

A Sustainable Chesapeake

BETTER MODELS FOR CONSERVATION

Edited by David G. Burke and Joel E. Dunn

THE CONSERVATION FUND



The case study you have downloaded is highlighted below. Other case studies from this Chapter of *A Sustainable Chesapeake: Better Models for Conservation* can be individually downloaded. The editors encourage readers to explore the entire Chapter to understand the context and sustainability principles involved with this and other featured case studies. The full publication contains 6 Chapters in total: Climate Change Solutions, Stream Restoration, Green Infrastructure, Incentive Driven Conservation, Watershed Protection and Stewardship.

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USDA Conservation Programs

Improving Water Quality and Wildlife Habitat on Maryland's Eastern Shore

Duvall Farm serves as a model for small farm operators and large-lot residential estate owners who can use the U.S. Department of Agriculture's (USDA) conservation programs to create a more diversified model of land management that improves local water quality and results in aesthetically pleasing landscapes supportive of Eastern Shore waterfowl populations and wildlife.

The 490-acre farm sits amidst a picturesque setting on Maryland's Eastern Shore, a short distance south of Easton and adjacent the headwaters of Trippe Creek off the Tred Avon River. At Duvall Farm, owners Chip and Sarah Akridge, their wildlife/farm manager Clay Robinson, and conservation construction contractor Daniel Kramer of Sweetbay Watershed Conservation have literally sculpted the landscape to create a sanctuary for wildlife alongside of income-producing farmland.

From the outset, the plans for Duvall Farm incorporated management practices that would enhance water quality and limit nutrient and sediment pollution from entering Trippe Creek. The farm has become a show place for on-the-ground implementation of the USDA's Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP), and the Wildlife Habitat Incentives Program (WHIP).

Beginning in early 2004, the Akridges worked with the Natural Resources Conservation Service (NRCS) and other cooperating agencies to

develop design plans and conservation contracts for their property. In 2005, they completed installation of wetlands, vegetative buffer systems, shallow water areas, and other conservation practices in accordance with the plans.

In the past, the Akridges and their support team implemented conservation practices that benefited water quality and wildlife on several other properties that they own. Their methods showed steady improvement as the installations matured and the team learned from their positive attributes and shortcomings. In consultation with experts from both government and private organizations, the owners were now in a position to fine-tune their efforts to produce the best possible results. Both the Akridges and their farm manager hope that the learning curve they have experienced will allow others to "short-cut" through a web of potential pitfalls and get things right the first time.

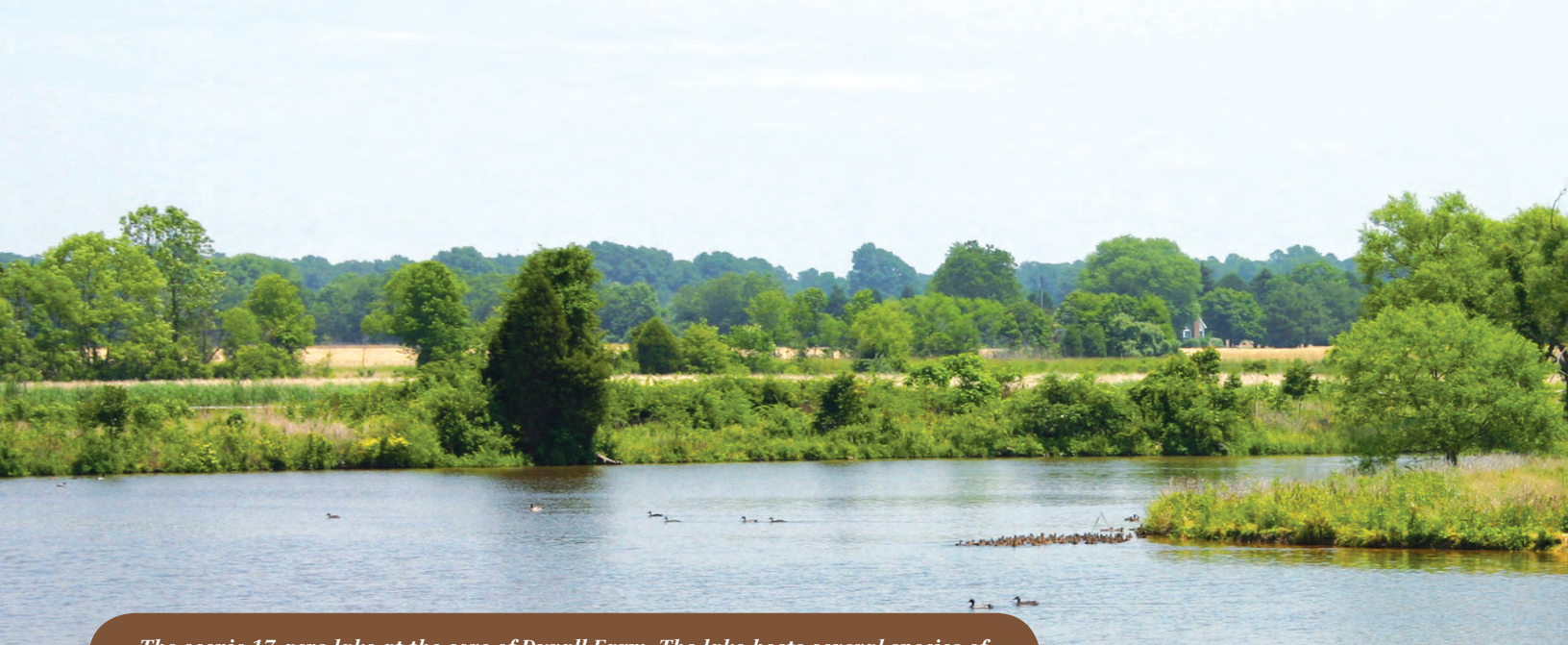
RESOURCE MANAGEMENT CHALLENGE

Duvall Farm started out with virtually no habitat for wildlife—particularly

waterfowl and upland bird habitat or the necessary aquatic regimes to host fish, turtles, and amphibians. Measures to protect water quality were limited or altogether lacking, and existing farm runoff was not processed through natural buffer systems or other means to allow groundwater infiltration. Extensive grading was required to create the conditions needed to retain surface water runoff and to avoid both the erosion and colonization of the newly created areas by invasive or undesirable plant species. All of this had to be accomplished within USDA guidelines that narrowed, to some extent, the range of options available to the owners for other farm and recreational operations.

CONSERVATION VISION

The Akridges' vision for Duvall Farm is to create and restore wildlife habitat and improve water quality, while maintaining productive agricultural lands. Chip Akridge acknowledges the tremendous help available to achieve his vision through the USDA's CRP and CREP programs noting that "... with careful design, these programs can recreate the natural



The scenic 17-acre lake at the core of Duvall Farm. The lake hosts several species of waterfowl that move freely between this water body and nearby impoundments.

habitat which was historically present in the area which will:

- ▶ Provide suitable habitat for the re-establishment and growth of vanished and existing wildlife species, including song birds, game birds, waterfowl, and upland game;
- ▶ Improve the quality of runoff into the Chesapeake Bay by minimizing the use of fertilizers, pesticides, and herbicides and by reducing erosion; and
- ▶ Replace suburban-type residential development sprawl with open space for the community at large to view and enjoy.”

Any visitor to Duvall Farm quickly surrenders to the aesthetic appeal and soft edges of the property that teem with wildlife. In part, the successful conservation story at Duvall Farm is due to a larger regional vision for the area.

Immediately north of Duvall Farm is a conservation subdivision called Cooke’s Hope at Llandaff (also featured in this publication). Significant wildlife habitat creation projects were instituted at Cooke’s Hope/Llandaff not long after the improvements at Duvall Farm. The management group at Cooke’s Hope/Llandaff

employed the Akridge team to design the wildlife habitat areas to closely resemble those at Duvall and expand the conservation improvements on the adjacent properties.

In conjunction with the habitat/water quality practices developed at Duvall Farm, the synergies of these adjacent parcels were deliberately intended to reinforce each other and introduce a growing regional matrix of private wildlife habitat that could be compared in scale and effectiveness to a publicly owned wildlife refuge.

IMPLEMENTATION RESOURCES

The CRP, CREP, and WHIP were the primary financial resources used to pay for the practices installed at Duvall Farm. CREP was the best fit for the owners—with cost-share amounts ranging from 75 to 90% of construction costs and annual rent payments that were comparable to farm rental rates. In addition, the technical support provided by the NRCS, Maryland Department of Natural Resources, and the U.S. Fish and Wildlife Service was very valuable and a requisite to maintaining compliance with the various programs. Without the financing provided for the conservation

THE CONSERVATION RESERVE PROGRAM AND CONSERVATION RESERVE ENHANCEMENT PROGRAM

The purpose of the Conservation Reserve Program (CRP) and the Conservation Reserve Enhancement Program (CREP) is to provide technical and financial assistance to eligible landowners to address soil, water and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The CRP encourages landowners to convert highly erodible cropland and other environmentally sensitive areas to permanent cover, such as introduced native grasses, trees, filter strips, riparian forest buffers, wetlands and shallow water habitats. In Maryland, CREP offers additional incentives to encourage landowners to implement practices that will help reduce sediment and nutrients in the Chesapeake Bay and will improve wildlife habitat.



practices, which affected nearly 35% of the property, the projects would not have been feasible.

Wetland creation and associated grading expenses represented a significant portion of the costs. Wetland construction was typically billed according to the number of yards of soil moved and varied according to fuel costs. Plant materials were relatively inexpensive because most were established from bare root seedlings or seed. Labor charges were modest due to the low level of technical expertise needed to accomplish the planting. Although volunteers were not involved with the initial plantings, the owners have subsequently used Chesapeake Bay Foundation volunteers to plant in new areas and replace original materials that failed after installation. Tree plantings were done by the Maryland State Forest Service; private contractors installed tree tubes for deer protection and drilled warm season grasses and wild flower seeds in the herbaceous portion of the buffers. The conservation treatments involved work on a total of 171 acres.

CONSERVATION STRATEGY

The Akridges and their farm manager were concerned with the accomplishment of two principal objectives:

- ▶ Controlling sediment and nutrient runoff
- ▶ Maximizing their target wildlife species populations

When the project was completed, they wanted to see large numbers of waterfowl and upland birds (both game and non-game species) using the property. The principal mechanism to achieving both objectives was to create new wetlands and restore former wetlands. The owners were well aware of the functional role wetlands could perform in enhancing water quality by capturing sediment and nutrient-laden runoff from their agricultural fields. They also wanted to create a multi-tiered system of buffers with zones of grass, shrubs and/or trees to ensure better filtration of runoff around fields and riparian areas. The wetlands and temporarily flooded fields created ample habitat for waterfowl, and the buffer systems produced the added upland bird habitat they sought.

Wetland Creation Specifics: The wetland creation and restoration work began with extensive soil sampling. The locations selected for artificial wetlands must have soils capable of holding water for at least part of the year. Once the design team identified suitable locations, they configured the wetlands to best meet their goals of attracting waterfowl for viewing and hunting. To take advantage of USDA cost-share programs and the expertise offered by the involved agencies, the owners built their wetlands to comply with USDA criteria. The bulk of their wetland acreage is enrolled in CREP. CREP requires that a significant portion of the wetland be allowed to function within the ebb and flow of natural

hydrological cycles of precipitation and shallow groundwater conditions without altering water levels. These areas provide local ducks and geese with nesting habitat and also furnish habitat for fish, turtles, and amphibians year around.

Wintering, migratory waterfowl benefit most from the food sources produced from annual plants that are flooded in the winter. In order to achieve this scenario, large portions of the impoundments are drained during early spring to promote the growth of seed-bearing annuals such as millets, sedges, and grasses. These areas are re-flooded in the early fall, either artificially or with captured rainfall, to make the food available. The technique creates and maintains permanent and seasonal wetlands in the same location. The seasonal wetlands result from a constructed berm around a portion of the field where runoff is impounded and the water level is raised or lowered through a water control structure. The permanent wetlands are created by excavating deeper areas within the same compound.

Buffer Specifics: All buffers were designed to filter sediment and nutrient runoff, as well as provide upland bird habitat. Generous buffer widths ranging from 120 to 150 feet were created by removing a portion of the existing agricultural field from production and planting it with trees, shrubs, and grasses. All agricultural fields and riparian zones now host buffers initiated through CREP or the CRP. The Quail Buffer (called Conservation Practice #33 or “CP-33” for short) is in the CRP. Robinson noted that CP-33 is the only NRCS practice that can be used to buffer a field strictly for wildlife enhancement. All other practices buffer runoff adjacent to a water feature. Most areas made use of the step-down method, which breaks the buffer into two or three





A created Shallow Water area at Duvall Farm — NRCS conservation practice CP-9.

zones. Trees were planted in the outside zone, nearest existing woods; shrubs were planted in the middle zone; and grasses were planted in the inside zone nearest the agriculture. This triple zone of filtration does a better job of trapping sediment and removing surface and subsurface nutrients. It also establishes a soft edge that is beneficial to wildlife and aesthetically appealing. In some areas where woods are not present or desired, only two zones were used—shrubs and grasses.

Installation and Administrative

Issues: Overall the installation of conservation practices went very smoothly due to several factors. First, the owners retained a knowledgeable and experienced contractor, Dan Kramer with Sweetbay Watershed Conservation, who was well versed in the construction and design requirements of CREP. Second, the owners and farm manager had the ability to incorporate new ideas into the project while it was being designed, such as

the addition of islands and peninsulas in the wetlands.

One tradeoff involved the use of one of the wetland berms as an access road to a structure on the property. CREP does not allow for this type of activity, so a compromise was reached with federal administrators. The portion of the berm that is used as a road was not enrolled in CREP, but the wetland created by the impounded water is in the program. The paper trail requirements of the USDA government cost share programs were time-consuming, but resulted in a significant construction cost savings along with an annual rent payment for those portions of the farm that were converted from agriculture to install the conservation practices.

RESULTS

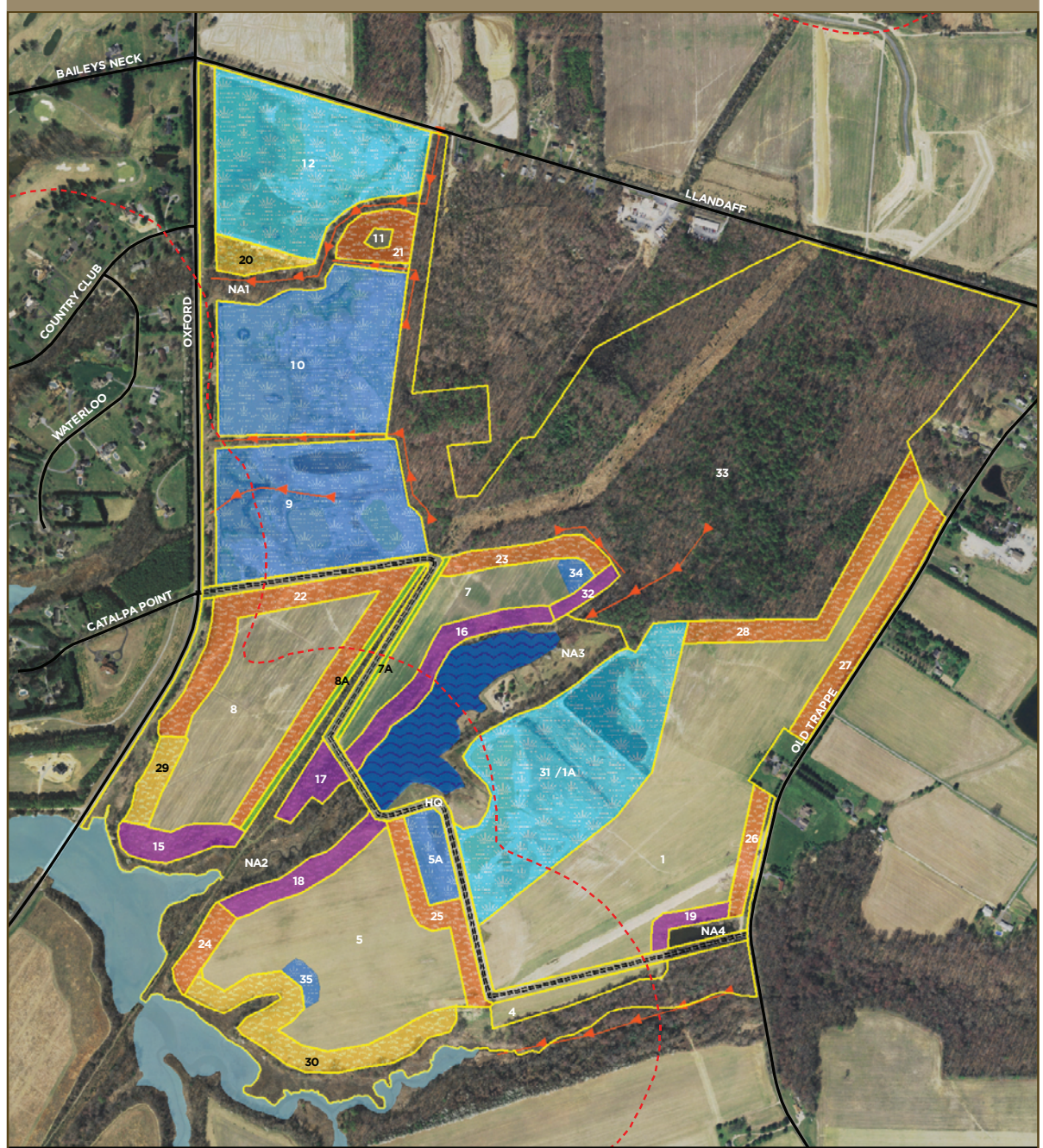
Water Quality: Water quality improvements associated with the buffered runoff were not measured scientifically because the owners

lacked a pre-construction baseline data set and because other lands drained into Trippe Creek. However, the owners report a noticeable improvement in water clarity and sediment runoff from the property, which is evident after every rainstorm.

Wildlife: Wildlife observations were documented by the owner and increases have been tremendous. In the wetlands, duck production had gone from almost nothing, because there was no habitat, to 445 wood ducks and 249 mallards in 2008. The statistics were compiled from observations made in artificial nesting structures erected in the constructed wetlands. Beyond these individuals, there was additional production by ducks using the natural cover and vegetation.

In the winter, migrating ducks and geese have been attracted to the new wetlands in large numbers. By flooding different cells at different times in the fall and winter, and therefore

Conservation Plan Map



LEGEND

- | | | |
|---------------------------|----------------------------|---------------------|
| Property / Field Boundary | Tree / Shrub Establishment | Farm Lane |
| Quail Habitat Buffer | Warm Season Grass Buffer | Drainage |
| Riparian Forest Buffer | Wetland Creation | Talbot County Roads |
| Shallow Water Area | Pond | Trippe Creek |
| Shallow Water Area | | Critical Area |

Tract: 2236
 Farm: 2210
 Plan: 83147
 Scale: 1" = 660'



making new food sources available, the property supports waterfowl for long periods of time. “It’s gratifying to see the large flocks of ducks and geese using the wetlands that were just corn fields three years ago” says Robinson.

A total of 146 bluebird boxes were installed in the buffers around the fields and the manager has observed huge increases in bluebirds, swallows, and grassland species of songbirds. A May 2008 survey showed 471 fledglings.

KEYS TO SUCCESS

Farm/wildlife manager Clay Robinson offered the following recommenda-

tions for replicating the success of Duvall Farm conservation initiatives:

- Have a clear plan with identified goals on the front end.
- Use CREP to receive cost-share funds.
- Make use of government and private organizations for their technical expertise.
- Recognize the maintenance needs, and commit adequate funds and equipment to do the job properly.
- Conduct annual surveys to monitor the condition of the installed practices and the results they are or aren’t achieving.

- Keep an open mind about your own observations and the observations and suggestions of others.
- Be willing to add small improvements to the project, as long as they don’t conflict with the program regulations.
- Take time to enjoy what has been created and be satisfied with your results.

PHOTOS AND FIGURES

All photos by David Burke
Figure by Shawn Smith, Talbot Soil Conservation District



LEFT: A forested riparian buffer planting at Duvall Farm – NRCS conservation practice CP-22.
RIGHT: A period reproduction building adjacent to Duvall Farm pond.



FOR MORE INFORMATION

Project Contact:

USDA Service Center

www.sc.egov.usda.gov/ContactUS.html

Contact local office for information on eligibility requirements, practices, and payments