

National Park Service
U.S. Department of Interior

Northeast Temperate Network



Why Monitoring Matters

Tracking the Health of Saratoga NHP

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Inventory & Monitoring Program

What is Monitoring?

"The collection and analysis of repeated observations or measurements to evaluate changes in condition and progress toward meeting management goals."

- Measurements are repeated to determine trend
- Monitoring is done for a specific purpose
- Results will effect an action of some kind

Why Monitor?

- Better understanding of ecological systems.
- Improve management and preservation of natural resources
- Share knowledge to engage, educate, and involve decision makers, stakeholders, and the public in managing and protecting park



Vital Signs



Saratoga's Vital Signs

- Air Quality
- Breeding Birds
 - Forest Breeding Birds
 - eBird
- Forest Health
- Forest Salamanders
- Invasives—Early Detection
- Freshwater Wetlands
- Water Chemistry/Water Quality
- Landscape Change
- Phenology
- Climate

Saint-Gaudens' Vital Signs

- Air Quality
- **Breeding Birds**
 - Forest Breeding Birds
 - eBird
- **Forest Health**
- Forest Salamanders
- Invasives—Early Detection
- Freshwater Wetlands
- Water Chemistry/Water Quality
- **Landscape Change**
- Phenology
- Climate

Breeding Birds

- 2008 Annual Report available online



The background is a stylized, high-contrast illustration of a forest landscape. The scene is rendered in a limited palette of black, white, and light gray. In the foreground, several dark, conical evergreen trees are scattered across the bottom. The middle ground is dominated by a large, light-colored bird, possibly a hawk or eagle, shown in profile with its wings fully extended as if in flight. The bird's feathers are depicted with fine, parallel lines, giving it a textured appearance. The background consists of a dense forest of trees, represented by a complex pattern of horizontal and vertical lines that create a sense of depth and texture. The overall style is graphic and artistic, resembling a woodcut or a digital illustration with a focus on form and light/shadow.

Who's twittering at the park?

Forest breeding bird diversity at Saratoga.

Who's twittering at the park?

- Citizen science monitoring project
- Early morning point counts-listen and look for birds
- Track trends in abundance and diversity; evaluate habitat condition.
- Species list for each park



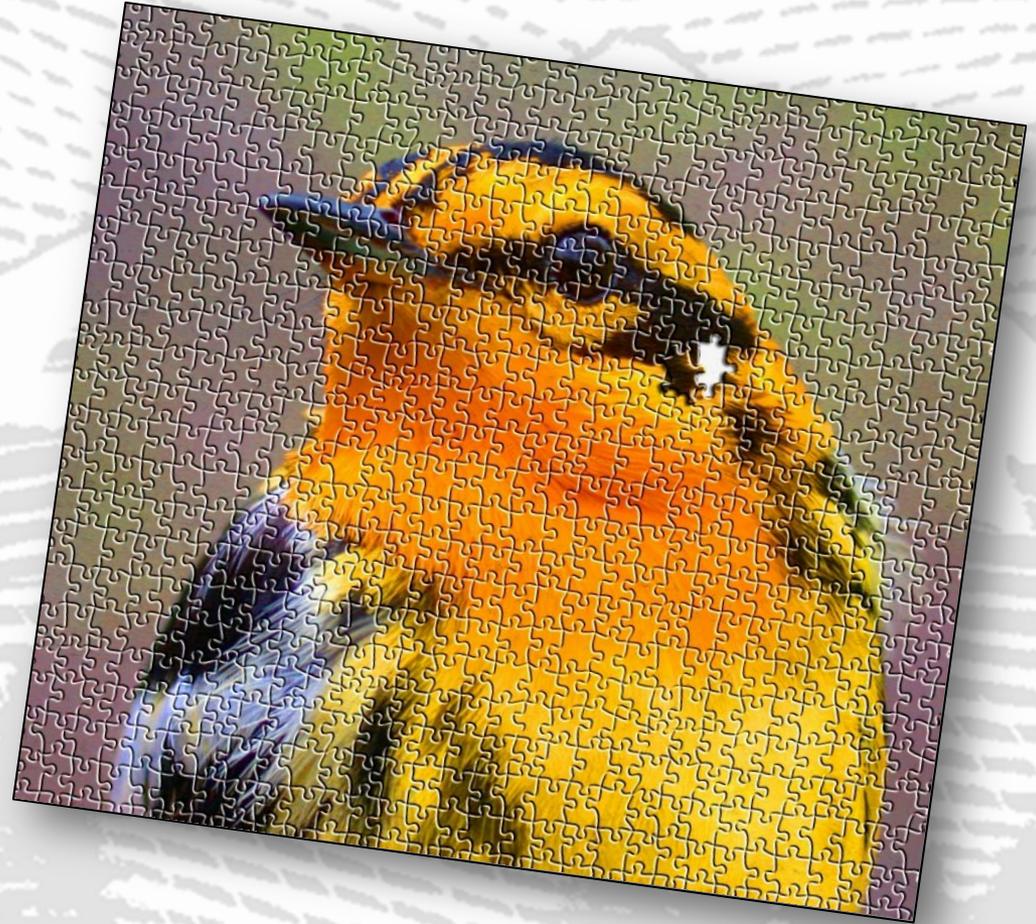
Who's twittering at the park?



- 10 Most Common Birds:
 - Red-winged Blackbird
 - Bobolink
 - American Crow
 - Black-capped Chickadee
 - Ovenbird
 - Song Sparrow
 - Field Sparrow
 - Common Yellowthroat
 - American Goldfinch
 - American Robin



- Bird observations are like puzzle pieces:
 - When do red-winged blackbirds arrive each spring?
 - How quickly is the range of European Starlings expanding?
 - Where do migratory birds winter or breed?

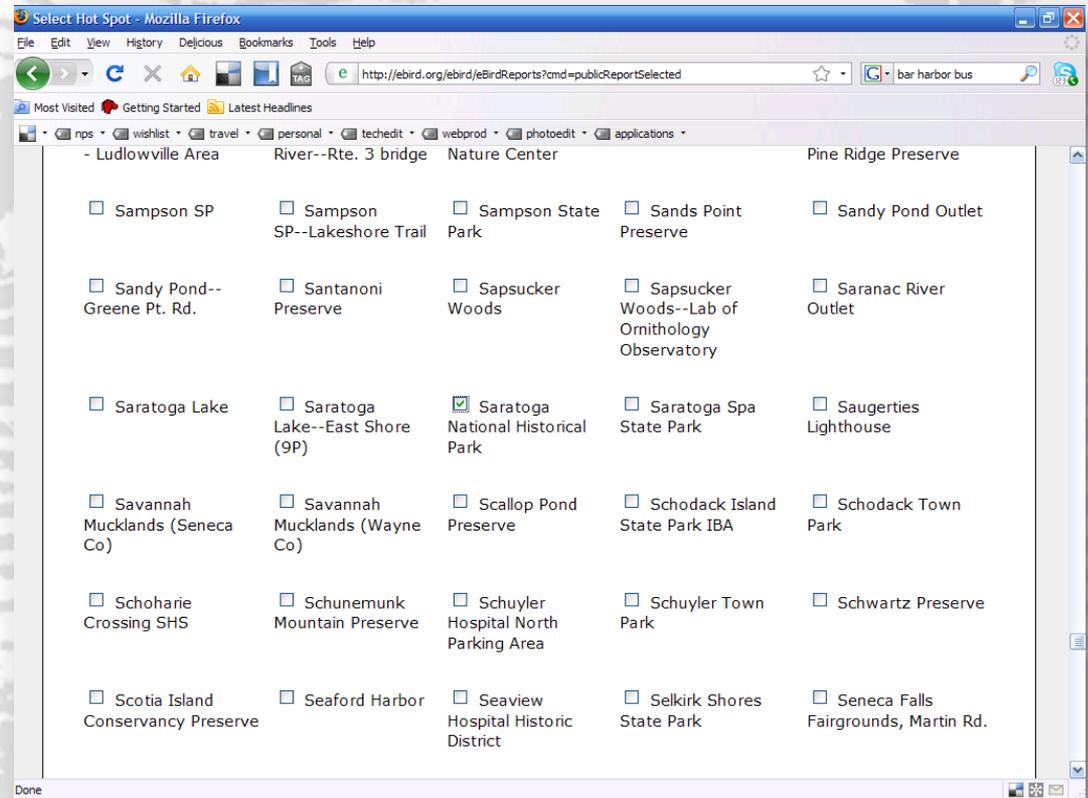


Your sightings are pieces that can help ornithologists put together the parts of that huge puzzle.



- Four key pieces of information:

- Where you were birding
- How you were birding (e.g, what kind of birding you were doing)
- What species you saw or heard
- How many individuals of each species were recorded

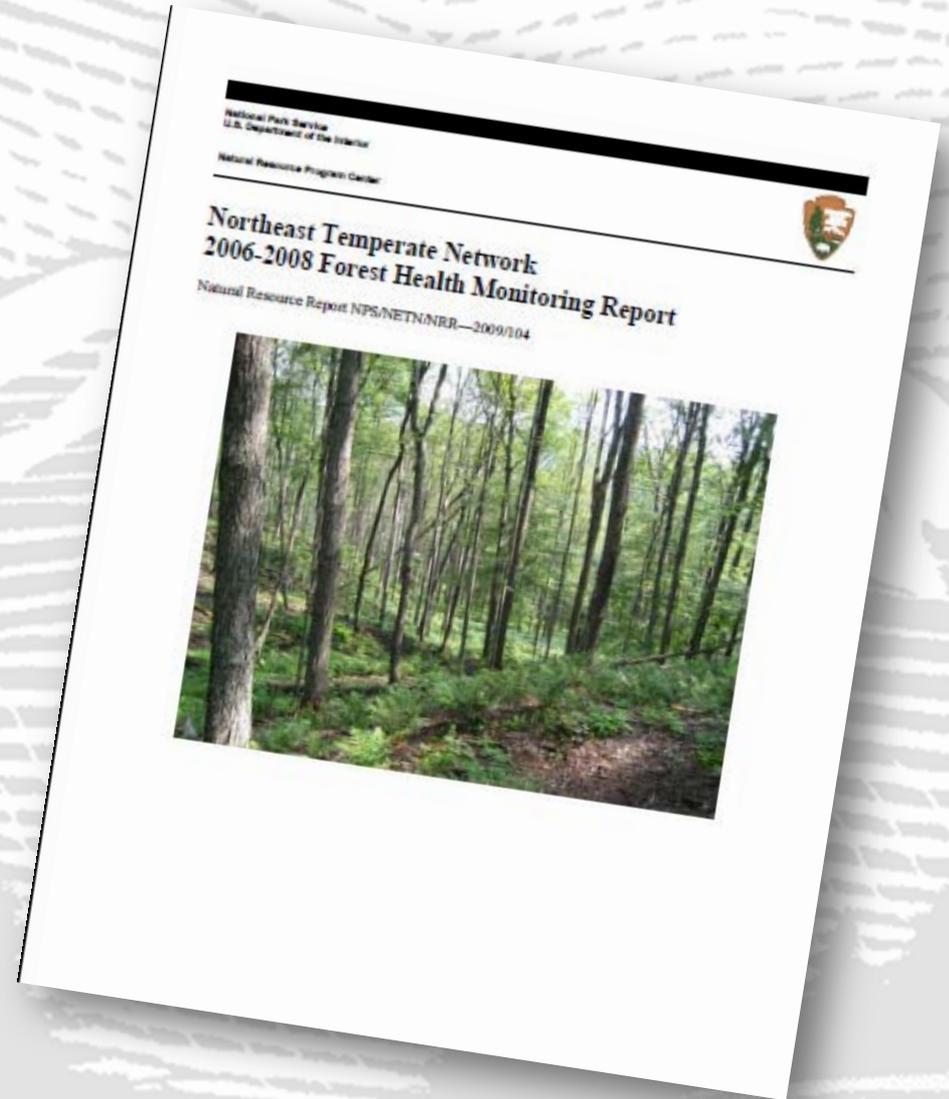




Recording observations based on multiple “Hotspots”—defined by habitat type or another important feature—will give managers better information about trends and changes in bird populations at their park.



Forest Health





Clean your room, but not your forest.

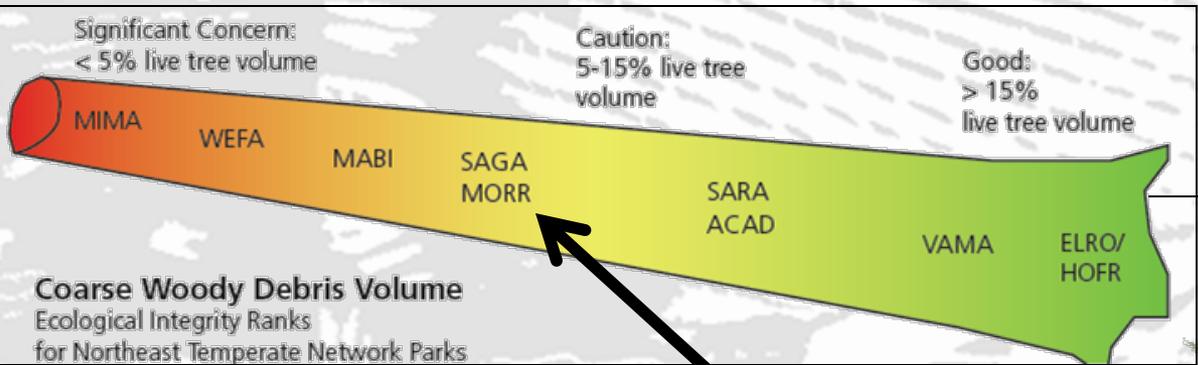
Forests at Saratoga might not be “messy” enough!

Clean your room, but not your forest.

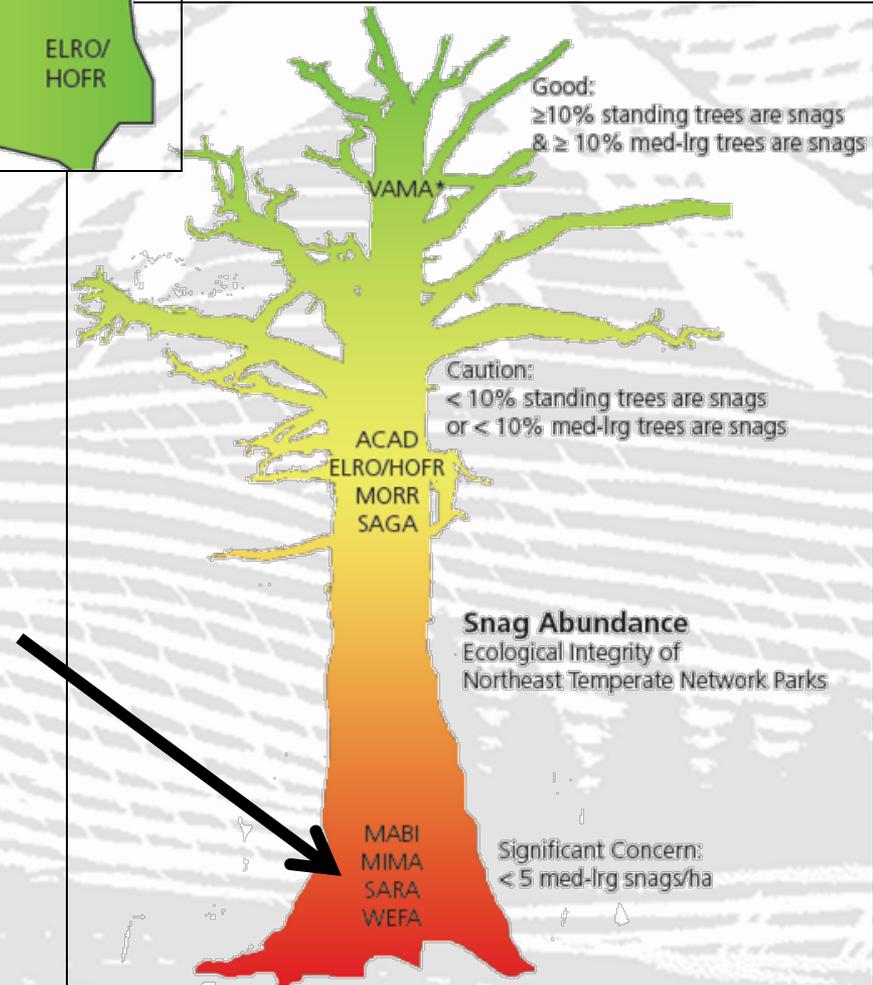


- “Messy” means standing dead trees (*snags*) and down dead trees/tree parts (*coarse woody debris*)
- What causes forest stands to be “messy”?
- Why is “messy” better?

Clean your room, but not your forest.



- SARA has younger forests which often lack snags and CWD.
- Management actions can make forests more "messy".

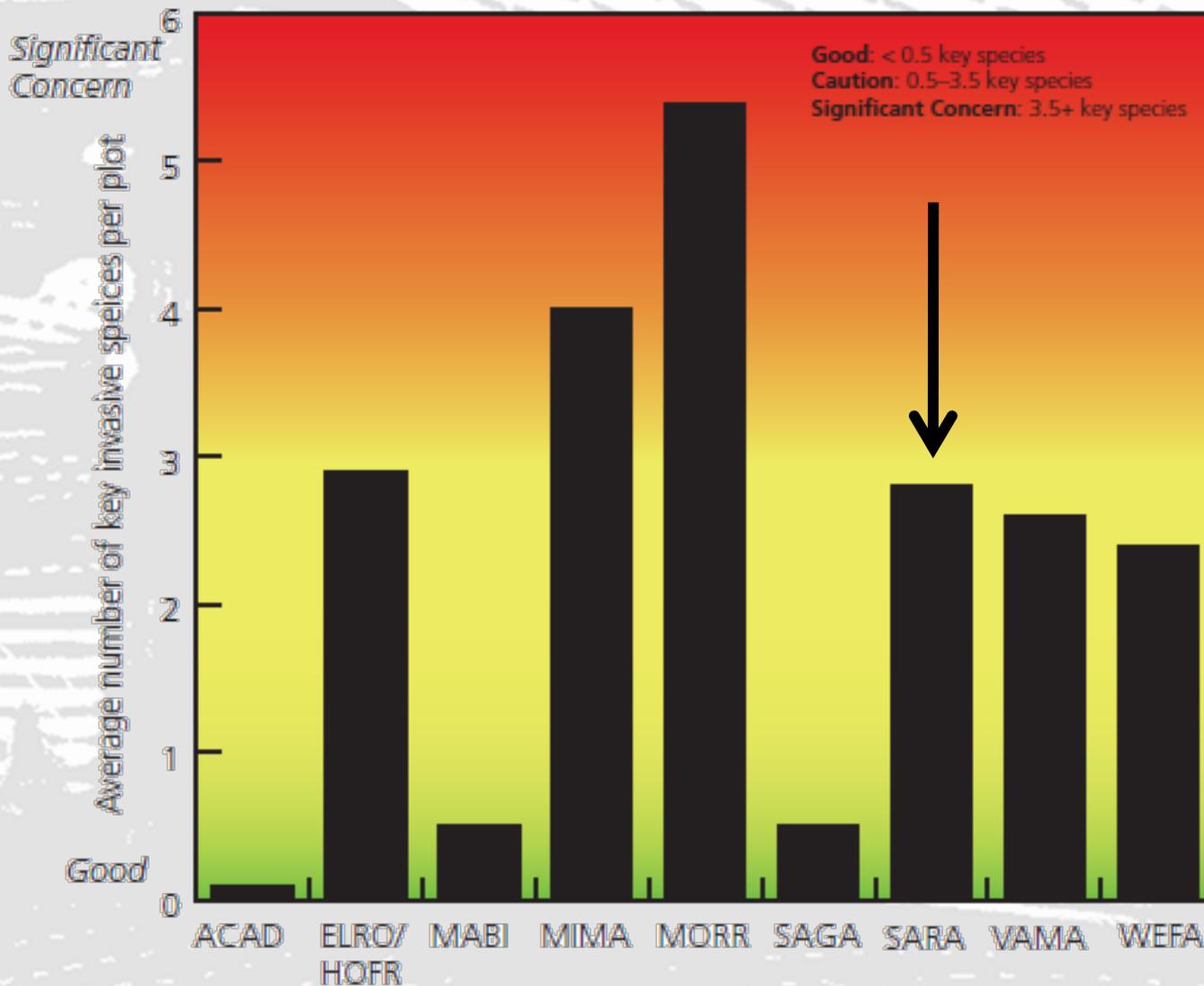




Saratoga's Most Wanted.

Monitoring the spread of invasive plants and forest pests—status and what to watch for.

Saratoga's Most Wanted



Saratoga's Most Wanted



Saratoga's Most Wanted

- Help Stop the Spread!
 - Parks specific "watch list" of plants and insects
 - ID booklet for field crews, park staff and volunteers of "watch list" species
 - Develop an efficient and speedy process for reporting and responding to new sightings of invasive species



EMERALD ASH BORER [*Agrilus planipennis* Fairmaire]



UGA1241011



UGA 5016058

Problem: A native of Asia, emerald ash borer (EAB) infests and kills North American ash species (*Fraxinus* sp.) including green, white, black and blue ash. Damage is caused by the larvae, which feed in the cambium between the bark and wood, producing galleries that eventually girdle and kill branches and entire trees.

Identification: Adults are roughly 7.5 to 13.5 mm long (3/8 to 5/8 inches) with metallic green wing covers and a coppery red or purple abdomen. Larvae reach a length of 26 to 32 mm long (1 to 1 1/4 inches), are white to cream-colored and dorso-ventrally flattened.

Signs and Symptoms: Irregular holes excavated by woodpeckers feeding on pre-pupal larvae (Fig. 1) may be the first sign that a tree has become infested. After at least one year of infestation, D-shaped exit holes in the outer bark of the branches and trunk (Fig. 2) indicate adult emergence, which can occur from late May through early September.



Fig. 1

UGA 1372003

Fig. 2

USDA Forest Service, Deborah McCullough, MSU

EMERALD ASH BORER *Agrilus planipennis* Fairmaire



Fig. 3

UGA 5016055



Fig. 4

UGA 1301042

Vertical bark fissures (Fig. 3), crown dieback (Fig. 4) and epicormic sprouting and suckering are also prevalent.



UGA 5142090

Similar Species: Adult EAB beetles are generally larger and a brighter green than native North American species of *Agrilus*, like the bronze birch borer. The six-spotted tiger beetle and ground beetle are larger in size, are both predators of other insects, and are ground dwelling.



UGA 5016041



UGA 2133022

Above:
six-spotted tiger beetle
Cicindela sexguttata Fabricius



UGA 5022083

Upper left:
bronze birch borer
Agrilus anxius Gory

Lower left:
ground beetle
Calosoma scrutator Fabricius

EARLY DETECTION PEST SPECIES REPORTING FORM

DIRECTIONS

- 1) Fill out this form.
- 2) Flag location with pink flagging and write "EDRR" on flag.
- 3) Take a photo(s) and make sure species and any distinguishable features are visible in the photo(s). Include additional photos of signs and symptoms.
- 4) ASAP, send card and/or information on card and photos to designated park contact (see park Species page) or Jennifer Stingelin Keefe at the ERMN office:

422 Forest Resources Bldg.
University Park, PA 16802
Phone: 814-865-8497
Fax: 814-863-4710

Jennifer_Stingelin_Keefe@partner.nps.gov

GENERAL INFORMATION

Name(s): _____

Email: _____

Phone: _____

Date: _____

Time: _____

SPECIES INFORMATION

Species name: _____

GPS Coordinates (UTMs or DD's--circle):

Y (Northing): _____

X (Easting): _____

UTM Zone: _____

Datum: _____

Coordinate error (meters): _____ (Over)

PEST

EARLY DETECTION PEST SPECIES REPORTING FORM

SPECIES INFORMATION (cont.)

Location Description (be as specific as possible):

Tree Species Involved: _____

Type of evidence present (circle):

1. Crown dieback
2. Foliar injury (chlorosis, necrosis, other discoloration)
3. Sawdust
4. Exit holes
5. Other _____

Certainty of identity (circle one):

Extremely confident
Moderately confident
Not very confident

Other comments (habitat, # individuals, site accessibility etc):

A black and white photograph of a forest. In the foreground, a large, textured tree trunk is visible on the right side. The background shows a dense forest of trees leading up to a mountain peak. The overall scene is somewhat hazy, suggesting a misty or overcast day.

I'm, like, totally stressed out!

Tree condition in forests at Saratoga.

I'm, like, totally stressed out!

- Causes of stress:
 - Invasive insects
 - Damage from native insects
 - Disease
- Visible damage
- Pest detection
- Beech bark disease severity



I'm, like, totally stressed out!

- Saratoga's trees were a bit stressed, mostly due to defoliation by forest tent caterpillars.



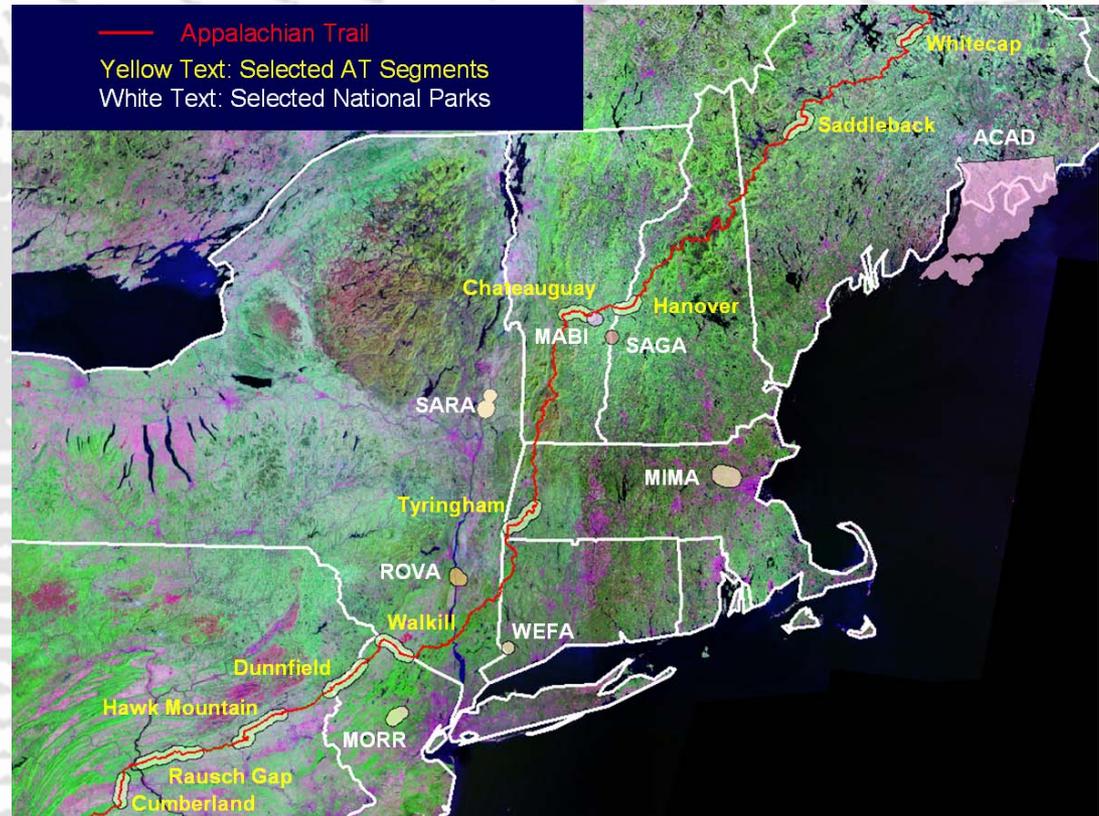
A black and white photograph of a mountain landscape. In the foreground, a road with a white center line curves through a field of tall grass. Several evergreen trees are scattered across the slope. In the background, a large mountain peak rises against a light sky. The overall scene is a natural, rural landscape.

The lands, they are a-changing!

Dynamic landscapes in and around Saratoga.

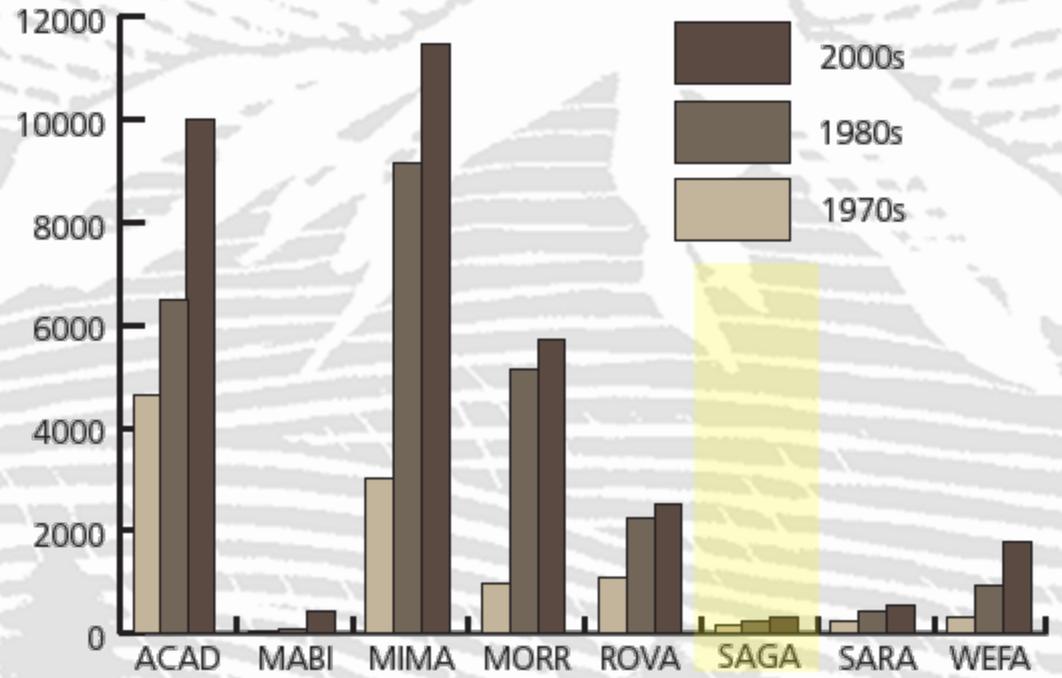
Dynamic Landscapes

- Landscape change analysis
- Remote sensing data from the
 - 1970s
 - 1980s
 - 2000s



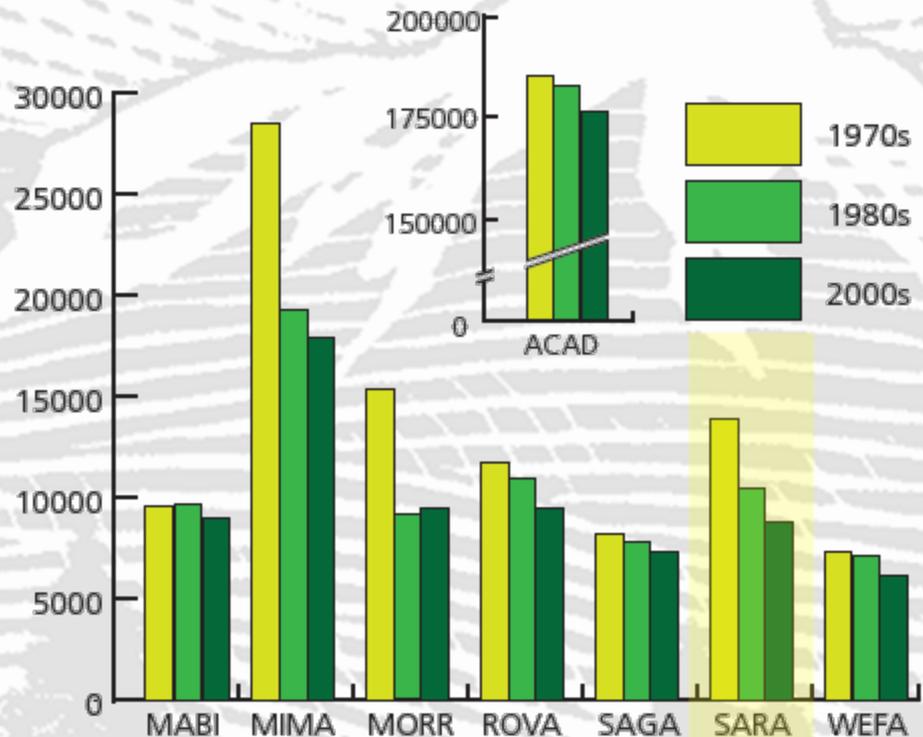
Dynamic Landscapes

- In and around SARA, urban areas are up...
 - ↑ 753 acres (1973 to 2001)



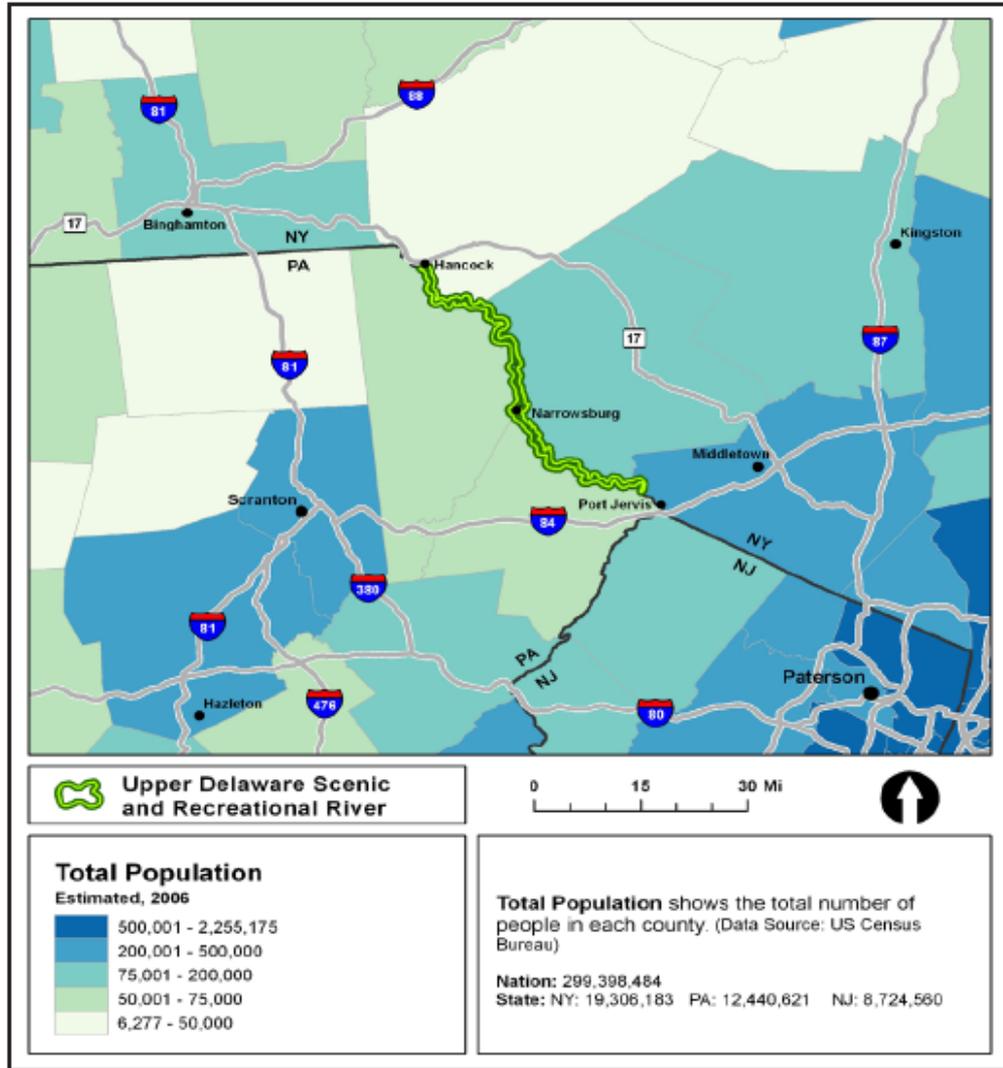
Dynamic Landscapes

- ...and acres of deciduous forest are down.
 - ↓ 1,516 acres between 1973 and 2001.



Dynamic Landscapes

- Future monitoring:
 - National I&M
 - Key indicators of landscape dynamics
 - Socioeconomic conditions in adjacent communities



Why Monitoring Matters

- Who's twittering at the park?
- Clean your room, but not your forest.
- Saratoga's Most Wanted.
- I'm, like, totally stressed out!
- Dynamic landscapes.
- *Spreading the word about monitoring...*

Spreading the Word

- 11 Resource Briefs
- 4 Program Briefs
- Presentations like this one
 - Information for managers and decision-makers
 - Encourage integration into interpretive programming

Spreading the Word

- Science Communication Summer Intern program with SERC and Acadia
- Blog
 - Field Notes: Observations on science and nature in northeastern national parks
 - <http://northeastparkscience.wordpress.com>

http://science.nature.nps.gov/im/units/netn/

NPS: Nature & Science » Networks: Northeast Temperate Network - Mozilla Firefox

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Vital Signs



Northeast Temperate Network

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Inventory and Monitoring Program

The Northeast Temperate Network (NETN) was established by the US National Park Service (NPS) to monitor ecological conditions in 11 parks located in seven northeastern states as well as six additional states through which the Appalachian National Scenic Trail passes. The NETN operates with the mandate to preserve park natural resources "unimpaired for future generations." These resources include water, air, geological, faunal and floral, and the various ecological, biological, and physical processes that act on these resources. The broad-based, scientifically sound information obtained through long term natural resource monitoring will have multiple applications for management decision-making, research, education, and promoting public understanding of park resources.

Knowing the condition of natural resources in national parks is fundamental to the Service's ability to manage park resources. Historically, managers and scientists have sought a way to characterize and determine trends in the condition of parks and other protected areas to provide early warning of impending threats and to assess the

Parks in this Network

Please select a park



Northeast Temperate Network Map

National I & M Map