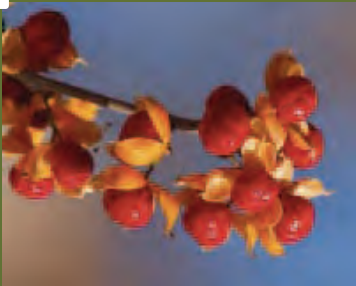




INVASIVE PLANTS ON CLIFF ISLAND



A GUIDE TO ECOLOGY,
IDENTIFICATION,
AND MANAGEMENT

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Since the 1970's, the Cliff Island Corporation for Athletics, Conservation, and Education has developed programs and services intended to help sustain and enrich life on Cliff Island. As part of that mission, ACE is committed to protecting our native ecosystems and to inspiring and informing generations of present and future stewards of our beloved island.



We have provided this guide to give members of the community more information about the importance of invasive species management and about how to identify invasive plants around the island. ACE is proud to be a leader in invasive species management efforts among the Casco Bay islands and grateful for the support of this community. To everyone who supports ACE and the Invasive Species Management Program, thank you.

WHAT ARE INVASIVE PLANTS?

Invasive plants are non-native species that grow and spread in ways that cause environmental harm.

HOW DO INVASIVE PLANTS GET TO CLIFF ISLAND?

There are a few main ways that invasive plants are brought to Cliff Island from the mainland or from neighboring islands. Cliff Island's main importers of invasive plants are:

- **Humans:** many of the invasive plants found on Cliff have been brought here by people. Some of the ornamental shrubs and flowers planted in island gardens are alien species that spread and invade native ecosystems. Invasive species can also “hitchhike” to Cliff around the base of plants purchased for yards and gardens, in soil, in road gravel and fill, and in mulch used to cover yards, gardens, building lots, roads, or septic systems.
- **Birds:** invasive species can be introduced to and



spread around the island by birds, which eat berries and fruits and then drop the seeds far from the original plant, often in forest understories.

A robin holds a berry from an invasive honeysuckle bush, which it will carry to another location, helping honeysuckle to spread. Honeysuckle berries are detrimental to the health of birds.

WHY DO WE MANAGE INVASIVE SPECIES?

Invasive plants outcompete Cliff Island's native species for essential resources like light, water, and nutrients in the soil. This harms native ecosystems because:

- Native plants provide food and habitat for countless animals like birds and insects.
- Native plants are an integral part of the ecosystem that filters the island's fresh water and prevents erosion on hillsides, beaches, and roads.
- Native plants make Maine's island landscapes beautiful and iconic!



Native vegetation is an essential part of Cliff Island's unique and attractive coastal landscape

Invasive plants reduce biodiversity in Cliff Island's ecosystems, with far-reaching consequences. When a wide variety of native plants is replaced with one or two invasive species, the insects that ate, reproduced and developed on, and lived in those plants dwindle and eventually disappear. So do the birds that fed those insects to their young (most baby birds survive exclusively on insects). The native plants that were pollinated by those insects suffer, as do the native plants whose seeds were dispersed by those birds. And so on.



A patch of native vegetation supports countless species of insects, birds, mammals, fungi, and microorganisms

Native plants are the foundation of a vast and complex food web, so when they are crowded out by invasive species, the whole ecosystem suffers. So too do the humans that depend on diverse ecosystems for their edible plants, their pollinators, their nutrient recyclers, their soil stabilizers, their toxin

absorbers, their influence on local water and climate, and much more. Biodiversity doesn't just sustain the wildlife that we enjoy and admire – it sustains us. If we want to continue to enjoy all the uses we have found for the land around us (known as “ecosystem services”), then we have to protect the biodiversity that makes that land what it is.

Biodiversity doesn't just provide the pieces to a healthy and productive ecosystem; it also protects it. High diversity allows one species to “pick up the slack” if another species is struggling. Invasive species reduce the natural resilience of diverse native ecosystems, amplifying the effects of small changes and increasing vulnerability to disturbances like land clearance, fire, drought, and floods. If they are not allowed to rebuild their natural resilience, native ecosystems will collapse.



Native vegetation is making a comeback after much of Cliff Island's forest was blown down in storms in recent years

HOW DO WE MANAGE INVASIVE SPECIES?

Invasive Species Management on Cliff Island began (unofficially) decades ago, when concerned community members got together every summer to remove invasive plants around the island. The ACE program was formally established in 2009 with the hiring of the first Invasive Species Management Director. Each summer, the Director develops and implements a plan for dealing with Cliff Island's various species of invasive plants with the help of community members, ACE leadership, volunteer groups, and one of Cliff Island's own hard-working young people. The Invasive Species Management Program has two main parts:

Prevention is always the first step! ACE provides educational resources (like this guide) to help community members learn how to avoid bringing invasive plants to Cliff and how to identify and remove them if they are found around the island. Monitoring and recording the locations of invasive plants also gives the Director a head start on regrowth and spreading.

Removal of invasive plants is carried out in the most effective way possible that minimizes any negative impact on Cliff Island's native ecosystems. The ACE team removes invasive plants using the *least toxic option* in order to protect native plants, wildlife, and island residents from the toxic effects of some chemical herbicides. The least toxic option usually means physical removal of invasive plants.

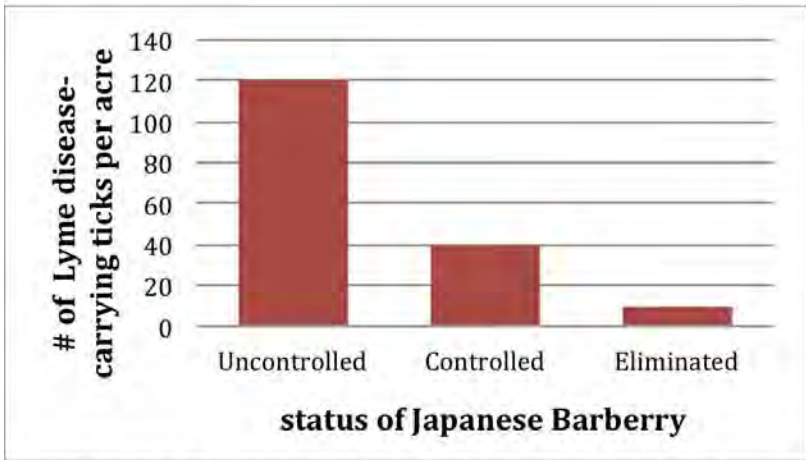
INVASIVE SPECIES, TICKS, AND LYME DISEASE

Several studies in recent years, including one conducted on Cliff Island by the Maine Medical Center, have linked the presence of invasive shrubs to disease-carrying ticks. Japanese barberry and shrub honeysuckle have been the subjects of studies showing both a higher density of disease-carrying ticks in areas where these species have invaded, and reduced numbers of disease-carrying ticks after the invasive shrubs were removed.




Invasive Japanese barberry is a favorite hiding place for deer ticks

Japanese barberry is a favorite home of the deer tick (or black-legged tick) because of the cool, moist shelter it provides when it invades forest understories and open areas. Studies have found huge increases in the number of Lyme disease-carrying ticks – as many as twelve times more – in areas with Japanese barberry invasions than in areas without barberry.



A study at the University of Connecticut found a huge increase in Lyme disease-carrying ticks in areas invaded by Japanese barberry

Deer ticks and Lyme disease pose an especially high threat to Maine’s island communities, where the deer that carry and feed ticks during development remain in a small area, creating dense tick populations in close contact with people. When Monhegan Island decided to eliminate deer in 1996, 13% of residents had contracted Lyme disease. Within 5 years of deer elimination, the number of new cases of Lyme disease fell to zero.

 TickEncounter Resource Center *Ixodes scapularis* (Blacklegged ticks or Deer ticks)



Deer ticks, which live in some of Cliff Island’s invasive shrubs, are vectors for Lyme disease and several other serious diseases. Shown here: larva (top left),

nymph (bottom left), adult male (middle) and adult female (right)

Lyme disease is preventable, but without proper identification and treatment it can become a debilitating chronic illness, resulting in permanent physical or mental impairment and even death. Although Lyme disease is gaining attention in the medical world as a serious public health problem, especially in the Northeast, it still goes unrecognized or misdiagnosed for many people. The best way to deal with Lyme disease is to prevent contact with ticks in the first place.

By removing the plants that harbor ticks and making their habitat less hospitable, we can reduce the density of these disease-carrying parasites on Cliff Island and help protect ourselves, our families, and our pets from exposure to Lyme disease and other infections.

More information about ticks and Lyme disease is available from ACE, from the organizations listed below, and from “Lyme-literate” medical professionals. When seeking more information online, look for the most up-to-date studies you can find, as the medical and academic understanding of Lyme disease is growing and changing rapidly.

Centers for Disease Control and Prevention:

www.cdc.gov/ticks

International Lyme and Associated Diseases Society:

www.ilads.org

Global Lyme Alliance: www.globallymealliance.org

Lyme Disease Association:

www.lymediseaseassociation.org

HOW TO HELP INVASIVE SPECIES MANAGEMENT

There are many ways that you can help Cliff Island's invasive species management efforts. As always, prevention is the best medicine!

- *Avoid disturbing the native landscape.* Keeping native plant communities intact provides invasive species with fewer opportunities to start growing.
- *Check to see if a plant is invasive before planting it in your yard or garden using information provided by ACE (like this guide!), available at the library and the store, or other reputable sources.*
- *Plant natives instead!* ACE's native plant gardens at the library, the hall, and the wharf have great examples of non-invasive plants that can be grown ornamentally. ACE offers a 20% discount and free delivery for native ornamentals used to replace invasive plants.



Native gardens at the hall (left) and library (right) have great examples of native ornamentals that can be used in your garden! Plants featured in these photos include: ninebark, black-eyed Susan (red variety), and sensitive fern at the hall, and smooth hydrangea at the library.

- *Check your property for invasive species*, especially if you have made changes like digging, upgrading your septic system, planting, or mulching. Bringing soil, plants, or gardening materials onto the island can also bring invasive stowaways in the form of seeds and roots.
- *Remove invasive species when you find them!* To prevent re-growth, remove the entire plant, including the roots. Removing invasive plants before they produce seeds or berries helps prevent them from spreading. If you would like help with removal, contact the ACE invasive species team.

MANAGEMENT WORKS!

Some invasive species are under control on Cliff Island and, with continued management, no longer threaten to devastate native ecosystems. You don't have to go far in coastal Maine to find areas where invasive plants like Asiatic bittersweet, Japanese knotweed, common reed (Phragmites), and others have completely overwhelmed native vegetation. The continuing efforts of the ACE invasives team and the Cliff Island community ensure that Cliff Island's ecosystems have the chance to recover and thrive. Because of these successes, other islands are now following Cliff's example when managing invasive plants!

ADDITIONAL RESOURCES

The Cliff Island library has several resources with more information about invasive plants:

- *Bringing Nature Home: How You Can Sustain Wildlife with Native Plants* by Douglas Tallamy

This book offers an excellent explanation of how invasive plants reduce ecosystem diversity and how those changes affect animals across the food web, from insects to birds to people. It also has advice for landscapers, gardeners, and landowners who want to prevent harmful invasions and help protect native ecosystems, with specific suggestions about native alternatives to invasive ornamental plants.

The library also has field guides and information about *native* plants. Developing a strong native plant “vocabulary” can add to our understanding of and appreciation for Cliff Island’s native vegetation. It also gives us the knowledge to identify invasive plants when we find them!

Articles, brochures, and fact sheets about invasive species, native gardening, ticks and Lyme disease, and other related topics are available at the Library and at the store.

Volunteering with the ACE Invasive Species Management Program is a great way to learn more about Cliff’s invasive species and native plants. Keep an eye out for volunteering events throughout the summer. Thank you for being a part of our team!