

[From Spring 1999]

## **Water, Water Everywhere...**

Chincoteague National Wildlife Refuge Manager John D. Schroer was reminded of the old adage, "Water, Water Everywhere and Not A Drop To Drink," this fall and early winter when the refuge's freshwater impoundments were completely dry but surrounded by a "sea" of water. Unfortunately, the "water, water everywhere" was salt water and freshwater was needed to fill these impoundments to accommodate the thousands of migratory waterfowl that normally rely on the refuge for food, water, and shelter during the fall migration and over the winter.

During the 1950s and 1960s a series of impoundments were constructed to improve waterfowl habitat by providing freshwater plants and invertebrates that the ducks and geese could feed on during the fall migration. Then a series of severe droughts during the 1980s dried up these impoundments every summer resulting in very little, if any, plant growth or food for waterfowl. To combat droughts, biologists on the CNWR staff began a new water management program in 1989. This program, referred to as moist soil management, calls for the impoundments' water levels to be drawn down in early spring to allow plants that waterfowl prefer to grow and establish a root system that will keep them alive through the summer months when the refuge typically receives little rainfall. On September 1, water control structures in these impoundments are gradually closed so that water levels will be raised as the fall rains come. The program's main draw-back is that we depend on Mother Nature's rainfall to fill the impoundments with water. As an example, this past year the lack of rainfall resulted in dry impoundments into December. Biologists on the CNWR staff have had difficulty lowering the water levels early in the spring because of excessive rainfall and growth of plants such as saltmarsh fleabane, which are not a good source of waterfowl food.

Since the refuge does not have any natural freshwater streams or lakes, rainfall is the only source of surface water. Even the freshwater ponds and impoundments are slightly brackish to highly saline because of overwash, salt spray, and the accumulation of salt residue as freshwater evaporates. The fresh ground water beneath the island forms a lens-shaped layer that floats on underlying salt water. Consequently, it is also brackish.

Ducks Unlimited, Inc. (DU) provided funds to have the impoundments' borrow ditches cleaned out to improve drainage in the spring and to provide habitat for wading birds during normal summer dry conditions. DU has also assisted the refuge with designing double flap gates that will be installed on the water control structures in three of the impoundments. These new flap gates will improve our ability to de-water the impoundments in the spring, as well as to allow salt water to flow into areas that are managed for brackish water, if drought conditions persist well after September 1. A DU engineer is also helping refuge biologists establish pumping stations at North Wash Flats and Snow Goose Pool, since these areas must be de-watered in a timely manner. North

Wash Flats must be ready to accommodate nesting piping plovers, and Snow Goose Pool must be de-watered in time because of its impact on the drainage pattern of all the lower impoundments.

The Refuge Master Plan, completed in 1993, calls for the "investigation and feasibility" of relying on freshwater aquifers far below the island to meet some of the refuge's fresh water needs by way of a series of deep wells. The feasibility of using this source of freshwater will require a study to ensure that the aquifer is not adversely impacted. Refuge staff is now collecting information on aquifers and deep well pumping

Each year the refuge water management program is guided by data which have been collected from the previous year and by advice from experts in the field of moist soil management. Each year refuge biologists and volunteers record weekly water and salinity levels and weekly shorebird and waterfowl use, the plant species, and their density in each impoundment. These data are then used to determine the best water management plan that should be used during the year.

These measures have been successful in dealing with drought conditions to some extent. The early spring draw downs have provided an abundance of waterfowl food, and the brackish management has provided for some "wet" areas even during droughts. Despite the 1998 fall drought, duck populations were only 2% below that of 1997. However, refuge staff is committed to improving this important program for the benefit of all wildlife and the people who flock to this refuge to see wildlife in their natural settings.

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