

## Butterflies and Skippers Recorded from the Southern Tip of the Delmarva Peninsula, 1995-2003

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### INTRODUCTION

Little recent information is available about the butterflies and skippers that inhabit the southern tip of the Delmarva Peninsula in Northampton County, Virginia. The butterfly fauna of the Delmarva Peninsula was treated by Woodbury (1994), but his book lacks range maps or information specific to the Virginia portion of the peninsula. Statewide references on butterflies and skippers of Virginia (Clark & Clark, 1951; Pavulaan, 1995) contain county-level records that include Northampton County. Clark & Clark (1951) also listed specific localities in Northampton County for a few species.

An interesting and rare phenomenon, a fallout, or mass grounding of butterflies (at least nine species involved) and dragonflies, was observed on 27 May 2000 at the Chesapeake Bay Bridge-tunnel, about 10-20 km southwest of the tip of the Delmarva Peninsula (Taber, 2002).

In 1995, volunteers and staff of Coastal Virginia Wildlife Observatory (CVWO), a non-profit organization formed in 1994, initiated regular surveys of butterflies and skippers throughout the year at the southern tip of the Delmarva Peninsula to document the current status of the fauna. A checklist of the butterflies and skippers found in the area has been produced by CVWO, distributed to the public, and updated as of June 2003.

### METHODS AND STUDY AREAS

CVWO has employed professional biologists annually since 1995 to study bird migration. Several of those staff, in their spare time, have paid close attention to butterflies and skippers, particularly in the three main study areas: Kiptopeke State Park (KSP), the Eastern Shore of Virginia National Wildlife Refuge

(ESVNWR), and the GATR Tract, a Virginia Department of Game and Inland Fisheries Wildlife Management Area (GATR). These sites are located in the southern 6 km of the Delmarva Peninsula (Fig. 1).

Volunteers, including the author, have spent considerably more time than staff recording observations at all seasons. To facilitate the studies and also for enjoyment by visitors, a butterfly garden was established in 1996 at KSP by CVWO volunteers. CVWO also helps manage a butterfly garden established by ESVNWR in 1999. The gardens provide nectaring opportunities for adult butterflies and skippers and food plants for caterpillars. The most predominant

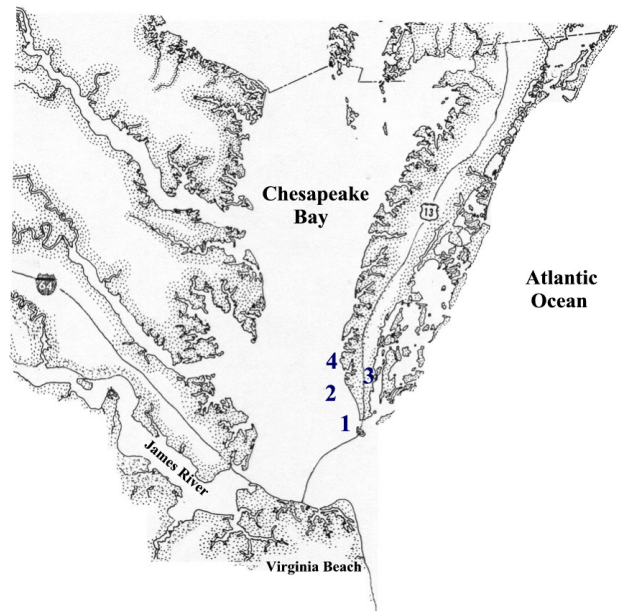


Fig 1. Map showing main study areas at the southern end of the Delmarva Peninsula, Northampton County, Virginia (1 = Fisherman Island National Wildlife Refuge, 2 = ESVNWR, 3 = GATR, 4 = KSP).

plants in the gardens are: Butterfly Bush (*Buddleia davidii*), Round Head Bush Clover (*Lespedeza capitata*), Blue Salvia (*Salvia guaranictia*), Joe-Pye Weed (*Eupatorium purpureum*), Butterfly Weed (*Asclepias tuberosa*), Seaside Goldenrod (*Solidago sempervirens*), Tansy (*Tanacetum vulgare*), Catnip (*Nepeta cataria*), Bergamot (*Monarda didyma*), Lamb's Ears (*Stachys byzantina*), Rose Root (*Sedum rosea*), Homestead Verbena (*Verbena canadensis*), and Lantana (*Lantana camara*). The gardens draw a wide variety of butterflies and skippers from March to early December.

In addition to the butterfly gardens, observations have been made primarily along the trails at KSP, ESVNWR, and GATR. Both KSP and ESVNWR have stands of *Abelia* bushes, approximately 20 m long and 50 m long, respectively, which have proven to be extremely attractive to butterflies and skippers and have concentrated them for easy, close-range study. Predominant habitats at the tip of the Delmarva Peninsula include small, mixed forest patches, containing Loblolly Pine (*Pinus taeda*) and Virginia Pine (*Pinus virginiana*), oaks (*Quercus* spp.), hollies (*Ilex* spp.), maples (*Acer* spp.), and other hardwoods; fallow fields; Wax Myrtle (*Myrica cerifera*) stands; thick understories of Poison Ivy (*Toxicodendron radicans*) and honeysuckle (*Lonicera*); freshwater ponds; saltmarsh; dunes and beaches. In addition, there are agricultural fields which mainly produce soybeans, wheat, string beans, cucumbers, squash, tomatoes, cotton, and sweet potatoes.

In 1999, CVWO began conducting the annual 4<sup>th</sup> of July Butterfly Count, organized by the North American Butterfly Association, within a designated 24 km diameter survey area. The count, named "Delmarva Tip" and centered around Capeville, uses the same circle as the annual National Audubon Society Christmas Bird Count.

## RESULTS AND DISCUSSION

A total of 66 species of butterflies and skippers was documented in the study area (Table 1). No specimens were collected, but many species were photographed and are so noted in the table. Multiple observers have documented the presence of 63 of the 66 species, from 1995-2003. The following four species are represented by a single observation:

Southern Dogface (*Colias cesonia*) - found by Bob Ake near KSP on 9 November 2002. Clark & Clark (1951) listed a record of this species from Bayford, Northampton County, which is plotted by Pavulaan (1995), but lacking from USGS (2002).

Hayhurst's Scallopwing (*Staphylus hayhurstii*) - observed by Hal Wierenga and Lynn Davidson at Oyster on 26 July 2003 during the 5<sup>th</sup> annual 4<sup>th</sup> of July Butterfly Count. This is the first record of this species from Northampton County.

Southern Broken-Dash (*Wallengrenia otho*) - observed by Mark Garland at ESVNWR on 14 September 1998. This species was previously recorded from Northampton County by Burns (1985).

Brazilian Skipper (*Calpodus ethlius*) - found by the author, Calvin Brennan, and Chad Runco and photographed by Fletcher Smith (Fig. 2) at ESVNWR on 1 December 2001. The temperature was 22 °C. This is apparently a new record for Northampton County, but the species was previously recorded from neighboring Accomack County by Clark & Clark (1951).

The following four additional species found during this study are apparently new records for Northampton County (Pavulaan, 1995; USGS, 2002): Sleepy Orange (*Eurema nicippe*), Crossline Skipper (*Polites origenes*), Little Glassywing (*Pompeius verna*), and Common Roadside Skipper (*Amblyscirtes vialis*). Aaron's Skipper (*Poanes aaroni*), another species that was observed during this study, was recorded from Northampton County by Clark & Clark (1951), but is not plotted by Pavulaan (1995) or USGS (2002). Sleepy Orange (Fig. 3) has been found by Calvin Brennan and the author at ESVNWR and KSP, including dates of 1 May 2000, 1 April 2001, and 14 April 2001. Crossline Skipper has been found at the Kiptopeke Butterfly Garden by Lynn Davidson, Hal Wierenga, Calvin Brennan, the author, and others, often feeding on *Lespedeza capitata* in late August and through September. Little Glassywing was found by Calvin Brennan and the author on 19 August 2000 at the Kiptopeke Butterfly Garden and four were observed on 20 July 2002 during the 4<sup>th</sup> of July Butterfly Count. Common Roadside Skipper was found separately by the author and Larry Brindza, on 4<sup>th</sup> of July Butterfly Counts on 18 July 1999 and 20 July 2002, respectively.

Five additional species represented by fewer than five observations are Pipevine Swallowtail (*Battus philenor*), Giant Swallowtail (*Papilio cresphontes*), White M Hairstreak (*Parrhasius m-album*), Gulf Fritillary (*Agraulis vanillae*), and Northern Broken-Dash (*Wallengrenia egeremet*). Both swallowtails have been observed at ESVNWR by multiple observers, and at least the Giant Swallowtail also at KSP by the author. Single adult White M Hairstreaks were observed at KSP by the author and Brennan in April 2001 and by

Table 1. Butterflies and skippers found near the southern tip of the Delmarva Peninsula, Northampton County, Virginia, 1995-2003. Scientific and common names follow Glassberg (1999), except for American Holly Azure (see Wright & Pavulaan, 1999) and Summer Azure (see USGS, 2002).

Common Name	Scientific Name	Documentation <sup>1</sup>	Relative Abundance <sup>2</sup>	Distribution Records <sup>3</sup>
Pipevine Swallowtail	<i>Battus philenor</i>	Sight	Rare	
Black Swallowtail	<i>Papilio polyxenes</i>	Photograph	Common	
Giant Swallowtail	<i>Papilio cresphontes</i>	Sight	Rare	C&C
Eastern Tiger Swallowtail	<i>Papilio glaucus</i>	Photograph	Common	
Spicebush Swallowtail	<i>Papilio troilus</i>	Photograph	Common	C&C
Palamedes Swallowtail	<i>Papilio palamedes</i>	Photograph	Common	C&C
Cabbage White	<i>Pieris rapae</i>	Photograph	Common	
Falcate Orangetip	<i>Anthocharis midea</i>	Photograph	Common	
Clouded Sulphur	<i>Colias philodice</i>	Photograph	Common	
Orange Sulphur	<i>Colias eurytheme</i>	Photograph	Common	C&C
Southern Dogface	<i>Colias cesonia</i>	Sight	Rare	C&C
Cloudless Sulphur	<i>Phoebis sennae</i>	Photograph	Common	
Little Yellow	<i>Eurema lisa</i>	Sight	Uncommon	
Sleepy Orange	<i>Eurema nicippe</i>	Photograph	Uncommon	N
Henry's Elfin	<i>Incisalia henrici</i>	Photograph	Common	
Eastern Pine Elfin	<i>Incisalia niphon</i>	Sight	Common	
White M Hairstreak	<i>Parrhasius m-album</i>	Sight	Rare	
Gray Hairstreak	<i>Strymon melinus</i>	Photograph	Common	
Red-banded Hairstreak	<i>Calycopis cecrops</i>	Photograph	Common	
Eastern Tailed Blue	<i>Everes comyntas</i>	Photograph	Common	
American Holly Azure	<i>Celastrina idella</i>	Photograph	Common	
Summer Azure	<i>Celastrina neglecta</i>	Photograph	Common	
American Snout	<i>Libytheana carinenta</i>	Photograph	Common	C&C
Gulf Fritillary	<i>Agraulis vanillae</i>	Photograph	Rare	
Variiegated Fritillary	<i>Euptoieta claudia</i>	Photograph	Common	
Pearl Crescent	<i>Phyciodes tharos</i>	Photograph	Common	
Question Mark	<i>Polygonia interrogationis</i>	Photograph	Common	
Eastern Comma	<i>Polygonia comma</i>	Photograph	Uncommon	C&C
Mourning Cloak	<i>Nymphalis antiopa</i>	Sight	Common	C&C
American Lady	<i>Vanessa virginiensis</i>	Photograph	Common	
Painted Lady	<i>Vanessa cardui</i>	Photograph	Common	
Red Admiral	<i>Vanessa atalanta</i>	Photograph	Common	
Common Buckeye	<i>Junonia coenia</i>	Photograph	Common	
Red-spotted Purple	<i>Limenitis arthemis astyanax</i>	Photograph	Common	
Viceroy	<i>Limenitis archippus</i>	Photograph	Uncommon	
Hackberry Emperor	<i>Asterocampa celtis</i>	Sight	Uncommon	
Tawny Emperor	<i>Asterocampa clyton</i>	Sight	Uncommon	C&C
Little Wood-Satyr	<i>Megisto cymela</i>	Sight	Uncommon	
Common Wood-Nymph	<i>Cercyonis pegala</i>	Photograph	Common	
Monarch	<i>Danaus plexippus</i>	Sight	Common	
Silver-spotted Skipper	<i>Epargyreus clarus</i>	Photograph	Common	
Long-tailed Skipper	<i>Urbanus proteus</i>	Sight	Uncommon	
Hayhurst's Scallopwing	<i>Staphylus hayhurstii</i>	Sight	Rare	N
Juvenal's Duskywing	<i>Erynnis juvenalis</i>	Photograph	Common	
Horace's Duskywing	<i>Erynnis horatius</i>	Photograph	Common	
Wild Indigo Duskywing	<i>Erynnis baptisiae</i>	Sight	Common	

Table 1 (continued).

Common Name	Scientific Name	Documentation <sup>1</sup>	Relative Abundance <sup>2</sup>	Distribution Records <sup>3</sup>
Common Checkered-Skipper	<i>Pyrgus communis</i>	Photograph	Common	
Common Sootywing	<i>Pholisora catullus</i>	Photograph	Common	
Swarthy Skipper	<i>Nastra therminier</i>	Photograph	Common	
Clouded Skipper	<i>Lerema accius</i>	Photograph	Common	C&C
Least Skipper	<i>Ancyloxypha numitor</i>	Photograph	Uncommon	
Fiery Skipper	<i>Hylephila phyleus</i>	Photograph	Common	
Tawny-edged Skipper	<i>Polites themistocles</i>	Sight	Uncommon	
Crossline Skipper	<i>Polites origenes</i>	Sight	Uncommon	N
Southern Broken-Dash	<i>Wallengrenia otho</i>	Sight	Rare	
Northern Broken-Dash	<i>Wallengrenia egeremet</i>	Sight	Rare	
Little Glassywing	<i>Pompeius verna</i>	Photograph	Rare	N
Sachem	<i>Atalopedes campestris</i>	Photograph	Common	
Zabulon Skipper	<i>Poanes zabulon</i>	Photograph	Common	
Aaron's Skipper	<i>Poanes aaroni</i>	Sight	Rare	C&C
Broad-winged Skipper	<i>Poanes viator</i>	Photograph	Uncommon	
Dun Skipper	<i>Euphyes vestris</i>	Photograph	Uncommon	
Common Roadside-Skipper	<i>Amblyscirtes vialis</i>	Sight	Rare	N, D
Brazilian Skipper	<i>Calpodus ethlius</i>	Photograph	Rare	N
Saltmarsh Skipper	<i>Panoquina panoquin</i>	Sight	Common	C&C
Ocola Skipper	<i>Panoquina ocola</i>	Sight	Uncommon	

<sup>1</sup> All photographs by Calvin Brennan except Gulf Fritillary (Larry Brindza, Ned Brinkley) and Brazilian Skipper (Fletcher Smith).

<sup>2</sup> Common (generally found during proper season in proper habitat); Uncommon (found only sporadically or in small numbers at proper season in proper habitat); Rare (<5 records).

<sup>3</sup> N = Northampton County record; D = Delmarva Peninsula record; C&C = species reported from Northampton County by Clark & Clark (1951); common statewide species were often reported as such, without county by county lists.



Fig. 2. Brazilian Skipper (*Calpodus ethlius*) photographed by Fletcher Smith at Eastern Shore of Virginia National Wildlife Refuge on 1 December 2001.



Fig. 3. Sleepy Orange (*Eurema nicippe*) photographed by Calvin Brennan at Eastern Shore of Virginia National Wildlife Refuge on 1 April 2001.

CVWO staff Chad Runco in August 2001. Northern Broken-Dash was observed several times by Mark Garland, including at KSP. Single Gulf Fritillaries were recorded on five dates, including four during the same week, as follows: (1) observed near KSP by Andy Davis on 20 September 2000; (2) seen and photographed on lantana at ESVNWR butterfly garden on 2-3 October 2002 by multiple observers; (3) photographed near Cape Charles on 3 October 2002 by Ned Brinkley; and (4) observed on the Chesapeake Bay Bridge-tunnel on 6 October 2002 by Bill Akers, Peggy Speigel, and Bill Opengari.

Species that were not found in the study area but which occur regularly just across the mouth of Chesapeake Bay (cities of Norfolk and Virginia Beach) include Zebra Swallowtail (*Eurytides marcellus*), Gemmed Satyr (*Cyllopsis gemma*), and Carolina Satyr (*Hermeuptychia sosybius*). Clark & Clark (1951) also noted the absence of Zebra Swallowtails on the Eastern Shore. Fifteen species previously recorded from Northampton County, but which were not found during this study period, are listed in Table 2. Two of these, Diana Fritillary (*Speyeria diana*) and Silver-bordered Fritillary (*Boloria selene*), were last recorded in the county prior to 1930 (Clark & Clark, 1951) and are likely extirpated. Diana Fritillary may be extirpated from the Coastal Plain of Virginia (West & Opler, 1979).

The results of the five 4<sup>th</sup> of July Butterfly Counts conducted to date appear in Table 3. Fisherman Island was only surveyed in 1999. The cumulative total is 45 species. While the results are interesting, meaningful comparisons cannot be made, because the number of observers, distances traveled, and field hours have not been standardized for this count. An astounding 24,901 Cabbage Whites (*Pieris rapae*), a non-native butterfly species, were estimated in agricultural fields during the 2002 count, mainly associated with Black Mustard (*Brassica nigra*). This figure was exceeded the following year by an estimated count of 33,018 Cabbage Whites.

In 1998, a Monarch (*Danaus plexippus*) migration program was begun by CVWO Board member Mark Garland, which includes late summer and fall censuses, roost site monitoring, and tagging. More than 2,600 Monarchs have been tagged from 1998 through 2002 (Davis & Garland, 2002; Davis & Garland, in press; Garland & Davis, 2002). Two of these Monarchs were recovered at the winter roost site in El Rosario, Mexico on 26 January 2001 and 16 February 2002.

In addition to Monarchs, one other species, Red Admiral (*Vanessa atalanta*), has been observed in active, straight-line seasonal migration, especially past the hawkwatch observation platform at KSP, during

Table 2. Butterflies and skippers recorded previously from Northampton County (Clark & Clark, 1951; Pavulaan, 1995; USGS, 2002) but not found by CVWO volunteers and staff during this study.

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Great Purple Hairstreak ( <i>Atlides halesus</i> )
Coral Hairstreak ( <i>Harkenclenus titus</i> )
Olive Hairstreak ( <i>Mitoura grynea</i> )
Brown Elfin ( <i>Incisalia augustinus</i> )
Diana Fritillary ( <i>Speyeria diana</i> )
Great Spangled Fritillary ( <i>Speyeria cybele</i> )
Silver-bordered Fritillary ( <i>Boloria selene</i> )
Southern Pearly Eye ( <i>Enodia portlandia</i> )
Hoary Edge ( <i>Achalarus lyciades</i> )
Southern Cloudywing ( <i>Thorybes bathyllus</i> )
Northern Cloudywing ( <i>Thorybes pylades</i> )
Sleepy Duskywing ( <i>Erynnis brizo</i> )
Zarucco Duskywing ( <i>Erynnis zarucco</i> )
Peck's Skipper ( <i>Polites peckius</i> )
Delaware Skipper ( <i>Anatrytone logan</i> )

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August and September (pers. obs). However, no census of the movement of Red Admirals has been undertaken.

This study represents a comprehensive attempt to (1) better understand the butterfly and skipper populations at the southern tip of the Delmarva Peninsula, and (2) make recommendations about possible management strategies. CVWO plans to continue the studies. More species will certainly be found as the coverage increases. Professionals and volunteers conducting similar studies in the area are encouraged to share their results with CVWO.

#### ACKNOWLEDGMENTS

Principal field researchers besides the author were Mark Garland, Calvin Brennan, Hal Wierenga, Lynn Davidson, Andy Davis, Marshall Iliff, Bob Ake, Larry Brindza, and Brian Sullivan. Additional 4<sup>th</sup> of July Butterfly Count participants were Rebecca Agule, Matt Akel, Bob Anderson, Danny Bell, Ned Brinkley, Camille Darby, Nicole Eaton, Sheila Faith, Dot Field, Teta Kain, and Bill Williams. 4<sup>th</sup> of July Count compilers are Davidson and Wierenga. Mark Garland, Calvin Brennan, Lynn Davidson and Hal Wierenga reviewed this paper and made helpful suggestions. Steve Roble made many suggestions about the content, organization, and literature citations of the paper. Access to research areas and tagging permits were made possible through the cooperation of Dave Summers and the KSP staff and Susan Rice and the ESVNWR staff.

Table 3. Results of 4<sup>th</sup> of July Butterfly Counts conducted at the southern tip of the Delmarva Peninsula, 1999-2003.

Common Name	18 July 1999	30 July 2000	28 July 2001	20 July 2002	26 July 2003
Pipevine Swallowtail	0	0	0	1	0
Black Swallowtail	4	30	0	89	160
Eastern Tiger Swallowtail	7	6	3	50	85
Spicebush Swallowtail	5	55	17	79	155
Palamedes Swallowtail	2	13	6	8	20
Dark swallowtail sp.	0	0	0	15	6
Cabbage White	1,310	2,209	52	24,901	33,018
Clouded Sulphur	2	1	2	33	18
Orange Sulphur	4	13	2	254	130
Cloudless Sulphur	0	0	0	13	1
Gray Hairstreak	0	5	0	15	3
Red-banded Hairstreak	2	45	0	1	1
Eastern Tailed Blue	0	24	0	10	5
Summer Azure	0	2	0	4	1
American Snout	0	12	0	5	111
Variegated Fritillary	0	42	0	60	3
Pearl Crescent	2	14	1	27	15
Question Mark	0	1	2	1	10
American Lady	2	7	22	9	90
Painted Lady	0	0	1	0	8
Red Admiral	2	5	4	1	9
Common Buckeye	6	65	0	354	197
Red-spotted Purple	0	8	1	2	1
Viceroy	0	0	0	3	2
Hackberry Emperor	0	1	1	7	38
Tawny Emperor	0	0	0	0	7
Common Wood-Nymph	12	38	0	9	41
Monarch	10	0	6	3	6
Silver-spotted Skipper	56	63	38	685	393
Hayhurst's Scallopwing	0	0	0	0	1
Horace's Duskywing	3	1	1	7	7
Common Checkered Skipper	0	0	0	27	2
Common Sootywing	0	11	0	52	16
Swarthy Skipper	0	8	0	3	0
Clouded Skipper	1	0	0	2	0
Least Skipper	0	4	1	1	7
Fiery Skipper	9	0	0	21	2
Northern Broken-Dash	0	1	0	0	0
Little Glassywing	0	0	0	4	0
Sachem	1	1	0	48	4
Zabulon Skipper	0	2	0	1	0
Broad-winged Skipper	0	2	0	20	6
Dun Skipper	1	3	0	2	0
Common Roadside-Skipper	1	0	0	1	0
Saltmarsh Skipper	0	0	0	0	7
Ocola Skipper	0	0	0	0	1
Total Species	21	31	17	39	37
Total individuals	1,442	2,692	160	26,828	34,597
Cumulative species total	21	35	36	41	45
Number of observers	4	8	1	8	6
Number of party hours	6	14	4	23.5	26.5

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