



Growth and Maturity of the Barnacles *Lepas hillii* and *Lepas anatifera*

INFORMATION on the rate of growth of all species of *Lepas* is scanty. Stanley Kemp, in a letter to J. F. Anton¹, quotes three sources, the first of which, referring to an unspecified *Lepas*, gives an increase in capitulum length of about 1 mm. a day; the second and third, referring to *L. anserifera*, give increases of 8 mm. in 8 days, 21 mm. in 40 days and 25 mm. in 107 days. In all cases these are minimum rates since they refer to ships and to a buoy known to be free of barnacles at one date and supporting barnacles of quoted size at another, the moment of settling being unknown.

During the voyage of the yacht *Petula* from Dakar to Barbados in the winter of 1953-54², colonies of barnacles settled on the ship's side above her anti-fouling paint and flourished there throughout the passage. While the ship lay in Dakar harbour preparing for sea, the stores which were loaded into her so increased her draught that some of her white topside paint was submerged, and here many fouling organisms were able to gain a hold. So long as the ship was at anchor only the sessile barnacle *Balanus amphitrite* Darw. was present, but at sea this species largely died off and was replaced by the pedunculate barnacles *Lepas hillii* Leach, *Lepas anatifera* L. and *Conchoderma virgatum* (Spengler). *Conchoderma virgatum* was present in large numbers and early attained a capitulum length of 9 mm. but beyond this length it did not grow, being heavily preyed upon by the trigger fish *Canthidermis maculatus* and *C. sobaco*.

In position 15° N., 31° W., after the ship had been at sea for 30 days, a sample of twenty of the largest *Lepas* growing on the topside was taken and preserved. A further sample of sixty of the largest specimens from an adjacent position was taken after 60 days, in position 15° N., 46° W.

Measurement of the preserved material yielded results summarized in Table 1. The measurements, to the nearest 0.5 mm., were made from the umbo (basiooccludent angle) of the scutum to the upper (occludent) tip of the tergum. This dimension may be approximately equated with the capitulum length generally quoted in the literature, being very slightly greater; it is to be preferred to the capitulum length as giving a firmer standard of size.

The age of the barnacles in the samples is again

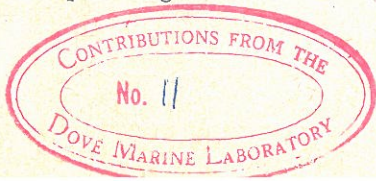


Table 1. LENGTH DISTRIBUTION OF *Lepas* TAKEN 30 AND 60 DAYS OUT

Length (mm.)		11-13.5	14-16.5	17-19.5	20-23
30 days	Total <i>L. hillii</i>	3	4	2	0
	Gravid <i>L. hillii</i>	0	1	0	0
	Total <i>L. anatifera</i>	5	6	0	0
	Gravid <i>L. anatifera</i>	0	2	0	0
60 days	Total <i>L. hillii</i>	6	10	20	21
	Gravid <i>L. hillii</i>	0	2	16	11
	Total <i>L. anatifera</i>	0	0	1	2
	Gravid <i>L. anatifera</i>	0	0	0	1

not known with certainty since settlement on the ship's side was not observed. Colonies containing both species of *Lepas* were established 10 days out, with capitula of perhaps 5 mm., and from the first day out the ship passed among much flotsam bearing mature *L. anatifera* from which infection by this species could have occurred. No *L. hillii* were found on collected flotsam, yet it is certain that both species were well established on the tenth day and it is not unreasonable to suppose that settlement of both began very near to the start of the voyage.

All specimens were opened and searched for embryos. From Table 1 the following may be noted.

(a) Among the 30-day group only one specimen of *L. anatifera* among eleven and one of *L. hillii* among nine bore embryos in the ovigerous lamella. It therefore seems probable that both species require more than 30 days on average from settlement to maturity.

(b) Of the 60-day group of *L. anatifera* one out of three bore embryos. Twenty-nine out of fifty-seven *L. hillii* bore embryos, all except two of the gravid examples being longer than 16.5 mm. So large a proportion of the barnacles between 17 and 19.5 cm. contained embryos that it is probable that this span represents first maturity. Since *L. hillii* achieved, in general, a length of 13-17 mm. in 30 days, 17-19.5 mm. at maturity and 17-21 mm. in 60 days it might be crudely assumed, given a constant increase in length during the second month, that maturity was achieved, on average, in the last two weeks of the second month. Comparing lengths at 30 and 60 days, however, it is seen that the average daily increase of about 0.5 mm. in the first month is not maintained in the second. This check in growth was no doubt due to the attainment of maturity at 17-19.5 mm. It would therefore seem more probable that the growth-rate of 0.5 mm. a day observed in the first month continued to maturity, which on these terms occurred in general on the thirtieth to forty-third day. Thereafter, a growth-rate near 0.03 mm. a day is indicated.

Throughout the voyage the sea temperature was high, ranging from 24.2° to 26.1° C. The conclusions advanced above concerning both growth-rate and the length of the juvenile phase must consequently be applied with caution to animals taken in cooler waters.

FRANK EVANS

Dove Marine Laboratory,
Cullercoats,
Northumberland. Sept. 1.

¹ Anton, J. F., *Scot. Nat.*, **61**, 65 (1949).

² Evans, F., *J. Inst. Navig.*, **8**, 205 (1955).



