

TABLE II.—The numbers of late fifth instar larvae of each morph in the two parts of the population of *A. assimilis* at Leithfield Lagoon.

Date	Cut-off Pond			Lagoon		
	Normal	Flightless	Total larvae	Normal	Flightless	Total larvae
December 23	—	—	—	9	4 (31%)	13
January 3	11	2	13	16	16 (50%)	32
January 6	—	—	—	33	33 (50%)	66
January 11	5	0	5	11	14 (56%)	25
January 20	19	5	24	6	16 (68.5%)	19
January 27	42	0	42	2	16 (89%)	18
February 5	—	—	—	8	29 (78%)	37
February 12	—	—	—	3	45 (94%)	48
February 26	—	—	—	3	51 (94.5%)	54

any time and none at all in a large sample of late instar larvae collected at the end of January—the last date that larvae could be found in any number.

These differences in development led to considerable differences in the adult populations of the two places. They had roughly similar structures at the beginning of January, a week after the first imagines appeared, with 18 of 52 bugs (35 percent) in the pond and 56 of 115 bugs (48 percent) in the lagoon flightless. Three weeks later on, January 20, only nine of 96 bugs (9.5 percent) in the pond were flightless compared with 45 of 83 bugs (54 percent) in the lagoon. The numbers of the two morphs are significantly different in the collections on the two dates in the pond ($\chi^2 = 14.40$, $P < .001$) and in the collections from the pond and lagoon on January 20 ($\chi^2 = 42.48$, $P < .001$) but not in the collections made on the two dates from the lagoon ($\chi^2 = 0.58$, $0.50 > P < 0.30$).

Development of the lagoon population continued increasingly towards the flightless morph and by May over 95 percent of bugs were flightless.

There seems to have been a strong migration of normal bugs away from the pond in the last week of January. The incidence of mature normal bugs in the population fell from 54 percent (52 of 96) on January 20 to 16 percent (11 of 70) on January 27 and whereas these bugs were at first over six times as abundant as mature flightless bugs, by the end of the month they were only as common. This change in relative abundance of the morphs took place at a time when there was little or no recruitment of the flightless morph but when there were great numbers of teneral normal bugs. The pond and lagoon were linked again on February 5 so that it was not possible to see whether migration of normal bugs would have become even more striking as the conditions deteriorated further in the drying pond.

To summarise, the cycles of development of the adult populations in the Kainga pond and Leithfield Lagoon were similar with predominantly normal development in early and mid-summer and flightless development at the end of summer, excepting that in the cut-off population at Leithfield most bugs developed to the normal morph in response to the unfavourable environmental conditions of the drying pond. At the end of summer the structure of the populations at Kainga and in the Lagoon at Leithfield were nevertheless quite different with only 54 percent of imagines flightless at Kainga compared with over 95 percent flightless at Leithfield. Although the two morphs occurred together in samples of late instar larvae throughout summer flightless development predominated earlier at Leithfield. Most bugs in these samples were flightless after mid-January at Leithfield but a similar incidence was not reached until nearly a month later, on February 10, at Kainga. Differential recruitment of the morphs seems the most likely explanation of the differences between the two overwintering populations.