

6:55 PM. Four morning raids were seen at the Lawn Nest in 1959, but this seemed unusual and no others have been observed. Within a colony, raid time also varied widely: from 3:06 PM to 5:16 PM for 0-26 and from 3:50 PM to 6:25 PM for the Lawn Colony. Second raids could start as late as 6:45 PM for 0-26 and 7:30 PM for the Lawn Colony. The latest ended at 8:14 PM.

Colonies in fully exposed places where the sun was bright and the temperature high for longer time started their raids late. The 0-26 raids were early because nearby trees began shading the nest while the sun was still high in the sky, thus reducing the temperature to that tolerated by the ants. Single individuals could run rapidly into the shade of nearby dense grass at almost any time of day, but the raiding group could not form until they could circle on the soil surrounding the nest entrance. The upper limit of tolerance for *Polyergus* was about 91°F for air temperature 10 inches above the surface and 98°F on the surface. (*P. p. nitidiventris* workers could forage normally at these temperatures.)

Frequently during the morning or midafternoon an ant or two would stand at the entrance or move off to explore in the grasses. Then, in late afternoon, as the sun slanted low, or the nest was shaded so that both light and temperature dropped, ants began to come out one or 2 at a time. Sometimes the number increased gradually to full quota, but usually there would be a sudden outpouring which seemed to be in response to an incoming scout. Thus, the starting time of a raid was influenced by time and temperature and perhaps reduced light but seemed more directly dependent on the return of an ant which had laid an odor trail. This seemed quite clear for the late raid which began at 5:16 PM. The ants had begun coming out at 4:10 PM when temperature was reduced to 91°F.* From then on 20 to 50 kept exploring the edges of the nest but seemingly could find no direction to start out. Then suddenly at 5:08 PM more ants poured out, covered the nest, and explored into the grasses until they had organized a raiding party which left at 5:16 PM. It had seemed that weather conditions had been right, and the ants had been ready to start for about an hour before an odor trail was found.

Even at favorable temperatures the ants did not raid until mid-afternoon. The earliest raid seen began at 3:06 PM at 81°F (83°F on the ground). At 2:30 PM, when the watch began, there were

*Temperatures are those 10 inches above the nest soil unless otherwise stated.