

SEASONAL DECREASE IN THE CLUTCH SIZE OF HARTLAUB'S GULLS
LARUS HARTLAUBII AT STRANDFONTEIN IN 1978

H.G. ROBERTSON & R.D. WOOLLER

Received 13 March 1981, accepted 17 April 1981

The contents of all nests in a colony of Hartlaub's Gulls *Larus hartlaubi* at the Strandfontein Sewage Works, southwestern Cape, South Africa (34 06S, 18 32E) were recorded from February to May 1978 by HGR. Visits were made at two-weekly intervals in February and March, and weekly thereafter. Hartlaub's Gulls were first recorded as having bred at Strandfontein in 1977 (Cooper & Pringle 1977).

Laying started in February and peaked in March (Table 1). The first young hatched by early March and all eggs and young were gone by late May. 52% of all clutches recorded contained two eggs, 28 % one egg and 20 % three eggs (Table 1). Similar clutch size distributions have been recorded elsewhere for the species (Cooper 1977, Cooper & Sinclair 1977, Cooper *et al.* 1977, Williams 1977, Manry 1978, Kriel *et al.* 1980).

If the total numbers of each clutch size recorded in the season are expressed as cumulative percentages in relation to date, it is clear that three-egg clutches were more commonly recorded early in the laying period whereas one- and two-egg clutches were more common later (Fig. 1). Many one- and two-egg clutches recorded probably represented incomplete two- and three-egg clutches, leading to an underestimate of large clutches early in the season. This might be offset, however, by partial predation of larger clutches later in the season or by incomplete replacement clutches at this time.

Many seabirds show a seasonal decrease in clutch size, usually attributed to later laying by inexperienced pairs (Nelson 1980), including the Silver Gull *L. novaehollandiae* of Australia (Wooller & Dunlop 1979). In the closely related Redbilled Gull *L. n. scopulinus* of New Zealand, females lay progressively earlier in the season as they age and clutch size increases with age (Mills 1973). The Strandfontein colony was probably established recently and includes colour ringed birds less than six years old (Cooper & Pringle 1977). Its apparent seasonal decrease in clutch size may result from a diverse age composition.

REFERENCES

- COOPER, J. 1977. Swift Terns and Hartlaub's Gulls breeding in the Berg River Estuary. *Cormorant* 2: 24.
- COOPER, J. & PRINGLE, J.S. 1977. Swift Terns and Hartlaub's Gulls breeding at the Strandfontein Sewage Works. *Cormorant* 2: 23.
- COOPER, J. & SINCLAIR, J.C. 1977. Hartlaub's Gull and Swift Tern breeding at Wadrifsoutpan. *Cormorant* 2: 22.

TABLE 1

NEST CONTENTS OF HARTLAUB'S GULLS *LARUS HARTLAUBII* AT STRANDFONTEIN DURING 1978

	February		March				April				May	
	05	19	04	19	08	15	22	29	06	13	21	
Clutch (one egg)	0	7	26	39	23	16	15	12	15	3	0	
Clutch (two eggs)	1	9	65	80	25	27	24	25	23	10	0	
Clutch (three eggs)	1	3	34	38	13	7	6	5	4	2	0	
Young in nest	0	0	2	10	7	11	3	4	5	0	0	
Young out of nest*	0	0	0	0	11	15	14	?	7	0	0	
Total clutches	2	19	125	157	61	50	45	42	42	15	0	
Cumulative percentage of all clutches recorded with :												
One egg (156)	0	4	21	46	61	71	81	88	98	100		
Two eggs (289)	1	4	26	54	62	72	80	89	97	100		
Three eggs (111)	1	4	34	67	79	85	90	95	98	100		

*minimum figures, since some young may have been missed among vegetation.

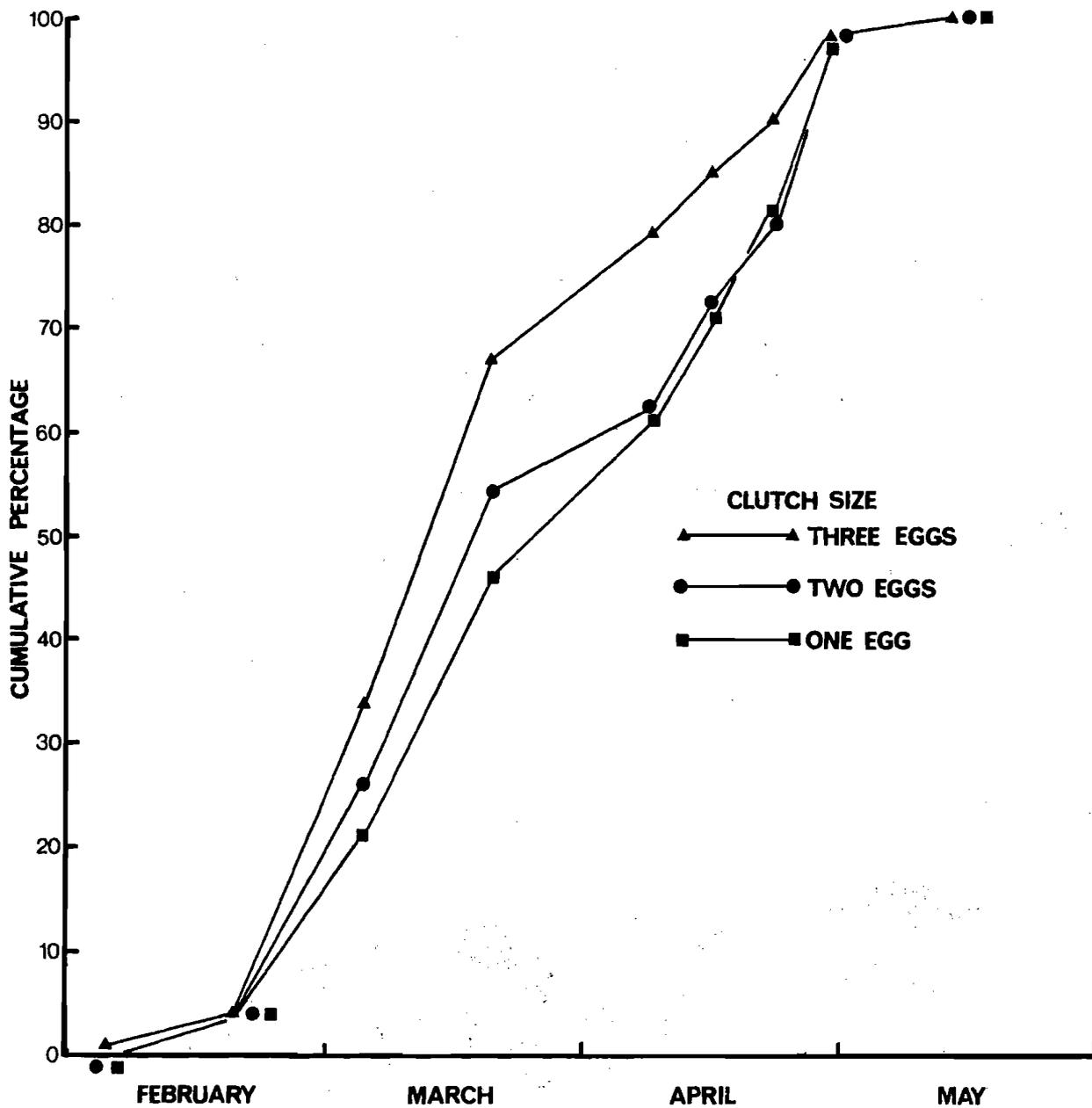


Figure 1

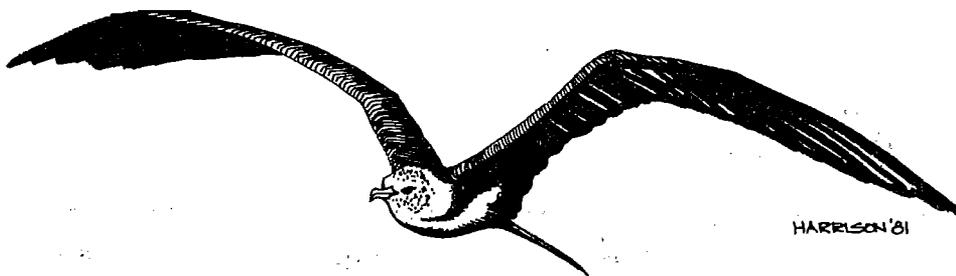
The cumulative percentages of one, two and three egg clutches in the Hartlaub's Gull *Larus hartlaubi* at Strandfontein during 1978

- COOPER, J., SHAUGHNESSY, P.D. & CLINNING, C.F. 1977. Hartlaub's Gull and Swift Tern breeding in South West Africa. *Cormorant* 3: 10-12.
- KRIEL, F., CRAWFORD, R.J.M. & SHELTON, P.A. 1980. Seabirds breeding at Robben Island between 1949 and 1980. *Cormorant* 8: 87-96.
- MANRY, D.E. 1978. Some seabird observations from the Orange River estuary, South Africa/South West Africa. *Cormorant* 5: 17-18.
- MILLS, J.A. 1973. The influence of age and pair-bond on the breeding biology of the Red-billed Gull (*Larus novaehollandiae scopulinus*). *J. Anim. Ecol.* 42: 147-162.
- NELSON, B. 1980. Seabirds. London: Hamlyn.
- WILLIAMS, A.J. 1977. Notes on the breeding biology of the Hartlaub's Gull. *Cormorant* 3: 15.
- WOOLLER, R.D. & DUNLOP, J.N. 1979. Multiple laying by the Silver Gull, *Larus novaehollandiae* Stephens, on Carnac Island, Western Australia. *Aust. Wild. Res.* 6: 325-335.

H.G. Robertson, Entomology Department, Rhodes University, Grahamstown 6140, South Africa.

R.D. Wooller^{**}, Percy FitzPatrick Institute of African Ornithology, University of Cape Town, Rondebosch 7700, South Africa.

^{**}Permanent address: Biological Sciences, Murdoch University, Western Australia 6150, Australia.



Imm. Lesser Frigate-Bird ~ Indian Ocean