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# Comparative activity of four *Elaeidobius* spp. oil palm pollinators visiting oil palm inflorescences in Central Africa

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Pollinating insects on oil palm, *Elaeis guineensis* Jacq., directly influence the fruit set rate, hence the production of well-formed fruits in bunches. Four small *Curculionidae* of the genus *Elaeidobius* are the main pollinators in Cameroon. They feed off pollen and complete their entire cycle on male inflorescences, depositing pollen when they visit female inflorescences. We assessed insect frequencies at different stages of anthesis, depending on climatic conditions over 6 weeks, using sticky traps installed near 9 male and 12 female inflorescences. Observations were carried out in March- April 2009 in a 118-ha plot of 6-year-old hybrid oil palms near Kribi in Cameroon. *Elaeidobius* specimens were also taken from male inflorescences in anthesis. Specimens of each species and both sexes were prepared and photographed; the male genitalia were dissected. Captures revealed four species: *E. kamerunicus*, *E. subvittatus*, *E. plagiatus* and *E. singularis*. A photo-plate and simple identification key are given to distinguish between the main three species which have similar external traits. *Elaeidobius subvittatus* was the most abundant in sunny conditions, averaging around a hundred individuals per trap, as opposed to 30 individuals for *E. kamerunicus* and *E. plagiatus*. In heavy rainfall, insect activity decreased around male inflorescences (27 *E. subvittatus*, 37 *E. kamerunicus* and 8 *E. plagiatus* on average), with even fewer around female inflorescences (1.5 *E. subvittatus*, 0.7 *E. kamerunicus* and 0 *E. plagiatus* on average). The male inflorescence stage, time of day and weather conditions had a significant effect ( $P < 0.001$ ) on the distribution of the 3 species. The results did not include *E. singularis* which was too scarce in the field. Species-stage interaction was significant ( $P < 0.01$ ). *E. subvittatus* was more abundant on the second and third days of anthesis, while *E. kamerunicus* and *E. plagiatus* were abundant on the first and second days of anthesis. Daytime screening every 1½ hours confirmed the insects were active around inflorescences between 8 am and 11.30 am, peaking around 10.00 am. A rainfall effect ( $P < 0.001$ ) led to a sharp drop in insect numbers on traps. As for male inflorescences, the female inflorescence stage had a significant effect ( $P < 0.005$ ) with the 3 species predominantly present on the first day of anthesis. A species effect was found ( $P < 0.0001$ ), with *E. kamerunicus* and *E. subvittatus* apparently attracted to female inflorescences (averaging 3.9 and 2.4 respectively, against 0.7 for *E. plagiatus*). The orientation of male or female inflorescences had no significant effect, but the trap face had a significant effect for female inflorescences ( $P < 0.0001$ ), unlike male inflorescences, with an average of 1.2 individuals on the outer face and 2.8 on the inner face. Lastly, distribution of the three species differed depending on the phenological stage of the inflorescences and their sex. Insects were more numerous around inflorescences on which they fed and completed their development cycle. This preliminary study suggests that fluctuations in *Elaeidobius* spp. populations should be studied over a longer time scale, to determine the current situation in central Africa and compare the evolution of a native species and an introduced species playing a decisive role in oil palm pollination efficiency.

**Keywords:**

oil palm, *Elaeidobius* spp., pollination, *Elaeis guineensis*, Cameroon.