Chesapeake Bay Program
Science. Restoration. Partnership.

Black Duck Outcome

Management Strategy

2015–2025, v.1

I. Introduction

The American black duck has been called the “gold standard” of eastern waterfowl. Historically, the black duck was the most abundant dabbling duck in eastern North America and comprised the largest portion of the region’s waterfowl harvest. Despite its importance to hunters and outdoor enthusiasts, the continental black duck population declined by more than 50 percent between the 1950s and 80s. Scientists believe this is due to loss of food and habitat associated with changing land use. The mid-Atlantic region, which includes the Chesapeake Bay watershed, supports the largest portion of eastern North America’s wintering black duck population, and preserving habitat here is critical to the long-term sustainability of the species. Black ducks are subjected to a variety of stressors during their annual lifecycle, many of which are beyond control of managers in the watershed. However, managers strive to provide enough food for ducks using the Atlantic Flyway during the winter months to support the Chesapeake’s historical proportion of the continental population goal set by the North American Waterfowl Management Plan (NAWMP). As an important indicator species, restoration of habitat for black ducks will also benefit other waterfowl which winter in the Bay region.

II. Goal, Outcome and Baseline

This management strategy for the Chesapeake Bay Watershed Agreement identifies approaches for achieving the following goal and outcome:

Vital Habitats Goal

Restore, enhance and protect a network of land and water habitats to support fish and wildlife, and to afford other public benefits, including water quality, recreational uses and scenic value across the watershed.

Black Duck

By 2025, restore, enhance and preserve wetland habitats that support a wintering population of 100,000 black ducks, a species representative of the health of tidal marshes across the watershed. Refine population targets through 2025 based on best available science.

This black duck management strategy aims to provide guidance to state and federal agencies, local governments, nongovernmental organizations (NGOs), and any group managing land and resources within the watershed to ensure that actions taken will benefit habitat outcomes for the American black duck as set forth by the Watershed Agreement.

Objectives:

- Adequate wintering habitat for 100,000 black ducks
- Estimate breeding habitat management opportunities in areas where breeding has occurred historically and where it is known to occur currently
- Ample foraging habitat for black ducks and connectivity across landscape
- Limit human development/habitat fragmentation adjacent to important black duck wintering areas because research suggests human development (i.e., buildings and structures) reduces habitat quality for black ducks

Baseline and Current Condition

The target is based on a NAWMP *continental* breeding population goal of 640,000 black ducks. The goal, most recently revised in 2004, is based on 1990 population estimates for this species. The core of the black duck population winters in the mid-Atlantic region, and biologists have agreed that achieving the goal of having enough habitat in the right places to support 100,000 wintering black ducks in the watershed will contribute significantly to the larger continental goal and thus facilitate the removal of black ducks from the Birds of Management Concern (BMC) list. Current data shows available energy and demand estimates for Maryland and Virginia and those estimates indicate that there is sufficient food to support 100,000 black ducks. However, that does not account for competition and assumes all food is available and used by black ducks. Management recommendations should emphasize slowing the rate of loss into the future, and consider sea level rise and other factors that will affect available black duck habitat as well as use and accessibility of that habitat.

Black duck numbers in the watershed are estimated annually as part of the Mid-winter Waterfowl Surveys conducted by teams of pilots and biologists from the U.S. Fish and Wildlife Service and state natural resource agencies. The number of wintering ducks is dependent on sufficient food resources like

vegetation, tubers and bivalves. Protecting, restoring and improving the ability of Chesapeake marshes to support wintering ducks, especially tidal marshes, are important actions to help achieve the black duck population goal.

Mid-winter Waterfowl Survey results:

- 2007-2009: 37,158 black ducks
- 2009-2011: 47,269 black ducks

The USFWS Atlantic Flyway Office, in collaboration with the Atlantic Flyway Council, ACJV, and BDJV, are revising the Mid-winter Survey to provide statistically defensible estimates of the abundance and distribution of wintering waterfowl, including black ducks. The revised protocol is expected to provide more accurate estimates of black ducks and will be incorporated into decision frameworks developed by the BDJV and ACJV to inform population and habitat management.

III. Participating Partners

Team Lead: Vital Habitats Goal Team

Workgroup Lead: Black Duck Action Team

Opportunities for Cross-Goal Team Collaboration:

- Wetlands Workgroup
- Stream Health Workgroup
- Submerged Aquatic Vegetation Workgroup

Participating Partners **(Signatory Agencies in Bold)**

Level of Participation: High (actively involved in drafting the management strategy)

- U.S. Fish and Wildlife Service (USFWS)
  - Black Duck Joint Venture (BDJV)
  - Atlantic Coast Joint Venture (ACJV)
- **State of Maryland**
  - Maryland Department of Natural Resources (MD DNR)
- **State of Delaware**
  - Delaware Department of Natural Resources and Environmental Control - Division of Fish and Wildlife (DE DNR)
  - University of Delaware
- **Commonwealth of Virginia**
  - Virginia Department of Game and Inland Fisheries (DGIF)
  - Virginia Institute of Marine Science (VIMS)
- **U.S. Environmental Protection Agency (EPA)**
- U.S. Geological Survey (USGS)
- Alliance for the Chesapeake Bay (ACB): Local Government Advisory Committee (LGAC)

- **District of Columbia (DC)**
  - District Department of the Environment (DDOE)
- Ducks Unlimited (DU)
- University of Massachusetts
  - Northeast Climate Science Center, Landscape Ecology Lab, Department of Environmental Conservation

Level of Participation: Medium (actively involved in reviewing the draft documents)

- **Chesapeake Bay Commission (CBC)**

Likely Participating Federal Partners:

- U.S. Army Corps of Engineers (USACE)
- Natural Resources Conservation Service (NRCS)

Local Engagement

Local government has a direct role in achieving the black duck outcome. Specifically, local officials' decisions about land use, which are reflected in both planning and permitting, will impact the availability of habitat and food sources for migratory and nesting black ducks. Many of the activities that might be contemplated for black ducks, including creation of nesting islands, building impoundments, or other work in freshwater wetlands or salt marsh would require permitting and in many cases obtaining the necessary permits could be challenging. It is recommended that conservation organizations, local governments and other resource agencies and permitting authorities work collaboratively in order to plan and develop the types of habitats needed to meet black duck resource needs. In addition, local governments may assist in achieving this outcome by adopting regulations that affect the ability and efficiency of habitat conservation for black ducks or assisting in any of the activities listed in the management approach below.

Local governments, watershed associations, nonprofits or anyone working in the watershed should be aware of encroaching land use and where potential development intersects with known migration pathways or priority wintering or breeding habitat for black ducks. They can incorporate this knowledge into landscape-scale planning efforts to increase conservation prospects for those landscapes. This knowledge can also be used in public outreach activities and communications to increase awareness and public interest.

IV. Factors Influencing Success

Many factors, with wide-ranging levels of importance and management potential, influence the attainment of the black duck goals.

> Black ducks use a wide variety of habitat types throughout the Chesapeake Bay watershed. Slightly different habitat characteristics are needed for breeding (nesting and brood-rearing), migrating through, or wintering. Nesting can occur in upland areas or in lowland salt marsh habitats. After hatching, female black ducks typically lead their broods a considerable distance away from the nest and into marsh areas with appropriate cover from predators and weather and with adequate food

resources nearby. Duckling survival is greatest when using interior rather than tidal habitats, likely due to increased predator numbers in tidal marshes. During migration, black ducks have greater flexibility than breeding birds with regard to their resource needs. They need adequate cover in the form of emergent, forested, or scrub/shrub wetlands. Their feeding needs can be met by resources found in a variety of wetland types, but whether they are breeding, migrating or wintering, black ducks prefer undisturbed habitat and are rarely found near human developments. Black duck wintering habitat characteristics typically include large bodies of open water, ample food resources, little to no disturbance and cover for protection from severe weather.

A number of factors have affected the black duck population within the watershed. While they are all important, the factors below are listed in rank order from most to least critical.

Factors Influencing Ability to Meet Goal:

1. Habitat loss, degradation and fragmentation
2. Food availability - affected by competition and proximity to disturbance (i.e., developed lands)
3. Shoreline disturbance (dredging, marina/housing development)
4. Invasive species
5. Climate impacts
   - Sea level rise
   - Flooding (habitat availability)
   - Salt marsh migration/salinity changes
   - Large storm events
   - Migration pattern and/or wintering range shift
6. Habitat loss and fragmentation at other ends of the Atlantic Flyway population's range

Human System Factors:

1. Adequate financial resources (administration and incentives)
2. Effective policy in place for achieving goals
3. Sufficient knowledge about black duck habitat needs
4. Permitting issues (permits are required for any action that may impact the land, which could affect availability of habitat and food sources for black ducks)
5. Adequate extension infrastructure (outreach and technical assistance)

V. Current Efforts and Gaps

Bay States and the District of Columbia

All states in the watershed have identified the black duck as a "Species of Greatest Conservation Need" as part of their State Wildlife Action Plans (SWAPs). Each jurisdiction estimates black duck (and other waterfowl) populations using the Mid-winter Waterfowl Survey.

The Maryland Department of Natural Resources uses the ACJV strategic plan for specific management guidance, and their actions currently involve conserving and restoring black duck habitat—primarily wintering and some breeding. The Delaware SWAP is currently under revision, and black ducks will be a

high-priority species. The District of Columbia has confirmed that black ducks will be identified as a high priority species in their wildlife action plan, currently being drafted and due in April 2015. Limited resources in the District will restrict the potential for a large wintering population or a small regular breeding population of black ducks in the foreseeable future. Climate change is also a concern and may impact or eliminate black duck habitat in the District in 25 to 50 years. Management actions in the District include: SAV restoration; limiting disturbance during wintering and breeding seasons; stormwater runoff and erosion controls around wetlands; trapping predator species such as red fox, feral cats and dogs; replanting mudflats with forage; and nonmigratory goose management.

DU is working on migratory waterfowl conservation throughout the watershed. Their priority areas are in Virginia, Maryland, Delaware and a small portion of Pennsylvania and are closely aligned with the NAWMP priorities. Their efforts focus on habitat conservation of areas utilized by black ducks and other migratory waterfowl. A regional action plan that lays out number of acres to target is in place. DU is also partnering with and supporting various academic institutes to complete research projects in the region, some of which directly relate to black ducks and their habitat in the Chesapeake Bay.

Regional Plans

The NAWMP was created in 1986 by the waterfowl management community and through its revisions (2012 was the most recent) has become a model for international conservation using a scientific approach to waterfowl habitat restoration and protection. The NAWMP is signed by the Secretary of Interior, the Minister of the Environment of Canada and the Secretary of the Environment and Natural Resources of Mexico.

The ACJV, one of 14 habitat joint ventures throughout the United States, brings public and private partners together to coordinate and improve the effectiveness of native bird habitat conservation throughout the Atlantic Flyway. The ACJV goal for waterfowl is to “Protect and manage priority wetland habitats for migration, wintering, and production of waterfowl, with special consideration to black ducks, and to benefit other wildlife in the joint venture area.”

The USFWS Black Duck Joint Venture (BDJV) is involved in many facets of population monitoring and research to support the conservation of the American black duck. Current efforts include six ongoing research projects designed to understand what factors determine carrying capacity during the nonbreeding season. The BDJV, in partnership with the Canadian Wildlife Service (CWS), USFWS National Refuge System and state and provincial agencies in the Atlantic and Mississippi Flyways, is conducting a two-season banding program to obtain estimates of winter-summer survival to investigate the influence of winter habitat and conditions on population dynamics. The BDJV, with the ACJV, is developing a decision framework to determine how much habitat is needed and where to achieve the population goal of the NAWMP. The BDJV continues to provide technical support for the maintenance and implementation of the International Black Duck Harvest Management strategy.

The Black Duck Adaptive Harvest Management Working Group (HMWG) and the Black Duck International Management Group (Management Group), formed in 2000 and 2008 respectively, include federal, provincial and state partners in the Atlantic and Mississippi Flyways of the United States and Canada. HMWG provides technical advice to the Management Group, which is responsible for developing an international black duck harvest management strategy to ensure that hunting regulations

in the United States and Canada are maintained and enforced to promote healthy populations of black ducks and other waterfowl.

Bird Conservation Regions

Bird Conservation Regions (BCRs) are ecologically distinct regions that encompass landscapes having similar bird communities, habitats and resource issues. BCRs have management plans that prioritize conservation actions specific to the ecosystem within that region. BCR 29 and 30—the Piedmont and the New England/Mid-Atlantic Coast Bird Conservation Regions, respectively—cover the Chesapeake Bay watershed.

The Piedmont Bird Conservation Region (BCR 29) lists the black duck as a high priority species in their management plan. To determine priority level, bird groups were ranked based on BCR-specific information originated in the bird initiatives, SWAPs and other valuation factors such as the population and threat level within that region.

The New England/Mid-Atlantic Coast Bird Conservation Region (BCR 30) designates black ducks as 'highest' priority within the BCR. Current efforts in this BCR include delineating and defining geographic focus areas for priority species, estimating populations and habitat goals, identifying monitoring and research needs for priority birds and their habitats, building communication with partners and stakeholders and linking bird conservation efforts.

National Wildlife Refuge System Waterfowl Planning

Federal Science agencies (USGS and FWS) are working with the BDJV, the ACJV and state and local partners to quantify and model the relationship between prey dispersion and availability found on five habitat types (high marsh, low marsh, mudflat, SAV, and freshwater) key to wintering black ducks, and the physiology and energetics of the duck to determine carrying capacity of habitat types in the watershed for wintering black ducks. The initial focus is on FWS refuges near the Bay.

All USFWS Refuges are required to use the latest science and public participation to develop a Comprehensive Conservation Plan (CCP) to ensure that management actions fulfill the overall refuge mission. Actions detailed in each CCP support SWAPs and improve habitat conditions for wildlife.

Most, if not all, of the CCPs of the USFWS Refuges within the watershed prioritize black duck habitat management. Examples include Chincoteague and Wallops Island Refuges, Chesapeake Marshlands NWR Complex (includes Blackwater, Glenn Martin and Susquehanna National Wildlife Refuges), Eastern Neck NWR, Eastern Shore of Virginia/Fisherman Island Refuges, Potomac River National Wildlife Refuge Complex, James River NWR, Great Dismal Swamp Refuge Complex (the Nansemond Refuge is entirely within the Chesapeake Bay watershed), Patuxent Research Refuge and the Occoquan Bay NWR.

Some of the black duck habitats mentioned in the CCPs include salt marsh, fresh/brackish emergent wetland, beach/dune habitat, managed waterfowl impoundments, palustrine emergent forests and SAV beds, barrier and bay islands, croplands, moist soil units (low-lying, wet, nonforested areas where water is seasonally impounded), and green tree reservoirs (lowland forests that are seasonally flooded to attract waterfowl). One CCP also mentions studying the efficacy of artificial nest structures for black ducks.

Current Funding Availability

Current funding assistance for work related to conservation actions that could benefit black ducks within the watershed include the National Fish and Wildlife Foundation - Chesapeake Bay Stewardship Fund, the USFWS North American Wetlands Conservation Act (NAWCA) grant programs, the USFWS National Coastal Wetlands Grants, the USFWS Partners for Fish and Wildlife Program grants and cooperative agreements and Natural Resources Conservation Service (NRCS) Farm Bill incentives. Past efforts using these funding sources include habitat protection and restoration on refuges as well as private lands. For example, more than 167,000 total acres have been affected (via restoration, enhancement or protection) by NAWCA grants in the watershed (Figure 1).

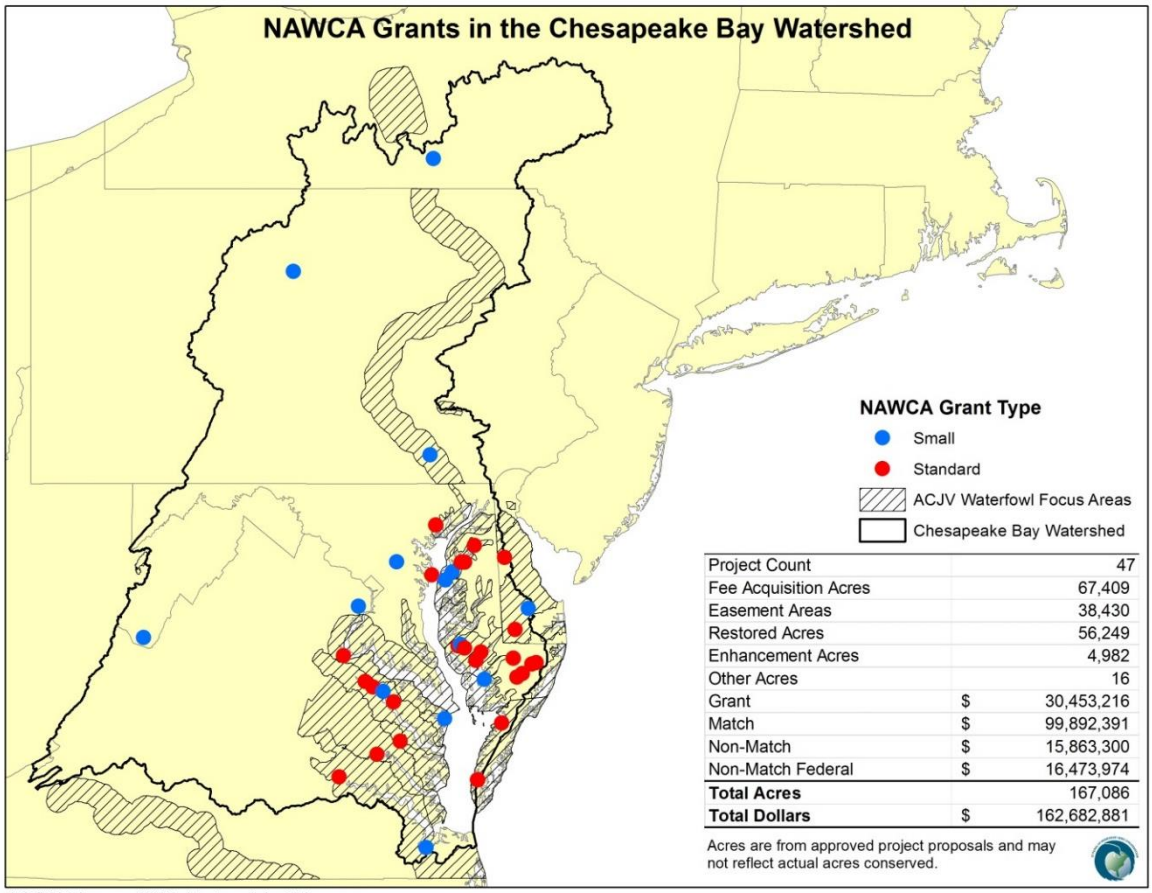

Figure 1. NAWCA Grants in the Chesapeake Bay Watershed

Gaps in Black Duck Management Strategy

- New York, West Virginia and Pennsylvania—there is currently no representation from these states on the drafting team.
- Reliable sea level rise information
- Breeding survey data analysis
- Analysis of competition from waterfowl species on food available for black ducks and implications for restoration.

Actions, Tools or Technical Support Needed at the Local Level

Maps showing vulnerability to development, sea level rise (from ~ 25 years up to 100 years), black duck food availability and a public lands layer may be useful to enable states, local governments, conservation groups and other groups working in the watershed to prioritize and optimize actions benefiting black ducks (Figures 1 and 2). Such maps show 'hot spots' where suitable black duck foraging habitat may overlap with decreased vulnerability to development and less susceptibility to sea level rise, for example. These maps could then be overlayed with priority areas identified to meet other outcomes, such as the SAV, wetlands and land conservation outcomes, to maximize the benefits of management approaches; this will be a focus of the biennial workplan for black duck habitat.

VI. Management Approaches

The partnership will work together to carry out the following actions and strategies to achieve the black duck outcome. These approaches seek to address the factors affecting the ability to meet the goal and the gaps identified above.

The black duck outcome specifies that efforts of the strategy should be focused on *habitat*; therefore, wintering (resting/feeding, e.g. coastal salt marsh) and breeding (nesting/rearing, e.g. boreal forest) locations should be targeted to ensure vital habitat availability for black ducks within the watershed. Science partners (BDJV, ACJV and USGS) will work to improve information needed for decision-making toward habitat restoration, enhancement, and protection. Efforts will include the use of land-change models and projections of sea-level rise to forecast potential loss of black duck habitats. Researchers and managers have discovered that wetland patch size is important (bigger is better for patch size), connectivity should be prioritized, and accessibility to forested and other wetland habitats and submerged aquatic vegetation (SAV) beds are key elements for black duck success in the watershed. It is also important to recognize that actions occurring outside of the watershed, while impactful to the species, are separate from the ability of managers to restore, enhance and preserve wetland habitats available to black ducks in this region.

The conservation actions listed below, if conducted in key black duck habitats, while also taking other limiting factors into consideration, will make the most significant impact on the ability to provide adequate wintering, and to some extent breeding, habitat for this far-ranging species. Additionally, these actions should benefit other waterfowl which utilize these habitats.

Habitat Restoration

Restoring degraded wetlands or vegetation in areas where black ducks have historically bred or wintered would be beneficial to the black duck outcome. In addition, tidal wetland hydrology restoration, riparian restoration of key land parcels on breeding grounds, migration routes and wintering grounds are just a few examples of the types of restoration activities that land managers and conservation partners could consider in an effort to achieve the black duck outcome.

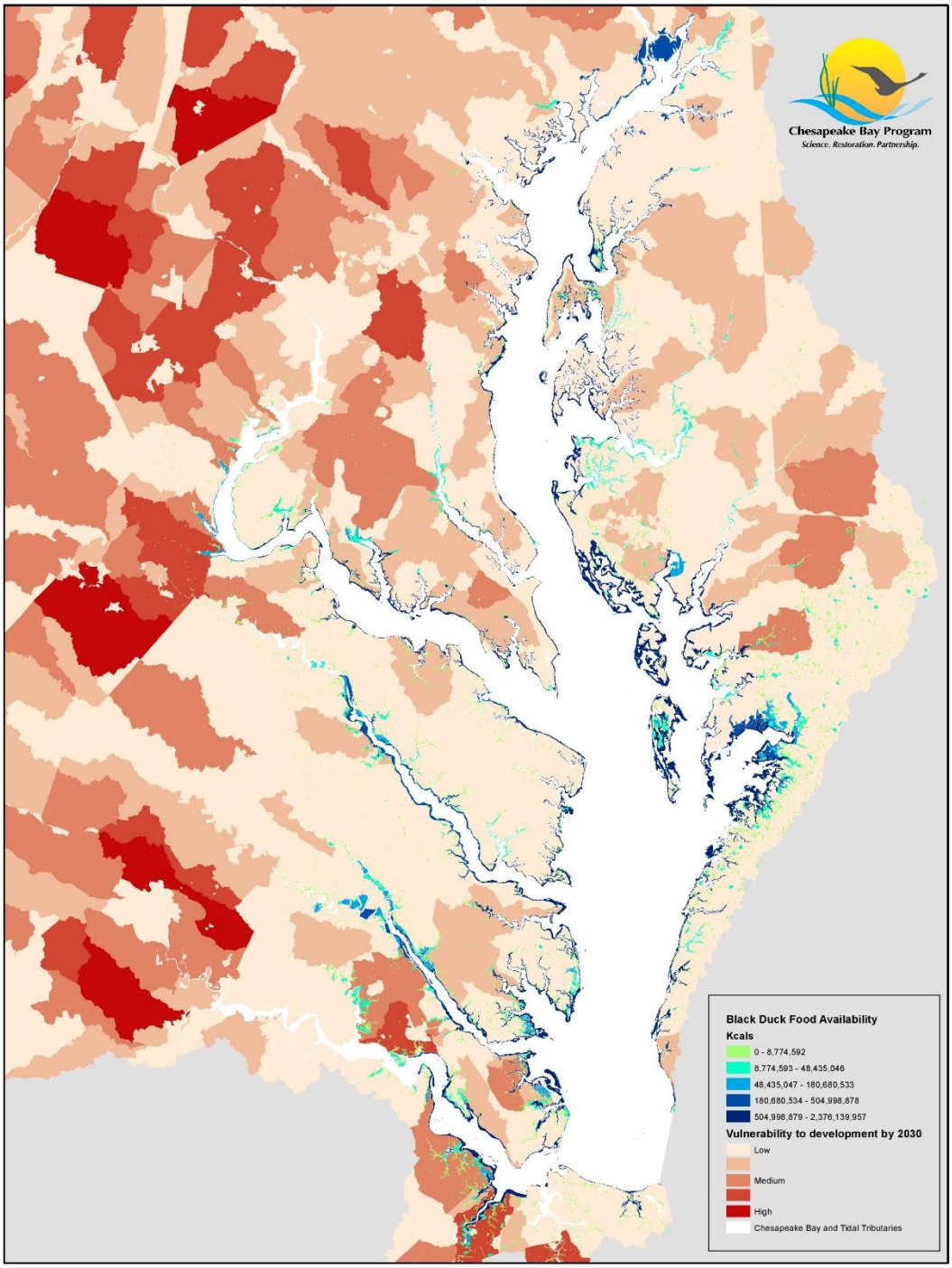

Figure 2. Black Duck Food Availability/Vulnerability to Development by 2030

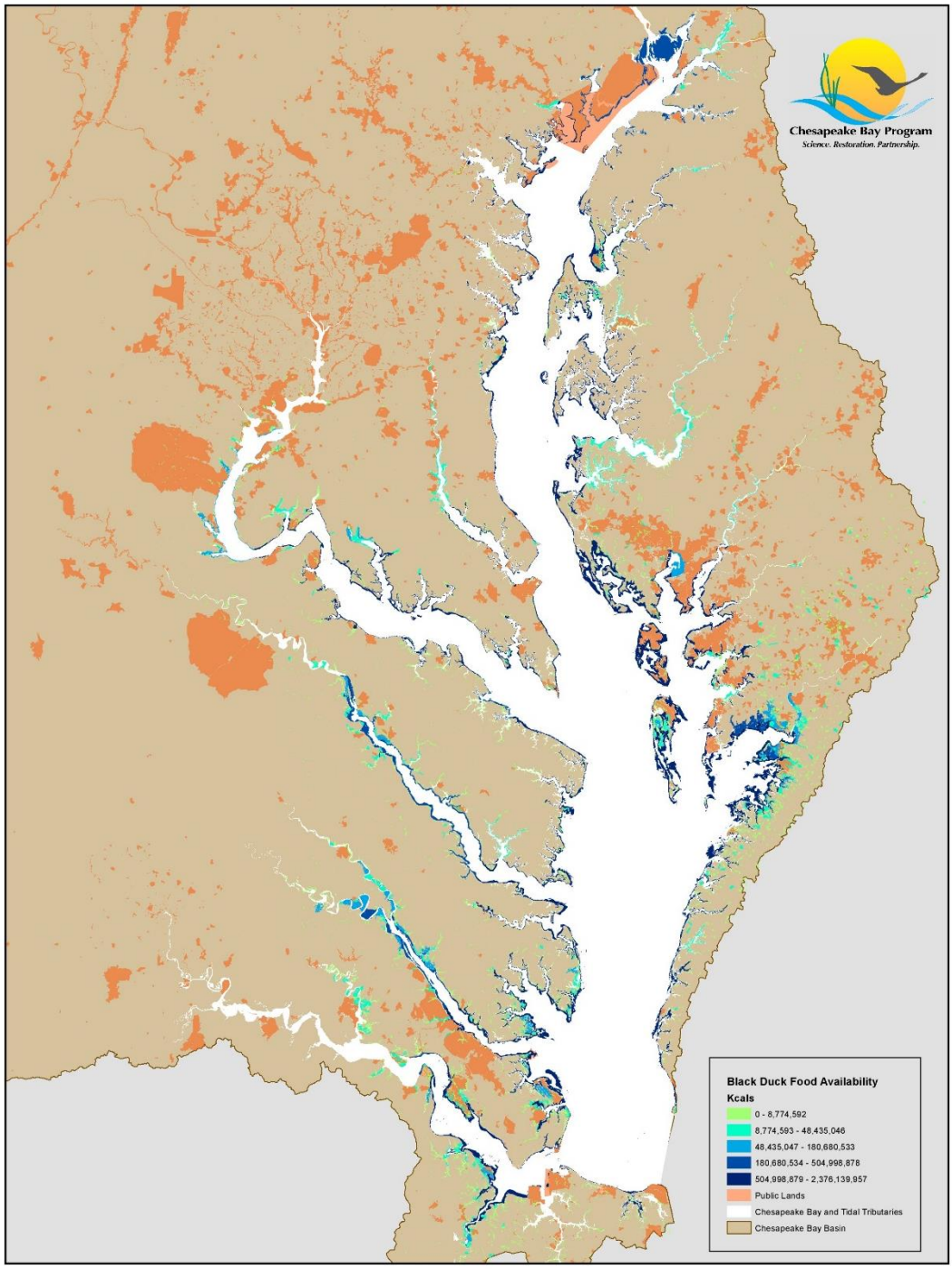

Figure 3. Black Duck Food Availability

Habitat Enhancement and Management

Black duck habitat enhancement and management activities may include improving water level management on managed wetlands (replacing compromised water control structures, leaking levees, etc. to improve management capability), restoring SAV or converted wetlands, open marsh management (to restore non-tidal waters back to salt marsh, for example), restoring and managing riparian buffers, beaver management, controlling exotic and invasive species, prescribed burning, or implementing farm bill conservation programs.

Habitat Protection

Protection actions such as fee title acquisition, conservation easements, cooperative agreements, leases and financial incentives should be implemented in areas with adequate habitat and ideal circumstances for protection. In order to leverage existing protection while also increasing buffering from climate impacts, protecting land adjacent to national wildlife refuges or other public lands may be beneficial.

Other Conservation Actions Benefiting Waterfowl Habitat

In addition to habitat restoration, enhancement, management and protection, the following actions could have a direct or indirect impact on ensuring adequate black duck habitat in the watershed: review regulatory legislation and enforcement, streamline regulation (to ensure policies to control harvest methods and seasons are in place and implemented in the most efficient way possible), mitigation, information/education, extension education on best management practices, simplify/streamline permitting processes, public use management, watershed protection and management, managing competition and hybridization (with other waterfowl, particularly mallards), and predator management (especially on Bay islands).

Management and control of nest predators during the breeding season is also important, especially mammalian predators such as raccoon and fox. These predators can be detrimental to ground-nesting birds especially on offshore nesting islands. This includes black ducks but also colonial bird nesting colonies such as terns, skimmers, gulls, herons and egrets; and threatened and endangered species such as piping and Wilson's plovers, oystercatchers, brown pelicans and others. Due to the lack of natural controls on these predators, without active predator management, these bird species would have little chance of breeding successfully.

Choosing Appropriate Sites

When choosing sites for restoration, enhancement or protection activities, partners and conservation managers should explore areas where dense populations of black duck populations are known to (and historically) occur and where food availability is high, but the risk to habitat loss due to sea level rise and/or land conversion due to urban development or other activities. A few possibilities include the Chester River, Fishing Bay and Patuxent River. For example, in the Chester River area there are large farms which have not been subdivided and where shoreline development is low; the Fishing Bay area has large amounts of public-owned and protected salt marshes with low disturbance and very little concern regarding encroaching development; and the Patuxent River may have excellent opportunities for coastal marsh system protection in close proximity to forested wetlands. Sea level rise and lack of inland tidal wetland migration could hinder efforts in a variety of these areas, however, and must be considered in planning.

VII. Monitoring Progress

All jurisdictions within the watershed conduct the Mid-winter Waterfowl Survey to determine population estimates. The results of these surveys will be indices of the extent of black duck (and other waterfowl) use of the available habitat. Continuation of this survey depends on collaboration among partners across the watershed and throughout the black duck range. Adequate funding for each jurisdiction to participate in the surveys will also be an important factor for monitoring black duck use of the available habitat within the watershed. Harvest data also provide population information.

Because the black duck outcome specifically states habitat for 100,000 black ducks should be made available, one way to measure this may be in acres of wintering and breeding black duck habitat restored, enhanced or protected in the watershed each year. In order to track acres restored, enhanced or protected, representatives from all jurisdictions assemble all state, federal and nongovernmental wetland conservation accomplishments for the given time period (each year). Further guidance on tracking conservation actions will be provided in the biennial work plan.

VIII. Assessing Progress

The progress will be assessed using the Mid-winter Waterfowl Survey results and by tracking the number of acres of black duck habitat restored, enhanced or protected in each state. Both of these will be collected and evaluated on an annual basis. Further guidance on assessing progress will be provided in the biennial work plan.

IX. Adaptively Managing

As the landscape changes with implementation of the restoration, enhancement and protection actions described above, and as climate change and land use activities impact the available habitat, it will be necessary to rerun the habitat and food availability maps to determine where the priority areas are within the watershed and assess if there have been shifts in those priority areas. Conservation managers will determine what is needed by way of research to better inform the adaptive management cycle, such as which habitat management effort provides the highest quality habitat for black ducks and whether the available resources and actions completed will support 100,000 black ducks. Annual surveys (Mid-winter Waterfowl Survey, etc.) will provide data to assess whether or not black ducks are using the newly restored, enhanced or protected areas and will also provide information about whether or not habitat to support 100,000 black ducks can be achieved by 2025.

X. Biennial Workplan

Biennial workplans for each management strategy will be developed by April 2016. They will include the following information:

- Each key action
- Timeline for the action
- Expected outcome

- Partners responsible for each action
- Estimated resources