

Scientific Note

First account of the splendid tamarisk weevil, *Coniatus splendidulus* Fabricius, 1781 (Coleoptera: Curculionidae) in Nevada

Wildlife biologists in the western United States are concerned that bio-control of tamarisk (*Tamarix* spp., Tamaricaceae) will have unintended consequences on native wildlife that have adapted to living in these non-native trees (DeLoach 1996, DeLoach et al. 1996). If bio-control agents are proficient in their predation on tamarisk, it is unclear what impact this will have on the populations of nesting birds and other wildlife that have adapted to living in tamarisk communities (Sogge et al. 2008). For example, the endangered southwestern willow flycatcher (*Empidonax traillii eximius* Phillips 1948) has adapted to the presence of this invasive plant, successfully nesting and foraging in tamarisk stands (Hultine et al. 2006). Only the tamarisk leaf beetle (*Diorhabda elongata* Brullé 1832) has been known to be officially introduced as a non-native bio-control agent for tamarisk in North America. The tamarisk leaf beetle has been released in multiple areas in Colorado, Utah and Nevada and their population is spreading throughout the Lower Colorado River Region (Hultine et al. 2010).

During a survey for invertebrates along the Las Vegas Wash in Clark County, Nevada, U.S.A. (36°5'12" N, 114°59'14"), we collected the first known record of the splendid tamarisk weevil (*Coniatus splendidulus* Fabricius 1781) in Nevada. A natural predator of one or more species of *Tamarix*, this small (~ 3 mm) beetle is one of 12 species in the genus. The native range of these species is from the Mediterranean region east to the Caucasus and Iraq (Hoffmann 1954). Life history of *C. splendidulus* is not well documented, however all the species in this genus are believed to be exclusively associated with one or more *Tamarix* species. Ethology and biology of *C. repandus* Germar, 1817 and *C. tamarisci* Germar, 1817 have been studied as potential biological control agents for tamarisk in the United States, (Fornasari 1998, 2004) and *C. tamarisci* was approved by the Technical Advisory Group for Biological Control Agents of Weeds. To date, however, no known intentional or otherwise authorized releases of any *Coniatus* species have occurred in North America primarily due to concern for unknown impacts to sensitive and endangered species (DeLoach 1996, DeLoach et al. 1996). Although no other North American record of *C. splendidulus* has been published, personal communications with colleagues and informal internet searches have revealed that the splendid tamarisk weevil was collected in Arizona as early as 2006, and southern California as well as southern Utah in 2010.

The Las Vegas Wash is the primary drainage for the Las Vegas Valley's 4100 km² watershed (Las Vegas Wash Coordination Committee 2000). Historically an ephemeral stream, since the 1950s, in addition to occasional flood flows, it has served as the discharge channel for wastewater from treatment plants serving the city of Las Vegas and surrounding communities. A significant expansion of tamarisk (primarily *Tamarix ramosissima* Ledebour) took place along the channel in the second half of the 20th century. Since 2000, a multi-faceted program to protect and

enhance the Las Vegas Wash has made significant strides to reduce erosion, remove tamarisk, and revegetate the area with native species (Eckberg 2010).

As part of a study to determine the diet of bats foraging along the Las Vegas Wash, we collected night-active insects in one of the few remaining stands of tamarisk and at revegetation sites. We used a UV light (BioQuip Inc, Model 2804, Gardena, California) to illuminate a white sheet draped over a rope tied between two trees. Beginning at sunset, we checked the sheet hourly for approximately four hours. A single splendid tamarisk weevil was collected within a tamarisk stand on 10 June 2010 at approximately 2115 h. Identification was confirmed the following week by Vassili Belov after posting photographs of the individual on BugGuide (www.bugguide.net). After this initial identification, confirmation was given by sending the image to Jens Prena with the United States Department of Agriculture and in the field by Tom Dudley with the University of California Santa Barbara. It is unknown if the weevil was attracted to the UV light or if it was simply a spatial coincidence. Following this discovery, we conducted informal surveys in other tamarisk stands along the Wash and recorded the presence of *C. splendidulus* at multiple locations.

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LITERATURE CITED

- Brullé, A. 1832. *Expedition scientifique de Morée*. Volume 3, Part 2, Zoologique (Paris) 266, 271, tab. 44, figure 10. [in French.]
- DeLoach, C. J. 1996. Biological control of salt cedar in California, pp. 30–32. *In*: DiTomaso & C. E. Bell (Eds.). *Proceedings of the Saltcedar Management Workshop*. Sponsored by the University of California Cooperative Extension Imperial County and U.C. Davis and the California Exotic Pest Plant Council.
- DeLoach, C. J., D. Gerlind, L. Fornassi, R. Sobhian, S. Myartseva, I. D. Mityaev, Q. G. Lu, J. L. Tracy, R. Wang, J. E. Wang & A. Kirk. 1996. Biological control programme against saltcedar (*Tamarix* spp.) in the United States of America: Progress and problems. *Proceedings of the 9th International Symposium on Biological Control of Weeds*, Stellenbosch, South Africa, 19–26 January 1996, 253–260.
- Durst, S. L., M. K. Sogge, H. C. English, S. O. Williams III, B. E. Kus & S. J. Sferra. 2006. Southwestern Willow Flycatcher breeding site and territory summary—2005. U.S. Geological Survey, Southwest Biological Center Report to U.S. Bureau of Reclamation. USGS Southwest Biological Science Center, Flagstaff, Arizona.
- Eckberg, J. R. 2010. *Las Vegas Wash Vegetation Monitoring Report, 2009*. Southern Nevada Water Authority, Las Vegas, Nevada, 48 pp.
- Fabricius, J. C. 1781. *Species Insectorum eorum differentias specificas, synonymma auctorum, loca natalia, metamorphosin adiectis observationibus, descriptionibus*. I. Hamburgi et Kilonii, VIII + 552pp.

- Fornasari, L. 1998. Biology, ethology and impact on the host by *Coniatus tamarisci* (F.) (Coleoptera: Curculionidae), a natural enemy of *Tamarix* spp. (Tamaricaceae, saltcedar) in France. *Biological Control* 13:25–40.
- Fornasari, L. 2004. Ethology, field biology and host suitability of *Coniatus repandus*, a natural enemy of tamarisk in France. *Bulletin of Insectology* 57:117–126.
- Hoffmann, A. 1954. *Coléoptères Curculionides (Deuxième partie) – Faune de France*, 29. Fédération française des sociétés de sciences naturelles, Paris, France.
- Hultine, K. R., J. Belnap, C. van Riper, J. R. Ehleringer, P. E. Dennison, M. E. Lee, P. L. Nagler, K. A. Snyder, S. M. Uselman & J. B. West. 2010. Tamarisk biocontrol in the western United States: ecological and societal implications. *Frontiers in Ecology and the Environment* 8:467–474.
- Jamison, L. 2009. Distribution of: Tamarisk Leaf Beetle (*Diorhabda* spp.) [map]. Palisade Insectary, Colorado Department of Agriculture; RIVR Labs, Marine Science Institute, University of California; Tamarisk Coalition, October 2009.
- Las Vegas Wash Coordination Committee. 2000. *Las Vegas Wash Comprehensive Adaptive Management Plan*. Las Vegas Wash Project Coordination Team, Southern Nevada Water Authority, Las Vegas, Nevada.
- Phillips, A. R. 1948. Geographic variation in *Empidonax traillii*. *Auk* 65:507–514.
- Sogge, M. K., S. J. Sferra & E. H. Paxton. 2008. *Tamarix* as habitat for birds: implications for riparian restoration in the southwestern United States. *Restoration Ecology* 16:146–154.

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