



Ent. Medd., 29 : 325-328 [1960]

**instincts of *Ammophila* (*Psammophila*) *tydei*
Guillon (Hymenoptera, Sphecidae).**

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A number of specimens of this species — characterized by silvery hairiness on the thorax — were caught within a minor uncultivated area near Arafo, Tecerife, at the end of December 1956. On 31/XII in the forenoon one wasp of this species — as determined by its appearance — was seen inspecting an Agrotid larva hanging in a twig of *Chrysanthemum frutescens* L. In the afternoon the larva had disappeared from the twig. But nearby a wasp, later caught and determined as belonging to this species, and presumably the same as had inspected the larva, was observed carrying what was presumably the same larva below herself to a nest prepared in advance and situated in rather hard soil some meters from where the larva had been hanging. She pulled the larva into the nest-hole head first. When in position the hind end of the larva almost reached the entrance of the nest. The wasp pressed down earth with her head into the entrance and used the mouth region

* *Psammophila* Dahlbom 1842 (preoccupied) = *Podalonia* Spinola 1853.

to close it with tiny particles. She also swept above her with hindward leg movements, but the closing was mainly undertaken by the pressing movements. She was heard humming. The wasp was caught and the larva excavated. The larva which still moved a little appeared to lie directly in the earth without much of a cave space and with only slight inclination of the tunnel. The egg was placed on its left side behind the last hind leg on the first abdominal segment somewhat above the level of the base of the legs. The larva gave off feces until the nest day when it was preserved. Mr. J. G. Worm-Hansen, Zoological Museum, Copenhagen, has kindly identified the larva as *Mamestra oleracea* L. or a closely related species.

The habits of *Ammophila tydei* have been observed before by Picard (1903, 1925) in France and by Rotli (1928, pp. 214—215) in Algeria. According to these authors earlier descriptions by J. H. Fabre of the habits of this species are contradictory and due to confusion with other species. Picard found the species working only in loose sand, whereas Rotli like myself found it digging in compact soil. Both like myself found the tunnel to be only slightly inclined and Picard expressly stated that the nest consisted only of the entrance tunnel. He stated (1925, p. 164) a but slightly inclined tunnel also for *A. viatica* L. (= *hirsuta* Scop.) and *A. affinis* Kirby. Also Picard like myself found the egg to be fixed on the left side of the larva, but on the thorax.

According to Rotli (1928, pp. 229—230; see also Murray 1940, pp. 8—10, and 1951, pp. 977—978; references to biology, e. g. Newcomer 1930, p. 553) all the species of the subgenus *Psammophila* to which *A. tydei* belongs (thus for instance *A. viatica* L. (= *hirsuta* Scop.) and *A. affinis* Kirby found in Denmark) capture the prey before the nest is made, whereas the bulk of the subgenus *Ammophila* (sensu stricto) prepare the nest first. However, the habit of capturing the prey first is known also within the subgenus *Ammophila* (Roth mentions *A. haimatosoma* Kohl), and according to Rotli this supports the idea of subdividing *Ammophila* s. str. into a number of subgenera (loc. cit., pp. 154, 230). There is apparently general agreement among authorities that in the subgenus *Psammophila* there is never more than one larva and one egg to a given nest, e. g. Murray's survey (1940, p. 10) for *A. (Ps.) luctuosa* Smith or *A. (Ps.) communis* Cresson. Biit E. Tetens Nielsen (1933, p. 307) without quoting his source refers to one or two larvae being placed in each nest by *A. (Ps.) viatica* L. This is not a personal observation of his, but — though it is not remembered now — probably based on earlier statements by Adlerz

of there being more than one larva in the nest of *A. (Ps.) viatica* (E. T. N. *in litt.*). Adlerz (1903) withdrew as doubtful these earlier statements. In the subgenus *Ammophila* there may be one (*A. sabulosa* L.) or several (*A. campestris* Jur.) caterpillars in each nest. Already Adlerz and E. Nielsen (E. Tetens Nielsen, 1933, p. 307) found that *A. campestris* Jur. inspects and provisions the nest regularly. *Ammophila adriaansei* Wilcke (Adriaanse 1948) even digs one or two more additional burrows for future use while still provisioning the first. Obviously the capture of the prey before the nest is made as in *Psammophila* seems rather incompatible with the provisioning of the nest with much more than one larva.

Newcomer succeeded in confusing the wasp so that she went in search of another worm with which to provision the nest she had already constructed. To Murray (1940, p. 10) this seems to indicate how the habit of *Ammophila* (by him called *Sphex*) may have originated.

The habit of preparing the nest after the prey has been taken and deposited nearby, e. g. in a twig of some plant, is specially characteristic of the spider wasps, the Pompilidae, though exceptions occur. The great bulk of the Hymenoptera aculeata, however, prepare the nest first and then seek the prey, and this sequence may have been a prerequisite for the evolution of the social groups. Actually some more highly advanced Pompilidae which prepare the nest first have become subsocial (Williams 1929; from Evans, 1953, p. 159). At Singora in South Siam 5. and 6. IX 1940 I saw myself specimens of a species of Pompilidae carrying spiders into the wide hollow base of a tree, where several other individuals of apparently the same species were seen, thus strongly suggesting some sort of social behaviour. Two collected specimens have been kindly determined by Mr. K. Fæster, C. E. from Bingham (1897) as males possibly of *Salius madraspatanus* (Smith).

A. (Ps.) viatica L. (= *hirsuta* Scop.) is gregarious except during the period of reproduction (several references by Maneval, 1939). It seems that a development of this gregariousness into social behaviour during the nesting period must be prevented by the habit of capturing the prey first.

The determination from Kohl (1906) of my collected specimens of *A. tydei* has kindly been confirmed by Mr. K. Fæster, C. E.

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