbivorous insects at FLCA. The photos are selected from Charley's iNaturalist pages documenting this survey. A link to the full report, including a reference to Charley's e-book "Leafminers of North America," can be found at the bottom of the BBC home page.

I walked the trails of Fitzgerald Lake Conservation Area on July 22 and September 26, 2021, in search of galls, leaf mines, and other characteristic evidence of herbivorous insects and mites on their host plants. Most of the insects and mites I found could be identified to species by examination of their galls or leaf mines in the field (and by the photos I took), but I collected a few that required rearing to adults for specific identification.

In all, I listed 190 species. In addition to the gall inducers and leafminers that were the focus of these surveys, I listed a few other miscellaneous insects (and signs thereof) that I happened to photograph along the way. The most exciting find was leaf mines of a jewel beetle (*Brachys* sp.) on deerberry *(Vaccinium stamineum*). These have been found previously in New York and North Carolina, but adults have never been reared; the beetle may prove to be an undescribed species. Other highlights included new host records for three species of leaf-mining moths: *Eupatorium* for *Leucospilapteryx venustella*, *Malus* for *Coptotriche crataegifoliae,* and *Symphyotrichum puniceum* for *Bucculatrix angustata.*

—Charley Eiseman

Hickory gall midges

Genus Blaesodiplosis (gall midge)

Goldenrod leaf miner beetle

Ophiomyia maura

Phylloxeras

Phyllocnistis insignis

Phytomyza ranunculi

Spongy oak apple gall wasp

Hickory puff tart gall midge

Hickory urn gall midge

Phyllonorycter basisgtrigella

Red milkweed beetle

Stigmella corylifoliella

Dragonflies and damselflies

Maple spindle gall mite

Goldenrod gall fly

Spiny witch-hazel gall aphid

Witch-hazel cone gall aphid

2022 Walks and Talks

Despite some lingering concerns over Covid-19, BBC scheduled six informational programs this year. We continued our masks-optional policy but lifted the restriction on attendance that was in place last year. Unfortunately, our September "Mushrooms in the Forest Ecosystem" walk had to be canceled, but the other five were well attended. We expect to reschedule the mushroom walk for next year.

Vernal Pool Ecology

Board member Brad Timm led the first walk of the season, on May 14, to examine the two vernal pools just off the Fishing Place trail. Using a dip net, Brad scooped up a sample of the pool life, including wood frog tadpoles, caddisfly larvae, dragonfly larvae, fairy shrimp, and predacious diving beetles (they bite!). We also got good looks at adult wood frogs and green frogs, as well as the spent egg mass of a spotted salamander—i.e., the gelatinous mass left over once the eggs have hatched and the larvae departed.

Beavers at Sundown

On June 4 more than 20 people of all ages joined Arcadia naturalist and BBC board member Laura Beltran on an evening walk along Boggy Meadow Road to explore the natural history of beavers in the FLCA. We glimpsed a beaver swimming, observed their dams and lodges, learned about their amazing building skills, and discussed beavers' adaptations to survive in their environment. In addition to the original long curved dam that created the dead-tree swamp, the beavers have been busy adding two smaller dams just downstream, forming stepped pools to increase their habitat. We also saw great blue herons, heard frogs, and enjoyed a quiet evening stroll back along the Pine Brook Trail after the sun had set.

Exploring Northampton: Beaver Brook Greenway

BBC partnered with Historic Northampton and Leeds Civic Association to sponsor this informational program about the Beaver Brook Greenway, Northampton's most recent conservation area. Interest was so high—more than 60 people signed up—that we had to schedule two separate sessions to accommodate everyone. Bob Zimmermann gave an overview of the history of the property, from the earliest colonial settlers through the Starkus family, whose fields and gardens many of the attendees could still remember. And Laurie Sanders detailed the geological history while also identifying notable trees and plants on the site, including (of course!) the many invasives. Highlights included the view from the timber-framed wildlife blind at the north end of the property, and an impromptu lesson on how the sawmill located on the property worked, given by one of the attendees who had extensive experience with similar equipment.

—Dave Pritchard

CONSERVATION NEWS IN BRIEF

NEW ENGLAND TRAIL NATURE WATCH

Many of you may be familiar with the New England National Scenic Trail (NET), a 215-mile hiking trail which starts at the New Hampshire-Massachusetts border, runs south along the Connecticut River valley, and continues into Connecticut where it eventually reaches Long Island Sound just to the east of New Haven. The Appalachian Mountain Club, in conjunction with iNaturalist, is coordinating a citizen science project along the NET to assess the effects of climate change on the flora and fauna of the NET and adjoining lands. The specific goal of the project is to track the timing of plant flowering and fruiting in response to climate change. Observations are accepted from anywhere along the NET corridor, which encompasses the Quabbin Reservoir, the towns of Amherst and Northampton and, of course, the Fitzgerald Lake Conservation Area. **To participate, visit the New England Trail Nature Watch at https://www.inaturalist.org/projects/new-england-trail-nature-watch.**

WATER CHESTNUT REMOVAL

Water chestnut is an invasive plant from Asia that grows abundantly in New England ponds, lakes, and rivers if given the chance. Because it quickly overwhelms and chokes out native aqueous plants, controlling it in conserved water bodies such as Fitzgerald Lake is of particular importance. For the past six years, BBC has organized a series of water chestnut "pulls" in the lake throughout the summer, starting with new and tender plants in June and finishing with tough seed-bearing plants in September. At three-week intervals, roughly 10 volunteers have hit the lake in kayaks, canoes, and rowboats to pull up the water chestnut by hand. At the beginning of the project we "harvested" over 1,100 lbs of the invasive plant, while this past summer our yield was slightly over 100 lbs. As water chestnut seeds can lie dormant on the bottom of the lake for 7-8 years, we anticipate that it will be necessary to continue this work for several more years until we consider our job done.

RECENT LAND ACQUISITION

Earlier this year, the City completed acquisition of a 25-acre parcel that brought the total area of the FLCA to 936 acres. This parcel, which extends from the western boundary of the conservation area to just east of Broad Brook, fills the final gap in City-owned property between the northernmost part of the conservation area and the main body of the FLCA. BBC contributed $15,000 to the purchase price of approximately $50,000.

Species Spotlight

(This is the eighth in a series of articles featuring species of animals and plants that are readily found in the Fitzgerald Lake Conservation Area. A fuller version of this article will be placed on the BBC website, broadbrookcoalition.org.)

Common Name: Wood Duck

Scientific Name: *Aix sponsa* ("Aix" is Latin for "water" and "sponsa" is Latin for "bride")

Physical Description: The Wood Duck is one of the most ornate and beautiful ducks in all of the world. Males are a mix of iridescent green and chestnut brown, with red eyes, various white stripes along their head, neck, sides of their body, mixed with tannish-yellow sides. The females, though less striking, are beautiful in their own right with a base of brown-to-chestnut body coloration, iridescent blues along their wings and back, and a white ring surrounding and extending back from each eye.

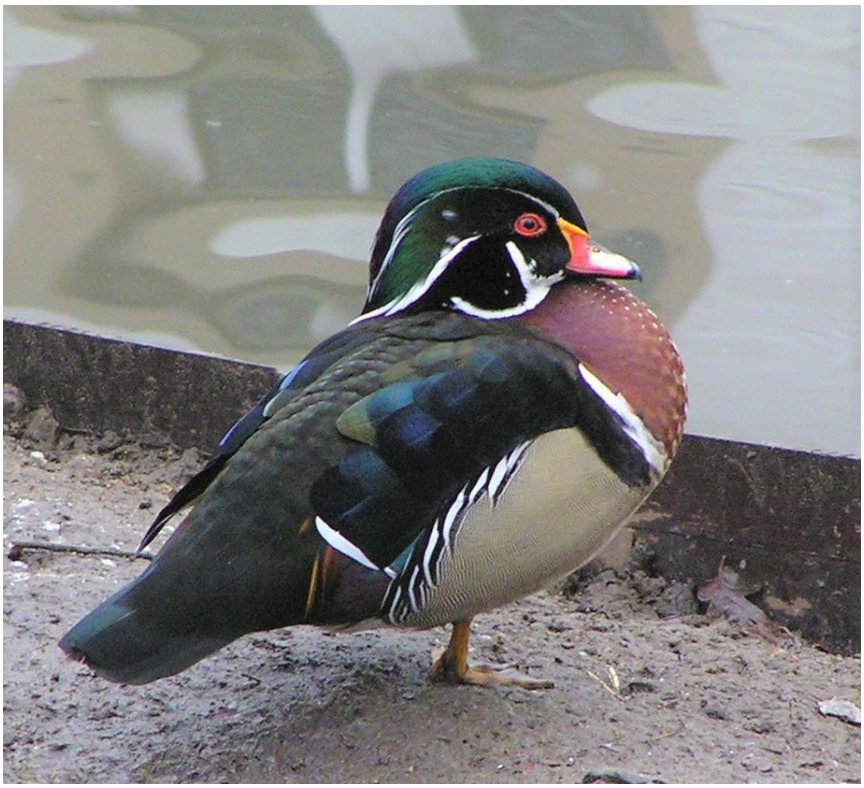
Longevity: The oldest recorded wild Wood Duck was known to live to at least 22 years old.

Distribution: Wood Ducks are found throughout almost the entirety of the eastern half of the United States except extreme southern Florida, and extend northward into southeastern and south-central Canada, westward into the south-central/western two thirds of the U.S., and well into much of Mexico. There are also populations in much of the northwestern U.S. southward through much of the western half of California.

Habitat: They are found in almost any type of freshwater wetland, though they prefer wetlands that have extensive areas of vegetative cover including shrubs, emergent plants, and downed trees; these conditions enable adequate cover that they can hide in while feeding.

Reproduction: Wood Ducks differ from most other duck species in that they nest in cavities in trees, typically those that are overhanging or near the water's edge. They most commonly nest where a tree-limb has previously broken off leading to a cavity that has rotted out from where the base of the limb previously attached to the tree. Less commonly they will use a cavity that was excavated by a woodpecker during a previous year. They also will nest in wood duck nest boxes that have been constructed and installed for conservation purposes (see the "Interesting Facts" section below).

The female typically lays between 5-15 eggs which take about one month to hatch. The female will have one or two "broods" (group of young) in a given year. Within a day or so after hatching the young will leave the nest by jumping out of the opening and will not return to the nest thereafter.



Prey: The Wood Duck diet consists mainly of plants, including a wide variety of aquatic plants. They will also eat various non-aquatic plants such as nuts, grains, grasses, seeds, fruits, and especially acorns, one of their favorite foods. In addition, they will eat a variety of aquatic and terrestrial invertebrates.

Conservation and Management: Currently Wood Ducks are widespread and fairly common throughout much of their range. They were threatened with extinction during the early 1900s, primarily due to habitat destruction and over-hunting, however their populations recovered considerably when hunting them was prohibited between 1918 and 1940.

Interesting Facts:

- Wood Ducks use their sharp claws on their webbed feet to perch in trees.
- Artificial nest boxes, often placed in wetlands well above the water line, have been very effective in maintaining/increasing their populations.
- One of their favorite foods are acorns and they have an expandable esophagus which can hold upwards of 20 acorns at a time.
- They are one of the few North American duck species that often produce two sets of young ("broods") per year.

—Brad Timm

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Please complete this form and return it with a check to:
Broad Brook Coalition, P.O. Box 60566, Florence, MA 01062
❑ $25 for Individual membership ❑ $35 for Family membership. *All contributions are tax deductible.*

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__ Sign me up for a paperless newsletter (email address required).
__ I prefer to receive a printed newsletter by mail.
__ I've included an additional tax-deductible contribution to the Land Preservation/Stewardship Fund.

Donate Online! Renew your membership or join BBC on our website (click on Membership)

The Broad Brook Coalition needs your help, too. We are very grateful for membership dues, but want you to know that you can contribute in other ways. Members and friends are needed to help carry out our goals.

Please consider one or more of the following volunteer opportunities:

___ Board Member ___ Trails Committee (maintenance and repair) ___ Clerical
___ Stewardship Committee (includes invasive species removal) ___ Land Preservation/Acquisition Committee
___ Occasional Work Days ___ Education Outreach ___ Newsletter writer ___ Other (please specify) _____