

## NUMBERS OF EGGS AND YOUNG OF BALD EAGLES IN FOUR MIDDLE ATLANTIC STATES

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Authors of numerous bird books, manuals, and circulars in the last thirty years have frequently stated or implied that the Bald Eagle (*Haliaeetus leucocephalus*) lays from one to three eggs. My notes made on the nests of Bald Eagles visited in the years 1935-1942 and in 1946 show a greater production of eggs or young than one finds in the literature.

Bent (1937) states that "Two eggs almost invariably make up a full set for the Bald Eagle, sometimes only one, and rarely three; in two or three cases four eggs have been found in a nest, but these may have been the product of two females." Bent's information was no doubt based largely on egg collections of various collectors in the United States and Canada, and one wonders if sometimes the sets or clutches were incomplete, a point often reiterated by the late Richard F. Miller of the Delaware Valley Ornithological Club. Miller's knowledge of the nesting ecology of the breeding birds of southeastern Pennsylvania and New Jersey was born of long years of field work in these States. Imler and Kalmbach (1955) state that the Bald Eagle lays "1 to 3 eggs with 2 being the normal number." Broley (1952) says "In the Bald Eagles of the North, it is not unusual to find three eggs"; in only two of his [Mr. Broley's] one hundred and twenty-five nests under observation in Florida would he hope to find three eggs or birds. No authority is given for the statement so I assume it is based on his personal observations. Troyer and Hensell (1965) found only three nests with three young in each nest, out of one hundred and fifty-eight active nests in a dense population of Bald Eagles on Kodiak Island, Alaska.

From 1935 to 1942, and in 1946, I examined 16 nests 60 times during these years in Pennsylvania, Delaware, New Jersey, and Maryland. To keep disturbance at a minimum, nests with young were not revisited unless the young were too small at the first examination of the nest; accordingly nesting success is based on these observations. The young were banded in most instances and the recoveries were negligible (2 birds shot, one near the nest site, and the other about 80 miles distant). Some of the New Jersey nests are those described by Stone (1937). Nineteen of these 60 successful nestings held 3 young; in addition, one nest had 4 eggs; one 3 eggs; one, 2 eggs; one, 1 young and 1 egg; two, 2 young and 1 egg. These nests by no means represented the total eagle populations of these States, particularly the latter State during these years. The nests were not always occupied. Occupancy was judged by examination of the nest after flushing the eagles, or if there was reasonable evidence of human predation of the nest, i.e., if the nest tree had been climbed by someone and eggs or young had been taken. In 1939 all of the known New Jersey nests were inactive with the possible exception of a very remote one in northern Cape May County which was not visited that year, but the owner of the tract said he saw two or three adults almost daily. It is possible that the eagles had

alternative sites for on two occasions eagles built new nests not far removed from the old sites. In one instance, in Delaware, the eagles built 150 yards from the old one in which raccoons had built a den in the bottom of the eyrie. In the other instance, in New Jersey, the eagles refurbished and occupied an Osprey's nest (*Pandion haliaetus*) when disturbed from their new nest. Hensel and Troyer (1964) found the Bald Eagle using alternate sites.

If one takes the data of Troyer and Hensel (1965) and averages all their successful nests, one finds it to be 1.0 young per successful nest, whereas in all of the 47 successful nests listed in the table it was 2.2. young per successful nest. The nesting success of these eagles did not vary as much as those of the Karluk area studied by Hensel and Troyer.

It is quite possible that the Kodiak eagles were regulated by population density, for in England (Haldane, 1953) relates that the population of nesting herons (*Ardea cinerea*) was found to remain stable. Even though it fell below the peak after a severe Winter, the loss was made up. The eagles' nests that I examined were separated by many miles, except in Kent County, Delaware. There the birds approximated the density of the Kodiak ones for the size of the area involved. The Harford County, Maryland, nest was quite near an abundant food supply, and the northern Cape May County, New Jersey, nest was, as the eagle flies, adjacent to good food supplies and remote from human habitation on a large private holding.

Related to all these problems of productivity is man's interference. Disturbance to large birds such as eagles and ospreys has increased tremendously since 1945. Cape May County has been greatly altered since the publication of

Eggs or Young in Nests of Bald Eagles in Four Middle Atlantic States.

	1935	1936	1937	1938	1939	1940	1941	1942	1946	†
Pa.: Lancaster Co.			1		2	3	2			2.0
Del.: Newcastle Co.		2	3	3	0	2	3		2	2.5
		2	2	2	2 eggs	1	2		3	2.0
Kent Co.		2	1	2	3	2				2.0
			3		3		3			3.0
			1	2						1.5
Sussex Co.	3 eggs*							1 & 1 egg		1.0
								2		2.0
Md.: Hartford Co.					3	3	3			3.0
Cecil Co.			2 & egg							2.0
N.J.: Cape May Co.	4 eggs*	1			0	0				1.0
		3	*		0	0				3.0
		2 & egg	**	1	0	1				1.3
		3	3	3						3.0
Cumberland Co.		2	3	0	0	2	3	3		2.6
Salem Co.				1	-	-	-	2		1.5
Totals for Young	0	17	19	14	11	14	16	8	5	2.2

\* Robbed                      \*\* Logged

- Nest present but not visited

† Mean No. Young Per Nest

Note: Eggs in nests when young are banded are beyond hatching period.

Stone's account of the bird life (Schmid, 1966). Logging preceded the destruction of much additional habitat for summer housing and more access roads, an air base was put close to one site in the early 1940's, and a canal was dug across the tip of the peninsula. Also, in Stone's time we did not have the addition of so many unknown pollutants to the Bald Eagles' environment. Overly zealous groups of bird watchers can lead to the abandonment of a nest as happened to one on the western side of the Chesapeake Bay in Maryland. It is quite possible that where the population density is not detrimental to the Bald Eagles their nesting success is more stable, and that the production of eggs and young was greater than normally encountered in the nests that I visited. Troyer and Hensel's work pointed to this probability, as did the work of Dixon (1937) on the Golden Eagle (*Aquila chrysaetos canadensis*) in San Diego County, California. It is a depressing thought, but we may be witnessing an irreversible change in the status of the Bald Eagles that nest near centers of human populations, and they could well be on their way out. Bald Eagles, despite protection, are still shot as are the Golden Eagles. They will be shot by a thoughtless few, bringing condemnation on the whole hunting fraternity. It is important that work such as Hensel's and Troyer's be continued with the minimum of disturbance, so that we learn how to establish sanctuaries for such interesting forms.

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