

The Wisconsin Frog & Toad Survey

Celebrating 35 Years (1981-Present)



Wisconsin Department of Natural Resources
Natural Heritage Conservation Bureau



Amphibians: Class Amphibia

Amphibian means two lives

-Water & Land

Order Gymnophiona: Caecilians (~170 spp.)

Order Caudata: Salamanders (~530 spp.)

Order Anura: Frogs and Toads (~5,200 spp.)

Family Bufonidae: Toads (1 species in WI)

Family Hylidae: Treefrogs (5 species in WI)

Family Ranidae: True Frogs (6 species in WI)



A nuran Physiology & E cology

Breeding/E gg Deposition

- E arly spring – S ummer

E ggs hatch in a few days to a couple weeks

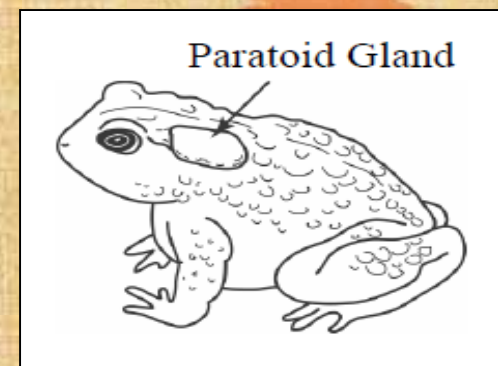
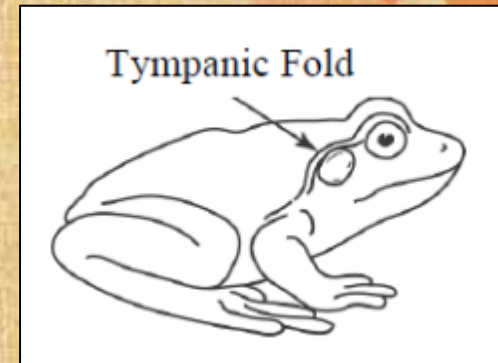
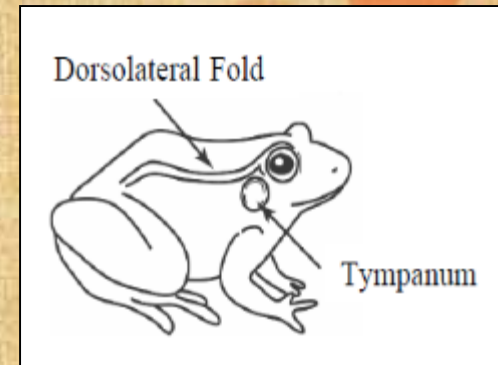
- Water temperature dependent

T adpole development rates can be influenced by water availability and temperature

- T ransformation prior to wetlands drying up

A nurans burrow into soil, under vegetation, and within muck in waterways to protect themselves during droughts or winter.

- S ome species can freeze entirely in winter (increase glucose production, which acts like an anti-freeze) and thaw out when spring returns!



Ecosystem Importance

Food Source

- Humans, birds, snakes, raccoons, dragonflies, etc...

Important Biological Controls

- Tadpoles feed on algae and other small aquatic invertebrates
- Adults feed on insects, some that harbor human diseases

Ex: Mosquitoes (Malaria & West Nile Virus)

Indicators of Ecosystem Health

- Permeable skin which allows for easy absorption of toxins
- Often the first species to decline in degraded or polluted habitat

Human Medicinal Value

- Skin secretions of frogs contribute exponentially to modern medicine

Ex: Lowers high blood pressure, pain killers > morphine, & prevents pathogenic & anti-biotic resistant bacterial strains

Population Decline

1) Habitat Change/Loss

2) Introduced Species

-American Bullfrog (Western U S A)

3) Over-exploitation

-Research, Food, Pet Trade

4) Global Climate Change

5) Environmental Contaminants

-Mercury, PCB's, Fertilizers, Pesticides, Acid Rain

6) Emerging Infectious Diseases*

-Ranavirus & Chytrid Fungus (*Batrachochytrium dendrobatidis*)

*Enhanced by stresses caused by 1-5



Wisconsin Frog & Toad Survey History

1960's and 70's

-Concerns over drastic declines in population numbers of northern leopard frogs, Blanchard's cricket frogs, pickerel frogs, American bullfrogs, and other anuran species in Wisconsin

1981-1983

-Survey initiated/standardized by Wisconsin DNR to increase knowledge of anuran abundance and distribution, and to monitor populations over the long term

1984

-Criteria and procedures finalized in 1984 by Ruth Hine and Mike Mossman (WDNR) with the recommendations of Debra Jansen and Ray Anderson of the University of Wisconsin - Stevens Point

Present

-Oldest and longest running frog and toad calling survey in the world
-Model for state and national programs



Citizen-based Monitoring

Fueled by Volunteers

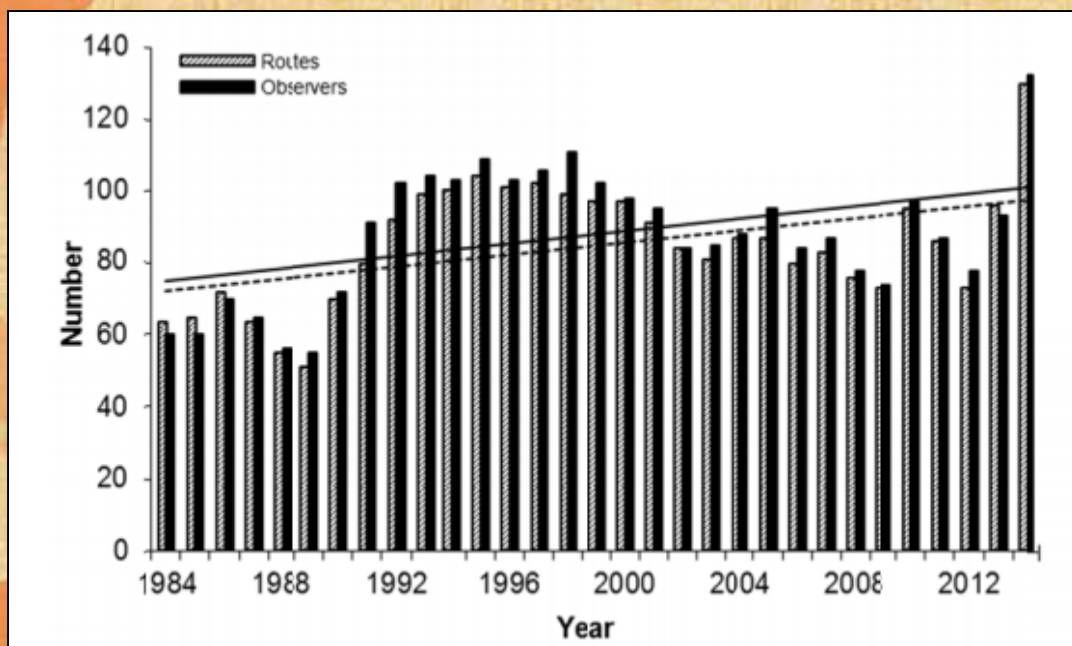
Volunteers cover a lot of ground!

Cost effective way to Analyze Annual Population Trends

Public Education & Engagement to Preserve Frogs & Toads

2014: 130 routes surveyed

-132+ Volunteers



Preparing for Surveys

1) Obtain & Review Instructional Materials

- Route Description
- Route Maps (county and topographic)
- Survey Manual (instructions & general info)
- Field Data Sheet



2) Learn the Calls, Phenology, and Ranges of Wisconsin Frogs & Toads

- Obtain a CD or tape of Wisconsin anuran calls or listen online
- Learn a few calls at a time and gradually work your way up to all 12 species
- Review the calls prior to going out or bring CD with on survey nights
- WFTS coordinator will be able to assist with identification and verification

Learning Wisconsin's Frog and Toad Calls

Madison Audubon Society

Order Wisconsin Frog and Toad CDs, MP3 Album, or Tapes

<http://madisonaudubon.org/education/links/wisconsin-frogs-and-toads/>

USGS Online Frog Quiz

Learn Species Online by Listening to Recordings

<http://www.pwrc.usgs.gov/frogquiz/index.cfm?fuseaction=main.lookup>

Wisconsin Frog & Toad Survey Website

Watch species videos and listen to breeding calls

<http://wiatri.net/inventory/frogtoadsurvey/WIfrogs/>

Things to Consider Before Surveys

Always Think About Safety

Find a Safe Parking Spot (If Possible)

- Pull well off to the side of the road
- Use safety hazard lights when necessary

Do not Survey a Site if it is Unsafe

- Let the WFTS Coordinator know if sites are unsafe (i.e., busy highways or unsafe neighborhoods). Survey sites can be relocated for safety purposes.

Become an Advocate for Amphibians

Educate & Inspire others to care about frogs and toads

- Invite friends, family, children/grandchildren, and co-workers on surveys

Keep Wildlife in the Wild



Completing Surveys

3) Complete Route Once per Sampling Period (3 Total Surveys/Year)

| Survey Period | Range of Dates | Minimum Water Temperature | Species Surveyed* |
|---------------|-----------------|---------------------------|---------------------------------------------------------------------|
| Early Spring | April 8-30 | 50°F | wood frog, chorus frogs, spring peeper, leopard frog, pickerel frog |
| Late Spring | May 20 - June 5 | 60°F | American toad, (eastern) gray treefrog, Cope's gray treefrog |
| Summer | July 1-15 | 70°F | cricket frog, mink frog, green frog, bullfrog |

-Complete Surveys After Dark & During Favorable Weather

-Warm, cloudy evenings with little wind and high humidity are ideal

-Wind preferably < 7 mph

4) Listen for Calls at All 10 Sites

-Listen quietly for 5 minutes at each station

-Take water temperatures (if possible)



Completing Surveys

5) Record Observations & Fill Out Data Sheet

-Record a call index value for each species heard for each location:

| Call Index | Criteria |
|------------|--------------------------------------------------------------------------------------------------------|
| 1 | Individuals can be counted; there is space between calls (no overlapping of calls). |
| 2 | Calls of individuals can be distinguished but there is some overlapping of calls. |
| 3 | Full chorus. Calls are constant, continuous, and overlapping; individual calls cannot be distinguished |

6) Verify Records of Rare or Unlikely Occurrences

-Species documented outside their normal range (i.e., Blanchard's Cricket Frogs)

-For verification, take audio recordings or photographs

7) Enjoy the Evening Sounds of Nature

Place asterisk by name of cooperator who should receive materials next spring

Year: 2006
 County: Dane

Route Number: 134
 Year: 2006
 County: Dane

Name: Jane Smith * Joe Smith
 Address: 101 S. Webster Street 101 S. Webster Street
Madison, WI Madison, WI
 Phone: 608-555-1234 608-555-1234
 Email: Jane.Smith@unknown.com

Enter sky and wind codes on front of data sheet:
 CH1dfl. www.dnr.wisconsin.gov

Enter sky and wind codes on front of data sheet:

| Wind Code | Wind Speed (miles per hour) | Indicators of Wind Speed | Sky Code | Sky Condition |
|-----------|--------------------------------|--------------------------------------------------------------------|----------|-----------------------------|
| 0 | less than 1 | Smoke rises vertically | 0 | Clear or a few clouds |
| 1 | 1-3 | Wind direction shown by smoke drift | 1 | Partly cloudy or variable |
| 2 | 4-7 | Wind felt on face; leaves rustle | 2 | Cloudy (broken) or overcast |
| 3 | 8-12 | Leaves and small twigs in constant motion; wind extends light flag | 4 | Fog |
| 4 | 13-18 | Wind raises dust and loose paper; small branches moved | 5 | Drizzle |
| | | | 6 | Showers |

Comments (difficulties, background noise levels, uncertain calls, habitat changes since previous run or previous year, etc.):

IMPORTANT: Documentation required for all records of cricket frogs and any species outside known range -- see instructional materials for details

| Site | Run 1 | Run 2 | Run 3 |
|------|---------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------|
| 1 | | <u>Surprisingly quite site tonight</u> | |
| 2 | <u>Pond filled in for subdivision, no frogs calling</u> | <u>Pond filled in for subdivision, no frogs calling</u> | <u>Pond filled in for subdivision, no frogs calling</u> |
| 3 | <u>Site dry, no frogs calling</u> | <u>Site dry, no frogs calling</u> | |
| 4 | | | <u>Heard barred owl in the distance</u> |
| 5 | | | <u>Creek appeared much muddier than usual</u> |
| 6 | <u>Very productive wetland, many species calling</u> | | |
| 7 | | | <u>No standing water; site overrun by reed canary grass</u> |
| 8 | <u>Traffic loud tonight</u> | | <u>Had to walk down highway to site due to construction</u> |
| 9 | <u>Site dry, no frogs calling</u> | <u>Site dry, no frogs calling</u> | |
| 10 | | <u>Observed one sora and one water snake</u> | |

Miscellaneous comments: Many thunderstorms throughout the afternoon of the third survey day.

Phenology Surveys

Overview:

In response to climate change, the WDNR is searching for volunteers to conduct frog and toad surveys near their homes. By completing surveys once a day (or at least once a week) at a single location (for 5 minutes) from March until the end of the frog calling season, the WDNR can better determine the effects climate change is having on frog and toad ecology and persistence throughout Wisconsin. One volunteer has provided 30+ years of data!

| | Early Survey (50°F) | Late Spring Survey (60°F) | Late Survey (70°F) | | |
|-------|----------------------|---------------------------|--------------------|------|--------|
| March | April | May | June | July | August |
| | Wood Frog | | | | |
| | Chorus Frog | | | | |
| | Spring Peeper | | | | |
| | Leopard Frog | | | | |
| | Pickerel Frog | | | | |
| | American Toad | | | | |
| | Gray Treefrog | | | | |
| | Cope's Gray Treefrog | | | | |
| | | Cricket Frog | | | |
| | | Mink Frog | | | |
| | | Green Frog | | | |
| | | Bull Frog | | | |



35 Years of Results

Wisconsin set the Standard

- Nationally & Globally

184 Survey Routes Statewide

- 7,608 Survey Nights with 75,674 Individual Site Visits

Defined Distribution for all 12 Wisconsin Species

- Local, Regional, Statewide Distributions
- Detecting Changes in Distribution Over Time

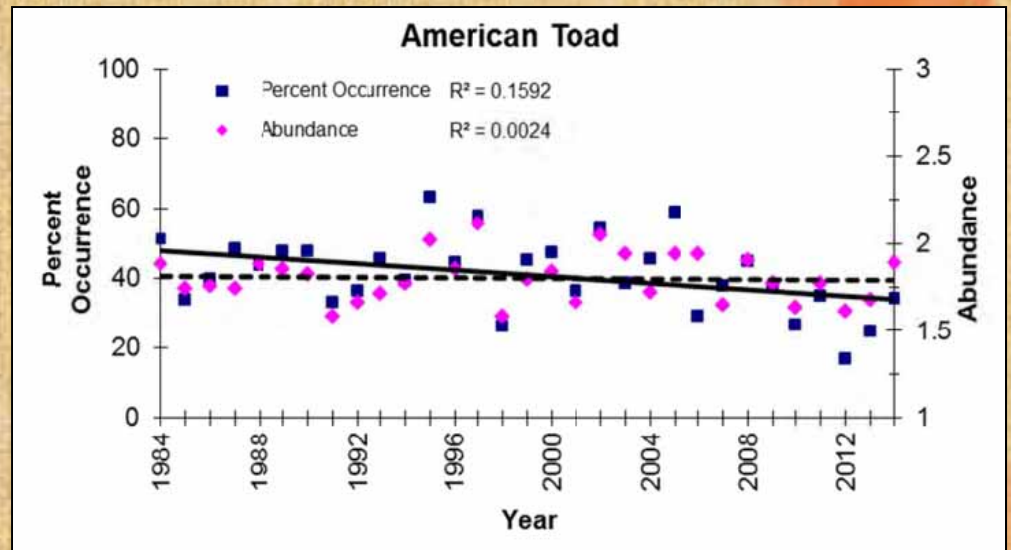
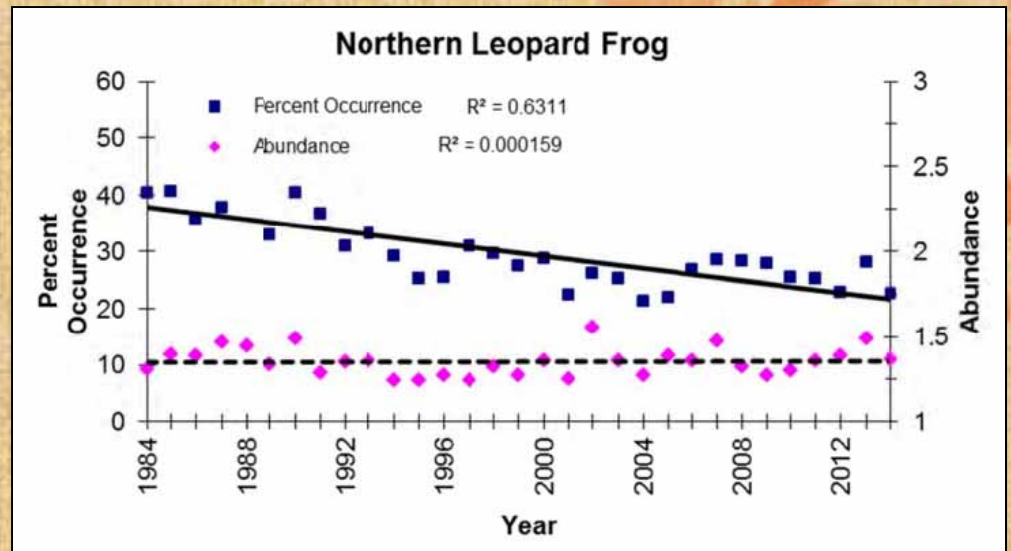
15 Year Assessment

- Trends Analysis & Significance

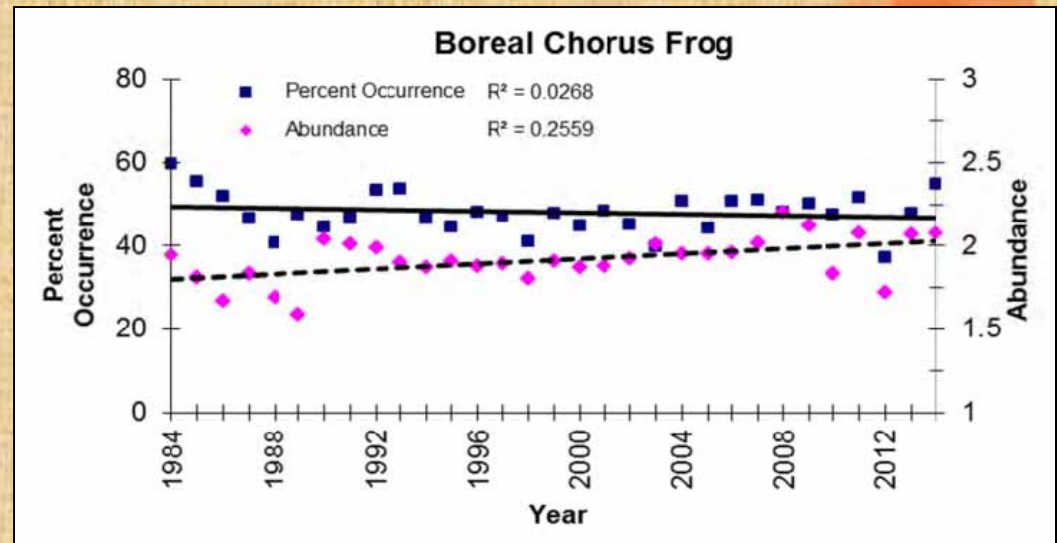
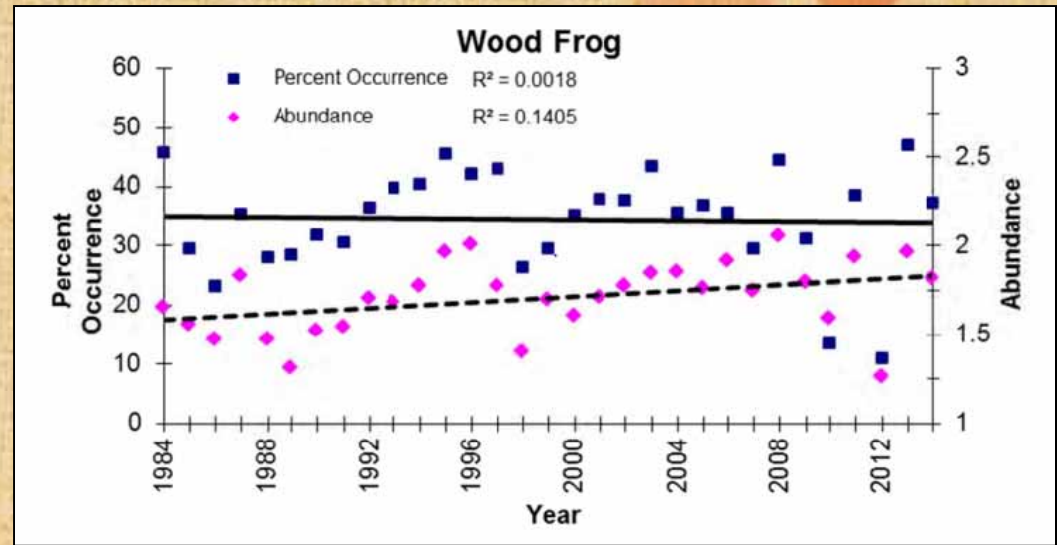
Public Awareness, Education, & Appreciation

- Developing Leopold's "Conservation Ethic"

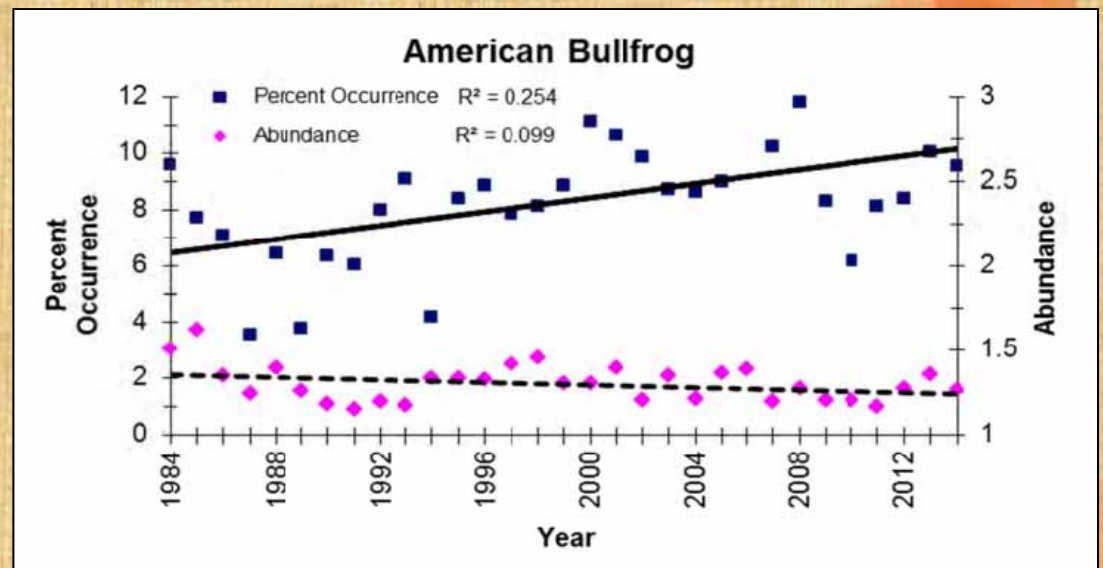
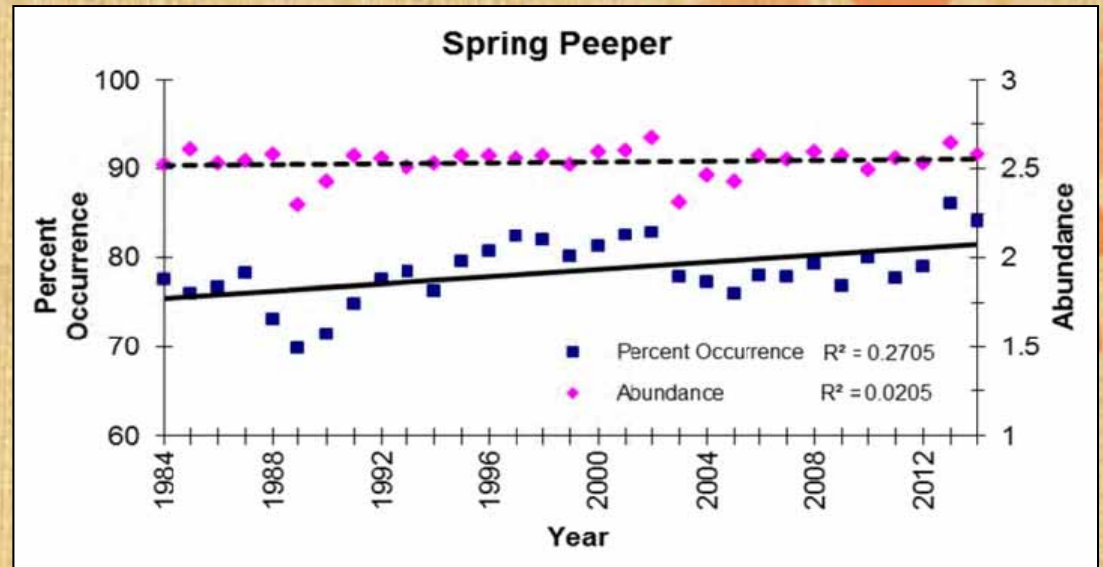
Trends - Declining



Trends - S table



Trends - Increasing



Citizen Monitoring Efforts for Amphibians

Wisconsin Frog and Toad Survey (WDNR)

Website: <http://wiatri.net/inventory/frogtoadsurvey/index.cfm>

E mail: WFTS@wisconsin.gov

Frogwatch USA (NWF)

Website: <http://www.nwf.org/frogwatchUSA>

E mail: frogwatch@nwf.org

North American Amphibian Monitoring Program (USGS)

Website: <http://www.pwrc.usgs.gov/naamp/>

*U.S. Geological Survey (USGS); National Wildlife Federation (NWF)



Celebrate the bald eagle recovery and help care for Wisconsin's rare plants and animals and natural areas

#Wleagleplate

Go to dnr.wi.gov and search "eagle plate"