

Pig's Eye Heron Rookery Report for 1985

To:

Metropolitan Airports Commission
and
Lee Pfanmüller, Minnesota Department of Natural Resources

From:

Dwain W. Warner
Bell Museum of Natural History
University of Minnesota
Minneapolis, MN 55455

This is the second report to you on the population structure, species composition and species responses to habitat changes of the herons, egrets and cormorants that make up this rookery. In addition there is included a comparison of population figures for 1985 with figures from 8 of the last 12 years.

Introduction

The Pig's Eye rookery is located on an island that was created by the construction of a channel across a peninsula of land separating Pig's Eye Lake from the main channel of the Mississippi River in St. Paul, Ramsey County, Minnesota. This island is a typical floodplain island created originally by the river and much altered by both the river and by human dredging efforts. Vegetation is also typical of floodplains of large river systems. The island is mostly forested by green ash, silver maple, boxelder, cottonwood, black willow and American elm, the last now nearly extirpated by elm disease. The understory is almost entirely wood nettle.

In April 1985 all nest trees that had not been marked with numbered metal tags in 1982, 1983 and 1984 were tagged. The censuses were concentrated in the latter half of April and the first half of June. Kevin Winker and Steven Stucker, my assistants, were key personnel on the project again this year.

All trees that held nests were identified and counted and the numbers of nests in each tree were counted and the species of bird that built the nest was identified whenever possible. Some nests were not occupied during the census periods and these were noted as "unknown". The unknown nests are included in calculations of totals for the different species--first by size, then by using the ratio of a species' known number of nests to the total number of unknown nests in that size category, as in Table 1.

The bird species using the rookery in 1985 were:

- Double-crested Cormorant (*Phalacrocorax auritus*)
- Great Blue Heron (*Ardea herodias*)
- Great Egret (*Casmerodius albus*)
- Black-crowned Night-Heron (*Nycticorax nycticorax*)

The Yellow-crowned Night-Heron (*Nycticorax violaceus*) has been represented in the rookery by one or two pairs for most of the last 13 years but none was found in 1985.

Results

The Pig's Eye rookery in 1985 was the largest it has been in number of nests counted since the first census in 1973. However, the number of nests of each species has changed over the years and it must be pointed out that most of the counts during all but the last two years were made during April and May whereas the total figure of 1225 nests for 1985 was of the census made in

June. Since we made two censuses in 1985, one in April and one in June, we can show that a considerable number of nests are built after mid-April. Most of the nest counts in the early years were continued through most of May; so those counts probably represent more accurately the rookery nest numbers than does the April count of 1985 that is shown in Table 1 along with the June count.

Table 1

Species	April		June	
	# of nests	% of nests	# of nests	% of nests
Night-Heron	440	41.0	592	48.3
Great Egret	431	40.1	382	31.2
Gr-blue Heron	151	14.1	188	15.3
Cormorant	52	4.8	63	5.1
Total calc.nests:	1074	100%	1225	99.9%

In Table 2 the known and unknown nests are separated which gives a more accurate presentation of the 1985 rookery structure:

Table 2

Species	April		June	
	# of nests	% known nests	# of nests	%known nests
Night-Heron	370	51.5	516	54.1
Great Egret	235	32.7	256	26.8
Gr-bl. Heron	85	11.8	137	14.4
Cormorant	29	4.0	45	4.7
Unknown large	224		152	
Unknown small	28		88	
Unknown	103		31	
Total nests:	1074	100%	1225	100%

Two natural factors have been causing marked changes in the structure of the rookery and in the habitat choices of the birds nesting in the trees there. First is the fact that floodplain forest trees are species that grow very rapidly; so just over a relatively brief period of time trees change their own structure and become more favorable as nesting sites for some species and less available to other species. For example the small side branches from the main trunks of some of these floodplain trees are favored places for nests sites of Night-Herons, sites the larger herons cannot use because the branches cannot support large nests. These small branches are shaded out as the crown spreads and in only a few years most of these small branches die

This is to be expected in floodplain forests where each species in an area is all of one age class. In the above case 104 trees declined in numbers of nests from 129 nests in 1982 to 49 in 1983 to only 3 nests in 1985. Since the rookery is probably the largest in numbers of birds that it has been in at least the last 13 years, the abandonment of some trees indicates that there are other trees that can still be used. We need to know how long this shift to other nest trees can continue.

Within each species occupying the rookery there occur shifts in population numbers between years; so the population structure changes with the years. An example of these differences is shown in Table 5.

Table 5

Bird species	Percent of known nests in rookery	
	1984	1985
Night-Heron	71.4	54.1
Egret	15.5	26.8
Gr. Blue Heron	10.2	14.4
Cormorant	2.9	4.7

This shows that the Black-crowned Night-Heron declined in relative numbers (and actual numbers) and the three other species increased. This should not be construed as indicative of a long term trend, however. In 1973 there were 560 Night-Heron nests (known and active); in 1978 there were 815 active nests of this species; and in 1985 there were 516. These populations do fluctuate but it is too early to prove any long term trends in populations. Total rookery size for 8 of the last 13 years show these fluctuations in numbers in Table 6.

Table 6

Year	Total rookery size - numbers of nests
1973	1142
1974	
1975	1087
1976	
1977	
1978	1073
1979	
1980	1211
1981	977
1982	899
1983	871
1984	1122
1985	1225

Conclusions

We know that over the last 13 years this rookery has changed. The vegetation has changed drastically by natural--and rapid--growth and by nearly complete die-off of the American elms. The colony is shifting location each year in response to these and perhaps other unknown factors. The cormorant is a newcomer to the rookery in recent years and seems to be increasing in numbers rapidly. The common egret, too, is increasing in numbers. With the demise of the elms the Great Blue Heron population also declined. Black-crowned Night-Herons may be on the decline as they are elsewhere but their numbers are still fairly high at Pig's Eye. We need to know the reproductivity of this rookery but counting the young that are produced each year has not been possible to date. At the beginning of the breeding season members of each species seem to be synchronized in timing of breeding season events but by late June and July synchrony does not exist and some young are fledging, some are very small and even some are just hatching. We may have to continue to use the numbers of adults present as indication of the general success of the rookery.

At this time the Pig's Eye rookery as a unit is in good condition. It is a large rookery and even the Black-crowned Night-Heron is present in large numbers in comparison with other rookeries where it occurs. Total numbers of individuals are not estimated for this population because those figures change with the season and we do not know how many young are produced and some nonbreeding birds come in spring but do not remain as part of the nesting population. By figuring 2 adults for each nest one will have a fairly accurate and useful estimate of the adult breeding population--about 2450 birds.
