Ruby and Elizabeth Cohen Woodlands Wildlife Management Plan

Colchester, Connecticut

Prepared by students of Dr. Ortega's Wildlife Management Course (NRE 3335) at:
the University of Connecticut

Authors:
Kylee Brown, Kelly Horrigan, Jamie Kurowski, Brendan McLean, Nicholas Medeiros,
Madison Platow, Marielle Sawicki, and Joan Tremblay

Introduction

Purpose

The goal of this wildlife management plan is to suggest management strategies that encourage the health of the ecosystem in the Ruby and Elizabeth Cohen Woodlands while reducing the harmful interactions between the park's human users and the wildlife that inhabits it.

Management Objectives

1) Manage ponds on the property to reduce eutrophication and address any potential issues the beavers on the property may present

2) Reduce and manage the human footprint and impact on the property by reducing pet waste, litter, and off-trail hiking.

3) Control the vegetation on the property by removing invasive species like bittersweet, phragmites, and Japanese knotweed, and controlling poison ivy along the trails.

4) Promote the presence of valuable wildlife species and their habitats by managing the meadow habitat effectively and putting in bird and bat boxes.

Property Location and Land Use

- Ruby and Elizabeth Cohen Woodlands (commonly known as Ruby Cohen or Cohen Woodlands) is located in Colchester, Connecticut
- The park's main use is recreational
  - Hiking, fishing, pet walking, general use
- The park also serves as in important habitat for an array of diverse plant and wildlife species

Brief History of the Property

- The land originally belonged to Congressman Rubin “Ruby” Cohen and his wife Elizabeth, until his passing in 1999
- The 111 acre plot of land was purchased by the Town of Colchester in 2000
- Since its opening, the park has grown to 121 acres through a series of land purchases

Property Description

The forest type is categorized as mixed hardwood. There are two water bodies (with a possible third) as well as a creek running throughout. A large open area is present surrounding the parking lot, which allows for wildflower growth.

A considerable amount of the habitat on the property would be best classified as swamp / lowland forest. This habitat type is identified by the wet nature of the soil and presence of specific species, as will be mentioned later in this presentation.

Vegetation: Trees

Shagbark Hickory
Hickory sp.
Sugar Maple
Red Maple
White Ash
Beech
Yellow Birch
Musclewood
White Oak
Red Oak
Oak sp.
White Pine
Spruce sp.

Vegetation: Shrubs/ Herbs

Skunk Cabbage
Christmas Fern
Spotted Wintergreen
Princess Pine
Highbush Blueberry
Multiflora Rose
Japanese Barberry
Japanese Knotweed
Phragmites

Mammals Observed

Large Predators: Bobcat and Coyote

Left: Camera trap photos of a Bobcat
Right: Camera trap photos of a Coyote

White-tailed Deer

Beavers







Species Encountered
Raccoon
Striped Skunk
Grey Squirrel
Cottontail Rabbit
Virginia Opossum (marsupial, not a mammal)
American Mink
Muskrat

Species listed left to right, top to bottom

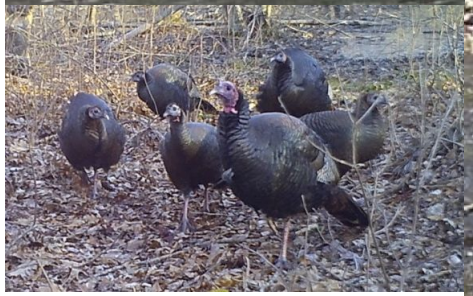
Birds Observed









Chipping & Song sparrows	Red-winged Blackbird
House finch	Tufted titmouse
Red-tailed hawk	Woodpecker sp.
American Goldfinch	White-breasted nuthatch
Eastern Phoebe	Mourning Dove
Pine Warbler	Common Grackle
Cedar Waxwing	Broad-winged Hawk
Red-shouldered Hawk	American Crow
Turkey Vulture	Blue jay
Cardinal	Black-capped Chickadee

Wildlife Management Recommendations

Issue 1: Pond Management

Pond Management - The Issue

- Both ponds can be classified as eutrophic water bodies due to their shallow depth and abundant aquatic vegetation.
- Sedimentation and the build up of organic matter will continue to make the ponds shallower and decrease their recreational angling value.

Pond Management - The Issue

Why Shallow Pond Depth Is a Problem

- Thermal stress on fish population
- Excessive aquatic vegetation
  - Decreases aesthetic appeal
  - Makes fishing very difficult
  - Depletes oxygen levels during winter
  - Decreases predation efficiency for fish species

Management Solutions

Option 1: Leave the Ruby Cohen ponds in their current condition

Pros:

- The ponds still provide habitat for a wide variety of mammal, reptile, amphibian, and bird species.
- This solution requires very little action and investment from the Town of Colchester.

Cons:

- The recreational angling and aesthetic value of the ponds will continue to decrease as the ponds become even more shallow and weedy.
- In time, the ponds will disappear from the landscape as they transition into wetlands.

Management Solutions

Option 2: Restore the Ruby Cohen ponds through a dredging project

Pros:

- Removing sediment from the ponds will increase their depth and reduce aquatic vegetation.
- The ponds' scenic and recreational value will be greatly improved.
- After the restoration, the ponds will still provide habitat for a diverse array of wildlife species.

Cons:

- Dredging is a very expensive and labor intensive management strategy.
- Not a one time solution - dredging and erosion control will need to performed on a continual basis.
- The dredging project will cause a temporary but significant disturbance to park visitors and wildlife.

Recommended Solution

- Depends on the Town of Colchester's priorities
- If the priority is to keep park maintenance costs to a minimum while promoting biodiversity, then we recommend option 1 (leaving the ponds in their current state).
- If the Town prioritizes the recreational and scenic value of the ponds and is willing to invest in them, we recommend option 2 (dredging).

Issue 2: Bird Encouragement

Bird Encouragement - The Issue

Broad-winged Hawk

-Forested Habitat

Great Crested Flycatcher

-Edge Habitat

Eastern Bluebird

-Field Habitat

Management Solutions

Option 1: Habitat Management

It is critical to maintain the current woodlands, clearings, and edge habitats. Therefore, minimal to no changes should be made to the structures of these habitats. However, it is possible to further improve the open habitat as will be discussed later in this presentation.

Option 2: Bird Boxes

The provision of bird boxes could allow for increased habitat suitability for particular species. It is important to note that any boxes should be comprised of untreated wood and not painted, as these have been shown to harm birds. Additionally, adding predator guards would greatly increase the chances of the birds' survival.

(The average price of a suitable bluebird house is around $25, not accounting for the pole and predator guard, which vary in cost considerably.)

Issue 3: Mosquito Reduction and Bat Encouragement

The Issue

Mosquitos

- High prevalence of mosquitoes noted at Ruby Cohen, especially around ponds and wetlands
- Some mosquito species can be both irritating to humans using the park and a potential health threat to people and domestic animals
- Some mosquito species can carry and transmit diseases like:
  - Zika Virus
  - Dog Heartworm
  - West Nile Virus
  - Eastern Equine Encephalitis

Bats

- Bat populations in Connecticut have been declining due to a loss of habitat and the destructive impact of White-Nose Syndrome (WNS)
- The Little Brown Bat, Tri-Colored Bat, and Northern Long-Eared Bat have been hit particularly hard by WNS
- CT DEEP lists all bat species in the state as being of the “Greatest Conservation Need”, with 5 of the 9 bat species in the state listed as Endangered

Management Solutions

Option 1: Manage Mosquitoes Chemically

- Spray mosquitoes with insecticides like resmethrin at night to kill them
- Advantages: Reduced health risks, fewer pest species,
- Disadvantages: Pesticides not always 100% affected, requires repeated treatments (increasing cost), danger to humans, honey bees, and aquatic life, most expensive option
- Cost single treatment:**$30,129 (**for 121 acres)
- Cost Repeated Treatments: **$71,874** (for 6 treatment on 121 acres)

Option 2: Encourage Bat Populations as Natural Mosquito Control

- Install bat houses (a few small, a few big, combination of both) at Ruby Cohen to increase bat populations
- Advantages: improves endangered bat populations, aids in conservation, natural pest control without too many health risks, low cost
- Disadvantages: public fear/hostility to bats, potential exposure to rabies
- Cost of buying and installing 1 small bat house: **$52.36**
- Cost of making and installing 1 large bat house: **$304.63**

Option 3: Put-up Informational Signs

- Warn about health dangers of mosquitoes
- Give tips on avoiding mosquito bites (long-sleeved clothing, bug spray, not staying out after dusk, ect.)
- If put up bat houses, potential signs informing the public and warning about potential rabies threat
- Advantages: Low-cost, helps community
- Disadvantages: doesn't solve problem of mosquitoes and doesn't help in bat conservation
- Cost of printing and laminating 3 flyers: **$8.97**

Recommended Solution

- A combination of options 2 and 3 is recommended, in that informational signs warning the public about the potential health threats of mosquitoes and/or bats should be put-up, and bat houses should also be installed at Ruby Cohen
  Cheapest Cost of both - 1 small bought bat house with flyers: **$61.33**, recommended with 3 bought bat houses (2 small, 1 large) and flyers: **$171.25**
- Option 1 is not recommended as it is a more temporary, expensive solution that presents dangers to the health of the environment and human-users of Ruby Cohen, and it still may not effectively control mosquito populations for long
- Option 2 is recommended as a long term, natural way to solve the mosquito problem because bats are so efficient at eating mosquitoes, and installing bat houses will have the dual benefit of increasing threatened bat populations in the state

Issue 4: Phragmites Management

Phragmites Management

- Phragmites is an invasive, fast growing wetland plant
- Shade out natives species and spread quickly
- Several management strategies but the plant will often come back if all roots and rhizomes (underground stems) are not fully removed

Management Solutions

Option 1: Herbicides

- $97/gallon, license required to apply pesticide, aerial spraying recommended
- Multiple spraying and removal of dead vegetation sessions required
- Could harm/kill native species

Option 2: Prescribed burning

- Does not target underground stems/roots so must be employed alongside herbicides.
- Phragmites may reestablish.
- Risks of fire spreading off site, need to bring in experts

Option 3: Manual removal

- Takes the most time, must be careful to remove all roots and rhizomes

Option 4: No action

- Free, offers some benefits

Recommended Solution

No action

- Most cost effective
- Other solutions are very complex, expensive and time intensive. They are sometimes unsuccessful too
- Some benefits to keeping the phragmites stand: carbon sinks, habitat for some species, take up Nitrogen

Issue 5: Other Invasive Plant Species Management

Invasive Species Management

- Two main species of concern
  - Oriental Bittersweet
  - Japanese Knotweed
- Brief history of both species
  - Highlight potential consequences of unchecked growth
- Management solutions

History of Oriental Bittersweet

- Introduced to United States in 1860
  - By 1920, spread throughout Connecticut and Massachusetts
  - By 1978, 33 states had instances of Oriental Bittersweet
- Known to completely replace native species
  - Ex. American Bittersweet
- Causes damage to established species through mechanical means and competing for resources

Management Solutions (Oriental Bittersweet)

Short-Term

The best short-term solution is regularly removing instances of oriental bittersweet wherever it is found. For this method to work optimally, it is critical to remove the root system of the instance and properly dispose of the plant matter. Store plant matter in metal or plastic containers and dispose of by burning.

This can be done in tandem with the disposal of Japanese knotweed for very little additional cost.

Long-Term

The best long-term solution is to increase observation of the property and monitor for new growths of oriental bittersweet. Early prevention is the only way to prevent the spread of oriental bittersweet to new areas.

Increased observation will require more frequent patrolling of the property, which will increase costs initially, but will save time, effort, and money in the long term.

Recommended Solution (Oriental Bittersweet)

A combination of both short and long term solutions

- The short-term solution of removing, storing, and burning will prevent oriental bittersweet from damaging native species
- The long-term solution of monitoring and preventing new instances of oriental bittersweet will reduce the resources needed to manage its spread

History of Japanese Knotweed

- Introduced to the United States in the late 1800s, approximately 50 year lag time before shifting towards exponential growth
  - One county in Washington State was known to have Japanese knotweed in 1960
  - By 2000, it had spread to over 50 counties in the surrounding area
- As of 2006, countrywide growth rate is still increasing

Management Solutions (Japanese Knotweed)

Short-Term

One short term solution would be the current management strategy in place, the periodical removal and burning of Japanese knotweed.

As this strategy is already in place, continuing it will not add new costs.

Long-Term

Long-term management strategies of Japanese knotweed are still being developed by the wider management community, however mowing or otherwise cutting new/young instances of Japanese knotweed has shown to be effective in limiting spread.

The most expensive aspect of this plan is mowing. A plant/brush mower costs approximately $2000. In addition, gas and the cost of paying an employee to operate will add to the cost.

Recommended Solution

Continue Current Management and Monitor New Growths

- Lack of evidence from studies of management of Japanese knotweed
- Continuing current management will be sufficient without adding additional costs
- Mowing/cutting new growths will prevent new instances from establishing and causing further damage

Issue 6: Pet Waste and Litter Management

Pet Waste and Litter

- There is a lack of waste management
- No trash cans or dumpsters
- Pet waste is found along side the trails
- There is plastic pet waste bags that are around the trail to a lack of place to properly dispose of them.
- This is an issue near the picnic tables since there is no place to dispose of garbage
- Problem for wildlife

Management Solutions

Short-Term

Addition of signs- *leave only footprints* campaign

Long-Term

Trash and recycling bins- placed along trails and around the picnic area. This is a way to get the community involved

A dumpster should be added by the parking lot so people throw away garbage before leaving and it can be used to empty other trash receptacles into.

Recommended Solution

Dumpster by the parking lot

- Simplest and best solution
- Gives park goers a place to dump waste
- No need for labor to collect garbage from trash cans around the park
- The ability to add trash receptacles is there
- A more expensive option but necessary to decrease littering and pet waste pollution

Issue 7: Trail Maintenance

Trail Maintenance

Problems

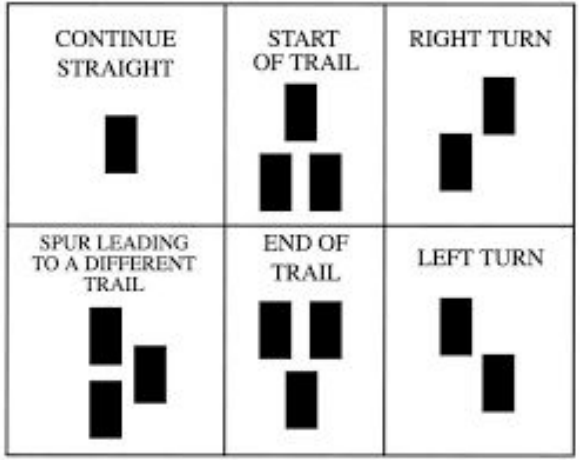
- Mud
- Debris on trail
- Hanging branches
- Water
- Faded and incorrect trail markers
- Incorrect maps

Management Solutions

- Physical labor
  - Manually removing debris
  - Building footbridges
  - Improving trail blazes
  - Designing new maps

Recommended Solution

- Physical labor can be performed by volunteers or Scouts
- Use spray paint to improve trail blazes
- Debris removal
  - Rake leaves
  - Move branches off of trails
  - Cut and remove overhanging branches
- Use debris removed from trails to
  - Line trails and guide hikers on path
  - Cover muddy and watery spots on the trail
    - Purchase of more wood may be required
  - Create microhabitats for wildlife
- Create a new trail map



Issue 8: Poison Ivy Management

Poison Ivy

- The team noticed an abundance of poison ivy along the trails, which can cause issues for people with allergies to poison ivy
- Upon contact with the skin, the toxin urushiol found in poison ivy leaves and stems can cause allergic reactions in people sensitive to poison ivy, symptoms can include itchiness, rashes, burning sensations and blisters
- Urushiol can cause contact dermatitis either through direct contact or through indirect contact though the clothes, objects, pets, or even inhalation of smoke of burning poison ivy, and the oils can remain potent for weeks

Management Solutions

Public safety information:

- Signage along trails:
  - Tips for identification to help prevent contact between the public and the plant
  - Tips on how to treat poison ivy if exposed
    - Washing with cold water and an alkaline soap
    - Calamine Lotion
    - When to seek medical attention

Physical Eradication:

- This option is difficult as poison ivy must be hand dug and all of its roots removed to be effectively eradicated
- Not only would the cost of the labor required to do this be high, but it would also present a health risk to the laborers removing the plant

Eradication via herbicides:

- Chemical controls like herbicides could be sprayed on the poison ivy along the trails, such as glyphosate, amitrole, or 2, 4-D
- Pro: Safer trails for human users
- Con: Herbicides can affect non-target species such as killing native plants

Recommended Solution

- We recommend installing signage along the trails to make the public aware of the problem and how to identify the plants, as well as providing tips on how to treat poison ivy rashes.
- The Town of Colchester should also use herbicides to kill existing plants and prevent the species from spreading to new areas of the property. While this option could present a danger to native plant species, it is difficult and costly to remove poison ivy by hand, and if applied properly and selectively along the trails, chemical controls should manage the threat to human health while minimizing the threat to the environment.

Issue 9: Meadow Management

Meadow Management

Throughout much of the Northeastern United States there has been a decline in open habitats such as meadows, fields, and early successional woodlands. The regional decline in this habitat type has directly contributed to the decreasing populations of many species, in some cases even rendering them locally endangered.

Such species include:
Least Shrew, Barn Owls, Grasshopper Sparrow, Long-eared Owl, Northern Harrier, Red-headed Woodpecker, Upland Sandpiper, Vesper Sparrow, and Yellow-breasted Chat

Management Solutions

Option 1: Maintain the open meadow habitat and alter the seasonal timing of mowing to ensure habitat viability

a) Mowing during the early fall (late September)

b) Mowing during the late winter (late February)

Option 2: Promote a slightly older meadow via mowing over a period of years instead of annually

Additional Information

Budget	Option 1	Option 2	Option 3	Option 4	Recommended
Pond Management	$0	Possibly exceeding $500,000	-	-	Option 1: $0
Phragmites Management	$846	$480	$900	$0	Option 4: $0
Invasives Management	-	Cost of labor	-	$2000, plus fuel/labor	Option 1, 2, 3: Cost of labor
Pet Waste & Litter	$140	$800+ $35/month	$120	-	Option 2: $800+ $35/month
Trail Maintenance	$18	$5,869.98	-	-	Option 1 and 2: $5887.98
Poison Ivy Management	$700	$64	-	-	$764
Meadow / Field Habitat	$0	$0	-	-	Option 2: $0
Bird Encouragement	$0	~$200-$300	-	-	Option 1 and 2: ~$200-$300 (for 4 bluebird houses)
Bats and Mosquitoes	$30,129 - $71,874	$52.36 - $304.63	$8.97	-	$30,190.33 - $72,187.60
Total	**-**	**-**	**-**	**-**	**$38,312.31-80,359.58**
Consultation Fee (at $120/hr, for 200.75 hours)	-	-	-	-	$24,090
Grand Total	**-**	**-**	**-**	**-**	$62,402.31-104,449.58 (not including pond excavation)

Potential Funding Sources/Service Projects

NRPA Grants

- **Park Access and Environmental Resilience and Health**
  - $300,000-500,000 for 2.5 years
  - https://nrpa-grants.secure-platform.com/a/page/learn-more/Resilient-Park-Access-Grant-and-Coaching
- **Waste Management Charitable Giving**
  - https://www.wm.com/us/en/inside-wm/social-impact/community-impact

Contacts

Contact Name	Title/Description	How to Reach them	Contribution towards the project
Dr. Beth Lawrence	Assistant Professor Department of Natural Resources and the Environment, UConn	beth.lawrence@uconn.edu	Expert on wetlands, gave phragmites management advice

Disclaimer

It must be noted that this wildlife management plan was completed by a group of students as a part of a class project. While all of the recommendations provided in this report are based on real research, professionals in wildlife management should be consulted before any of the recommendations are used by the landowners.

Acknowledgements

Jay Gigliotti

Dr. Miranda Davis

Dr. Morty Ortega

Residents of Colchester

In Conclusion....

To conclude this report, we would like to acknowledge that the Ruby and Elizabeth Cohen Woodlands is a wonderful property that the Town of Colchester has preserved. All of the recommendations for management action above may help improve the property for the wildlife and humans who use the park if taken, but on the whole, the property is home to a thriving ecosystem and is a wonderful space for the humans and wildlife that use it alike. Its wetlands and meadow habitat are especially important habitat for many species of conservation concern, and we are glad the Town of Colchester is preserving it as a space for humans to enjoy and wildlife to inhabit.


Questions?


Thank You!