

**ORNATIVALVA ERUBESCENS (WALSINGHAM) (LEPIDOPTERA: GELECHIIDAE)  
INTRODUCED IN NORTH AMERICA**

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**ABSTRACT.** *Ornivalva* (Lepidoptera: Gelechiidae) is an Old World genus known to be associated with the plant genus *Tamarix* (Angiosperm: Tamaricaceae) which was introduced to North America and became widely distributed in the Southwestern United States. *Ornivalva erubescens*, introduced from the Old World, is reported from the Southwestern United States. *Ornivalva erubescens* is redescribed. Adults and male and female genitalia are illustrated.

**Additional key words:** *Tamarix*, *saltcedar*, Arizona, Nevada, Texas, potential biological control, riparian habitats

*Ornivalva* Gozmány is an Old World genus in the family Gelechiidae (Lepidoptera). The genus was revised by Sattler (1967, 1976) and contains 60 described species from the Palaearctic Region and one species from South Africa (Bidzilya 2009; ftp.funet.fi Feb. 27 2017, Li 1991, Li & Zheng 1996, Sattler 1967, 1976).

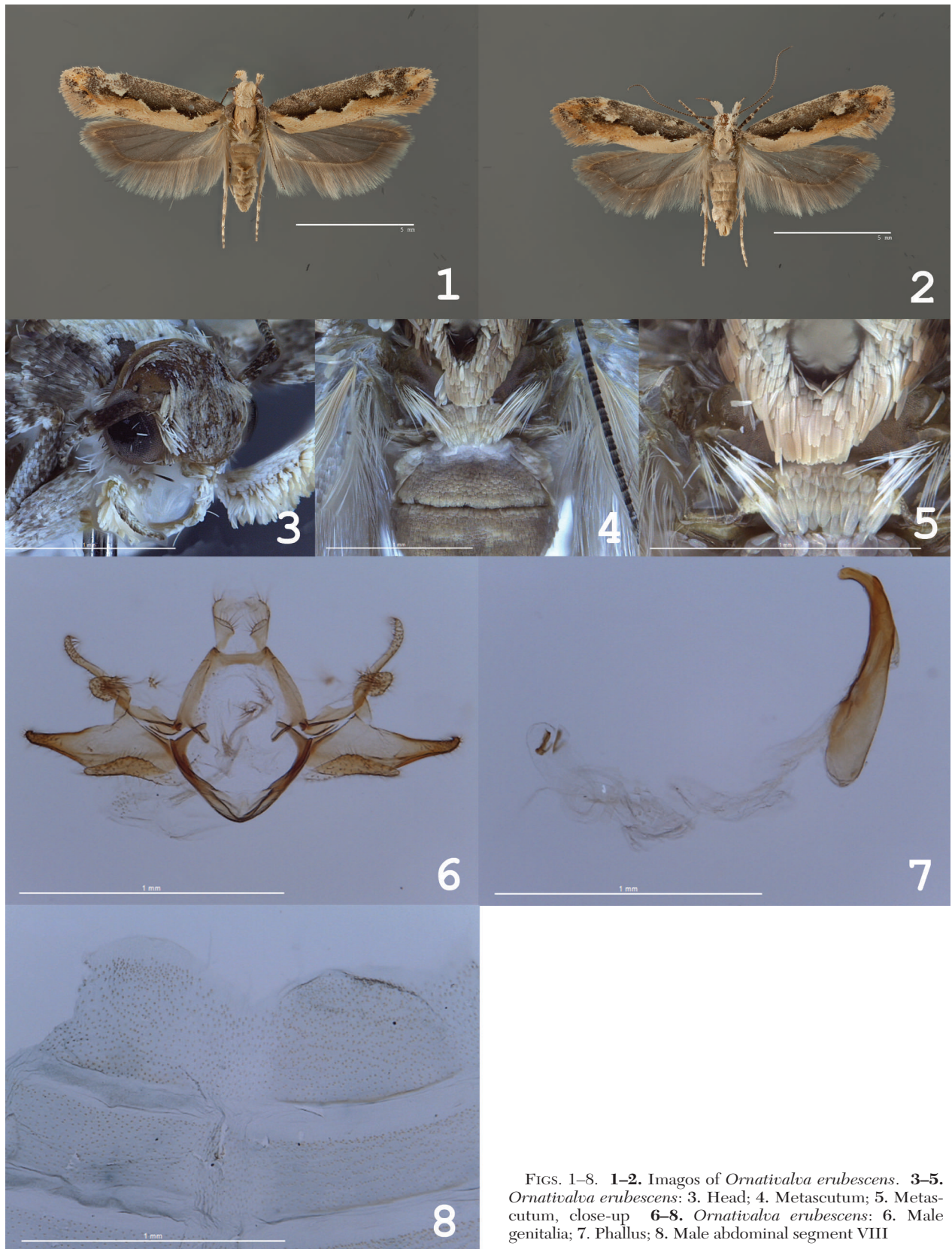
According to the literature, the genus *Ornivalva* is closely correlated with the plant genus *Tamarix*, commonly called saltcedar, based on two lines of evidence. First, the distribution of *Ornivalva* and *Tamarix* are highly similar. Second, a number of *Ornivalva* species were reared from *Tamarix* host plants. The other known host plant is *Frankenia* (Frankeniaceae) (Sattler 1976). Saltcedar is native to xeric areas of Eurasia and Africa and was introduced into the United States in the 1800s, where it was planted for erosion control along river systems in the Southwestern United States. *Tamarix ramosissima*, *T. chinensis* and hybrids between these are now considered undesirable invasive plant species in the Southwestern United States, particularly in desert regions of California and many riparian habitats in New Mexico. Land managers and owners of riparian areas all across the Southwestern United States, as well as many state, public, and private organizations in Mexico, are struggling to deal with saltcedar. Thousands of dollars are spent every year trying to control or attempt to eradicate saltcedar in the White Sands Missile Range, Holloman Air Force Base and White Sands National Monument in Otero County

New Mexico (E. Metzler, personal communication). Currently the distribution of saltcedar in the United States is reported along major rivers and reservoirs from southern California east through Texas and western Oklahoma, and north to Nevada, Colorado and Utah. Some years ago, the USDA brought one of the natural consumers of saltcedar, *Ornivalva grisea* Sattler, from China and tested it in quarantine, but any further updates are not reported (Bossard et al. 2000, Chew 2009, Nagler et al 2011). The herein reported introduction of *O. erubescens* (Walsingham) could be considered as an accidental potential biological control.

*Ornivalva erubescens*, naturally distributed in Northern Africa to Western Asia, was recently collected in the Southwestern United States, with an especially high abundance of individuals from the state of Arizona. The introduced species is redescribed and illustrated below, and known locality records from the United States are given.

#### MATERIALS AND METHODS

Imago specimens were captured at a 12 Volt, 15 Watt Ultraviolet (UV) light. The lectotype female (Wlsm no. 96596) of *O. erubescens* deposited in the Natural History Museum, London (NHM) was examined. Dissection and slide mounting methods for genitalia followed Clarke (1941), except preparations were stained with eosin and mounted in Euparal. A Leica M205 A Stereo-Microscope (with magnifications 7.76-159X) was used



FIGS. 1-8. 1-2. Imagos of *Ornatalva erubescens*. 3-5. *Ornatalva erubescens*: 3. Head; 4. Metascutum; 5. Metascutum, close-up 6-8. *Ornatalva erubescens*: 6. Male genitalia; 7. Phallus; 8. Male abdominal segment VIII





FIGS. 9–10. *Ornaturalva erubescens*: 9. Female genitalia; 10. Female abdominal segment VIII

for examining specimens and slide mounts. Images were made with the Passport II Imaging System with a Canon MPE 65 mm 1–5X micro-photography lens, and with a Leica stereoscope with Leica Application Suite 4.6©. Specimens are deposited in the Arizona State University Hasbrouck Insect Collection (ASUHC), at least one male and one female deposited in the U.S. National Museum of Natural History (USNM), and several specimens in the British Museum Natural History, London (BMNH) (Ian Watkinson, personal communication, June 26, 2017).

#### Genus *Ornaturalva* Gozmány, 1955

*Ornaturalva* Gozmány, 1955, Ann. Hist.–nat. Mus. natn. Hung. 47: 308–309 [keys], 310.

Type species: *Gelechia plutelliformis* Staudinger, 1859

*Pelostola* Janse, 1960, Moths S. Afr. 6(2): 188.

Type species: *Pelostola kalahariensis* Janse, 1960

Most *Ornaturalva* species are characterized by having frontal modifications or processes on the denuded head, however some species are free of modifications. The metascutum bears paired patches of long hair-like scales near its posterior margin, like most

gelechiid species, however some species of *Ornaturalva* are found with modified short broad scales. The forewing bears a characteristic W-shaped line in the fold. The genitalia in both sexes are diagnostic; the male valvae are divided into two to five branches, and in the female a signum is always present in the corpus bursae.

***Ornaturalva erubescens* (Walsingham, 1904)** Figs. 1–10

*Gelechia erubescens* Walsingham, 1904, Entomologist's mon. Mag. 40: 265.

*Ornaturalva erubescens* (Walsingham) Sattler, 1964: 578; Sattler, 1976: 108; Li & Li, 2005: 247.

**Description** (Figs. 1–5). Wing length 5.6–6.2 mm. Head pale or whitish ochreous, brown along eye; without developed arc above the transfrontal sulcus. Vertex without enlarged scale bases or frontal process. Labial palpus pale or whitish ochreous; outer surface of second segment with scattered light brown rings at base and apex; third segment with scattered light brown scales. Antennae dark brown with pale ochreous rings. Thorax ochreous or pale ochreous; metascutum with a paired group of hair-like scales near its posterior margin. Tegula dark brown with white mottled. Forewing with a short dark brown basal streak; anterior half of wing dark brown like a band running from the base slightly widening toward the apex and the termen, W-shaped markings in the fold, posterior half of wing ochreous or pale ochreous, dark dot at end of cell with short dark streak extending towards apex, pale ochreous broad spot extending towards costa along anterior streak, pale ochreous streak at four fifths

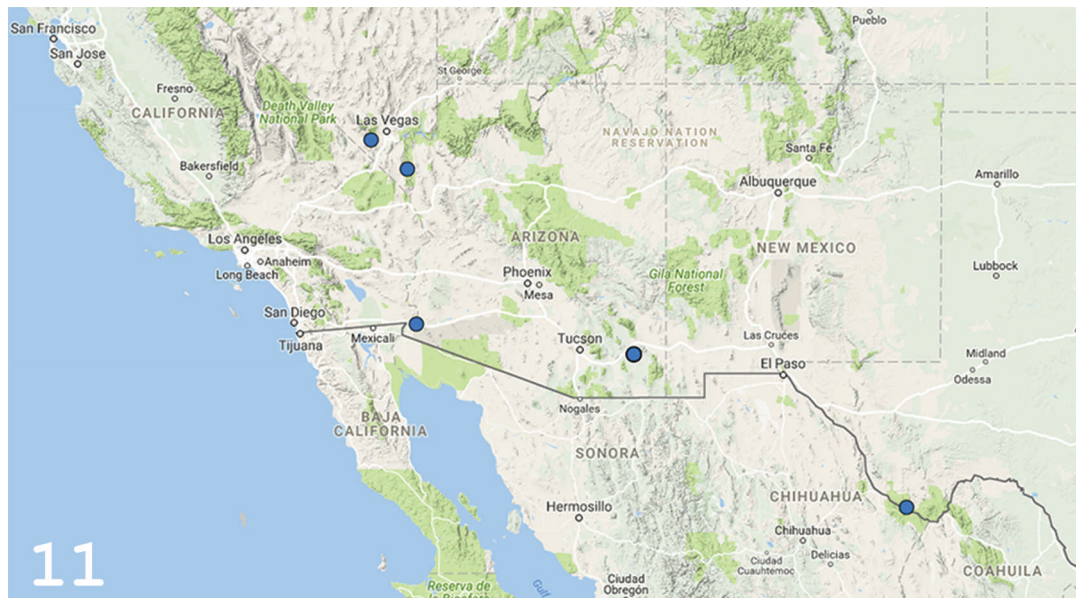


FIG. 11. Distribution map of *Ornatalva erubescens*. Blue dots indicate occurrences in the United States

of costa, sometimes extending towards the dorsum along the posterior half of the wing, base of fringes with distinct dark markings. Hindwing dark brown. Frenulum of female double or triple.

**Male genitalia** (Figs. 6-8). Uncus short, tubular, truncated. Gnathos absent. Valva broad at base, divided costal and saccular parts widely separated. Costa almost as long as valva, costal half tapering, curved dorsally, digitate-shaped, pointed at apex; harpe almost two-thirds length of costa, bent near middle, broader at apex. Saccular region tapering, apex rounded, turned dorsad. Sacculus digitate-shaped, almost half length of saccular region, enlarged near middle, rounded at apex. Phallus with slightly bulbous base, apical one-third curved, tapering, apex truncated.

**Female genitalia** (Figs. 9-10). Abdominal segment VIII posteriorly with paired patch of short scales. Apophyses anteriores a little shorter, or almost as long as length of apophyses posteriores. Antrum well developed, sclerotized, funnel-shaped, anterior portion narrowed. Ductus bursae almost twice length of corpus bursae when fully extended, coiled inside the abdomen. Signum with pair of sclerotized teeth, no sclerotized bridge of the signum.

**Material examined** (37 specimens) (Fig. 11). 3(♂), 3(♀), USA: AZ: Yuma Co., Yuma, Elev. 200', 16.vi.2016, at blacklight, leg. I. Watkinson (male genitalia slide No. SLEE0875); 12(♂), 12(♀), USA: AZ: Cochise Co., Willcox Playa Wildlife Area, Kansas Settlement Rd., 32.142360, -109.758675, Elev. 4177ft., 5.viii.2016, UV light, leg. S. Lee and F. Skillman (male genitalia slide No. SLEE0873; female genitalia slide No. SLEE0874); 1(♀), USA: TX: Brewster Co., N29.265, W103.790, 12.iii.2014, leg. J. Vargo; 5(♀), USA: NV: Clark Co., N35.495, W114.69, 5.x.2016, leg. J. Vargo; 1(♀), USA: NV: Clark Co., N36.01, W115.488, Elev. 5400ft., 6.x.2016, leg. J. Vargo. Slides deposited in ASUHIC.

**Diagnosis.** The forewing pattern with the dark brown band-like anterior half, short dark basal streak or W-shaped markings in the fold, is similar to *O. arabica* Sattler, *O. aspera* Sattler, or *O. pulchella* Sattler. The male genitalia are rather similar to *O. frontella* Sattler especially with the harpe bent near middle. *O. erubescens* is specifically separated from those similar ones by the combination of characters: head without enlarged scale bases or frontal process; forewing with a short dark brown basal streak, anterior half of wing dark brown, posterior half of wing ochreous or pale ochreous, pale ochreous broad spot extending

towards costa along anterior streak, pale ochreous streak at four fifths of costa; male with harpe bent near middle, sacculus digitate-shaped, enlarged near middle, rounded at apex; female with funnel-shaped antrum, signum with pair of sclerotized teeth, sclerotized bridge absent.

**Biology.** Host plant unknown, however suspected to be *Tamarix* (Angiosperm: Tamaricaceae). Imago moths were collected in March, June, August and October in Southwestern United States.

**Distribution.** North Africa (Morocco, Algeria, Tunisia, Libya, Sudan) and the Middle East (Egypt, Israel, Saudi Arabia, Iran) to Pakistan (ftp.funet.fi Feb. 27 2017; Sattler 1976). United States (Cochise and Yuma Counties in Arizona, Clark County in Nevada, and Brewster County in Texas).

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