

# VALLEY FORGE AUDUBON SOCIETY

## BIRD-BANDING IN CHESTER COUNTY, PENNSYLVANIA

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The story begins back in the mid-seventies. T. Doman Roberts was president of the Scientific Studies Committee of Valley Forge Audubon Society (VFAS). Under his leadership, the Committee launched a Gypsy Moth Study in a wooded area in northern Chester County, Pennsylvania, where defoliation by caterpillars was clearly evident. Two study sites were mapped and walking trails cleared. By 1977 serious census and breeding information concerning the avian predators of the moth was being gathered. Soon, entomological studies of the Gypsy Moth in all its stages was initiated. Reports were presented to the S. S. Committee, and some of the results published. Dr. Richard Kelley's, "The Year of the Wilt," appeared in the VFAS Conservator in November 1982. Earlier that same year, I had retired from overseas work and joined the VFAS team to add banding to the bird studies.

### SITE 4-A

We chose the southern area-Site 4A-for our Banding Project, and began in the spring of 1983. The site is bottomland Red Maple-White Ash-Pin Oak forest, bounded on the SE by a power line clearing, on the SW by a swamp and pond, on the W and NW by the lane to the pond and an extensive cultivated area, and on the NE is the continuation of the forest. We worked about 10 acres of the woodland, and netted 93 species during 1983, 1984 and 1985 seasons. (see Table I)

### MIST NETS AND VOLUNTEER HELP

Between April and October of 1985, there were 36 mist nets (most 60' x 7'; a few 42' x 7') strategically located throughout the woods. The number unfurled for use on each of the 56 working days was determined by the number of trained volunteers available.

The helpers were taught to handle the delicate nets so that minimal tearing resulted. Nets were unfurled at daybreak or before, and furled at the end of the day's work. Beetles, seeds, twigs, and leaves (or an occasional bat at dawn!) were painstakingly removed.

Volunteers removed the fragile birds from the nets. Frequent "rounds" through the net lanes to collect trapped birds were made. We tried to calculate an average of about 20 minutes between rounds. This gives sufficient time for birds to circulate and be caught, but not enough for accidents or casualties.

Accidents included deer collisions with and the resultant destruction of nets (about 3 nets per season were ruined this way), or tree limbs falling.

TABLE I

SPECIES MIST-NETTED AT SITE 4-A OF  
VFAS BIRD BANDING PROJECT  
DURING 1983, 1984, and 1985 SEASONS\*

## COMMON NAME

Green-backed Heron  
American Woodcock  
Mourning Dove  
Sharp-shinned Hawk  
Broad-winged Hawk  
Hairy Woodpecker  
Downy Woodpecker  
Red-bellied Woodpecker  
"Yellow-shafted" Flicker  
Ruby-throated Hummingbird  
Eastern Kingbird  
Great Crested Flycatcher  
Eastern Phoebe  
Eastern Pewee  
Yellow-bellied Flycatcher  
Acadian Flycatcher  
"Traill's" Flycatcher  
Least Flycatcher  
Blue Jay  
Brown-headed Cowbird  
Red-winged Blackbird  
"Baltimore" Oriole  
Rusty Blackbird  
Common Grackle  
Purple Finch  
American Goldfinch  
White-throated Sparrow  
Chipping Sparrow  
Field Sparrow  
"Slate-colored" Junco  
Song Sparrow  
Lincoln's Sparrow  
Swamp Sparrow  
Rufous-sided Towhee  
Northern Cardinal  
Rose-breasted Grosbeak  
Indigo Bunting  
Scarlet Tanager  
Barn Swallow  
Tree Swallow  
Rough-winged Swallow  
Cedar Waxwing  
Red-eyed Vireo  
Yellow-throated Vireo  
White-eyed Vireo  
Black-and-white Warbler  
Prothonotary Warbler  
Worm-eating Warbler

## COMMON NAME

Blue-winged Warbler  
Nashville Warbler  
Orange-crowned Warbler  
Tennessee Warbler  
Yellow Warbler  
Black-throated Blue Warbler  
"Myrtle" Warbler  
Magnolia Warbler  
Chestnut-sided Warbler  
Bay-breasted Warbler  
Blackpoll Warbler  
Blackburnian Warbler  
Black-throated Green Warbler  
Pine Warbler  
Palm Warbler  
Prairie Warbler  
Ovenbird  
Northern Waterthrush  
Louisiana Waterthrush  
Kentucky Warbler  
Mourning Warbler  
Common Yellowthroat  
Yellow-breasted Chat  
Hooded Warbler  
Wilson's Warbler  
Canada Warbler  
American Redstart  
Gray Catbird  
Brown Thrasher  
Carolina Wren  
House Wren  
Brown Creeper  
White-breasted Nuthatch  
Tufted Titmouse  
Black-capped Chickadee  
Carolina Chickadee  
Golden-crowned Kniglet  
Ruby-crowned Kniglet  
Blue-gray Gnatcatcher  
Wood Thrush  
Veery  
Gray-cheeked Thrush  
Swainson's Thrust  
Hermit Thrust  
American Robin  
**TOTAL ..... 93**

\*Birds are ordered by A.O.U. number, not phylogenetically.

Since casualties could result from (1) predators, like hawks and weasels, who attack struggling birds in the net, or (2) tangling and twisting in the net for a long period causing injury and/or death, and (3) lengthy exposure to direct sunlight, which brings dehydration and death, frequent visits to the unfurled nets were made. Mist-netting was discontinued in the rain, since the bird's normal protection against getting soaked is destroyed by his abnormal position in the net.

#### A BIRD IN THE HAND

Banding in 1985 began in mid-April and was concluded in mid-October. Thirty-six mist nets were used to capture 2,638 birds. The average catch in 1985 was over 45 birds a day. For a comparison of our three years of banding, see Table II and Table III. Then, for the top 10 species in 1985, see Table IV.

#### TECHNIQUES AND RECORDS

The "Banding Station" is the hood of our 1979 Oldsmobile. On a "table cloth" are spread out bird books, banding manuals, pliers, scales, rulers, etc. An open satchel provides the variety of different sized aluminum bands, supplied by the Bird Banding Laboratory of the U.S. Fish and Wildlife Service in Maryland. Volunteers make the rounds, collect birds from the nets, and place each one in a soft cloth bag, which is tied and labelled with the net location. These are delivered to the bander at the car for processing. One by one the birds are studied and, if not already banded, receive their shiny bracelets.

Alongside the bander is a secretary with a clipboard full of Field Sheets, recording all the pertinent statistics about each bird. On busy days a weighmaster is added, who finishes the study of one bird, while the bander begins with another. It is imperative to process the birds as rapidly as possible, especially during periods of incubation and feeding young. A few are registered "Not Banded", like a Green-backed Heron (we had no bands that large!), or over 30 Ruby-throated Hummingbirds (we had no bands that small!), or a couple of unidentifiable empidonax flycatchers.

The Field Sheets containing the following data for each bird captured are submitted regularly to the Computer Secretary for the permanent record:

BAND PREFIX—Indicates size of band; BAND NUMBER—unique for each band; COMMON NAME, AOU#, AGE—Hatching Year, Second Year, After Hatching Year, etc., or Unknown; HOW AGED—plumage, skull ossification, eye color, etc.; SEX, HOW SEXED—size, plumage, brood (or incubation) patch, etc.; FAT—quantity; MOLT, PARASITES—On 1985 birds we have observed ticks, mites, lice, hippoboscids, etc.; WING—length; WEIGHT, NET—geographical location; NET HEIGHT, HOUR, DATE, REMARKS—Recapture, Return or Recovery—banded by someone else; additional information about a bird, such as injuries, deformities, unusual markings or plumage, significant measurements (beak culmen, etc.); possible or probable pairs, etc.

TABLE II  
YEARLY COMPARISON  
VFAS Bird Banding Project — Chester County, Pennsylvania

YEAR	Days worked	Total birds caught	Recaptures*	Returns**	Species handled	Net-hours (No. of active nets times the hrs. worked)	Birds per 100 Net-hours
1983	33	835	138	—	60	1752	41
					Species added		
1984	46	1550	300	174	19***	2290	67
1985	56	2638	616	208	14****	5924	39
<b>TOTALS</b>	135	5023	1054	382	93	9966	46

\* Recaptures are birds caught again the same season they were banded.

\*\* Returns are birds caught which were banded during a previous year.

\*\*\* There were seven species handled in 1983, which were not captured in 1984: American Woodcock, Broad-winged Hawk, Red-bellied Woodpecker, Eastern Phoebe, Prothonotary Warbler, Worm-eating Warbler and Hooded Warbler.

\*\*\*\* There were 14 species handled in 1983 and 1984 which were not caught in 1985: Broad-winged Hawk, Eastern Kingbird, Great Crested Flycatcher, Barn Swallow, Tree Swallow, Rough-winged Swallow, Chipping Sparrow, Prothonotary Warbler, Worm-eating Warbler, Bay-breasted Warbler, Blackpoll Warbler, Mourning Warbler, Brown Thrasher, Golden-crowned Kinglet.

TABLE III  
 RETURNS  
 from previous years — Caught in 1985\*

1983		1984	
HY (immature)	AHY (adult)	HY	AHY
1	27	17	54

\* This TABLE indicates *INDIVIDUAL BIRDS*, many of which were caught repeatedly. Multiple captures are reflected in the overall RETURN statistics.

TABLE IV  
 TOP 10 SPECIES CAPTURED IN 1985

SPECIES	CAUGHT 2638	% OF TOTAL
Gray Catbird	779	29
Common Yellowthroat	323	12
Wood Thrush	183	6
Song Sparrow	141	5
Swamp Sparrow	129	5
Veery	110	4
Northern Waterthrush	90	3
Yellow Warbler	51	2
Red-eyed Vireo	41	2
Canada Warbler	40	2

The analysis of the season's work is based on reams of invaluable print-outs from Dr. John Yandrasitz of Rosemont. He spent many days at his computer entering the 1985 banding information from our daily Field Sheets. One result was the discovery that about 30% of the birds caught in 1985 were Gray Catbirds. *Figure A* shows the comparison between the catbirds and other species this season.

In *Figures B* through *H* the horizontal axis divides the season into four week periods. This gives a more realistic picture of the trends than a graph which plots only the working days. It also reveals shut-downs of the operation (like 4/30 to 5/13, or 6/22 to 7/9, when the Director/Bander had to be absent).

On our peak day (*Figure B*) at the end of August, we handled 87 birds, using 24 nets, four volunteers and one bander, for five hours. Of the 87, 74 were immatures hatched in 1985. The late May peak was due to migration; later peaking resulted from the flood of 1985 immatures.

*Figure C* shows the percentage of first-time birds to the total number handled per day. On the first visit, each bird is banded. On subsequent visits to the nets, he will be registered as a Recapture (in the same year), or Return (following years). A total of 1,763 was banded at 4-A this season. The decline in the number of new birds can be traced on the graph during the incubation season, after spring migration ceases. The new birds which appear later were largely this year's young.

*Figure D.* The high point represents banded migratory birds from previous years, some passing through, and others returning to nest in the area where they were banded in 1983 and 1984.

*Figure E* shows the percentage of Recaptures to the total daily number of birds trapped. The details for each bird are on print-outs and help us follow the individual birds through consecutive captures. Territories can be plotted by the geographical location of the nets in which they were caught repeatedly during nesting season. Pairs are indicated by their being caught together simultaneously in the same net during breeding periods, and occasionally more than once! Lapse of time between fledging and migratory departure is shown by multiple captures.

*Figure F.* We began banding on April 16. The first Gray Catbird was caught on May 13, followed by 10 more the same day. From then on there was no stopping them, as indicated in this graph. We have noticed that Gray Catbirds form a large percentage of birds banded in many projects in the Eastern United States.

*Figures G* and *H* together indicate the decline in the percentage of adults when the 1985 chicks began to circulate (*Fig. G*). The first 1985 immature was a Traill's Flycatcher on June 1. On the 13th, we netted a young Song Sparrow and an immature Red-winged Blackbird. From then on there is a drastic climb upward until the "Hatching Year Birds" almost totally dominate (*Fig. H*). They peaked on August 27, when our nets trapped 60 immatures and only three adults.

BIRDS CAUGHT DURING THE 1985 BANDING SEASON

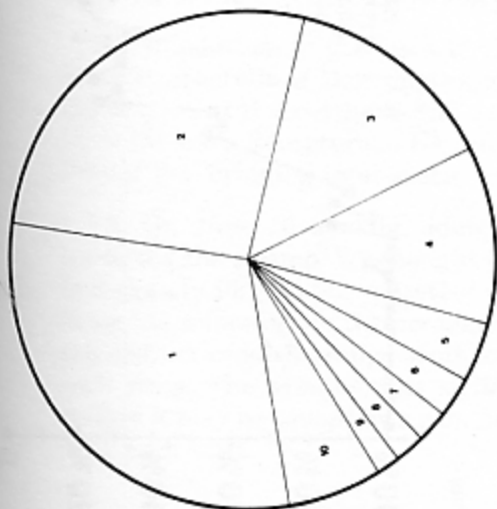


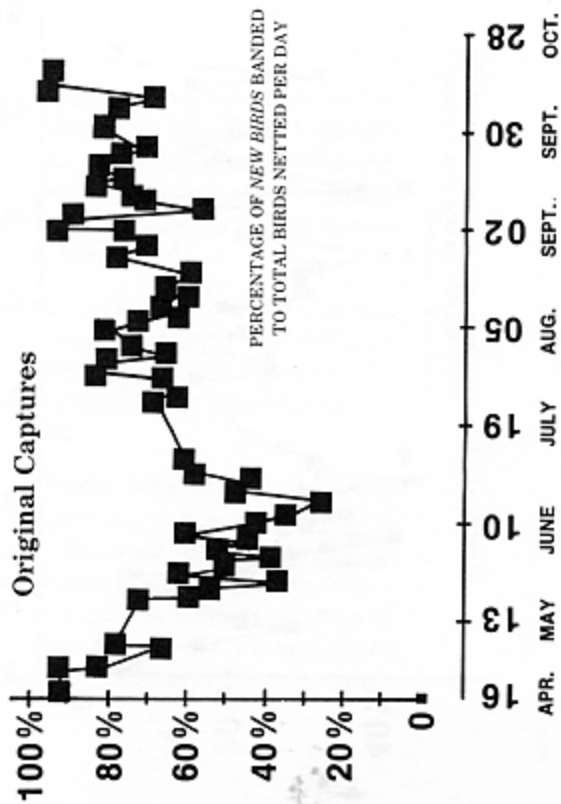
FIGURE A

KEY TO FIGURE A

1. Gray Catbirds ..... 779
2. Warblers ..... 693
3. Thrushes ..... 356
4. Sparrows ..... 311
5. Grosbeaks/Buntings ..... 109
6. Flycatchers ..... 67
7. Vireos ..... 55
8. Chickadees/Titmice ..... 51
9. Finches (Purple/Gold-) ..... 41
10. All the rest ..... 176

TOTAL 2638

FIGURE C



TOTAL BIRDS HANDLED PER BANDING DAY  
1985 Season

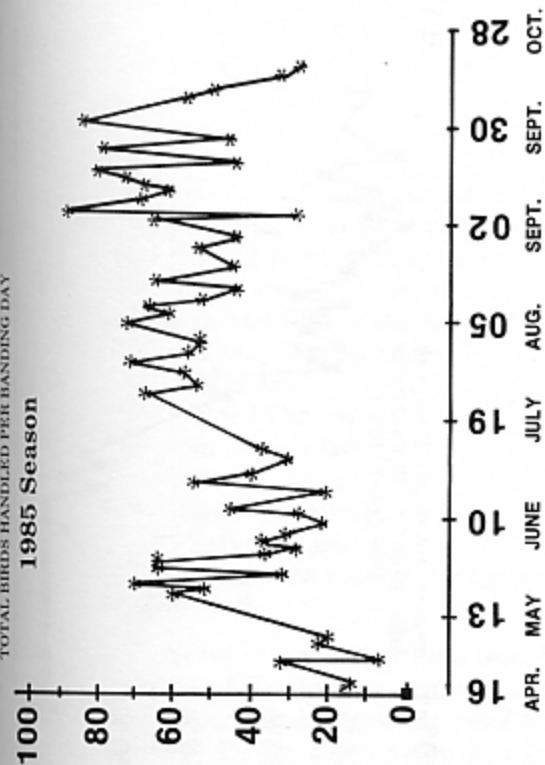


FIGURE B

FIGURE D

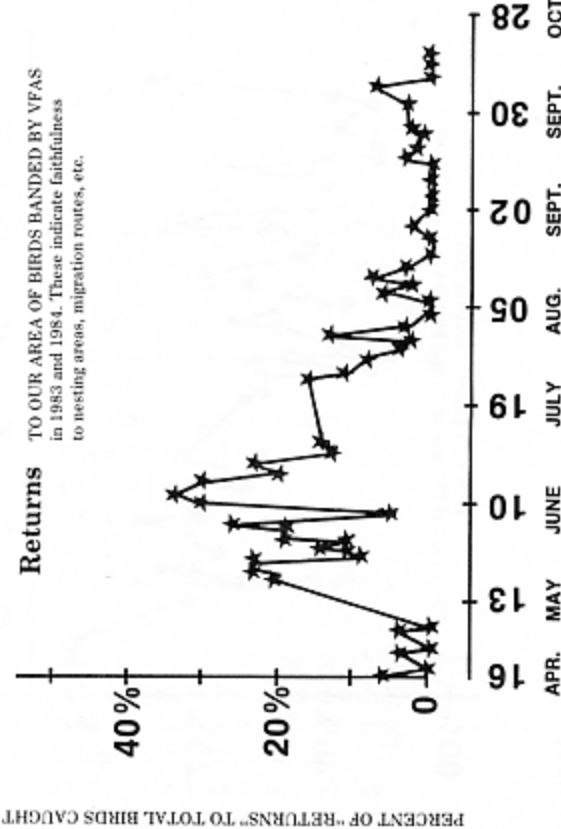


FIGURE E

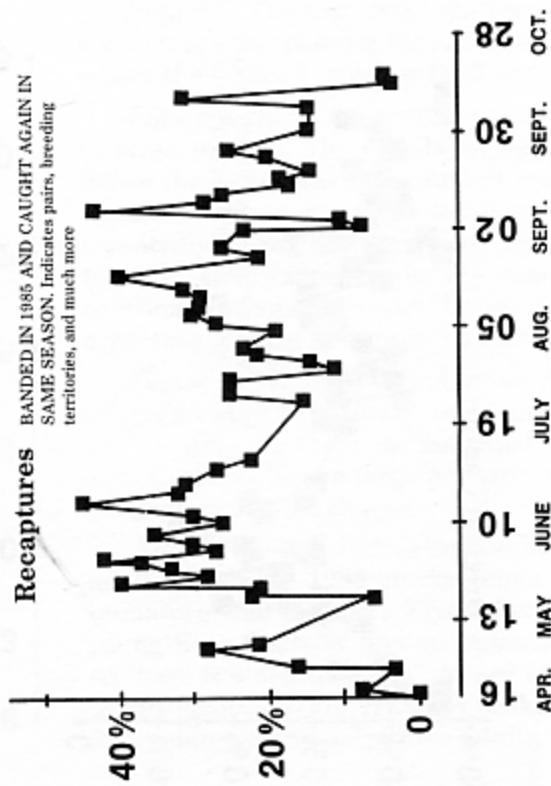


FIGURE F

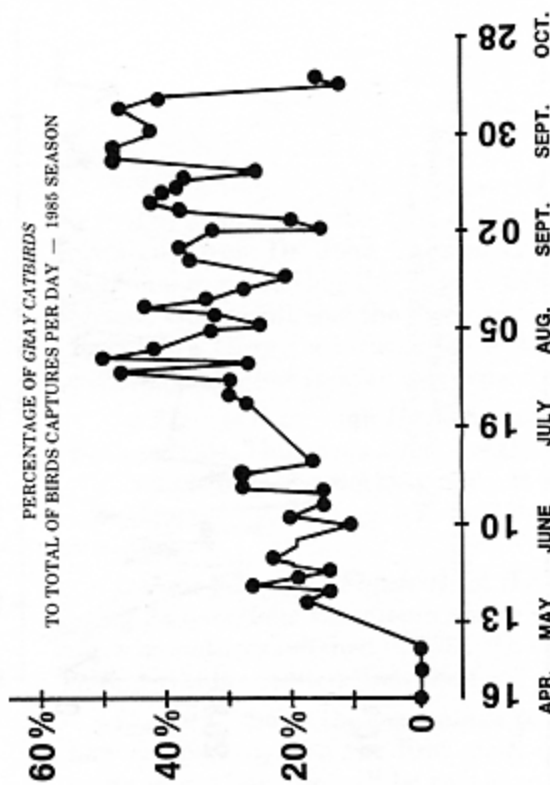
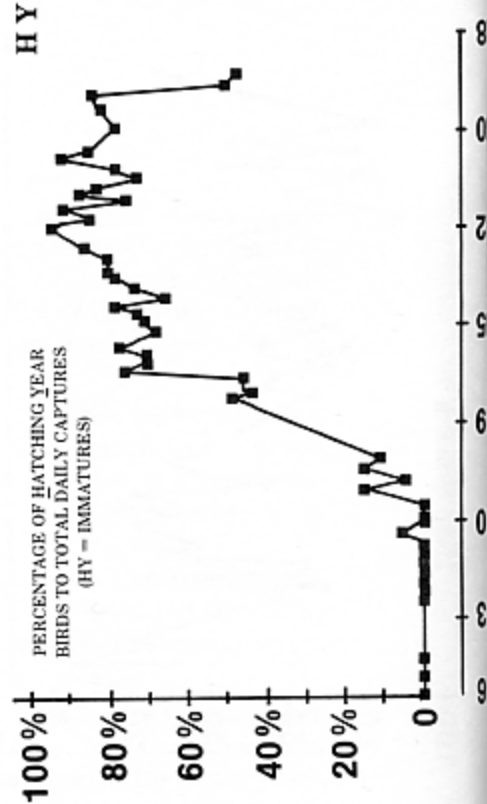


FIGURE H



## BREEDING BIRDS / GYPSY MOTH PREDATORS

Of special interest to us were the birds which were apparently breeding and nesting in the general area of the Study Site, as indicated in Table V. The following are known to be predators of the Gypsy Moth (from the research and files of the Scientific Studies Committee of VFAS):

Downy Woodpecker	Black-and-white Warbler
*Blue Jay	Ovenbird
Wood Thrush	Common Yellowthroat
*American Robin	Rose-breasted Grosbeak
*Gray Catbird	Indigo Bunting
*Red-eyed Vireo	Brown-headed Cowbird
Yellow Warbler	

\*These four rate among the top nine, in a list of 45 avian predators of the Gypsy Moth.

As we compare the 1985 records with previous years, we discover that several of the nesting birds were banded here in 1983 or 1984 as adults, and returned as apparent residents for the 1985 season. Also fledglings banded during those years have manifested faithfulness to the area by returning (or remaining) in 1985, among them Gray Catbirds, Song Sparrows, Swamp Sparrows, Veeries, Wood Thrushes, Common Yellowthroats, Tufted Titmice, and Downy Woodpeckers.

### CONCLUDING NOTES

1. We have no report of any 1985 birds being recovered yet in other areas. 800 miles is still the record, set in 1984. An adult American Redstart banded on May 17th was captured by a cat one week later in Newcastle, New Brunswick, Canada. The cat's owner called it a "small Baltimore Oriole". A Canadian bird-watcher corrected this information before it was reported to the U.S.B.B. Laboratory in Laurel, Maryland.

2. In addition to the work at Site 4-A, on which this article is based, Jerry Pasquarella of Downingtown, Pennsylvania, initiated a VFAS Banding Station at the northern Site 1-A for the 1985 season. He handled 304 birds (64 were Recaptures). He also added the Connecticut Warbler to our Project list, bringing total species captured to 94.

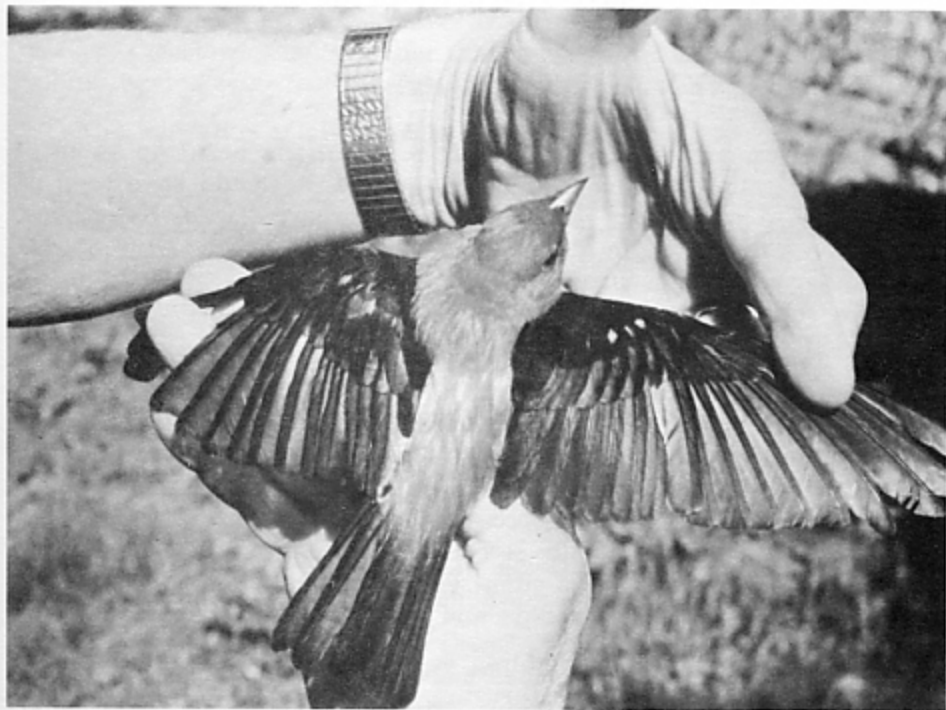
3. On June 10 a male, adult Scarlet Tanager was caught in a net bordering the swamp. We thought we had a "Red-winged Scarlet Tanager"! Fortunately Phil Allen, volunteer from Radnor Pa., had his camera ready. From his colored slide the accompanying photograph was prepared. There are distinct reddish-orange spots on the primary and secondary coverts of each wing. The symmetry is striking. Some ornithologists we consulted believe it may be caused by a genetic abnormality, and might show up anew after each molt.

TABLE V

INDIVIDUAL BIRDS with PHYSIOLOGICAL EVIDENCE  
of breeding at the VFAS Project Site during 1985 season.  
Each banded bird was recorded several times (2 to 9 times)  
from just before nesting until the end of nesting season.

SPECIES	MALE BIRDS with noticeable cloacal protuberance (CP)	FEMALE BIRDS with incubation patch ("brood patch") (BP)
Downy Woodpecker	*	1
Blue Jay		1
Brown-headed Cowbird		1
Song Sparrow	3	5
Swamp Sparrow	3	4
Northern Cardinal	*	4
Rose-breasted Grosbeak	*	4
Indigo Bunting	*	2
Red-eyed Vireo	3	2
Black-and-white Warbler	*	1
Yellow Warbler	*	3
Ovenbird		2
Northern Waterthrush	2	4
Louisiana Waterthrush	1	1
Common Yellowthroat	*	12
Gray Catbird	16	14
Tufted Titmouse	1	3
Carolina Chickadee		1
Wood Thrush	6	10
Veery	2	5
American Robin	*	4

\*Indicates MALE BIRDS whose sex was identified by *plumage*, most of which were not checked for CP.



SCARLET TANAGER (*Piranga olivacea*) with red-orange spots on primary and secondary coverts. Banded June 10, 1985 in Chester County, Pa.

*Photo by Phil Allen*

4. *Gray Catbird migratory activity* at Site 4-A: We caught the first 1985 Catbird on May 13, our last on October 1. During September, the average lapse for Hatching Year birds from the first capture after fledging to their last appearance was nine days. About 10 birds during that month were around only three days before disappearing.

5. *Birds caught all three years at 4-A*: A good number of individuals (from 9 species) have appeared consistently each season, several times each year. A Wood Thrush, banded in 1983, was caught 11 times in 1984, and six times in 1985.

There is already abundant data from the three years of field work that casts light on avian patterns of migration, breeding and impact on Gypsy Moth infestation in Chester County. More details are available from the author. Many gems still remain hidden in the previous years' work.

—Glen-Groft Club Apts. 122, 132 Folcroft Ave., Folcroft, PA 19032