ARTICLES

BREEDING PRODUCTIVITY OF SIBERIAN KNOTS AND CURLEW SANDPIPERS, 1987-1989.

L. G. Underhill

Breeding productivity of waders and Brent Geese *Branta bernicla* on the Taimyr Peninsula, Siberia, U.S.S.R, is related to lemming cycles, usually of length three years. In the first year of a normal cycle, foxes prey on the superabundant lemmings, leaving the ground-nesting birds to breed unmolested; in the second year of the cycle, the lemming population crashes, and foxes switch prey to eggs and young, resulting in poor breeding productivity; the third year of the cycle is unpredictable, and the birds have either good or poor productivity. Since 1960, there have never been more than two consecutive 'good' years, or more than two consecutive 'poor' years, as might be anticipated from the above scenario. The Knot *Calidris canutus* and Curlew Sandpipers *C. ferruginea* which winter in southern Africa breed mainly on the Taimyr Peninsula, consequently they show large fluctuations in the percentage of first-year birds in ringing samples [illegible] from 1969 to 1986 [illegible] 'good' and 'poor' years to be clearly [illegible] (Underhill 1988, Underhill 1988, Summers & Underhill 1987, in press, Underhill 1988, Summers 1990, Summers & Underhill 1990, Underhill [illegible] 1990).

This note reports the productivity of Knots and Curlew Sandpipers in boreal summers 1987, 1988 and 1989. 1989 was the third year of a lemming cycle, and breeding productivity was unpredictable. 1988 was the first year of a new cycle, and high breeding productivity was anticipated and 1990 was the second year, with poor breeding expected.

The percentages of first-year Knots in ringing samples in the southwestern Cape, mainly at Langebaan Lagoon, in the summers 1987/88, 1988/89 and 1989/90 were 0%, 29% and 0% respectively, and the corresponding figures for Curlew Sandpiper were 9%, 26% and 0% (Table 1 overleaf). 1987 and 1989 were, therefore, 'poor' years and 1988 was a 'good' year. The sample sizes were adequate to make these inferences with the exception of the small (n=8) sample of Knots in 1987/88. The observations conform with the predictions. They also conform with the breeding productivity of another Taimyr breeder, the Brent Goose. In 1987 and 1988, the percentages of first-year Brent Geese were 3% and 34,5% respectively, and the percentage in 1989 was less than 1% (R. W. Summers pers. comm.).

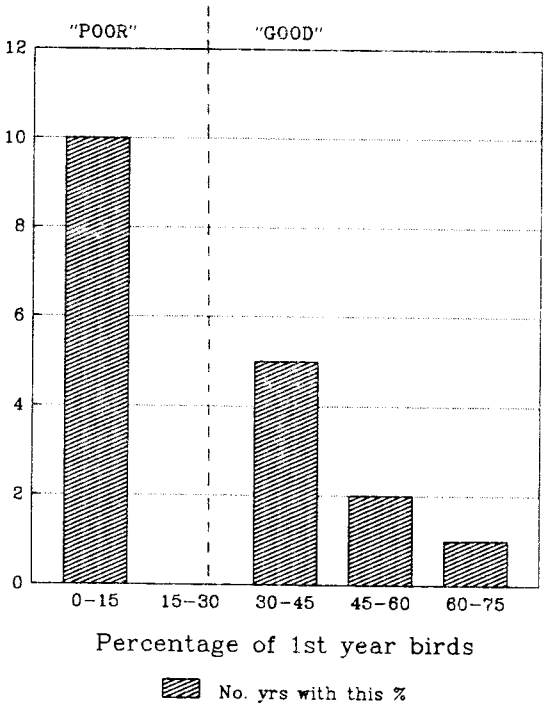

FIGURE 1

BREEDING PRODUCTIVITY OF CURLEW SANDPIPERS, WITH CLASSIFICATION INTO 'POOR' AND 'GOOD' YEARS (1969-1986). THERE WERE NO VALUES BETWEEN 12% AND 30%

TABLE 1

THE PERCENTAGES OF FIRST-YEAR KNOTS *CALIDRIS CANUTUS* AND CURLEW SANDPIPERS *C. FERRUGINEA* (AND SAMPLE SIZES) IN MIST-NETTED SAMPLES IN THE SOUTHWESTERN CAPE BETWEEN NOVEMBER AND MID-APRIL

	KNOTS	CURLEW SANDPIPERS
1987/1988	0% (N=20)	9% (N=255)
1988/1989	26% (N=39)	29% (N=496)
1989/1990	0% (N=146)	0% (N=446)

There have only been three 'good' breeding years on the Taimyr in the past decade (1982, 1985 and 1988). The third (and unpredictable year) in each cycle has turned out to be a 'poor' year. During the 1970s there were five 'good' years, and in the 1960s, four. These unpredictable 'boom or bust' patterns of breeding success must result in substantial fluctuations in total population size. In spite of this, Curlew Sandpiper numbers at Langebaan Lagoon in summer remain relatively stable (Underhill 1986). Probably, in boom years, the overflow of mostly first-year Curlew Sandpipers occupies suboptimal habitat.

There is some evidence for this: for example, Tony Tree found that 93% of the Curlew Sandpipers he trapped at the Kowie and Fish Rivers in the 1985 boom year were first-year birds (Underhill 1986). It would be a worthwhile project to conduct regular counts of Curlew Sandpipers and other waders at wetlands which apparently offer less suitable feeding conditions. These data could be used to quantify the fluctuations in numbers between summers, in relation to breeding productivity.

With these data, the long-term study of waders at Langebaan Lagoon by the Western Cape Wader Study Group comes of age, with 21 consecutive years of data for Curlew Sandpipers. The total number of Curlew Sandpipers ringed during this period is close to 20 000, approximately equal to the average number of Curlew Sandpipers at Langebaan Lagoon in summer

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L. G. Underhill, Department of Mathematical Statistics, University of Cape Town, RONDEBOSCH, 7700.

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