



Good Evening!!





The Secret Life of Bats of the Okanogan Highlands and Beyond



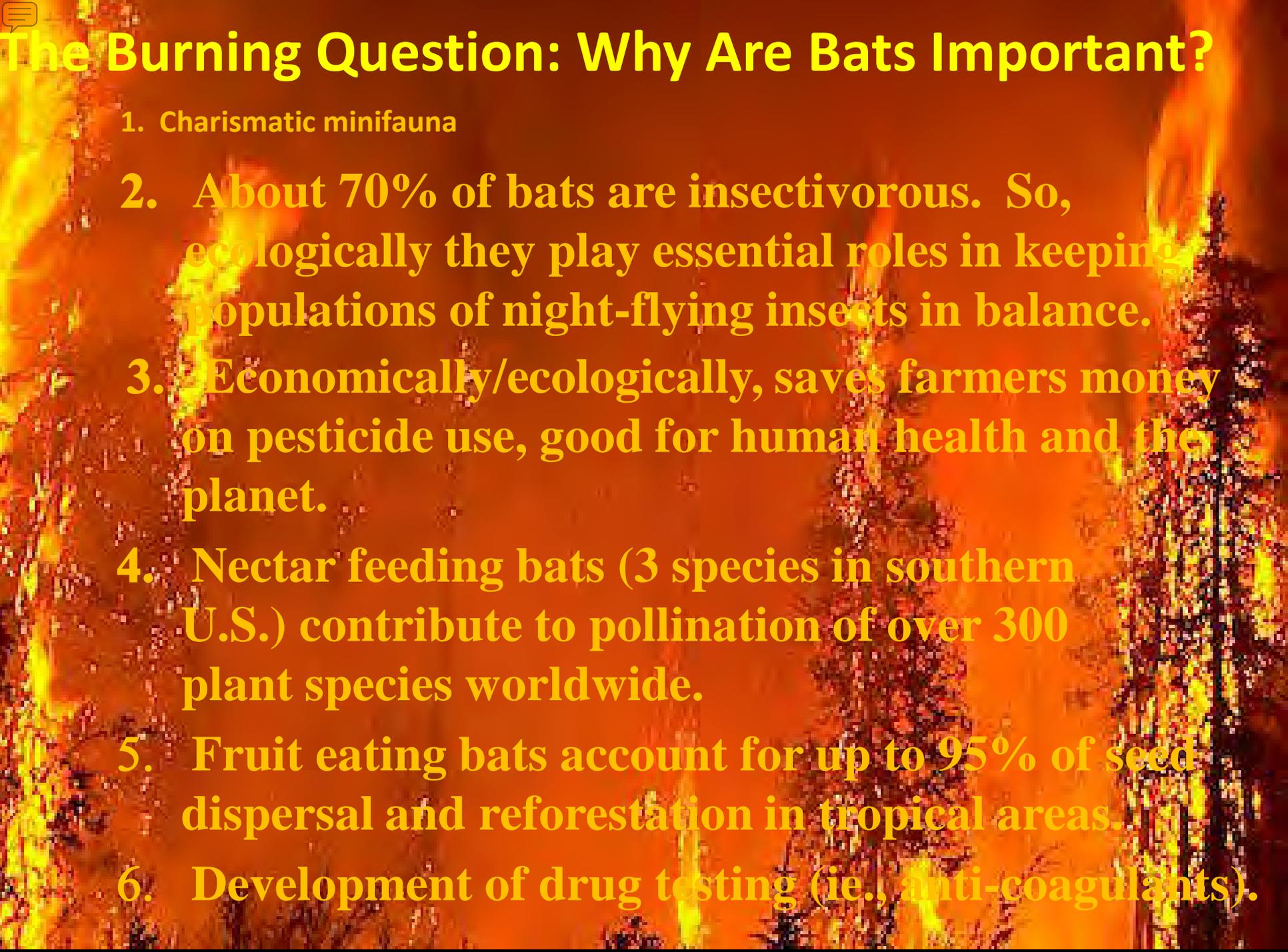
Roger Christophersen, NOCA Wildlife Biologist





Ground To Cover

- 1. Ecological and Economic Benefits**
- 2. Public Health Issues**
- 3. Life History**
- 4. Habitat Requirements**
- 5. Identification Characteristics**
- 6. Research Methods and Results**
- 7. Threats and Conservation Needs**
- 8. What You Can Do**
- 9. Quiz**



The Burning Question: Why Are Bats Important?

1. Charismatic minifauna
2. About 70% of bats are insectivorous. So, ecologically they play essential roles in keeping populations of night-flying insects in balance.
3. Economically/ecologically, saves farmers money on pesticide use, good for human health and the planet.
4. Nectar feeding bats (3 species in southern U.S.) contribute to pollination of over 300 plant species worldwide.
5. Fruit eating bats account for up to 95% of seed dispersal and reforestation in tropical areas.
6. Development of drug testing (ie., anti-coagulants).

Yummy Bat Math

An insectivorous bat can catch 600 mosies in an hour. Assume it feeds for 2 hrs each night, how many mosies would it catch in a week...month...summer (6 mths)?

1 week

$$600m \times 2/hr = 1200m \times 7/nt = 8400m/wk$$

1 month

$$8400m/wk \times 4/wk = 33600m/mth$$

1 summer

$$33600m/mth \times 6/mth = 201,600m/sum$$

Assume avg. sized colony of 200 bats

1 week

$$8400m \times 200b = 1,680,000m/wk$$

1 month

$$1680000m \times 4/wk = 6,720,000m/mth$$

1 summer

$$6720000 \times 6/mth = 40,320,000m/sum$$

Tourist Attractions

- Bat feeders for fruit bat observations



- Congress Bridge in Austin, TX (1.5 million Mexican free-tailed bats consume 10-30,000 lbs. bugs each night)





Who Hasn't Heard a Bad Story about Bats?



DON'T YOU BELIEVE IT!

And because of this exaggerated human fear and persecution, bats are in decline worldwide.

Therefore, they deserve to be understood and appreciated.



Public Health

- **Bats are a reservoir of rabies virus, but the prevalence of infection is very low in wild populations (0.1-0.5%).**
- **Rabies is a viral infection of the central nervous system.**
- **Since 1953 only 10 bat-related human deaths. Statistically speaking, pets, playground equip., and sports are far more dangerous.**
- **Vaccine available for people at risk, (ie., researchers).**
- **Histoplasmosis infection.**
- **With simple precautions, bats present little risk to human health.**

Safety First



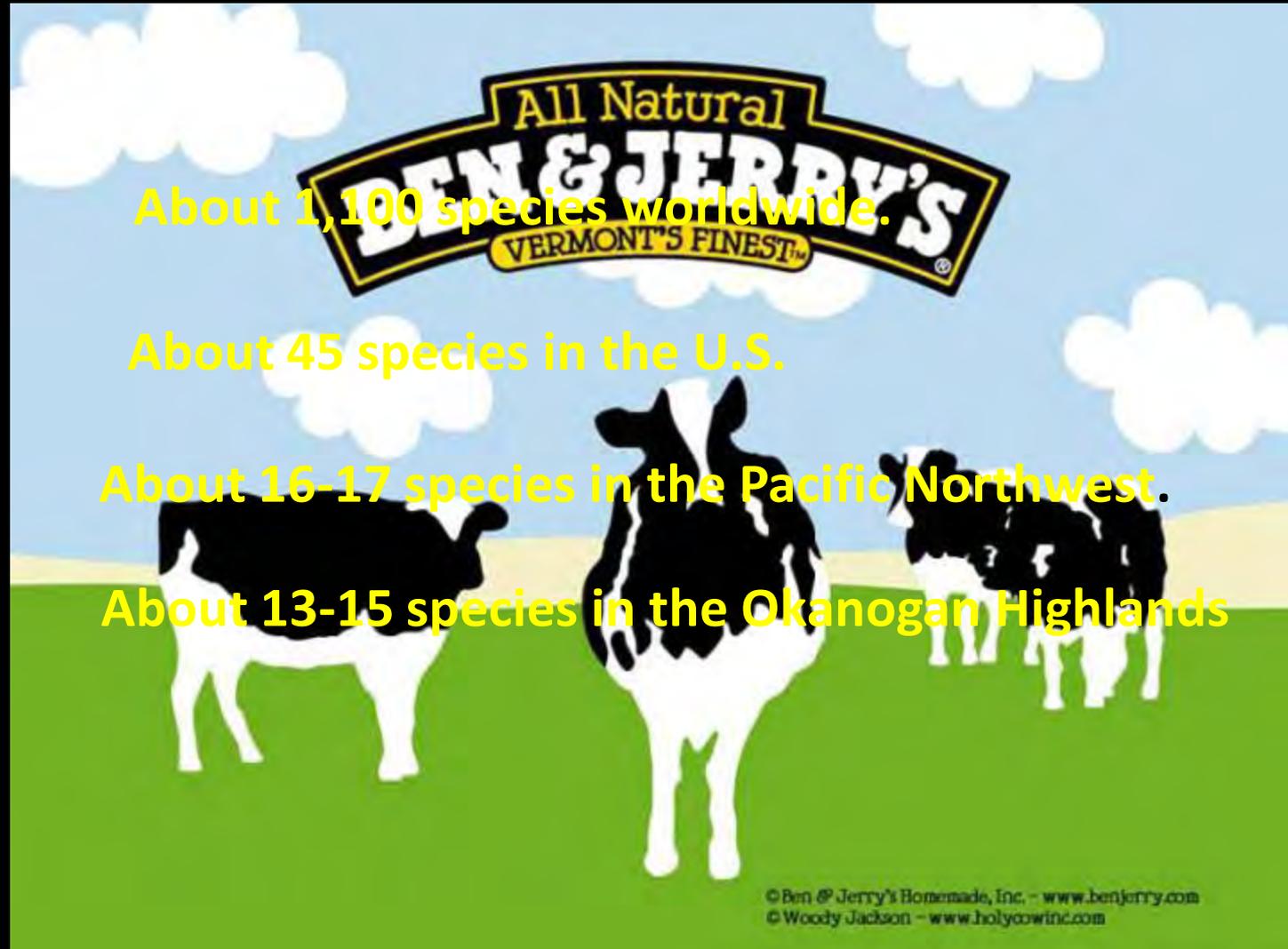


Fossil Record

- 50 million yrs



There are about as many species of bats in the world as there are ice cream flavors!



About 1,100 species worldwide.

About 45 species in the U.S.

About 16-17 species in the Pacific Northwest.

About 13-15 species in the Okanogan Highlands

Bumblebee Bat of Thailand



Flying Fox Bat of the South Pacific



photo by Fran

Bats of the Okanogan Highlands

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
California myotis	<i>Myotis californicus</i>	
Western long-eared myotis	<i>Myotis evotis</i>	a,c
Little brown myotis	<i>Myotis lucifugus</i>	
Long-legged myotis	<i>Myotis volans</i>	a,c
Yuma myotis	<i>Myotis yumanensis</i>	c
Western small-footed myotis	<i>Myotis ciliolabrum</i>	a
Fringed myotis	<i>Myotis thysanodes</i>	a
Big brown bat	<i>Eptesicus fuscus</i>	
Silver-haired bat	<i>Lasionycteris noctivagans</i>	
Pallid bat	<i>Antrozous pallidus</i>	a
Spotted bat	<i>Euderma maculatum</i>	a
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	b,c
Hoary bat	<i>Lasiurus cinereus</i>	
Western red bat	<i>Lasiurus blossevillii</i> *	
Western pipistrelle	<i>Pipistrellus hesperus</i> *	
Mexican free-tailed bat	<i>Tadarida brasillensis</i> *	
Northern long-eared bat	<i>Myotis septentrionalis</i> *	

a=WA state monitor species

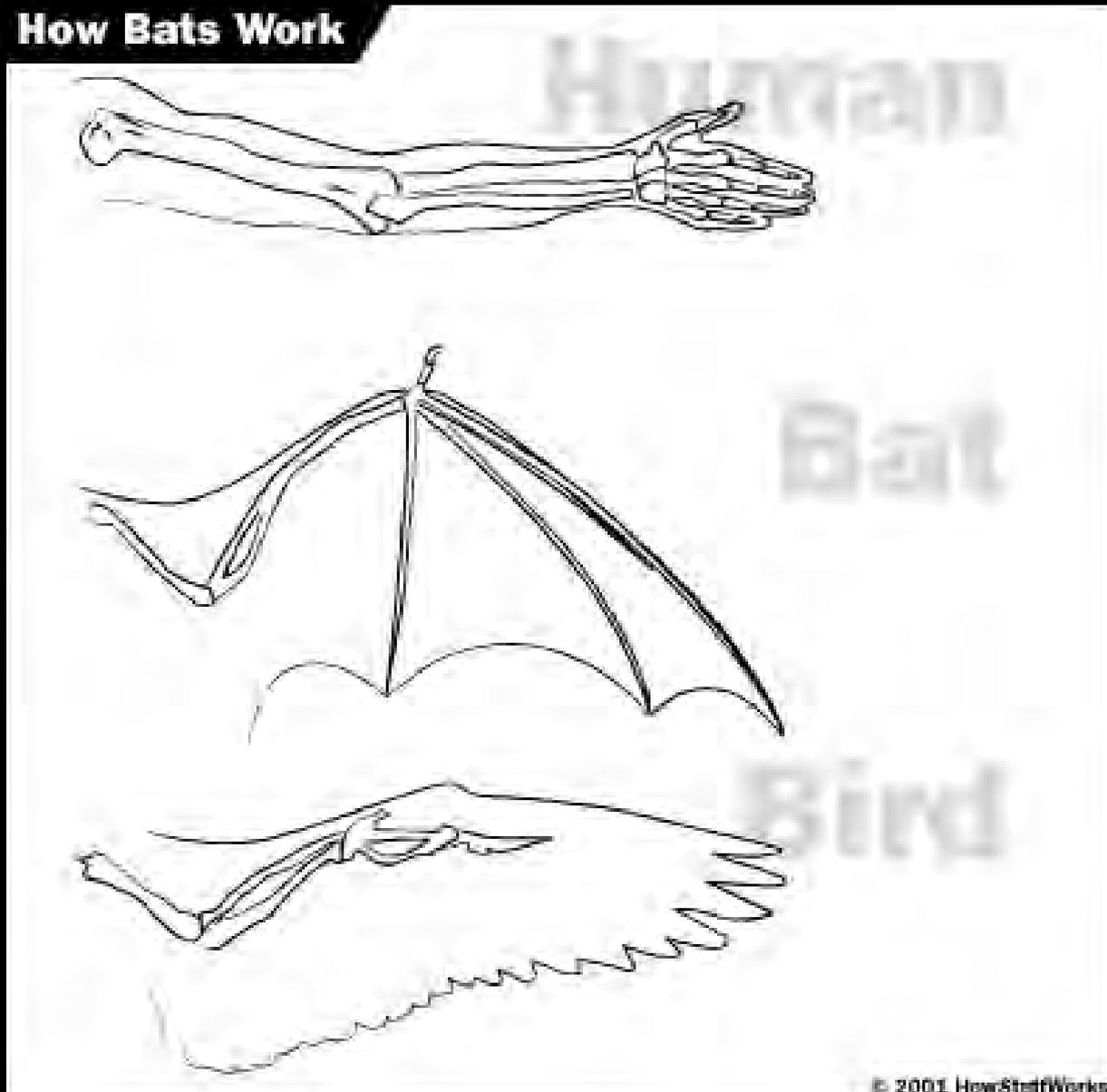
b=WA state candidate species

c=Federal species of concern

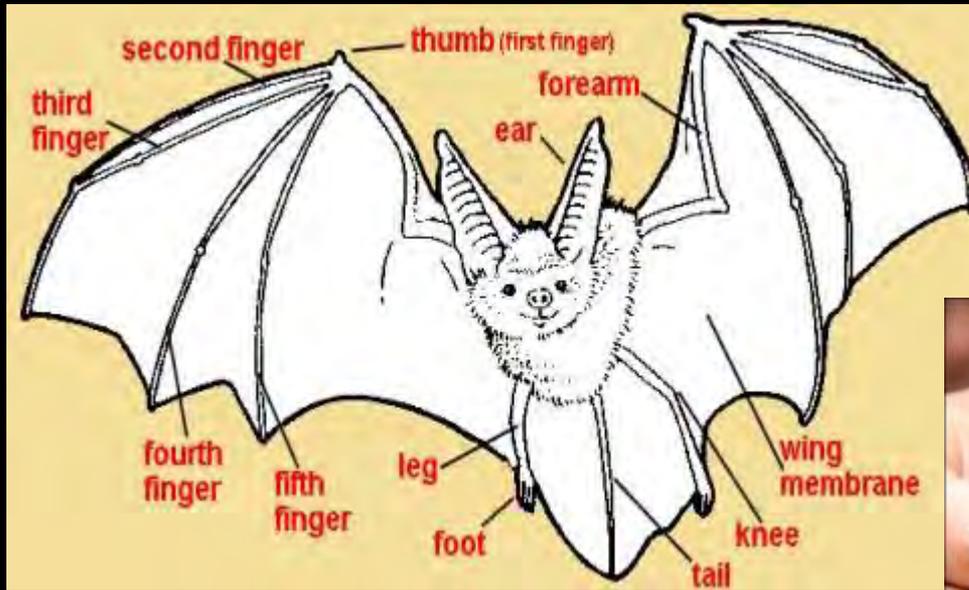
* Suspect, but not confirmed

Order Chiroptera (Hand-Winged)

How Bats Work



Morphology of a Bat



Bat Calendar

April--Bats come out of hibernation and fatten up.

May--Gender segregation begins. Fertilization takes place (delayed implantation).

June--Young are born. Pups are large-sized relative to their mother at birth, equivalent to a human mother giving birth to a 5-year old.

July--Pups nurse mother's milk and grow rapidly, able to fly at about 6 wks. old.

August--Young begin leaving the roost and eating insects on their own to fatten up and increase body weight by at least 1/3.

September--The mating period, but fertilization does not take place til spring.

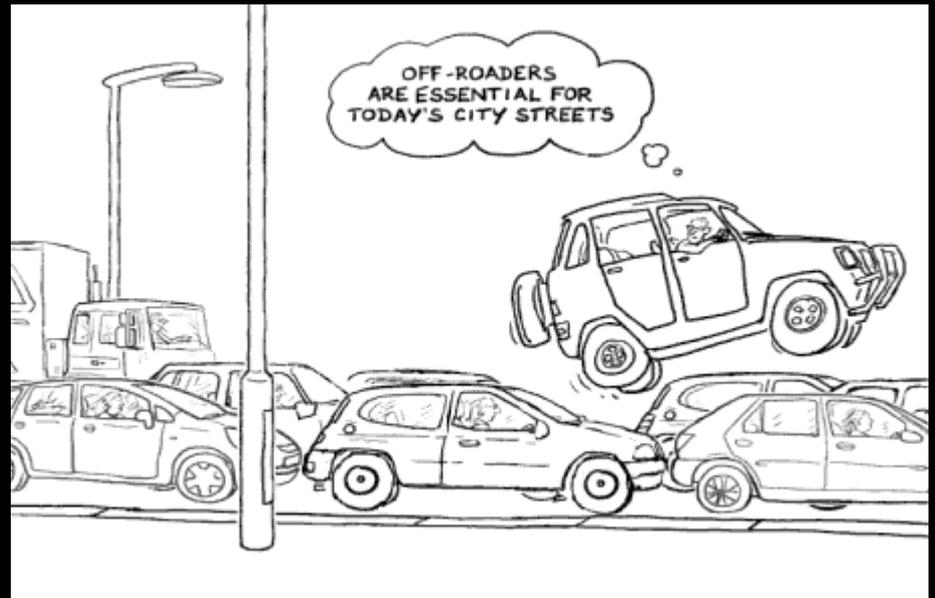
October to March—Migrate or enter hibernation in caves, mines, etc. Heart beat may fall to as little as 6 beats per minute. Critical not to disturb during this period.

Bats Live Where They Work

- Food, water and shelter



- No long commutes



Forest Roosting Habitat



Rock Crevices



Buildings as Habitat

- Day roosts



- Maternity colonies



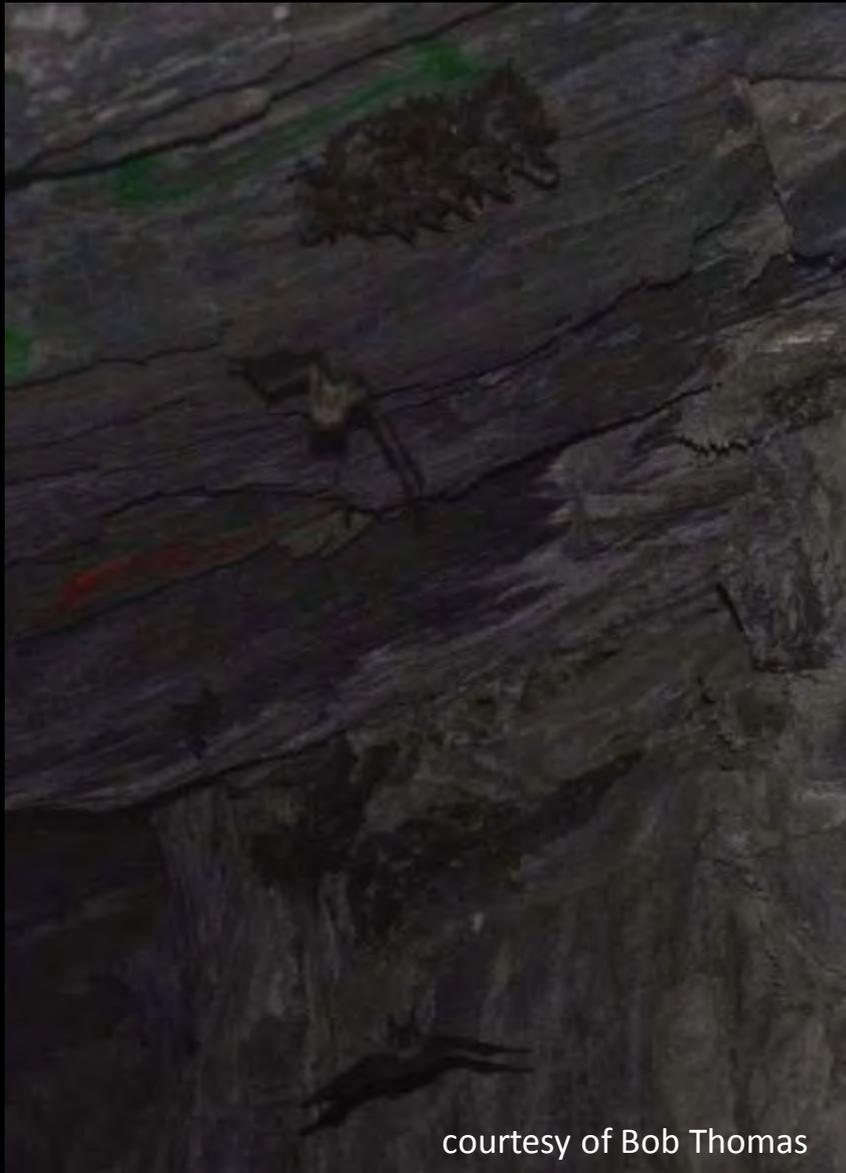
Bridge Night Roost



Caves and Abandoned Mines



Cave Ceiling



courtesy of Bob Thomas

Small Stope





**Nursery
Colony**

aka

**Maternity
Colony**



Night-time Exit Count



Ultrasonic Echolocation



Ultrasonic Detection Methods

Anabat Passive Recorder



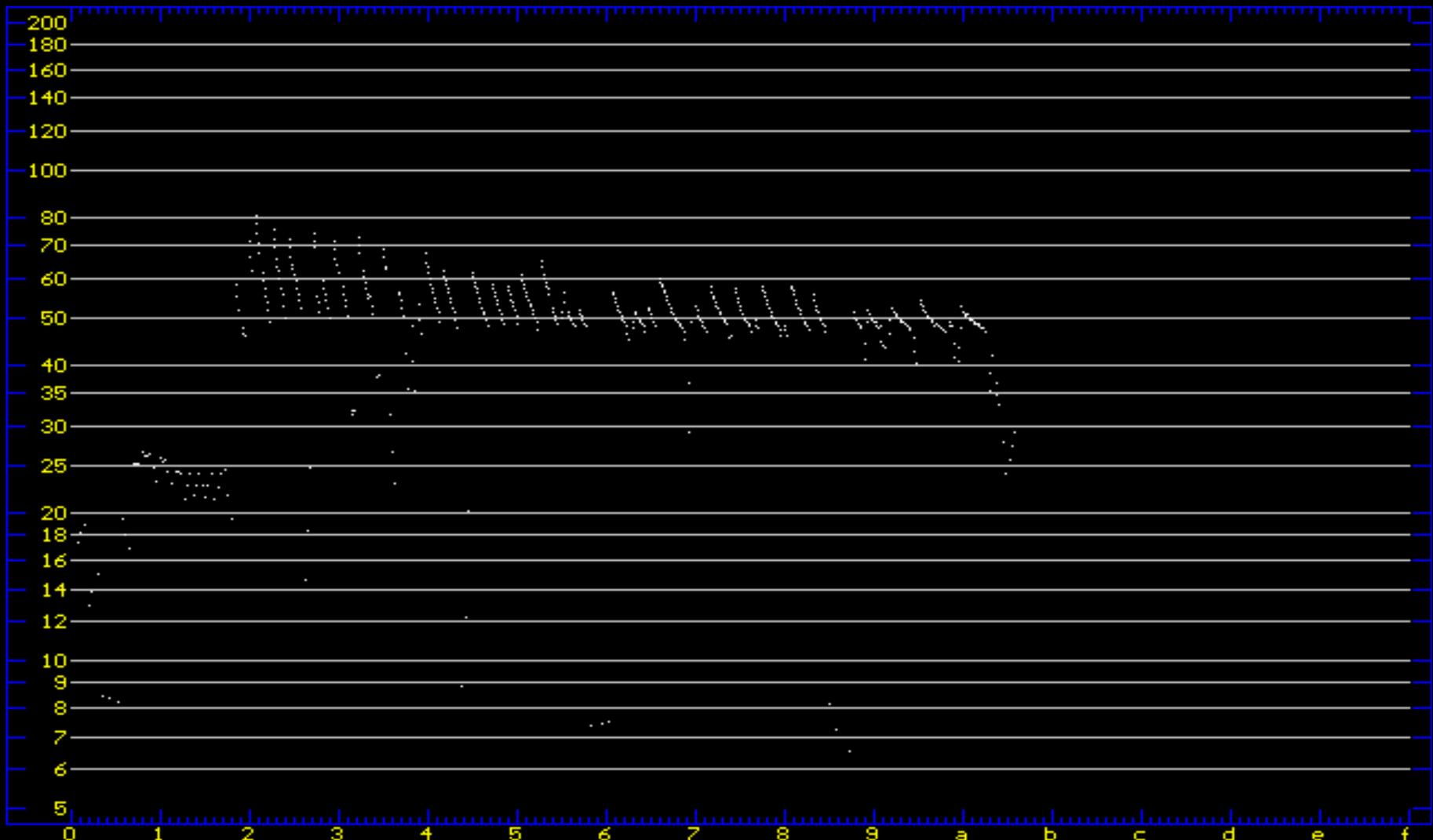
A closer look...



Anabat Active Recording

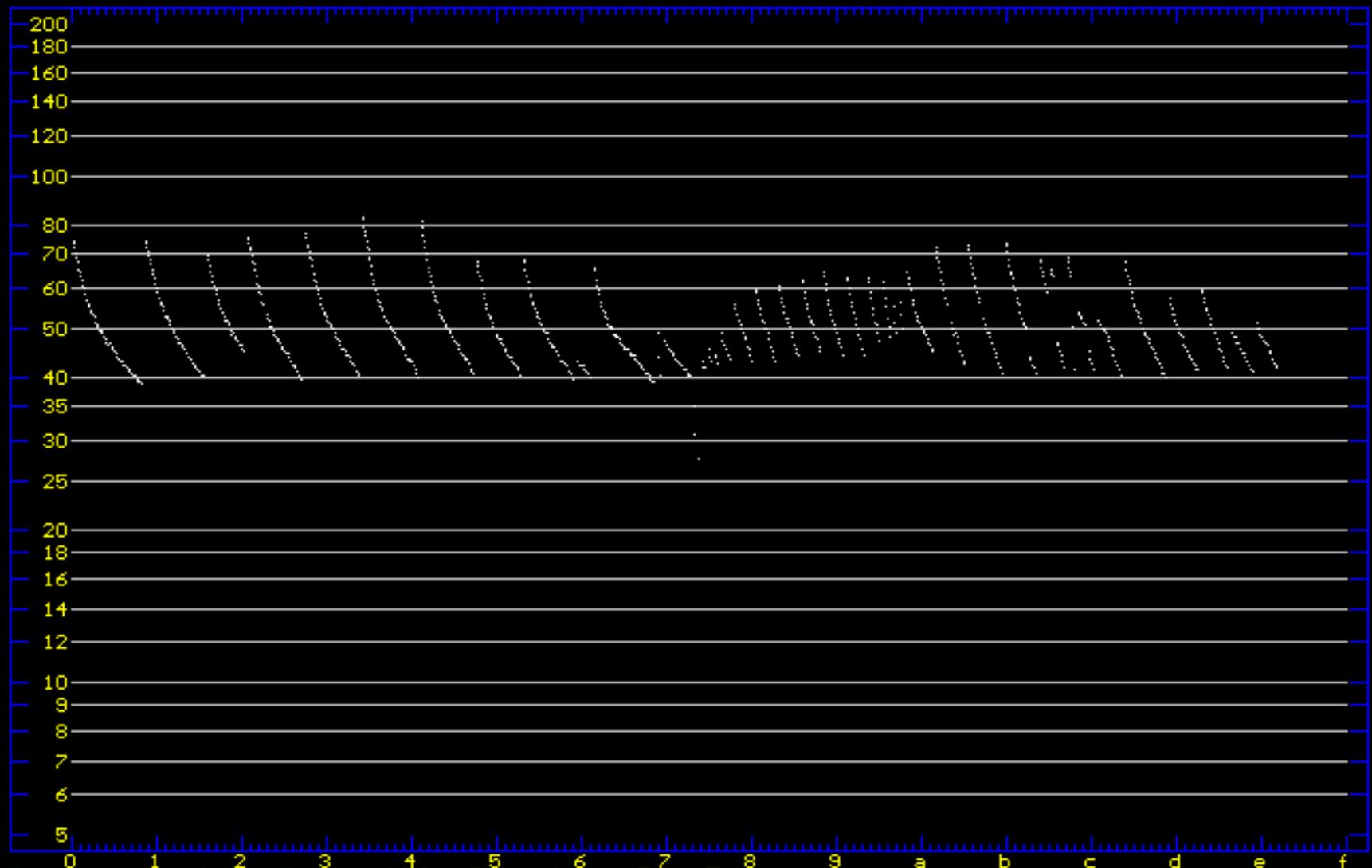


Yuma Bat (*Myotis yumanensis*) Sonogram



Tape: Voucher Date: 6/27/00 Loc: County Line Ponds Spec:
Sp: MYYU
Note: Riparian, West slope NOCA Washington, 530 ft.
A6272251.20# Div 16 Type 132 2000/06/27 2251:20
TOT 150ms TK 10ms F7 COMP St 2 FILT 0
ANALOOK Version 4.8j 14 Jun 2000

40Khz Call Group



Tape: uc std Date: 10Aug98 Loc: Big Beaver Ck.

Sp: 40Khz, likely MYLU

Spec:

Note: Passive Anabat sampling. Note feeding buzz.

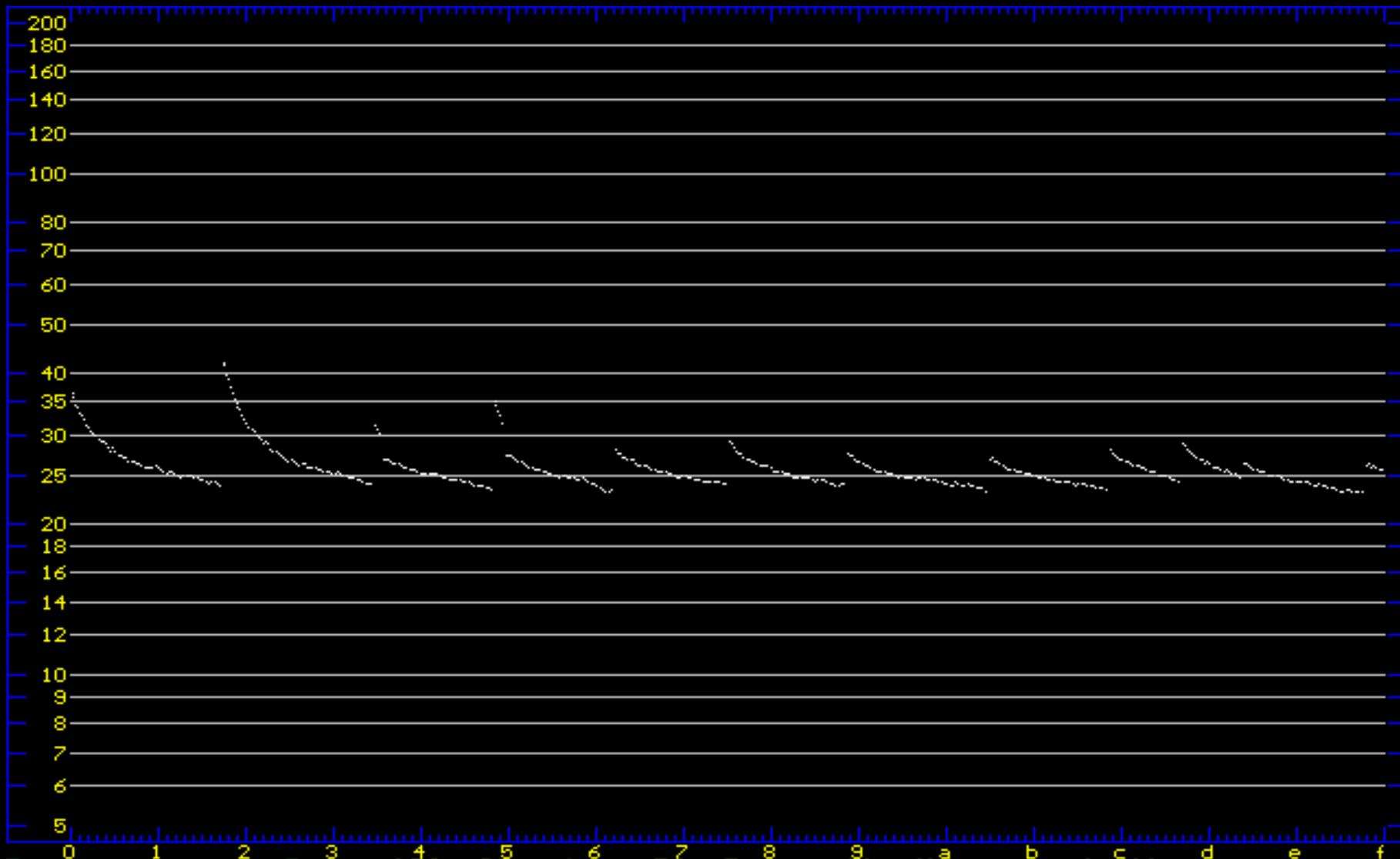
C6121439.56# Div 16 Type 132 2002/06/12 1439:56

TOT 150ms TK 10ms f7 COMP St 3954 FILT 0

ANALOOK Version 4.8j 14 Jun 2000



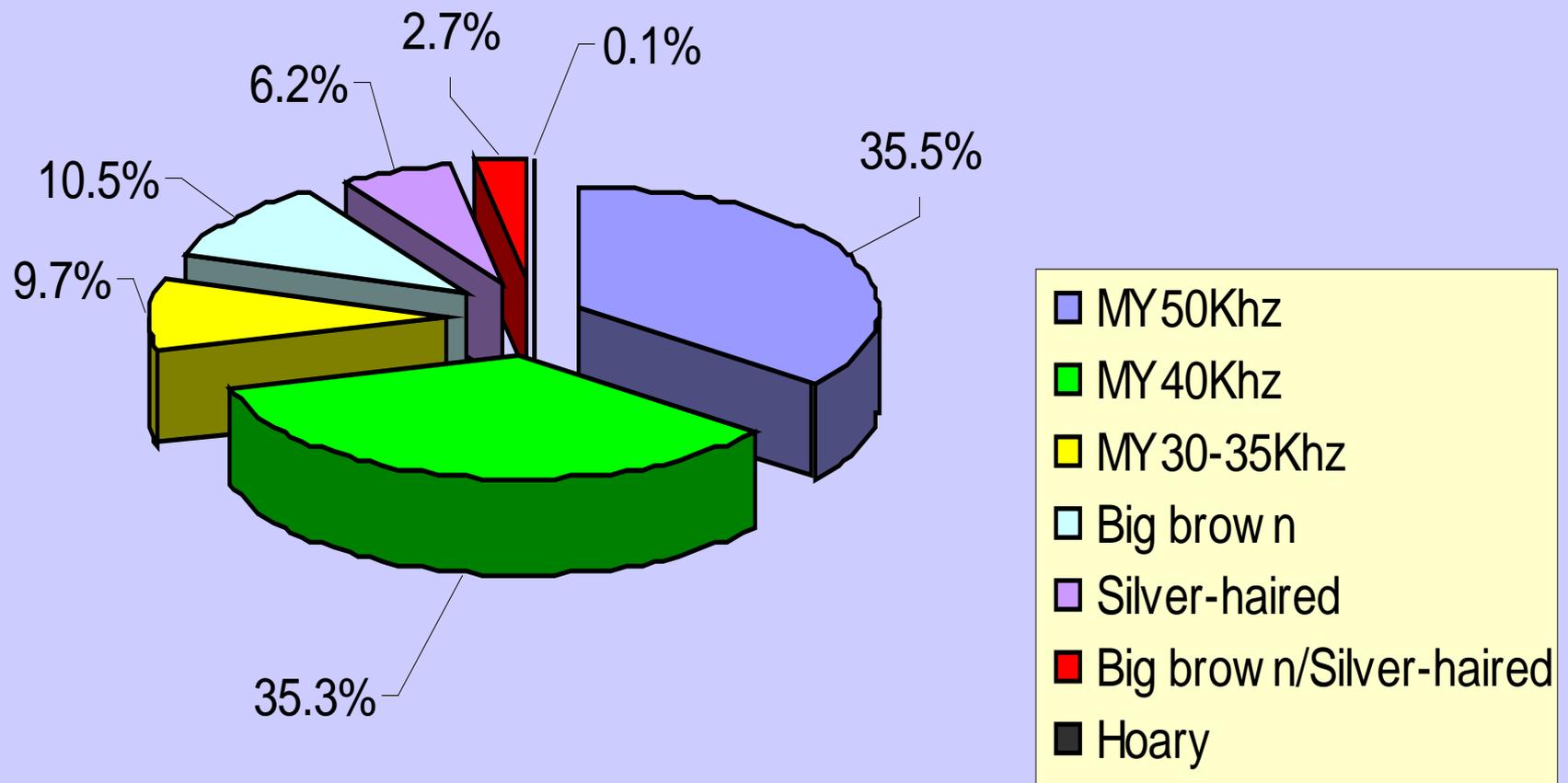
Silver-haired bat (*Lasionycteris noctivagans*) Sonogram



Tape: _____ Date: 10Aug98 Loc: Big Beaver Ck. Upper pond site. Spec: _____
 Sp: LAND
 Note: Passive Anabat sampling.

C6121440.52# Div 16 Type 132 2002/06/12 1440:52
 TOT 150ms TK 10ms f7 COMP St 5338 FILT 0
 ANALOOK Version 4.8j 14 Jun 2000

2000-2001 NOCA ANABAT DETECTIONS SPECIES COMPOSITION (n=1529 passes)



Activity Period

1998 ANABAT DETECTIONS OVER ROSS LAKE RESERVOIR

