

Bats: What You Didn't Learn Watching Batman



Marne Titchenell
Extension Program Director – Wildlife
School of Environment & Natural Resources

CFAES THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

3

BAT WEEK!

October 24-31 every year!

Batweek.org



#BATWEEK

English French German Spanish

BATWEEK
October 24-31, 2021

HOME WHY BATS MATTER TAKE ACTION EVENTS EDUCATE VIDEO CONTACT US

4

u.osu.edu/obwg

Ohio Bat Working Group
Communication and collaboration between bat-minded people.

Home Annual Meetings **Bat Week** Coexisting with Bats Educator Resources Get Involved Habitat Management About



Video series on bats and weekly events!

Follow us on Facebook at www.facebook.com/OhioBWG

5

My background with bats:



6

Bats are *not* mice with wings.

Chiroptera



Bugwood.org

7

Order Chiroptera

- Over 1400 species worldwide
- 10 Ohio species
 - Family Vespertilionidae
 - Insectivores





Eastern Red bat

Kathy Kirk, MEd

8

CFAES



Bats have amazing skills that help them find the food they need to survive.

When they eat food, they are helping us!

9

CFAES

Ohio Bat Foraging


- Pest control services
 - 37% annual US crop loss due to pests
 - 150 big brown bats consume 1.2 million insects/year (Whitaker 1995)
 - \$3.7- 53 billion/year (Boyles et al. 2011)




10

CFAES

Echolocating Bat – How it Works




- High-frequency sound pulses (calls)
 - Produced from mouth or nose
 - Above human hearing range (20 kHz)
- From the returning sound waves (echoes) bats can determine:
 - Size (angle)
 - Direction (timing, angle, patterns)
 - Distance and speed (timing and strength)

11

CFAES

Listening to Bat Echolocation Calls



12

CFAES




Challenges to Bat Conservation

Economic and Environmental Value

Social & Intelligent

Fear/Dislike

Disease

Slide courtesy Rachel Handy

13

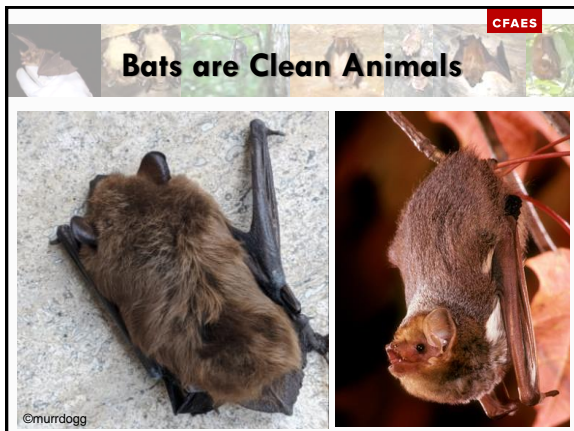
CFAES

Bat Fact vs. Fiction

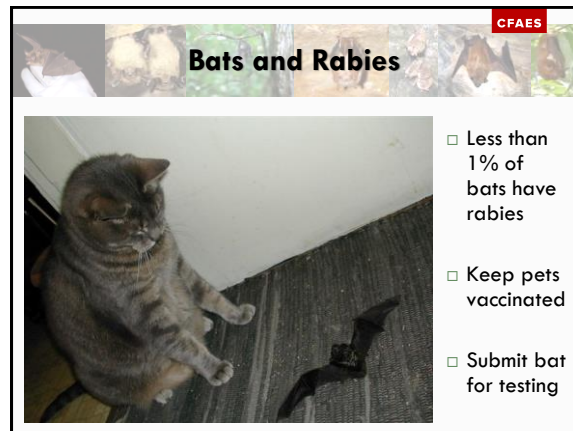


You will be pleased to learn that bats getting stuck in hair is a myth!

14



15



16



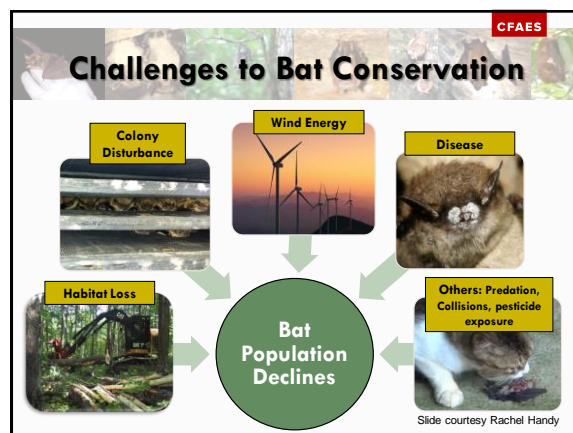
17



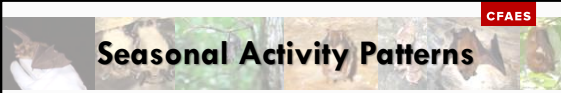
18




19



20


CFAES

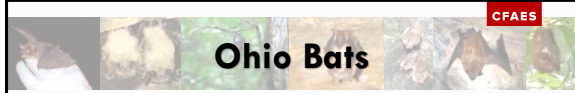
Seasonal Activity Patterns



Eastern Red bat

- Bats are nocturnally active April through September.
 - ▣ Birthing and raising young
 - ▣ Foraging
- From October through March, bats migrate and hibernate.

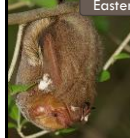
21


CFAES

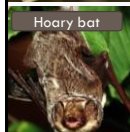
Ohio Bats

Solitary Bats

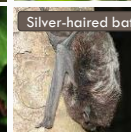




Eastern red bat

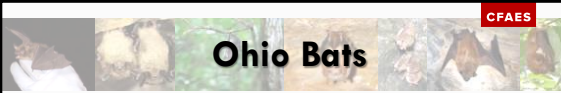


Hoary bat





Silver-haired bat

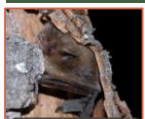
22


CFAES


Ohio Bats


Colonial Bats




Little brown bat



Big brown bat




Northern long-eared bat




Indiana bat


23


CFAES


More Colonial Bats



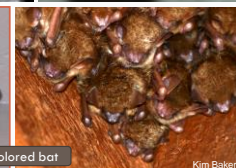
Evening bat



Small-footed bat




Tri-colored bat



Kim Baker

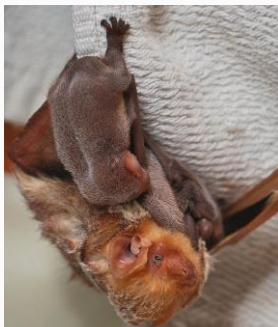
- Evening and small-footed bats are rarely found in Ohio
- Tri-colored forms small maternity colonies
 - ▣ Dead leaf clusters

24


CFAES

Reproductive Patterns

- Fall mating
- Delayed fertilization
 - ▣ Sperm stored in uterine tract
 - ▣ Ovulation and fertilization occur in spring
- Birth coincides with emergence of insect prey
 - ▣ ~4 week development



25


CFAES

Bats reproduce once per year.

- **April** – arriving at roost sites
- **May-June** – all species birthing young
 - ▣ 1-3 pups/female (20-30% mother's weight)
- **July – August** - Pups foraging




26

CFAES

These bats are being cared for by Ann Wookey, who is a wildlife rehabilitator in Ohio.



27

CFAES

What About the Males?

- Bachelor colonies
- The single life




28

CFAES

Seasonal Activity Patterns

Eastern Red bat

- Bats are nocturnally active April through September.
- Birthing and raising young
- Foraging
- From October through March, bats migrate and hibernate.

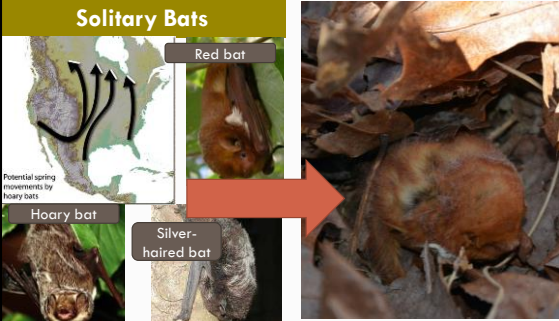


29

CFAES

Some Solitary Bats Highly Migratory



Solitary Bats



30

CFAES

Tracking Migratory Bats...

(A)  (B) 

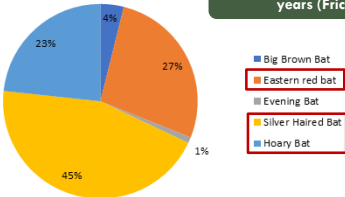
- **Weller and others (2016)** tracked hoary bats for a month
- Exhibited a variety of movement behaviors

31


CFAES

Bat Mortality at Wind Turbines

Predicted 90% decline of hoary bat in 50 years (Frick et al. 2017).



Slowing wind turbine rotation speed can reduce bat mortality.



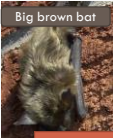
32

CFAES

Colonial Bats Hibernate in Caves/Mines

Colonial Bats

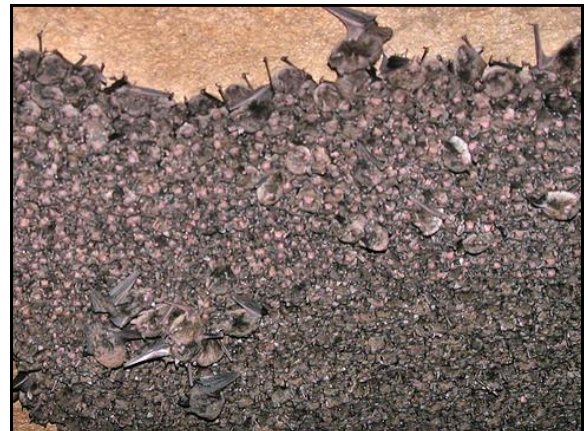


Other colonial bats that hibernate in caves:
 Tricolored bat, Northern long-eared bat, Indiana bat, and Small-footed bat



33



34

CFAES

White Nose Syndrome (WNS)




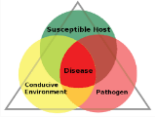
A disease of cave-hibernating bats **caused by a non-native, invasive fungus** that appears on the bodies of infected bats. Impacting 6 of Ohio's 10 species.

35

CFAES

What Causes WNS?

- **Invasive, non-native fungus:**
Pseudogymnoascus destructans (aka PD)
 - Suspected origin is Europe
- Cold-loving fungus
 - Optimal growth 41-59°F
 - Stops growing at 68°F
- Caves provide perfect climate....and a host
 - Suppressed immune systems
- **Causing abnormal arousal**
 - Depleted energy and water reserves
 - Verant et al. 2014

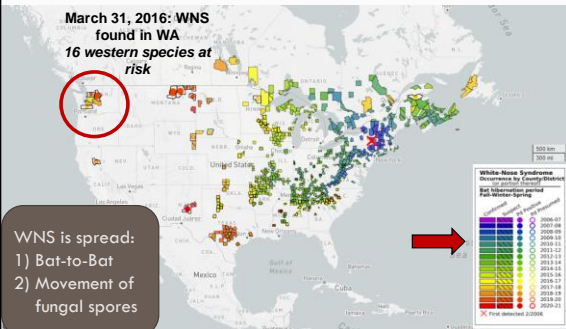



36

CFAES

Current Spread of WNS

March 31, 2016: WNS found in WA
16 western species at risk




WNS is spread:

- 1) Bat-to-Bat
- 2) Movement of fungal spores


37

CFAES


Which Bat Species are Affected?




Little brown bat
(*Myotis lucifugus*)




Northern long-eared bat*
(*Myotis septentrionalis*)




Tri-colored bat
(*Perimyotis subflavus*)



Eastern small-footed bat
(*Myotis leibii*)



Big brown bat
(*Eptesicus fuscus*)




Indiana bat*
(*Myotis sodalis*)

- ▶ 13 species in US
- ▶ 6/10 in Ohio
- ▶ 3 federally E&T sp.
 - ▶ Indiana bat (E)
 - ▶ Northern long-eared bat (T)
 - ▶ Gray bat

PD has been found on an additional 7 species, including 2 endangered species, without confirmation of the disease.

Photos: Martin Tuttle, Bat Conservation International

38





IS WNS still a problem?

- ☐ Yes. Especially for western states.
- ☐ State, federal, NGO collaboration for collective response
 - ☐ Research
- ☐ Here in Ohio....
 - ☐ Species need to recover
 - ☐ Habitat
 - ☐ Safe hibernacula
 - ☐ Time



Whitenosesyndrome.org

The fungus causing WNS can be transported by people visiting contaminated sites throughout the year!

Abandoned Railroad Tunnels

Tunnel 8 located on property owned by Jefferson Soil & Water Conservation District.


A photograph of the entrance to Tunnel 8, a large, arched opening in a stone wall, surrounded by dense vegetation and fallen leaves.


A photograph showing a person's hand holding a smartphone displaying a blue bat, likely a tricolored bat, in front of the tunnel entrance.


This tunnel is currently home to the 4th largest hibernating colony of little brown bats and 5th largest winter population of tricolored bats!

Above-ground Over

- Big brown bat hibernacula do not appear reflective of summer survey results
- Entire population is NOT hibernating








CFAES

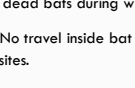

1 – Be WNS (White-nose Syndrome) Aware

W – Watch for unusual behavior or dead bats during winter.

N – No travel inside bat hibernation sites.

S – Support bat-friendly gating of tunnels and other hibernation sites.

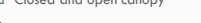


CFAES

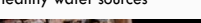
2 – Create Habitat in Woodlands

- Woodlots for foraging
 - Diverse and healthy
 - Closed and open canopy



- Roost trees
 - Snags and den trees

- Healthy water sources



CFAES

3 – Build a Bat House



For more information, plans, and guidance on bat houses:

u.osu.edu/obwg

Click on 'Habitat Management'

Photo courtesy: Mario Perdicás, Summit Metro Parks

46

CFAES

4 – Plant a Bat Garden



- Incorporate late-day or night blooming plants
- Night-scented
- Pale colored
- Herbs also attract insects

47

CFAES

5 – Work with a Professional to Safely Remove Bat Colonies from Buildings




Bat exclusion is safe for the bats and the best long-term solution for the homeowner.

48

CFAES

Bat Colonies in Buildings

□ All Ohio bats are protected if maternity season is avoided.



49

CFAES

6 – Talk about Bats.



The last word in ignorance is the person who says of an animal or plant: 'What good is it?'


- Aldo Leopold

USDA Forest Service, Southern Research Station, SRS, Bugwood.org

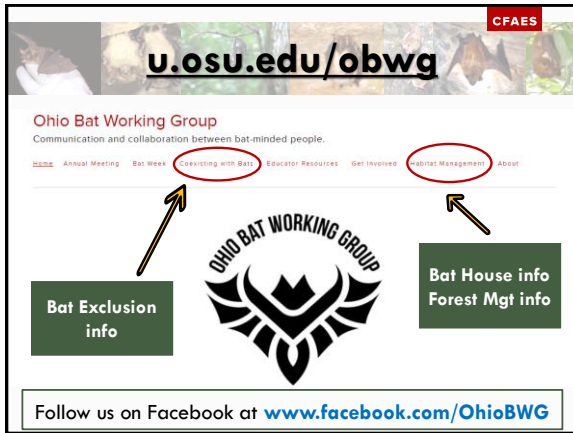
50

CFAES

Eastern Red Bat Release



51



52



53



54