Morristown National Historical Park
Focused Condition Assessment

National Park Service
U.S. Department of the Interior

Natural Resource Stewardship and Science
Natural Resource Condition Assessment Program

Creating Effective Deer Exclosures
Lessons Learned from Long-Term Monitoring in Morristown

Countless habitats in the Northeast region of the United States are being threatened by stressors that lower native biodiversity and natural resource quality. The main stressors near developed areas are encroaching invasive plants and chronic high levels of white-tailed deer (Odocoileus virginianus) herbivory, in addition to the lack of adequate regeneration.

One common solution for protecting native plants is the exclosure fence, which eliminates deer herbivory and potentially the spread of some invasive plants. Originally constructed as a tool for understanding the effects of deer herbivory on vegetation, the Morristown exclosures provide insights about placement and monitoring that can help ensure deer exclosures are successful.

Size

- Small exclosures have greater longevity and lower risk of failure. The larger the size of the exclosure, the greater the chance of falling limbs from storms or other damage to the fence, which allow access for deer.

- Many small exclosures scattered throughout the landscape are more likely to remain intact and can equate to the same area of a large tract with less maintenance concerns. Additionally, when fences of small exclosures are damaged, they tend to collapse inward, still protecting the vegetation.

Recommended Size: Approximately 4m x 4m

An example of a small exclosure.

Location

- Exclosures placed in intact forests, such as interior late-successional forests, that experience reduced intensity or frequency of disturbances have greater potential to successfully conserve native flora.

- Placement in successional forests, edge habitats, or near extensive invasive plant colonies can lead to lower floristic quality and even pose greater risk to the exclosure structure.

Recommended Location:

- **Intact and interior late-successional forest**
- **Away from edge habitats**
- **Away from extensive invasive plant colonies**

An example of an intact and interior late-successional forest.

Maintenance

Maintaining a vegetation exclosure.

- Even one small breach in an exclosure fence can allow deer in and compromise the protection of native plants within.

- Staff should inspect and maintain the exclosures regularly and frequently. It is important to determine how many exclosures can be effectively managed given staffing resources.

  Recommended Maintenance:

  - **Once per month**
  - **After each severe storm**

Monitoring

- Natural resource professionals skilled in plant identification should regularly monitor vegetation within exclosures.

- We recommend completing a census of target native plants along with high intensity sampling of canopy cover, canopy species assemblage, mid-story species assemblage, and proximity to invasive areas.

  Recommended Monitoring:

  - **Annual at minimum**

  - **Same time each year within growing season**

  - **Include measurements of:**

    - **Canopy cover**

    - **Percent vegetation cover (all strata)**

    - **Proximity to invasive areas**

Woody plant regeneration observed within an exclosure.

Red maple seedling observed within an exclosure.