National Park Service
U.S. Department of Interior

Northeast Temperate Network

Why Monitoring Matters

Tracking the Health of Saint-Gaudens NHS

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National Park Service
Northeast Temperate Network
Inventory & Monitoring Program

What is Monitoring?

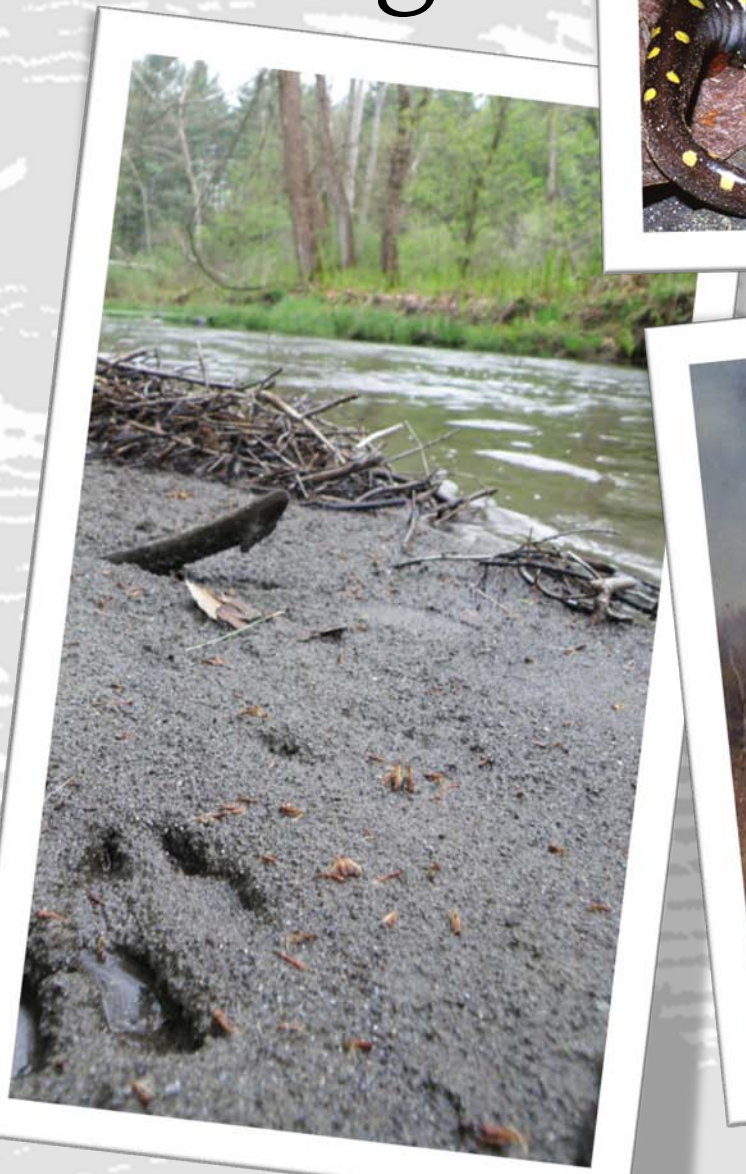
"The collection and analysis of repeated observations or measurements to evaluate changes in condition and progress toward meeting management goals."

- 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



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

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Breeding Birds

- 2008 Annual Report available online

National Park Service
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Natural Resource Program Center

Breeding Landbird Monitoring
Northeast Temperate Network 2008 Annual Report

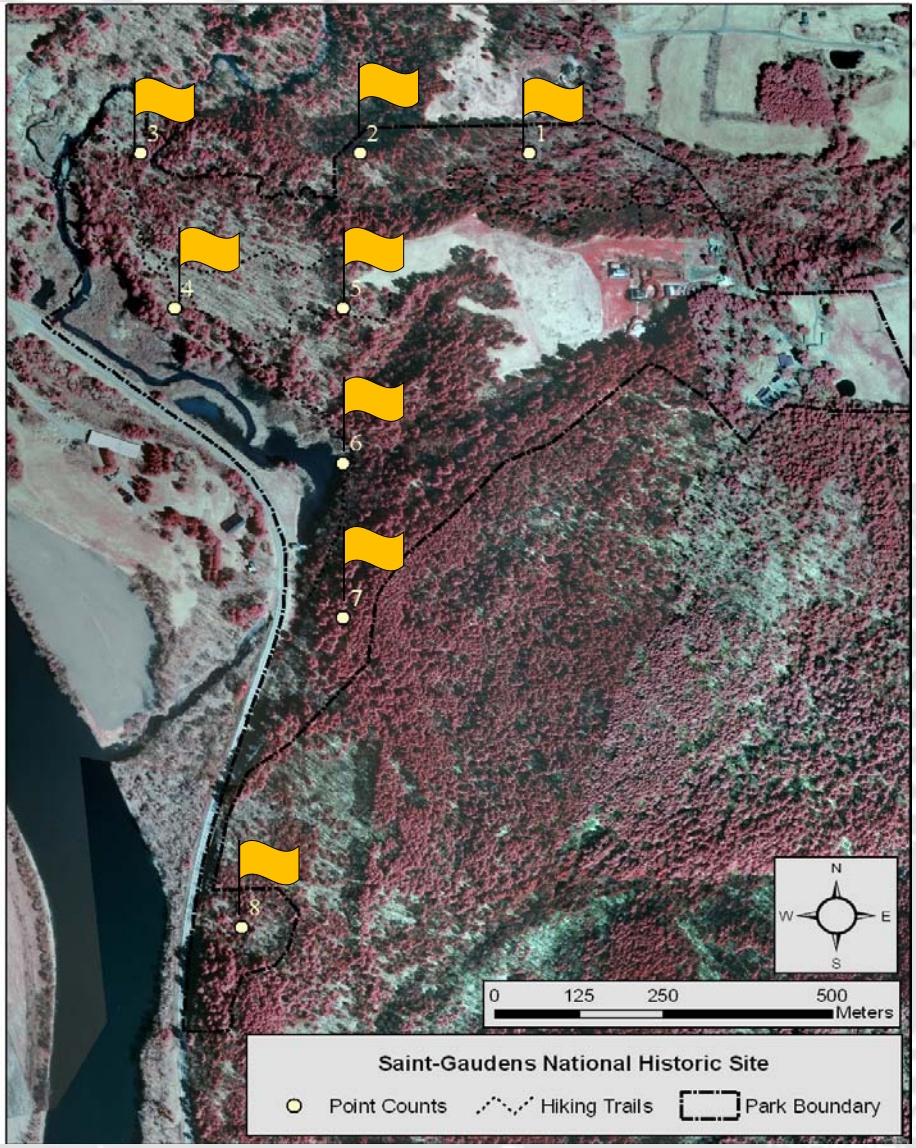
Natural Resource Report NPS/NETN/NRR—2009/105

Who’s twittering at the park?

Forest bird diversity at Saint-Gauden’s.

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?

- Breeding bird habitat is in good condition.

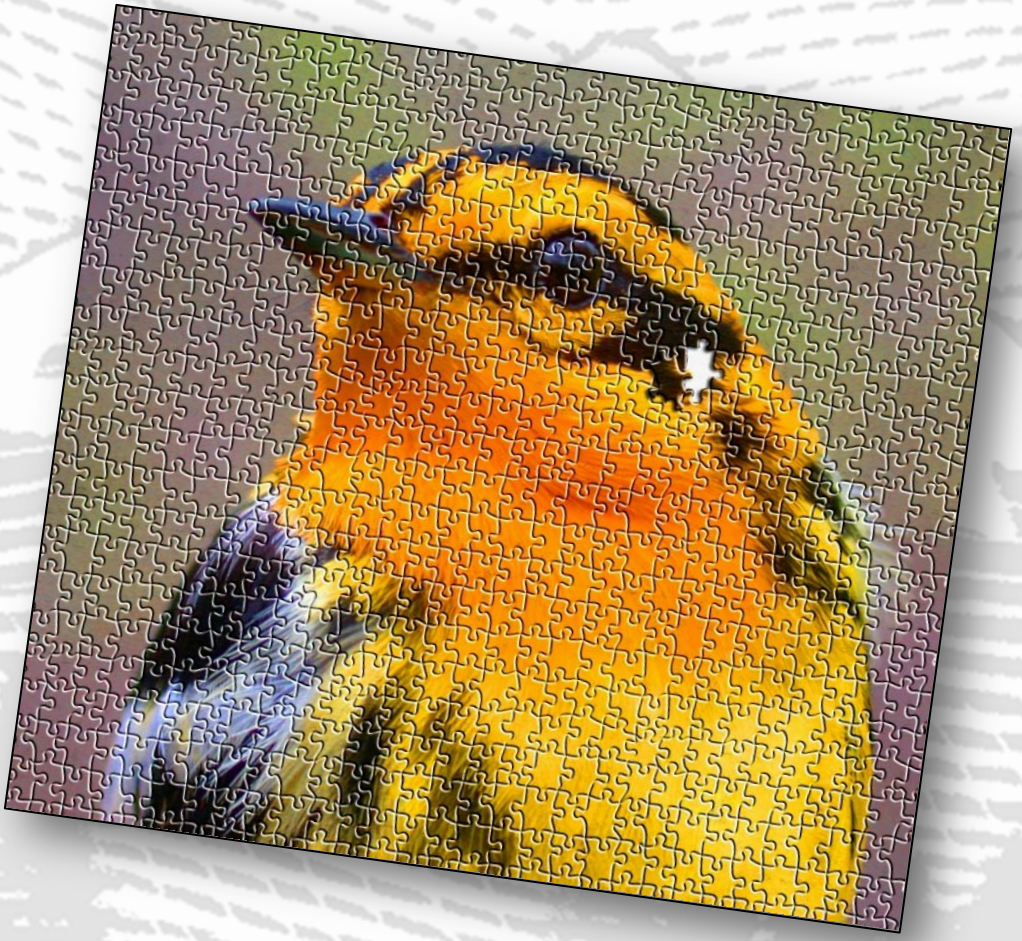
- 10 Most Common Birds:
  - Eastern Wood-pewee
  - Blue Jay
  - American Crow
  - Black-capped Chickadee
  - Ovenbird
  - Red-eyed Vireo
  - Veery
  - Scarlet Tanager
  - Wood Thrush
  - American Robin
  - Black-throated Green Warbler

eBird

CORNELL LAB of ORNITHOLOGY

Audubon

- 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?



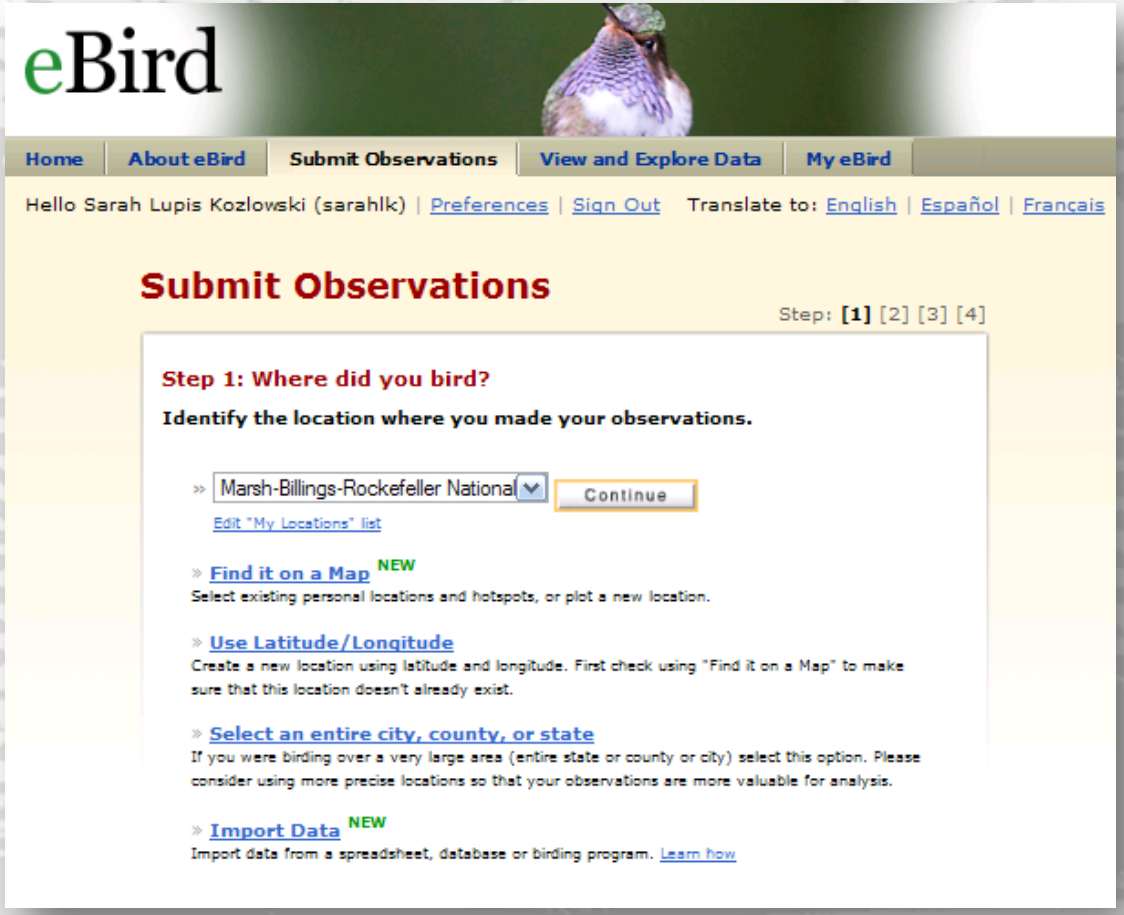
Your sightings are pieces that can help ornithologists put together the parts of that huge puzzle.

eBird

CORNELL LAB of ORNITHOLOGY

Audubon

- 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

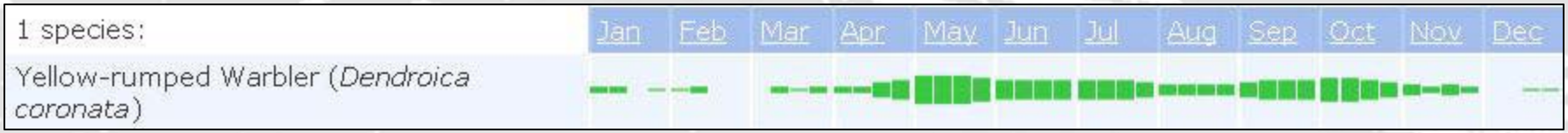


eBird

CORNELL LAB of ORNITHOLOGY

Audubon

Ready, Set, Go? ☺ Curriculum? ☺

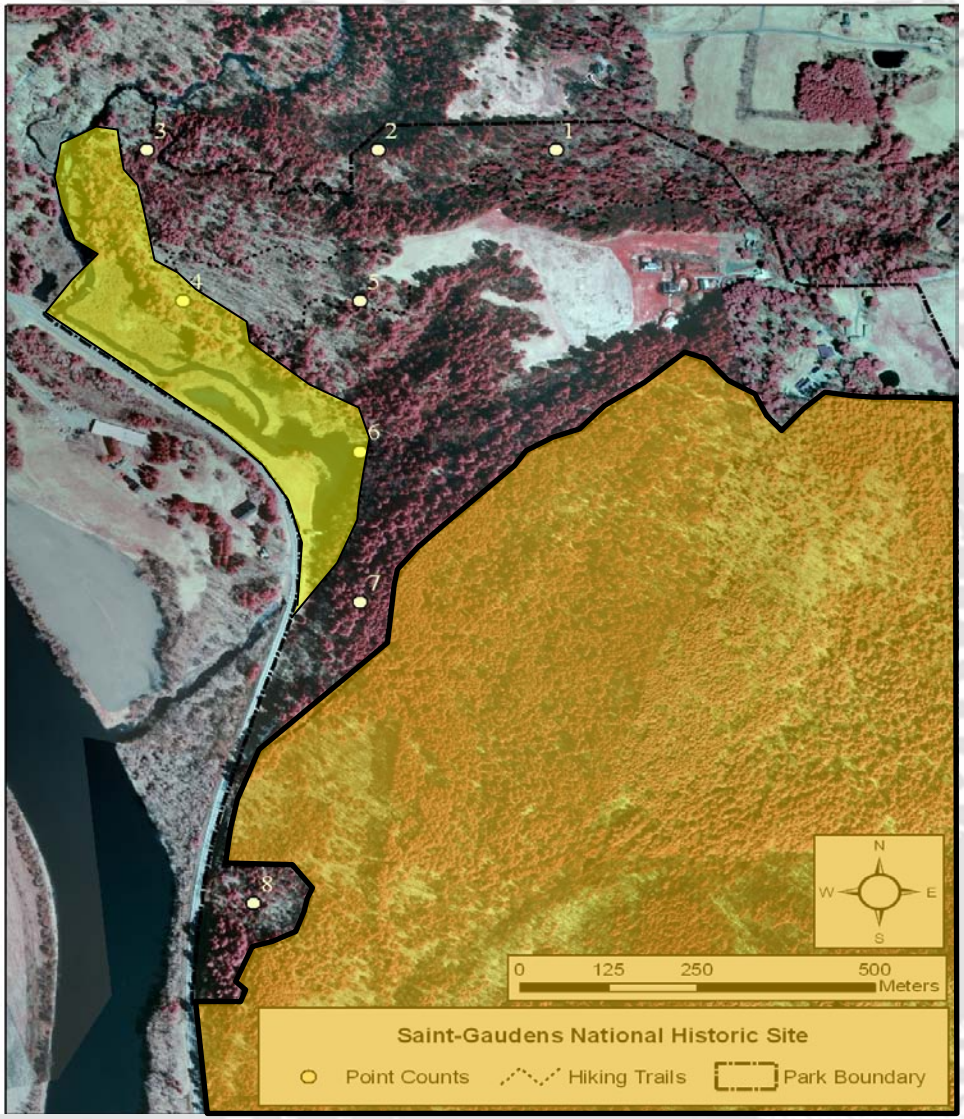


eBird

CORNELL LAB of ORNITHOLOGY

Audubon

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

National Park Service
U.S. Department of the Interior

Natural Resource Program Center

Northeast Temperate Network
2006-2008 Forest Health Monitoring Report

Natural Resource Report NPS/NETN/NRR—2009/104

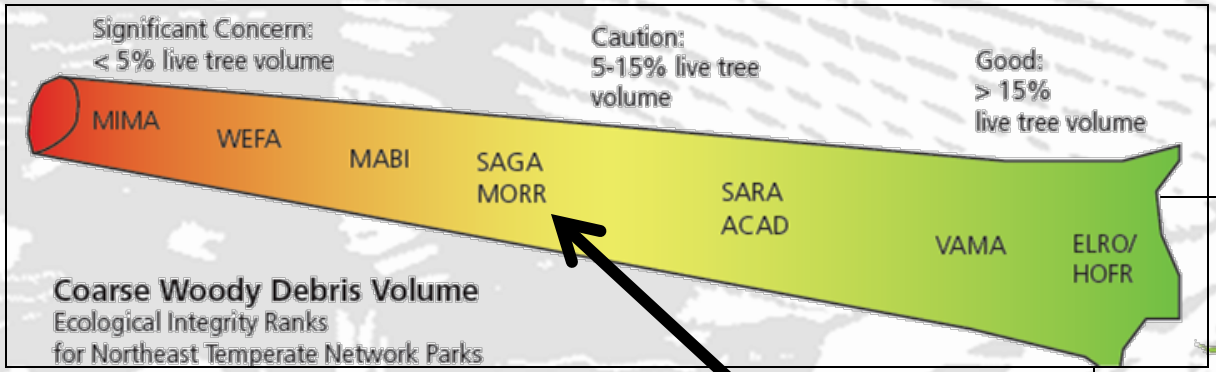
Clean your room, but not your forest.

Forests at Saint-Gauden's might not be "messy" enough!

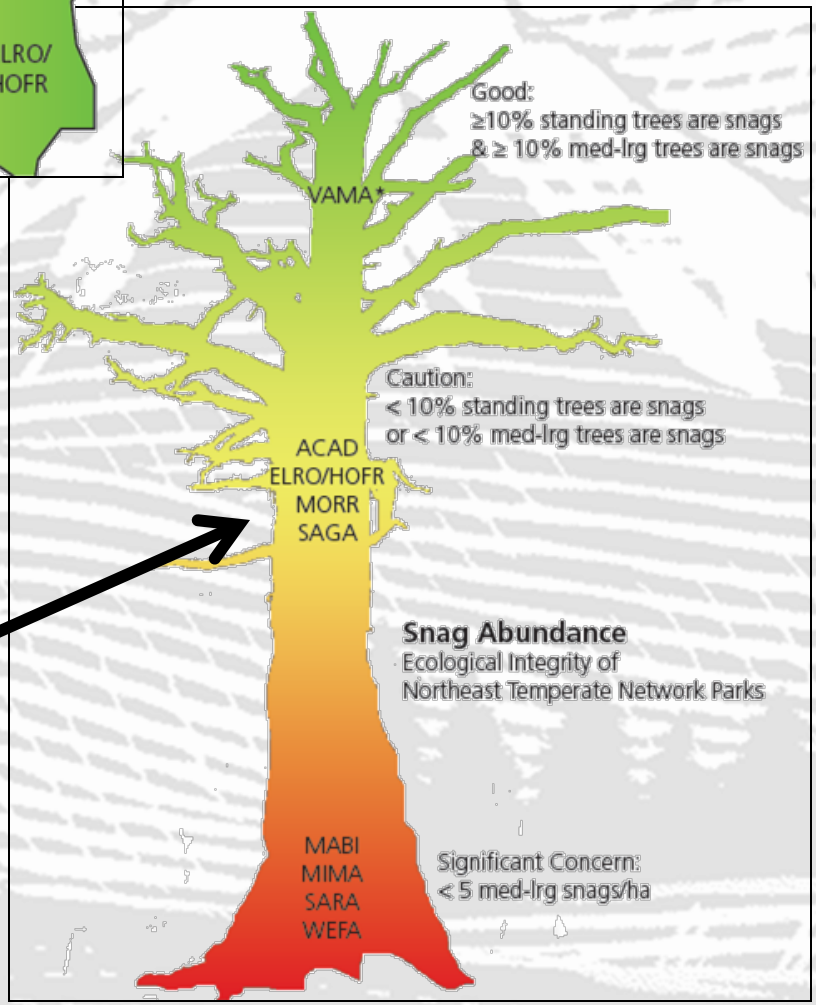
Clean your room, but not your forest.

- "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.



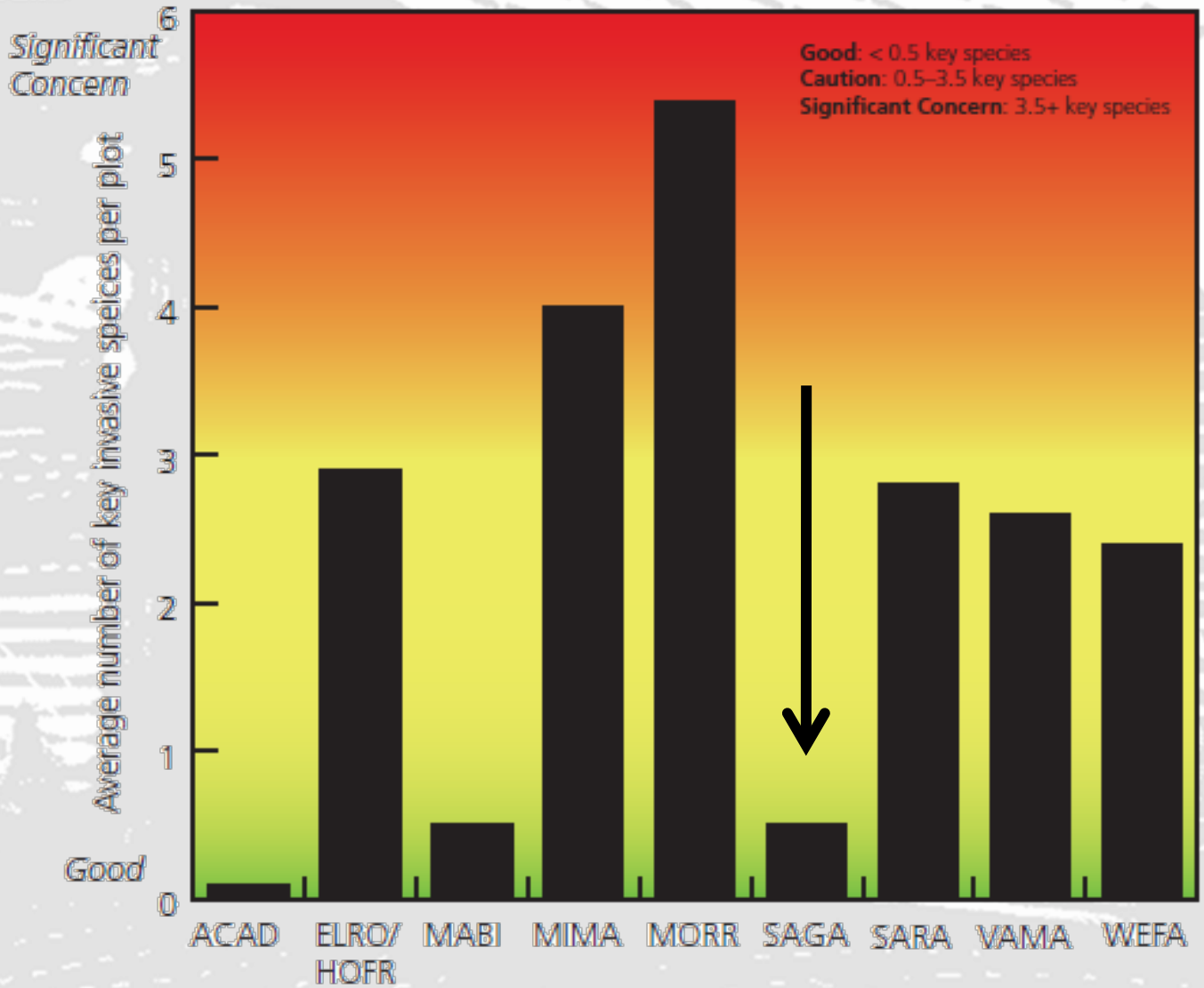
- SAGA has younger forests which often lack snags and CWD.
- Management actions can make forests more "messy".



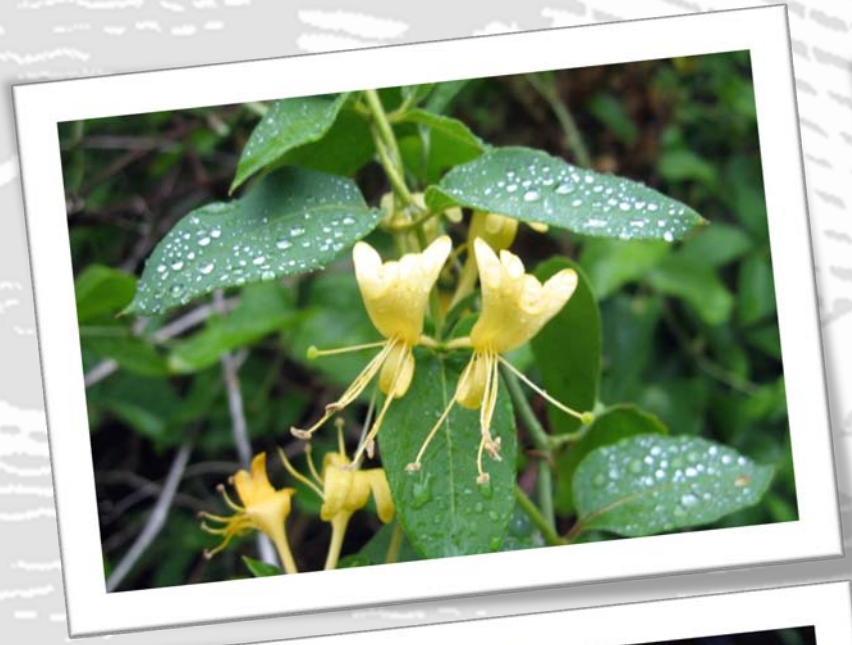
Saint-Gauden's Most Wanted.

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

Saint-Gauden's Most Wanted



Saint-Gauden's Most Wanted



Saint-Gauden'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

PEST

EMERALD ASH BORER
Agrilus planipennis Fairmaire

Fig. 3 UGA 5016053

Fig. 4 UGA 1301042

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

UGA 5147090

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 2135022

Above:
six-spotted tiger beetle
Cicindela sexguttata Fabricius

UGA 5022085

Upper left:
bronze birch borer
Agrilus anxious 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 Keefer at the ERMN office:

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

Jennifer_Stingelin_Keefer@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 accesibility etc):

I’m, like, totally stressed out!

Tree condition in forests at Saint-Gauden’s.

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!~~

- Forests at Saint-Gaudens have healthy trees.

Why Monitoring Matters

- Who’s twittering at the park?
- Clean your room, but not your forest.
- Saint-Gauden’s Most Wanted.
- I’m, like, totally stressed out!

Field Notes:

Science in northeastern parks

- http://northeastparkscience.wordpress.com
- Write about your experiences with science and nature in national parks
- Share in the experience through photos, video, and posts
- Park staff, cooperating scientists, NETN staff, and our brand-new interns
- **We want your contributions!!!!**

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

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

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

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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.

Parks in this Network

Please select a park

Northeast Temperate Network Map

National I & M Map

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

Done