



***Pterostylis plumosa* – Bearded Greenhood**

Observations for pollinators were made over many seasons, but were negative until 2016. It was found that *Pterostylis plumosa* attracted male daggerflies of the Empididae family. The individual shown on the left from Chiltern has two lots of pollinia on the thorax, one lot fresh on top as it came out of the flower and another lot, sitting under it, that came from a different flower and has clearly eroded, and probably pollinated this flower in the process. The construction of the column may suggest potential self-pollination as pollen-material may fall onto the stigma, but some finishing flowers checked showed the pollinia shrivelling up and nothing falling on the stigma. This was similarly checked at Wilson's Promontory in *P. tasmanica* and in this species the pollinia crumbles and self-pollination seems to occur.

Amazing courtship behaviour is known for some members of the Empididae fly-family with an elaborate ritual in which the male offers a captured prey to the female to stimulate copulation. Apparently females of some species do not hunt and rely on males to provide food and some have ornamental features to impress males, such as feathery-looking scales on the legs. In case of this orchid it appears that the labellum is a visual part to arouse the male. The orchid would attract the male with kairomones initially and when coming close it would be looking for the female. The actual entering of the flower was not observed, but it seems to go through a courtship routine on arrival. In wanting to copulate it is expected to enter through the lower opening over the labellum. Once inside it may feel trapped and move up to escape, which is through the column wings and in the process potentially contacts the viscidium to pick-up the pollinia.

In the foothills near Briagolong many male daggerflies were observed flying with prey carried in their legs to the orchid. Apparently with some species the males often congregate and compete for the female. The insects seem most active on warm days and the orchids may have lots of visitors on a given day. The images in Chiltern were taken in natural light, which made the insect look black. They possibly are the same species, but the orchid may attract local forms or sibling species.

Empididae, *Empis* sp



Dunkelt
27 Oct 10





<<<< Empididae, *Empis* sp



Action was for several hours during a sunny afternoon. Males were regularly flying in with prey to present to the 'fake female', usually comprising other Diptera members such as fungus-gnats, but also one of its own kind (upper-right). If prey is taken inside and ends up on the stigma it could be mistaken for a pollinator and possibly the reason of statements made by researchers that fungus-gnats are pollinators of the bearded greenhoods.

