

**Breeding Biology of the Endangered  
Mariana Swiftlet on Guam  
and  
Recommendations for Recovery**

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# ***Mariana Swiftlet*** ***(Aerodramus bartschi)***

- **Endemic to Mariana Islands**
  - **Extant: Guam, Aguiguan, Saipan**
  - **Extirpated: Rota, Tinian**
- **Roosts and nests in caves**
- **Insectivorous**
- **Federally listed, Endangered – 1984**
- **Threats - Brown treesnake, cockroaches, disturbance, & pesticides**



*Philippine Sea*

*Pacific Ocean*

Agat

**Fena  
Reservoir**

Talofofo

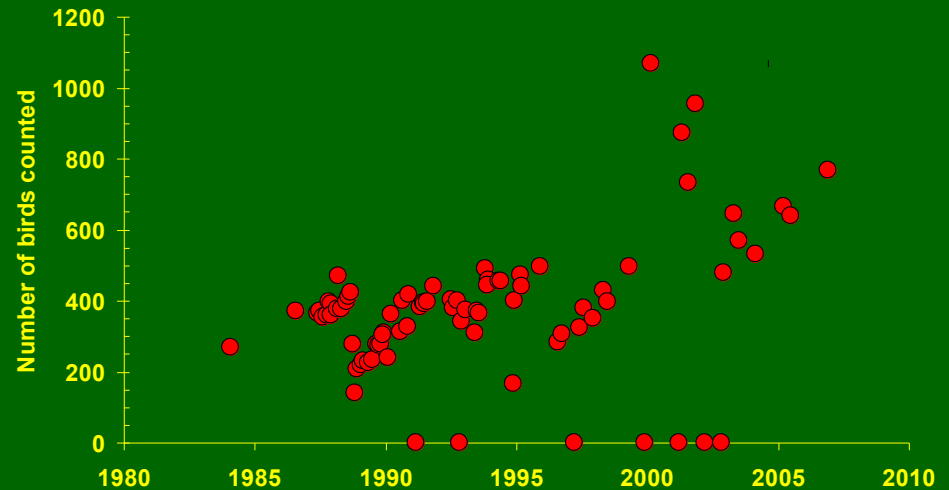
Talofofo Bay

# Status on Guam

- **Mahlac Cave -**  
pop. 600-800 Swiftlets
- **Fachi Cave -**  
pop. 45-95 Swiftlets
- **Firebreak 3 Cave -**  
pop. 70 Swiftlets
- **Yigo?**



Mahlac cave swiftlet counts

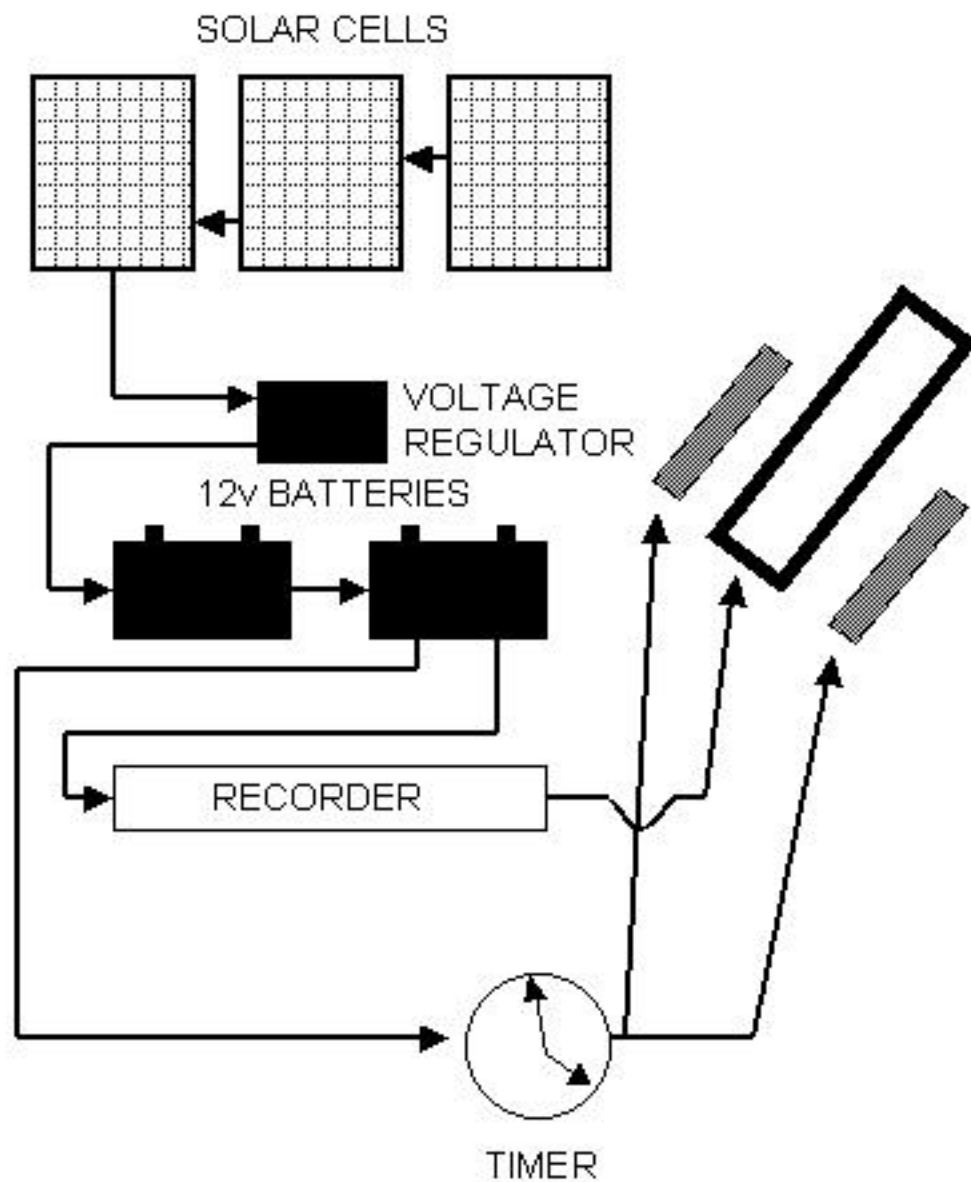


# ***STUDY OBJECTIVES***

- 1. Assess feasibility of using a video system to monitor nests and predators**
  - a. Breeding biology**
  - b. Identify predators**
  - c. Assess response to disturbance**
  
- 2. Determine distribution of foraging swiftlets and prey**







- Specifications
- Solarex* SX-30 solar panel (30 watts)
  - Kyocera* K51 solar panel (50 watts)
  - Real Good's* M16 charge controller
  - 24-hr 12-volt programmable timer
  - Delco* 12-volt deep-cycle marine batteries (960 A-hr)
  - Fieldcam* infrared illuminator (2 x 36 LED)
  - Fieldcam* TLV/BWD 8 mm time-lapse recorder
  - Sony* electronic CCD iris monochrome lens
  - 380K pixels – 570 lines horizontal resolution
  - 0.3 lux light sensitivity
  - 1/10 – 1/100,000 sec shutter speeds
  - 12.5 – 75 mm (f1.2) zoom lens

# ***VIDEO SAMPLING***

- **Sampled 8 nests every week for 48 hrs at 4-sec intervals from July 1996 – July 1997**
  - **Scored breeding behaviors at 12-min intervals**
  - **Scored behavioral response at 1-min intervals 30 min before and after disturbance by researcher**
  - **Recorded nest predators**
- **Sampled 3 x 4 m section of wall every other week for 48 hrs**



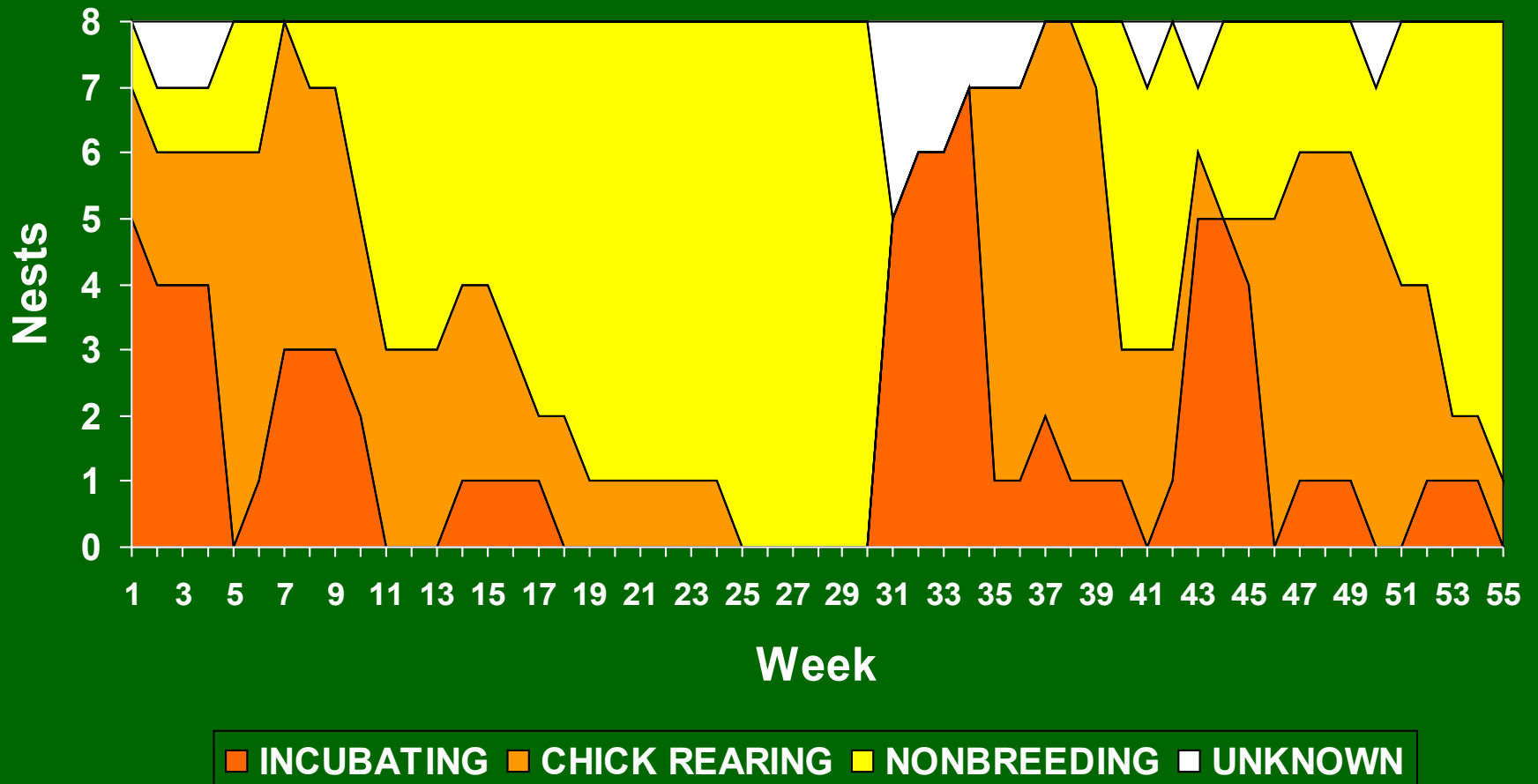
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# Breeding activity over 1 year

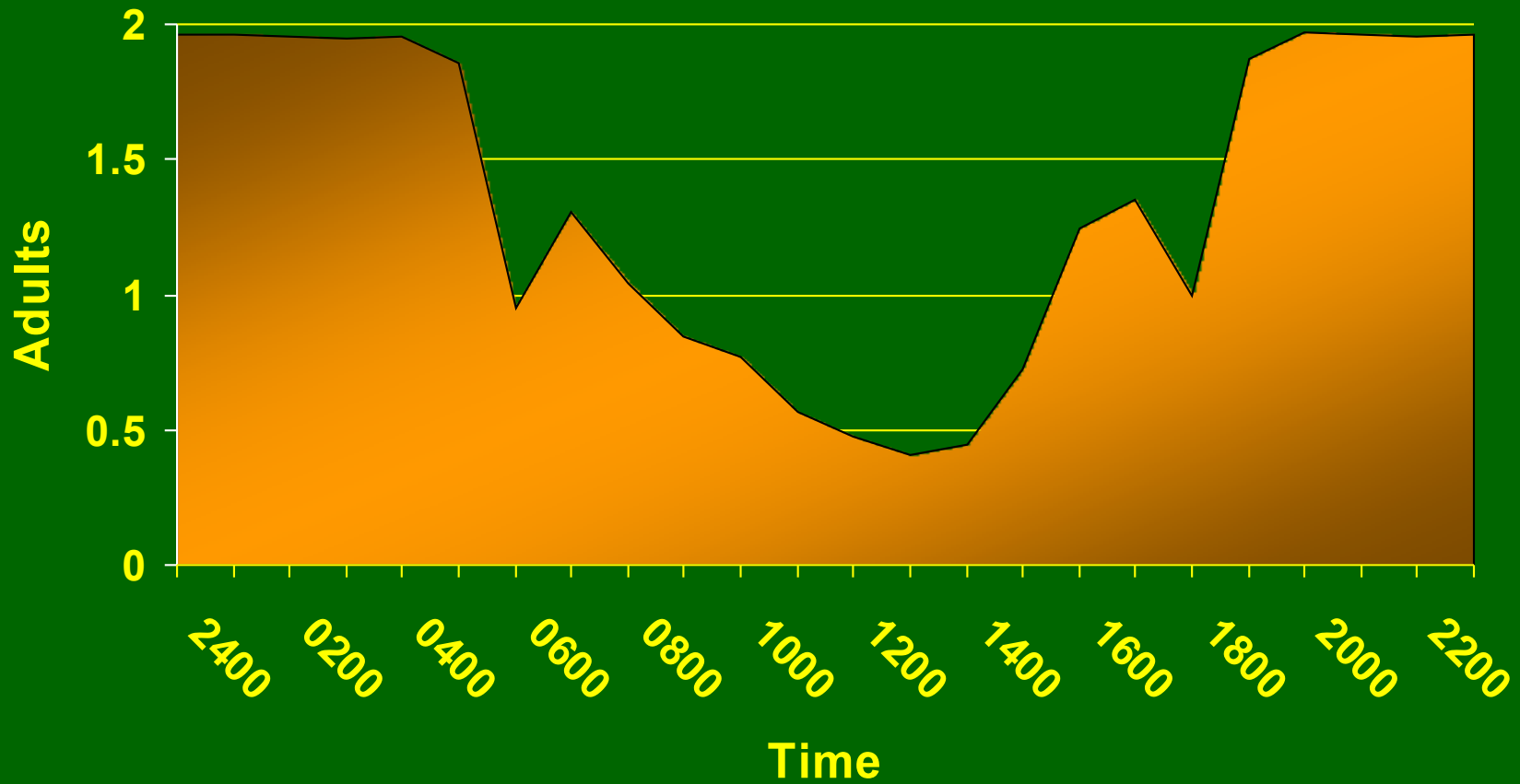


# ***Breeding biology***

- **Incubation period**
  - Range: 16-23 days
  - Mean: 18 days
- **Brooding period**
  - Range: 37-51 days
  - Mean: 42 days
- **Feeding rate**
  - Range: 1-4 per day
  - Mean: 1.8

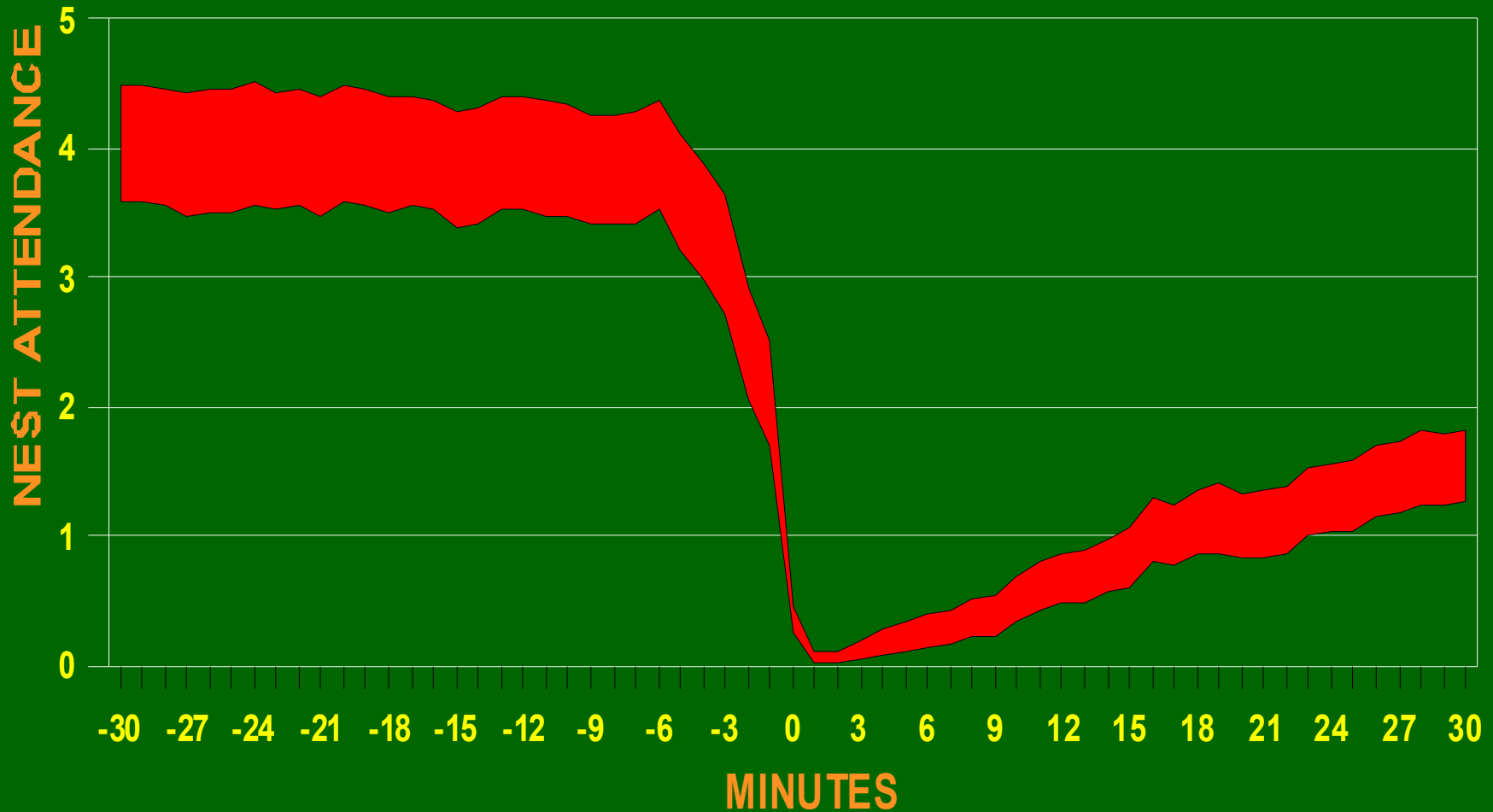


# *Swiftlet daily nest activity*





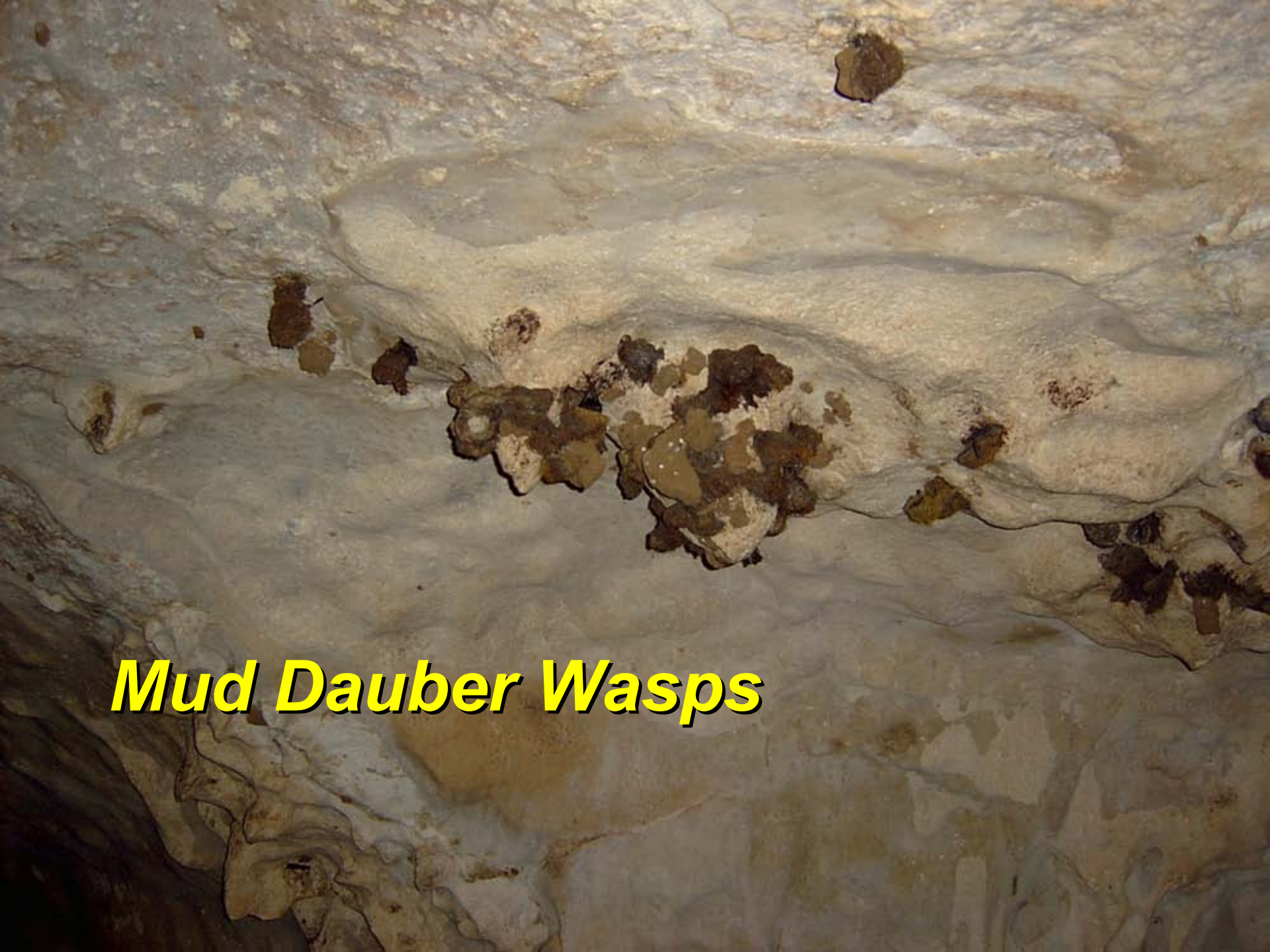
# *Swiftlet behavioral response to researcher disturbance*



# Potential predators

- Brown treesnakes
  - Wall footage
  - Snake trapping in cave
- Monitor lizard
- Feral cat
- Cockroaches

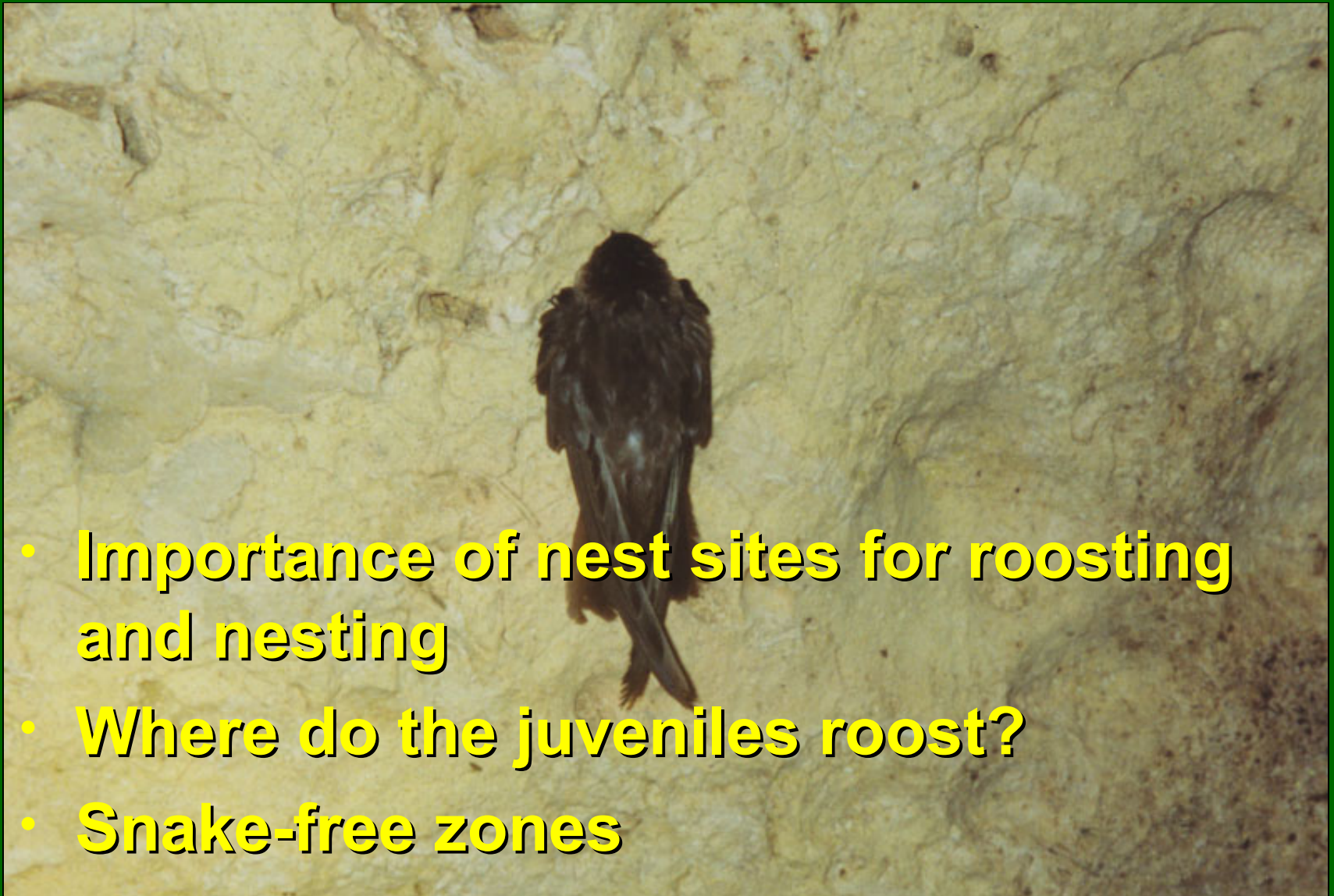




***Mud Dauber Wasps***







- **Importance of nest sites for roosting and nesting**
- **Where do the juveniles roost?**
- **Snake-free zones**

# *Artificial nest substrates*

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# ***Recommendations for management***

A photograph of a bird's nest built in a cave. The nest is constructed from a mix of mud and dried grasses, and is situated in a rocky, dimly lit environment. A small bird is visible inside the nest, looking out. The background shows the rough, textured walls of the cave.

- **Snake-proofing nest/roost sites**
  - **Artificial nesting/roosting substrates**
  - **Cave modification prior to translocation**
- **Mud dauber wasp control**
- **Minimizing disturbance in caves**

# ***Acknowledgements***

NOV-26-96  
PM 2:42:26

- U.S. Navy
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