

Analyzing Economic Impacts of Leafy Spurge

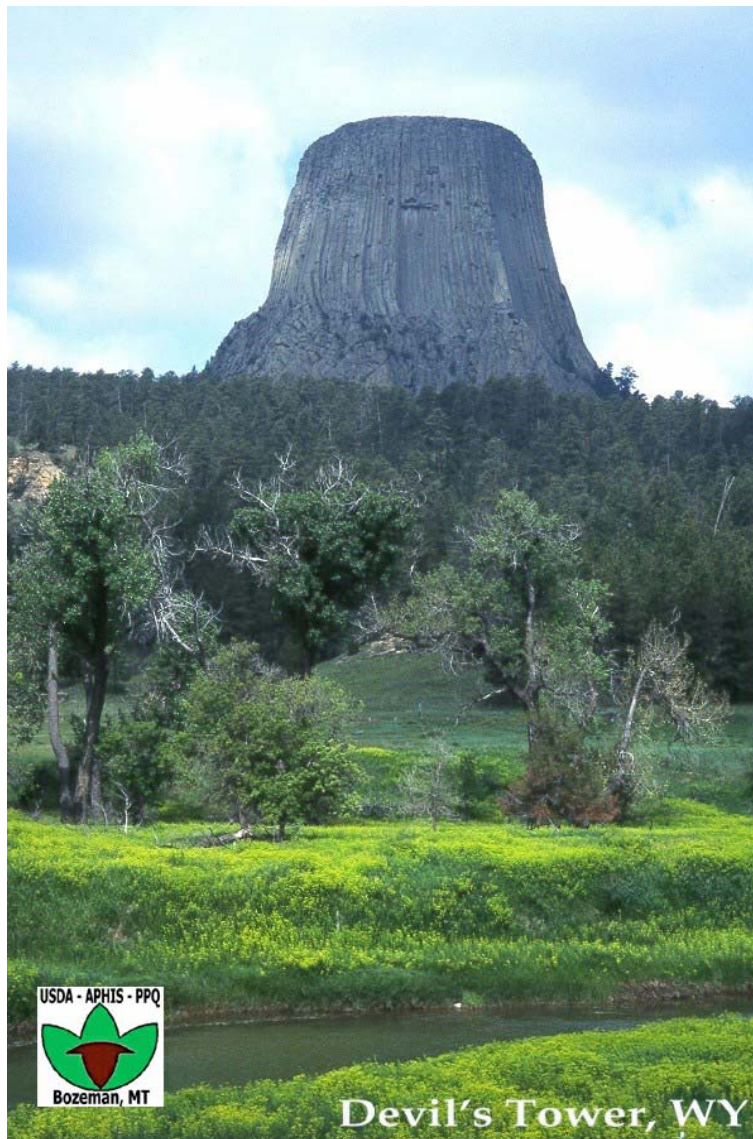
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Leafy Spurge

- ☞ Invasive perennial weed native to Europe and Asia
- ☞ Widely established on untilled lands, especially in Northern Great Plains
- ☞ Infestations exceed 1.6 million acres in 4-state region (MT, ND, SD, WY)
- ☞ More than 1.1 million acres in North Dakota alone



Devil's Tower, WY

Bio-Economic Model

- Estimate **biophysical effects** of leafy spurge infestations
- Estimate economic values associated with biophysical effects (**direct economic impacts**)
- Estimate economic effects on other sectors (**secondary economic impacts**)

Leafy Spurge – Major Effects

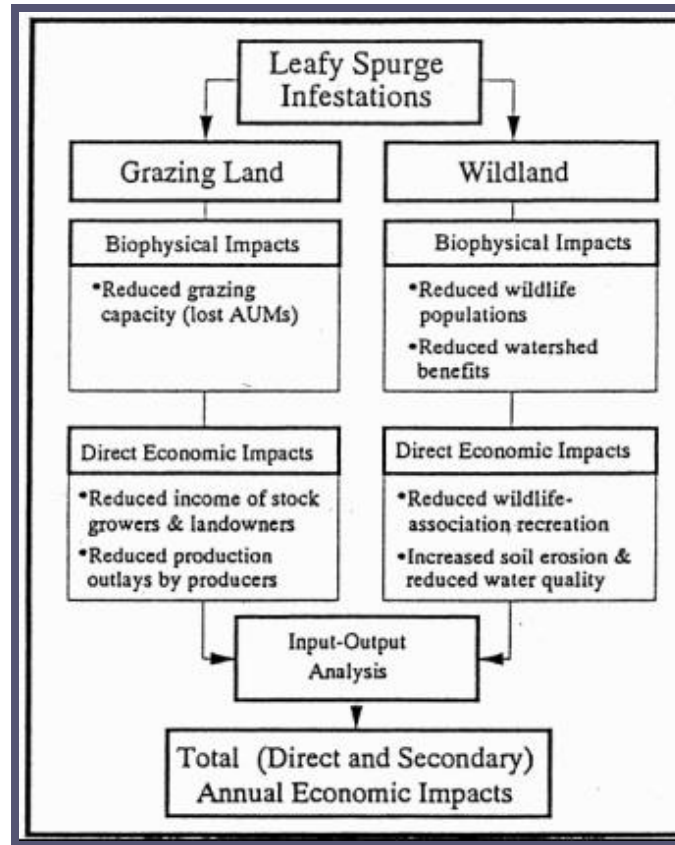
☞ Grazing land

- Loss of carrying capacity
- Smaller beef herds
- Reduced revenue for ranchers

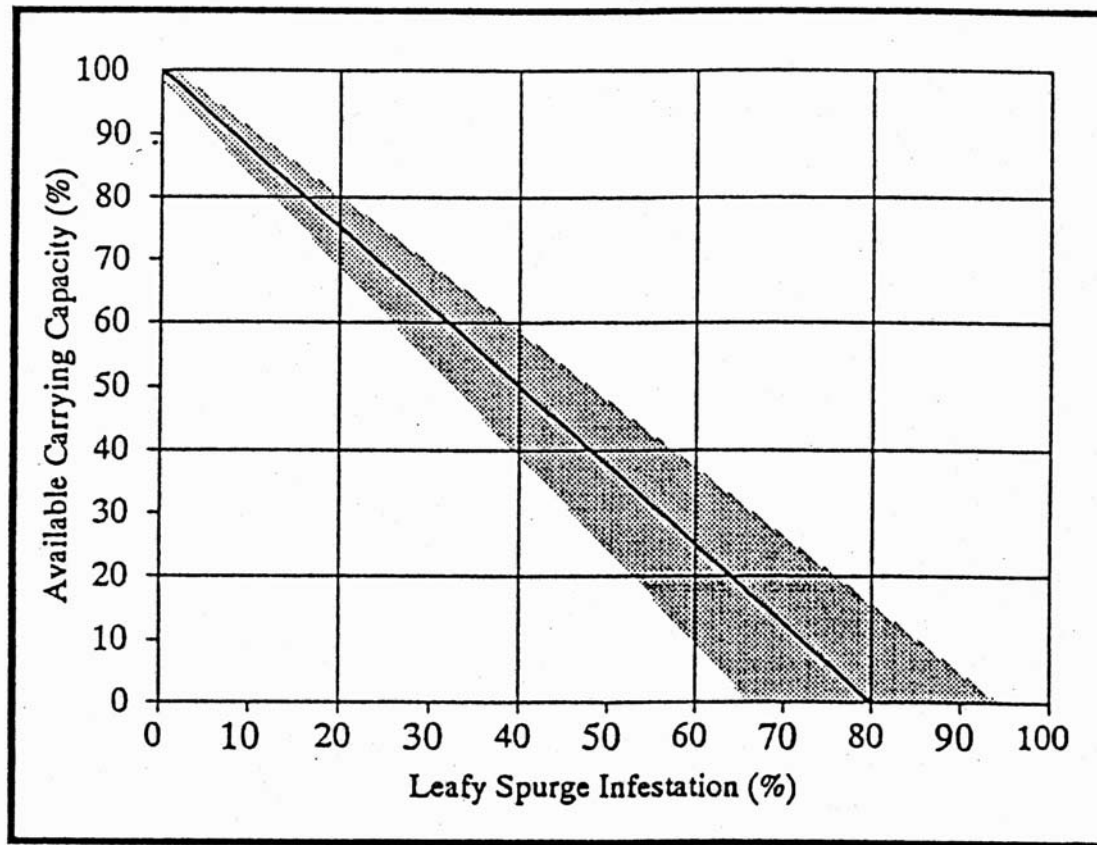
☞ Wildland

- Reduced wildlife habitat value
- Reduced watershed benefits

Bioeconomic Model of Leafy Spurge Infestation



Reduced Carrying Capacity for Cattle Associated with Various Levels of Leafy Spurge Infestation



Grazing Impacts (Biophysical Effects)

- ☞ Lost grazing in 4-state region = 736,000 AUMs
- ☞ Enough for a herd of 90,000 cows

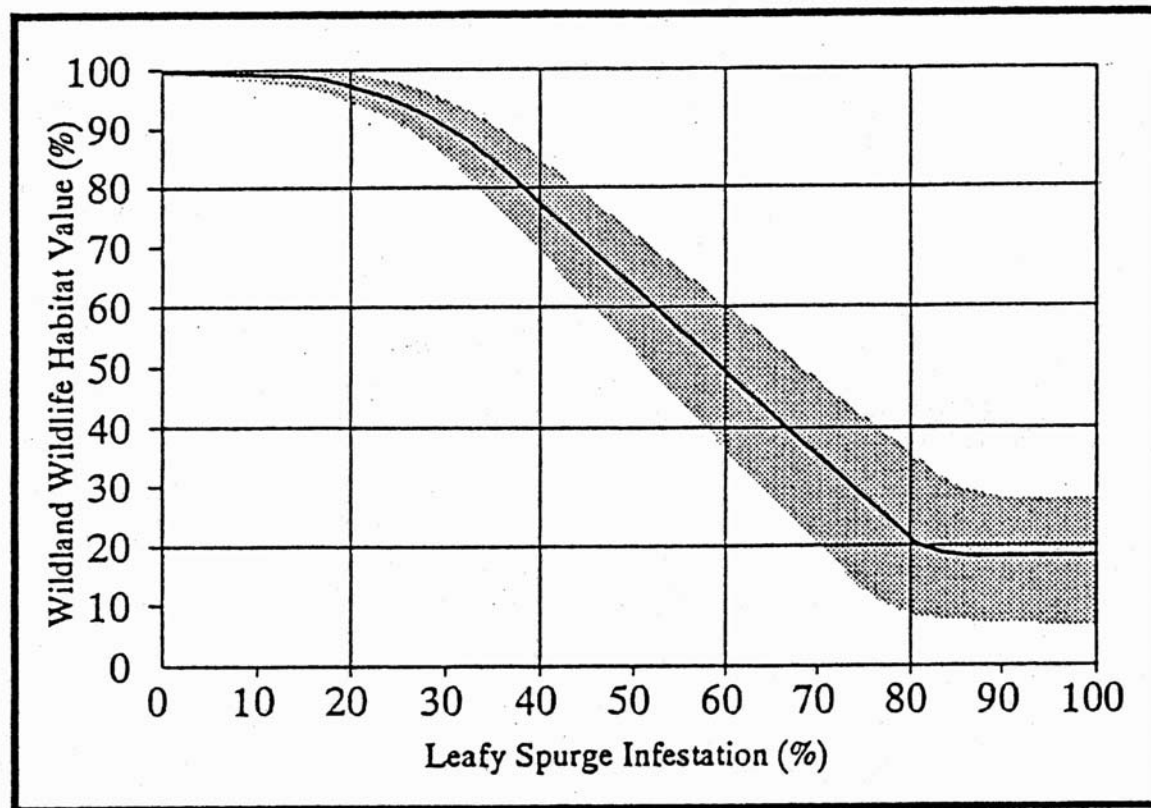
Grazing Impacts (Direct Economic Effects)

- \$37.1 million annually in lost livestock sales
- \$26.4 million annually in reduced livestock production expenditures and \$10.7 million in reduced personal income

Wildland Impacts

- ☞ Leafy spurge displaces native plants and reduces plant diversity, resulting in:
 - Reduced wildlife habitat value
 - Increased water runoff and soil erosion

Relationship of Wildland Wildlife Habitat Value and Leafy Spurge Infestations on Wildland



Wildland – Direct Economic Effects

- ☞ Reduced wildlife – associated recreation expenditures - \$2.4 million annually
- ☞ Reduced watershed values - \$1.0 million annually

Secondary Impacts

- ☛ Secondary impacts are those experienced by other sectors of the regional economy through the multiplier process
- ☛ Estimated using an input-output (I-O) model for regional economy
- ☛ I-O model measures linkages among sectors (industries) and estimates secondary impacts resulting from direct economic effects

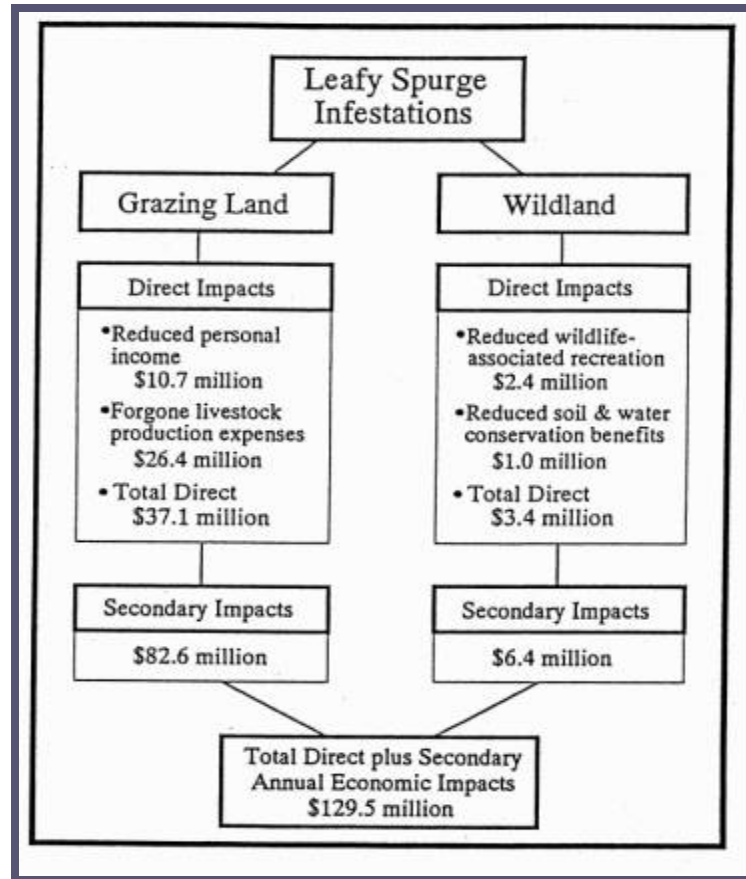
Secondary Impacts - Grazing

| | |
|-------------------|-------------------|
| Direct Impacts | ☛ \$37.1 million |
| Secondary Impacts | ☛ \$82.6 million |
| Total Impacts | ☛ \$119.7 million |

Secondary Impacts - Wildland

| | |
|-------------------|---------------|
| Direct Impacts | \$3.4 million |
| Secondary Impacts | \$6.4 million |
| Total Impacts | \$9.8 million |

Annual Economic Impacts of Leafy Spurge in MT, SD, ND & WY



Use of Impact Information

- ☛ To convey the seriousness of the problem to policy makers at state and national levels
- ☛ To gain/maintain support for research to develop and demonstrate improved control measures



Valley City, ND





USDA - APHIS - PPQ

Bozeman, MT



USDA - APHIS - PPQ

Bozeman, MT









USDA - APHIS - PPQ



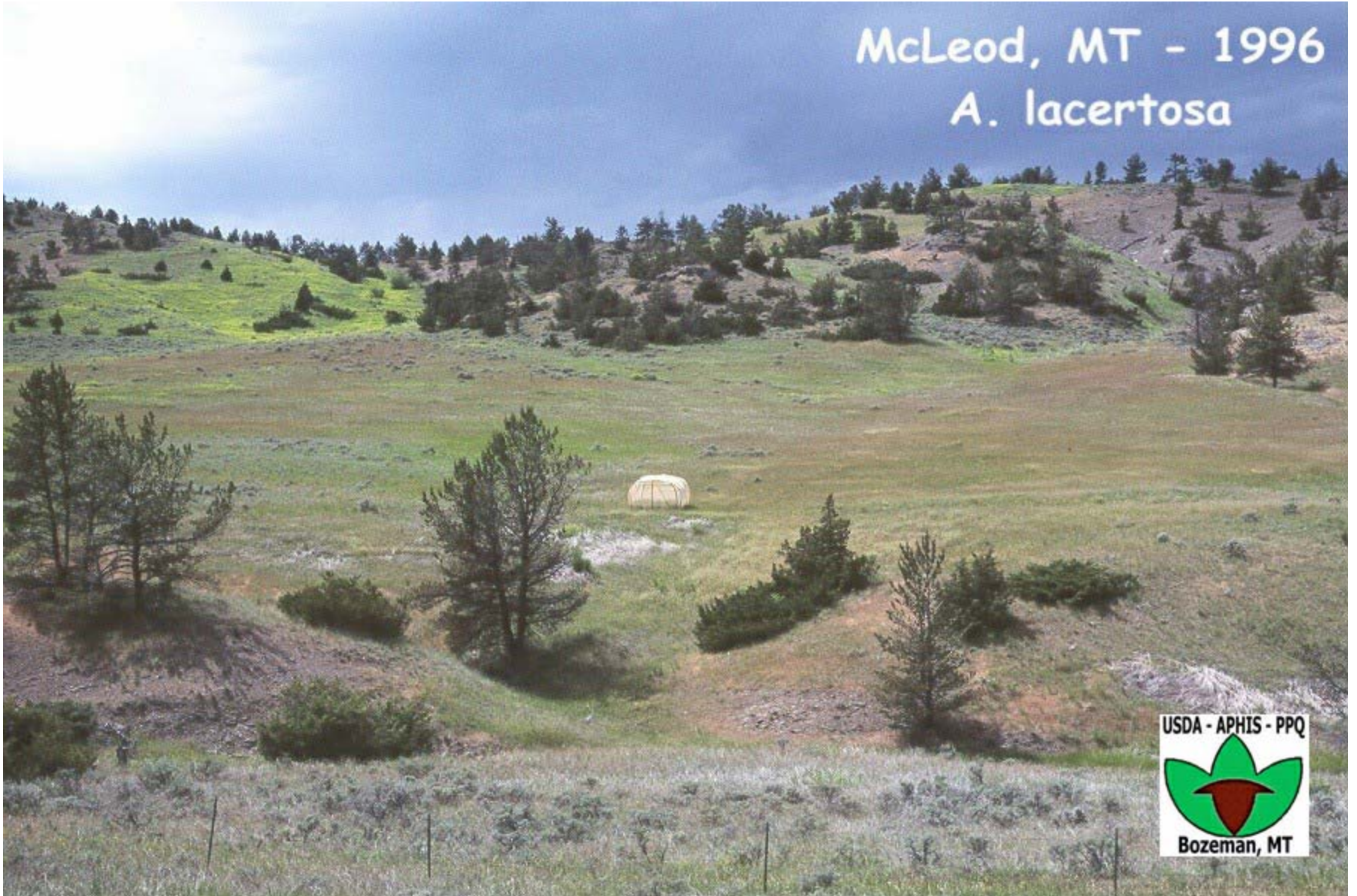
Bozeman, MT

McLeod, MT - 1994

A. lacertosa



McLeod, MT - 1996
A. lacertosa



MT-USFS, Bridgers - 1994
A. nigriscutis



MT-USFS, Bridgers - 1996

A. nigriscutis





