

WHITE PELICAN REPRODUCTION IN THE MOLLY ISLANDS
BREEDING COLONY, YELLOWSTONE NATIONAL PARK

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Objectives

Compared to other North American White Pelican, Pelecanus erythrorhynchos, breeding colonies, the Molly Islands Colony is a minor colony consisting of 400-600 adults (Lier and Behle, 1966; Diem and Condon, 1967; Sloan, 1973; Diem, 1976). Despite its small size, the colony is unique for these reasons: 1) it is the only White Pelican breeding colony in a national park; 2) the location of the colony at an elevation of 7,733 ft (2,357 m) is the highest recorded for any breeding colony of the species; 3) discovered in 1890, the colony has had variable surveillance since 1917, with relatively intense monitoring since 1965; 4) the breeding population is composed of birds from both coasts of North America; and 5) the colony's nesting sites on the two Molly Islands change frequently with no predictable pattern. The major objective of this project is to continue monitoring changes in the reproductive success of the Molly Islands White Pelican colony and to continue studies of the factors influencing those changes.

Procedures

Nesting and fledgling censuses continue to be taken from a boat 100-200 ft from shore. Because landing in the colony would be too much of a destructive disturbance, clutch data cannot be collected. Some errors in nest counting probably occur, however, the fledgling censuses are very accurate.

Results

Nesting and fledgling counts for the Molly Islands White Pelican colony from 1977 through 1982 are presented in Table 1. An early and extensive water runoff from the surrounding mountains made it impossible to accurately measure the water bird nesting effort on the two islands. On July 3 there was evidence of more nests having been destroyed by flooding than were still intact. Considerable wave action caused widespread redistribution of eggs and bodies of newly hatched chicks from flooded nests. These circumstances plus the compact clustering of adults on the small island projections made it impossible to obtain accurate nest counts. One important observation of pelican behavior was noted. Despite having lost many nests to flooding, there were a large number of adult White Pelicans standing in several inches of water on the Sandy Island on July 3. This strong nest site attachment was unusual in comparison to earlier years

Table 1. Numbers of water birds nests and young fledged in the Molly Islands breeding colony, 1977-1982.

Year	Species	Nesting Census				Fledgling Census		
		Rocky Island		Sandy Island		No. of Fledgling	No. of Fledgling	No. of Fledgling
	Date	No. of Nests	No. of Nesting Aggregations	No. of Nests	No. of Nesting Aggregations	Date	Fledgings Per Nest	Per Nest
1977	White Pelican	22	3	195+	5	8/11	302	1.39
1978	White Pelican	24	1	167+	6	8/15	230	1.20
	Double-crested Cormorant	11	2			8/15	0 ^a	
	Caspian Tern	0				8/15	0	
1979	White Pelican	78	2	172 ^b	2 ^b	8/9	418 ^b	1.67
	Double-crested Cormorant	6	1			8/9	15	1.88
	Caspian tern	21	1			8/9	11	0.52
1980	White Pelican	201	6	84	5	8/12	340	1.19
	Double-crested Cormorant	1	1			8/12	17 ^c	?
	Caspian Tern	18	1			8/12	12	0.67
1981	White Pelican	91	4	199	6	8/19	232	0.80
	Double-crested Cormorant	17	3	1	1	8/19	19	1.12
	Caspian Tern	14	1			8/19	18	1.29

1982 White Pelican	7/3	27	1	47 ^a	2+	8/20	29	a
	7/13	27	1	0	0			
Double-crested Cormorant	7/3	12 ^a	2	1 ^a	1	8/20	14	a
Caspian Tern	7/3	17	1			7/13	0	0

a Extensive flooding inundated much of the early nesting, thereby making an accurate nesting effort count impossible.

b Two additional nests were established on the Sandy Island after the 6/27 census.

c Three plus additional nests were established after the 6/23 census in 3 plus aggregations.

when flooding destroyed many nests.

The nesting effort and fledgling success are equally contradictory for the Double-crested Cormorant. The 14 young in 7 nests on August 20th ranged in age from recent hatchlings to 75% maturation. This suggests some renesting took place after earlier nesting efforts failed. Both nests on the Sandy Island and several on the Rocky Island were destroyed by flooding and wave action.

On the Rocky Island the nests of the Caspian Terns observed on July 3 had been totally destroyed by flooding between that date and July 13.

What began as an average nesting season for all of these water birds, culminated in a near complete reproduction failure because of flooding. More remarkably, this degree of flooding was much more extensive than during the 1974 high of 7.3'. In 1974 only 40% of the Sandy Island was flooded whereas in 1982 with 1' less of water, a strip measuring 12' x 78' was all that remained above the water level. This elevated strip projected only several inches above the lake water level.

It appears from these observations that there has been a 1' increase in the stable water level of Yellowstone Lake since 1974. Efforts were initiated in August to measure the current lake level and establish a series of water level benchmarks for monitoring future lake level changes. Nine of these benchmarks have been established in coordination with the seismic and tectonic studies of Dr. Robert Smith, University of Utah and the botanical studies of Dr. William Romme of Western Colorado College.

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