

NOTE BRÈVE

**Successful use of a deimatic display by the praying mantid
polyspilota aeruginosa against the yellow-vented bulbul**

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Deimatic displays have been long observed in mantids and they have been thought to be anti-predator behaviors (CHOPARD, 1938 : CRANE, 1952; VARLEY, 1939). However, little evidence has been provided to confirm this hypothesis, especially in the field (EDMUNDS, 1972). Most works have referred to experimental or circumstantial evidence obtained from confrontation experiments between predators and mantids (MALDONADO, 1970 : EDMUNDS, 1972, 1976). EDMUNDS (1972) showed that *Polyspilota aeruginosa* performs this display but did not study its anti-predator function.

Here, we report an observation of a bird-mantid interaction in the field with the use of a spectral posture by the mantid which resulted in a withdrawal of the bird. The encounter occurred at the border of a track near an openfield area located at Amani (Tanzania, Eastern Usambara mountains, 900 m, 5°05' S. and 38°37' E., 15.V.1995, 14 H 00) and was observed at ten meters of distance, taking care of not disturbing both animals. The bird, a Yellow-vented Bulbul (*Pycnonotus barbatus*, Pycnonotidae) and the mantid, a female of *Polyspilota aeruginosa* (Goeze, 1765) (Mantinae) were on bare ground at the base of the openfield embankment. The bird, head down and wings partly apart, charged and attacked the mantid several times during two minutes. The bird alternately moved forward and backward, meanwhile displaying some small jumping flights. The mantid faced the bird at a distance of fifteen centimeters, showing the deimatic display described by EDMUNDS (1972). The insect stood on its middle and hind legs, the four wings apart with the black and red stripes evident on its hind wings. Its forelegs were outstretched, their bluish inner sides with black ocelli turned ahead. This posture was maintained several seconds and emphasized several times by leg stretching and slight wing movements. The bird eventually withdrew and flew away, but the mantid maintained its posture, for an additional minute.

This observation attests to the possible protective function of the deimatic display of mantids. In this case, the posture resulted in the withdrawal of a potential predator several times bigger than the prey (respective lengths: 20 cm and 8 cm) and did not simply provide the mantid with time to escape, as suggested by CRANE (1952).

The two species which we observed probably did not interact in a specialized and exclusive way. The mantid is widely distributed in openfield areas of tropical Africa and the bird occurs in all non-forested areas of East and Central Africa, where they can respectively encounter varied vertebrate predators and arthropod preys.

The yellow-vented Bulbul is known to be primarily fruit-eating but also to eat many insects to complement its diet (WILLIAMS & ARLOTT, 1980). It may be thus considered at least as an occasional predator for insects and especially mantids in openfield areas of tropical Africa. Hence, our observation suggests that *Polyspilota aeruginosa* may deter at

least occasional predators using its deimatic posture. Moreover, even if some birds perform only play activity when they attempt to seize mantids, this posture can avoid the insects to be fatally injured.

If the deimatic display has an anti-predator function, it is still necessary to clarify how and why it is effective. To be efficient against most predators, this display must act on some generalized releasers/inhibitors of predatory behavior, such as those depending on the size and the aggressivity of prey (EDMUNDS, 1972). These releasers/inhibitors should be visually mediated in diurnal predators. To escape nocturnal predators, another anti-predator defence in mantids involves elusive flights provoked by ultrasonic emissions (e.g., bats, YAGER *et al.*, 1990).

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