



2022

Annual REPORT

**PROTECTING WILDLIFE THROUGH FIELD
RESEARCH, EDUCATION AND HABITAT
CONSERVATION FOR OVER 25 YEARS**

 vawildliferesearch.org

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TABLE OF CONTENTS

<i>CVWO Partners</i>	4
<i>President’s Message</i>	5
<i>Raptor Research</i>	6
Kiptopeke Hawkwatch Report Summary	6
History of the Kiptopeke Hawkwatch published by THE RAVEN	21
College Creek Hawkwatch	22
<i>Songbird Research</i>	26
Prothonotary Warbler Nest Monitoring Reports	26
Prothonotary Warbler Nestling Diet Quantified.....	29
Purple Martin Report	32
Cape Charles Christmas Bird Count.....	34
<i>Butterfly Research</i>	35
Monarch Migration Report.....	35
New 2022 Butterfly Records	41
Creole Pearly-eye Butterfly Study – Final Report.....	43
Chippokes Butterfly Count	44
Williamsburg Area Butterfly Count	45
Delmarva Tip Butterfly Count.....	47
<i>Waterbird Project</i>	49
Waterbirds Annual Report.....	49
Wood Ducks Report	55
<i>Annual Kiptopeke Challenge</i>	56
<i>VSO Atlas Adoptions</i>	57
<i>The Big Sit</i>	58
<i>Grants and Outreach</i>	59
Conservation Grants	59
Educational Grants.....	60
<i>In Memorium</i>	61
Larry Brindza.....	61
Bettye Fields	61
Peter Doherty	62
<i>Support CVWO</i>	64

CVWO PARTNERS

American Bird Conservancy
 City of Chesapeake | Parks, Recreation and Tourism
 Finch Research Network
 Hampton Roads Bird Club
 Hawk Migration Association of North America
 James City County | Parks & Recreation
 Monarch Joint Venture
 National Park Service | Colonial National Historical Park
 U.S. Fish & Wildlife Service | Eastern Shore of Virginia
 U.S. Army Corp of Engineers | Craney Island Dredged Materials Management Area
 Virginia Society of Ornithology
 Virginia Department of Conservation and Recreation | Kiptopeke State Park
 Virginia Department of Wildlife Resources
 Virginia Master Naturalist | Historic Rivers Chapter
 Williamsburg Bird Club
 Williamsburg Botanical Garden and Freedom Park Arboretum



Virginia Department of Conservation and Recreation
 CONSERVE. PROTECT. ENJOY.



Virginia Master
Naturalists
 Historic Rivers Chapter

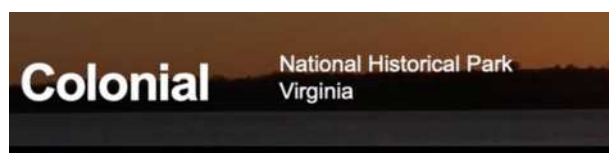
FINCH RESEARCH NETWORK



WILLIAMSBURG
 BIRD CLUB



WILLIAMSBURG BOTANICAL GARDEN



President's Message



This report is full of data and photos thanks to so many people including volunteers, donors, partners, and seasonal staff.

In addition to team reports, it also contains tributes to three very special people who have passed away. You will also see that we are proud to have a new partnership with the Finch Research Network, where we helped establish a student grant in memory of our friend Ned Brinkley. The piece about our Breeding Bird Atlas Adoptions is especially gratifying as the Virginia Society of Ornithology has been so helpful to the Observatory over our 28 years. Also, you will see ideas for changes to our annual team birding competition. Thanks to our Communications Specialist, Sarah O'Reilly, for creating this report!

Brian Taber, CVWO President

CVWO's 2022 Board of Directors CVWO's Advisory Board

Brian Taber, President
 Nancy Barnhart, Vice President
 Ann Carpenter, Treasurer
 Shirley Devan, Secretary
 Andy Hawkins
 Dr. Sheila Scoville
 Lisa Reagan
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RAPTOR RESEARCH



Kiptopeke Hawkwatch Report Summary

Prepared by Jason Bojczyk

Located at the southern tip of the Delmarva Peninsula, Kiptopeke State Park offers a spectacular opportunity to witness the southbound fall migration of hundreds of migratory bird species, particularly raptors. The fall of 2022 was the 46th consecutive year of the hawkwatch and the 28th consecutive year that CVWO has staffed a full-time hawkcounter to monitor the fall migration of raptors at Kiptopeke State Park. In addition, an assistant hawkcounter/educator/monarch biologist was hired and was present for a large majority of the season.

From August 28 to November 30, a total of 14,079 migrant raptors of 14 species were counted over ~670 observation hours at the Kiptopeke hawk platform. Six full days of counting were lost due to weather, with an additional twelve days of partial counting also attributed to the weather. The five most numerous species in order of decreasing abundance were: American Kestrel (n=3,373), Sharp-shinned Hawk (n=2,950), Osprey (n=2,212), Cooper's Hawk (n=1,762), and Merlin (n=977). All data collected were entered into the Hawkcount.org online database (which is maintained by the Hawk Migration

Association of North America) and the Dunkadoo database.

The 2022 season total of 14,079 individual raptors was well below the ten-year average of 18,220. In fact, it is the lowest total number of raptors tallied since CVWO started hiring full-time counters in 1995.

Additionally, this is only the sixth time since 1995 that fewer than five raptor species (not including vultures) had seasonal totals of 1,000+ (the other years being 2020, 2012, 2008, 2002 and 2001). Including both vulture species, 16 species of raptors were recorded, which matches the previous 10-season average.

Raptors **significantly above** their previous 10-season averages include the following:

Bald Eagle	+21%
Northern Goshawk	+50%
Red-shouldered Hawk	+56%

Raptors **near** their previous 10-season averages include the following:

Northern Harrier	-10%
Broad-winged Hawk	-11%
Golden Eagle	+0%
American Kestrel	-8%

Raptors **slightly below** their previous 10-season averages include:

Cooper's Hawk	-11%
---------------	------

Raptors **significantly below** their previous 10-season averages include:

Osprey	-26%
Sharp-shinned Hawk	-41%
Red-tailed Hawk	-27%
Merlin	-34%
Peregrine Falcon	-48%

No Rough-legged Hawks, Swainson's Hawks, or Swallow-tailed Kites were tallied this season.

Monthly Reports from the Hawkwatch Platform



Andrew Rapp (right) and Jason Bojczyk at Kiptopeke Hawkwatch

AUGUST

A total of 73 raptors comprised of nine migrant species were recorded in August. The total effort was four days comprised of 32.5 hours, conducted by Nancy Barnhart. No days were affected by the weather. The three most numerous raptors in order of decreasing abundance were Osprey (n=39), Bald Eagle (n=11) and Red-tailed Hawk (n=6). The highest daily total and number of raptor species both occurred on August 29, with 25 raptors tallied, comprised of seven species. All three Mississippi Kites of the season were tallied in August, with a peak of two individuals on August 29.

SEPTEMBER

A total of 5,779 raptors comprised of eleven migrant species were recorded in September. The total effort was 29 days comprised of 267 hours. One full day was lost due to weather, with an additional two days shortened due to weather. The three most numerous raptors in order of decreasing abundance included the American Kestrel (n=1,905), Osprey (n=1,649) and Merlin (n=474). The highest daily total of raptors occurred on September 15 with 979 raptors tallied. September 15, 17, 24, 27, 28 and 29 all recorded eleven species of migrant raptors, the highest diversity for the month. Three species had their seasonal raptor peaks on two days including the following:

Osprey	n=273	9/15
American Kestrel	n=396	9/15
Broad-winged Hawk	n=194	9/24

Compared to the previous ten Septembers, it was a significantly below-average September for total raptors (-24%) and the fewest number of raptors recorded in September since 2013. The number of 1,000+ days (0) was just below the 10-year average of one per September. The number of 500+ days (2) was significantly below the 10-year average of five. In fact, there is only one other season (not impacted by a delayed start and with a full-time counter) with two or fewer days of 500+ raptors in September (2012). The number of 250+ days (9) was near the 10-year average of ten

and the number of 100+ days (17) was near the 10-year average of 18. The number of days with less than 50 raptors (7) was near the 10-year average of six.

Raptors **near** the previous 10-season September average include:

Northern Harrier	+0%
Red-tailed Hawk	-11%
American Kestrel	-4%

Raptors **slightly above** the previous 10-season September average include:

Bald Eagle	+14%
Broad-winged Hawk	+10%
Red-shouldered Hawk*	+400%

* (Second-highest September and significantly above 10-year September average)

Raptors **significantly below** the previous 10-season September average include:

Osprey	-20%
Sharp-shinned Hawk	-66% (third lowest September ever)
Cooper's Hawk	-34%
Merlin	-36%
Peregrine Falcon	-70% (lowest September on record)

When treated as individual species, Swainson's Hawk, Mississippi Kite and Swallow-tailed Kite have been recorded on less than half the last ten Septembers. Collectively, at least one of these species was seen in September during seven of the past ten seasons. Unfortunately, none of these species were tallied in September of 2022.

OCTOBER

A total of 7,655 raptors comprised of 12 migrant species were recorded in October. The total effort was 31 days comprised of 229 hours. No full days were lost due to weather, but eight days were shortened due to weather. The three most numerous raptors in order of decreasing abundance were Sharp-shinned Hawk (n=2,384), American Kestrel (n=1,437), and Cooper's Hawk (n=1,408). The highest daily total of raptors occurred on October 7, with 910 raptors tallied. The highest diversity of raptors occurred on October 30, with 12 migrant species recorded. Along with November 9, this was the most diverse day of migrant raptors for the season. Nine species had (or tied) their seasonal raptor peaks on six days:

Peregrine Falcon	n=117	10/1
Merlin	n=112	10/7
Bald Eagle	n=48	10/8
Sharp-shinned Hawk	n=374	10/8
Cooper's Hawk	n=167	10/8

Red-shouldered Hawk	n=18	10/22
Northern Harrier	n=47	10/28
Red-tailed Hawk	n=27	10/28
Golden Eagle	n=1	10/30 and 5 November dates

Compared to the previous ten Octobers it was a significantly below-average October for total raptors (-19%) and the lowest number of raptors recorded in October since 2017; the second lowest October since full-time counting began. The number of 1,000+ days (0) was slightly below the 10-year average of 1.5 per October. The number of 500+ days (2) was significantly below the 10-year average of 5. The number of 250+ days (14) was near the 10-year average of 12.5, and the number of 100+ days (20) was slightly below the 10-year average of 23. The number of days with less than 50 raptors (9) was significantly above the 10-year average of 4.4.

Raptors **near** the previous 10-season October average include:

Northern Harrier	+4%
Cooper's Hawk	+4%

Raptors **significantly above** the previous 10-season October average include:

Bald Eagle	+82%
Red-shouldered Hawk	+150%
Red-tailed Hawk	+51%

Raptors **slightly below** the previous 10-season October average include:

American Kestrel	-13%
Golden Eagle	-50%

Raptors **significantly below** the previous 10-season October average include:

Sharp-shinned Hawk	-29%
Broad-winged Hawk	-45%
Merlin	-31%
Peregrine Falcon	-40%

At least one Rough-legged Hawk or Swainson's Hawk was tallied in four of the last ten seasons in October, but neither species was recorded this October.

NOVEMBER

A total of 572 raptors comprised of 13 migrant species were recorded in November. Total effort was 25 days comprised of 142.25 hours. Five full days were lost due to weather, with an additional two days shortened due to weather. The three most numerous raptors in order of decreasing abundance were the Sharp-shinned Hawk (n=146), Red-tailed Hawk (n=134), and Red-shouldered

Hawk (n=71). The highest daily total of raptors occurred on November 2, with 97 raptors tallied. The highest diversity of raptors occurred on November 9, with 12 species recorded. Two species had (or tied) their seasonal peaks on eight days.

Northern Goshawk	n=1	11/8, 11/23, 11/29
Golden Eagle	n=1	11/2, 11/9, 11/14, 11/15, 11/19

Compared to the previous ten Novembers it was a significantly below average November for total raptors (-57%) and the lowest November total since full-time counting began. The number of 100+ days (0) was significantly below the 10-year average of four. The number of days with less than 50 raptors (26) was significantly above the 10-year average of 20.

Raptors **near** the previous 10-season November average include:

Northern Goshawk	+50%
Red-shouldered Hawk	+4%
Golden Eagle	+25%
American Kestrel	-19%
Peregrine Falcon	-8%

Raptors **slightly below** the previous 10-season November average include:

Osprey (-58%)
Broad-winged Hawk (-64%).

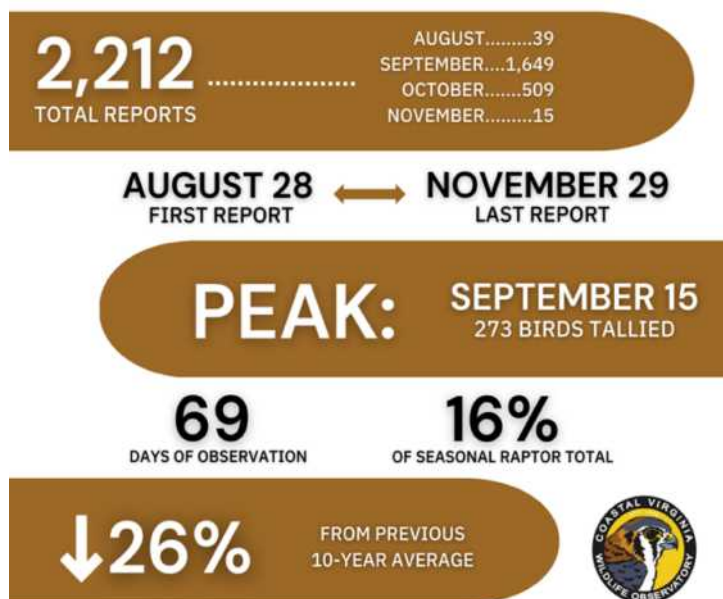
Raptors **significantly below** the previous 10-season November average include:

Bald Eagle	-63%
Northern Harrier	-65%
Sharp-shinned Hawk	-62%
Cooper's Hawk	-65%
Red-tailed Hawk	-62%
Merlin	-79%

At least one Rough-legged Hawk or Swainson's Hawk was tallied in four of the last ten seasons in November, but neither species was recorded this November.

Selected Species Accounts

OSPREY

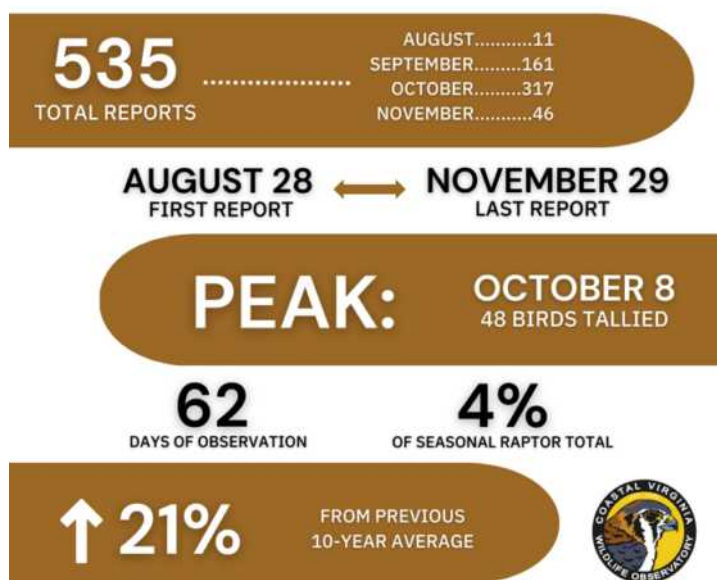


Interestingly, both the number of 100+ Osprey days (7) and 200+ days (3) this season exceeded the previous 10-season average of six and two respectively. The top seven daily totals of 273, 217, 205, 141, 136, 119, and 114 accounted for 55% of its season total. All seven peak dates occurred between September 2 and October 1. The 205 Osprey tallied on September 8 is tied for the second earliest 200+ day in the history of the count. The 217 tallied on October 1 is the first 200+ day in October since 2010. Like several other raptor species this season, Osprey got off to a fantastic first half of September, but inexplicably dried up during its typical peak 2-week

period (September 18-October 1). The 273 birds recorded on September 15 is the 31st highest day count ever and the 11th highest count in the last ten years.

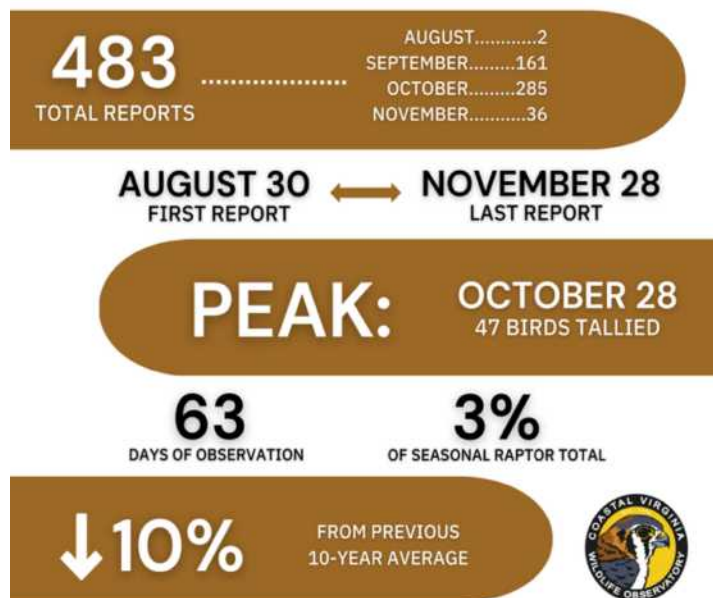
The top seven daily totals of 48, 44, 31, 30, 26, 23, and 22 accounted for 42% of its season total. All seven peak dates occurred between September 28 and October 22. The 48 birds on October 8 is the second-highest day count of migrant Bald Eagles. On October 12, 19 migrant Bald Eagles were recorded between 12-1 p.m., which is almost certainly the highest Bald Eagle hour in the history of the count. The 44 Bald Eagle day was the third-highest Bald Eagle day count ever. Incredibly, two of the top three Bald Eagle days in the history of the count occurred within just five days of each other. Despite this, the season total of Bald Eagles was only the fourth highest in the

BALD EAGLE



history of the count, largely due to a poor showing from October 23 through the remainder of the season. In fact, the 46 Bald Eagles recorded in November is the lowest November total since 2014.

NORTHERN HARRIER



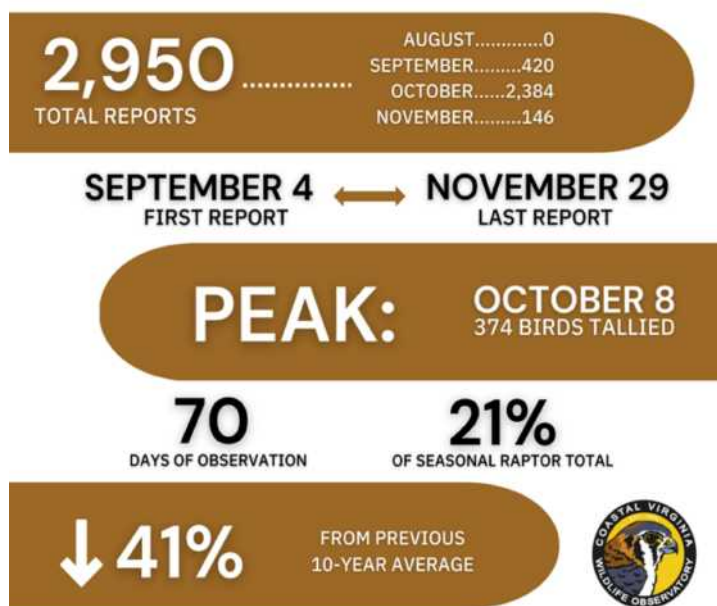
The top seven daily totals of 47, 43, 28, 26, 25, 25, and 25 accounted for 45% of its season total. All seven peak dates occurred between September 15 and October 29. The 47 birds on October 28 is tied for the 50th highest day count of Northern Harriers in the history of the count and the fourth-highest daily total in the past 10 years.



Northern Harrier | Steve Thornhill

The top seven daily totals of 374, 293, 179, 178, 127, 119, and 116 accounted for 47% of its season total. All seven peak dates occurred between October 7 and October 28. The 420 Sharp-shinned Hawks tallied this September was the third fewest in the history of the count. The remnants of Hurricane Ian did slowly work their way up the Delmarva Peninsula between September 30 through October 5 and perhaps somehow had an unknown impact on their migration. This seems to be unlikely as there were seemingly favorable conditions for Sharp-shinned Hawks to peak during their normal peak period, as well as

SHARP-SHINNED HAWK



favorable conditions pre-Ian remnants, during Ian remnants, and post-Ian remnants. Just before the typical start of the peak period for Sharp-shinned Hawks (September 20-23), there were seemingly favorable conditions each day for hawks to move in peak numbers (light-moderate WNW-NW winds); it didn't happen. Prior to the remnants of Hurricane Ian (September 26-29) had favorable light-moderate NW-NE winds and immediately after the remnants of Ian, on October 6, had light WNW winds. Additionally, October 1, 2, and 5 had at least six hours of counting per day, without any significant Sharp-shinned Hawk movement. Adding to the confusion is the fact that Cape Henlopen, DE had these same conditions affect that location from September 30 through October 5 and that site had its highest Sharp-shinned Hawk season since 2011. Cape May, NJ also had its second-highest Sharp-shinned Hawk season since 2013, despite facing similar weather conditions from October 1-4.

The top seven daily totals of 167, 145, 103, 103, 99, 90, and 88 accounted for 45% of its season total. All seven peak dates occurred between October 7 - 28. Unlike Sharp-shinned Hawks, the two highest counts this season both occurred during the typical peak week for Cooper's Hawk (October 5-11).



Cooper's Hawks | Steve Thornhill

COOPER'S HAWK

1,762
TOTAL REPORTS

AUGUST.....4
SEPTEMBER.....286
OCTOBER...1,408
NOVEMBER.....64

AUGUST 28
FIRST REPORT

NOVEMBER 28
LAST REPORT

PEAK:

OCTOBER 8
167 BIRDS TALLIED

71

DAYS OF OBSERVATION

13%

OF SEASONAL RAPTOR TOTAL

↓ 11%

FROM PREVIOUS
10-YEAR AVERAGE



NORTHERN GOSHAWK

3

TOTAL REPORTS

AUGUST.....0
SEPTEMBER.....0
OCTOBER.....0
NOVEMBER.....3

NOVEMBER 8
FIRST REPORT

NOVEMBER 29
LAST REPORT

PEAK:

All single-tally
reports throughout
the season

3

DAYS OF OBSERVATION

<0.2%

OF SEASONAL RAPTOR TOTAL

↑50%

FROM PREVIOUS
10-YEAR AVERAGE



Only half of the past ten seasons recorded at least one Goshawk. The three tallied this season are the most since 2014 when six were tallied.

RED-SHOULDERED HAWK



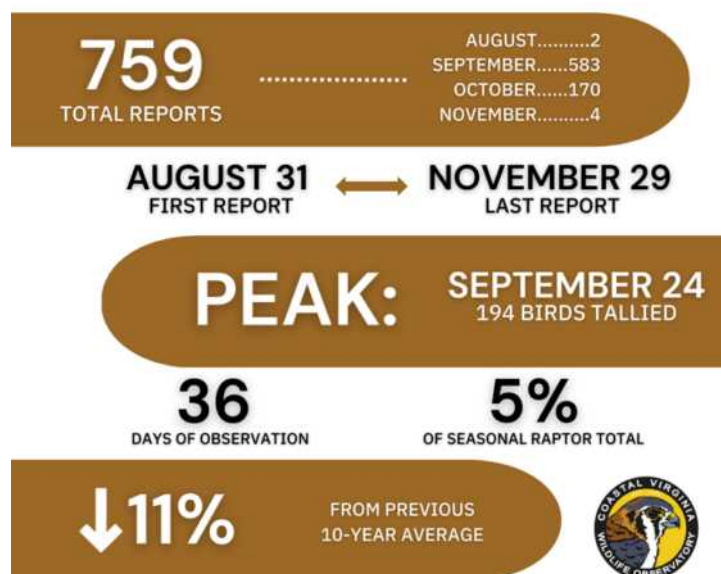
The top seven daily totals of 18, 12, 11, 9, 9, 8, and 8 accounted for 48% of its seasonal raptor total. All seven peak dates occurred between October 12th and November 14. It was an excellent season for Red-shouldered Hawks and the 158 tallied this season is the third-highest season in the history of the count. It also was the second-highest September season (12 birds) and the second-highest October season (75 birds) in the history of the count.

The top seven daily totals of 194, 83, 83, 61, 56, 50, and 36 accounted for 74% of its seasonal raptor total. All seven peak dates occurred between September 15 and October 8. The Broad-winged Hawks tallied between 1-2 p.m. on November 29 is the latest in the history of the count. This mark very narrowly beats out the previous records of between 11 a.m. - 12 p.m. on 11/29/1997 and between 9-10 a.m. on 11/29/2020.

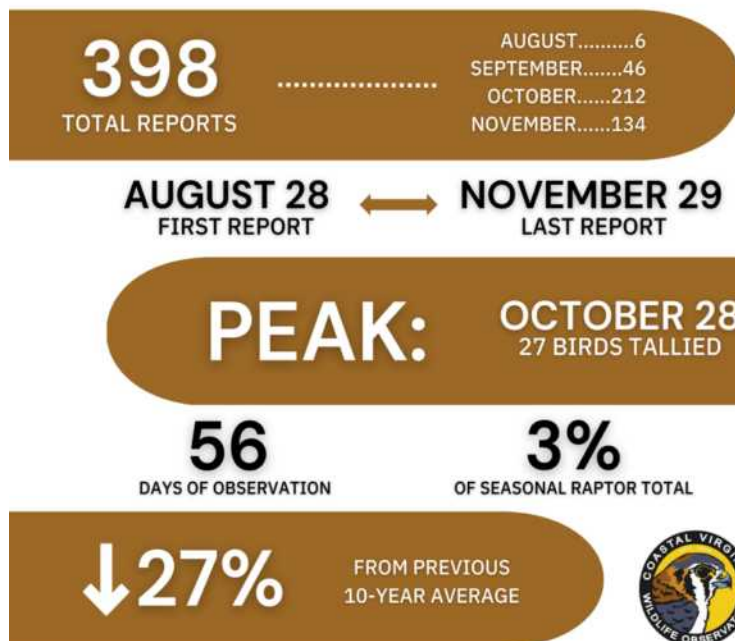


Broad-winged Hawks | Steve Thornhill

BROAD-WINGED HAWK



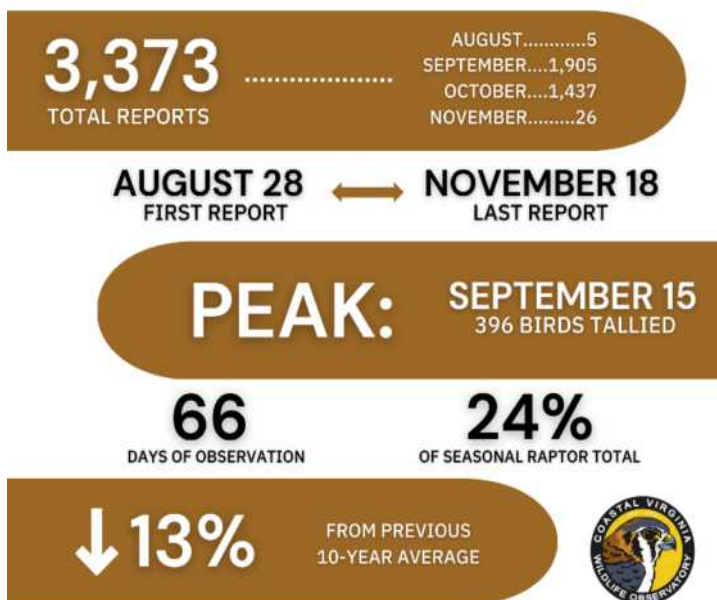
RED-TAILED HAWK



The top seven daily totals of 27, 26, 25, 25, 23, 23, and 21 accounted for 43% of its seasonal raptor total. All seven peak dates occurred between October 22 and November 8. The 398 Red-tailed Hawks tallied this season is the fewest since 2015.

The top seven daily totals of 396, 248, 234, 233, 204, 174, and 143 accounted for 48% of its seasonal raptor total. All seven peak dates occurred between September 14 and October 15. Kestrels got off to an excellent start this season, with the second-largest number recorded in the first half of September since 2005. With the 396 tallied on September 15, nearly a week before the typical peak week for Kestrels, it seemed like Kestrels were going to have one of the best seasons in a long time. Unfortunately, Kestrels really cooled off during the peak week, with only one of the top seven days this season (the seventh-highest day)

AMERICAN KESTREL



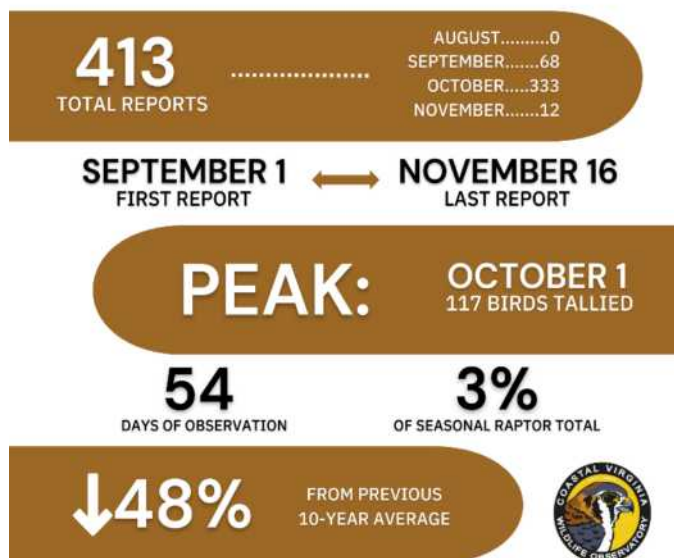
occurring during the typical best week (September 21-27). In fact, Kestrels went from being 29% above the 10-year average for the first 3 weeks of September to 4% below the 10-year average just a week later. The 396 tallied on September 15 was the seventh-highest count for Kestrels in the last ten years. The three consecutive 100+ Kestrel days from October 14-16 totaling 543 birds is

nearly unprecedented that late in the season. The excellent start and finish to the Kestrel season makes it that more surprising that they were down 13% from the 10-year average.



American Kestrel | Steve Thornhill

PEREGRINE FALCON



The top seven daily totals of 117, 38, 20, 19, 19, 15, and 14 accounted for 55% of its seasonal raptor total. All seven peak dates occurred between September 25 and October 16. It was a very disappointing season for Peregrines. The 68 tallied in September and the 413 tallied for the season were both the fewest since full-time counting began and down 70% and 48% respectively. The 117 tallied on October 1 alone accounted for 28% of its seasonal raptor total. This was the 22nd highest daily total for Peregrine Falcons in the history of the count and the 7th highest count in the last 10 years. Unlike most other species that had significantly below average totals this season, three of the seven peak daily totals

occurred Peregrine's typical peak week (October 1-7). Other hawk watching sites known for high seasonal totals of Peregrine Falcons were also down a bit this season. Cape May had the sixth lowest total since 1995 and the Florida Keys hawk watch had its lowest season (not impacted by weather) since 2010. Additionally, Cape Henlopen had its third lowest Peregrine season since full-time counting began in 2008.



Peregrine Falcon | Steve Thornhill

The top seven daily totals of 112, 98, 74, 68, 55, 50, and 49 accounted for 52% of its seasonal raptor total. All seven peak dates occurred between September 9 and October 7. Merlin was another species that got off to an excellent start, with the most recorded in the first half of September since 2006. With the 74 tallied on September 9, more than 2 weeks earlier than the typical peak period, it seemed like Merlins were going to have an excellent season. Unfortunately, only one of the top seven days this season occurred during the typical peak for Merlins (September 24-30). By the end of September, Merlins were already down 36% from the previous 10-year average.

MERLIN

977

TOTAL REPORTS

AUGUST.....1
SEPTEMBER.....474
OCTOBER.....497
NOVEMBER.....5

AUGUST 29
FIRST REPORT



NOVEMBER 28
LAST REPORT

PEAK:

OCTOBER 7
112 BIRDS TALLIED

56

DAYS OF OBSERVATION

7%

OF SEASONAL RAPTOR TOTAL

↓34%

FROM PREVIOUS
10-YEAR AVERAGE



Non-raptor highlights

A total of 172 species were recorded from the hawk platform in 2022. The following includes the most notable sightings.



Rufous Hummingbird | Brian Taber

Table 1. Non-Raptor Highlights

American Goldfinch	Northern Flicker
American Pipit	Northern Parula
American Robin	Northern Waterthrush
American White Pelican	Pine Siskin
Barn Swallow	Prairie Warbler
Black-billed Cuckoo	Orchard Oriole
Blue Jay	Pine Siskin
Blue-gray Gnatcatcher	Purple Finch
Bobolink	Purple Martin
Brown-headed Cowbird	Red Crossbill
Cape May Warbler	Red-bellied Woodpecker
Common Loon	Red-breasted Nuthatch
Chuck-wills-widow	Red-headed Woodpecker
Clay-colored sparrow	Red-winged Blackbird
Dickcissel	Ruby-throated Hummingbird
Double-crested Cormorant	Rufous/Allen's Hummingbird
Eastern Bluebird	Rusty Blackbird
Eastern Kingbird	Swamp Sparrow
Evening Grosbeak	Tree Swallow
Grasshopper Sparrow	Tundra Swan
Great Blue Heron	Yellow-billed Cuckoo
Green Heron	White-breasted Nuthatch
House Finch	Wood Thrush
Killdeer	Yellow-bellied Sapsucker
Lapland Longspur	Yellow-headed Blackbird
Lark Sparrow	Yellow-rumped Warbler
Lazuli/Indigo Bunting	

Acknowledgements

Thanks to Coastal Virginia Wildlife Observatory and Brian Taber for the opportunity to count raptors back on the East Coast again. Thanks to the staff of Kiptopeke State Park for providing the lodging at the Dutton House and their quick response to any issues that arose throughout the season. A huge thanks to Andrew Rapp for his help in all aspects throughout the season. It's been a while since I've had a field job with another co-worker and his enthusiasm throughout the season reminded me of just how great a season can be, shared with another person. Thanks to everyone that assisted in helping spot birds and providing conversations throughout the season, especially Bob Ake, Harry Armistead, Nancy and Ken Barnhart, Jessie Bright, Rudy Cashwell, Lynn Davidson, Wes Hetrick, Roberta Kellam, Rose Leong, Brian Taber, Tracy Tate, Steve Thornhill, Wayne Valentine, and Hal Wierenga. Although this was the fewest number of raptors tallied in a season, it sure didn't feel like it with all the great people who visited this season.

— *Jason Bojczyk*



Nancy Barnhart scanning the skies | Steve Thornhill



American Kestrel | Steve Thornhill



History of the Kiptopeke Hawk Watch published by the Virginia Society of Ornithology's journal, THE RAVEN.

THE RAVEN, Volume 93, published "The Kiptopeke Hawk Watch 1977-2018: Trends in Counts of Migrating Diurnal Raptors at a Coastal Virginia Site." This issue was published at the end of 2022. The authors are Bill Williams, Dorothy Silsby, Robert Anderson, and Brian Taber.

The lead author is Bill Williams, Kiptopeke Hawk Watch Founder/Director 1977-1994; KESTREL/CVWO Raptor Research Team Leader 1995-2002; CVWO Waterbirds Team Leader since 2015, and currently President of the VSO. Here is the LINK to the paper:

<https://static1.squarespace.com/static/60750489d6588c09f1001893/t/62f516d25498c20b32ff4354/1660229330788/Kiptopeke+Hawk+Watch.pdf>

A few photos from the past at Kiptopeke



Seated: Walter Smith. Standing Doris Smith, left, and Dorothy Mitchell, right



Charlie Hacker



Mike Mitchell



Bill Williams

College Creek Hawkwatch Summary

Prepared by Brian Taber



This was the 26th consecutive late winter and spring season of the College Creek Hawkwatch, located on the James River, 3 miles southeast of Williamsburg, conducted by Coastal Virginia Wildlife Observatory. It's the only late winter and spring hawkwatch annually run in Virginia. It was conducted from March 1 through May 31, 2022.

The protocol remained the same as in the previous 25 seasons; a daily watch was conducted, weather permitting, between 9 a.m. and 1 p.m., Eastern Standard Time. This has been shown to be the time period when hawks and vultures typically cross the river, apparently taking advantage of the air warming in the morning. Attempts to see birds crossing earlier and later in the day have not met with success. Also, these mostly morning counts regularly tend to show these flights both beginning and ending, usually, with a bell-shaped curve. All hawks and vultures crossing the river headed north were tallied.

The biggest days of record occurred on March 3 (143), May 2 (117) and May 4 (103). These three 100+ bird days compare to eleven such days last year, which was an all-time high for that

mark. May 2, 2022, is the third-highest reported day for May. The 1,000th bird of the season, a milestone that is tracked, was recorded on March 25. The earliest date to reach that mark is March 20.

Adult Bald Eagles were regularly seen overhead and over Kingsmill and Hog Island, presumably breeding birds, which again caused us to be very conservative; no adults were recorded as migrating.

Many thanks to the 2022 volunteers who spent many mornings at the College Creek Hawkwatch site: Bill Williams, Nancy Barnhart, Brian Taber and Deborah Humphries.

Species Accounts

Black Vultures	66	2nd all-time
Turkey Vulture*	1819	3rd all-time
Osprey**	125	3rd lowest since 2003
Bald Eagle	116	4th all-time
Northern Harrier	45	3rd all-time
Sharp-shinned Hawk***	26	tied for 4th lowest
Cooper's Hawk	19	5th all-time
Red-shouldered Hawk	14	2nd all-time
Broad-wing Hawks	16	4th all-time
Red-tailed Hawk^	22	3rd lowest
American Kestrel^^	19	
Merlins	5	average
Mississippi Kite	2	(greater than annual average of 1)

* Accounts for 76% of total observations

** Before 2003 coverage and totals were much less; no explanation for the apparent decrease

*** Continuing a slow recent trend

^ Might they be staying further north

^^ Higher than 10 of the past 11 years, but the numbers are still quite low all-time; no day recorded more than 1; it's a species of concern across the east



Brian Taber (left) and Bill Williams (right) Day 1 of 2022 College Creek Hawkwatch, March 1 | Shirley Devan

**Number of Days Species Observed
(out of 80 total days):**

Black Vulture	42
Red-shouldered	10
Turkey Vulture	70
Broad-winged Hawk	11
Osprey	38
Red-tailed Hawk	13
Bald Eagle	42
American Kestrel	19
Northern Harrier	26
Merlin	5
Sharp-shinned Hawk	18
Peregrine Falcon	3
Cooper's Hawk	16

Monthly totals:

March	1264	4th best all-time
April	683	4th best all-time
May	452	2nd best all-time

Birds/Hour by month:

March	13
April	9
May	6

Average Birds/hour for the season was 10.

The non-raptor highlights included:

- American White Pelican
- Tundra Swan
- Northern Gannet (March 6 and March 19)
- Lesser Black-backed Gulls
- Glossy Ibis
- Semi-palmated Plovers
- Black-bellied Plovers
- Whimbrel (13 on May 22)



Bald Eagle | Steve Thornhill

Table 2 Season Totals with 10-year Averages

<i>Species</i>	<i>Total (10 yr avg)</i>	<i>Peak Flight (date)</i>	<i>Range of occurrence</i>
Black Vulture	166 (109)	18 (3/8/22)	3/1 - 5/29/22
Turkey Vulture	1819 (1499)	136 (3/3/22)	3/1 - 5/31/22
Osprey	125 (162)	10 (5/2/22)	3/3 - 5/13/22
Mississippi Kite	2 (1)	1 (5/14 & 5/17/22)	5/4 - 5/17/22
Swallow-tailed Kite	0 (0)	n/a	n/a
Bald Eagle	116 (106)	8 (3/30 & 5/13/22)	3/2 - 5/21/22
Northern Harrier	45 (29)	5 (5/2/22)	3/3 - 5/13/22
Sharp-shinned Hawk	26 (42)	3 (3/21/22)	3/1 - 5/16/22
Cooper's Hawk	19 (14)	3 (5/2/22)	3/8 - 5/20/22
Red-shouldered Hawk	14 (6)	4 (3/11/22)	3/1 - 5/2/22
Broad-winged Hawk	16 (7)	3 (4/12)	4/12 - 5/18/22
Red-tailed Hawk	22 (32)	3 (3 Total Dates)	3/1 - 5/18/22
American Kestrel	19 (33)	1 (19 Total Dates)	3/6 - 5/13/22
Merlin	5 (5)	1 (5 Total Dates)	3/17 - 5/1/22
Peregrine	4 (<1)	2 (3/6/22)	3/6 - 5/20/22
Unidentified	1	n/a	n/a
Total	2399 (2033)	143 (3/3/22)	3/1 - 5/31/22

SONGBIRD RESEARCH

Prepared by Shirley Devan

Prothonotary Warbler Nest Monitoring Reports

The 2022 Prothonotary Warbler monitoring revealed mixed results across all sites CVWO monitored in the Coastal Plain.

Dragon Run | King and Queen County

Volunteer Gary Driscoll monitors the twenty-two Prothonotary Warbler nest boxes in two locations along the Dragon Run from his kayak. Gary started monitoring on March 21 and the season was completed on July 27. According to Gary, “The results this year were much lower than in previous years. The average from 2015 through 2021 was approximately 60 fledglings. Since 2015, the previous low-year number of fledglings was 32 in 2020. This year, the number was only 28 fledglings. There were nine unfertilized eggs and lack of activity in many boxes.” At the Big Island site, there was activity in 7 of 15 boxes. There were 24 Prothonotary Warblers and 6 Carolina Chickadees fledglings at this location. At the Mascot Bridge site, four of the seven boxes had activity. Four Prothonotary Warblers and six Carolina Chickadees fledged. The total fledglings were 28 Prothonotary Warblers and twelve chickadees for 2022 on the “Dragon.”

Newport News Park & Harwoods Mill Reservoir | Newport News

Volunteer Dave Youker, who also monitors his nest boxes from a kayak, reports that the nest boxes at Harwoods Mill Reservoir fledged 22 Prothonotary Warblers and seven Carolina Chickadees in 2022. Like last year, the nest boxes at Newport News Park did not have any warbler or chickadee activity.

Chickahominy Riverfront Park | James City County

Shirley Devan and volunteers estimate that 22 Prothonotary Warblers fledged from the twelve boxes along Gordon Creek. Shirley banded seven nestlings and two females. Box R10 hosted two successful Prothonotary Warbler clutches with six new warblers entering the world. In a first for CVWO warbler boxes at any site, one box on Gordon Creek hosted four Brown-headed Nuthatch nestlings. Nuthatches are cavity nesters, but White-breasted Nuthatches are too large to enter the small opening of a Prothonotary Warbler box. However, a Brown-headed Nuthatch, also a cavity nester, is much smaller and a pair readily took up residence in one of the boxes and fledged four young. We can never have too many Brown-headed Nuthatches!

Powhatan Creek Trail | James City County

Three of the five boxes saw nesting Prothonotary Warblers. Volunteers report that predators took two nestlings in box four. However, boxes two and six fledged seven nestlings, and Shirley banded the three nestlings in box two.

Northwest River Park | Chesapeake

Volunteers monitored 84 boxes in 2022, another year of disappointing results and intriguing observations, even more than the results of 2021. See the chart below for five-year comparison of Prothonotary Warbler data. Only 32 nestlings were banded in 2022, an even lower figure than the record low of 88 banded in 2021. Volunteers estimated that only 35 fledged without banding, compared to the estimated 65 in 2021. Only 13 new females were banded compared to 26 in 2021. Only four females were recaptured in 2022, compared to 15 recaptured in 2021 and 46 in 2019. Females are recaptured when they are incubating eggs or caring for nestlings. The fact that so few females were captured indicates that they were not incubating eggs. We did not capture any male Prothonotary Warblers in 2022. Of the 84 boxes, four boxes had no activity all season. As in 2021, volunteers observed numerous buried and abandoned nests. A buried nest occurs when adults take over an existing nest that has eggs or nestlings and build another nest on top of the existing nest. An abandoned nest is one in which the female does not incubate the eggs after laying them. Thirty-seven boxes had buried nests and forty-three boxes had abandoned nests. Volunteers observed seven boxes with both buried nests and abandoned nests. As a result of buried and abandoned nests, eggs lost totaled 318 of 462 eggs laid (estimated).

Table 3 Comparison Northwest River Park Prothonotary Warbler Productivity 2017-2022

	2017	2018	2019	2021*	2022
Boxes	81	83	84	84	84
Eggs Laid	385	486	579	570	462
Nestlings Banded	179	318	278	88	32
Total Fledged without banding (estimated)	126	51	105	65	35
Total Nestlings Fledged (estimated)	305	369	383	153	67
% Fledged of Eggs Laid	79%	75%	66%	27%	15%
New Adult Females Banded	32	29	30	26	13
Total Females Recaptured	27	42	46	15	4

* 2020 - No monitoring due to Covid

Again in 2022, volunteers scratched their heads trying to figure out why the warblers abandoned and/or buried their eggs after similar observations in 2021. No other sites in Virginia reported such observations. In conversations with my Master Bander, Dr. Bob Reilly, he described that the females are not evolutionarily programmed to sacrifice themselves versus sacrificing eggs and/or nestlings. The females will conserve themselves to continue to reproduce and extend their species. One or more unknown stressors on the females on their Northwest River breeding grounds caused them to abandon their eggs, which may or may not have been buried under a new nest with eggs by the same or different female. Since females were not recaptured, volunteers could not determine if the same or different females laid eggs in subsequent nests. Incubating eggs and feeding young require incredible energy from the female. If the females are stressed and do not have the energy to incubate and raise young, then they will save themselves and sacrifice their eggs and young. Migration for these new adults is very challenging at the end of the season. They fly 1500–3000 feet high and have difficulty negotiating the winds as they head south to Central and South America. Also, their habitat on their wintering grounds is disappearing as the mangrove swamps are destroyed to create shrimp farms in many areas. So, the adults face stressors on their wintering grounds as well.

With fewer Prothonotary Warbler fledglings at Northwest River for the past two years and fewer new birds migrating south to winter in another stressful environment, nesting success in coming years may continue to be low at Northwest River. The 2023 Prothonotary Warblers will be observed to see what effects the past two years have on the returning populations and their 2023 nesting success.

Many thanks to the many volunteers who ventured into the swamps and rivers to monitor these “golden swamp warblers.” We can’t do it without you!



Prothonotary Warbler nestlings | Shirley Devan



Prothonotary Warbler with food for nestlings | Shirley Devan

Prothonotary Warbler Nestling Diet Quantified

In 2018 and 2019, Dr. Lesley Bulluck at VCU and Samantha Rogers, one of her graduate students, were studying Aquatic and Terrestrial Prey in Prothonotary Warbler Nestling Diets Quantified Using DNA Metabarcoding” in PROWs along three sites on the James River and along the Northwest River in Chesapeake, VA.

Samantha’s summary below describes the difference in the Aquatic and Terrestrial Prey fed to the nestlings at Northwest River and at the three James River sites. Dr. Bulluck and Samantha Rogers provided the protocol and volunteers at Northwest River collected PROW nestling poop and Shirley Devan transported the samples to Dr. Bulluck and Samantha Rogers at the Rice Rivers Center. The report below by Samantha Rogers, graduate student at VCU in 2018 and 2019, was prepared specifically for CVWO’s Annual Report.

Aquatic and Terrestrial Prey in Prothonotary Warbler Nestling Diet Quantified Using DNA Metabarcoding

**Samantha Rogers, MS, PhD Candidate,
Integrative Life Sciences, Virginia Commonwealth University**

Aquatic insects connect aquatic and terrestrial food webs when the flying adults emerge from the water and become prey for birds, bats, and other consumers foraging near the water’s edge. Consumers take advantage of large densities of aquatic insects by aligning energy-intensive activities, such as migration and breeding, with emergence pulses. One such consumer, the Prothonotary Warbler (*Protonotaria citrea*), is a wetland-dependent songbird that breeds in forested wetlands and along riverine riparian corridors in the eastern United States. Prothonotary Warblers feed their nestlings a mixture of aquatic and terrestrial insects; however, the menu of available prey varies seasonally and spatially across the breeding range.

To understand flexibility in prey selection, Prothonotary Warbler nestling diets were quantified using DNA metabarcoding. This technique identifies the presence of individual prey items, often to the genus or species taxonomic level, from DNA extracted from nestling fecal samples. DNA metabarcoding does not reliably provide proportions of prey items in diet; therefore, results usually report the frequency of occurrence (FOO) of prey items, which refers to the proportion of samples containing a prey item. For example, if mayflies are detected in half of the samples, then the FOO of mayflies in the population is 50%. Using FOO, diet diversity can be compared across sites and over time.

In Virginia, nestling fecal samples were collected during 2018 and 2019 from Northwest River Park and three sites along the James River (Dutch Gap Conservation Area, Deep Bottom Park, and VCU Rice Rivers Center), which are combined to facilitate comparison with Northwest River Park. At all sites, artificial nest boxes are monitored annually for Prothonotary Warbler nesting

activity. Sample collection was a collaborative effort by VCU Avian Ecology Lab, Coastal Virginia Wildlife Observatory, and Richmond Audubon Society.

As expected, Prothonotary Warbler nestlings were fed a combination of aquatic and terrestrial prey at Northwest River Park and along the James River, although some prey items were consumed more frequently than others in both locations (Figure 1). The most frequently consumed prey taxa at Northwest River Park and James River sites were Lepidoptera (caterpillars), Araneae (spiders), and Ephemeroptera (mayflies). At Northwest River Park, all nestlings were fed caterpillars, over 90% were fed spiders, and 84% were fed mayflies. Additional terrestrial taxa had FOO above 50% at Northwest River but not along the James River, indicating that Northwest River nestlings were fed a greater diversity of terrestrial prey items than James River nestlings. Specifically, Northwest River nestlings consumed more prey classified as Orthoptera (katydids), Hemiptera (planthoppers and treehoppers), and Hymenoptera (sawflies). Within frequent prey orders, species-level detections were also uneven, such that a single genus or species often accounted for the majority of detections (Table 1).

The frequency of emergent aquatic insects in Northwest River nestling diet differed seasonally from James River nestling diet. Whereas the FOO of emergent aquatic insects (any taxonomic order present) in James River nestling diets decreased from 83.6% to 69.6% when the breeding season was split into early and late nests, the FOO of emergent aquatic insects in Northwest River nestling diet remained high (85.7% in early nests and 90.9% in late nests). In addition to mayflies, which had a high FOO in both locations, Northwest River nestling diets also contained greater frequencies of aquatic insects that emerge later in the summer, such as non-biting midges (Diptera: Chironomidae) and dragonflies (Odonata: Libellulidae).

Emergent aquatic insects are well-represented in the diets of Prothonotary Warbler nestlings from Northwest River Park and throughout Virginia, and may be explained by the composition of foraging habitat, landscape context, and hydrology. For example, Northwest River Park is surrounded primarily by forested wetlands, with access to open water throughout the breeding season. The proportion of forested wetlands also remains high at a broader landscape scale. These characteristics vary from other breeding sites across the eastern United States, where urban development or agriculture comprise more of the surrounding landscape, and nearby waterbodies tend to dry as the breeding season progresses. These findings emphasize the importance of wetland habitats and aquatic ecosystems in conservation planning for terrestrial consumers.

Table 1. Taxonomic orders with a frequency of occurrence (FOO) greater than 50% in Prothonotary Warbler nestling diet at Northwest River Park, along with taxonomic classification for the most frequently detected species in each order. The FOO is also provided for each taxon.

<i>Order</i>	<i>Family</i>	<i>Species</i>
Lepidoptera (100%)	Erebidae (90.6%)	<i>Spilosoma</i> spp. (56.3%)
	Geometridae (65.6%)	<i>Hypagyrtis</i> spp. (31.3%)
	Noctuidae (65.6%)	<i>Callopistria mollissima</i> (25.0%)
		<i>Polygrammate hebraeicum</i> (25.0%)
Araneae (90.6%)	Pisauridae (40.6%)	<i>Dolomedes</i> spp. (40.6%)
	Tetragnathidae (37.5%)	<i>Tetragnatha elongata</i> (31.3%)
Ephemeroptera (84.4%)	Ephemeridae (84.4%)	<i>Hexagenia</i> spp. (84.4%)
Orthoptera (59.4%)	Tettigoniidae (59.4%)	<i>Orchelimum</i> spp. (53.1%)
Hemiptera (59.4%)	Flatidae (31.3%)	<i>Metcalfa pruinosa</i> (31.3%)
	Membracidae (15.6%)	<i>Ceresa bubalus</i> (15.6%)
Hymenoptera (53.1%)	Tenthredinidae (43.8%)	<i>Strongylogaster tacita</i> (43.8%)

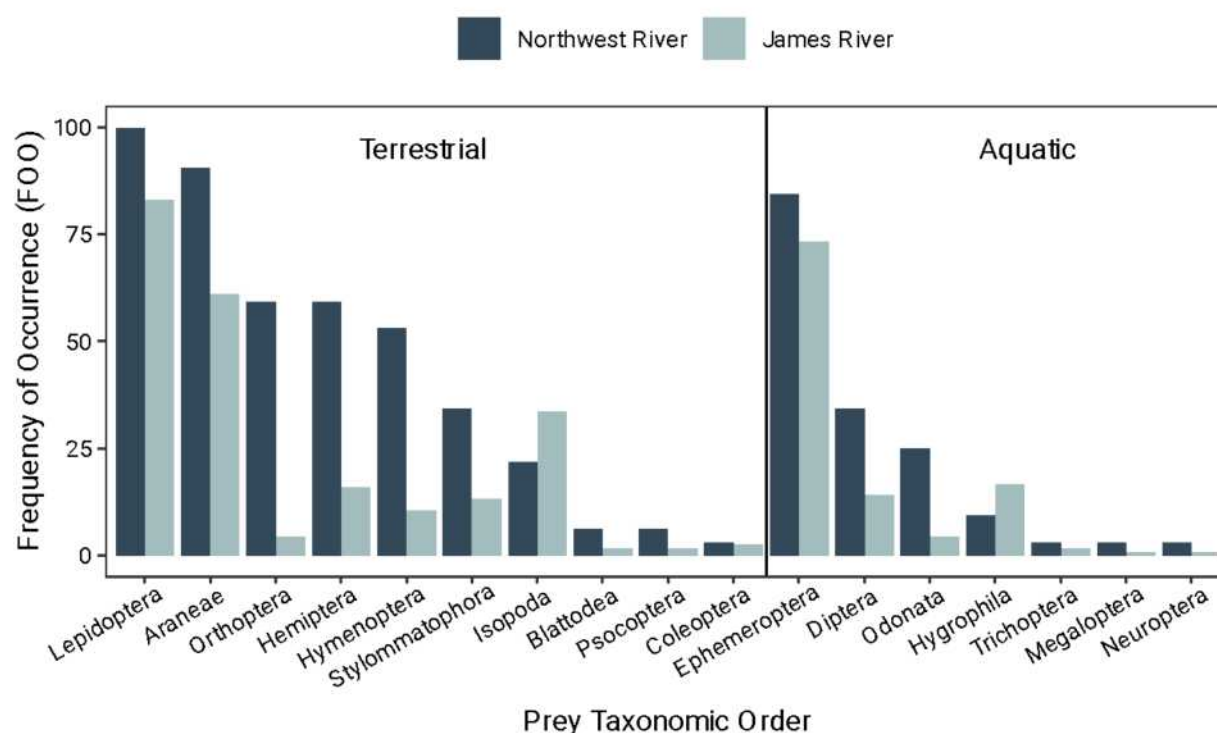


Figure 1. The frequency of occurrence (FOO) of terrestrial and aquatic prey taxonomic orders for Prothonotary Warbler nestlings in Northwest River Park and sites along the James River. Orders that contained a combination of terrestrial and aquatic prey (Stylommatophora, Diptera) are placed with the prey source that was best represented by prey detections.

Purple Martin Report

Prepared by Cheryl Jacobson and Shan Gill



Purple Martin Chicks | Judy Jones

Currently The Purple Martin Project consists of five locations with support to one additional location. Those locations are Chickahominy Riverfront Park with two poles, New Quarter Park with one pole, VIMS with one pole, York River State Park with one pole, and Ford's Colony with one pole and a second pole soon to be installed. Support is provided to the Sunoco Station that now has seven metal houses, three of which have been donated by the Williamsburg Bird Club. Data for each location are provided below.

Chickahominy Riverfront Park:



Purple Martins at Chickahominy Riverfront Park | Judy Jones

This location has been the most successful with the fledging of approximately 53 Purple Martin chicks. Gourd checks were completed on June 9 and July 1 with eggs and chicks counted. At that time, 39 chicks were counted in twelve active gourds with more eggs to hatch. Also, there were an estimated 35 plus Purple Martins around the colony, which at that time consisted on one pole.

Therefore, a second pole was installed, and Purple Martins immediately entered the new seven gourds. Challenges at this location have been Tree Swallows which were successfully kept out of the gourds by constant monitoring and wasps which were killed and their nests removed. Volunteers include Bill Vanzetta, Trish Stahlhut and Bob Stahlhut.

Virginia Institute of Marine Science:

Initially in May, three Purple Martins were seen entering gourds with four more later seen flying overhead. In mid-May, the weather became very cold and the Martins were not seen at this location, however, the colony about a mile away continued to have Martins. The gourd check in August showed the beginning of two Martin nests; it is expected that this colony will be successful next season. Volunteers include Judy Jones and Janet Harper.

New Quarter Park and York River State Park:

Neither of these colonies has been successful although martins have been seen flying overhead at New Quarter Park. The monitors at both locations have been very conscientious in monitoring and keeping bluebirds and a pair of Tree Swallows out of the gourds. A good insect supply is critical and now that York River State Park has installed a large native plant garden near the colony there seem to be many more insects. Of concern is the frequency of mowing by county staff at New Quarter Park, although the creek is very close and is a source of some insects. Volunteers for New Quarter Park include Mary Ellen Hodges, Anne Nordin and Nancy Barnhart. Volunteers for York River State Park include Sherry Hancock and Bill Hancock.

Ford's Colony:

This is also a successful colony which has consisted of a metal house and one pole with fifteen gourds. At this location, the gourds were not checked during nesting season so the number of hatchlings can only be estimated at 25. When the gourds were checked in August, there were a possible seven nests removed. A problem to be solved is that four of the gourds that contained nests were very wet inside. Although there had been heavy rains at all the locations, this is the only location with soaked nests. It is apparent that it will be important to do gourd checks at least twice to determine the number of eggs and chicks and to check for dampness. The metal house was predated by a Cooper's Hawk which broke the outer rail and forced his head into the house compartments. The hawk was seen at the house repeatedly, but it is unknown if it was able to predate the hatchlings or if they were all able to enter inner compartments. There were six nests in the house when it was taken down in August to be replaced by a pole and gourds which can not be predated so easily.

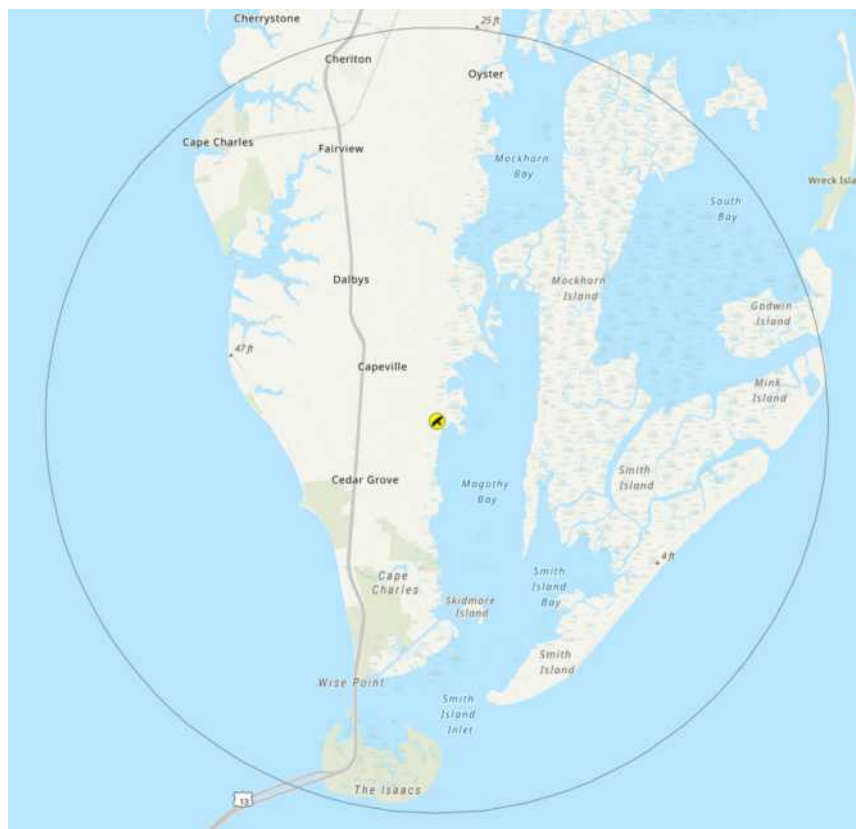
Sunoco Station, Williamsburg

Although this is not officially one of our project colonies, CVWO has now donated three metal houses to add to the existing four. They have the equipment to weld and repair the houses and are there all hours of the day to prevent predation. This season they estimate that they had 200 plus martins at their colony.

Cape Charles Christmas Bird Count

Prepared by Dan Cristol

The 57th annual Cape Charles Christmas Bird Count was held, as usual, on December 30, 2022, with 33 counters enjoying mild weather, light wind, and abundant birds. The count circle was divided into nine sectors, including north and south (Smith Island) boat parties, Fisherman's Island, Bull's Pond, Ferry, Town, Oyster, and a subdivided Townsend sector. This is one of the most productive counts in Virginia, and true to form, 48,355 individual birds of 148 species were counted, with two additional species being recorded count week (Purple Sandpiper and Wild Turkey). The most unusual bird seen was a Nashville Warbler. This is slightly below normal for recent years and far below the diversity recorded a few decades ago. Waterfowl numbers and diversity were low this year, with even reliable species like Redhead missed altogether. Vultures were incongruously scarce. A few other rare, but regulars were also absent, such as Little Blue Heron and Red Knot. Singleton Purple Finch, Rusty Blackbird, Tree Swallow, Least Sandpiper, Eurasian Wigeon, Saw-whet Owl and Northern Bobwhite rescued "the list" to some extent. It was a beautiful day of birding, tradition, and camaraderie, nonetheless. With the addition of a few more birders, some winter finches and a couple more lingering vagrants, the Cape Charles CBC will be peerless again. Special thanks to the CVWO for financially supporting the south boat party.



Cape Charles Christmas Count Circle on the Eastern Shore

BUTTERFLY RESEARCH

Monarch Migration Report

Prepared by Andrew Rapp



Andrew Rapp in the field | Nancy Barnhart

The 25th season of the CVWO Monarch Migration project ran from September 1 through November 10. As a part of this program, pilot transects were surveyed at the Eastern Shore of Virginia National Wildlife Refuge (ESVNWR) and Kiptopeke State Park (KSP). The main sight surveyed at ESVNWR was the Butterfly Trail which runs behind the visitor center to the bunker parking lot. The sight surveyed at KSP was the Sunday fields which can be accessed by the Brown Pelican Trail. The transect surveys intended to measure all butterfly diversity within a constant route.

These surveys were completed advantageously when raptor migration allowed and should be viewed as a pilot study. Conducting a constant transect survey over a multi-year period can give insight into changes in not only Monarchs but other butterfly diversity which can show more in-depth trends in diversity. The tagging of Monarchs was conducted at various locations, including ESVNWR, KSP, Pickett's Harbor Natural Area Preserve and Magothy Bay Natural Area Preserve.

Sites

Eastern Shore of Virginia National Wildlife Refuge offers a range of habitats favorable for migrating Monarchs. Lantana behind the Refuge Visitor Center was a favorite for all butterflies in the first month of the count. As mentioned earlier it was an incredibly dry season on the shore so in the early fall, the lantana offered the only nectaring plant on any of the sites that could be tagged. Fennel and Goldenrods were offered around the Visitor Center and along the Butterfly Trail which by October held good habitat for Monarchs. Ramp Road offered Groundsel blooms which came and went quickly at the end of September. One of the best sites in the early season was the southernmost tip of the peninsula, Wise Point. This area is closed to the public but offers a great variety of Groundsel and Goldenrods. Due to the nature of it being the southernmost tip of the peninsula, on northern wind days, large concentrations gathered in the bushes and trees in the area. On September 23, an estimated 190 Monarchs roosted in what appeared to be an Apple tree right off Route 13.

Kiptopeke State Park also offers a range of habitats for migrating Monarchs. Researchers found KSP to be a much better place to find Monarchs in the later season (October onwards) after the Groundsel dried up at ESVNWR. The Hawkwatch field adjacent to the southeast of the Hawkwatch was a phenomenal spot for Monarch tagging. The variety of Goldenrods and Blue Mistflower in the

Hawkwatch field kept the Monarchs happy from October all the way through early November. The dunes also hosted Seaside Goldenrod which in later October was coated with Monarchs. The ideal route for late season Monarch tagging starts in the Hawkwatch field then runs down to the beach just south of the pier walking the dunes and then taking the Peregrine Falcon trail back to Baywoods Trail to then hop on the Brown Pelican Trail which leads to the Sunday Fields.

Magothy Bay Natural Area Preserve offers some habitat with a mix of Groundsel and Goldenrods. Monarchs did not seem to stage here in high numbers with only a few detected all season in the preserve. Due to the more mature nature of the fields and wood edges, there were not many areas for flowering plants to thrive without being shaded by trees and tall shrubs.



Tagged Monarch Butterfly | Andrew Rapp

Picketts Harbor Natural Area Preserve was seldom surveyed due to how grown up the road was allowing for little habitat for Monarchs or butterflies and few flowering plants.

Tagging

This season, 497 Monarchs were tagged using all the tags that Monarch Watch sent to CVWO. Three tags were damaged and deemed unsafe to place on Monarchs. Each individual upon capture was sexed and measured before release.

These details help us understand if a certain size or sex of Monarch is more successful in reaching their wintering grounds. This data can also be used to compare to previous years data to see if there are any changes in size or proportions of sex captured. More on both the measurements and sex ratio can be found below. This year, 177 Monarchs were tagged at the ESVNWR, 318 at KSP, and two at Magothy Bay Natural Area Preserve.

Nectar Sources

This fall started with a devastating drought. Because of the drought, there were next to none flowering plants for migrating Monarchs. The one early-season savior was several Lantana bushes at ESVNWR. These bushes were the only flowering plant around and were typically covered in butterflies and looper moths (either *Chrysodeixis includens* or *Trichoplusia ni*). As the season progressed, hurricanes brought rain for the Goldenrods and Groundsels to bloom. Mid to late September was the peak for Groundsel which housed the first large pushes of Monarchs. Goldenrods took over from late

September through later October. The Goldenrods represent several different species that are challenging to identify but regardless were a magnet flower for Monarchs in the dunes and fields alike. Mid to late October also saw the increase in Oxeye Daisy and Spotted Horse Mint in the Sunday Fields which Monarchs also utilized when there was too much competition for the Goldenrod. Just as the Goldenrods lost peak bloom, Blue Mistflowers started blooming and offered the only flower from late October into early November. The edge of the Hawkwatch field and Sunday fields offered patches of Mistflower which was frequently attended even on poor Monarch flights.

Sex Ratio

Of the 497 Monarchs tagged, 320 (64%) of the individuals were male, 175 (35%) individuals were female and 2 (<1%) were likely also males but not noted at the time of processing. This ratio of male-to-female Monarchs is to be expected in the area.

Wing Length



Of the 497 Monarchs tagged, 488 were measured. Temporary misplacement of the ruler led to the nine butterflies not being measured. Forewing measurements came from measuring the length of the forewing from the tip to where the forewing attached to the Monarch's abdomen. Hindwing measurements came from measuring the length of the hindwing from the central edge to where the hindwing attaches to the Monarch's abdomen. The average Monarch had a forewing of 51.0 mm and a hindwing

Andrew Rapp Recording Monarch Data

measurement of 32.3 mm. Male Monarchs averaged measurements of 51.2 mm and 32.4 mm. Female Monarchs averaged measurements of 50.6 mm and 32.0 mm. Despite female Monarchs averaging smaller overall wings, the smallest monarch captured was a male. The smallest Monarch caught had a forewing measurement of 40 mm and a hindwing measurement of 25 mm. The largest Monarch on the other hand had measurements of 56 mm and 35 mm forewing and hindwing, respectively.

Recaptures

Of the 497 Monarchs tagged, 23 were recaptured in the same area in the following days. One individual was caught six days after it was originally tagged. For both instances the Monarch was tagged in the Sunday fields. One individual was recaptured on three separate days. Two individuals were tagged in the morning at the Hawkwatch field and recaptured later in the day in the Sunday fields which are located 0.7 miles to the south.

This season, there were two foreign Monarch recaptures! One individual was AGMC 645 on October 15 in the KSP Hawkwatch field. The other was AGUA 952 on November 7 in the KSP Sunday fields. Both foreign-tagged Monarchs have been reported but no updates regarding the original tag locations at this time. Two other individuals were captured that had been previously tagged by someone else but the tag had fallen off. Both individuals were given new tags. The loss of the original tag highlights the importance of proper tag application.

This upcoming spring, if not sooner, Monarch Watch will provide a comprehensive list of recaptured and/or rediscovered Monarchs. CVWO will use this information to determine the origin of recaptured Monarchs and learn if any Monarchs tagged at CVWO sites were found within overwintering sites.

Transect data

ESVNR expressed interest in data that could be reproducible on an annual basis. Point count efforts conducted by past Monarch biologists were randomly conducted at locations with Monarchs present or at singular shrubs that were in use at a given time. If point count locations are constant over a multi-year period of time and the habitat is altered then there is a lot of wasted effort by the Monarch biologists. Transect surveys on the other hand are easily reproducible and factor in changing habitats without wasted effort. The effect of habitat maturation or alteration on butterfly usage is a critical conservation question to be studied on the Eastern Shore of Virginia. The two transects that are easily accessible and have a variety of pollinating plants are the Butterfly Trail at ESVNR and the Sunday Fields at KSP. Monarch biologists walked the length of the trail down and back counting all species within the survey and making note of time spent. Transects were run at these two sites throughout the season; a total of 34 different species and fluctuations of Monarch numbers were encountered.

Education



Monarch migration education is essential for the position of Monarch Biologist. Throughout the season formal presentations were given to four different bird clubs, one group of Virginia Master Naturalists, and one group of ninth and tenth graders from the local Northampton County High School. Countless informal presentations were given to hundreds of guests who made the grave mistake of walking too close or asking a question about what CVWO's Monarch Biologist was working on. Guests ranged as far as Germany.

Andrew Rapp Educating Future Biologists at Kiptopeke State Park

Dragonfly Recommendation



A new project this season was to determine if dragonfly migration could be studied on the Eastern Shore. Previous seasons deemed counting dragonflies from the hawkwatch to be impossible due to possible double counting. Dragonflies fly around the hawkwatch fields feeding for longer periods of time than migrating raptors so less emphasis can be placed on answering the question of exactly how many dragonflies pass over on a given day. The questions that can be answered are what conditions cause the mass movement of dragonflies, when do most dragonflies migrate, and how do dragonfly flights coincide with raptor migration?

Swamp Darner | Steve Thornhill

The Monarch Biologist tested the practicality of counting dragonflies on various hawkwatch days as the hawk counter and found it feasible even during large raptor flights. I recommend future hawkwatchers keep hourly counts of migratory dragonfly species the same as they record hawk flights.

Conclusion and Acknowledgements



Jason Bojczyk and Andrew Rapp | 2022 CVWO Biologists

The fall of the 2022 season was a complete success with all the Monarch tags being used, a multitude of educational presentations, and a pilot study on dragonfly migration on the Eastern Shore. The shore during the fall is an incredibly beautiful place to be. What the shore lacks in fall leaves it makes up for in a wide array of blooming flowers. The goldenrod-flowered beaches in late September as well as the purple-flecked fields in the frost are a site deeply engrained in my memories from the shore. I am incredibly grateful to Kiptopeke State Park for hosting us and to Coastal Virginia Wildlife Observatory for this opportunity. I am also grateful to all the visitors and locals that made Jason and me feel at home and part of the community.

— *Andrew Rapp*

New 2022 Butterfly Records

Compiled by Nancy Barnhart

Zarucco Duskywing: A New First Sighting Record for 2022

By Ken Lorenzen

When Butterflies of the Greater Williamsburg Area: An Annotated List was created in 2015 by members of the Coastal Virginia Wildlife Observatory and the Historic Rivers Chapter of Virginia Master Naturalists, a total of 85 species were documented. With so many enthusiastic volunteers keeping their eyes open for butterflies at home and out in the field, it is not surprising that there have been first recorded sightings of 14 previously undocumented butterfly species since 2015, including two new records for 2022. One of those new species is the Zarucco Duskywing (*Erynnis zarucco*).

Zarucco Duskywings are a species of skipper (Family HesperIIDae) belonging to the Subfamily Pyrginae, the spread-wing skippers. These skippers are so named because they tend to keep their wings held open and spread out flat as they visit flowers for nectar or perch on twigs or leaves, etc. Other butterfly species typically hold their wings together vertically over their bodies when visiting flowers or at rest, although they will sometimes bask in the sun with their wings spread open.

Other duskywing skippers commonly seen in our area are Horace's Duskywings (*E. horatius*) and Juvenal's Duskywings (*E. juvenalis*), and less often, Wild Indigo Duskywings (*E. baptisiae*). These are all large brown skippers with very similar markings, making identification difficult at best, especially since those markings vary a great deal within each species.

Zarucco Duskywings are a common sight in the southeastern US, where they are residents from North Carolina southward and have multiple broods that fly from March to October. They prefer dry coastal sandy areas, open scrublands and fields, edges of woodlands, and roadsides; woody legumes, such as Black Locust (*Robinia pseudoacacia*), are the preferred host plants.

There are records of Zarucco Duskywings straying as far north as eastern Pennsylvania and Connecticut, but they have not been observed – or at least not recognized – in our area. That changed on August 16, 2022, when a single individual was sighted by Ken Lorenzen at the James City County Marina Garden. The next day, also at the Marina Garden, a different individual was sighted by Deborah Humphries and Brian Taber. Many photographs were taken, allowing positive identifications to be made for this new addition to the Annotated List.



Zarucco Duskywing | Ken Lorenzen



Zarucco Duskywing | Deborah Humphries

GULF FRITILLARY – CATERPILLARS AND ADULTS – NEW LOCAL RECORDS

By Nancy Barnhart



Gulf Fritillary butterfly | Deborah Humphries

Adult Gulf Fritillary butterflies, a particularly dazzling species, were spotted in the marina garden by Brian Taber on July 4th and 5th. These butterflies are typically found in southern regions and only occasionally wander further north. Caterpillars of this species were observed on August 17 and again on October 17, feeding on passion vine.

EUFALA SKIPPER – A FIRST LOCAL RECORD

By Nancy Barnhart

On July 16, Deborah Humphries and Brian Taber discovered a Eufala Skipper at the James City County Marina Garden, for a first local record of this species, one typically found further south. Brian found it the next day, same location, for inclusion in the Chippokes Plantation State Park Butterfly Count, a NABA sponsored count. The butterfly appeared again on July 18 and five more dates including the August 13 Annual Williamsburg butterfly count. The last local sighting of this species was October 22 at the Annual Picnic of the Historic Rivers Chapter, Virginia Master Naturalist.

Eufala Skippers are regularly found throughout the southern United States and into Central America. They can stray to the north. They are quite plain and could easily be overlooked. The larval food plant includes weedy grasses.



Eufala Skipper | Brian Taber



Eufala Skipper | Deborah Humphries

Creole Pearly-eye (*Enodia creole*) Butterfly Study – Final Report

Monitoring in Colonial National Historical Park

Prepared by Nancy Barnhart



Creole Pearly-eye butterfly | Nancy Barnhart

In 2017, CVWO was granted a research permit from the National Park Service to survey and study Creole Pearly-eye butterflies in Colonial National Historical Park. This species is considered uncommon-to-rare in its typical southeastern U.S. range. The documentation of a breeding population in the Neck-o-Land area of James City County represents a significant expansion of its range to the north.

In the previous four years the research team surveyed and successfully documented the presence of two broods of Creole Pearly-eye caterpillars and adults, and established flight periods within the Neck-o-Land property and Jamestown Island.

In 2022, surveys were conducted from mid-April through early fall attempting to establish early and late dates for this species. Butterfly numbers were down in general and only one Creole Pearly-eye adult was found. Evidence of larval feeding was observed on Switch Cane on Jamestown Island. Numerous Northern Pearly-eye butterflies were seen as would be expected in James City County.

2022 marked the fifth and final year of this project. Having established the presence of a breeding population of Creole Pearly-eye butterflies in James City County in previous years, the project achieved its goal. The research added valuable information about Creole Pearly-eye range expansion and the need to protect habitat and its host plant, Switch Cane. This project led to the publication in “*Banisteria A Journal Devoted to the Natural History of Virginia*,” of a scholarly article authored by lead researcher Kenneth Lorenzen entitled “PEARLY-EYE BUTTERFLIES (LEPIDOPTERA:NYMPHALIDAE) OF COLONIAL NATIONAL HISTORICAL PARK, VIRGINIA” in December 2020.

Many people contributed to this project over the past five years. We would like to thank the National Park Service, Colonial National Historical Park, especially Dorothy Geyer, NPS Natural Resource Specialist, for allowing us continued access to Park property, Emily Hinson of James River Associates for allowing us access to Neck-o-Land property, and to the following volunteers who participated in this project; Adrienne Frank, Gary Driscoll, Shirley Devan, Ken Lorenzen, Brian Taber, Jan Lockwood, Les Lawrence, Ryan Walsh, Nancy Barnhart, Deborah Humphries, Helen Hamilton for her assistance with plant identification, and Allen Belden for his knowledge and guidance.

Chippokes Butterfly Count | July 17, 2022

Prepared by Joni Carlson



Eufala Skipper | Deborah Humphries



Butterfly Enthusiasts in the Jamestown Sector | Shirley Devan

On July 17, 2022, volunteers conducted the annual Chippokes Plantation State Park butterfly count, sponsored by CVWO. Data from the count were submitted to the North American Butterfly Association (NABA) which sponsors counts across the country. A total of 32 volunteers spent the day in the field counting a total of 753 individuals representing 43 species. High counts for the day were Common Buckeye, 95, followed by Cloudless Sulfur, 75. The Jamestown Sector had the highest number of species (30), and total sightings (153). Of special note was the first ever Chippokes count observation of a Eufala Skipper. (See photo above). Participants were Bryan Barmore, Nancy Barnhart, Betty Baucom, Ginny Broome, Sharon Burton, Joni Carlson, Peggy Combs, Chris Conley, Barbara Creel, Shirley Devan, Randy Dove, Teresa Dove, Gary Driscoll, Susie Engle, Adrienne Frank, Barbara Giffin, Karen Hines, Deborah Humphries, Melissa Inge, Teta Kain, Alice Kopenitz, Seig Kopenitz, Les Lawrence, Shelby Longmire, Ken Lorenzen, Jeanette Navia, Keith Navia, Lisa Nickel, Patricia Quinn, Brian Taber, Bill Williams, Jeff Wright.

Many thanks to the volunteers who covered all six sectors. The areas covered were Jamestown, Hog Island, Surry West, Chippokes Plantation State Park, and the Ferry and Farm Belt sectors. Thanks also to Chippokes Plantation State Park for waiving the parking fee.

Williamsburg Area Butterfly Count | August 13, 2022

Prepared by Adrienne Frank



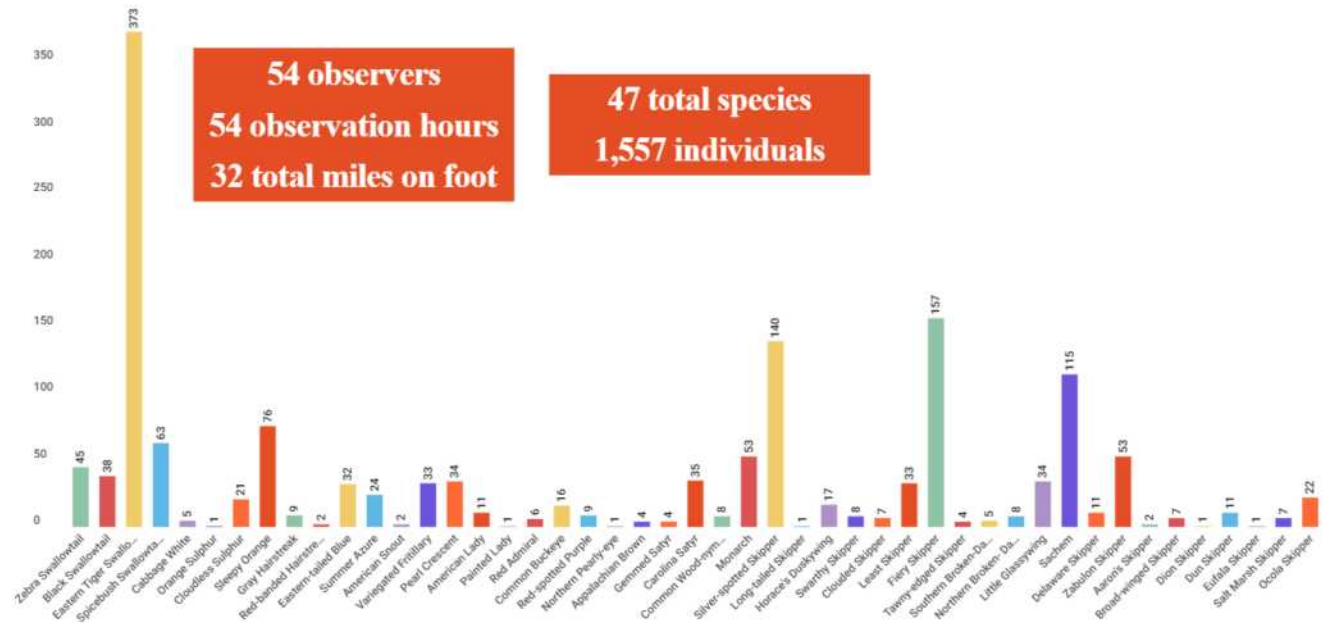
Silver-spotted Skipper | Deborah Humphries

The ninth Annual Williamsburg Area Butterfly Count was held on August 13, 2022. The weather was great for observers but was a slow start for butterflies. At 9 a.m., it was just 70 degrees, and the butterflies didn't really start flying until late morning. As the day warmed, some of the hearty observers remained to count until almost 5 p.m. Seven groups and five individuals reported 47 species and 1,557 individuals. This year was low for species count and some typical butterflies such as the Hackberry Emperor, Southern Cloudywing and Common Sootywing were not observed. Three species had new high counts: Sleepy Orange, Common Woodnymph and Swarthy Skipper.

This year, the highest single species identified was the Eastern Tiger Swallowtail (373), followed by the Fiery Skipper and Silver-spotted Skipper. New high counts were reported for Sleepy Orange, Common Wood-nymph, Swarthy Skipper and Tawny-edged Skipper. The Eufala Skipper was a first for NABA count and a second record for James City County. Sector reports and highlights are below:

- Upper York County reported two unique species (Painted Lady and Aaron's Skipper). This team had the highest number of Eastern Tiger Swallowtails (81)
- Lower York County had two unique species (Northern Pearly-eye and a Dion Skipper)
- Upper James City County reported high numbers of Broken Dash, Tawny-edged Skipper, Carolina Satyrs and Common Wood-nymphs
- The Centerville Corridor had a new species, the Eufala Skipper, only observed one other time and that was just a few days prior. They had the highest overall count of butterflies.
- Freedom Park and the Warhill Tract reported higher numbers of Variegated Fritillaries and Gray Hairstreaks compared to other sectors.
- Williamsburg City reported lots of Silver-spotted Skippers, Fiery Skippers and Sachem Skippers. Not observed this year was the Hackberry Emperor, in part, because a Hackberry tree at the Governor's Palace was removed.
- In its third year, the Gloucester sector observed more butterflies than in the last 2 years. They had the most Monarchs and the most observers (10)
- Individual contributors observed a Longtail Skipper and 95 total individuals.

Since 2014, there has been a range of 47 to 53 species found per year. Over nine years of annual counts has yielded 64 total species. The average number of species is 50 and the average number of individuals per count is 1,692. The number of individuals has ranged from 1014 – 3037.



Gray Hairstreak | Deborah Humphries



Eastern Tiger Swallowtail | Shirley Devan

The 24th Delmarva Tip Butterfly Count | July 31, 2022

Prepared by Brian Taber



Volunteers gathered to count butterflies for the Delmarva Tip Butterfly Count | Shirley Devan

The Observatory sponsored and conducted the 24th annual butterfly count at the tip of the Eastern Shore of Virginia on July 31, 2022. This fifteen-mile diameter circle, centered at Capeville, Virginia, includes Kiptopeke State Park, Eastern Shore of Virginia National Wildlife Refuge, Cape Charles, and Oyster. Fisherman Island was not surveyed this year. Many thanks to Pam Denmon of Eastern Shore of Virginia National Wildlife Refuge for access to areas otherwise closed to the public. The Delmarva Tip count is sanctioned by the North American Butterfly Association (NABA) and Brian Taber submitted this year's results. The temperature ranged from 80-85 degrees for the 24 volunteers in five parties who drove and walked around the tip of the Eastern Shore. Participants were Paul Anderson, Nancy Barnhart, Ginny Broome, Martina Coker, Susan Crockett, Tom Crockett, Shirley Devan, Gary Driscoll, Adrienne Frank, Babs Griffin, M. Hall, D. Hinch, Cheryl Jacobson, Teta Kain, Judy Kinshaw-Ellis, Alice Kopinitz, Seig Kopinitz, Les Lawrence, Ken Lorenzen, Laura Mae, S. Osborne, Peggy Rommen, L. Silvia, Brian Taber.



Spicebush Swallowtail on Sunflower | Tom Crockett



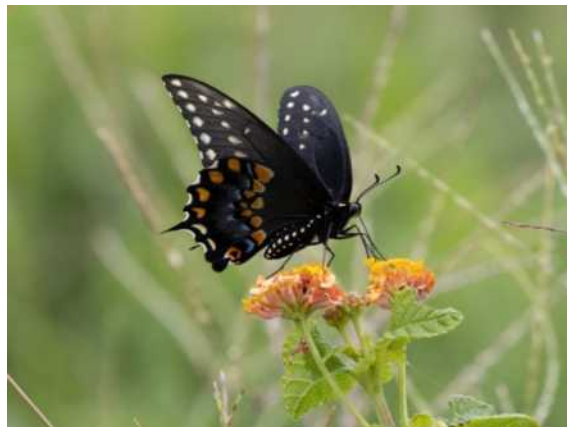
Giant Swallowtail on Mimosa | Nancy Barnhart

Delmarva Tip Volunteers found 42 species and 726 individuals:

Black Swallowtail 65	Variegated Fritillary 14	Common Sootywing 4
Giant Swallowtail* 3	Pearl Crescent 8	Swarthy Skipper 3
Eastern Tiger Swallowtail 32	Question Mark 4	Fiery Skipper 3
Spicebush Swallowtail 100	American Lady 1	Southern Broken-Dash 1
Palamedes Swallowtail 7	Red Admiral 2	Little Glassywing 1
Cabbage White 66	Common Buckeye 32	Sachem 3
Clouded Sulphur 1	Red-spotted Purple 51	Delaware Skipper
Orange Sulphur 5	Viceroy 10	Zabulon Skipper 15
Cloudless Sulphur 1	Hackberry Emperor 4	Dun Skipper 3
Juniper Hairstreak 2	Tawny Emperor 7	Clouded Skipper 2
Gray Hairstreak 8	Common Wood-Nymph 6	Salt Marsh Skipper 3
Red-banded Hairstreak 5	Monarch 13	Ocola Skipper 2
Eastern Tailed-Blue 30	Silver-spotted Skipper 129	
Summer Azure 27	Horace's Duskywing 3	
American Snout 41	Common Checkered-Skipper 8	<i>*seen for 10th year in a row; not found prior to 2013</i>



Common Checkered-Skipper | Tom Crockett



Black Swallowtail | Tom Crockett

WATERBIRD PROJECT

Waterbirds Annual Report

Prepared by Bill Williams

The Waterbirds Team focused its 2022 fieldwork on two long-standing field studies: documenting the volume and diversity of bird species frequenting Craney Island Dredged Materials Management Area (CIDMMA) in Portsmouth, Virginia and assessing the status and breeding efforts of Least Terns and American Oystercatchers on Grandview Nature Preserve in Hampton.



American Golden-Plover | Bill Williams

Grandview Nature Preserve Findings

Grandview Nature Preserve was visited in early June as part of the Virginia Department of Wildlife Resources (VDWR) annual Least Tern Survey and American Oystercatcher Survey. During the visit a Least Tern pair was observed completing a nest-exchange on Factory Point at the northeast tip of the preserve. An American Oystercatcher pair was also present, although no evidence of breeding was noted. Significant habitat loss combined with increased boater-access recreation use have profoundly diminished the preserve's capacity to accommodate nesting seabirds or shorebirds.

Craney Island Dredged Materials Management Area (CIDMMA) Findings

The final CIDMMA survey of the year, completed December 1, was the 42nd for 2022, and the 542nd overall survey-effort dating back to 2008. During those 15 years, the Team has logged 3,223 survey-hours totaling 2,153,744 birds of 271 species. Survey data entered in the Cornell Laboratory of Ornithology's eBird database have been summarized in annual reports submitted to the Norfolk District Office of the United States Army Corps of Engineers (USACE) to support compliance with its Long-term Bird Management Plan for the Craney Island Dredged Material Management Area (Beck 2012).

The Team's 2022 survey work adhered to protocols detailed in a previous CVWO annual research report (Williams, 2020). A total of 174,539 birds of 202 species was documented during 271.9 observation hours over 42 weekly surveys conducted January 6 - December 1, weather permitting. The average number of species per visit was 79. The single-day high-count for the total number of birds was 8,239 on January 6 (83 species); the lowest single-day total was 1,097 posted June 30

(74 species). Waterbirds, including 24 waterfowl species, 4 rail species, American Coot, 2 grebe, 2 loon species, Northern Gannet, Anhinga, Double-crested Cormorant, American White Pelican, Brown Pelican, 31 shorebird species, 6 gull, 8 tern species, Black Skimmer, and 10 heron-egret-ibis species comprised 47% of all species recorded. CIDMMA had Virginia's highest 2022 totals for 6 waterbird species: 2,768 Northern Shovelers on January 6; 1,870 Green-winged Teal on March 31; 135 Black-necked Stilts on July 21 (113 in view at one site); 750 American Avocets on September 15; 8 Buff-breasted Sandpipers on September 8; and 13 Wilson's Phalaropes on August 4.

Mottled Duck

A Mottled Duck was documented on the facility June 2, 2022, making this the third record of this species for CIDMMA. Virginia's first confirmed Mottled Duck was chronicled on the facility during June and July 2018 (Williams et al. 2019). The second CIDMMA occurrence was recorded on three June dates in 2021. Documentation for all three records has been accepted by the Virginia Avian Records Committee.

Northern Bobwhite

The Waterbirds Team documented its first Northern Bobwhite on CIDMMA in June 2009 (Williams, 2009). Thereafter, this species was recorded annually through 26 August 2021 (Williams, 2021) including a peak count of 5 on 14 Jan 2016 (Williams, 2016). Because no Northern Bobwhite have been detected since the August 2021 observation, we suspect the species has been extirpated locally.

American Avocet



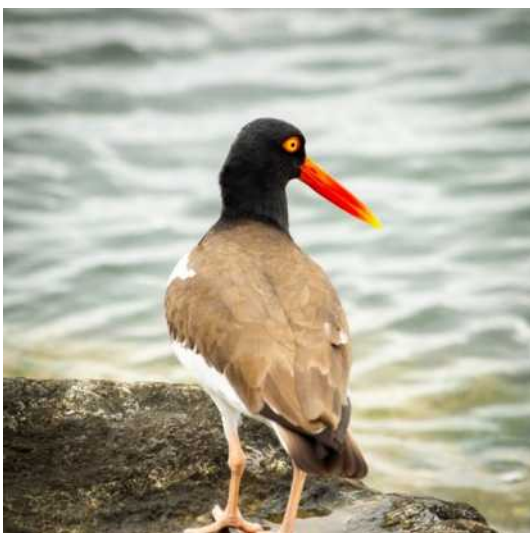
CIDMMA is the only site in Virginia where American Avocets are found year-round and is the only location in the Commonwealth where this species has nested. A nesting attempt was documented on the facility in June 1975 (Dillon, 1979). A pair with 2 downy chicks was recorded there in July 1991 (Armistead, 1992; Clapp, 1997; Kain 1998; Rottenborn and Brinkley, 2007). Team members observed a pair copulating and moving possible nest material on 26 May 2022. Careful scrutiny of the area later that day and over the ensuing weeks failed to find any further American Avocet breeding activity.

American Avocet | Bill Williams

Black-necked Stilt

The first Black-necked Stilt (one) of the year was noted during the March 31 survey. Breeding evidence was confirmed on May 5 by a pair nest-building in a shallow excavation pit near the southeast corner of the North Cell. That nest contained a 4-egg clutch on May 11 but was subsequently abandoned. The following week the Team located 11 Black-necked Stilt nesting pairs in a complex of deep excavation pits in the southeast corner of the North Cell. Those nest sites were also abandoned over the next few weeks due to an extensive amount of excavation activity coupled with the high volume of traffic of large-capacity earth-removal vehicles.

Subsequent observations revealed the pairs relocated to the western third of the North Cell. The undisturbed area there provided the rough-structured shoreline and vegetative cover near water preferred by this species for nesting and brood-raising. Small, downy chicks were observed on 7 July. Two weeks later a careful accounting of downy young closely associated with foraging adults revealed at least 17 breeding pairs, the most confirmed during a 2022 survey.



American Oystercatcher | Sarah O'Reilly

For a third year, an American Oystercatcher pair attempted to breed on the southernmost Elizabeth River eastward expansion dike. The previous attempts in 2020 and 2021 were unsuccessful as offspring produced in both years were likely predated by Fish Crows which were frequently observed harassing the youngsters. This year, an adult appeared to be incubating on 14 and 21 April, respectively. Subsequently, no chicks or further evidence of nesting were observed. The presence of Fish Crows and American Bald Eagles around the nest site was believed to have caused the breeding effort to fail. A color-banded American Oystercatcher was documented regularly along the western

shoreline from 28 April through 18 August. Its red band with white alpha-numeric lettering indicated the band had been placed on the bird in Georgia.

Least Tern

The Team identified three Least Tern colonies occupied by a total of 210 adults on 27 May. Thereafter, USACE staff located 8 colonies occupied by a total of 102 adults. Once the colony sites were identified the perimeter of each was marked with signage restricting access to the area until 1 August. Throughout the breeding season USACE staff assumed responsibility for monitoring each colony to determine breeding activity and reproductive success. Unfortunately, the colonies experienced very low productivity, due to a combination of mammalian predation, high-volume vehicular traffic, and periods of excessive heat and dryness. The USACE staff filed a report of its early June findings with the VDWR for its annual Least Tern Survey.

Anhinga

A female Anhinga was observed on the neighborhood pond just east of the CIDMMA office during both the 14 and 21 July surveys. This is noteworthy because this species has become a rare, but regular breeder in southeast Virginia over the last decade. Whether this waterbird will become more routine at CIDMMA in the future is uncertain.

Bald Eagle

The Bald Eagle pair that successfully fledged a single offspring from an artificial nest structure off the CIDMMA's northwest corner in both 2020 and 2021 failed to breed in 2022. A strong coastal storm dislodged the nest on 3 January. The pair remained in the vicinity of the damaged nest but did not attempt to re-nest.

AudioMoth Deployment for Possible Eastern Black Rail Detection

Two of the three AudioMoth stations deployed just below CIDMMA's northeast perimeter road in May 2021 were relocated to sites near the Common Reed *Phragmites australis* lined down-slope of the southeast corner of the South Cell. The third station was left intact as originally placed in the middle of the northeast third of the north perimeter road. The relocations were necessitated by the extensive preparation for and subsequent raising of the height of the north perimeter road. The purpose for deploying these devices was to assess the possible presence of Eastern Black Rail *Laterallus jamaicensis jamaicensis*, a species accorded threatened status with a Section 4 (d) Rule under the 1973 Endangered Species Act. A vocalizing Eastern Black Rail had been documented at this CIDMMA location in June 2017 (Williams, 2017). After that detection, a cursory assessment of the facility's physiography suggested its gently sloping, heavily vegetated, wet seepage microhabitats off both the northeast and southeast corners had the potential of supporting this species during migration and/or during its late spring/early summer breeding season.

AudioMoth is an open-source full-spectrum acoustic logger built around Silicon Labs EFM32 Gecko processor by the Open Acoustic Devices Team. Each credit-card sized (58 × 48 × 15 mm) unit is powered by 3 AA batteries and consists of a printed circuit board, micro-controller and an

analog micro-electro-mechanical systems (MEMS) microphone. The device has a recording radius of ~30m and is capable of detecting sounds ranging from audible to ultrasonic frequencies that are then recorded as uncompressed WAV files to a micro-SD card from 8,000 to 384,000 samples/second. An onboard real-time clock allows each unit to be preset to activate specific recording times for each unit.

All three stations were operational from April 1 through September 2, 2022, recording sounds nightly from 10 p.m.– midnight and 3-5 a.m. Analysis of data recorded on 128 of 153 recording-nights (no data from 25 nights for unknown reasons) did not conclusively detect any Black Rail vocalizations. Species that were confirmed included Chuck-wills-widow, Virginia Rail, Clapper/King Rail, Black-necked Stilt, American Oystercatcher, Least Bittern, Yellow-breasted Chat, Common Yellowthroat, Red-winged Blackbird and Song Sparrow.

Motus Wildlife Tracking System Activity

The Waterbirds Team continued to monitor the Motus wildlife tracking system installed on CIDMMA Spillway 6 in 2018. No data “hits” were recorded by the station during 2022.

Public Outreach and Publications

The Waterbirds Team made PowerPoint presentations of its 2008 through 2021 CIDMMA fieldwork to the Williamsburg Bird Club in February 2022 and the Cape Henry Audubon Society in April 2022. The Waterbirds Team eBird data provided the foundation for the publication of a comprehensive analysis of its 2009-2020 CIDMMA findings (Guilfoyle et al. 2022).



Mink | Bill Williams

Additional CIDMMA Fauna

The Team keeps anecdotal records of non-avian species detected during its surveys. This year the following were recorded.

Mammals: Atlantic bottlenose dolphin, coyote, white-tailed deer, opossum, eastern gray squirrel, eastern cottontail rabbit, red fox, river otter, muskrat, mink, unidentified bat species.

Reptiles: diamond-backed terrapin, painted turtle, yellow-bellied slider, snapping turtle.

Amphibians: squirrel tree frog, green tree frog, leopard frog, bull frog, American/southern toad.

Butterflies: Black Swallowtail, Eastern Tiger Swallowtail, Cabbage White, Clouded Sulfur, Orange Sulphur, Sleepy Orange, Gray Hairstreak, Summer Azure, American Snout, Variegated Fritillary,

Pearl Crescent, Mourning Cloak, Common Buckeye, Red-spotted Purple, Tawny Emperor, Monarch, Silver-spotted Skipper, Clouded Skipper, Least Skipper, Broad-winged Skipper.

Dragonflies: Halloween Pennant, Eastern Pondhawk, Blue Corporal, Bar-winged Skimmer, Widow Skimmer, Needham's Skimmer, Four-spotted Skimmer, Great Blue Skimmer, Wandering Glider, Spot-winged Glider, Eastern Amberwing, Common Whitetail, Carolina Saddlebags, Black Saddlebags.

Acknowledgements and Literature Cited

The Waterbirds Team wishes to express its sincere gratitude to the Norfolk District Office of the United States Army Corps of Engineers and the Craney Island Dredged Materials Management Area staff for their continued support of the field work the Team is permitted to do. Shannon Rheinheimer, Megan Wood, and Laura Bennett invested considerable effort to post and monitor Least Tern and Black-necked Stilt nesting sites. Steve Thornhill's technical expertise was once again critical for the analysis of three AudioMoth stations' sound files. Members of the 2022 CVWO Waterbirds Team were: Bob Ake, David Clark, Deborah Humphries, Alex Minarik, Lee Schuster, Brian Taber, Bill Williams, and Dave Youker.

Armistead, H. A. 1992. The Winter Season: December 1, 1991-February 29, 1992: Middle Atlantic Coast Region. *American Birds* 46 (2): 242-249.

Clapp, R. 1997. Egg dates for Virginia birds. *Virginia Avifauna* No. 6. Virginia Society of Ornithology, Lynchburg, Virginia.

Dillon, J. S. 1979. Possible nesting attempt by Avocets in Virginia. *The Raven* 50 (3):54.

Guilfoyle, M. P., R. A. Beck, B. Williams, S. J. Reinheimer, L. D. Burgoon, S. S. Jackson, S. M. Beck, B. S. Suedel, and R. A. Fischer. (2022). *Birds of the Craney Island Dredged Material Management Area, Portsmouth, VA, 2008-2020. Dredging Operations Technical Support, Technical Report (DOTS TR-22-15), Vicksburg, MS: U.S. Army Research and Development Center.* <https://erdc-library.erdc.dren.mil/jspui/handle/11681/45604>.

Kain T. 1998. 1997 report of the Virginia Avian Records Committee. *The Raven* 69 (1): 46-52.

Williams, B. 2009. <https://ebird.org/ebird/view/checklist/S5077202>. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: <http://www.ebird.org>. (Accessed: 8 Feb 2023).

Williams, B. 2016. <https://ebird.org/ebird/view/checklist/S26909344>. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: <http://www.ebird.org>. (Accessed: 8 Feb 2023).

Williams, B. 2017. <https://ebird.org/ebird/view/checklist/S41175258>. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: <http://www.ebird.org>. (Accessed: 8 Feb 2023).

Williams, B. 2021. Waterbirds Team Report. Coastal Virginia Wildlife Observatory Annual Report for 2020 pp. 47-49.

Williams, B. 2021. <https://ebird.org/ebird/view/checklist/S93771505>. eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: <http://www.ebird.org>. (Accessed: 8 Feb 2023).

Williams, B. R. L. Ake, E. S. Brinkley, B. Taber, and D. Youker. 2019. Mottled Duck *Anas fulvigula* on Craney Island, Portsmouth: Virginia's first record with notes on possible Mallard X Mottled Duck hybrids. The Raven 90: 13-17.

Wood Ducks Report

Prepared by Dave Youker



Wood Ducks | Dave Youker

Work on the Harwoods Mill dam continued, necessitating low water levels. Most boxes previously located in the water were now on dry land and couldn't be checked from the kayak. Fortunately, the predator guards continued to keep out the snakes. An Eastern Screech-Owl took up roosting in one box but left in time for the ducks to use the box for nesting.

Five of the seven boxes produced young this year, and three boxes had second clutches. Total Wood Duck egg production was 224 with 186 ducklings fledged. Nesting again began in early March, and one box was still active in July.

Thanks to Newport News Parks and Recreation for their continued support of this project.

ANNUAL KIPTOPEKE CHALLENGE



Gulls Gone Wild with the Piping Plover Trophy

The annual Kiptopeke Challenge was affected by the predicted forecast of Hurricane Ian to enter the area around the October 1 event date. Participants and the CVWO board made the decision to allow all teams to complete their challenge during a two-week timeframe through the middle of October. Overall, four teams competed in the 24-hour category (Laughing Falcons, the Wandering Wagtails, Fishing Longlegs, and Gulls Gone Wild.

Two groups competed in the Special Venue category (Tallying Terns and The Hungry Hybrids) and one group in the 3-hour category (Road Runners). The 2022 grand total for funds raised totaled \$12,446.30 with the Gulls Gone Wild keeping their winning streak going for securing the most funds donated in support of their team. They take home the 2022 Piping Plover Trophy for the sixth consecutive year.

The winners in the challenge categories are listed below.

- 24-hr: The Laughing Falcons (115 species) – David Clark, Andrew Baldelli and Steve Myers
- Special Venue: The Tallying Terns (106 species) – Brian Taber & Maggie Long
- 3-hr: Road Runners (62 species) – Harry Colestock

Other team totals:

- Wandering Wagtails: 75 species – Sarah O'Reilly, Carolyn Morgan, Caitlin Kufahl
- Fishing Longlegs: 40 species – Maryanna Fisher
- Gulls Gone Wild: 83 species – Shirley Devan, Joyce Lowry, Nancy Barnhart, Sue Mutell, and Jan Lockwood
- Hungry Hybrids: 80 species – Andrew Rapp and Jason Bojczyk

The total number of species observed on the Challenge was 165. CVWO looks forward to having you join us for the 2023 event.

Since the Observatory began, we've sponsored an annual fall team birding competition that was fun and also a fund-raiser. Now, many years later, we want to emphasize the whole coastal plain of Virginia and will choose a new name. We also want to encourage as many teams as possible to participate, for part of the day or the whole day, highlighting the many great local natural areas that contain birds. Stay tuned for more details through our eNewsletter and other resources!

VSO ATLAS ADOPTIONS

Prepared by Brian Taber



Barn Swallow | Deborah Humphries



Blue Jay | Jim Easton

The Virginia Society of Ornithology has undertaken a huge project, the Breeding Bird Atlas, with the Virginia Department of Wildlife Resources and others, to document breeding birds in the Commonwealth. The first step was thousands of hours of field work, mostly by volunteers. The next step involves the creation of a public website database which will house, publish, and share that data. To help with the cost of the website, the VSO is inviting organizations and individuals to “adopt” the 200 breeding species. For a set donation, donors will then be recognized on the Atlas website for a particular species. CVWO has adopted eight species to honor special people who have contributed so much to CVWO and to bird conservation in Virginia.

CVWO honorees with their sponsored bird are:

Joy Archer | American Kestrel (CVWO logo)

Ruth Beck | Forster’s Tern

Bill Akers | Least Tern, his master’s thesis bird

CVWO Founder and Advisor Bill Williams | Acadian Flycatcher

Advisor Dr. Mitchell Byrd | Barred Owl

Advisor Bob Ake | Clapper Rail

Harry Armistead | Brown Pelican

Brian Taber | Yellow-throated Warbler

In addition, CVWO President Brian Taber personally honored two organizations with adoptions for their great work: the Williamsburg Bird Club, with Blue Jay, the adoptive photo was by our friend and supporter Jim Easton; and CVWO with Barn Swallow, the adoptive photo was by our friend and supporter Deborah Humphries. Jim and Deborah have donated use of many of their fine bird photos to VSO and CVWO.

THE 2022 BIG SIT

Prepared by Lynn Davidson



Hawkwatch platform and Kiptopeke State Park | Drone photo by Collins Reagan

CVWO participated in “The Big Sit!” again this fall on October 8, 2022. The event was founded by the New Haven (Connecticut) Bird Club in 1992. The goal is to tally as many species as possible in one day, all from within a restricted 17-foot diameter circle (either sitting or standing!). A total of 119 Big Sit circles were registered from 34 States and 3 other countries this year.

For CVWO’s 24th consecutive year, the middle of the Kiptopeke State Park Hawkwatch platform became ground zero for the all-day affair.

From the Hawkwatch platform, waterbirds are barely visible through a much-diminished gap in the western tree line where the Chesapeake Bay and decaying concrete ships at the former ferry slip had been easy to see in the past. The adjacent forest, shrubs, and meadows provide habitat for numerous land birds, and, of course, the location is prime for migrants of all types. As with all birding events, the species count is very weather dependent; rain and wind can greatly reduce the count by limiting detection of flight calls, especially at night. The passage of a cold front that brings migrants into the area is of key importance for a fun and successful Big Sit.

The weather for the October 8 event did not include a strong cold front this year, but it was favorable with light easterly winds, partly cloudy skies, and temperatures around 60 degrees at daybreak. The count began before dawn (at 5 a.m.) with the squawk of a great blue heron, whinny of an Eastern screech-owl, and flight calls of a few thrushes. At first light, Northern Mockingbird, Carolina Wren, Gray Catbird and Brown Thrasher were among the earliest to be tallied. “Sitters” found only 21 species by 7 a.m.; however, they tallied 58 species by 8 a.m. New species continued to be added, including a fly-by Dickcissel (8:26 a.m.), and the list became respectable by mid-morning. By 1 p.m. the tally stalled out at 84 species with a Blue Grosbeak, an unusual bird for our Sit. Just after sunset, a few more species were added, including Snowy Egret, White Ibis, and two pairs of dueting Great Horned Owls. The last bird of the day was a Black-crowned Night-Heron at 7 p.m. The final count of 88 species was the second highest in 24 years and among the highest counts overall – tied for 7th place. For more details, see The Big Sit! Website: <https://www.thebigsit.org/>.

More than a dozen people participated this year. Some of the primary Sitters were CVWO Hawk Counters Jason Bojczyk and Andrew Rapp, as well as Lynn Davidson, Hal Wierenga, Bob Anderson, Rudy Cashwell, George Armistead, Todd Day, Michael Veit, Tom and Diane Rapp, and Linda & Pete Millington.

GRANTS AND OUTREACH

Conservation Grants

In early 2022 the board approved the awarding of several conservation grants, in small amounts, to organizations doing great work on behalf of wildlife. One grant went to help with the restart of the Kekoldi Hawkwatch, on indigenous peoples' land in Costa Rica, in partnership with the Hawk Migration Association of North America and Hawk Mountain Sanctuary. The grant covered room and board for the hawkcounters.



A second grant went to the Youth Birding Camp, operated by the American Birding Association (ABA), sponsoring a youth to attend their camp on a full scholarship. Ethan, the recipient, sent the Observatory a heartfelt thank you note, with his original bird artwork.

Thank you note sent to CVWO from Ethan who received a scholarship to attend the ABA's Youth Birding Camp in 2022.

A third grant went to Kiptopeke State Park to assist with tree planting on Arbor Day at the park's new Visitor Center. Another grant went to Birdability, an organization dedicated to inclusion, to help support their team in the World Series of Birding in New Jersey. The Observatory also supported the Virginia Society of Ornithology's effort to publish the Breeding Bird Atlas. See more about this support on page 55 of this report.

Also, CVWO and the Finch Research Network (FiRN) have established a student grant in memory of Edward S. "Ned" Brinkley. Ned had lots of connections with both of our organizations and of course, so many others. FiRN is committed to researching and protecting threatened finch species like the finches of Hawaii, the Evening Grosbeak, the Rosy-Finches, and more. According to Matt Young, founder of the Finch Research Network, "In discussion with Brian Taber, I suggested we start a joint 'Ned Brinkley Finch Research Grant' as a way of acknowledging the luminary he was, but also as a way of paying things forward!"

Here is the link to FiRN's page about the grant: <https://finchnetwork.org/edward-s-ned-brinkley-finch-research-grant>

The Observatory will continue to search for worthwhile research, education, and conservation projects in need of modest, though important support.

Educational Grants



2022 Ruth Beck Graduate Student Grant went to Liz Elliott for her project: “Heat-induced calling affects embryonic vibrations: Scrambled eggs or genuine feedback?” Liz is a graduate student in biology at the College of William and Mary studying under Dr. John Swaddle.

2022 Bill Akers Graduate Student Grant went to Joey Liberto for his project: “Full Metal Sparrow: Examining the effects of sublethal lead on ecologically-important behaviors in a commensal songbird.” Joey is a graduate student in biology at the College of William and Mary studying under Dr. John Swaddle.



2022 Bob Ake Research Grant went to Gabriella DiPetto for her project: “The effect of oyster restoration structures on avian diversity and behavior.” Gabriella is a graduate student in the Department of Biological Science at Old Dominion University, Norfolk, VA

IN MEMORIAM

Larry Brindza

Prepared by Kathleen Brindza



CVWO lost a valued member of the advisory board on December 4, 2022. Larry Brindza led the monarch program at CVWO for 14 years. Larry has been tagging monarch butterflies since 1996. In October of 2000, he began helping Mark Garland and Dr. Andy Davis tag monarchs at Kiptopeke State Park and later took over as coordinator of the program. In 2002, he began weighing all captured monarchs

with an electronic scale. He collected such detailed data that in 2008 he collaborated with Dr. Lincoln Brower, Tonya Van Hook and Dr. Andy Davis in publishing a major article in the Journal of the Lepidopterists' Society. Larry has given many presentations on the biology of monarchs and the monarch migration to visiting groups at Kiptopeke, the Williamsburg Botanical Garden and school groups in the Northern Virginia area. In 2011, he was named "Scientist of the Month" by Monarch Net, the North American network of monarch butterfly monitoring programs.

Bettye Fields

Prepared by Brian Taber



Bettye Fields on the right with her long-time friend Mary Pulley. Photo provided by Brian Taber

Bettye Fields, of Newport News, was a long-time supporter of CVWO, as well as the Hampton Roads Bird Club, Williamsburg Bird Club, and VA Society of Ornithology. She passed away at age 97 in December 2021. Bettye is pictured on the right, with her long-time friend Mary Pulley, as they both received service awards for their volunteer efforts, from CVWO at a meeting November 10, 2007. Bettye volunteered at the Kiptopeke Songbird Station and participated in many Virginia Christmas Bird Counts and Spring Bird Counts. She was a faithful supporter CVWO's Kiptopeke Challenge.

Peter Doherty

Prepared by Sheila Scoville



We in Coastal Virginia came to know Peter in his third career, as a field ornithologist. Here he was able to satisfy both his “hands-on” interest in birds and his love for teaching. Peter was employed by CVWO as the bird bander at First Landing State Park from 2007 through 2010 and contributed to banding efforts at Kiptopeke State Park. While at First Landing, he gave classes in bird handling and taught aspiring ornithologists including his interns. CVWO Board Member, Shirley Devan, remembers him in the following passage:

In the spring of 2010, Peter Doherty graciously volunteered to teach a bird banding workshop as a fundraiser for CVWO. The workshops were at First Landing State Park over two weekends in late March and early April. At that time, CVWO operated a songbird banding station in the wilds of the park – WAY off the beaten paths that visitors enjoyed.

Peter was a certified trainer for the North American Banding Council and thus licensed to provide such specialized training. Under Peter’s intense eyes, skilled hands, and gentle voice, participants learned how to extract birds from mist nets, and how to hold the birds – bander’s grip and photographer’s grip, without injuring them – how to apply the tiny aluminum bands, weigh the birds, and then release the birds.

The first bird I ever held in my hand was a Northern Cardinal I had extracted from a mist net. In no time at all, the cardinal had nipped at the soft skin between my thumb and forefinger. OUCH! That big beak is designed to crack seeds! Peter taught all of us the trick to deter a cardinal from inflicting a painful nip – place a small twig in the beak to keep the bird preoccupied during the short time it’s in your hand.

Little did I know that the training and skills I learned from Peter Doherty in the spring of 2010 would lead to more than ten years of monitoring Prothonotary Warblers for CVWO in several locations in the Coastal Plain. The experience with Peter in the wilds of First Landing State Park and the memories of many days since in a canoe studying the “golden-swamp warblers” will be with me forever. Thank you, Peter!



Peter Doherty in teaching mode.

During his life's journey, Peter recalled that in grade school, his mother once took him out of class so that he could get a look at a rare bird that had strayed into his area in Connecticut. He also would accompany her while she was bird banding. After Yale, his decision to attend UVA Law School was guided by a friend who convinced him that his greatest influence would be creating public policy. He shared that his dream job was implementing the newly passed Environmental Protection Act while he was Assistant Attorney General for Rhode Island. He later argued a case before the U.S. Supreme Court that now has implications for siting wind turbines.

He created and manufactured two types of capture nets that used by biologists around the world, the Whoosh Net and the Drop Net. Both of these specialized nets allow biologists to remotely, safely and selectively capture target birds without the explosives used with cannon nets.

His writings triggered my own childhood memories, such as the simple joy of waking up to the sound of a Song Sparrow. He was an unflinching advocate for birds and for the environment, whether it was championing the importance of migratory stop-over points or the danger to birds of wild cat colonies. An essay that made the most impact on me concerned the lack of a standard for what we should accept as a sustainable world. He pointed out that our benchmark has been "the way it was when we were young," identifying what a flawed touchstone we have relied upon.

I fell in love with Peter watching him tenderly handle the fragile and often tiny birds.

The J. P. Doherty Foundation has been created in his memory to support a wide range of wildlife support and conservation issues.

The words from our wedding vows, "till death do us part" came true on January 20, 2022, but the influence on all of us will last our lifetimes.

With love,

Sheila Scoville, his devoted companion and wife

SUPPORT CVWO



Your donation can make a big difference in 2023. Use the form below to join or renew your 2023 CVWO support and donate to one of our ongoing projects such as the Kiptopeke Hawkwatch, Monarch butterfly research, waterbird research, warbler nest box trails, or graduate student scholarships. No donation is too small, and every gift is welcome. If you are a Life Member or have already donated in 2023 — many thanks! Perhaps you would consider another donation to one of our projects or a scholarship! We look forward to hearing from you!

I want to support CVWO's 2023 research. Support Level:

- Warbler \$25
- Sparrow \$50
- Thrush \$100
- Falcon \$250
- Eagle \$500 (Life Supporter)

I want to make an additional donation for:

- Brian Taber's Book, "Riding the Wind: A Birder's Ups and Downs" – cost \$25
- Kiptopeke Hawkwatch
- Monarch butterfly research
- Waterbird research
- Prothonotary Warbler Nest Box Trails
- Annual Scholarship to William and Mary or ODU Graduate Students

Friends who donate \$25 or more or join/renew at the \$25 level or higher will receive CVWO's Annual Report.

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