

Assessing BASH Risk Potential of Migrating and Breeding Osprey in the Mid-Atlantic Chesapeake Bay Region

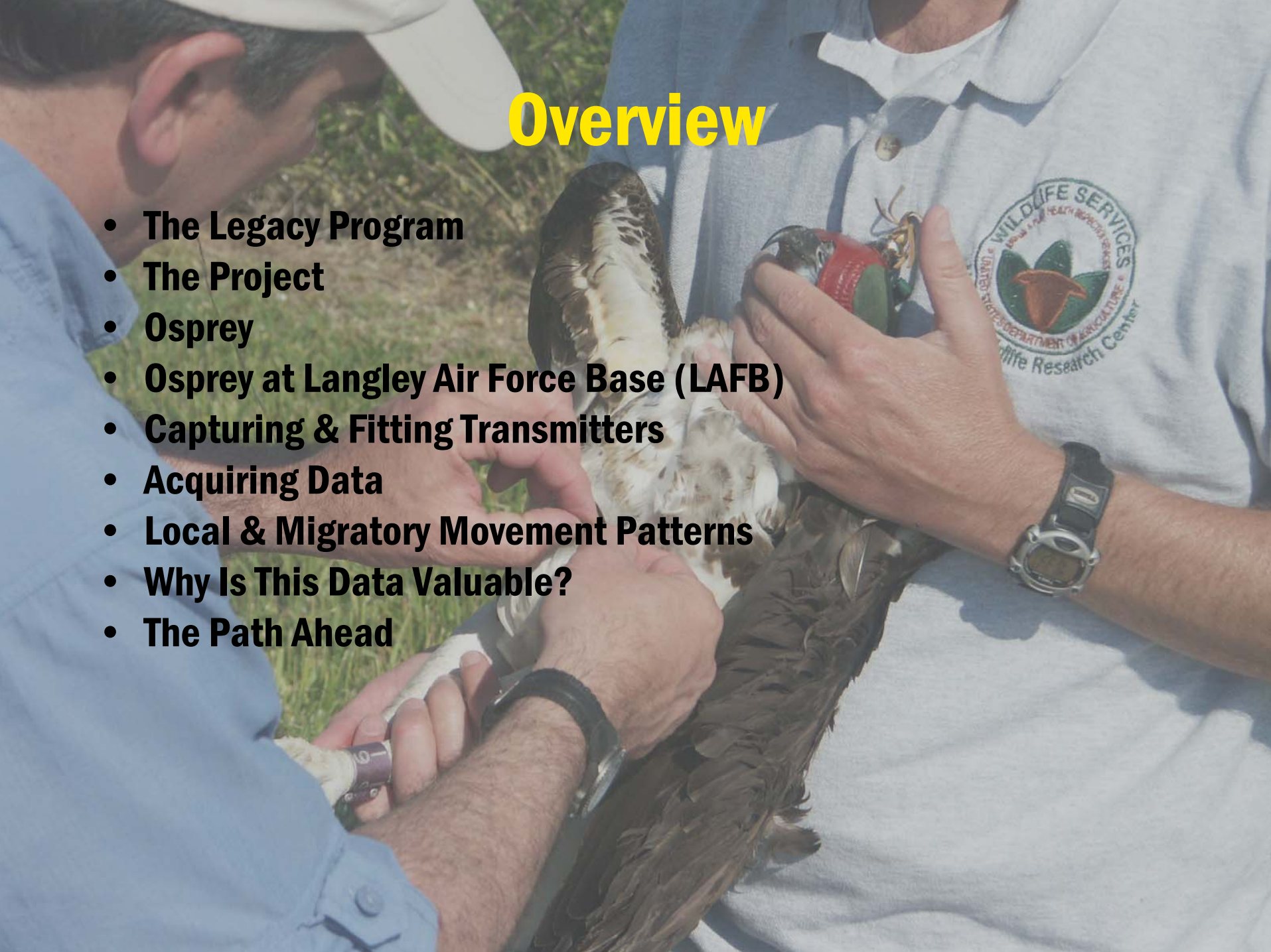


USAF Environmental Training Symposium

Mr. Troy Andersen, 1 CES/CEVR

Overview

- **The Legacy Program**
- **The Project**
- **Osprey**
- **Osprey at Langley Air Force Base (LAFB)**
- **Capturing & Fitting Transmitters**
- **Acquiring Data**
- **Local & Migratory Movement Patterns**
- **Why Is This Data Valuable?**
- **The Path Ahead**





Stewardship

Partnership

Leadership

“Protecting and Enhancing Resources While Supporting Military Readiness”

DoD Legacy Resource Management Program

- **Established in 1990**
- **Three Guiding Principles**
 - **Stewardship**
 - **Leadership**
 - **Partnership**
- **Additional Information:**
 - **www.dodlegacy.org**

Protecting and Enhancing Resources While Supporting Military Readiness

Proposal Criteria

- **Regional Ecosystem Management**
- **Monitoring and Predicting Migratory Bird Patterns**
- **Wildlife Studies to Ensure Safety of Military Operations**
- **Supports Legal Requirements to Implement INRMP & BASH**
- **Pursues New Technology to Identify and Effectively Manage INRMP & BASH**



Project Description

- **A collaborative multi-agency (state and federal) effort where breeding adult Osprey and nestlings were live-captured, fitted with GPS satellite transmitters, and released from selected nest locations in Back River on the Western Shore of the Chesapeake Bay of Virginia.**
- **Movements of Osprey are tracked via the ARGOS satellite network.**
- **Movement information collected from breeding Osprey will be cross referenced to Langley Air Force Base flying operations to develop GIS-based strike-risk models.**

Project Description

- **Migratory patterns of Osprey will be evaluated to assess the risk of migrating Osprey to military aircraft operations along the Eastern seaboard.**
- **Expected to continue until 2008.**

Multi-agency cooperative research effort



NWRC



AHAS



ARGOS
SYSTEMS



Research Objectives

- **Examine Osprey migration patterns in relation to military flight operations**
- **Determine airfield occurrence in relation to Osprey breeding territories**
- **Develop GIS-based Osprey strike risk models**

Osprey (*PANDION HALIAETUS*)

- L23'' x W6.3'' x W3.5lbs
- Worldwide Distribution
- 13-17yr Life-Span
- Nest on Trees, Cliffs,
and Platforms
- Lays 2-3 Eggs
- 32-42 Day Incubation Period
- 48-59 Day Nestling Period
- Males Providers /
Females Caregivers
- Found Nesting Always Near Food = Water



Key Breeding Characteristics

- **Established pairs nearly always return to their old nest sites**
- **Semi-colonial nesters**
- **New breeders return remarkably close to their natal/fledge sites**
- **Fidelity is dependent on courtship success**
- **Population Stability = 0.95-1.30 young per nest**
- **Increasingly becoming dependent on artificial nest sites**

Population Status and Distribution

- 1955 – 1972 population status plummeted

Pesticide DDT

- 1973 – 2004 dramatic recovery in population status

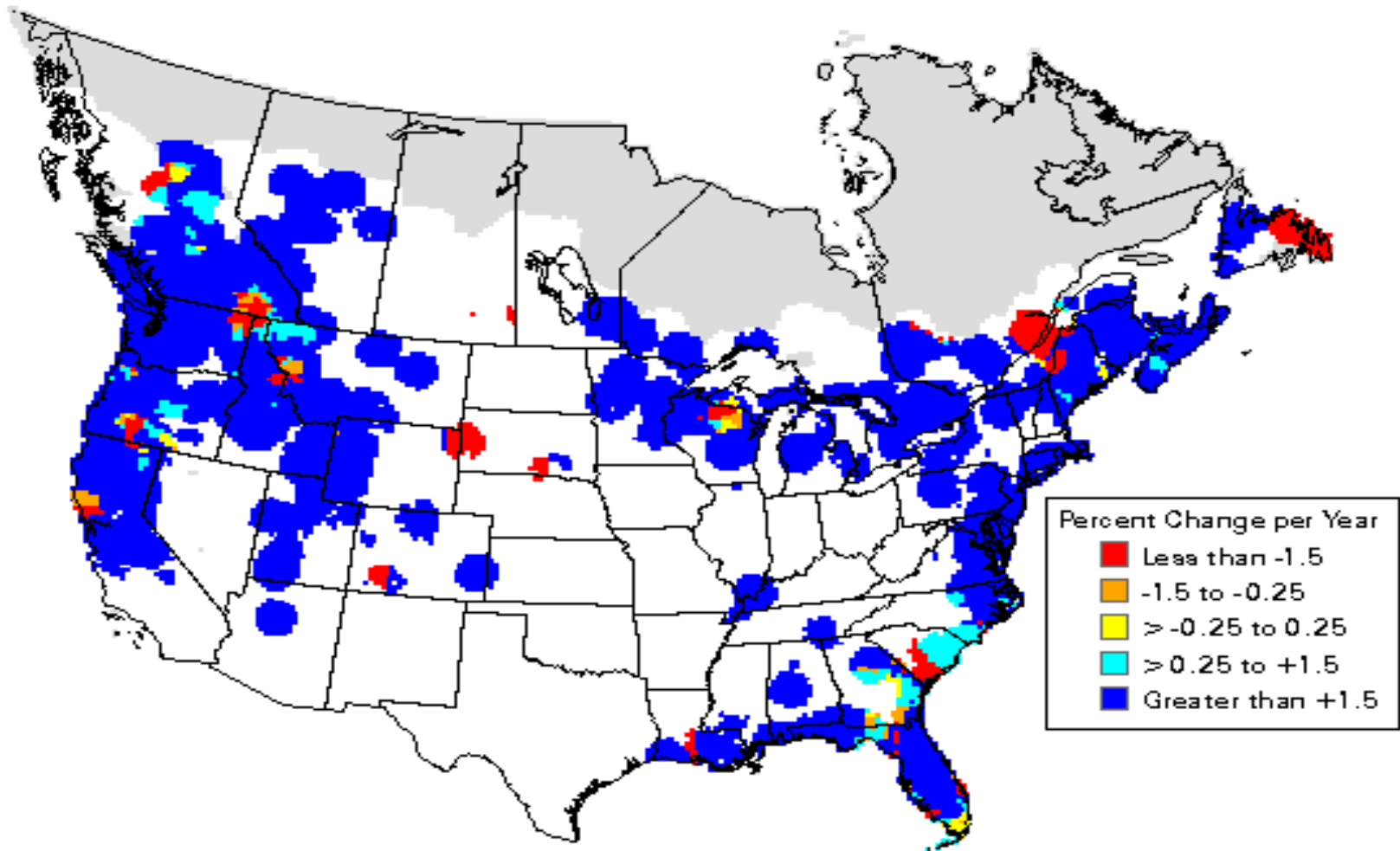
DDT Use Banned

Artificial Nest Platforms

Structure Enhancements

Translocation Efforts

Breeding Population of Osprey in North America, 1966-2003



Why are Osprey an aviation safety concern?

- **5th most hazardous species to aircraft**
- **Increasing populations and adaptability**
- **Tolerant of human activities and traditional hazing techniques**
- **Nest sites and breeding behavior increases strike potential and FOD related incidents**

Strike History

- **21 reported USAF strikes resulting \$1,305,811 in aircraft damage**
- **86 reported FAA strikes, 20% result in substantial aircraft damage or impoundment**



Strike Case Study: Langley AFB, VA

Date: 7/20/2000

Aircraft: F-15C

Cost: \$750,000 Class B

Damage: No. 2 Inside Engine

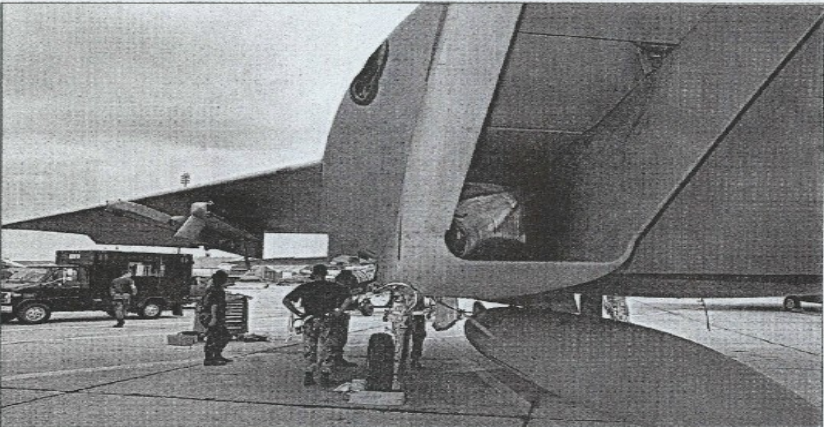
Phase of Flight:

Touch and Go

Effect on Flight: Engine failure emergency landing

21 July 2000

LOCAL Daily Press



Buddy Norris/Daily Press

Damage to the F-15C's intake is visible in the upper righthand corner. Damage to the jet has been estimated at \$700,000.

Osprey brings down Langley-based F-15C

By Terry Scanlon
Daily Press

LANGLEY AIR FORCE BASE

A four-pound bird has cost the U.S. Air Force at least \$700,000.

That's the price tag for replacing the engine of an F-15C that struck an osprey over the base Thursday morning, Maj. Douglas Dunbar said.

The pilot, Capt. Brad "Razor" Gillette, was uninjured, Dunbar said.

Gillette was preparing to land when he heard "pops and bangs," Dunbar said. After losing power in the right side engine, Gillette circled for less than five minutes on a single engine before landing.

"If you had to fly this much longer it could've had serious consequences," said Dunbar, a flight safety officer.

Ospreys weigh up to eight pounds and have wingspans up to six feet.

The birds feast on fish and have nests on poles in the neighboring Back River, Air Force officials said.

Gillette probably never saw the osprey, said Dunbar.

"If you see it. It's too late," he said.

The bird bounced off the side of the plane before being sucked through the blades of the engine.

The impact sent small pieces of metal ricocheting through the engine, destroying it, said Dunbar. A portion of the dark brown bird's body was recovered inside the plane.

The bird also damaged part of the plane's body next to the engine.

The extent of that damage is unclear, but it could drive up the repair costs to \$1 million, Dunbar said.

Birds are not a new problem at Langley. Last year, animal-rights groups criticized the Air Force for sending to slaughter nearly 200 Canada geese. The birds were removed to ensure pilot safety, Air Force officials said.

Thursday's collision was costlier than most accidents involving birds. For fiscal 1998 and 1999, Langley officials documented 19 bird strikes causing \$637,887 in damage. An F-15 ingesting a seagull accounted for \$636,000 of that.

Air Force officials said Gillette was not available for an interview.

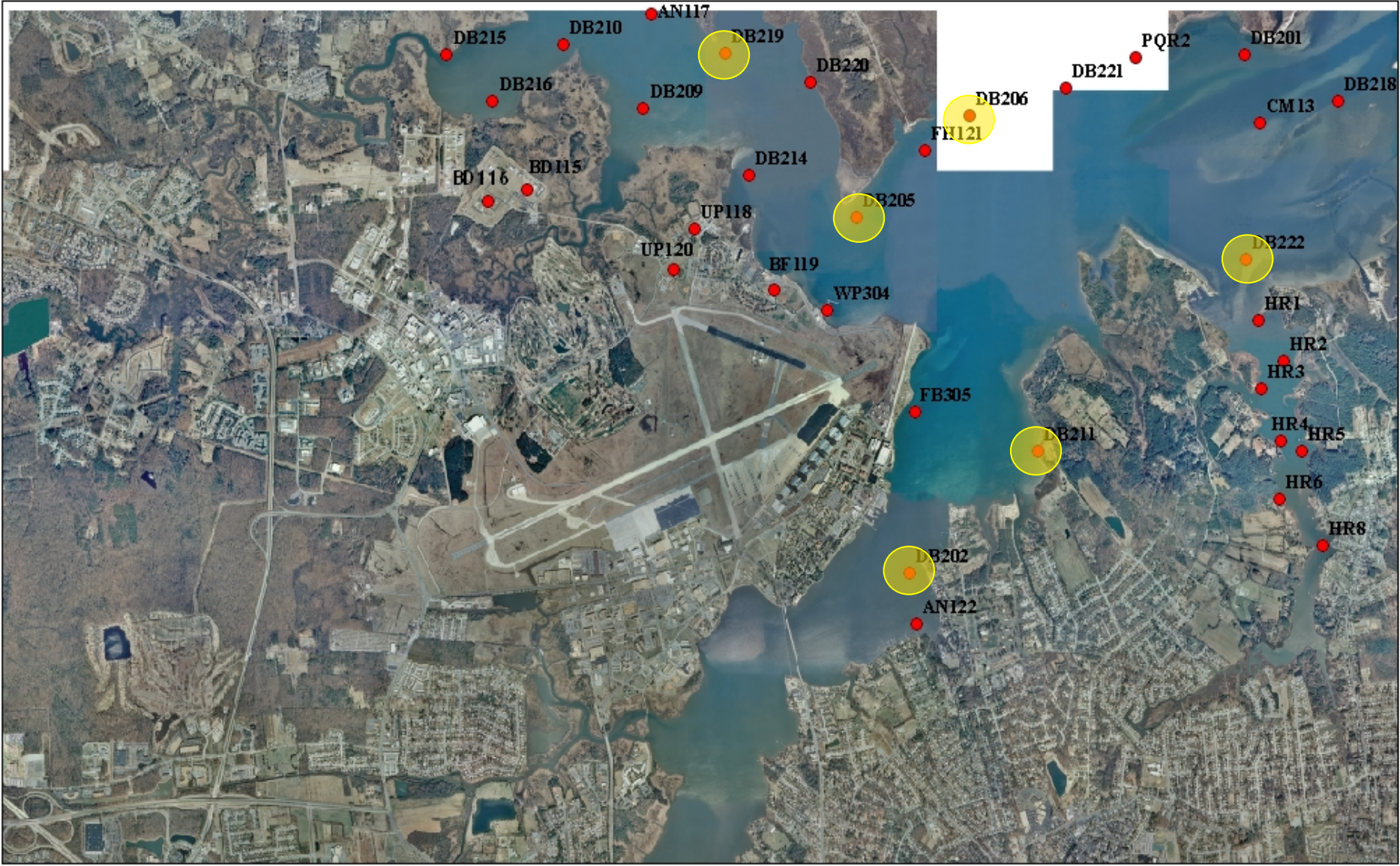
WAVY TV 10 contributed to this report.

Terry Scanlon can be reached at 247-7821 or by e-mail at tscanlon@dailypress.com.

Tagging Sessions

- **Capture Objective & Techniques**
- **Adult Osprey**
 - **May 2006**
 - **Six (3 female and 3 male)**
 - **Modified carpet-nose**
 - **Dho-gaza net**
- **Nestling Osprey**
 - **July 2006**
 - **Four (2 local and 2 relocated)**
 - **Hand-caught**





THIS IMAGE DISPLAYS POINT LOCATIONS OF ACTIVE OSPREY NESTS FOR THE FISCAL YEAR OF 2006.

● ACTIVE NEST SITES

LOCATION: LANGLEY AFB, VIRGINIA
 IMAGE DATE: 3 May 2006
 GEOGRAPHIS PROJECTION: WGS 84
 IMAGE DISPLAYED AND DIGITALLY PROCESSED BY USDA/WS

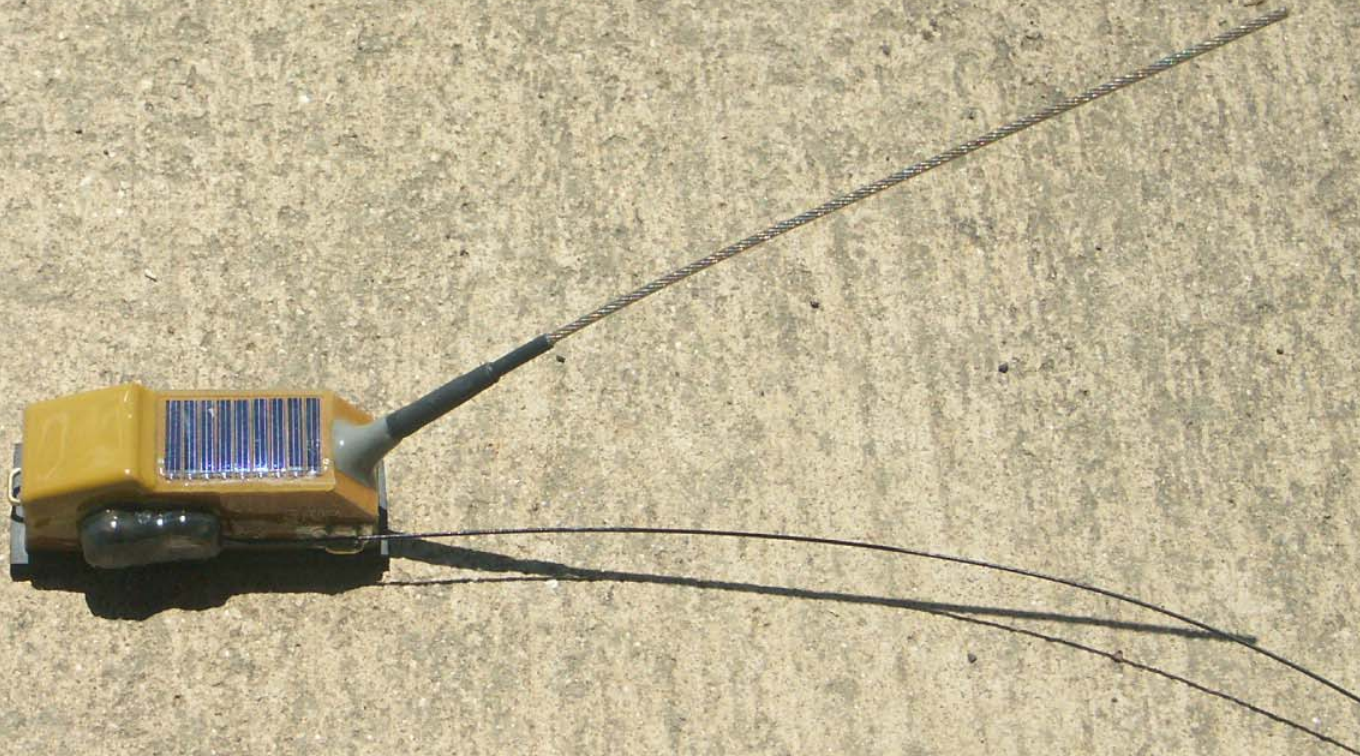


Fitting Transmitters and Banding



Tagging Kit Checklist

- **GPS/PTT 100**
 - Teflon Ribbon
 - Cotton Thread
 - Duro® Quick Gel
 - Zip-Kicker Accelerator
- **Bands**
 - USFWS Aluminum
 - Acraft Alpha Numeric Color Bands
- **Hood and Scotch Tape**





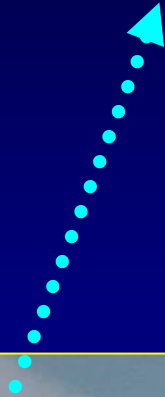
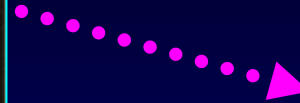
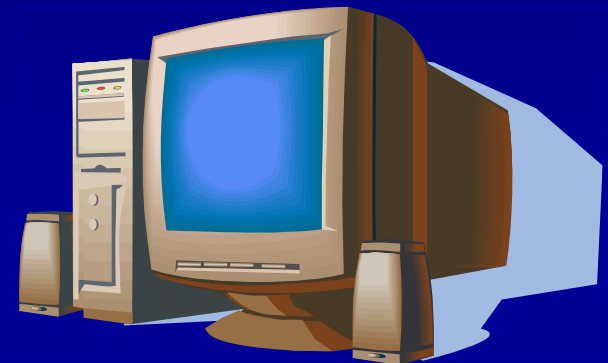
Acquiring Data

- **As of January 14, 2007 – 244 days of location data**
- **Tracked via ARGOS satellite network (NOAA)**
- **Data delivered via email to project team every 3 days**
- **Data formatted into Geo-database every 2 weeks**
- **Data parsed into three separate periods**
 - **Breeding Period (10 fixes/day)**
 - **Fall/Spring Migration Period (10 fixes/day)**
 - **Wintering Period (3 fixes/day)**



ARGOS
Center

Email



Sample Data

PTT No.	Date	EDST	Lat	Long	Speed	Course	Alt
66052	1/15/2007	4:00	7.158833	-67.032	0	180	51
66052	1/15/2007	6:00	7.1635	-67.0172	20	72	43
66052	1/15/2007	8:00	7.1735	-66.9977	0	126	34
66052	1/15/2007	10:00	7.159333	-67.0342	13	127	45
66052	1/15/2007	12:00	7.159167	-67.0327	0	310	15
66052	1/15/2007	14:00	7.158333	-67.0308	0	331	73
66052	1/15/2007	16:00	7.156833	-67.0173	0	22	63
66052	1/15/2007	18:00	7.1585	-67.0312	0	110	36
66052	1/15/2007	20:00	7.158833	-67.032	0	80	35
66052	1/15/2007	22:00	7.158833	-67.032	0	282	35

Breeding Period Data Analysis

- **May 16th – September 27th**
- **10 fixes collected per day**
- **6,499 individual GPS locations for the 6 adults**
- **504 individual GPS locations for 2 juveniles**

Breeding Period Data Analysis

- **Summary of Female Osprey Movement**
 - **Actively moving 16% of the times they were tracked**
 - **Average Altitude = 63 m AGL**
 - **Average Speed = 23 kph**
- **Summary of Male Osprey Movement**
 - **Actively moving 22% of the times they were tracked**
 - **Average Altitude = 62 m AGL**
 - **Average Speed = 19 kph**

Fall Migration Data Analysis

- **July 26th – October 17th**
- **Fixes collected 10 times/day**
- **1,252 individual GPS locations for the 6 adults**
- **314 individual GPS locations for 2 juveniles**
- **Shortest distance traveled = 2,173 km**
- **Longest distance traveled = 6,840 km**

Fall Migration Data Analysis

- **Summary of Female Osprey Movement**
 - Started migration between 16 and 30 August
 - Average Altitude = 377 m AGL
 - Average Speed = 37 kph
- **Summary of Male Osprey Movement**
 - Started migration between 7 and 27 September
 - Average Altitude = 324 m AGL
 - Average Speed = 38 kph

Wintering Data Analysis

- **Arrival at wintering grounds - 14 Jan 07**
- **Fixes collected 3 times/day**
- **1,984 individual GPS locations for the 4 adults**
- **15 Jan 07, transmitters returned to “summer duty cycle”**



**The Tale of Osprey F48
and M52**

The Tale of Osprey F48 and M52



The Tale of Osprey F48 and M52



Why is this information important?



Why is this information important?



Why is this information important?

- **Osprey movement patterns**
- **Quantify Osprey-strike risk**
- **Evaluation of Osprey management efforts**



The Path Ahead

- **Technical Report (DENIX Website)**
- **Spring Migration**
- **Tagging Sessions- Round 2 (4 new birds)**
- **Media Production**
- **AF Portal Viewer**
- **Home-range and Strike Analysis**
- **AF NEST SITE DATA POINTS**

Additional Contact Information

Dr. Brian Washburn – USDA Project Manager

6100 Columbus Avenue

Sandusky, OH 44870

419-625-0242

Brian.E.Washburn@aphis.usda.gov

Mr. Tom Olexa – Technical POC

USDA Wildlife Services – 1 FW/SE

65 Sweeney Blvd

Langley AFB, VA 23665

COM: 757-764-5357

DSN: 574-5357

Thomas.olexa@langley.af.mil



QUESTIONS ???

