



Bird declines in Maryland –
and some conservation
solutions

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CONTINENTAL BREEDING ADULT BIRD POPULATION U.S. AND CANADA

(in billions)

2.9
BILLION BIRDS
GONE IN 50 YEARS
NEARLY 30% OF POPULATION

Rosenberg, K. V. et al. 2019.
Decline of the North American
Avifauna. *Science* 365(6461).
doi: [10.1126/science.aaw1313](https://doi.org/10.1126/science.aaw1313)



-17%
**EASTERN
FOREST BIRDS**



-23%
**ARCTIC
TUNDRA BIRDS**



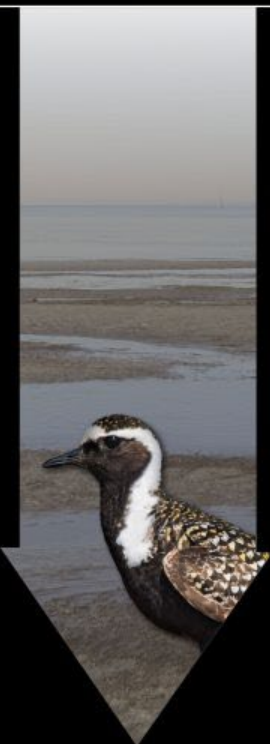
-29%
**WESTERN
FOREST BIRDS**



-33%
**BOREAL
FOREST BIRDS**



-37%
SHOREBIRDS



-53%
**GRASSLAND
BIRDS**



Reasons for bird declines

Habitat loss

Habitat degradation

Food chain disruption

- Insect declines
- Fish declines

Building collisions

Cats

Pollution/pesticides

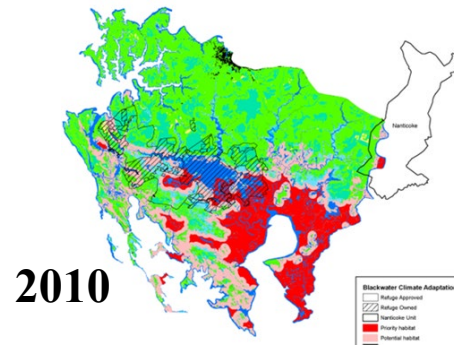
Climate change



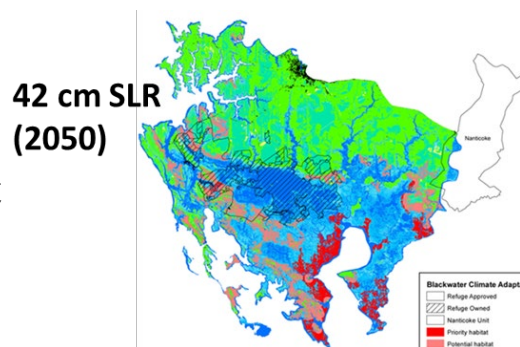
The biggest threats to birds and their habitats: Climate Change and Habitat loss/degradation

- Climate change is the biggest threat in coastal zone, via SLR.
 - Near total loss of salt marsh by 2100.
- Inland, the biggest threat is habitat loss and degradation, to:
 - **Development.**
 - Invasive species.
 - Inappropriate management
 - Pollution, etc
- Climate impacts on birds/habitats inland include:
 - Increased disease.
 - Increased defoliation by forest pests.
 - Habitat shifts.

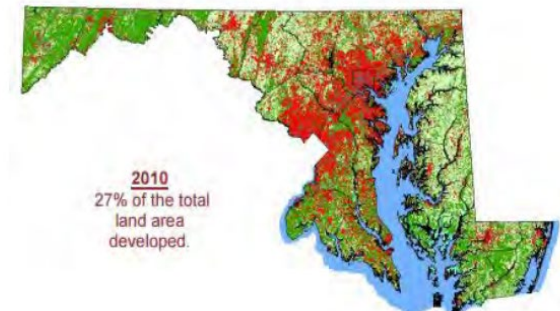
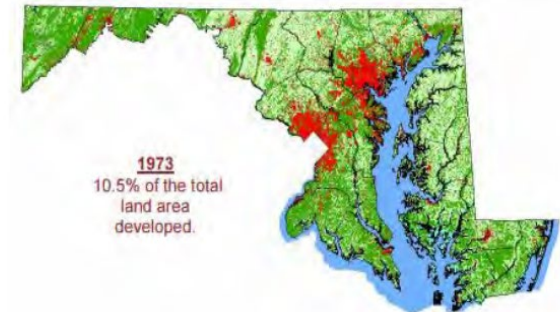
Climate-driven sea level rise



Dorchester Co., MD



Habitat loss to development



Climate Change Vulnerability Index (CCVI)

Developed by NatureServe using data on climate change, habitat, and species biology.

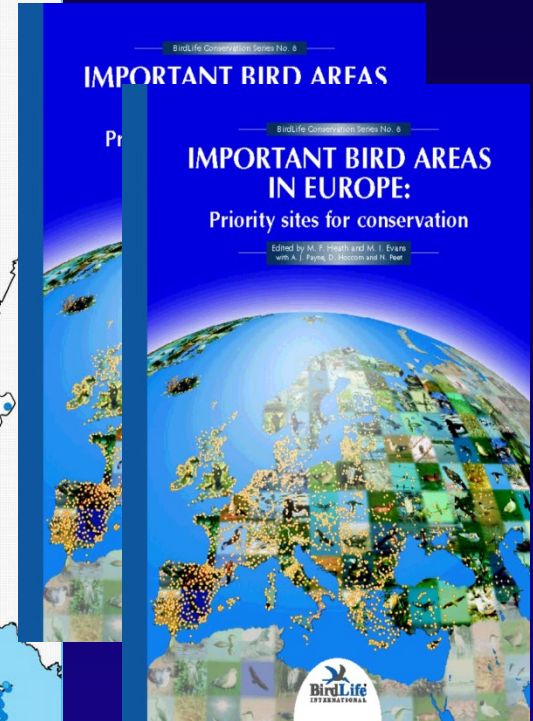
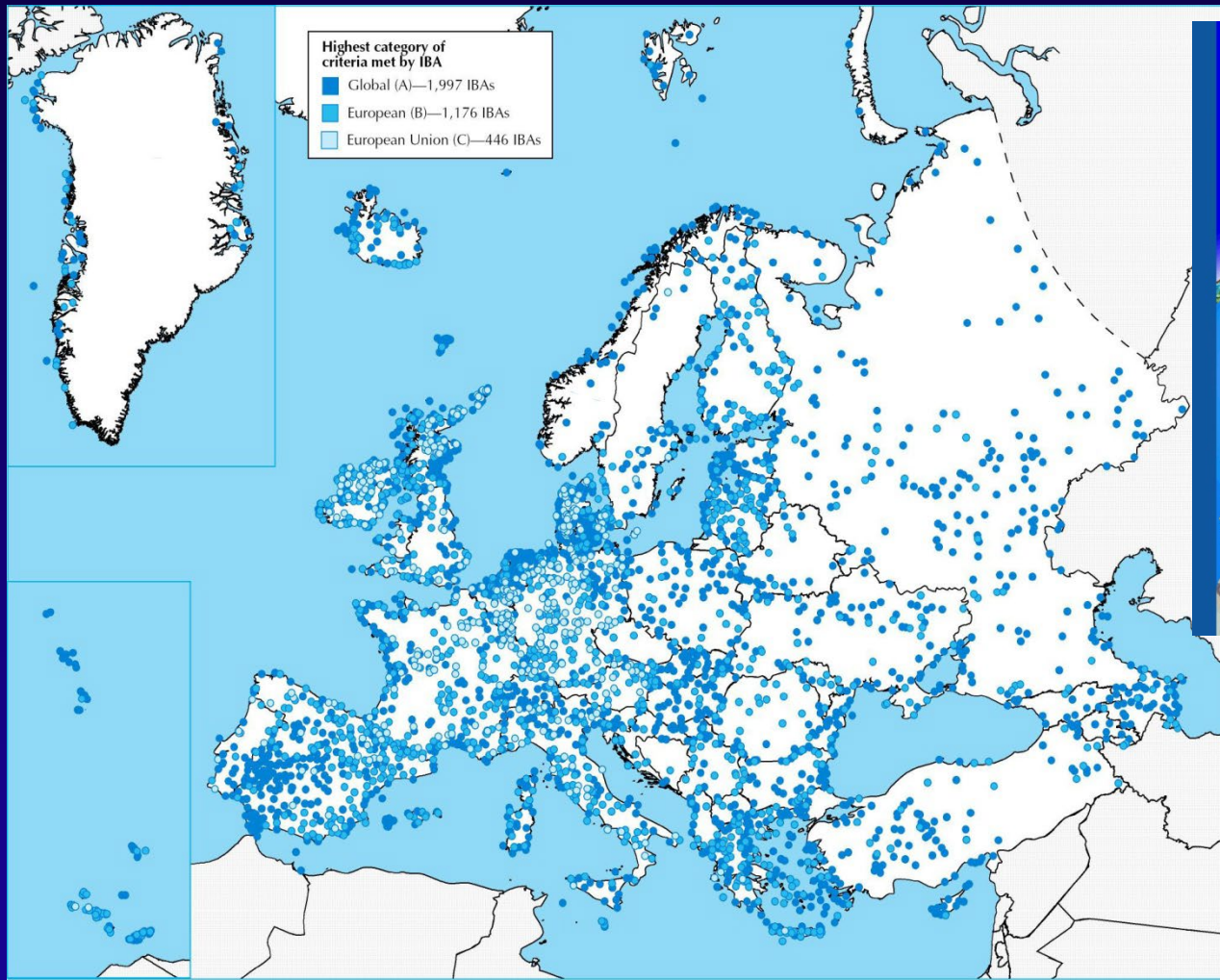
	# bird species with CCVI score (MD only)					
Habitat	# species assessed	Increase likely	Not vulnerable/presumed stable	Moderately vulnerable	Highly vulnerable	% species vulnerable
Forest	50	16	34	0	0	0%
Grassland/ agricultural	14	3	8	3	0	21%
Urban/ suburban	5	0	3	2	0	40%
Coasts	32	2	5	12	13	78%
Freshwater wetland	10	0	4	5	1	60%
Salt marsh	18	0	4	8	6	78%
Lakes & Rivers	4	0	2	2	0	50%

Prioritizing places for conservation - Important Bird Areas

Major goal:

Identify a network of sites that contain habitat needed to maintain healthy bird populations, and focus conservation efforts on these sites.

Program initiated by BirdLife International in mid-1980s



3,619 IBAs cover 7% of Europe

Site criteria based on vulnerabilities

- IBAs provide habitat for:

1. Sites important to bird species at-risk
2. Sites important to bird assemblages, vulnerable because they are dependent on a **particular habitat type**
3. Sites where native birds concentrate in significant numbers



**Category 1, At-risk species:
IBA threshold population size**



**Saltmarsh Sparrow
Threshold=10 prs**



**Common Tern
Threshold = 30 pairs**



**Prairie Warbler
Threshold = 30 prs**



**Whip-poor-will
Threshold = 10 pairs**

IBA site criteria in Maryland

Category 2: Species assemblages

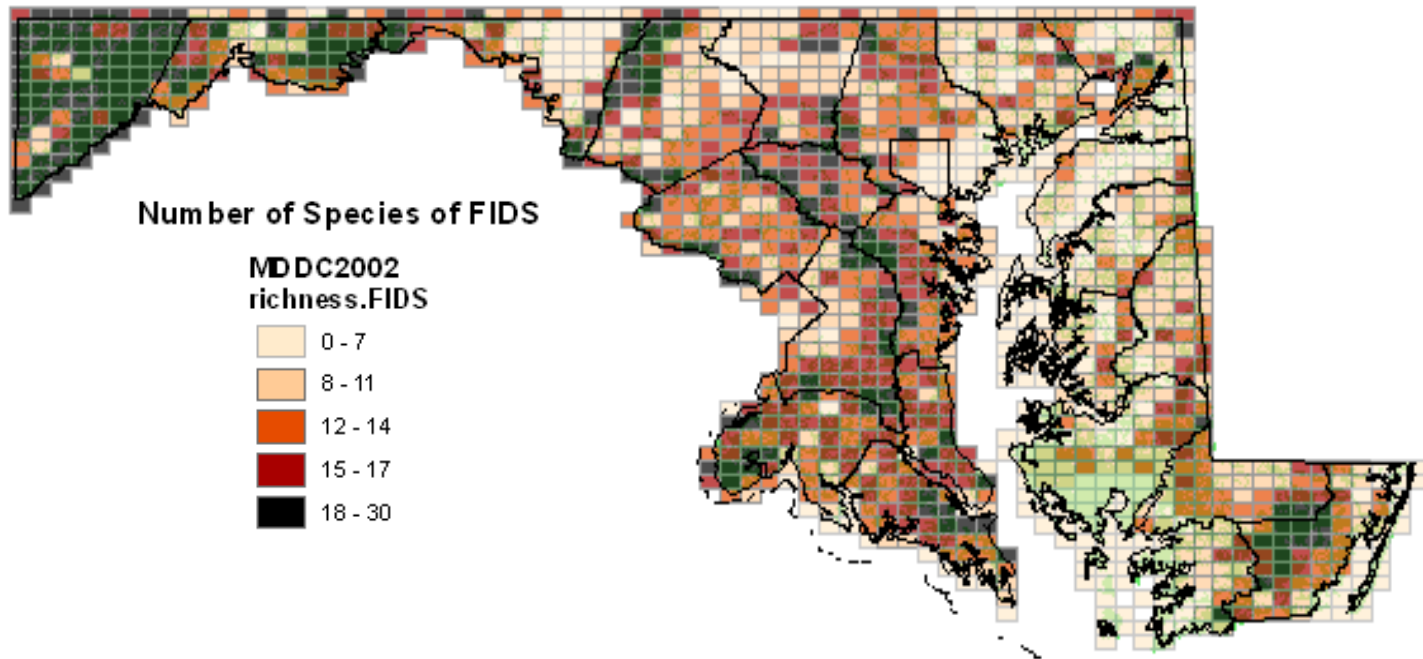
- Forest-interior Dwelling Species (FIDS) - 35 species
- Shrubland/early successional - 14 species
- Grassland - 13 species
- Saltmarsh - 17 species
- Fresh marsh - 10 species
- Coastal beach and dune – 7 species

Forest Interior-Dwelling Species



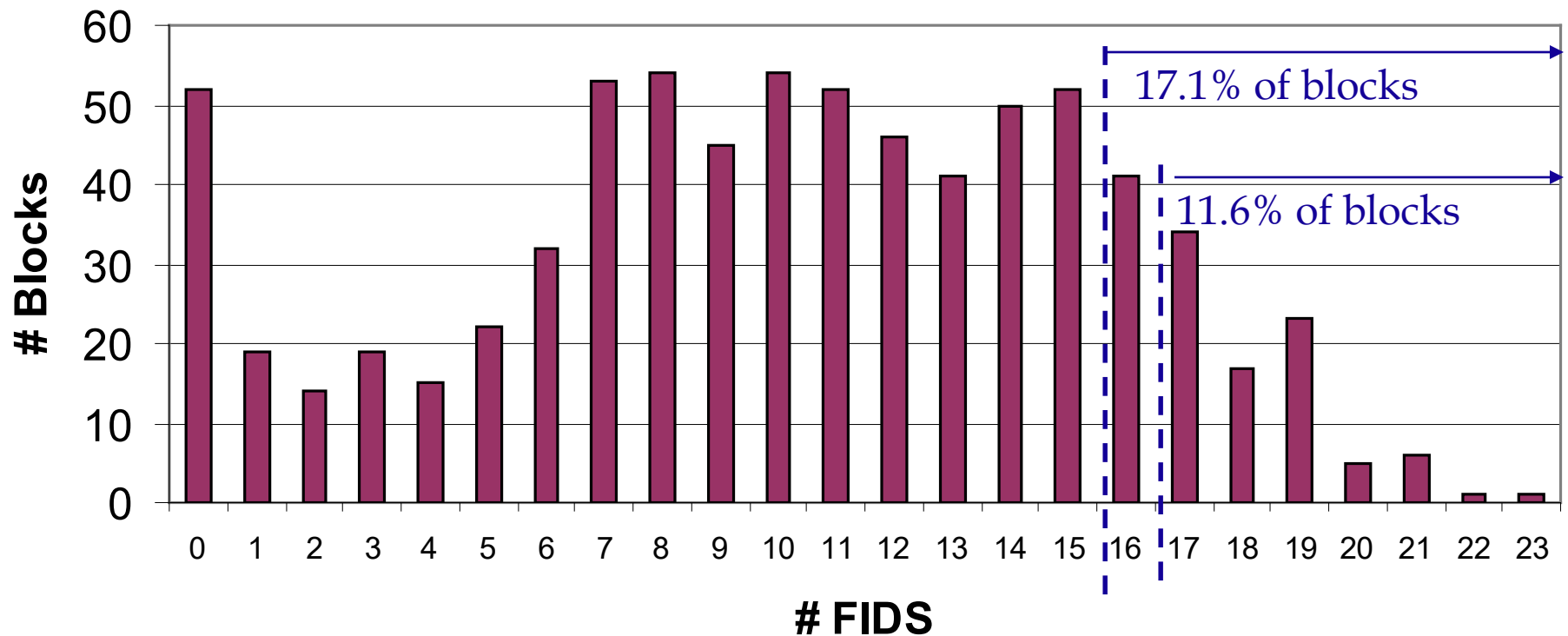
Forest-Interior Dwelling Species (FIDS) Species Richness

Maryland-DC Breeding Bird Atlas project 2002-06

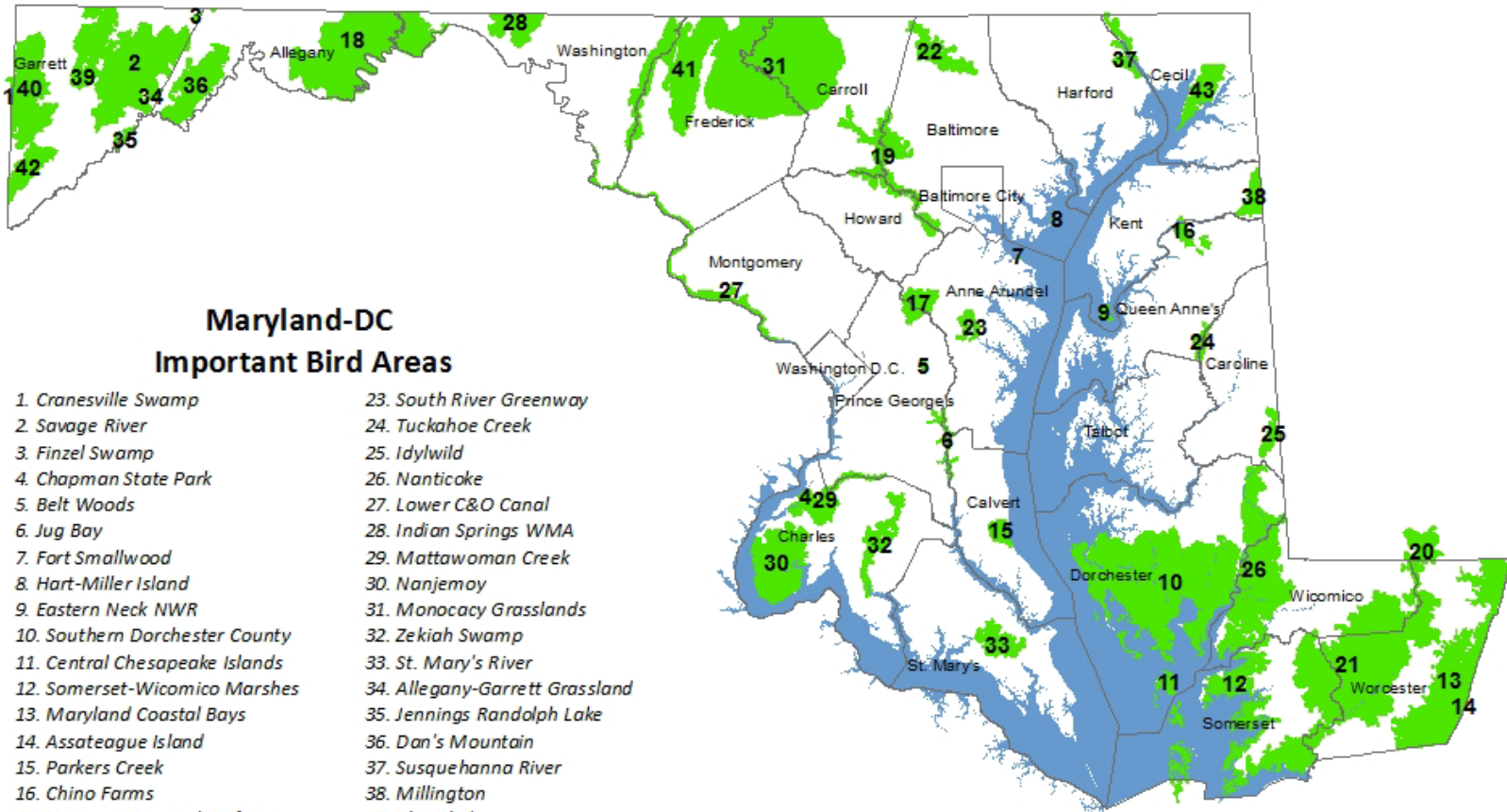


Standardizing the species assemblage category - richness thresholds

FIDS Species richness by Breeding Bird Atlas blocks in BCR 30, 2002-06 (n=748 blocks)



Important Bird Areas in Maryland and DC



Maryland-DC Important Bird Areas

- | | |
|--------------------------------|--------------------------------|
| 1. Cranesville Swamp | 23. South River Greenway |
| 2. Savage River | 24. Tuckahoe Creek |
| 3. Finzel Swamp | 25. Idylwild |
| 4. Chapman State Park | 26. Nanticoke |
| 5. Belt Woods | 27. Lower C&O Canal |
| 6. Jug Bay | 28. Indian Springs WMA |
| 7. Fort Smallwood | 29. Mattawoman Creek |
| 8. Hart-Miller Island | 30. Nanjemoy |
| 9. Eastern Neck NWR | 31. Monocacy Grasslands |
| 10. Southern Dorchester County | 32. Zekiah Swamp |
| 11. Central Chesapeake Islands | 33. St. Mary's River |
| 12. Somerset-Wicomico Marshes | 34. Allegany-Garrett Grassland |
| 13. Maryland Coastal Bays | 35. Jennings Randolph Lake |
| 14. Assateague Island | 36. Dan's Mountain |
| 15. Parkers Creek | 37. Susquehanna River |
| 16. Chino Farms | 38. Millington |
| 17. Patuxent Research Refuge | 39. The Glades |
| 18. Green Ridge | 40. Youghiogheny Valley |
| 19. Patapsco Valley | 41. Maryland Blue Ridge |
| 20. Great Cypress Swamp | 42. Pleasant Valley |
| 21. Pocomoke-Nassawango | 43. Elk Neck |
| 22. Prettyboy | |

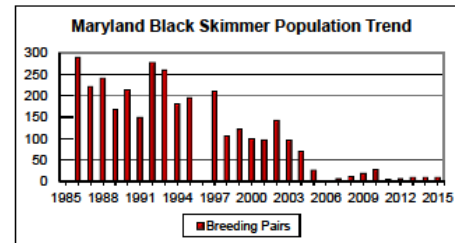
Endangered Seabirds in Md Species Trends, 1985-2015

- **Black Skimmer.** State-endangered. 95+% decline, near extirpation.
- **Common Tern.** State-endangered. ~90% decline in population.
- **Royal Tern.** State-endangered. Declining, very marginal colony site.

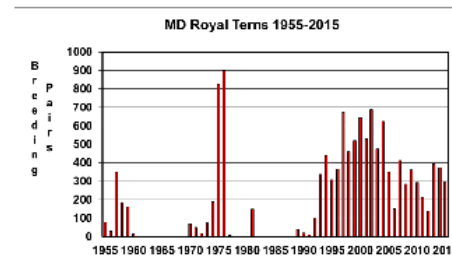
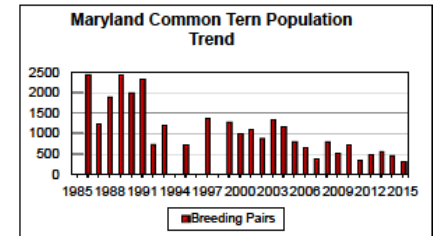
Monitoring by DNR, MCBP and public volunteers.

2020: No nesting success by these species on Coastal Bays islands. Skimmer Island reduced to remnant.

POPULATION OF ENDANGERED SPECIES ARE CONTINUING TO DECLINE DUE TO LOSS IN HABITAT



Black skimmer with chick



Common tern

Royal terns nest primarily on one island in the coastal bays, so they are very vulnerable to habitat loss. Royal terns are shown below



Maryland Coastal Bays Colonial Waterbird and Islands Report 2019



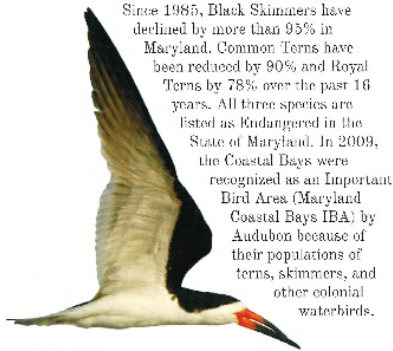
THE REPORT

This report provides an assessment of the current state of colonial waterbird breeding in the Coastal Bays of Maryland behind Ocean City and Assateague. This is the first of what will be an annual report on their status.

HISTORY OF THE BIRDS

Terns and skimmers

Iconic species of terns and skimmers that define the essence of the Coastal Bays' birdlife are in serious decline because the islands that they depend on for nesting are rapidly eroding as a result of sea level rise and increased storm events. Moreover, human-induced disturbance is directly taking its toll on the birds. Terns and skimmers evolved to breed only on sandy islands where their nests on the sand are safe from predators. Wading birds also require predator-free islands but with shrubs or small trees.



Black Skimmer

Since 1985, Black Skimmers have declined by more than 95% in Maryland. Common Terns have been reduced by 90% and Royal Terns by 78% over the past 16 years. All three species are listed as Endangered in the State of Maryland. In 2009, the Coastal Bays were recognized as an Important Bird Area (Maryland Coastal Bays IBA) by Audubon because of their populations of terns, skimmers, and other colonial waterbirds.

Wading birds

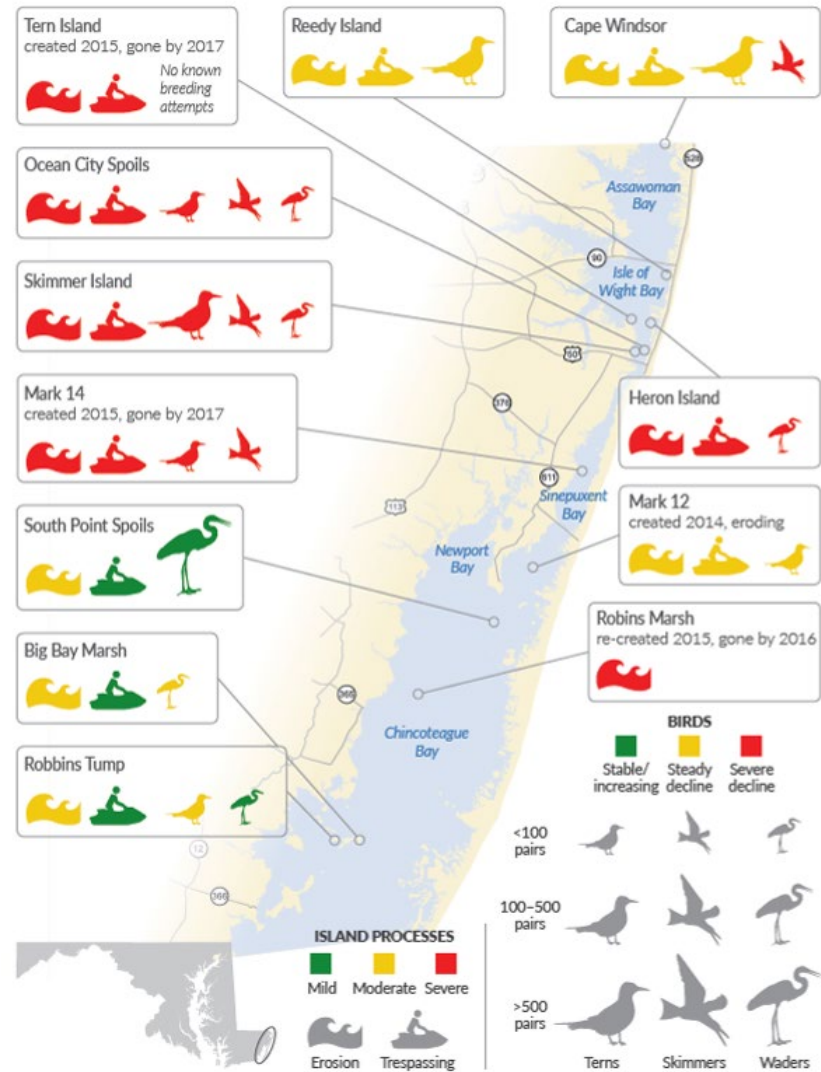
Skimmers and terns aren't the only struggling species in the Coastal Bays. A large suite of wading birds also only use islands in the Coastal Bays to breed. These include Snowy Egrets, Cattle Egrets, Little Blue Herons, Tricolored Herons, Great Egrets, Black-crowned Night herons, and Glossy Ibis. Like skimmers and terns, these species suffer from island disturbance, erosion, and sea level rise. As a result of these factors, more than 95% of all wading birds in the Coastal Bays now breed on just one island, South Point Spoils. This report includes information on their current status.



Wading Heron

Monitoring

Waterbird populations have been monitored in the Coastal Bays since 1985, coordinated by Maryland Department of Natural Resources (DNR), and assisted by Assateague Island National Seashore (AINS), the Maryland Coastal Bays Program (MCBP), and public volunteers. The DNR Colonial Waterbird Survey coordinates a complete statewide census of breeding terns, gulls, skimmers, pelicans, cormorants, herons, egrets and ibis every five years. In each intervening year between complete censuses, a partial census is carried out to keep track of rare, threatened, and endangered species and other species of special interest.



Maryland's first floating nesting platform

Challenges

1. Selecting a Location

- Lower wave energy environment
- Avoid human disturbance
- Avoid predation
- Reduce potential permitting complications

2. Permitting

- Joint Evaluation meeting – 28 September 2020
- Requested early April issuance (~15 April launch)
- Permit issued 3 May 2021

Partners: Md DNR

Md Coastal Bays Program



Launch Day
May 4, 2021



Chick and Adult Banding



2022 – an expanded raft (48ft x 48ft)



2022 - a successful year



155 nests

181 Chicks Hatched

Maryland's disappearing salt marshes



What's so important about tidal marshes?

Irreplaceable ecosystem services:

- Nursery for commercial fisheries.
- Buffer against storm surge.
- Driver of ecotourism industry.
- Filter of nutrient pollutants.
- Huge store of sediment and “blue carbon”.
- Unique biodiversity.



Blackwater NWR

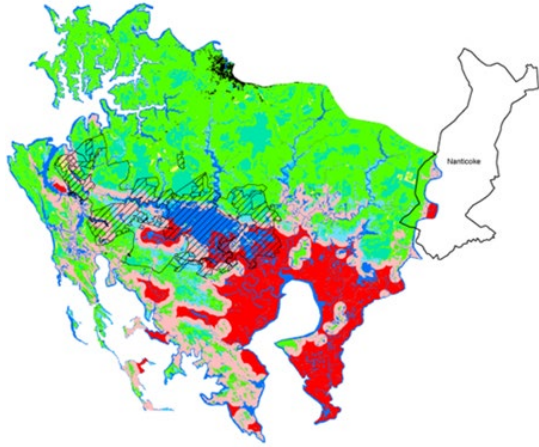


Saltmarsh Sparrow

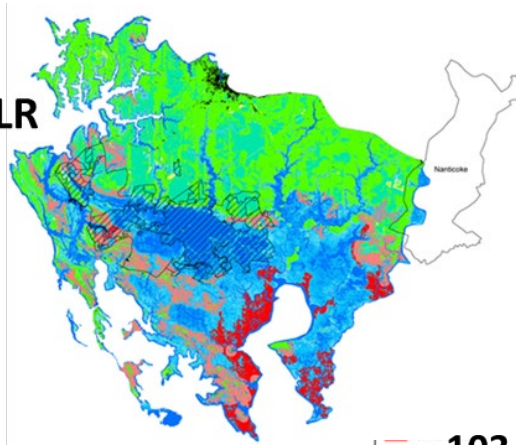
Dorchester County - Climate Impact Assessment

Mapping marsh loss and migration

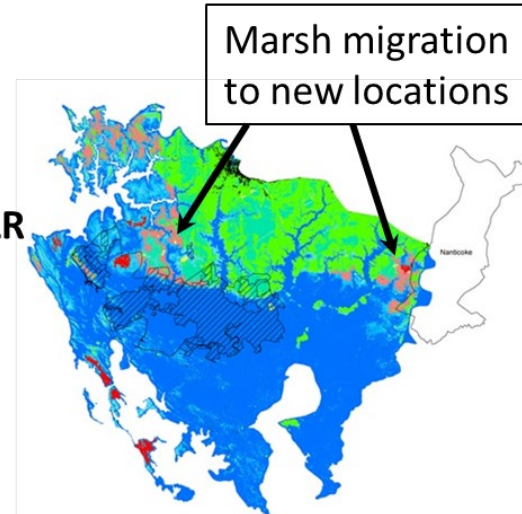
Current condition



42 cm SLR
(2050)



103 cm SLR
(2100)





Blackwater 2100

Thin-layer Placement (TLP) at Blackwater NWR, 2016

Design

- 26,000CY sediment spread over 35-40 acres.
- Target elevation based on optimal growth elevation for salt hay -20-30 cm NAVD88 (Kirwan and Guntenspergen 2012).
- 200,000 plugs of salt hay (*Spartina patens*) planted.

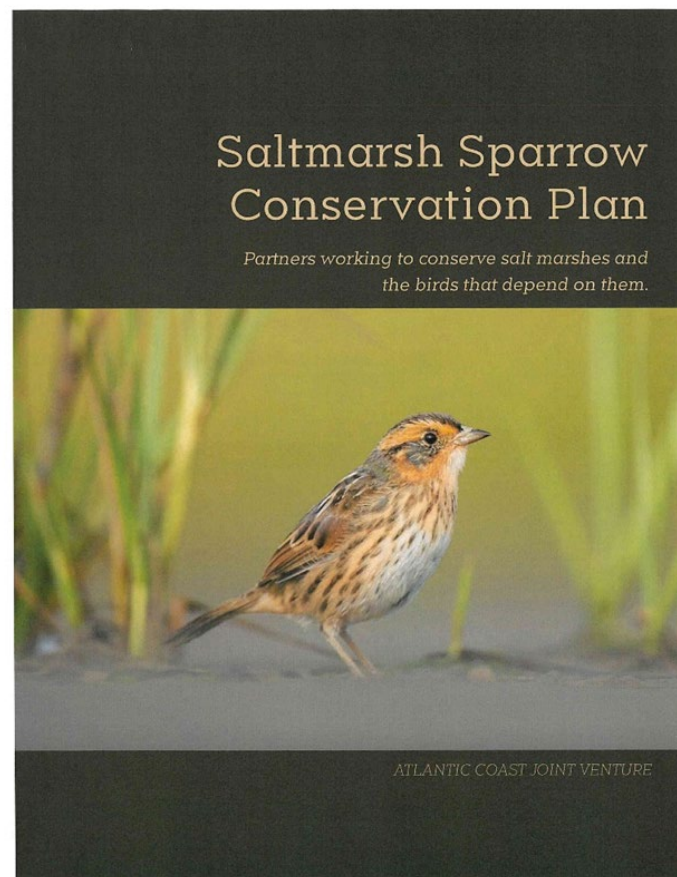
THE CONSERVATION FUND



A Restoration Plan for Maryland

Delmarva Restoration & Conservation Network Salt Marsh Restoration & Resilience Plan

- DRCN – Coalition of 40 partner groups, convened by USFWS.
- Salt marsh plan based on Atlantic Coast Joint Venture's (ACJV) Saltmarsh Sparrow Conservation Plan.
- Prioritize top 25,000 acres of high tidal marsh for long-term maintenance (spatial analysis).
- Assign restoration prescriptions → sequenced pipeline of projects.
- Engage local communities with public consultations and landowner outreach.





Thank you!

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