

plants because their mouthparts penetrate selected cells or vessels, thereby avoiding protective coatings and resin ducts (Weis & Berenbaum 1989).

If chewing herbivorous insects are deterred by the same chemicals and protective coatings that deter herbivory by vertebrates, the insect fauna of a deciduous shrub that is palatable to vertebrate herbivores should comprise a higher ratio of chewing to sucking insect species (or individuals) than a co-occurring evergreen shrub that is unpalatable. The inventories and semi-quantitative data presented here for *O. sinuatum* (palatable to verte-

brate herbivores) and *P. pallens* (toxic to many vertebrate herbivores) provide evidence to support this hypothesis.

This work was supported by the FitzPatrick Institute, University of Cape Town, and by the Foundation for Research Development. I am grateful to J.K. Scott (C.S.I.R.O. Division of Entomology, Western Australia) for initiating this investigation, to the staff of the National Collection of Insects, Pretoria, for identification of specimens and to W.R.J. Dean and two referees for constructive criticism.

## REFERENCES

- COLEY, P.D. 1987. Interspecific variation in plant anti-herbivore properties: the role of habitat quality and rate of disturbance. *New Phytologist* **106**: 251–263.
- HENDRIX, S.D. 1980. An evolutionary and ecological perspective of the insect fauna of ferns. *American Naturalist* **115**: 171–196.
- KERLEY, G.I.H. 1990. Browsing by *Lepus capensis* in the Karoo. *South African Journal of Zoology* **25**: 199–200.
- KELLERMAN, T.S., COETZER, J.A.W. & NAUDE, T.W. 1988. *Plant Poisonings and Mycotoxinoses of Livestock in Southern Africa*. Oxford University Press, Cape Town.
- MILTON, S.J. 1992. Effects of rainfall, competition and grazing on flowering of *Osteospermum sinuatum* (Asteraceae) in arid Karoo rangeland. *Journal of the Grassland Society of Southern Africa* **9**: 158–164.
- MILTON, S.J. & DEAN, W.R.J. 1990. Seed production in rangelands of the southern Karoo. *South African Journal of Science* **86**: 231–233.
- MILTON, S. J. & DEAN, W.R.J. 1993. Selection of seeds by harvester ants (*Messor capensis*) in relation to condition of arid rangeland. *Journal of Arid Environments* **24**: 63–74.
- MILTON, S.J., DEAN, W.R.J. & SIEGFRIED, W.R. In press. Food selection by ostriches on wildlands and ranches in southern Africa. *Journal of Wildlife Management*.
- OTTOSSON, J.G. & ANDERSON, J.M. 1983. Number, seasonality and feeding habits of insects attacking ferns in Britain: an ecological consideration. *Journal of Animal Ecology* **52**: 385–406.
- STINDT, H.W. & JOUBERT, J.G.V. 1979. The nutritive value of natural pastures in the districts of Ladismith, Riversdale and Heidelberg in the winter rainfall area of the Republic of South Africa. *Technical Communication, Department of Agricultural Technical Services, Republic of South Africa* **154**: 1–12.
- THERON, J.G. 1984. Leafhoppers (Hemiptera: Cicadellidae) associated with the renosterbos *Elytropappus rhinocerotis* Less. *Journal of the Entomological Society of Southern Africa* **47**: 83–97.
- WEIS, A.E. & BERENBAUM, M.R. 1989. Herbivorous insects and green plants. In: Abrahamson, W.G. (Ed.) *Plant-Animal Interactions*. 123–162. McGraw Hill, London.
- VAN BREDÁ, P.A.B. & BARNARD, S.A. 1991. 100 Veld Plants of the winter rainfall region. *Bulletin, Department of Agricultural Development, Republic of South Africa* **422**: 34–35.

Accepted 10 February 1993

## Lectotype designation for *Graptomyza longirostris* Wiedemann, 1820 (Diptera: Syrphidae)

A.E. Whittington

Natal Museum, Private Bag 9070, Pietermaritzburg, 3200 South Africa

*Graptomyza* Wiedemann, 1820, is a genus of small Syrphidae (Tribe: Volucellini) easily distinguished from other members of the family by a well-defined, usually setose, scutellar depression (Whittington 1992, Fig. 9). The genus is distributed in tropical and subtropical regions of South, Southeast and Far East Asia, Micronesia,

Australasia, Africa and Madagascar.

It is well established that *Graptomyza longirostris* Wiedemann, 1820, is the type species of the genus (Knutson *et al.* 1975; Peck 1988; Smith & Vockeroth 1980; Thompson & Vockeroth 1989). Although I was unable to study the syntype series before publication of my revision of Afrotropical

*Graptomyza* (Whittington 1992), I have subsequently borrowed the syntype series from the Zoologisk Museum, Copenhagen. Examination of the syntypes (two males) confirms that the Afrotropical species revised in Whittington (1992) are members of this genus. In addition, it was evident that no primary type had been formally designated.

As the fauna of the Oriental and Australasian Regions still require taxonomic attention it is essential that the identity of the type species be fixed. Of the two male syntypes, I have chosen as lectotype the specimen bearing the identification label and most closely resembling Wiedemann's illustration. Precise specimen data, stated verbatim, with semicolons separating labels, are as follows.

*Lectotype* ♂: '♀ [sic]; Mus. Westerm.'; 'TYPE' [rectangular red label with black print]; '*G. longirostris* Wied. Batavia Aug. 1815.' [handwritten by Wiedemann].

*Paralectotype* ♂: 'Mus. Westerm.'; 'TYPE' [rectangular red label with black print].

Both specimens, which share (on a separate pin

grouped with the specimens) a black-framed label: '*Graptomyza longirostris* Wied. Det. F.C. Thompson 71' have been provided with suitable type labels by me.

According to Wiedemann's label, the type locality is 'Batavia' (= Jakarta 06.10S 160.48E), although Knutson *et al.* (1975) gave Java as the type locality, a conclusion possibly based on the fact that Wiedemann's (1820) publication states: 'Habitat in insula Java.' The collector and date of collection are unknown, but since Wiedemann (1820) and the labels on the specimens state the original depository as 'In Museo Westermanni,' Westermann may have been the collector. The ♀ label on the lectotype is incorrect.

I am grateful to L. Lyneborg (Zoologisk Museum, Copenhagen) for the loan of the type specimens; to F.C. Thompson (United States National Museum, Washington) for providing a reference and to D.A. Barraclough and J.G.H. Londt (Natal Museum, Pietermaritzburg) for reading the manuscript and providing valuable advice.

## REFERENCES

- KNUTSON, L.V., THOMPSON, F.C. & VOCKEROTH, J.R. 1975. Family Syrphidae. In: Delfinado, M.D. & Hardy, D.E. (Eds) *A Catalogue of the Diptera of the Oriental Region. Volume II, Suborder Brachycera through Division Aschiza, Suborder Cyclorrhapha*. 307–374. The University of Hawaii Press, Honolulu.
- PECK, L.V. 1988. Family Syrphidae. In: Soós, A. & Papp, L. (Eds) *Catalogue of Palaearctic Diptera. Volume 8. Syrphidae – Conopidae*. 11–230. Elsevier, Amsterdam.
- SMITH, K.G.V. & VOCKEROTH, J.R. 1980. Family Syrphidae. In: Crosskey, R.W. (Ed.) *Catalogue of the Diptera of the Afrotropical Region*. 488–510. British Museum, London.
- THOMPSON, F.C. & VOCKEROTH, J.R. 1989. Family Syrphidae. In: Evenhuis, N.L. (Ed.) *Catalog of the Diptera of the Australasian and Oceanian Regions*. 437–458. Bishop Museum Press, Honolulu.
- WHITTINGTON, A.E. 1992. Revision of the Afrotropical species of *Graptomyza* Wiedemann (Diptera: Syrphidae: Volucellini). *Annals of the Natal Museum* 33: 209–269.
- WIEDEMANN, C.R.W. 1820. *Munus rectoris in Academia Christiano-Albertina iterum aditurus nova dipterorum genera*. Kiliae [= Kiel].

Accepted 16 March 1993

## Comparative susceptibility of *Chilocorus nigritus* (Fabricius) and *C. bipustulatus* (Linnaeus) (Coleoptera: Coccinellidae) to triazophos

A.S. Schoeman

Department of Entomology, University of Pretoria, Pretoria, 0002 South Africa

The coccinellid *Chilocorus nigritus* (Fabricius) has been reported as a voracious and important predator of many soft and hard scales, including red scale, *Aonidiella aurantii* (Maskell) (Hemiptera: Homoptera: Diaspididae) (Samways 1984; Schoeman 1987a,b). It is a useful addition to the existing natural enemy complex of citrus pests in

southern Africa, and the beetles have been successfully used in various integrated control programmes (Bruwer & Schoeman 1988). It has been mass-reared, released and transferred from one citrus orchard to another at many localities in southern Africa (Bruwer & Schoeman 1988; Samways 1989). *Chilocorus bipustulatus* (Linnaeus)