

**POST-BREEDING POPULATIONS OF PIED-BILLED GREBES
(*Podilymbus podiceps*) AT THE TONAWANDA WILDLIFE
MANAGEMENT AREA.**

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ABSTRACT— In January 1994 the Pied-billed Grebe (*Podilymbus podiceps*) was proposed for listing as a "Threatened" Species in New York State. Grebes were frequently seen at the Tonawanda Wildlife Management Area (TWMA), Genesee and Niagara counties, but no data existed on the size of the population or their habitat use. In mid-August I began to survey the area to collect baseline data on the Pied-billed Grebes using the area. Ten surveys were conducted between 18 August 1994 and 7 October 1994 resulting in counts ranging from 28 to 108 birds.

INTRODUCTION

Grebes are marsh birds of the family Podicipedidae. There are 22 species of grebes worldwide, five of which are on the official Checklist of the Birds of New York State (Levine 1998). The Pied-billed Grebe (*Podilymbus podiceps*) is the most widespread, breeding from southern Alaska to South America and as far east as the West Indies (Gibbs and Melvin 1992). It is also the only grebe that nests in New York, occupying freshwater ponds, rivers and marshes. Occasionally they have been known to utilize saline or brackish habitats (Chabreck 1963).

Their presence as breeding birds in western New York has been noted by various authors (Bull 1974, Eaton 1910, Saunders 1926), but recently their range has been restricted mostly to state and federal management areas (Andrle and Carroll 1988). During surveys of 95 wetland sites in western and northern New York in 1989, Pied-billed Grebes were located at only 18 of the sites and all but one of the sites were either a state or a federal wildlife management area (Novak 1990).

Although federally protected by the Migratory Bird Treaty Act, the species presently has no listing in the state of New York. The Natural Heritage Program ranks the Pied-billed Grebe as S3 (rare or uncommon) in the state. The proposal in 1994 by New York's Department of Environmental Conservation (DEC) to list the species as "Threatened" prompted my collection of data on the grebe population utilizing the TWMA.

The TWMA is located halfway between Buffalo and Rochester in Genesee and Niagara counties. Located in the Tonawanda Creek floodplain, 3,000 of the site's 5,600 acres is wetland. The TWMA is part of a larger wetland complex that includes the federal Iroquois National Wildlife Refuge and the state operated Oak Orchard Wildlife Management Area. The three properties abut each other creating a total wetland area of about 20,00 acres, known locally as the "Alabama Swamps" after the local township.

Although the TWMA is a natural wetland, today it is expertly managed by several miles of dikes and water control structures. Through active professional management, the property maximizes waterfowl production capabilities and increases the biodiversity creating habitat for non-game species, like the Black Tern (*Chlidonias niger*), as well as for waterfowl.

METHODS

The TWMA consists of nine separate marshes and six smaller paddies, all of which are bordered by man-made dikes or roads. Surveys were conducted from the dikes and roads by driving at five miles per hour and scanning the open water for grebes. All grebes were identified as juvenile or adults based on their plumage (Palmer 1962). Those grebes that were unable to be categorized because of the distance or other factors were listed as "age unknown".

Marshes selected for surveying were chosen based on past sightings of grebes. Most survey routes were established along large open water areas. Surveys had to be conducted only after regular duties were completed. Therefore, they were not conducted in a specific order or at a specific time of day. The number of marshes included per route varied also, but the four marshes of Ruddy, Hunt Club, Meadville and Wood were always included.

The duration of a survey depended upon the number of birds seen and the ease at which they could be identified as either a juvenile or an adult. Extreme care was taken to ensure that birds were not counted more than once in a survey.

RESULTS

Ten surveys were conducted starting 18 August 1994 and ending 7 October 1994. A total of 742 grebe sightings was recorded (Table 1). Most surveys lasted well over three hours and averaged 74 sightings. Remarkably in the third week of August, daily counts tallied as high as 100 birds including 69 juveniles. Counts as high as 89 were recorded as late as 23 September.

DISCUSSION

I became aware of the proposed "Threatened" listing too late in the season to allow for proper planning of a scientific study. Surveys based on visual observation were the only avenue for the immediate collection of data. The goal of the surveys was to salvage what I could of the 1994 season and gather as much information as possible on the size of the grebe population. Time constraints and responsibilities of other duties resulted in an inconsistent scheduling of surveys. Despite the fact that the plan was hastily conceived, it did meet its goal by providing baseline data on the number of Pied-billed Grebes using the area.

The daily totals of birds observed were surprising. Counts as high as 108 birds were far beyond expectations. It is possible that birds could already have migrated in from other breeding sites. Fall migration starts as early as August.

In every survey the observed number of juveniles exceeded the observed number of adults. That could be indicative of a successful breeding season. Those observations of birds that could not be identified to an age group, were not included in that analysis. The complex appears to be prime habitat for Pied-billed Grebes. Emergent marshes with varying degrees of open water are the areas most often used (Chabreck 1963, Faaborg 1976, Glover 1953, Kirby 1975). The TWMA consists of 1,315 acres of emergent vegetation and 333 acres of open water. Additionally, Oak Orchard WMA provides another 375 acres of emergents and 320 acres of open water. The federal refuge contains about 5,300 acres of habitat in a combination of emergent vegetation and open water (A. Nice pers. comm.). Reportedly, intermediate size marshes between 0.74 acres and 17.3 acres are preferred (Faaborg 1976, Kirby 1975, Nudds 1982, Yocum et al 1958). Brown and Dinsmore (1986) suggested that marsh size was an important factor and that grebes were consistently found only at wetlands greater than 12 acres. Gibbs and Melvin (1990) concurred that marshes >12 acres were necessary.

The grebes are known nesters in the complex. Plant species associated with Pied-billed Grebe nesting areas generally are emergent vegetation such as cattail (*Typha* sp.), bur reed (*Sparganium* sp.), wire grass (*Spartina* sp.), arrowhead (*Sagittaria* sp.), rushes (*Scirpus* sp.) (Deusing 1939, Abbott 1907, Faaborg 1976, Chabreck 1963, Sealy 1978) and submerged aquatics. Large expanses of open water exist in Ruddy and Wood marshes providing more than adequate feeding grounds for Pied-billed Grebes.

Controversy exists however; as to whether the birds prefer to nest in the vegetation or in the open water. Faaborg (1976) noted that 13 of 24 nests were built in heavily vegetated ponds containing only 20-40% open water. He summarized that, of the three species of grebes studied, the Pied-billed Grebe used the more heavily vegetated and generally larger ponds, completely avoiding ponds that were 100% open water. Several authors have recorded nests directly located within the vegetation (Abbott 1907, Deusing 1939, Glover 1953, Forbes and Ankey 1988). Chabreck (1963) on the other hand, observed 52% of his nests were in open water, free of any emergent vegetation. Grebes were observed nesting in both instances at the complex. Most often nests that were established in what was open water at the time, ended up surrounded by either bur reed or rushes before the clutch hatched.

Shallower marshes appear to be most favorable to the species (Nudds 1982). Glover (1953) recorded water depths at his study site to range between 15 and 25 inches, but stated that the most successful nests were found in water averaging 24.2 inches. Chabreck (1963) documented the water depths at the open water nests to average 18 inches as opposed to the nests in the emergent areas of wire grass (*Spartina patens*) with water depths of between 8 and 12 inches.

Water levels at TWMA can be controlled within the impounded areas. Water depth generally ranges from 0 to about 4ft, excluding the borrow ditches which can be almost 6.5 ft. Black Tern colonies occupy the same type of habitat as Pied-billed Grebes. Over the years, water depth measurements taken at Black Tern nest sites throughout the complex recorded depths of 8 to 31 inches with averages of 17.5 in. (Seyler 1991), 19 in. (Adams 1990) and 21 in. (Hickey 1994).

The size of the population during the breeding season at the TWMA or the wetland complex as a whole is unknown. The numbers of birds seen during the surveys seemed high, but at no time did the birds appear to be crowded. The grebes were well spaced and in fact gave the impression that there was room for many more. Unlike Eared Grebes, which tend to be colonial in nature, Pied-billed Grebes are solitary nesters (Faaborg 1977). They maintain a nesting territory of about 150 ft. around

their nest (Glover 1953), which is aggressively defended from other grebes (Palmer 1962, Wetmore 1920). Pied-billed Grebes have also been recorded to be aggressive toward other species within their nesting territory, such as coots and ducks (Kilham 1954, Wetmore 1924). Chabreck (1963) recorded the average distance between active nests to be 180 ft.. The home range has been approximated to be twice the size of the defended nesting territory (Glover 1953). Although grebes are highly aggressive within their nesting territory, they peacefully coexist in other areas of the marsh, such as large expanses of open water, without incident (Glover 1953).

The results of the surveys indicate that the TWMA supports a successful breeding population of Pied-billed Grebes. Consequently, the adjoining wetland properties of Iroquois and Oak Orchard likely support similar sized populations. More research should be done to ascertain the size of the population for the complex, its nesting success and habitat use. That information could be used to better manage other portions of the state where the birds are in low numbers as well as to ensure that the habitat needs of the species are maintained at the *Alabama Swamps*.

TABLE 1.

1994 Pied-billed Grebe Surveys
Tonawanda Wildlife Management Area,
Genesee and Niagara counties, New York

Date Time	#Juveniles	#Adult	Age	Total	#Marshes
			#Unknown		
8/18/94 1345-1510	35	15	11	61	5
8/19/94 0800-1040	69	11	20	100	8
8/25/94 0915-1103	17	4	7	28	5
8/26/94 0750-1124	40	8	23	71	9
9/09/94 0915-1215	24	11	30	65	8
9/13/94 0935-1313	23	6	33	62	10
9/16/94 0935-1315	32	8	39	79	7
9/20/94 0842-1317	19	7	53	79	7
9/23/94 0825-1256	26	10	53	89	7
10/7/94 0823-1210	24	3	81	108	7

Marshes visited in all surveys: Ruddy, Meadville, Hunt Club, Wood
marshes included in most surveys: Cinnamon, Paddies II, Klossen
marshes occasionally surveyed: Paddy I, Paddy III, Sprout

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