

Barn Owl and Screech Owl Research and Management

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We Bring You Delaware's Outdoors Through Science and Service

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Barn Owls and Screech Owls are Cavity Nesters



Adult Barn Owl



History of Barn Owl Project

- Tony Florio – Barn Restoration -1984
- Barn Owl Research Foundation – Paul Hegdal - Band Return
- Banding Initiated - 1996

8 Week-Old Fledgling Barn Owl



Barn Owls in Nesting Box



Typical Barn Owl Habitat in Delaware



Barn Owl Favorite Prey: Meadow Vole

Microtus pennsylvanicus



Bar Owls Nest in Cavities

- Trees
- Cliffs
- Caves
- Riverbanks
- Church Steeples
 - Barn Lofts
 - Hay Stacks
 - Bridges
- Nest Boxes

Nest Box Inside of Barn



Elevated Nest Box on Pole with Predator Guard



Barn Owl Nest Box Placement

- Preferably Adjacent to Tide Marsh in Delaware
 - The Further from the Marsh, the Higher the Placement (16 Feet).
- Wood Chips Assist Reproduction by Reducing Parasites and Minimizing Dampness.
 - Clean Out Boxes August – February.

Pole to Block Entrance to Cavity



Capturing Adult Barn Owl



Banding Young Barn Owl



Banding Young Barn Owl



Typical Raptor Leg Band



Typical Lock-On Raptor Leg Band



Reasons for Banding Birds

- Home Range
- Migratory Routes
 - Life Span
- Habitat Preferences
 - Dispersion
- Estimate Population Sizes

Data Collected and Recorded While Banding

- Wildlife Area
- Box Number
- Bird Band Number if Recaptured or New
 - Weight of Bird
 - Age of Bird
 - Sex of Bird
 - Color Phase
 - Brood Size
- Prey Species if Present and Identifiable
- Use of Nest Box by Non-target Species
 - Wood Duck Data
 - Box Repair if Needed

Other Important Data Collected

- Height of Nest Box
- Direction of Nest Box
- Habitat Type

Typical Barn Owl Brood



One Week-old Barn Owl



Barn Owl Brood in Nest Box



Barn Owl Brood in Nest Box



Nest Box Competitors

- Starlings
- Raccoons
- Pigeons
- Gray Squirrels
- Wood Ducks

Active Barn Owl Nest Boxes Monitored

- State Wildlife Areas: 10
- Bombay Hook NWR: 8
 - Private Land: 5

Interesting Barn Owl Information

- Over 800 Barn Owls Banded since 1996.
- 23 Active Barn Owl Boxes Monitored On State Wildlife Areas, Bombay Hook NWR, and Private Land.
- Brood Size: <100 broods = Average 4.4 Young per Brood.
- Longest Band return: Banded at Blackwater National Wildlife Refuge.
- Most Recaptures from or to New Jersey (Near Salem).
- Prey: Primarily Meadow Voles, but Will Feed on Other Small Mammals, Birds, Insects.
- High Winter Mortality in Cold Snowy Weather.
- High Summer Mortality in Draught Years.
- Mostly Monogamous, sometimes Polygynous.
- Average Home Range: (NJ-Radio-tagged) 1,771 Acres.
- Non-Migratory.
- Average Lifespan: 20.9 months. (Oldest Wild Barn Owl Recorded: 34 Years).
- Fledge 8-9 weeks, Remain Dependent upon Parents 3-5 Weeks after Flying. First Successful Capture at 10 Weeks.
- Research in Cooperation with Barn Owl Research Foundation.

Barn Owl Nest Box on Deer Stand



Red Phase Screech Owl



Male Wood Duck



Female Wood Duck with Chicks Hatching



Screech Owls inside Wood Duck Box



Checking Wood Duck Box in Typical Screech Owl Habitat



Typical wood duck/Screech Owl Habitat



Starling as Nest Site Competitor



Carolina Wren as Nest Competitor



Screech Owl Prey Cache (mostly frogs)



Feathers as Sign of Screech Owl Prey



Small Mammal Prey Species of Screech Owls



Marbled Salamander as Screech Owl Prey



Red and Brown Phase Screech Owls



Gray Phase Screech Owl



Brown Phase Screech Owl



Nest Box Placement and Sun Bathing



Leg Banding Screech Owl



Screech Owl Box Placement

- Use Wood Duck Box or Box Specifically Designed for Screech Owls.
- Plastic or Wooden Wood Duck Boxes are Equally Used.
- 5' to 30' in Height. Will Nest in Natural Cavities as High as 65'.
- Must Have a Predator Guard.
- South Facing Entrance for Sunbathing.
- Clean Out Boxes Annually in Winter before March.
- Replace Wood Chips While Cleaning.
- Plastic Wood Duck Boxes Available from Division of Fish and Wildlife for \$30.00.

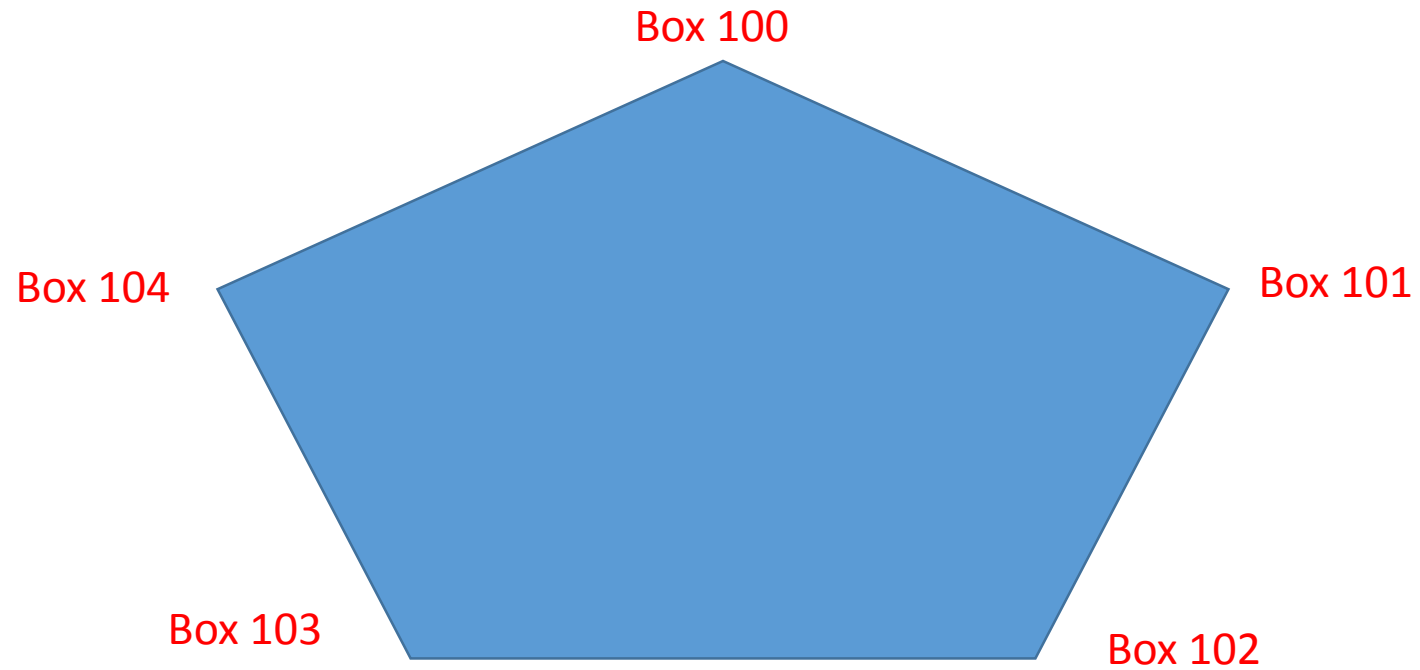
Home Range vs. Territory

- **Home Range**: an area in which an animal lives and moves on a periodic basis
- **Territory**: An area that is actively defended such as feeding territory or Breeding territory

Tools for Determining Home Range

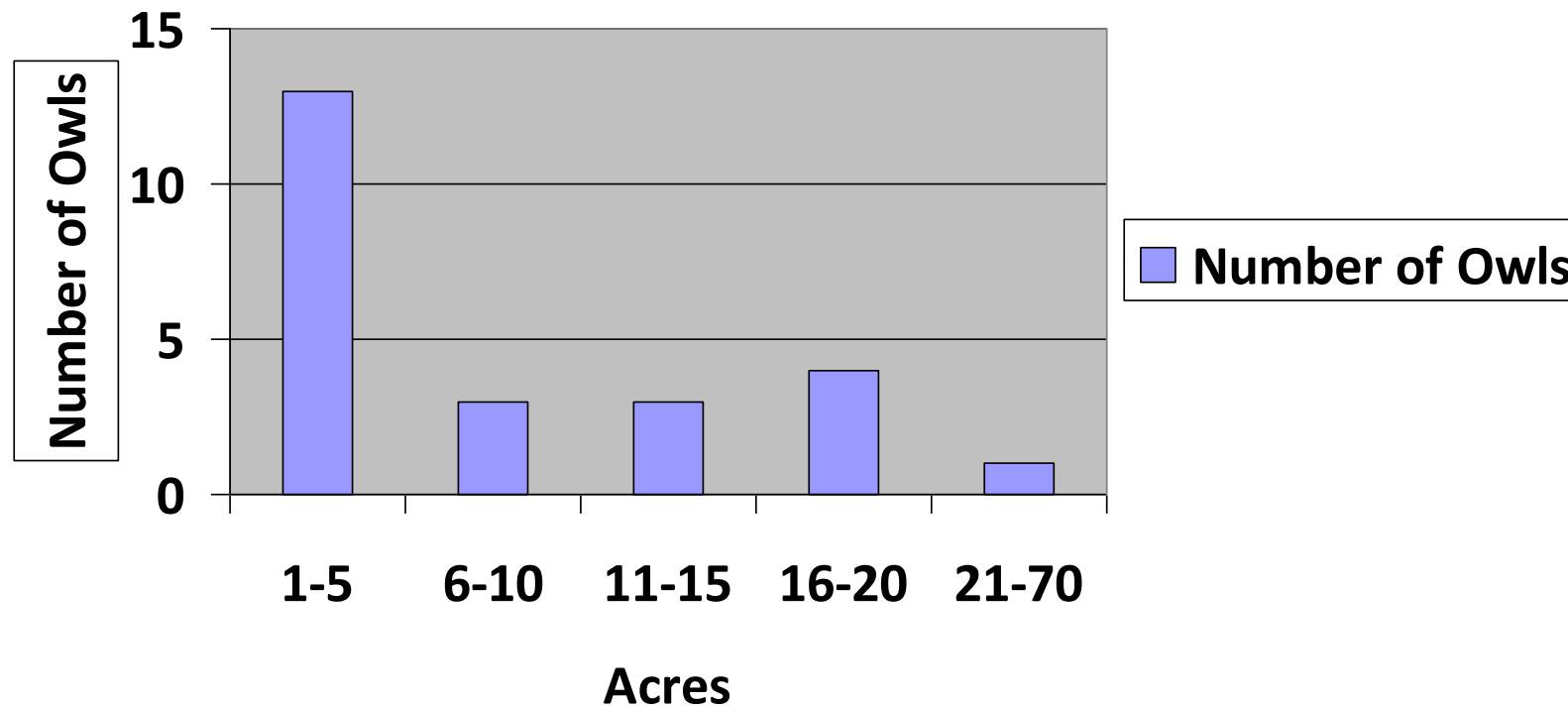
- Capture-Recapture (Minimum Home Range)
 - Radio Telemetry
 - GPS – Satellite Technology

Minimum Home Range Illustration



Minimum Home Ranges of Screech Owls
3 Or More Captures in 3 or More Boxes (N=24)
Average= 9.61 AC

Screech Owl Home Range (AC)

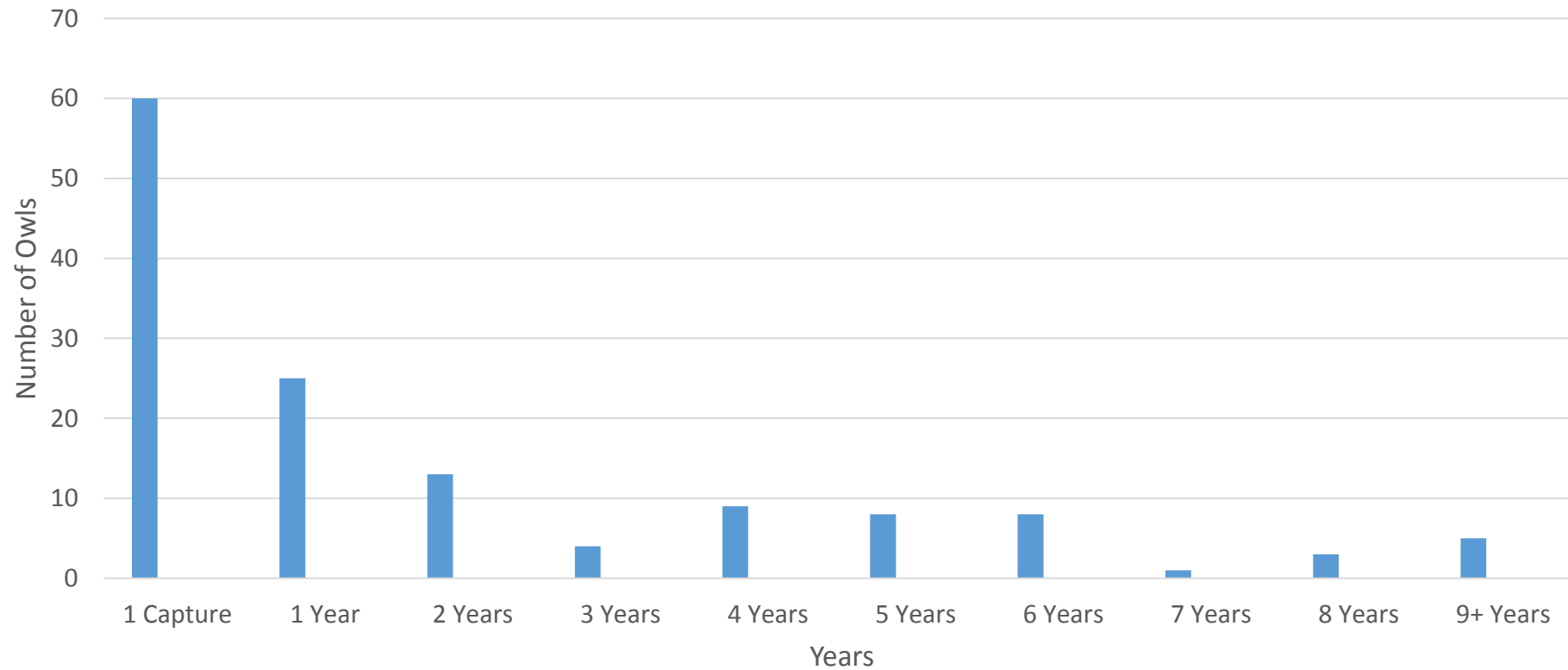


Screech Owl Captures

Year	Boxes Checked	New Captures	Recaptures	Total Captures
2010	110	9	23	32
2011	128	5	21	26
2012	106	2	14	16
2013	103	12	23	35
2014	106	2	14	16
2015	91	8	14	24
2016	104	9	21	30
2017	102	9	22	31

Screech Owl Capture Span

(First Capture to Last Capture) (N=136 Individuals)

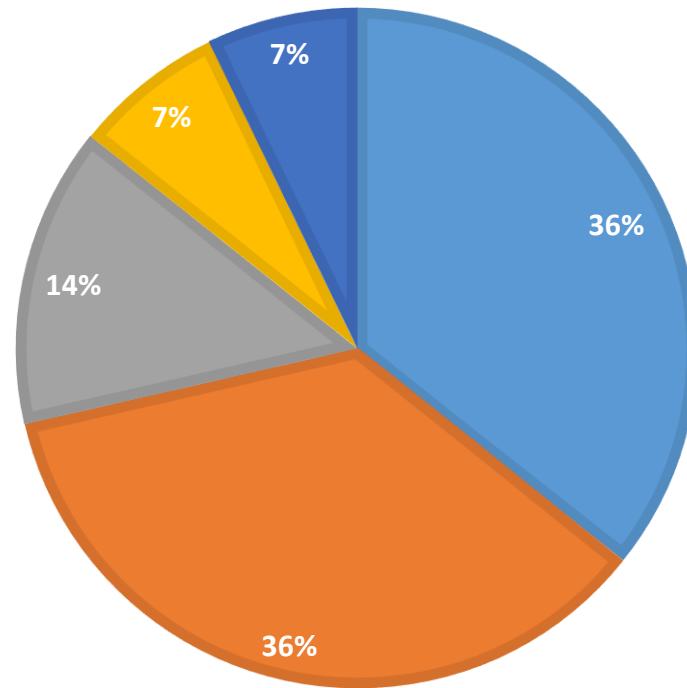


Nest Box Fidelity: Owl 433

14 Captures, 2001-2014, 13 Years, 1 Month Span
Minimum Home Range: 17 Acres

NEST BOX USE

■ Box L531 ■ Box L533 ■ Box L837 ■ Box L534 ■ Box L532

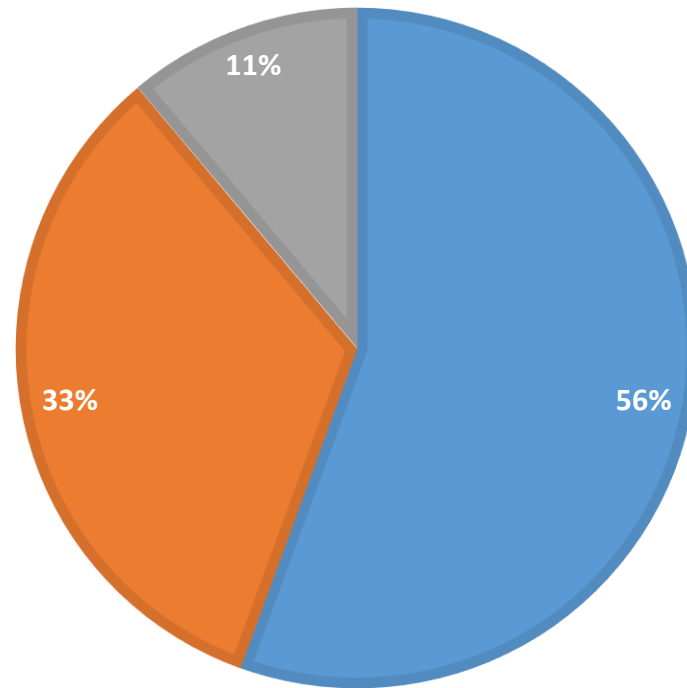


Nest Box Fidelity: Owl 401

9 Captures, 1996-2009, 12 Years, 11 Month Span
Minimum Home Range: 19 Acres

NEST BOX USE

■ Box L526 ■ Box L535 ■ Box L525 ■



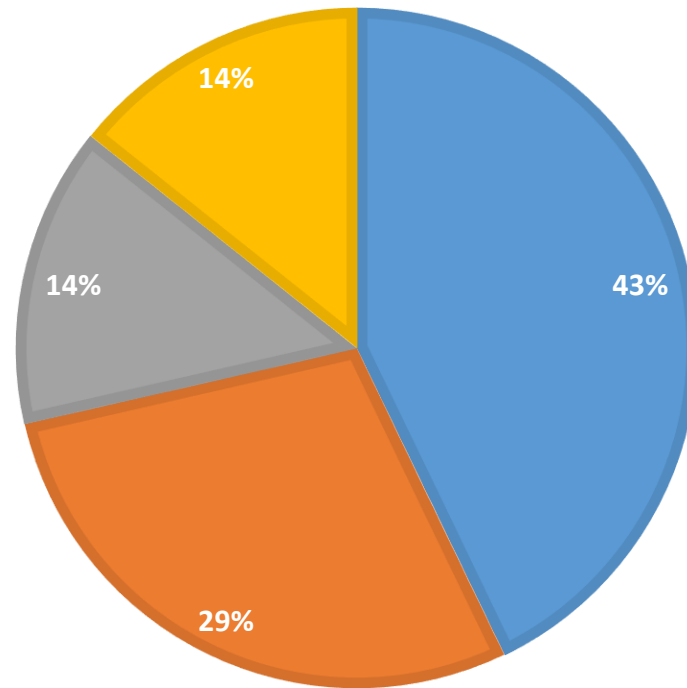
Nest Box Fidelity: Owl 449

7 Captures, 2004-2014, 9 Years, 10 Month Span

Minimum Home Range: 66 Acres

NEST BOX USE

■ Box L890 ■ Box L889 ■ Box L515 ■ Box L899



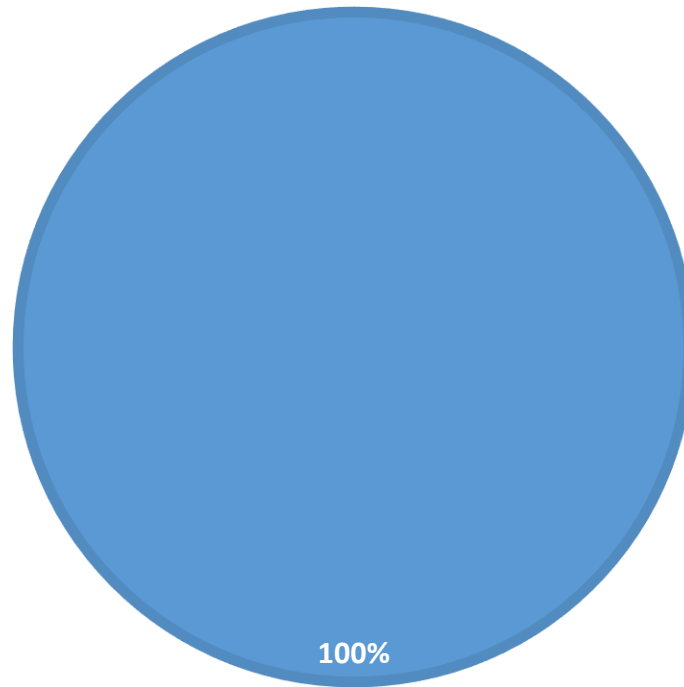
Nest Box Fidelity: Owl 507

7 Captures, 1994-2004, 10 Years, 1 Month Span

Minimum Home Range: 0 Acres

NEST BOX USE

■ Box L535 ■ ■ ■



Interesting Screech Owl Facts

- Average Life Span: 1 Year.
- Longest banding Records: (13 years, 1 month), (12 years, 11 months) (2 Owls). (Oldest Screech Owl in Literature: 13 Years, 6 Months).
- Color Phase Ratio: 67% Red, 26% Gray, 7% Brown.
- Screech Owls Banded since 1993, 145 Individuals, 76 Recaptured at Least Once.
- Prey Species: Birds, Small Mammals, Amphibians, Fish, Insects, Crayfish. (Opportunistic).
- Minimum Lifetime Home Range (3 or more captures of 25 birds): Average : 9.16 AC.
- Largest Home Range: 66 AC. (7 Captures, 2004 – 2014)
- Mostly Monogamous, sometimes Polygynous: 2 Pairs Captured in Same Nest Box 3 Consecutive Years.
- Non-Migratory.
- Plastic vs Wooden Wood Duck Boxes Equally Used by Wood Ducks and Screech Owls.
- Screech Owls Will Roost and Nest in Boxes.
- Screech Owls will Vacate Box for Wood Duck, Move Back When Nesting Completed.
- 130 Wood Duck Boxes Maintained and Monitored on Kent County Wildlife Areas.

Future Findings for Screech Owls To Be Determined

- Ideal Height and Direction of Cavity Entrance.
- Interactions between Screech Owls and Wood Ducks.
- Screech Owl Color Phase Changes Over Time.
- Geographical Differences in Color Phases (Among Wildlife Areas).

WORDS OF CAUTION

- Disturbance of Nest Boxes May Cause Nest Abandonment
- Adult Screech Owls will Abandon During Incubation.
- Adult Barn Owls Will Abandon from Early Courtship Until Early Chick Stage.
- Disturbance of Barn Owls Just Previous to Fledgling Stage will Cause Premature Fledging.
- Please Do Not Disturb Nest Boxes Without Professional Assistance.

Signs of Successful Wood Duck Nest



Wood Duck Nesting Success, Kent County Wildlife Areas

Nesting Year	Total Boxes Checked	Boxes Used by Wood Ducks	Boxes Used (%)	Successful Nests	Nesting Success (%)
2008	103	44	42.72	27	61.14
2009	110	41	37.30	27	65.90
2010	128	55	43.00	40	72.70
2011	106	37	35.00	29	78.40
2012	103	35	33.90	29	82.50
2013	106	39	36.79	21	53.80
2014	91	36	39.56	20	55.56
2015	104	28	26.92	14	50.00
2016	102	32	31.37	27	84.38

Forested Wetland Restoration Blackiston Wildlife Area



Forested Wetland Restoration Tappahanna Wildlife Area (Fortney Tract)



Plastic (Bellrose) Wood Duck Boxes Available from Delaware Division of Fish and Wildlife (\$30.00)

- Newcastle County: (302) 834-8433
 - Kent County: (302) 284-4795
 - Sussex County: (302) 539-3160

*Subsidized by Delaware Duck Stamp Funds

