Feeding of *Ocladius grandii* (Coleoptera: Curculionoidea: Brachyceridae) on *Salsola vermiculata* flowers and fruits

Alimentación de *Ocladius grandii* (Coleoptera: Curculionoidea: Brachyceridae) sobre flores y frutos de *Salsola vermiculata*

Francisco Sánchez Piñero

Dpto. Zoología, Facultad de Ciencias, Universidad de Granada, 18071 Granada (Spain). E-mail: fspinero@ugr.es

Recibido el 24 de enero de 2013. Aceptado el 4 de abril de 2013.

ISSN: 1130-4251 (2013), vol. 24, 19-23

The genus *Ocladius* Schönherr, 1825 comprises 95 species occurring in the Ethiopian and the Palaearctic regions (Meregalli, 2008). In the Palaearctic region, the genus is represented by 17 species distributed in arid and desert areas of western Asia up to Turkestan, the Arabian Peninsula, northern Africa, and southeastern Iberian Peninsula (Meregalli & Colonnelli, 2006, Meregalli, 2008, Löbl & Smetana, 2011). Palaearctic species of this genus inhabit arid or desert habitats and are usually associated with Amaranthaceae (= Chenopodiaceae), while African species inhabit both arid and mesic habitats and appear to have a broad spectrum of host plants (see Meregalli & Colonnelli, 2006, Meregalli, 2008 and references therein). However, data on the feeding habits of *Ocladius* adults are very scarce [see Marshall (1937) for the only available information on larvae]. Adults of the south African species *O. obliquaesetosus* Fåhraeus, 1871 have been reported eating on the spikelets of four grass species (Poaceae) (Howden, 1986). Although Meregalli & Colonnelli (2006) and Meregalli (2008) cite that label information indicate that specimens of *O. rufithorax* Pic, 1894 were collected during the night on *Medicago sativa* L. (Fabaceae), *O. bifasciatus* Tournier, 1875 on *Reseda amblyocarpa* Fresen (Resedaceae), *O. interstitialis* Fåhraeus, 1871 and *O. subundulatus* Fåhraeus, 1871 on *Indigofera daleoides* Benth. Ex Harv (Fabaceae), and that *O. lamii* Hustache, 1938 was described as associated with *Lamium* L. (Lamiaceae), these records do not necessarily

provide feeding information, since individuals can be found on the plants resting or mating, but not eating, as pointed by Howden (1986) for the occurrence of *O. obliquaesetosus* on Liliaceae (*s. lat.*). No information on feeding have been reported for Mediterranean species. Here, feeding of adults of *O. grandii* Osella & Meregalli, 1986 on flower and fruits of *Salsola vermiculata* L. (Amaranthaceae) is reported.

Ocladius grandii is an endemic species of arid environments of SE Iberian Peninsula, recorded in coastal locations of Almeria (3 km from Rambla de Morales, Cabo de Gata) and Murcia (Águilas), and from an inland site at the Guadix-Baza Basin (Barranco del Espartal, Baza, Granada) (Osella & Meregalli, 1986, Sánchez-Piñero & Gómez, 1995, Gurrea, 2008, 2011). Although adult beetles have been found associated to halophytic vegetation (*Salicornia* in coastal sites of Almeria and Murcia, *Salsola vermiculata* in the Guadix-Baza Basin; Osella & Meregalli, 1986, Sánchez-Piñero, 1994) no information on their feeding has been provided.

Observations were made at Barranco del Espartal (Baza, Granada; 750 m altitude), an inland location in the arid Guadix-Baza Basin. The site is an occasional watercourse (or *rambla*) with a gypsum loam soil. Climate is Mediterranean continental and highly seasonal, characterized by cold winters, hot summers and short springs. Potential evapotranspiration is three times the amount of precipitation (250-300 mm annual rainfall) (Doblas-Miranda *et al*., 2009). Vegetation is an open shrub-steppe (58% bare soil, 40% shrub cover) dominated by *Salsola vermiculata* L. and *Artemisia* (*A. herba-alba* Asso*, A. barrelieri* Besser) shrubs, *Stipa tenacissima* L. tussock grasses, and *Retama sphaerocarpa* (L.) Boiss. bushes. A more detailed description of the study site can be found elsewhere (Doblas-Miranda *et al.,* 2009).

Observations were made occasionally during surveys carried out for different studies on the arthropod community and food web ecology at the site (Sánchez-Piñero *et al*., 2011; González-Megías *et al*., 2011). Only *O. grandii* individuals observed actually eating on the plant by close, careful inspection (Figure 1) were recorded. Flowers and developing fruits of *S. vermiculata* were distinguished because of the presence of small dorsal perianthic wings in developing fruits; Mature fruits were easily distinguishable because of their larger size and large dorsal perianthic wings (Castroviejo & Luceño, 1990).

A total of twelve individuals of *O. grandii* were observed feeding on *S. vermiculata*, nine eating on flowers (25-VIII-2005, 4 individuals; 5-VIII-2009, 1 individual; 9-IX-2009, 2 individuals; 21-VII-2010, 2 individuals) and three eating on developing fruits (15-X-2005). In all the recorded observations the weevils were feeding with their rostrum inside the flower or fruits (figure 1). The feeding observations were made at dusk, on flowers and fruits at the tips

Fig. 1.—*Ocladius grandii* feeding on a *Salsola vermiculata* flower (Barranco del Espartal, Baza, 21-VII-2010. Photo: Octavio Jiménez Robles).
Fig. 1.—*Ocladius grandii* alimentándose sobre flor de *Salsola vermiculata* (Barranco del Espartal, Baza, 21-VII-2010. Foto: Octavio Jiménez Robles).

of *S. vermiculata* shrub branches. Although a higher number of *O. grandii* weevils were observed on the tip of *S. vermiculata* shrubs, actual feeding could only be recorded in a small number of individuals because the weevils dropped themselves to the ground as observers approached the plants. This behavior of dropping from the plants when the observer was approaching the weevils probably prevented observations later during the night, due to very low detectability of foraging individuals and to flashlight disturbance (which may have increased the dropping scape behavior).

In a whole, feeding observations were recorded from late July to mid October, suggesting a coincidence of *O. grandii* activity with *S. vermiculata* flowering (mid July to September) and fructification (September-November) in the study area. Adults of *O. grandii* have also been collected in the canopy of *S. vermiculata* by means of beating, and observed sheltered in the litter under *S. vermiculata* shrubs during this same period (July to October) (Sánchez-Piñero, 1994, pers. obs.). Further feeding information

for *O. grandii* and other Palaearctic *Ocladius* species will be necessary to establish whether feeding on flowers and fruits of Amaranthaceae is a common feature of their diet. In addition, data on the diet and host plants of both larval and adult stages of *Ocladius* species are needed to uncover their degree of feeding specialization.

ACKNOWLEDGEMENTS

Octavio Jiménez Robles kindly took and provided the photo of *O. grandii*.

BIBLIOGRAPHY

Castroviejo, S. & Luceño, M. 1990. *Salsola* L. In: Castroviejo, S., Laínz, M., López-González, G., Monserrat, P., Muñoz-Garmendia, F., Paiva, J. & Villar, L. (eds.) *Flora ibérica. Plantas vasculares de la Península Ibérica e Islas Baleares. Vol. II. Platanaceae-Plumbaginaceae (partim)*: 541-547. Real Jardín Botánico, CSIC, Madrid.

Doblas-Miranda, E., Sánchez-Piñero, F. & González-Megías, A. 2009. Different structuring factors but connected dynamics shape litter and belowground soil food webs. *Soil Biology and Biochemistry*, 41: 2543-2550.

González-Megías, A., Sánchez-Piñero, F. & Hódar, J. 2011. Trophic interactions in an arid ecosystem: from decomposers to top-predators. *Journal of Arid Environments*, 75: 1333-1341.

Gurrea, P. 2008. *Ocladius grandii* Osella y Meregalli, 1986. En: J.M. Barea, E. Ballesteros y D. Moreno (Coords.): *Libro rojo de los invertebrados de Andalucía. Tomo IV*: 1081-1083. Consejería de Medio Ambiente, Junta de Andalucía, Sevilla.

— 2011. *Ocladius grandii* Osella y Meregalli, 1986. En: J. R. Verdú, C. Numa y E. Galante (eds.): *Libro rojo de los invertebrados amenazados de España (especies vulnerables)*: 111-115. Dirección General del Medio Natural y Política Forestal, Ministerio de Medio Ambiente, Medio Rural y Marino, Madrid.

Howden, A.T. 1986. Note on the biology of *Ocladius* (Coleoptera, Curculionidae). *Journal of the Entomological Society of Southern Africa*, 49: 394-395.

Löbl, I. & Smetana, A. 2011. *Catalogue of Palaearctic Coleoptera. Vol. 7: Curculionoidea I*. Apollo Books, Stenstrup, Denmark, 373 pp.

Marshall, G.A.K. 1937. New injurious Curculionidae (Col.). *Bulletin of Entomological Research*, 28: 467-477.

Meregalli, M. 2008. Niche shift: a tool for expanding range? The case of *Ocladius* (Coleoptera: Curculionoidea: Brachyceridae). *Biogeographia*, 29: 157-166.

Meregalli, M. & Colonnelli, E. 2006. The genus *Ocladius* Schönherr, 1825 in the Arabian subregion, with description of six new species (Coleoptera: Curculionoidea: Curculionidae). *Fauna of Arabia*, 21: 251-306.

Osella, G. & Meregalli, M. 1986. *Ocladius* Schönherr, 1825 e *Sphincticraerus* Marseul, 1871, generi nuovi per la fauna europea (Col. Curculionidae). *Bolletino dell'Instituto di Entomologia "Guido Grandi", Università di Bologna*, 61: 109-125.

Sánchez-Piñero, F. 1994. *Ecología de las comunidades de coleópteros en zonas áridas de la Depresión de Guadix-Baza (sureste de la Península Ibérica)*. PhD Thesis, Universidad de Granada.

Sánchez-Piñero, F. & Gómez, J.M. 1995. Use of ant-nest debris by darkling beetles and other arthropod species in an arid system in south Europe. *Journal of Arid Environments*, 31: 91-104.

Sánchez-Piñero, F., Tinaut, A., Aguirre, A., Miñano, Lencina, J.L., Ortiz-Sánchez, F.J. & Pérez-López, F.J. 2011. Terrestrial arthropod fauna of arid areas of SE Spain: Diversity, biogeography, and conservation. *Journal of Arid Environments*, 75: 1321-1332.