

## **Delmarva Fox Squirrel Trapping Results October/November 1996**

On September 30, 1996 Blackwater National Wildlife Refuge contracted a biotechnician (work order # 51530-6-0217) to perform Delmarva fox squirrel population inventories on five refuge site locations (Linthicum, Malkus, Shorters Marsh, Valiant and Elliot Mills). This study contributes to Blackwater NWR's research and recovery projects relating to the abundance, survival, and habitat use of the endangered Delmarva fox squirrel.

Tasks involved in this study included conducting a mark-recapture study which consisted of:

- (1) establishing trapping grids
- (2) pre-baiting traps with corn for four consecutive days
- (3) setting traps for five consecutive days and checking traps according to schedule (twice daily)
- (4) recording pertinent information such as age, sex, weight and other physical characteristics
- (5) marking each captured squirrel (grays included) with a pair of U.S. Fish & Wildlife Service issued tags (one in each ear).
- (6) ensuring all squirrels are handled carefully and treating any injuries before release

All work was to be completed within 5-10 weeks of initiating the study (depending on weather conditions) at a cost of \$1920.<sup>00</sup>. In the end, the study was completed in 8 weeks. Hunting on refuge property temporarily delayed entry into certain sites (Valiant and Elliot Mills could not be trapped until after November 9, 1996).

The following information is a breakdown of the results of the mark-recapture study. Information on the follow-up trapping at the Malkus tract can be obtained in the summary prepared by Lisa Paglione (on file).

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**Site Name: Linthicum**

**Site Location:** We accessed the Linthicum tract via Buttons Neck Road, heading in a south/south westerly direction from highway 16. At the road's end is a refuge security gate. Once through the gate we proceeded due west, using an ATV so as to limit habitat degradation, for approximately 1 mile. A dirt driveway heading northwest leads to the trapping site where red-glo tape marks the exact location which was almost centrally located within the tract (see Figure 1).

**Site Description:** Linthicum consisted of several microhabitats. The first three lines of the trapping grid were made up of young Loblolly pine (*Pinus taeda*) and hardwood species (*Acer* spp., *Liquidambar* spp.) with an average height of ~20'. A thick understory, mostly greenbrier (*Smilax rotundifolia*) and some bayberry (*Myrica pensylvanica*) as well as holly (*Ilex opaca*), was consistent throughout these grid lines and standing water was minimal.

The next three lines displayed a much more mature forest stand. Loblolly pine trees had an average height of ~40-60' and were the dominant tree species. The understory could be described as a "park-like" habitat. The forest floor was covered with shed pine needles and had no standing water. Tree cavities, although not abundant, were more common in this area.

The last two grid lines had somewhat combined features seen throughout the site. Standing water was a definite factor at the southern-most end of the lines. At its deepest point, the vernal pools had a depth of ~2'. Towards the mid- section of these lines were mature trees, directly connected with those of the previous grid lines. The northern-most portion of the lines emulated the young forest and thick understory seen in grid lines one through three.

**Trap Success:** Many squirrels were trapped at the Linthicum tract. In total, we captured 11 individual squirrels (27 captures) (Table 1 and Figure 1). Delmarva fox squirrels accounted for a total of 8 captures (4 new individuals, 2 recaptures, and 2 escapees of which 1 had already been tagged). Gray squirrels made up the other 19 captures (6 new individuals, 7 recaptures, 4 escapees of which 3 were due to size {went through cone}, 1 released due to stress {wouldn't go into the cone}, and 1 mortality due to shock).

**Comments:** The Linthicum tract has a variety of beneficial characteristics that could support a viable population of Delmarva fox squirrels and should be managed in such a way so as to ensure continued survival.

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**Site Name:** Shorters Marsh

**Site Location:** Shorters Marsh was accessed by traveling south-southwest on Shorters Wharf Road (Maple Dam). Once at the site and through the refuge security gate, we traveled northerly until we reached another security gate. This road is part of the property owned by the Riverdale Sportsman Club. Because of their relations with Bill Giese, the group allowed us to access the road. This was a great help in that it allowed us to install and remove traps much more quickly. A boundary line between the two tracts leads to the trap locations. Grid lines of the study site are layed out in Figure 2.

**Site Description:** The Shorters Marsh tract consisted mostly of Loblolly Pine with some mixed hardwoods scattered throughout. For the most part, the forest stand was mature and had a relatively open understory consisting of bayberry, holly and some greenbrier.

The first 5 lines of the established grid, located at the southernmost section of the site, was relatively dry with small vernal pools scattered unevenly throughout. This half of the site was where the majority of the captures took place. The understory was minimal and the pines at this end of the site were definitely the most mature stands in our tract with trees averaging ~50'.

The last five grid lines progressively became saturated with water with lines 9 and 10 being the wettest. However, higher grounds were abundant enough for trap site locations. Tree snags and cavities were abundant in this section and downed logs provided corridors between dry grounds. Although captures were reduced at the northern end, movement did not seem to be significantly impaired by the standing water.

**Trap Success:** The majority of squirrels caught at the Shorters Marsh tract were gray squirrels. In total we captured 8 individual gray squirrels (13 captures) and 1 Delmarva fox squirrel. Not included in the 13 captures of gray squirrels, were 6 juvenile squirrels that could not be handled due to small size (they ran right through the cone) and 1 gray that we had to release (it went into shock; nonfatal).

**Comments:** Although minimal Delmarva fox squirrels were captured at this site, I feel the site does have potential. The surrounding lands owned by the Riverdale Sportsman Club suggest that of sustainable habitat for Delmarva fox squirrels. It may be possible that the Shorters Marsh habitat is less mature than that of the Riverdale site and is in a transitional phase.

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**Site Name:** Valiant

**Site Location:** From Blackwater refuge, the Valiant site is located northwesterly. We traveled southwest on Rt. 335 to Hip Roof Road. We followed Hip Roof to the end where it met Smithville Road and then traveled north/northwest. The site is marked with boundary posts and the northernmost boundary borders a sportsman club's property. This is the end where we accessed the study site. The grid lines begin about 1/2 mile from the boundary. Grid lines of the study area are layed out in Table 3.

**Site Description:** The Valiant tract is made up of various forest types and structure. The central portion of the site is composed of young vegetation from recent timber harvest operations. The southern and northernmost sections of the site are of a more mature forest stand but with considerable gaps throughout. The canopy is minimal. The understory is predominantly open with scattered greenbrier, holly and some bayberry. This site is bordered to the east by a marsh. Grid line locations are explained in Figure 3.

**Trap Success:** Valiant was the most unproductive site of the study. Only 1 gray squirrel was captured and 0 Delmarva fox squirrels. Bobwhite quail were captured 4 times and one was decapitated, suggesting a hawk may have taken advantage of the opportunity. It should be noted that the weather was considerably colder the week we trapped this site. This was the only site we trapped once per day (in the late afternoon).

**Comments:** Valiant is a young forest stand not yet able to support a large population of Delmarva fox squirrels. However, management of this site should focus on working with adjacent land owners, whose land appears to be more suitable for viable populations of Delmarva fox squirrels.

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**Site Name:** Elliot Mills

**Site Location:** Elliot Mills is located south/southeast of Blackwater refuge. To access the site, we traveled southwest on Rt. 335 to Hip Roof Road. The study site was located about 2 miles down Hip Roof on the north side. It is bordered by the Newcomb site to the west and the Spicer tract to the west. Once at the site location, a dirt road takes you to the boundary markers that begin the study site. Figure 4 explains the grid locations.

**Site Description:** Elliot Mills was by far the best of the five study sites. Throughout the habitat, Elliot is consistently made up of mixed-aged Loblolly pine and some hardwoods. Understory at this site was minimal with greenbrier being the dominant species. Tree cavities were relatively abundant and standing water was minimal. The continuity of this site made it an ideal habitat.

**Trap Success:** Elliot was the best of the five sites for capture success. In total we captured 8 individual Delmarva fox squirrels (21 captures) and 7 individual gray squirrels (12 captures). Not included in the total was 1 released gray squirrel that was released due to stress (would not go into the cone).

**Comments:** The Elliot tract appears to be an ideal habitat for Delmarva fox squirrels. Management should focus on protection, with minimal disturbance or modification.

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TABLE 1

**Delmarva Fox Squirrel Trap Success**  
**(Newly Acquired Land; 1996)**

<u>Site</u>	<u>#DFS</u>	<u>m:f</u>	<u>A:S:J</u>	<u>kg range</u>	<u>#Grays</u>	<u>m:f</u>	<u>A:S:J</u>	<u>kg range</u>
Linthicum	5 (1 recap)	2:3	4:1:0	1.01 to 1.14	6 (7 recaps)	4:2	3:3:0	.60 to .70
Shorters Marsh	1	0:1	1:0:0	1.0	8 (6 recaps)	7:1	3:5:0	.61 to .70
Malkus	1 (3 recaps)	1:0	1:0:0	1.15	0 (1 recap)	0:0	0:0:0	-----
Valiant	0	0:0	0:0:0	-----	1	0:1	0:1:0	.71
Elliot	8 (13 recaps)	4:4	8:0:0	.97 to 1.15	7 (6 recaps)	4:3	5:1:1	.50 to .76

## Linthicum Trap Locations October 1996

				5-10	6-10		
				5-9	6-9		
				5-8	6-8		
		3-7	4-7	5-7	6-7		
1-6	2-6	3-6	4-6	5-6	6-6		
1-5	2-5	3-5	4-5	5-5	6-5		
1-4	2-4	3-4	4-4	5-4	6-4		
1-3	2-3	3-3	4-3	5-3	6-3		
1-2	2-2	3-2	4-2	5-2	6-2	7-2	8-2
1-1	2-1	3-1	4-1	5-1	6-1	7-1	8-1

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This is the road after it banks to the left, pink tape marks the beginning of the grid at 1-1, there is a green 2x6 board that allows crossing of the creek. Grid lines are marked in pink flag tape until 5-6, then marked with red. **All trap sites are marked in blue.** Another board at 8-1 will bring you back to road.

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FIGURE 1

## Shorters Marsh Trap Locations October 1996

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 This is the road leading into shorters marsh. It runs almost due north. Park the truck on the side of the road so that another vehicle may pass. A hunting club owns the land bordering the refuge property and members use the road frequently.  
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						w
				1 2	1 1	a
						l
						k
				2-2	2-1	i
						n
						g
		3 4	3 3	3 2	3-1	
						t
		4-4	4-3	4-2	4-1	r
						a
						i
						l
5-6	5-5	5-4	5-3	5-2	5-1	
6-6	6-5	6-4	6-3	6-2	6-1	
		7-5	7-4	7-3	7-2	7-1
		8-5	8-4	8-3	8-2	8-1
			9-4	9-3	9-2	9-1
			10-4	10-3	10-2	10-1

**\*\*All Flag lines are glo-red and trap locations are glo-blue**

FIGURE 2



# Valiant Trap Locations

## November, 1996

In total there are 43 traps at Valiant. 37 of them lie at the northern end, the remaining 6 lie at the southern end. All trap lines are marked in glo-red and trap locations are marked in glo-blue. To enter the north end, proceed to boundary line that borders a hunting clubs' property. The map for this end is detailed below.

			L2T9	L1T9
	L4T8	L3T8	L2T8	L1T8
	L4T7	L3T7	L2T7	L1T7
	L4T6	L3T6	L2T6	L1T6
L5T3	L4T5	L3T5	L2T5	L1T5
L5T2	L4T4	L3T4	L2T4	L1T4
L5T1	L4T3	L3T3	L2T3	L1T3
	L4T2	L3T2	L2T2	L1T2
	L4T1	L3T1	L2T1	L1T1

The south end map is first marked with a double band of glo-red. There are only six traps here and it should be self-explanatory.

FIGURE 3

