

TYLECODON CACALIOIDES

AND A LONG-PROBOSCID HORSE-FLY

by **Robert Gess**, Klein Karoo Sustainable Dryland Permaculture Project, Bergendal, Western Cape

In January 2000, in succulent veld on a west facing slope of interbedded Witteberg shales and sandstones, I came upon an abundance of flowering *Tylecodon cacalioides*. I was particularly interested to see what visited the flowers as little has been recorded on the pollinators of *Tylecodon* (a member of the family Crassulaceae).

Furthermore, I had previously observed the flower visitors to *Tylecodon hallii* in the Richtersveld National Park together with Sarah Gess (see *Veld & Flora*, June 1998). The greenish yellow flowers of that species were found, in two years, to be solely visited by a long-tongued pollen wasp described by Fred Gess as *Masarina tylecodoni*. I now found that the bright yellow flowers of *Tylecodon cacalioides* were being frequently visited solely by a long-proboscid horse-fly, *Philoliche (Phara) tumidifacies* (family Tabanidae), known only from the Little Karoo.

Other plants in flower on the slope were a pink flowered species of *Pelargonium*, a reddish orange flowered species of *Cotyledon* (family Crassulaceae) and various mesembs, none of which were being visited by the horse-flies.

I observed the plants over a period of a week in early January 2001 and then again during the last week of January. On all days and throughout the day there were several (three or four) flies present per plant at any one time. The flowers are deeply campanulate (bell-shaped) with the tips of the fused petals free and outwardly curved. The flies, when visiting flowers, always alighted on the outwardly curved petal tips, moved across the anthers and stigmas and then inserted themselves, reaching to the base with the proboscis to imbibe the nectar. When entering flowers with ripe anthers, the flies received a visible load of pollen on the ventral surface and ventro-lateral



Above A long-proboscid horse-fly, *Philoliche (Phara) tumidifacies*, dusted with pollen, withdrawing from a flower of *Tylecodon cacalioides*. Right below *Tylecodon cacalioides* on the farm Bergendal in the foothills of the Klein Swartberg.

Photos: R. Gess.

fringe of 'hairs'. The flies moved from plant to plant carrying the pollen with them and, when entering flowers with receptive stigmas, must have acted as effective pollinators.

Apart from the horse-flies the only other insect visitors to the flowers were small leaf-cutter bees and a carpenter bee. Visits by these bees were infrequent and those of the carpenter bee cursory. The infrequency of the leaf-cutter bees' visits, their small size and their catholic flower choice, made them unlikely pollinators. It is probable that, if the carpenter bees were to take nectar from the flowers, they would take it by theft, piercing the base of the corolla as I have seen them do when visiting the *Cotyledon* flowers.

The fact that the horse-flies were the only suitable candidates for pollinating *T. cacalioides* in two succeeding years suggests a third pollination strategy for *Tylecodon*, long-proboscid fly pollination. The other two known strategies are long-billed bird (sunbird) pollination as exemplified by *T. paniculatus* and long-tongued pollen wasp pollination as exemplified by *T. hallii*.

The present example of long-proboscid fly pollination is not only of interest with respect to *Tylecodon* but also of topical interest - long-proboscid flies as flower pollinators of some deep flowered Iridaceae and some *Pelargonium* species having been receiving considerable recent exposure in *Veld & Flora*.¹

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About the author

Robert Gess is a paleontologist and zoologist. His primary field of research has been an investigation of a Late Devonian lagoonal site near Grahamstown, but he has participated in the research on aculeate wasps and bees of

Fred and Sarah Gess since early childhood. He is one of the founder members of the Klein Karoo Sustainable Dryland Permaculture Project, which is being established about 5 km east of Ladismith in the foothills of the Klein Swartberg on the farm Bergendal. As a member of the team, he is involved with the mapping of the geology and vegetation of the farm.

