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ARE YEARLINGS DISTINGUISHABLE FROM OLDER RED-NECKED PHALAROPES?

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Abstract.—Contrary to Prater et al. (1977), wear on primaries was not useful in separating yearling from older Red-necked Phalaropes (*Phalaropus lobatus*). Yearling and older males differed significantly in weight, but not in bill-length or wing-length. A weight : wing-length ratio provided the best, but not a complete, separation of age classes.

PUEDE DISTINGUIRSE LA EDAD ENTRE ESPÉCIMENES DE *PHALAROPUS LOBATUS*?

Resumen.—Se encontró que el grado de desgaste de las primarias en individuos de falaropes (*Phalaropus lobatus*) no es confiable para separar por edades individuos menores de un año y mayores a esta edad. Aves de estos dos grupos muestran diferencias significativas en sus peso, pero no así en el tamaño de su pico y largo del ala. La razón (ratio) peso : largo del ala, provee con el mejor método para separar estas aves en los dos grupos de edades, aunque el método no es infalible.

At the end of a 7-yr study of Red-necked Phalaropes (*Phalaropus lobatus*), including the capture and observation of known yearlings, Hildén and Vuolanto (1972) concluded that yearlings are indistinguishable from older birds. Their conclusion apparently was based upon gross plumage characteristics, for no quantitative data were provided in their paper. In contrast, Prater et al. (1977) claimed that yearling Red-necked Phalaropes have very worn primaries. Since inexperienced breeding birds often exhibit reproductive parameters quite different from experienced breeders (Baillie and Milne 1982, Perrins and Moss 1974), accurate separation of age classes is important. This paper reports our attempt to separate yearling from older Red-necked Phalaropes on the bases of wear on primaries and three morphological measurements.

Fieldwork occurred at Cape Espenberg (66°30′N, 163°30′W), on the Seward Peninsula of western Alaska during the summers of 1976–1981. Additional information about our study area is found in Schamel and Tracy (1987). We banded captured adults for individual recognition with an aluminum band and colored, plastic bands (Schamel and Tracy 1977). We banded chicks with an aluminum band and one plastic band, color-coded for year of hatch. We measured bill length (to 0.1 mm) with calipers, wing length (to 1 mm) with a ruler, and weight (to 0.1 g) with a 100 g Pesola scale on all captured adults, including banded chicks that returned as yearlings and recaptured adults (banded in previous years). In 1979 (mid-way through our phalarope studies), we learned that primary wear had been suggested as a potential means of separating age classes and we began to keep records on this parameter. Thus, the number of birds examined for body measurements and for feather condition is not equal.

TABLE 1. Amount of wear on primaries of yearling vs. older Red-necked Phalaropes.

Age, sex	Amount of wear on primaries[a]			
	none	slight	moderate	much
Yearling				
Male	2	3	0	0
Female	1	0	0	0
Older[b]				
Male	1	4	0	0
Female	1	2	0	0

[a] Categories from Prater et al. 1977.
[b] Captured as adults two or more years old.

In this paper "yearling" refers to a bird that was observed the summer following its year of hatch. These birds were in breeding plumage. This definition is consistent with the term "yearling" used by Hildén and Vuolanto (1972) and Prater et al. (1977). "Known older" birds are adult birds that were captured in two or more years or had been banded as chicks and recaptured at age two or older. The oldest birds in this study were at least 6 yr old.

We did not find wear on primaries useful in separating yearling from older birds (Table 1). Although Prater et al. (1977) suggested that yearlings have primaries that are *very* worn, none of the six yearlings we examined for this characteristic had primaries that were even "moderately" worn. We noted only "trace" to "very slight" wear on the primaries of three yearlings showing any wear. J. D. Reynolds (pers. comm.) also saw no noticeable wear on yearlings' primaries examined in his study of Red-necked Phalaropes (Reynolds 1987).

Yearling males were not significantly different from older males with respect to bill-length ($t = 0.03$, df = 33, $P > 0.5$) or wing-length ($t = 1.14$, df = 33, $P > 0.20$) (Table 2). Yearling males weighed significantly less than older males ($t = 3.20$, df = 33, $P < 0.005$) (Table 2). Based upon weight alone, we were able to classify 77% of yearlings and 73% of older birds correctly, using 32.4 g as the separation between age classes. Weight : wing-length ratios yielded a better separation (Mann-Whitney Test, $U = 232$, $n = 35$, $P = 0.002$). We correctly classified 85% of yearlings and 73% of older birds, using a weight : wing-length ratio of 3.03 as the separation point. We suspect the weight difference between yearling and older males is real. Our scant data suggest that yearlings weigh less than older males upon arrival and during the nest initiation period. This phenomenon may be related to migration patterns and scheduling, for yearlings arrive on the breeding grounds a few days later than older birds (Hildén and Vuolanto 1972). One early-arriving yearling male weighed 24.0 g, 22% less than mean yearling weight (Table 2), was very lethargic, and died several days after arrival. Although weight trends appeared

TABLE 2. Measurements of yearling and older Red-necked Phalarope males.

Measurement	Age category (no. birds examined)	
	Yearling (13)	Older[a] (22)
Bill (cm) $\bar{x}$	2.18	2.19
SD	0.07	0.11
Wing (cm) $\bar{x}$	10.4	10.6
SD	0.5	0.5
Weight (g) $\bar{x}$	31.1**	33.5**
SD	2.2	2.1

** $0.002 < P < 0.005$, $t = 3.20$.

[a] Captured as adults two or more years old.

similar in females, the small sample size of yearlings (3) and older birds (5) precluded statistical analysis.

We found yearling and older Red-necked Phalaropes to be indistinguishable on the basis of wear on primaries. Although the weight : wing-length ratio does not provide complete separation of age groups, it may provide useful estimates of the percentage of yearlings in the population. Unfortunately, male weight may be a labile characteristic in this species (Erckmann 1981:168), dependent upon food availability and weather. The fact that yearling males have, on the average, less weight than older males has important implications for incubation dynamics, since male phalaropes perform all incubation and brood-rearing duties.

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