Conservation Grazing

Responses of Plant Communities to the Sustainable Use of Livestock

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Acknowledgments

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  Taravale Farm (B. Armata)
  Applewood Acre Sheep (R. Embler)
  Sap Bush Hollow Farm (J. & A. Hayes)

• Our Dogs
  Tory
  Jinx
  Sarah
Stocking Density: 5 - 10 tons/ha (~2 - 4 tons/acre)

Rotation Rate: ~ 2 - 3 days
Presence of Mycorrhizae at Normanskill Farm

Ugr = Ungrazed; IRG = Intensively Rotated; Ogr = Unrotated (overgrazed)

Data: Lauren Holland
Effectiveness Against Invasive Plants

*Lythrum salicaria* in Grazed (E) and Reference (R) paddocks

Change in cover by *Lythrum salicaria* in ungrazed (Ref) and grazed (Exp) paddocks. Berne, NY, June-August, 2008.
Species richness (S), in Grazed (red) and Reference (black) quadrats. Newcomb’s Farm, August 2008.

ANOVA, $H_0$: Mean $S_{\text{grazed}} = $ Mean $S_{\text{ref}}$; $F = 61.38$; $df = 159$; $p<0.001$. 
### Median Number of Flower Clusters/ Plant

<table>
<thead>
<tr>
<th>% Cover</th>
<th>Grazed</th>
<th>Ungrazed</th>
<th>Grazed - Ungrazed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>27.5</td>
<td>22.17</td>
<td>-19.38%</td>
</tr>
<tr>
<td>Final</td>
<td>8.5</td>
<td>26.83</td>
<td>215.68%</td>
</tr>
</tbody>
</table>

- 69.09%  21.02%

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Data & Photo: Nicole Lewis
Mile-a-Minute (*Persicaria perfoliata*)
Multiflora Rose
Reclaiming Our Pastures
Approximate Surface Area of a scalene hemi-ellipsoid

\[ S \approx \frac{1}{2} \left( 4\pi \left[ \left( \frac{1}{2} A^p \frac{1}{2} B^p + \frac{1}{2} A^p C^p + \frac{1}{2} B^p C^p \right) / 3 \right]^{1/p} \right) \]

\[ p \approx 1.6075 \]

\( \frac{1}{2} A = a^* \)

\( \frac{1}{2} B = b^* \)

\( C = c^* \)

* Adopted from radius a, b, c in Knud Thomsen approximation of scalene ellipsoid

Graphics: Erin Reddix-LaBarge
Multiflora rose – Seasonal changes in PSA, Normanskill Farm, June – August 2011

PSA ($m^2 \pm SE$)

- Grazed
- Ungrazed

$\Delta U = -10.0\%$
$\Delta G = -56.1\%$

Sampling Interval

Pre  Mid  Post
Effects of Grazing on Biodiversity

% Difference in Species Richness

\[100\% (S_G - S_U)/S_U\]
Outcomes and Implications

• Grazing may influence plant community “health”
• Grazing seems to suppress some invasive plant species
• Grazed areas consistently had higher biodiversity than ungrazed areas
• Future directions – We are developing a program to allow young farmers to graze State land without charge as a management approach