NOTE

Occurrence of Alates of the Neotropical Ant, *Paraponera clavata* (Hymenoptera, Formicidae), at Lights During the Dry-Wet Seasons Interface in Panama[1]

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The ponerine ant, *Paraponera clavata* (F.), is a large and important neotropical ant. Its nests are constructed in the soil, usually near a tree base, and colony populations of more than 1300 workers have been recorded (Janzen and Carroll, 1983. *In* D. H. Janzen [ed.], Costa Rican Natural History, University of Chicago Press. pp. 752-753). It is nocturnal and feeds extensively on extrafloral nectaries. Alate females and males are produced simultaneously in the same colony and have been collected in August in Costa Rica (Janzen and Carroll 1983) and January in Panama (McClusky, E. S. and W. L. Brown, Jr. 1972, Psyche 79: 335-347).

In a study of the periodicity of alate ants at lights during the final months of the dry season and the beginning of the wet season at Barro Colorado Island, Panama, in 1967 and 1968, alates of many species were collected. Those of *P. clavata* were large, conspicuous, and easily identified; they constitute the subject of this report.

Alates were collected in 1967 at two lights, one a black-light fluorescent on the side of the dormitory building, and the other an incandescent light in the forest off Snyder-Molino Trail (marker 0.2). In 1968 the Snyder-Molino light was replaced by a fan-operated black-light trap. The lights were turned on about 6:45 pm EST each evening. The dormitory light was observed continuously between approximately 6:45 pm and midnight and 4 and 6 am from 25 February to 31 May 1967 except that no observations were made between the morning of 24 April and the evening of 29 April. Occasional observations between midnight and 4 am were made on several nights. With few exceptions all observed specimens were collected during half-hour intervals. Ants attracted to the forest light were collected at approximately 6:15 to 6:30 am between 26 February and 4 April. The 1968 collections were made at the dormitory light from 3 to 25 April and at the light trap from 13 to 25 April. Specimens at the domitory light were hand collected between 7 pm and midnight and 4 and 6 am. The light trap was turned on each day at 6 pm and emptied at 8 pm, 5 am and 6 am the following morning.

All specimens collected were preserved in 85% ethanol and later mounted and incorporated in the collection of the Invertebrate Museum, Department of Biology, University of North Dakota.

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This study extended over a three-month period in the dry-wet season interface. The wet season began about mid-April in 1967 and early May in 1968. The interface between the wet and dry seasons is an important environmental cue to tropical organisms and is the season of increased nuptial activity by some other ants (Kannowski, P. B. 1969, *In* Proceedings, VI Congress, International Union for the Study of Social Insects, Bern, Switzerland, pp. 77-83).

A total of 50 females and 5 males was collected, 36 females and 5 males in 1967 and 14 females in 1968. Alates were collected in 1967 throughout the period of study, the first (female) being collected on 25 February, the last (female) on 26 May. However, no alates were collected between 10 March and 7 April. In 1968 alates (females) were collected from the morning of 4 April until the morning of 25 April. Specimens were collected on 33 different days spread over a 91-day span in the two years. Only eight collections involved more than one individual during an hourly period. The maximum number of specimens collected at a light during any hourly period was three: three males collected at 9 pm on 13 May 1967 and three females collected at 7 pm on 14 May 1967. The maximum number of specimens collected in one night was seven (females) in the night of 14-15 May 1967. The 50 females were collected at diverse times during the night, but principally after the onset of darkness and secondarily just prior to sunrise (Fig. 1). Three of the females collected in early morning were partially dealate, indicating that mating had probably occurred.

The collections were made from the center of the dry season until the early part of the wet season. The wet season extends from April or May until December on Barro Colorado Island (Rand, A. S. and W. M. Rand, 1982. *In* E. G. Leigh, Jr., A. S. Rand and D. M. Windsor [eds.], Smithsonian Institution Press, Washington, DC, pp. 47-59). McClusky and Brown (1972) recorded alates in a nest on Barro Colorado Island in January of 1960, a moderately dry month following an extremely wet December. Janzen and Carroll (1983) recorded alates in a nest excavated in Costa Rica in August of 1969 during the wet season there. In addition, Diana Lieberman collected males of *P. clavata* at lights at La Selva, Costa Rica between 10-16 June 1982, early in the wet season in that locality.[3] These observations suggest that *P. clavata* may produce alates and have flights throughout the year.

The hourly pattern of alate collection (Fig. 1) indicates that the alates leave the nests at or soon after the onset of darkness. McCluskey and Brown (1972) observed a male in the opening of a nest on Barro Colorado Island at 6:30 pm in January 1960. They also noted that males collected on Barro Colorado Island and maintained in an artificial nest in a laboratory at Harvard University under controlled light/dark conditions showed greatest activity in the first part of the dark period. These observations suggest that mating occurs in dim light (at best) and that vision is of little or no importance in mate location.

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[3] Specimens in the Invertebrate Museum, Department of Biology, University of North Dakota.

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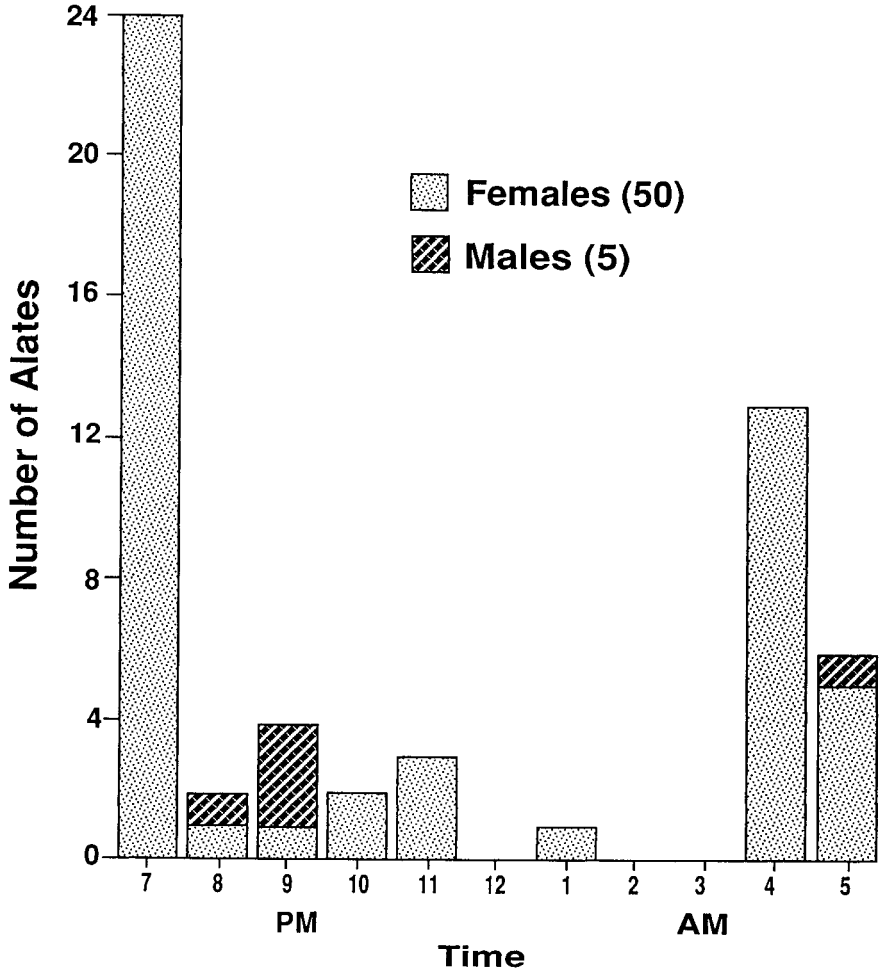

Fig. 1. Hourly records of *Paraponera clavata* alates at lights, Barro Colorado Island, Panama, February-May 1967 and April 1968.