



Caves: Life Beneath the Forest

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Cave Life Topics

1. Major Food Sources in Caves
2. Ecological Classification of Cave Life
3. Super Cool, Cave Adapted Species
4. Threats to Cave Species

Photo by Dave Bunnell





1. Energy Sources in Caves



Major Food Sources

- 🦇 Microorganisms
- 🦇 Cave cricket guano
- 🦇 Bat guano
- 🦇 Plant detritus – including plant roots
- 🦇 Feces or remains of other species using the cave

Cave Environment

- 🦇 Constant temp & humidity
- 🦇 Low energy input – scarcity of food
- 🦇 Mainly decomposer community
- 🦇 Cyclical pulses of food



2. Ecological Classification of Cave Life

 Accidentals

 Troglaxenes

 Troglaphiles

 Troglobites



Ecological Classification of Cave Animals - Accidentals

☞ Generally surface dwelling species which fall or wander into a cave

☞ Examples include mice, snakes, frogs, and turtles (and turkeys???)



Ecological Classification of Cave Animals - Trogloxene

🦇 Cave “visitors”

🦇 May live in caves or similar surface habitats

🦇 Must leave the cave to meet certain life requirements such as feeding or reproduction



Caves are Important to Bats!

There are 47 species of bats that live in the U.S.

More than $\frac{1}{2}$ of these bats hibernate in caves and mines.

Some bat species spend the winter and summer in caves.



Photo by Craig Stihler



And, Bats Are Important to Caves!

🦇 Cave-roosting bats are keystone species!

🦇 Bat guano can provide the primary nutrient source for entire ecosystems of cave life.

🦇 Guano – Are You Loving It?

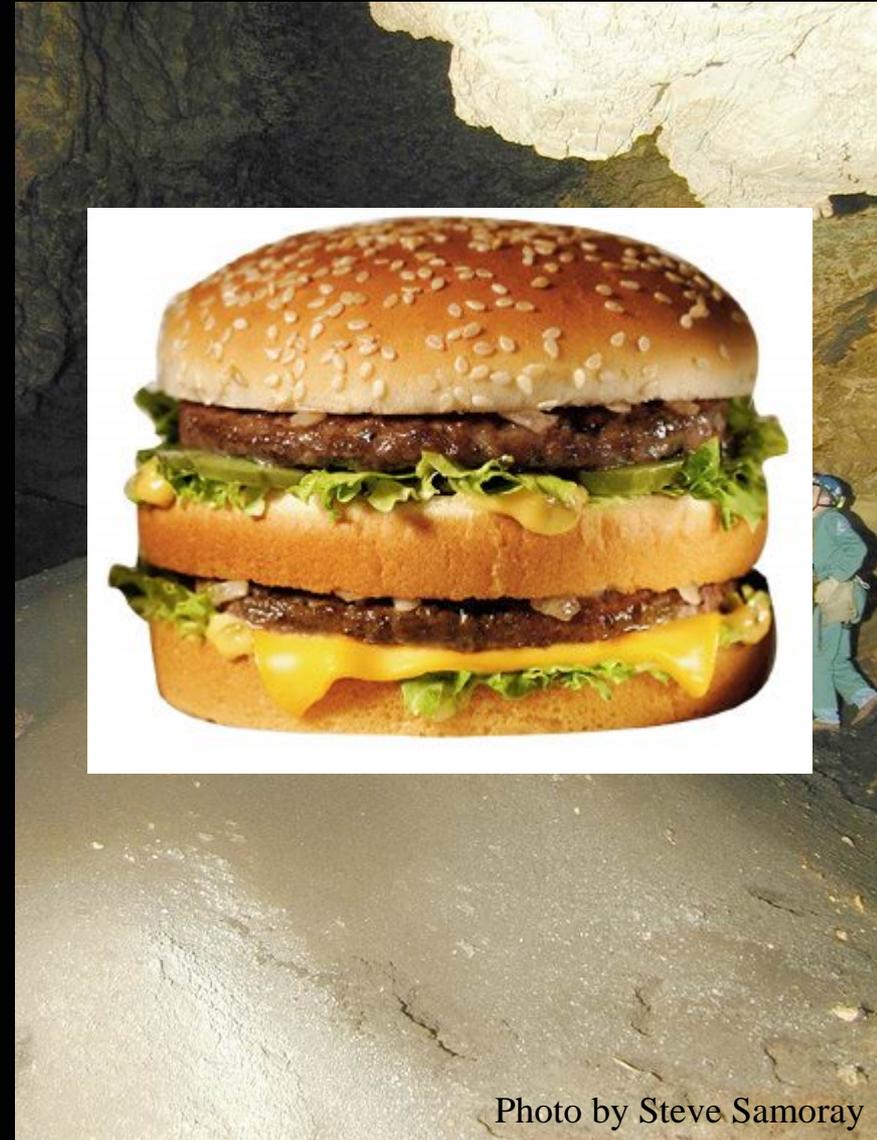


Photo by Steve Samoray

Ecological Classification of Cave Animals - Troglophile

Some Cave Crickets such as *Hadenoeacus* sp.

🦇 Cave “lover”

🦇 May live in caves or
similar surface habitats

🦇 May feed and
reproduce without
ever leaving the cave



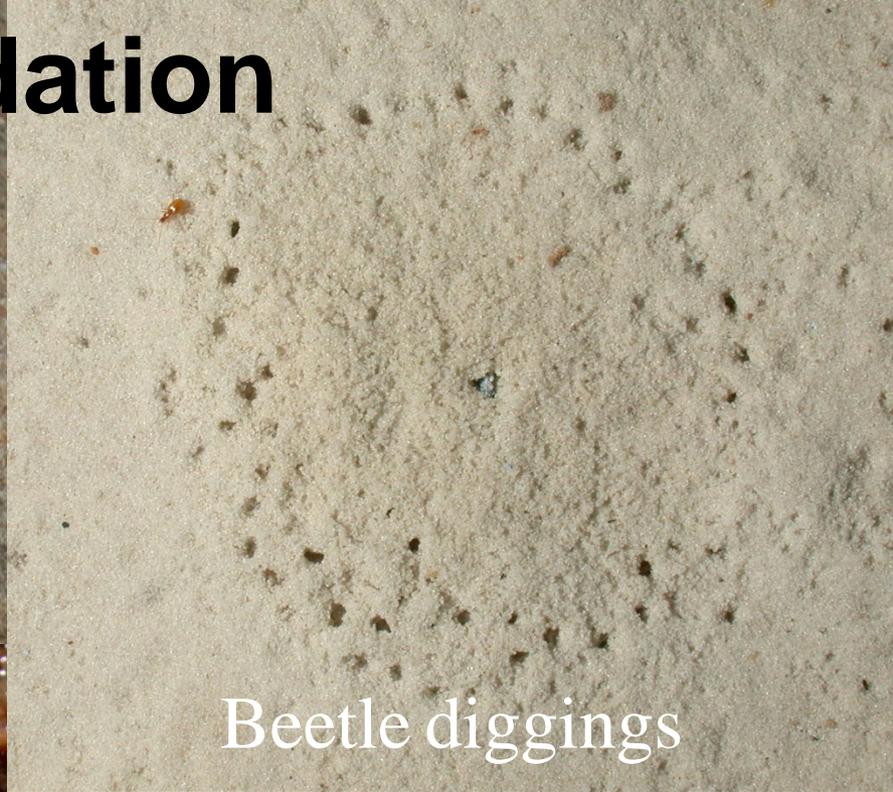
Cave Salamander



Cricket Egg Predation



Cave Cricket -
Hadenoeocus subterraneus



Beetle diggings



Cave Beetle - *Neaphaenops*



Cricket Predators





Cricket Guanobites



Scoterpes



Lepidocyrtus



Helicodiscus



Antriadesmus



Carychium



Ecological Classification of Cave Animals - Troglomite

- 🦇 Obligate cave species
- 🦇 Must live in caves
- 🦇 Must feed and reproduce without ever leaving the cave
- 🦇 Many are extremely rare and restricted to only a few caves.



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Texas Cave Salamander



Photo by Joe N. Fries, U.S. Fish and Wildlife Service



How Many Cave Obligate Species Are Found in North America?

- A. Less than 500
- B. About 1,000
- C. About 1,500
- D. About 3,000
- E. About 6,000



3. Species Adaptation

-  Small or absent eyes
-  Metabolism better adjusted to nutrient poor environment
-  Life history changes from surface dwelling cousins.
-  Sensory structures often are more developed, Ex: antennae, olfactory organs, vibration receptors
-  Longevity



Decomposers in caves

Examples include fungus, bacteria, and microorganisms



Cave Biota Video –
www.cavebiota.com

4. Threats to Cave Fauna

- Changes in the cave environment;
- Disturbance by humans;
- Reductions in recharge;
- Increased sedimentation of subterranean streams
- Groundwater pollution;
- Non-native invasive species
- White-nose Syndrome



Discovering Caves

Fragile Underground

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Discovering Caves

lava Tubes

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Battle for Bats

The WNS Tragedy

White-Nose Syndrome (WNS) is responsible for the catastrophic death of hibernating bats in the United States and Canada. This previously unknown disease has spread very quickly among bats since it was first discovered, and it poses a considerable threat to millions of bats and entire ecosystems.

Cave Conservation and Restoration

Edited by
Loren C. Morlock

A GUIDE TO MISSOURI'S
by
William R. Elliott

Missouri Department of Conservation
Serving nature and you

CAVE LIFE

70 Cave Species Brought to Light

Indiana Bats, Kids & Caves - Oh My!

An Activity Book for Teachers
By
Dana M. Barber, Ph.D., Sarah D. Tye, & Leigh Ann O'Donnell

The Education Department of
Evansville's Market Park Zoo & Botanic Garden

Bats LIVE

Project Underground

Classroom activities with an emphasis on caves and related karst regions - their biological, geological, hydrological, and historical diversity and value.

A Natural Resource Education Guide

THE VIRTUAL CAVE

IMPORTANT BAT FACTS

BAT CONSERVATION
www.batcon.org

Caves

Life Beneath the Forest

Please, Learn More!

KARST

INFORMATION PORTAL

Questions?

