

Genetic and Behavioral Differences among Purported Species of *Trichosirocalus* (Coleoptera: Curculionidae) for Biological Control of Thistles (Asteraceae: Cardueae)

A. De Biase¹, S. Primerano¹, S. Belvedere¹, E. Colonnelli²,
L. Smith and M. Cristofaro⁴

¹Dept. of Biology and Biotechnologies “Charles Darwin”, University of Rome “La Sapienza”, Viale dell’Università 32, 00185 Rome, Italy

²c/o Entomological Museum of the University of Rome “La Sapienza”, Piazzale Valerio Massimo 1, 00185 Rome, Italy

³USDA-ARS, 800 Buchanan Street, Albany, CA 94710, USA link.smith@ars.usda.gov

⁴ENEA C.R. Casaccia, UTAGRI-ECO, Via Anguillarese, 301 00123 S. Maria di Galeria Rome, Italy

Abstract

Trichosirocalus horridus (Panzer) was introduced to North America, New Zealand and Australia for biological control of *Carduus nutans* L. Since then two more species of *Trichosirocalus* have been described (Alonso-Zarazaga and Sánchez-Ruiz. 2002. Aust. J. Entomol. 41: 199-208), and the three species are thought to have different host plant associations: *T. horridus* on *Cirsium vulgare* (Savi) Ten. and possibly on other Carduineae, *T. mortadelo* Alonso-Zarazaga & Sanchez-Ruiz on *C. nutans*, and *T. briesei* Alonso-Zarazaga & Sanchez-Ruiz on *Onopordum* spp. This raises the question of which species were previously released for biological control of *C. nutans*. Subsequent studies by Groenteman et al. (2009, XII International Symposium on Biological Control of Weeds, pp. 145-149.) raises uncertainty about which species are in New Zealand and whether *T. mortadelo* was a valid species. *Trichosirocalus briesei* was introduced to Australia to control *Onopordum* spp. and is being evaluated for introduction to North America. We analyzed part of the mtDNA cytochrome oxidase I (COI) gene sequence of adult specimens representing the three species collected in Spain, Italy, USA, New Zealand and Australia. All specimens morphologically identified as *T. briesei* formed one clade that was clearly distinct from all the other specimens. The COI sequences for specimens of *T. horridus* and *T. mortadelo* were intermixed within the same clade, suggesting that they represent one heterogeneous species. Furthermore, the morphological characters attributed to *T. mortadelo* are of little significance to really isolate two different species, so that we combine them under the name of *T. horridus*. In laboratory choice experiments, specimens from Spain identified as *T. briesei* preferred *Onopordum acanthium* L. to *Carduus* or *Cirsium* spp., whereas those from North America, identified as *T. horridus* preferred *Carduus* spp. but also attacked *Cirsium* spp.