The Use of Meat Goats in Woodlot & Sugar Bush Management

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Why use “Goats-In-The-Woods”? 
Too Much of the “Wrong” Thing

American beech, striped maple

- Excludes desired hardwoods
- Limits access
- Reduces forest diversity
### Arnot’s Typical Forested Understory Per Acre

<table>
<thead>
<tr>
<th>Species</th>
<th>2002 Seedlings</th>
<th>2002 Saplings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar Maple</td>
<td>5074</td>
<td>24</td>
</tr>
<tr>
<td>American Beech</td>
<td>4169</td>
<td>2489</td>
</tr>
<tr>
<td>Red Maple</td>
<td>3396</td>
<td>6</td>
</tr>
<tr>
<td>Striped Maple</td>
<td>1614</td>
<td>741</td>
</tr>
<tr>
<td>White Ash</td>
<td>1563</td>
<td></td>
</tr>
<tr>
<td>Red Oak</td>
<td>989</td>
<td></td>
</tr>
<tr>
<td>Black Birch</td>
<td>804</td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17610</strong></td>
<td><strong>3311</strong></td>
</tr>
</tbody>
</table>
The reason for woodlot ecosystem imbalance?

Largely because of an overabundance of white-tailed deer!
Horses and ponies

- Mobile upper lip allows them to select leaves
- Some ponies very apt to girdle bark
- Do not require much shelter, especially pony breeds
- Some pony breeds inclined to founder
Sheep – Intermediate feeders – However, prefer grass although they will also graze forbs and browse. Graze close to ground.
Goats are:

- Very social animal - Learn their eating habits from their herd
- Appear to have a higher dry matter intake than many other livestock species
- Larger liver for processing secondary compounds (tannins, etc.)
- Salivary glands equipped to bind tannins – tannins do not cause them to respond with appetite depression as in other animals
- Depending on feed history may possess rumen microbes to break down some secondary compounds such as alkaloids
Intermediate feeders – prefer forbs and browse but also graze grasses – crave variety –> on the move
Goats are more agile than sheep but also more susceptible to internal parasites found in conventional pastures.
Mouth width in goats, sheep and cattle

0.8  

0.9  

1
Mobile upper lip allows goats to be selective eaters. Sheep do not have mobile upper lip.
Age? Sex?

- Goats under one year of age have only “baby teeth”
- Less able to girdle hard bark
- Safer for valuable timber and sugar maples
- Less effective at eradicating beech
- Mixtures of females and uncastrated males → leads to kids/lambs
Adapts to Common Goat Producer Issues

- What to do with late Spring kids born too late for the Easter market
- Holding for the fall/winter market demand
- Barn capacity
- Land availability
- Parasite loading on conventional pastures
- Cash flow
Conventional Controls
Chemical or Mechanical

Comparable to herbicide treatment

$100 to $150 per acre
What Was Tested?

2001

Feeding Regime

- 5 vs. 20 per paddock
- Supplemental (16% CP) vs. Rotation feeding

2002

Diet Quality

- 12% vs. 14% protein
- Low vs. Normal fiber

2003

Farm Systems

- Juvenile vs. Mature – but had to be moved faster!
- Milled vs. farm mixed (16% CP)
Field Set - Up

- 42” electro-net fence - 150 x 75 ft area (\textasciitilde 1/4 acre)
- Charger and 12v battery
- Adequate grounding
- Weather shelter
- Juveniles – groups of 20 for 7 days
- Mature – groups of 20 for 3 to 4 days
What We’ve Learned
Comparison of Sapling Mortality by “Best” Treatment

<table>
<thead>
<tr>
<th>Species</th>
<th>2001 16% CP, mixed, juvenile</th>
<th>2002 12-14% CP, wethered, all male, juvenile</th>
<th>2003 Farm systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beech</td>
<td>60%</td>
<td>20%</td>
<td>? &gt;50%</td>
</tr>
<tr>
<td>Striped Maple</td>
<td>99%</td>
<td>80%</td>
<td>=&gt; 95%</td>
</tr>
<tr>
<td>Black Birch, Ostrya, etc.</td>
<td></td>
<td>58%</td>
<td>=&gt;80%</td>
</tr>
</tbody>
</table>
Preliminary Conclusions

- Typically no damage to mature crop trees
- Consistently high mortality of striped maple saplings
- Beech mortality variable
- Goats like bark of: Striped Maple, Red Maple, Hemlock
- Goats “avoid” bark of: Sugar maple, Black Birch, Black Cherry, Red Oak, Aspen
Preliminary Conclusions (con’t)

- 1+ acre paddock with 20 goats for efficiency
- Respectable goat weight gains with compensatory feeding
- Very labor intensive for goat producers
- “Tree” people can learn to care for goats
Economic Considerations

- Herbicides are $130/acre with 50 acres
- Fixed versus variable costs
- Economy of scale – better for smaller woodlots
- Sensitive to stocking and feed costs
- Estimate that the goat producer breaks even at $110/acre
- Organic alternative?
Send in the goats in first

- It can save on equipment expense
- Operation
- Repairs
- Inaccessible terrain
  - Steep
  - Marshy
  - Environmentally Sensitive
  - Obstructions
Reclaim vineyards

Goats ready to move to next paddock in overgrown vineyard

3 years of once annual browsing
Reclaiming Pastures/Hay fields/Crop Land
How you manage goats/sheep on browse and woods depends on whether you want to eradicate the browse or sustain it

- When will you graze it?
- How much defoliation will you allow?
- How often in a grazing period
If trying to sustain browse:

- Don’t browse it early in the season before the root reserves exhausted from putting out spring growth have been replenished,

- Don’t browse it late in the season after leaves have fallen when goats will tend to girdle trunks and branches,

- Don’t defoliate it more than ~66%,

- Don’t return onto it before leaf growth has recovered
Browse usually deteriorates in feed quality over a growing season slower than conventional pastures. However, in timber lots and sugar bush there will usually not be sufficient browse to sustain animals without supplemental feeding.
Provide shelter

- Acts as a “security blanket or homing area
- Direct sun and precipitation
  - Many dairy goat breeds are “thin skinned”
  - Boer goats/sheep do well with minimal shelter
- Issues
Supplemental Feed

- Trace mineral salt always available! Choose one suitable for your species (i.e. no or very low copper for sheep)
- Feed - Depends on management plan
- Yes if:
  - Stripping bark in woods
  - Growing kids/lambs– maximize gains
- Not necessary if:
  - Defoliating dense brush
  - Rotating paddocks frequently
- Helps capture for management
Water

- Movable tanks
- Flexible black plastic tubing
- Springs, ponds –
  - access?
  - Fecal contamination
Health Observations

- Bright and thrifty
- Compete for feed
- Move around normal
- Body condition
- Weight gain or loss
  - Easier with kids/lambs
  - Adults not as critical
Check your animals often!

- Are all of them there?
- Accidents can happen
  - Goats especially like to climb
- Is there enough charge on the fence?
  - 3000 volts if possible
- Is the fence still standing?
Vaccinations

- What specific ones recommended for species?
  - Clostridium C & D for goats
- Tetanus
- Rabies
Predators

- Guard dogs
- Llama and donkeys
- Night lot
- Electric fence – taller “electro nets” can sometimes be a reliable deterrent
Meningeal worm (deer, brain worm)  
*Parelaphostrongylus tenuis*

- Parasite of White Tail Deer
- Small ruminants are an abnormal host (sheep, goats, llama, alpaca)
- Parasite has **indirect** life cycle – snails and slugs needed for infection
Larva travel from intestinal tract to spinal cord to brain, causing

Nerve damage (can include lameness, gait abnormality, itching)

→ can be as extreme as paralysis or even DEATH

→ Animals maintain appetite
Specific toxic plants that “feed back” does not work well on Black Cherry in the wilt/stress stage

- All Cherries and Prunus family – leaves, bark, etc.
- Amount consumed, specific plant
Yew

Rhododendrons, Azaleas, Mountain laurels
Cash Flow for producer

- Contract clearing
  - Locating collaborator
  - Communication
- Inexpensive summer forage
- Allows producer to stockpile forage at home for fall/winter
- Agricultural assessment
Disadvantages to Producer

- Animals not on the home farm
  - Travel time to feed and monitor
  - Travel cost
- Animal security
  - Escape – liability
  - Rustling
- Depredation
- Extra equipment expense
  - Fencing, handling and shelter
Choose the “natural-eco” way of dealing with invasive brush!

Goats are quiet, fast and efficient, they do not pollute air, water or soil!

They eat brush and invasive species, and they eat them fast!

ECO BRUSH TRIMMERS

Korana Stipetić, DVM
and Greg Hornbrook, A.S.
ECO BRUSH TRIMMERS SERVICES

- Establishing goals with the landowner
- Land/invasive growth assessment
- Brush management plan
- Goat brush management

- Finalizing the goals
  - Brush control
  - Brush clearing / eradication
  - Establishing silvopasture
MEET THE GOATS

CONSTANCE

CHANCE

LADY

NUISANCE

SQUIGLES

ZUMBA
CONTACT:
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Key Messages for Practitioners

- Need adequate browse + supplement as needed
- Maintain animal health
- Monitor your forage regularly
- Avoid wet areas – deer brain worm!!
Questions?