National Wetlands Inventory
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Wetland Trends for the North East Quadrangle in Maryland (1981 to 1988)

U.S. Department of the Interior
Fish and Wildlife Service

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Wetland Trends for the North East Quadrangle in Maryland (1981 to 1988)

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INTRODUCTION

Wetlands are subjected to multiple impacts, both natural and human-induced. They may change from one type to another, e.g., emergent wetland to scrub-shrub wetland, due to natural succession or to minor filling or drainage. Wetlands are also destroyed directly or indirectly by human activities. Most wetlands, however, change gradually over long periods of time. Knowledge of wetland losses and gains is important for evaluating the effectiveness of government programs and policies designed to protect wetlands and for developing strategies to reverse undesirable trends.

The U.S. Environmental Protection Agency (EPA) and the U.S. Fish and Wildlife Service (FWS) provided funding to initiate quadrangle-based wetland trends studies for selected areas in the Chesapeake Bay watershed. These studies identify the extent and nature of small- and large-scale wetland alterations for selected local areas.

The purpose of this report is to present the findings of the wetland trends analysis study for the North East Quadrangle in Maryland, one of numerous study areas selected by the EPA and FWS for detailed wetland trends analysis.

STUDY AREA

The study area is the North East Quadrangle in Maryland (Figure 1) which has a land surface area of approximately 57.5 square miles. The study area encompasses one large-scale (1:24,000) U.S. Geological Survey topographic quadrangle: North East.

METHODS

Wetland trends analysis involves comparing aerial photography from at least two time periods. For the present study, aerial photos from 1981 and from 1988 were examined and compared to determine the extent of the wetland changes (losses, gains, or changes in wetland type) that occurred during that time period in the study area.

The 1981 photography was 1:58,000 scale color infrared (CIR) aerial photography acquired by the U.S. Geological Survey's National High-Altitude Photography Program (NHAP). The 1988 photography was 1:40,000-scale CIR aerial photography acquired by the National Aerial Photography Program (NAPP). Wetlands and deepwater habitats were initially interpreted on the 1:58,000 photography and classified according to the Service's official wetland classification system (Cowardin, et al. 1979), following standard NWI mapping conventions (National Wetlands Inventory, 1990). These interpretations served as the basis for evaluating recent wetland trends.

The two sets of photographs were compared using an Ottico Meccanica Italiana stereo facet plotter. Changes and map refinements were transferred to an NWI map using this device. Causes of change were recorded for each polygon. The minimum mapping unit for wetlands was generally 1/2 acre, except for ponds, which were mapped when 1/10th of an acre or larger in size. Changes as small as 1/10th acre were detected. Wetland boundaries were improved and previously undetected wetlands were added to the original maps because the larger scale and more apparent seasonal signs of wetland hydrology on the NAPP photos improved our ability to detect and classify wetlands. Quality control of all photo interpretation was performed by a second photointerpreter.

Interpreted data were digitized and acreage summaries generated. Tables were then prepared to present the study's findings.

RESULTS

Recent Wetland Trends

The results of the wetland trends analysis study are presented in Tables 1 through 4. The following discussion highlights the more significant or interesting findings.

Vegetated Wetlands

Less than one acre of temporarily flooded palustrine emergent wetland was the only conversion of vegetated wetland to upland (Table 1). The cause for this change was commercial/business development. Other losses of

vegetated wetland were increases in some wetland types, namely palustrine scrub-shrub and estuarine emergent wetlands, at the expense of other vegetated wetlands (Table 2).

Nonvegetated Wetlands

A slight net gain in palustrine nonvegetated wetlands took place between 1981 and 1988 (Table 3). Gains from upland were offset by conversions of ponds to uplands. Most of the newly created ponds were the result of detention basin construction and ponds built in undeveloped areas (Table 4).

ACKNOWLEDGMENTS

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Wetland maps and digital data were compiled by the U.S. Fish and Wildlife Service's National Wetlands Inventory Office at St. Petersburg, Florida. Special appreciation is extended to Becky Stanley and Linda Shaffer for their assistance. Photo interpretation was performed by the junior author and quality controlled by Glenn Smith. We also acknowledge John Eaton for his able assistance in compiling trend statistics, tables and graphics for this report, Todd Nuerminger for the tabulation of raw data, and Liz Dawson for manuscript word processing.

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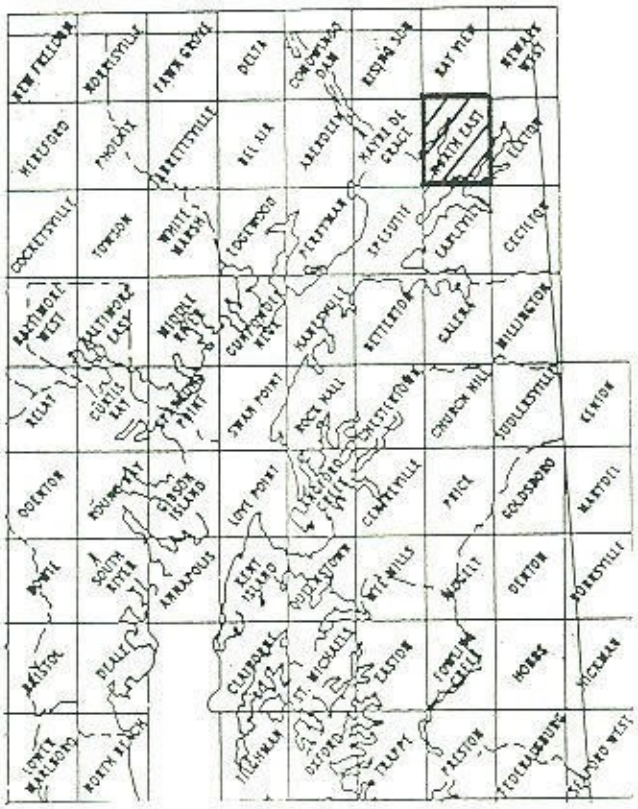
Cowardin, L.M., V. Carter, F.C. Golet, and T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish and Wildlife Service, Washington, DC. FWS/OBS-79/31. 103 pp.

National Wetlands Inventory. 1990. Photointerpretation Conventions for the National Wetlands Inventory. U.S. Fish and Wildlife Service, St. Petersburg, FL. 45 pp. plus appendices.

Figure 1. Location of Study Area - North East Quadrangle in Maryland.



1. North East

Table 1. Changes of vegetated wetlands for the North East Quadrangle in Maryland (1981 to 1988).

Wetland Type	Converted to Upland (acres)	Changed to Other Vegetated Wetlands * (acres)
Palustrine Emergent	0.61	1.33
Palustrine Forested	0.00	3.93**
Estuarine Emergent	0.00	5.16
Total	0.61	10.42

* Represents changes in class (e.g., emergent to scrub-shrub) but not changes in water regime within a given wetland class.

** Includes both changes in class and changes in water regime within this class.

Table 2. Gains in vegetated wetlands for the North East Quadrangle in Maryland (1981 to 1988).

Wetland Type	Gain from Nonvegetated Wetlands (acres)	Gain from Other Vegetated Wetlands * (acres)	Gains from Upland (acres)
Palustrine Emergent	0.44	0.00	0.00
Palustrine Scrub-Shrub	0.00	5.00	1.17
Palustrine Forested	0.00	0.00	4.04
Estuarine Emergent	0.00	5.16	0.00
Total	0.44	10.16	5.21

* Represents changes in class (e.g., emergent to scrub-shrub) but not changes in water regime within a given class.

Table 3. Gains and losses in palustrine nonvegetated wetlands for the North East Quadrangle in Maryland (1981 to 1988).

Wetland Type	GAINS		LOSSES	
	Created From Upland (acres)	Created in Vegetated Wetland (acres)	Converted to Upland (acres)	Changed to Vegetated Wetlands (acres)
Palustrine Unconsolidated Bottom	7.72	1.17	6.20	0.00
Palustrine Unconsolidated Shore	0.00	0.00	0.00	0.44
Total	7.72	1.17	6.20	0.44

Table 4. Causes of recently constructed ponds on upland sites for the North East Quadrangle in Maryland (1981 to 1988).

Causes	Pond Acreage Created
Detention Basin Construction	3.42
Ponds in Undeveloped Areas	3.02
Farm Ponds	0.96
Ponds of Unknown Purpose	0.32
Total	7.72