SHORT COMMUNICATIONS

1981 - An Extraordinary Year for Golden Eagle "Triplets" in the Central Rocky Mountains

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The clutch size of the Golden Eagle (*Aquila chrysaetos*) ranges from 1 to 4 eggs with a mean near 2 (Brown 1977). Clutches of 3 are unusual, occurring less than 10% of the time (Table 1). Normally, 1 to 3 young fledge/successful nest with a mean of 1.2 to 1.4 (Brown 1977).

Table 1. Frequency of 3-egg clutches in the Golden Eagle.

STUDY AREA	YEAR(S)	NO. OF CLUTCHES	NO. OF 3-EGG CLUTCHES	% OF 3-EGG CLUTCHES	REFERENCE
California		21	3	14.3	Slevin, *in* Arnell 1971
Scotland		82	8	9.8	Gordon 1955
Colorado		5	0	0.0	Jollie, *in* Arnell 1971
Montana	1963-1964	60	4	6.7	McGahan 1966
Montana	1963-1968	30	1	3.3	Reynolds 1969
Utah	1957-1958	5	0	0.0	Hinman [no date]
Utah	1967-1968	23	1	0.4	Murphy et al. 1969
Utah	1969-1970	26	8	30.8	Arnell 1971
Idaho, Oregon	1966	15	1	6.7	Hickman [no date]
TOTALS		267	26		
MEAN				9.7	

Various factors, from failure to lay eggs to mortality of nestlings, reduce the probability of a pair of eagles fledging 3 ("triplets") from a nest. Table 2 compares data on the frequency of 3 fledgling nests from various studies of Golden Eagles in the western United States.

In 1981, we independently surveyed eagle nests for productivity and recorded nests with 3 nestlings. We subsequently discovered that other investigators, in Utah especially, found 5 nestling nests. The mean percentage (3.8%) of nests fledging triplets in 1981 in Utah, Colorado, and Wyoming is significantly higher $P < 0.10$) than the mean percentage of triplets for other years in the western United States (Table 2). We assumed that mortality of the nearly-grown nestling eagles observed in 1981 was low and that most nearly-grown nestlings fledged. Most studies with which we compared our data also made that assumption by counting nearly-grown nestlings as fledglings.

Many factors can influence productivity in Golden Eagles as reviewed by Newton (1979); also see Edwards and Collopy 1983). We are unable to assess the influence of these factors on the high number of triplets in 1981 with the possible exception of the influence of high prey densities. Clutch size, and therefore, ultimate productivity (number of fledged young/successful nest), are partly influenced by the quantity of food adult females eat before egg-laying affecting her nutritional state of health (Newton 1979). Newton (1979) pointed out that rodent-eating raptors lay clutches that can vary directly in size with rodent densities in the nest area. This allows raptors to exploit rodent and other cyclic prey species in high density years by increasing productivity. Evidence suggest that this is true of Golden Eagle-prey relationships, because the eagle's diet in North America is mainly (74%) lagomorphs and rodents (Olendorff 1976) that exhibit cyclic populations (Murphy 1975). This relationship may be moderated by other factors.

In the western United States lagomorph populations appear to have increased in the years leading up to 1981. In southwestern Idaho populations of Black-tailed Jackrabbits (*Leus californicus*) reached plague proportions in the winter of 1981-82, as reported in the popular press (e.g., Trueblood 1982). Jackrabbit densities were the highest in 9 y in 1981 in the Snake River Canyon of Idaho (Steenhof et al. 1983). In Utah, jackrabbit censuses con-

Table 2. Frequency of three-fledgling (triplet) Golden Eagle nests in the western U.S.

STUDY AREA	YEAR	TOTAL NO. SUCCESSFUL THROUGHOUT STUDY	NO. WITH TRIPLETS	% SUCCESSFUL W/TRIPLETS	REFERENCE
			Years Other Than 1981		
Idaho, Oregon	1966	17	0	-	Hinman, no date
Utah	1957-1958	5	0	-	Hinman, no date
Utah	1967-1968	18	0	-	Camenzind 1968
Utah	1969-1970	19	3	15.8	Arnell 1971
Wyoming, Colo.	1964-1980	882	1	0.1	Den. Wildl. Res. Ctr. data
Wyoming	1979	11	0*	-	Lockhart et al. 1980
Wyoming, Mont.	1975-1978	34	0*	-	Lockhart et al. 1978
Montana	1963-1964	55	3	5.5	McGahan 1966
Montana	1962-1968	22	0	-	Reynolds 1969
Oklahoma	1974-1975	6	0	-	Lish 1965
Texas	1974-1975	5	0	-	Lockhart 1976
TOTALS		1,074	7		
MEAN				0.7	
			1981 Data		
Utah	1981	95	6	6.3	Present study
Colorado	1981	94	3	3.2	Pearson, Grode pers. comm.
Wyoming	1981	46	0	0	Phillips and Beske 1981
TOTALS		235	9		
MEAN				3.8	

*Data gathered by personal communication with the author.

ducted by the Department of the Army (R. LeClerc pers. comm.) showed that densities were high(though decreasing thereafter) in autumn 1980 at 3 northwestern Utah study sites, moderate populations at 3 others, and low at 1 Nevada site. Data from both Steenhof et al. (1983) and the Army show similar high densities in 1971 supporting the hypothesis of a 10 yr jackrabbit population cycle in these areas.

Increased prey availability for nesting eagles is probably an important cause for higher than normal frequency of triplets in the western United States in 1981. The only other instance of a high frequency of triplets is the study of Arnell (1971) in Utah. He noted high lagomorph populations in 1971, 10 yr before the high number of triplets in 1981.

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Food Piracy Between European Kestrel and Short-eared Owl

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I studied a raptor community of the large field plain of Alajoki in Southern Ostrobothnia, western Finland (63° 05'N, 22°55'E), from 1977 through 1982 (see Korpimäki, et al. 1977, 1979). The most numerous raptor on the study area was the Short-eared Owl (*Asio flammeus*) (315 total pairs, 39.4%), followed by European Kestrel (*Falco tinnunculus*) (36.2%), Long-eared Owl (*A. otus*) (20.0%), Northern Harrier (*Circus cyaneus*) (2.5%), Boreal Owl (*Aegolius funereus*) (1.6%) and Sparrow Hawk (*Accipiter nisus*) (0.3%); for addition details see Korpimäki 1984a). Although the 4 most common species comprise the guild of open-terrain hunting birds of prey in the study area (Korpimäki 1978, 1981), inter- and intraspecific food piracy or kleptoparasitism (see Brockmann and Barnard [21979] for additional details on the terms) was observed only once. Consequently this case may be of some interest.

On 16 May 1982 at 2130 H, I saw a Short-eared Owl in the northern part of Alajoki flying over the field at the height of about 120 m and carrying a vole in its talons. The