Terrestrial Invasive Species Management Plan (ISMP):
A Framework for Response
Shrubby Bushclover at Daketown State Forest

Section 1: Project Summary

General Information	
Site Name: Daketown State Forest	**County:** Saratoga County
Address (if different): 261 Daketown Rd Greenfield Center, NY 12833	**Permit(s)/Permission(s) Acquired?** Yes, NYS DEC Temporary Revocable Permit
Parking Lot Latitude/Longitude: 43.103030, -73.923883	**Property Owner Name, Title, and Contact:** Rob Ripp, Region 5 State Forest TRP Contact, robert.ripp@dec.ny.gov, (518) 897-1291
Total Parcel Size (acres): 506 acres	
Worksite Size (acres): 0.33 acres	**Project Leader Name, Title, and Contact:** Sam Schultz, Terrestrial Invasive Species Coordinator Ss986@cornell.edu

*****Remember to obtain proper permissions before completing any response project. Please attach any permits/permissions completed for this project as an appendix.**

Conservation Goal:

☐ Delineate & assess a conservation value ☐ To prevent and protect a conservation value
☒ Local Eradication ☐ Post-Treatment Monitoring ☐ Containment
☐ Suppression ☐ Exclusion ☐ Restoration

Response Type:

☒ Initial Response ☒ Follow-up Monitoring ☐ Crew Assistance Program Project
☐ Research Action ☐ Restoration ☐ Volunteer Engagement

Site Description: The 506-acre Daketown State Forest is conveniently located about 20 minutes west of the heart of Saratoga Springs. The property hosts a variety of tree species, as well as several large rustic foundations and property walls lining the trails. The property features hiking, primitive camping, biking, hunting, trapping and watchable wildlife. This area is a low traffic state forest with log trails extending throughout the land. There are a couple of clear-cut openings where infestations of Autumn Olive and the Bush Clover have occurred. The trails are used mostly by hunters in the spring and fall.

DEC manages these lands in accordance with the management activities described in the Saratoga Warren Draft Unit Management Plan (PDF). In addition to management objectives, the UMP contains detailed information on natural features, recreational infrastructure, geology, natural and human history, habitats, wildlife, fisheries and much more. If you have questions and/or comments about this UMP, please email 5.ump@dec.ny.gov.

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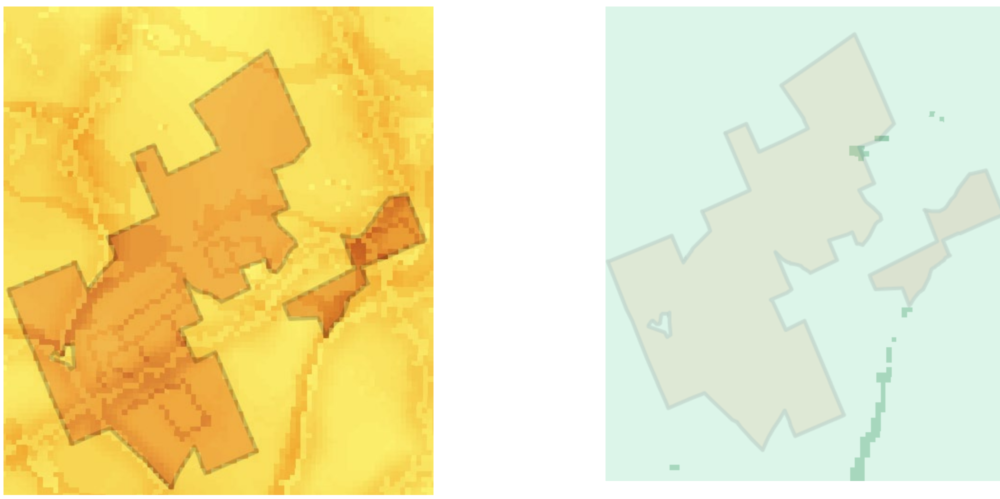
Project Description: Spades, shovels, loppers, and grubbing tools were used to extract the roots of the Shrubby Bush Clover. Goldenrod and other native plants were on site in the immediate area. The site will need multiple retreatments to eradicate the plant locally using this lesser management practice. The site is socially valuable and ecologically significant.

Project Significance: This site is socially valuable and is used by various state agencies for training loggers on sustainable forestry practices and invasive species. Shrubby bushclover is also a Tier 2 species within the Capital Region PRISM and is one of only five reports in NYS. The plant was historically planted by the Saratoga Tree Nursery but has since been determined to be an invasive species.



Figures 1 & 2: *Screenshots taken from the NYNHP Terrestrial Prioritization Mapper, on the left is the comprehensive score map and on the right is the ecological score map. The darker shades show more significant areas.*

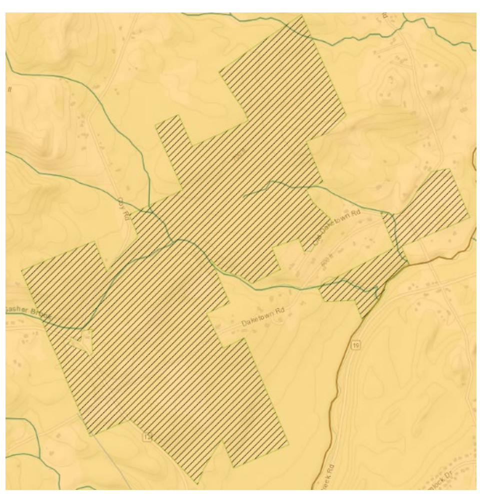


Figure 3: *Screenshot from the NYS DEC Environmental Resource Mapper. The state forest delineated by the crosshatching and is in the vicinity of bats listed as endangered or threatened.*

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Appendices (if applicable):

1. If Invasive Plant Management Decision Analysis Tool (IPMDAT) tool was utilized for this project, please attach result as an appendix.

2. Has pesticide use been proposed for this project? Attach any pesticide labels as an appendix.
   - Aquatic Pesticide Permits: https://www.dec.ny.gov/chemical/8530.html
   - Pesticide Laws and Regulations: https://www.dec.ny.gov/chemical/112881.html

3. If relevant to a larger project, please include associated master plan if relevant to a larger project (link file URL or attach as an appendix).

Map: Develop a map of the response area that shows the geography and has the searched area, any iMapInvasives points, polygons and/or lines for presence or non-detection. Multiple maps may be added for multiple species or locations. All response actions should be uploaded to the CR-PRISM SharePoint Tracker and iMapInvasives.

Figure 4: *The brown area indicates the area of treatment from 07/29/2021 and size of the infestation.*

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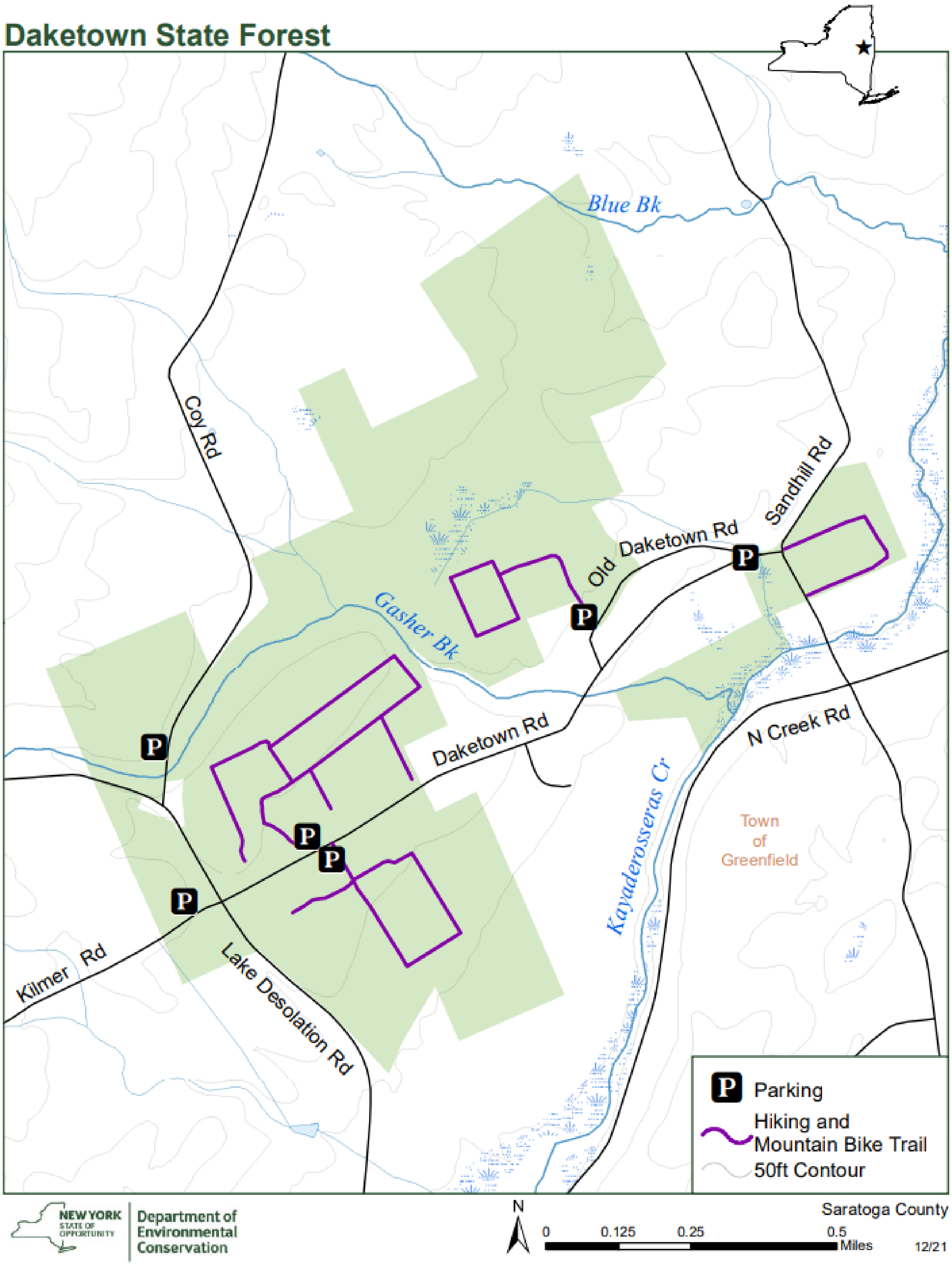
Daketown State Forest



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Section 2: Implementation Summary

Response: The target species for this site is Shrubby bushclover (*Lespedeza bicolor*), Tier 2 with a threat ranking of moderate. In 2020, the first year of treatment the infestation was estimated to be 0.22 acres with about 60% cover. Manual removal with spades, shovel, lopper and hedge trimmers to remove root balls from satellite populations and limit regrowth on the bushes. Vegetative material above and below the surface removed was left to solarize. The site will need multiple retreatments to eradicate the plant locally using this management practice.

Disposal and Disturbance: Biomass is left on site to decompose. Site disturbance was high in the first few years of treatment with root grubbing. From year 4 onward, disturbance is low because removals only involve seedlings.

Restoration: Goldenrod and other native plants were on site in the immediate area. Plant species should be propagated from the local area and native seed banks should be encouraged. Follow up will occur late spring.

Post-Treatment Monitoring: The Capital Region PRISM staff will visit this site on an annual basis, either once or twice during a field season. First visit should be planned for July to ensure treatment previous to seed set. A follow-up visit can be conducted for native seed restoration in the fall.

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Treatment, Post-Treatment (Monitoring), and Restoration Calendar: Briefly outline when response, post-treatment monitoring, restoration efforts, and possibly research efforts are anticipated to occur with a date range. When completed check the box next to the targeted date range with an initial.

	Year 1 (2020)	Year 2 (2021)	Year 3 (2022)	Year 4 (2023)	Year 5 (2024)
Late Spring	☐	☐ Shovel, bush pruner, loppers, pruners, and weed-wrench to cut all plants down, digging out root balls and piled on site	☐	☐	☐
Summer	☐	☐ Shovel, bush pruner, loppers, pruners, and weed-wrench to cut all plants down, digging out root balls and piled on site	☐ Grubbers to cut all plants down, digging out root balls & removing stems	☐ Grubbers to dig out all saplings	☐ 7/23/24 Grubbers to dig out all saplings
Early Autumn	☐ Loppers, pruners, and weed-wrench to cut all plants down and piled on site.	☐ Shovel, bush pruner, loppers, pruners, and weed-wrench to cut all plants down, digging out root balls and piled on site	☐	☐	☐

	Year 6 (2025)	Year 7	Year 8	Year 9	Year 10
Late Spring	☐	☐	☐	☐	☐
Summer	☐ 7/15/25 Hand pulling all saplings, Autumn olive also treated	☐	☐	☐	☐
Early Autumn	☐	☐	☐	☐	☐

Notes: Make notes as necessary and keep the documentation simple. Use plant phenology to determine ideal time for response actions and restoration efforts. Document anything that did not work with recommended adjustments in the post season report.

First year of treatment, high cut larger stumps about three feet above ground. The second year of treatment, cut off suckers. The third year, there was 90% mortality for those larger stumps with only about 5 suckers being seen per plant that did not die. This has been a very effective treatment, focus for the third year onwards will focus on removing any saplings that arise from the seedbank.

Goal Progress: ☐ Goal Unlikely ☐ Regressing ☐ No Change ☒ Progressing ☐ Goal Met

Follow-up Plan: ☒ Further Treatment Planned ☒ Further Monitoring Planned ☐ Monitoring Phase Complete ☐ Further Management Not Planned ☐ Other: ____________

Native Species Recovery: ☐ Absent ☐ Sub-Dominant ☒ Dominant

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Section 3: Project Implementation - Year 1 (2020)

Treatment Schedule: Plan out when and how treatments will occur. Attach and reference separate spreadsheet if more space is needed for additional species. Include the Tier level & Threat ranking of each species.

Treatment Window (MM/DD/YY)	Target Species Common & Scientific Name	Tier & Threat Rank	Response Method	Size of Infestation (Acres)*	Percent Cover (%)	Species Abundance	Acreage Treated	Disposal Method
07/24/2020	Shrubby bushclover (*Lespedeza bicolor*)	2, M	Dig, Pull, Cut	0.22 acres	60%	Dense	0.22 acres	Left on site

***REMINDERS**:
- Obtain proper permissions before completing any management project. Please attach any permits/permissions completed for this project as an appendix.
- If infestation is linear, use miles to measure "size of infestation"

End-of-Year Summary:

Time Spent on Site (Hours)/ # of Staff on Site: NA

# of Volunteers (if any)/Total Hours of Volunteer Hours on Site (# of volunteers x Time spent on site) NA

Explain any successes, failures, or needed adjustments. Including restoration, missed treatments, not monitoring, etc.
- Seedlings, stems, and plants that are regrowing from previous treatment efforts were dug up using shovels, pulled using grubbing tools, and cut by loppers to weaken the roots
- Trimming the bush down seemed to weaken the root system some and limit regrowth. There were some suckers that sprouted, but continuously cutting the suckers will continue to weaken the plant. One visit was not enough for a noticeable difference. Recommend that there be 2 to 3 visits a year to continue to battle them.

Goal Progress: ☐ Goal Unlikely ☐ Regressing ☒ No Change ☐ Progressing ☐ Goal Met

Follow-up Plan: ☐ Further Treatment Planned ☐ Further Monitoring Planned ☐ Monitoring Phase Complete ☐ Further Management Not Planned ☐ Other: ____________

Native Species Recovery: ☐ Absent ☐ Sub-Dominant ☐ Dominant

Adjustments Needed:
Add more visits to schedule to help better beat down the bush clover.

Year 1 Notes:

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Section 3: Project Implementation - Year 2 (2021)

Treatment Schedule: Plan out when and how treatments will occur. Attach and reference separate spreadsheet if more space is needed for additional species. Include the Tier level & Threat ranking of each species.

Treatment Window (MM/DD/YY)	Target Species Common & Scientific Name	Tier & Threat Rank	Response Method	Size of Infestation (Acres)*	Percent Cover (%)	Species Abundance	Acreage Treated	Disposal Method
07/29/21, 08/04/21	Shrubby bushclover (*Lespedeza bicolor*)	2, M	Dig, Pull, Cut	0.33 acres, or a 563-foot perimeter around the main infestation	40-50%	Dense	0.22 acres	Left on site

End-of-Year Summary:

Time Spent on Site (Hours)/ # of Staff on Site: NA

# of Volunteers (if any)/Total Hours of Volunteer Hours on Site (# of volunteers x Time spent on site) NA

Explain any successes, failures, or needed adjustments. Including restoration, missed treatments, not monitoring, etc.

- 2 trips were made, both with the goal of limiting satellite populations and trimming large stems down to cause stress.
- Seedlings, stems, and plants that are regrowing from previous treatment efforts were dug up using shovels, pulled using grubbing tools, and cut by loppers to weaken the roots

Goal Progress: ☐ Goal Unlikely ☐ Regressing ☐ No Change ☒ Progressing ☐ Goal Met

Follow-up Plan: ☒ Further Treatment Planned ☐ Further Monitoring Planned ☐ Monitoring Phase Complete ☐ Further Management Not Planned ☐ Other: ____________

Native Species Recovery: ☐ Absent ☒ Sub-Dominant ☐ Dominant

Adjustments Needed:

- Trim large bushes, in the sun, down to roots to cause stress and solarization, plants trimmed down in shade suckered more, so dig up root balls instead.
- If plants look small enough to pull (seedling/shoots) hand pull or grub will be effective
- For the plants that need to be cut above the root base, 2-3 trips per year will be necessary to weaken the root systems enough.

Year 2 Notes:

- Satellite plants 90% removed, about 50% of yearling stems removed and 30 large root stumps remain in the main infestation. Shoveling as much as possible of yearling and seedling plants will yield best results.
- Hypothesis: Bushes in the sun store nutrients in their leaves to promote further leaf growth, compared to bushes in the shade that hold nutrients in the roots to create larger root systems, which causes more suckering if trimmed in the shade and stress if trimmed in the sun.

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Section 3: Project Implementation - Year 3 (2022)

Treatment Schedule: Plan out when and how treatments will occur. Attach and reference separate spreadsheet if more space is needed for additional species. Include the Tier level & Threat ranking of each species.

Treatment Window (MM/DD/YY)	Target Species Common & Scientific Name	Tier & Threat Rank	Response Method	Size of Infestation (Acres)*	Percent Cover (%)	Species Abundance	Acreage Treated	Disposal Method
07/28/22	Shrubby bushclover (*Lespedeza bicolor*)	2, M	Cut, pull, dig	0.24 acres	20%	Sparse	0.24 acres	Left on site

End-of-Year Summary:

Time Spent on Site (Hours)/ # of Staff on Site: NA

# of Volunteers (if any)/Total Hours of Volunteer Hours on Site (# of volunteers x Time spent on site) NA

Explain any successes, failures, or needed adjustments. Including restoration, missed treatments, not monitoring, etc.

- Seedlings, stems, and plants that are regrowing from previous treatment efforts were dug up using shovels, pulled using grubbing tools, and cut by loppers to weaken the roots
- Trip made 7/28/2022. Population significantly lower with high mortality on larger stumps that were high cut first year of treatment and had suckers cut the second year. There were eleven established adults that had suckers after two years of treatment but no more than five per plant. Those individuals were completely removed. Plants that were hand-pulled last year and placed back on disturbed soil re-sprouted. No plants had gone to seed and young seedlings were a result of the seed bank. All plant material was left on site to decompose.
- 7/28/2022 - 220 Stems, 59 Shrubs, and 11 root balls removed

Goal Progress: ☐ Goal Unlikely ☐ Regressing ☐ No Change ☐ Progressing ☐ Goal Met

Follow-up Plan: ☐ Further Treatment Planned ☐ Further Monitoring Planned ☐ Monitoring Phase Complete ☐ Further Management Not Planned ☐ Other: ____________

Native Species Recovery: ☐ Absent ☐ Sub-Dominant ☐ Dominant

Adjustments Needed:

- Continue to grub seedlings and saplings that arise from seedbank. Use shovels to reduce soil disturbance and tamp down soil following removal. Monitor for swallowwort and remove any plants found. Continue to restore area with goldenrod, deer tongue grass and other native species found in the area.

Year 3 Notes:

- Swallow-wort was detected (~12 plants) with one plant having gone to seed (Seed pods were removed). Three adult mulleins had already gone to seed and were removed. Bristly lady's thumb, *Persicaria longiseta* detected at the beginning of the trail clearly being transported via traffic along the trail. Additionally, high stump cuts on buckthorn (~3 ft) had no suckering the next year. Goldenrods will be important in native restoration and progress on reclaiming disturbed areas should be monitored.

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Section 3: Project Implementation - Year 4 (2023)

Treatment Schedule: Plan out when and how treatments will occur. Attach and reference separate spreadsheet if more space is needed for additional species. Include the Tier level & Threat ranking of each species.

Treatment Window (MM/DD/YY)	Target Species Common & Scientific Name	Tier & Threat Rank	Response Method	Size of Infestation (Acres)*	Percent Cover (%)	Species Abundance	Acreage Treated	Disposal Method
7/25/23	Shrubby bushclover (*Lespedeza bicolor*)	2, M	Grubbing	0.59 acres	20%	Sparse	0.59 acres	Left on site

***REMINDERS**:
- Obtain proper permissions before completing any management project. Please attach any permits/permissions completed for this project as an appendix.
- If infestation is linear, use miles to measure "size of infestation"

End-of-Year Summary:

Time Spent on Site (Hours)/ # of Staff on Site: NA

# of Volunteers (if any)/Total Hours of Volunteer Hours on Site (# of volunteers x Time spent on site) NA

Explain any successes, failures, or needed adjustments. Including restoration, missed treatments, not monitoring, etc.

- Small saplings were removed via grubbing by TIS team and Rich McDermott throughout the area previously known. Search was conducted outside known infested area, and no new stems were found. Swallowwort was not detected this year. Some of the autumn olive within the treated area were cut back. No large individuals found, continue to work to remove saplings emerging from the seedbank.

Goal Progress: ☐ Goal Unlikely ☐ Regressing ☐ No Change ☐ Progressing ☐ Goal Met

Follow-up Plan: ☐ Further Treatment Planned ☐ Further Monitoring Planned ☐ Monitoring Phase Complete ☐ Further Management Not Planned ☐ Other: ____________

Native Species Recovery: ☐ Absent ☐ Sub-Dominant ☐ Dominant

Adjustments Needed:

Continue to treat any saplings that arise within the treatment area. Continue to communicate with Rich McDermott when treatments occur in this state forest. Continue to restore area with goldenrod, deer tongue grass and other native species found in the area.

Year 4 Notes:

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Section 3: Project Implementation - Year 5 (2024)

Treatment Schedule: Plan out when and how treatments will occur. Attach and reference separate spreadsheet if more space is needed for additional species. Include the Tier level & Threat ranking of each species.

Treatment Window (MM/DD/YY)	Target Species Common & Scientific Name	Tier & Threat Rank	Response Method	Size of Infestation (Acres)*	Percent Cover (%)	Species Abundance	Acreage Treated	Disposal Method
7/23/24	Shrubby bushclover (*Lespedeza bicolor*)	2, M	Grubbing	0.55 acres	15%	Sparse	0.55 acres	Left on site

***REMINDERS**:
- Obtain proper permissions before completing any management project. Please attach any permits/permissions completed for this project as an appendix.
- If infestation is linear, use miles to measure "size of infestation"

End-of-Year Summary:

Time Spent on Site (Hours)/ # of Staff on Site: NA

# of Volunteers (if any)/Total Hours of Volunteer Hours on Site (# of volunteers x Time spent on site) NA

Explain any successes, failures, or needed adjustments. Including restoration, missed treatments, not monitoring, etc.
- Small saplings were removed via grubbing by TIS team throughout the area previously known. Search was conducted outside known infested area and no new stems were found. Swallowwort was not detected this year. Some of the autumn olive within the treated area were cut back. No large individuals found continue to work to remove saplings emerging from the seedbank. Continue to restore area with goldenrod, deer tongue grass and other native species found in the area.

Goal Progress: ☐ Goal Unlikely ☐ Regressing ☐ No Change ☐ Progressing ☐ Goal Met

Follow-up Plan: ☐ Further Treatment Planned ☐ Further Monitoring Planned ☐ Monitoring Phase Complete ☐ Further Management Not Planned ☐ Other: ____________

Native Species Recovery: ☐ Absent ☐ Sub-Dominant ☐ Dominant

Adjustments Needed:
- Continue to treat any saplings that arise within the treatment area. Continue to communicate with Rich McDermott when treatments occur in this state forest.

Year 5 Notes:
- Post-treatment monitoring was conducted via transects throughout the known infestation site as well as around the perimeter of the area. Rotating staff between areas after surveying to determine if any plants were missed.

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Section 3: Project Implementation - Year 6 (2025)

Treatment Schedule: Plan out when and how treatments will occur. Attach and reference separate spreadsheet if more space is needed for additional species. Include the Tier level & Threat ranking of each species.

Treatment Window (MM/DD/YY)	Target Species Common & Scientific Name	Tier & Threat Rank	Response Method	Size of Infestation (Acres)*	Percent Cover (%)	Species Abundance	Acreage Treated	Disposal Method
7/15/25	Shrubby bushclover (*Lespedeza bicolor*)	2, M	Hand pulling	0.76 acres	10%	Sparse	0.76 acres	Left on site

***REMINDERS**:
- Obtain proper permissions before completing any management project. Please attach any permits/permissions completed for this project as an appendix.
- If infestation is linear, use miles to measure "size of infestation"

End-of-Year Summary:

Time Spent on Site (Hours)/ # of Staff on Site: 5 staff, 3 hours

# of Volunteers (if any)/Total Hours of Volunteer Hours on Site (# of volunteers x Time spent on site) NA

Explain any successes, failures, or needed adjustments. Including restoration, missed treatments, not monitoring, etc.
- Small saplings were removed via hand pulling by TIS team throughout the area previously known. Search was conducted outside known infested area and no new stems were found. Swallowwort was not detected this year. Some of the autumn olive within the treated area were cut back. No large individuals found continue to work to remove saplings emerging from the seedbank. Continue to restore area with goldenrod, deer tongue grass and other native species found in the area.

Goal Progress: ☐ Goal Unlikely ☐ Regressing ☐ No Change ☐ Progressing ☐ Goal Met

Follow-up Plan: ☐ Further Treatment Planned ☐ Further Monitoring Planned ☐ Monitoring Phase Complete ☐ Further Management Not Planned ☐ Other: ____________

Native Species Recovery: ☐ Absent ☐ Sub-Dominant ☐ Dominant

Adjustments Needed:
- Continue to treat any saplings that arise within the treatment area. Continue to communicate with state forester when treatments occur in this state forest.

Year 6 Notes:
Post-treatment monitoring was conducted via transects throughout the known infestation site as well as around the perimeter of the area. Rotating staff between areas after surveying to determine if any plants were missed.

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