

INDIANA BAT SURVEY
Lockheed Martin Site

**Approximately 8.5 Acre Site,
Akron, Summit County, Ohio**

Project # 34-2613

Prepared for:

ARCADIS
11000 Regency Parkway, West Tower, Suite 205
Cary, North Carolina 27518-8518
(919) 469-1952

Prepared by:



EnviroScience, Inc., 3781 Darrow Road, Stow, Ohio 44224
(800) 940-4025 enviroscienceinc.com

9 September 2008

STATEMENT OF CERTIFICATION

The analyses, opinions and conclusions in this report are based entirely on EnviroScience's unbiased, professional judgment. EnviroScience's compensation is not in any way contingent on any action or event resulting from this study. Neither EnviroScience nor any EnviroScience employee has any vested interest in the property examined in this study.

TABLE OF CONTENTS

1.0	INTRODUCTION AND SITE DESCRIPTION.....	1
2.0	SPECIES DESCRIPTION.....	1
3.0	METHODS AND MATERIALS.....	2
4.0	RESULTS.....	3
5.0	DISCUSSION.....	4

LIST OF TABLES

Table 1: GPS Coordinates for Net Sites.....	3
Table 2: Activity Observed and Recorded (July 26, 2008).....	3
Table 3: Activity Observed and Recorded (July 27, 2008).....	4
Table 4: Bats captured July 27, 2008.....	4

LIST OF APPENDICES

Appendix A: Maps

- Map 1. Location of Summit County, Ohio.
- Map 2. Location of Lockheed Martin Site on Highway Map of Summit County, Ohio.
- Map 3. USGS 7.5-minute Topographic Map of Site (Akron East Quadrangle).
- Map 4. Site Map Identifying Net Site Locations.

Appendix B: Bat Species Photographs

Appendix C: Site Photographs

1.0 INTRODUCTION AND SITE DESCRIPTION

EnviroScience, Inc. performed a Mist-net survey on July 26th and July 27th of 2008 for Arcadis at their Lockheed Martin Site in Summit County, Ohio (Appendix A: Map 1) in order to assess the presence of the endangered Indiana Bat (*Myotis sodalis*).

The site is located west of Landon Street, south of East Archwood Avenue, and north of Triplett Avenue, in the City of Akron, Ohio (Appendix A: Map 2). The Lockheed Martin site is approximately 8.5 acres in total size, with approximately 5 acres of second growth forest. The forested area is divided into two main sections. One is located in the northern portion of the site and the second at the southern end of the site (Appendix A: Map 3). These forested areas are connected by a narrow section of open field (Appendix C: Photos 1 and 2). The site is surrounded by commercial and residential land-use and is located just north of the Akron Fulton International Airport (Appendix A: Map 4). Haley's Ditch, a large open water channel, runs south to north through the central portion of the site (Appendix C: Photo 3). The wooded sections of the site that Haley's Ditch passes through contain thick understory woody and herbaceous vegetation much of which is lacking suitable corridors for sampling (Appendix C: Photo 4). No underground mines, mine shafts, or mine portals were noted on the site.

Two netting sites were selected under or adjacent to the closed canopy of the riparian corridor of Haley's Ditch and two net sets were placed at each site. The mist-net survey was performed by Mr. Merrill Tawse (USFWU Permit #TE157679-0) and assisted by Kristina Tawse and Jamie Willaman of EnviroScience.

2.0 SPECIES DESCRIPTION

The Indiana Bat is in the genus *Myotis* (Appendix B: Photo 1 & 2). Within the study range, two other bats from this genus are encountered, the Little Brown Bat (*Myotis lucifugus*), and the Northern Long-eared Bat (*Myotis septentrionalis*). Size, length, and habitat requirements are similar for these three species. Each of these three species could be encountered foraging in habitats like those found on the study site and each could be encountered roosting under exfoliating bark. At this time, accurate identification can only be made by capturing and direct examination of these bats.

The Indiana Bat is distinguishable from the other two *Myotis* species in that the Northern Long Eared Bat has a longer and more pointed tragus (Appendix B: Photo 5) in its ear pinna than the Indiana Bat or Little Brown Bat. The Little Brown Bat has some scattered, longer toe hairs that extend well beyond their claws, which the Indiana Bat lacks. The Indiana Bat has a "keeled calcar" (Appendix B: Photo 2) along the trailing edge of its interfemoral membrane, which the Little Brown Bat does not. The pelage color of the Indiana Bat is a dull grayish color instead of the bronze color of the other two bats (Appendix B: Photo 1). The Indiana Bat has pink lips, which are brown in the other two species (Appendix B: Photo 3 & 4).



EnviroScience Inc.
3781 Darrow Road
Stow, OH 44224
(330)688-0111
Project # 34-2613

3.0 METHODS AND MATERIALS

The survey was conducted over two consecutive evenings, July 26th and 27th of 2008, by mist netting within the Lockheed Martin site. Two sites were selected and two canopy nets were stretched at each, so that they extended laterally beyond the corridor sides. The nets also extended above the closed upper canopy of the riparian corridor. Each net set was comprised of two canopy nets. The nets used were very fine black mist nets (36 mesh, 2 ply, 50 denier, 4 shelf, 12 meter long and 2.6 meter high nets from AFO Banding Supplies of Manomet MA) stacked horizontally to a height of approximately 5.2 meters and a length of 12 meters. The nets were stretched between telescoping metal poles equipped with pulley systems to facilitate raising and lowering. Each mist-net system was positioned across a potential bat corridor (flyway) in areas with a closed canopy and lateral borders approximating the net's length (12 m). The location of each net site was noted using a Global Positioning System (GPS). The nets were surveyed at a minimum surveying period of five hours each night.

The two net sites were selected were closed canopy riparian corridors formed by Haley's Ditch. Net Site 1 was in the northeastern section of the site and Net Site 2 was at the extreme southern section. The mid-section of the site is open field and was not suitable for netting. The extreme north and western portions of the site consisted of open wetland, sparsely surrounded by larger trees including a few dead cottonwoods; but no closed canopy corridors for netting. Net Site 1 was located just down the riparian corridor from these trees.

At Net Site 1, (Appendix A: Map 4), both nets were placed so that they traversed Haley's Ditch in the northeastern section of the site. This section of the channel was forested with secondary growth consisting of larger Cottonwoods (*Populus deltoides*) and various other young successional trees such as Boxelder, and Maples (Appendix C: Photo 5). Both nets completely spanned the stream corridor. Immediately east of this net site location is a parking lot.

Net Site 2 was located just north of Triplet Blvd, adjacent to a restricted concrete walkway that crosses Haley's Ditch (Appendix C: Photo 6). At this site, there was only one area with an open corridor over Haley's Ditch, where one of the nets was placed. The second net was placed in a mature wooded canopy opening with mowed grass, east of the ditch (Appendix C: Photo 7).

Nets were spread each evening at dusk (8:30pm) and lowered after over five hours of netting. Nets were checked every 20 minutes for the presence of captured individuals. At the end of the survey, all materials (nets and poles) were removed from the site.



4.0 RESULTS

TABLE 1: GPS Coordinates for Net Sites.

Net Site	Latitude	Longitude
1	N 41° 02.764'	W 081° 28.278'
2	N 41° 02.578'	W 081° 28.350'

TABLE 2: Activity Observed and Recorded July 26, 2008.

Trip	Time	Captures	Temperature	Comments
1	8:50 p	None*	80°F	
2	9:10 p	None*	78°F	
3	9:30 p	None*	70°F	
4	9:50 p	None*	69°F	
5	10:10 p	None*	69°F	
6	10:30 p	None*	69°F	
7	10:50 p	None*	69°F	
8	11:10 p	None*	69°F	
9	11:30 p	None*	69°F	
10	11:50 p	None*	68°F	
11	12:10 a	None*	68°F	
12	12:30 a	None*	68°F	
13	12:50 a	None*	68°F	
14	1:10 a	None*	68°F	
15	1:30 a	None*	68°F	Nets Closed

*signifies no physical captures and lack of activity detected either through visual or acoustical monitoring



EnviroScience Inc.
 3781 Darrow Road
 Stow, OH 44224
 (330)688-0111
 Project # 34-2613

TABLE 3: Activity Observed and Recorded July 27, 2008.

Trip	Time	Captures	Temperature	Comments
1	8:50 p	None*	78°F	
2	9:10 p	None	78°F	Saw first bat flying, Net Site 2
3	9:30 p	None*	77°F	
4	9:50 p	None*	77°F	
5	10:05 p	None*	75°F	
6	10:30 p	None*	74°F	
7	10:50 p	One	72°F	Captured 1 Big Brown Bat; Net Site 2
8	11:10 p	None*	71°F	
9	11:30 p	None*	69°F	
10	11:50 p	None*	68°F	
11	12:10 a	None*	68°F	
12	12:30 a	None*	68°F	
13	12:50 a	None*	68°F	
14	1:10 a	None*	67°F	
15	1:30 a	None*	67°F	Closed nets

*Signifies no physical captures and lack of activity detected either through visual or acoustical monitoring

TABLE 4: Bats captured July 27, 2008.

Common Name	Scientific Name	Sex	Time	Site #	Age	Weight	Band #
Big Brown Bat	<i>Eptesicus fuscus</i>	Male	10:50 p	2	Adult	19 g	ODNR 8705

5.0 DISCUSSION

Nets were opened at 8:30 PM on day one of the survey, July 26th 2008. The conditions at that time indicated that the evening would be acceptable for the conditions required by the US Fish and Wildlife Services (USFWS), with a starting temperature of 80° F (Table 2) and a final temperature of 68° F. A small amount of rain passed through the area in the late afternoon and skies remained cloudy until approximately midnight. After midnight, the skies were partly clear. There was no wind during the sampling period. Sampling on July 26 did not result in any captures, visual or acoustic detection of bats at the survey site.

On the second night of the survey, July 27th 2008, the nets were opened at 8:30 PM at a starting temperature of 78° F (Table 3). The conditions were partly overcast, with low



EnviroScience Inc.
3781 Darrow Road
Stow, OH 44224
(330)688-0111
Project # 34-2613

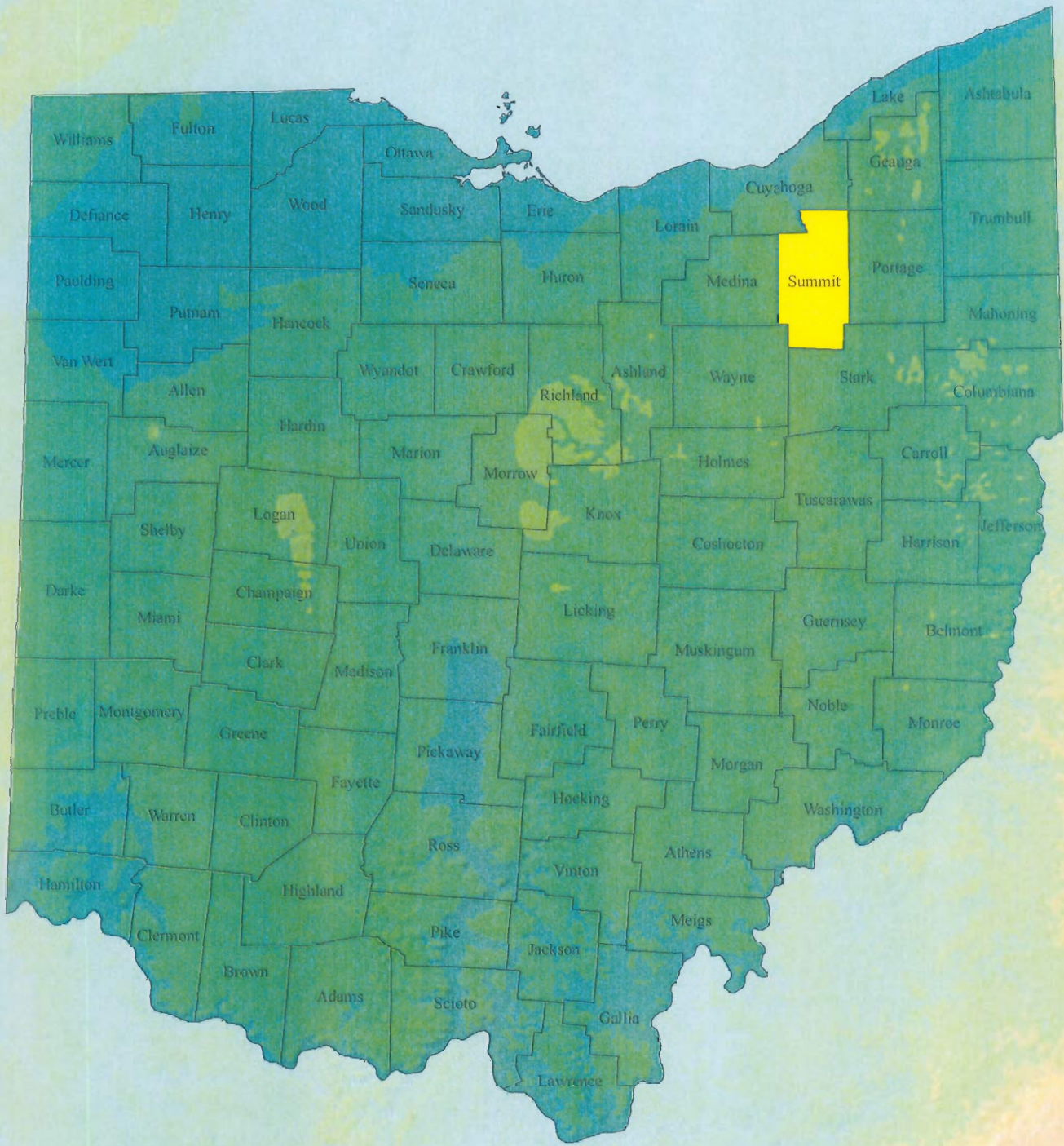
humidity and no wind. Over the five-hour survey the temperature decreased to a final reading of 67° F. All weather conditions and time intervals were in compliance with USFWS standards.

The sampling effort in this highly disturbed site resulted in only one bat capture, a Big Brown Bat (Table 4). In addition, the bat observed flying in the vicinity of Net Site 2 at dusk was visually larger than a *Myotis*. **No Indiana bats were captured in this survey.**

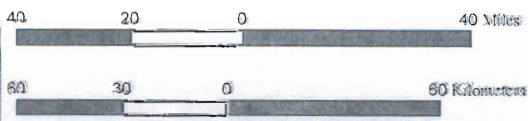


EnviroScience Inc.
3781 Darrow Road
Stow, OH 44224
(330)688-0111
Project # 34-2613

Appendix A: Maps

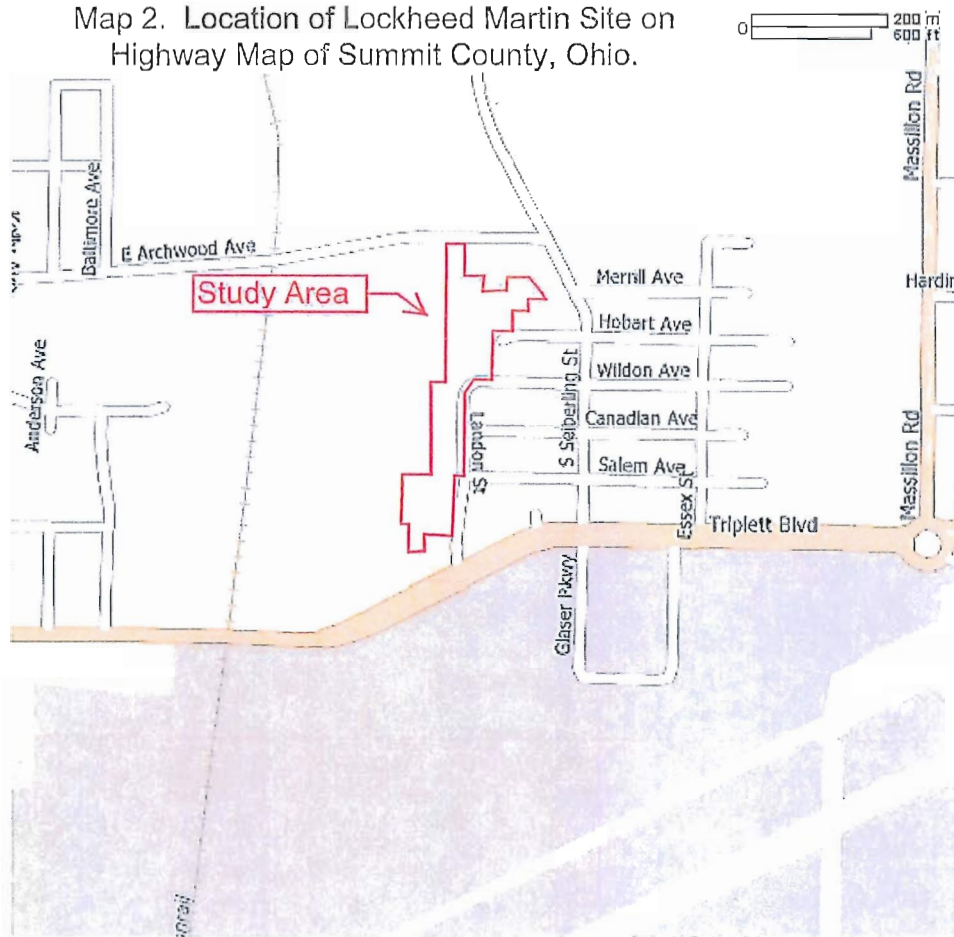


Map 1. Location of Summit County, Ohio

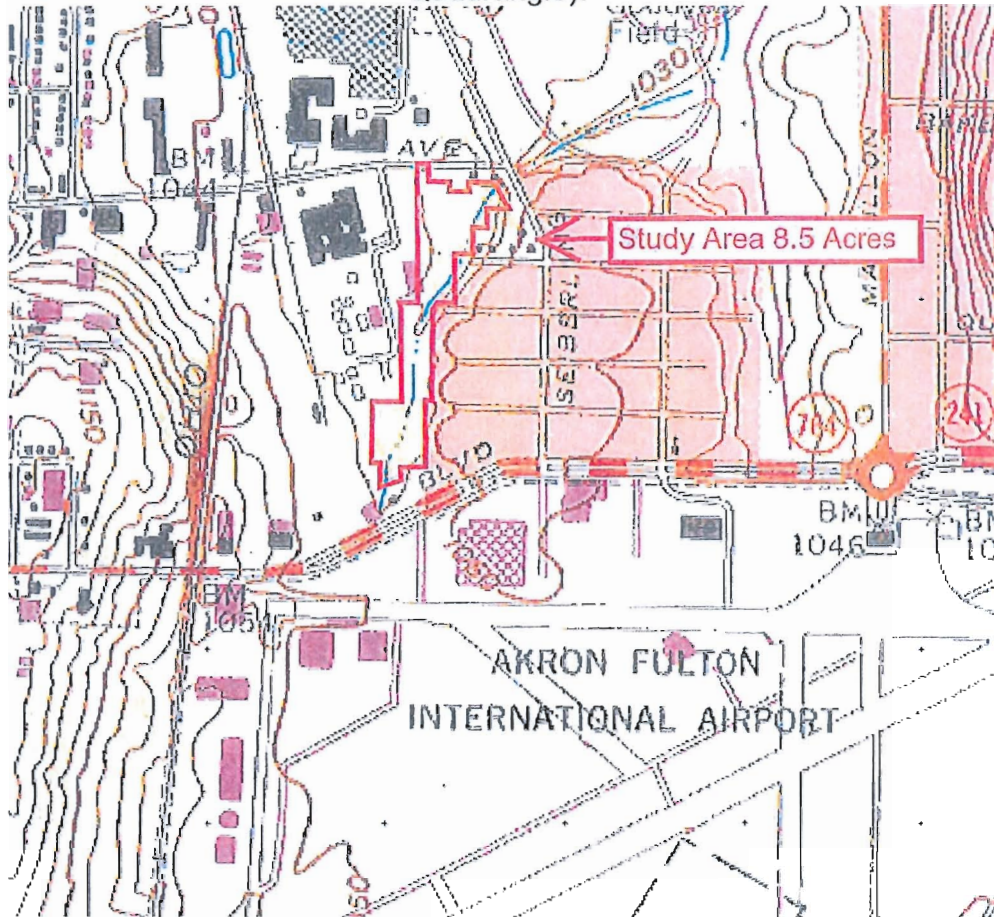


EnviroScience, Inc.
"Excellence in Ecological Monitoring"

Map 2. Location of Lockheed Martin Site on Highway Map of Summit County, Ohio.



Map 3. USGS 7.5-minute Topographic Map of Site (Akron East Quadrangle).



Map 4. Site Map Identifying Net Site Locations.



Appendix B: Bat Species Photographs

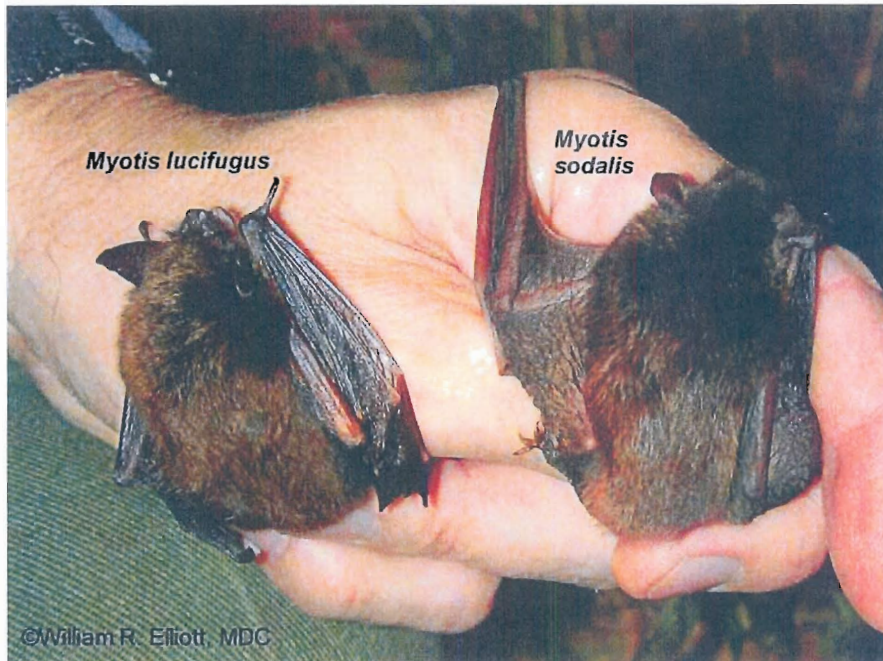


Photo 1. Pelage color comparison of Little Brown (*M. lucifugus*) to Indiana Bat (*M. sodalis*).

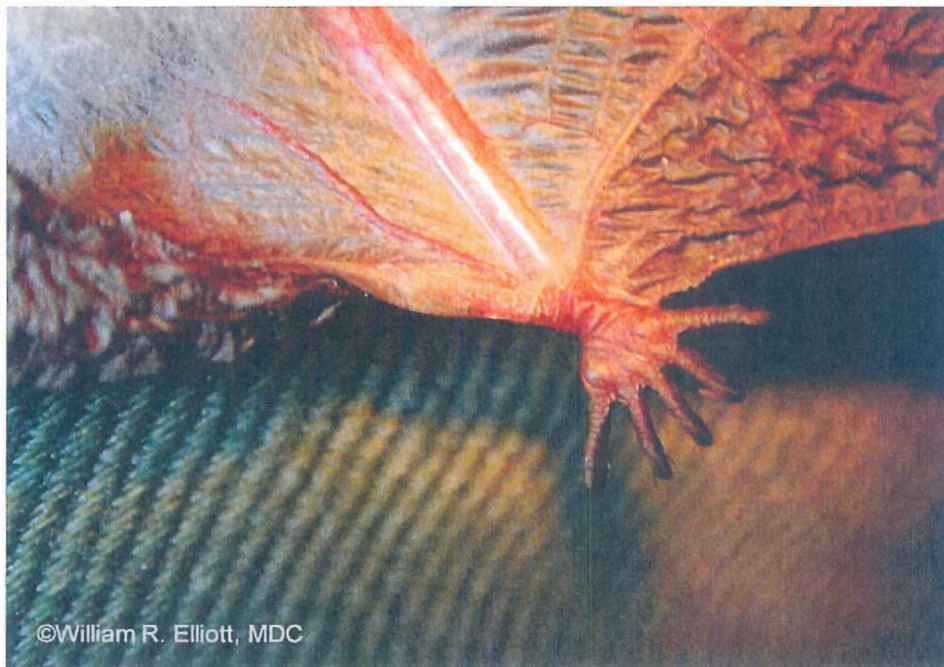


Photo 2. Keeled calcar of an Indiana Bat.



Photo 3. Indiana Bat showing pink lips.



Photo 4. Little Brown Bat showing dark lips and short ear tragus.



Photo 5. Northern Long-eared Bat showing long ear tragus.



Photos 6 & 7. Big Brown Bats showing bare muzzle.



Photo 8. Big Brown Bat captured at Lockheed Martin Site.