

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. In addition, a cumulative substrate uplift along the north shore of Yellowstone Lake appears to have significantly raised the stable water level of the southern arms of the lake. Consequently, 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 for the period 1977 through 1983 are summarized in Table 1. The late spring was cold and wet which delayed early nesting of the White Pelican by about 7-10 days. The earliest hatching was estimated to occur around 1 July. By contrast, the Caspian Terns seemed to be 1 week ahead of schedule with 5 chicks apparently hatching about July 4. Nesting of the Double-crested Cormorants appeared to be near normal.

The early to mid-summer was cool and this suppressed both the rate and volume

Table 1. Numbers of water birds nests and young fledged in the Molly Islands breeding colony, 1977-1983.

Year	Species	Date	Nesting Census			Fledgling Census			
			Rocky Island		Sandy Island	Fledgling Census		No. Fledgd Per Nest	
			No. of Nests	No. of Nesting Aggregations	No. of Nests	No. of Nesting Aggregations	Date		No. of Fledglings
1977	White Pelican	7/7	22	3	195+	5	8/11	302	1.39
1978	White Pelican	7/9	24	1	167+	6	8/15	230	1.20
	Double-crested Cormorant	7/9	11	2			8/15	0 ^a	
	Caspian Tern	7/19	0				8/15	0	
1979	White Pelican	6/27	78	2	172 ^b	2 ^b	8/9	418 ^b	1.67
	Double-crested Cormorant	6/27	6	1			8/9	15	1.88
	Caspian tern	6/27	21	1			8/9	11	0.52
1980	White Pelican	6/23	201	6	84	5	8/12	340	1.19
	Double-crested Cormorant	6/23	1	1			8/12	17 ^c	?
	Caspian Tern	6/23	18	1			8/12	12	0.67
1981	White Pelican	6/28	91	4	199	6	8/19	232	0.80
	Double-crested Cormorant	6/28	17	3	1	1	8/19	19	1.12
	Caspian Tern	6/28	14	1			8/19	18	1.29

1982	White Pelican	7/3	27	1	47 ^d	2+	8/20	29	d
		7/13	27	1	0	0			
	Double-crested Cormorant	7/3	12 ^a	2	1 ^a	1	8/20	14	d
	Caspian Tern	7/3	17	1			7/13	0	0
1983	White Pelican	7/13	102	1	208	5	8/24	268	0.86
	Double-crested Cormorant	7/13	4	2	11	1	8/24	d	
		8/24	9	2	15	1	7/13	5+	
	Caspian Tern	7/13	12	1			8/24	0	

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- 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.
- d Young and adults were indistinguishable in the fledging census.

of snow melt runoff which in turn restricted flooding to a small portion of the willow areas on the southern tip of each island. Evidence of mortality of chicks of all species was restricted to 12 White Pelican chicks with 11 of those appearing to have died on the Sandy Island between August 14 or 17 and August 24. Extensive periods of cold, rain and at times heavy rain intensities undoubtedly played a role in that mortality, as well as, reducing the overall pelican reproductive effort. Compared to the average reproductive success for 6 of the last 7 years, 1983 White Pelican reproductive success was 25% below that average.

With respect to the cormorants and the terns, no direct evidence of mortality was observed. However, only 58 young and adult cormorants were observed on August 24 and no Caspian Terns were recorded. While some young birds could have fledged before the August 24 census, (particularly the Caspian Terns) the abnormal temperature and precipitation impacts of July and August appears to have extensively reduced the Caspian Tern and the Double-crested Cormorant reproductive success. The extensive Double-crested Cormorant nesting on the Sandy Island was a new development, never having been observed in that number in any previous year.

Overall, while water bird reproduction on the Molly Islands was spared the impact of flooding, it appears to have been significantly impacted by the cumulative affects of adverse temperature and precipitation with respect to time of occurrence, length of duration and degree of intensity.

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Literature Cited

- Diem, K. L. and D. D. Condon. 1967. Banding studies of water birds on the Molly Islands, Yellowstone Lake, Wyoming. Yellowstone Lib. and Mus. Assoc., Yellowstone Park, WY. 41 pp.
- Diem, K. L. 1979. White Pelican reproductive failures in the Molly Islands Breeding Colony in Yellowstone National Park. Proc. First Conf. on Sci. Res. in the Nat'l Parks. U.S.N.P. Trans. and Proc. Series. 5:489-496.
- Lier, M. F. and W. H. Behle. 1966. Status of the White Pelican in the United States and Canada through 1964. Condor 68:279-292.
- Schaller, G. B. 1964. Breeding behavior of the White Pelican at Yellowstone Lake, WY. Condor, 66(1):3-23.
- Sloan, N. F. 1973. Status of breeding colonies of White Pelicans in the United States through 1972. Inland Bird Band. News. 45(3):83-96.