First record of the ponerine ant *Pachycondyla sennaarensis* (Hymenoptera: Formicidae) in Iran, with notes on its ecology

by Siavosh Tirgari and Omid Paknia

Abstract. The mainly African stinging ant *Pachycondyla sennaarensis* is reported from Fars province in southern Iran, which represents the northern limit of its distribution. It occurs mostly in rural and urban habitats where the humidity reaches up to the soil surface, such as in parks. It preys on small arthropods using its sting.

Kurzfassung. *Pachycondyla sennaarensis,* eine vorwiegend in Afrika beheimatete Ameise, wurde erstmals in der Provinz Fars in Süd-Iran nachgewiesen. Dieser Fundort markiert die Nordgrenze ihrer Verbreitung. Sie kommt vorwiegend in städtischen und ländlichen Habitaten vor, meist an Stellen, an denen die Bodenfeuchtigkeit bis nahe an die Oberfläche reicht (so z.B. in Parks der Städte). Die Beute besteht hauptsächlich aus kleinen Arthropoden, die sie mit Hilfe ihres Stachels erbeutet.

Key words. Ant, stinging, *Pachycondyla,* Iran, Middle East.

Introduction

The ponerine ant *Pachycondyla sennaarensis* was first described, as *Ponera sennaarensis*, by MAYR in 1862. The type locality is Sennar in Sudan. WHEELER (1922) (as *Euponera* (*Brachyponera*) *senaarensis*) found it at many localities in West Africa, and LÉVIEUX & DIOMANDE (1978) described it as probably the most common ant in the Sudan, savannah regions, being found from Senegal across Sub-Saharan Africa to Somalia and up to the southern edge of the Sahara in Niger, north of Niamey, and halted by the massif of the ebony forest. COLLINGWOOD (1985) reported it from Saudi Arabia and described it as an aggressive species, distributed throughout the African tropics with Arabia probably being its northern limit. In 1997, he reported it from UAE.

This paper reports *Pachycondyla sennaarensis* from Iran for the first time and gives new information on its habitat, biology and ecology at the northern edge of its distribution area.

Material and methods

The study area, Lar city (27°41'N, 54°20'E), is situated in a desert and dry area in the Fars province of southern Iran (Fig. 1). The mean altitude is 915 m above sea level, and the mean annual air temperature is 24°C. The hottest months of the year are July and August. The

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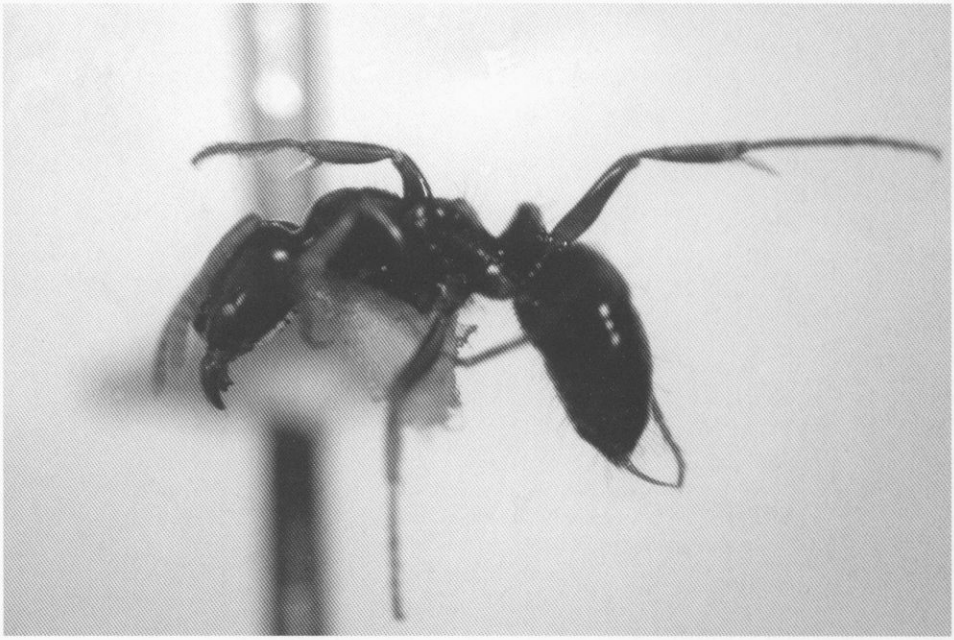

Fig. 1. *Pachycondyla sennaarensis* Mayr, 1862, from Iran.

maximum diurnal temperature is 47°C.The coldest months of year are June and February. The minimum diurnal temperature is –2°C. The mean annual rainfall is 200 mm. The area is strongly under the influence of two air currents during the year: a Mediterranean humid front that enters the area in winter, and a summer current from the Indian Ocean.

Data were recorded between autumn 2001 and summer 2002. A total of 35 colonies was selected randomly for closer studies. All of them were located in urban habitats (Lar City) and observations were in ten-day periods throughout all seasons.

Results and discussion

Like other species of ants, *Pachycondyla sennaarensis* (Sumsun Ant) has winged female and male forms. Nuptial flights usually take place following rain, with optimal conditions of temperature and wind. Mated and dealate queens form new colonies soon afterwards. Both large and small workers are found together in the colony (Fig. 1).

The colonies in Lar County were mostly found along the irrigation ditches of roadside plantations, gardens and parks, in damp ground, partially exposed to the sun. The nest entrance to the colony on the soil surface is usually circular, 3–5 mm in diameter, rarely round, with piled-up debris from nest excavations (tumulus). However, it usually occurs when the

surface of the soil of the colony is damp. The number of nest entrances in soft soils is often more than those in hard soils. Colonies are sometimes found at construction sites.

These ants are considered to be omnivore or scavengers in their feeding habits. They prey on small arthropods (other species of ant) and rarely on large arthropods (cockroaches), using their sting. They are seed feeders and they feed on refuse as well.

Diurnal activities depend largely on the external air temperature and humidity. In warm seasons, particularly in spring and summer, surface activities begin one hour before sunrise and continue for several hours, but they come to a complete halt as the temperature rises. A second period of diurnal activities begins one or two hours before sunset and continues to midnight, especially when there are artificial lights. In the cold seasons, autumn and winter, outside activities begin after sunrise and continue until two hours before sunset.

Initial studies in Africa have shown that *P. sennaarensis* is a savannah species which penetrates into adjoining forest zone areas, but in Iran these ants are restricted to urban and rural habitats. Because of the low levels of rainfall and the long dry seasons in the south of Iran, these ants cannot survive outside human settlements where they can make colonies near water resources, in damp soils such as in gardens, parks and along the irrigation ditches of roadside plantations. DEJEAN & LACHAUD (1994), who studied the species in Zaïre, described it as unique among Ponerine ants in being partially seed eating, this being an adaptation to the dry areas which constitute its main habitat. In the wet season, and in humid habitats, animal prey is the principal diet. COLLINGWOOD (1997) described the species as a scavenger. Our observations have shown that these ants are partially scavengers but have an omnivorous diet.

It seems that *P. sennaarensis* has adapted some of its biological and ecological characteristics to the new habitats in southern Iran.

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