

***XYELA (PINICOLITES) LATA SMITH*
(VESPIDA: XYELIDAE), A LIVING FOSSIL SAWFLY
FROM WESTERN NORTH AMERICA**

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Abstract.—*Xyela lata* Smith is an extant member of *Pinicolites* Meunier, 1920, a subgenus previously known from a single fossil species from Tertiary deposits of Germany. The species, known from the highlands of Colorado, Nevada, and Oregon, is first recorded from California (Sierra Nevada Mountains, altitude 2,560–2,800 m).

Key Words.—Insecta, Xyelidae, Tertiary relict, living fossil

Xyelidae is one of the oldest insect families, whose fossil record starts as early as at the Middle or Late Triassic. The genus *Xyela* Dalman is also an ancient as it first appeared in the Lower Cretaceous (Rasnitsyn 1969).

The fossil history of *Xyela* was recently reviewed by Rasnitsyn (1995) who recognized three subgenera: *Mesoxyela* Rasnitsyn (1965) (with one Early Cretaceous species from Zaza lake sediments in Transbaikalia), *Pinicolites* Meunier (1920) (one species from the mid-Tertiary (Aquitania) of Germany near Bonn), and *Xyela* s.s. (five mid-Tertiary and 31 extant species). *Pinicolites* is found now to persist since mid-Tertiary until the present.

Recently I have examined two specimens of *X. lata* in the collection of the California Academy of Sciences, San Francisco, and found the species to be a member of *Pinicolites*. The species was not recognized as a member in the original description of this subgenus, so it is redescribed here to include important characters not visible on the fossil specimens.

Discovery of the living fossil was presented to the general public in the Sep 1995 edition of the San Francisco Chronicle. The reporter contacted Donald J. Burdick, the collector, who provided details about the habitat.

GENUS *XYELA* DALMAN
SUBGENUS *PINICOLITES* MEUNIER

Finding of an extant species made my previous diagnosis of *Pinicolites* obsolete. A new diagnosis follows.

Diagnosis.—*Pinicolites* differs from *Xyela* s.str. and *Mesoxyela* in having an ovipositor that is both flat (saw-like) and upcurved. In addition, RS either touches M in a point, or is connected to it by short 1r-m crossvein (fused with M for a distance in *Mesoxyela* and a majority of *Xyela* s.str.). Within *Xyela* s.l., *Pinicolites* has a unique combination of a lightly colored mesoscutum (with black spots that indicate muscle attachments) a short antennal flagellum (shorter than or subequal to the article III and about 0.7 as long as the head width). In *Mesoxyela*, the mesoscutum is black and the antennal flagellum short, and in *Xyela* s.str. the antennal flagellum is longer and the mesoscutum is usually lightly colored. *Pinicolites* is similar to *Mesoxyela* and differs from *Xyela* s.str. in having free stalk of SC. Judging from the extant species only, *Pinicolites* differs from *Xyela* s.str.

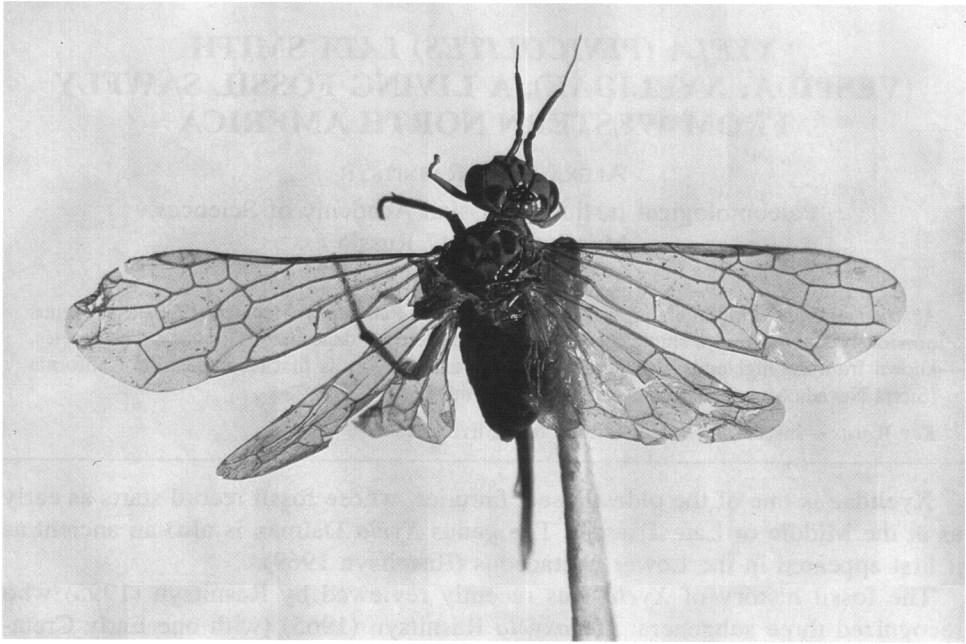


Figure 1. *Xyela lata* Smith, specimen from Kaiser Pass.

and *Mesoxyla* also in having antennal flagellum 11-segmented, mesonotum surface smooth, unsculptured (except for minute, sparse punctures), and, for the ovipositor blades, in the dorsal valve lacking visible structures, and the ventral valve having a narrow, acute apical projection that is abruptly separated from the main valve portion.

Xyela (Pinicolites) lata Smith
(Figs. 1–4)

Xyela lata Smith, 1990: 9.

Description.—*Female*: Length of forewing 4.4 mm, of sawsheath 2.3–2.5 mm. Integument shiny, asetose, unsculptured (except for scattered, minute punctures and pubescent abdominal apex). Body yellow with usual dark pattern (evanescent in part in one specimen); brown (sometimes with red tint) on head: antennomere III and flagellomeres, mandibular apex, lines along and spot between ocellar-antennal furrows, interocellar and postocellar area, spots laterad of postocellar sutures, posterior ocular orbits, and posterior head surface above; on thorax: pronotum, propleuron (except yellow caudally along thoracic midline), mesopleuron anterad of pseudosternal suture, pseudosternum except rostrally, laterally, mesonotum narrowly along notauli, medial, and scutellar furrows and along posterior scutellar margin, lateral and sublateral spots of mesonotum; additionally brown are dorsal body surface posterior of mesonotum disc (except for whitish cenchri, and yellowish metascutellum and abdominal tergal margins), and sawsheath apex. Pterostigma and veins pale yellow, membrane hyaline. Maxillary palp with article III as wide as and almost as long as antennal article III, with article V bearing 4 curved setae submedially, and membranous flap adaxially, subapically. Wing venation (Fig. 2), with several irregularities, viz., one specimen has an extra A_1 stub on left hindwing, another a supernumerary rs_1 - rs_2 crossvein in right forewing, its rudiment in left forewing, and r-rs crossvein in left hindwing. Sawsheath slightly upcurved in basal half, almost straight distally, widest subbasally, tapering slightly both basally and distally, tapering abruptly toward apex that is narrowly rounded, almost symmetrical. Basal plate of ovipositor (2nd valvifer) short: externally scarcely longer than maximum height of sheath. Ventral valve (V_1) high, membranous except for simple dorsal longitudinal thickening, abruptly

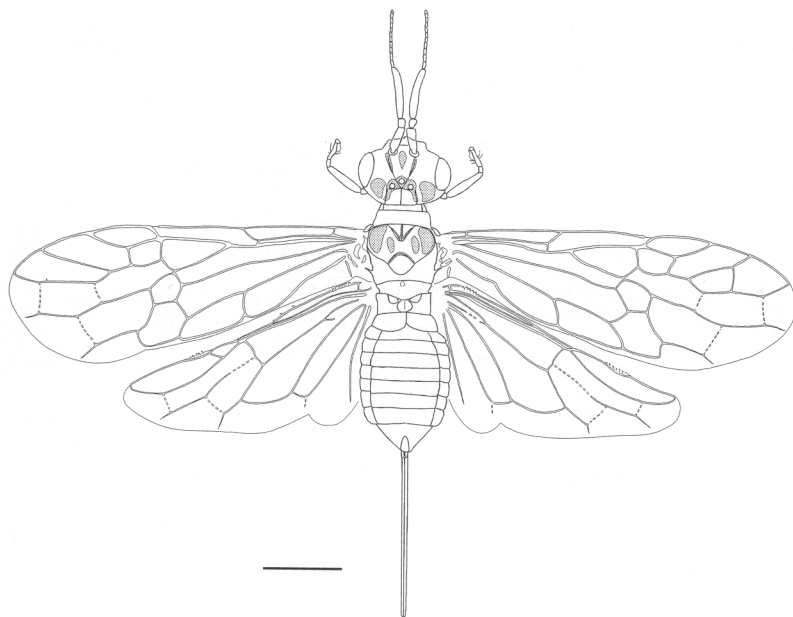


Figure 2. *Xyela lata* Smith, line drawing of Kaiser Pass specimen (legs omitted). Scale line = 1 mm.

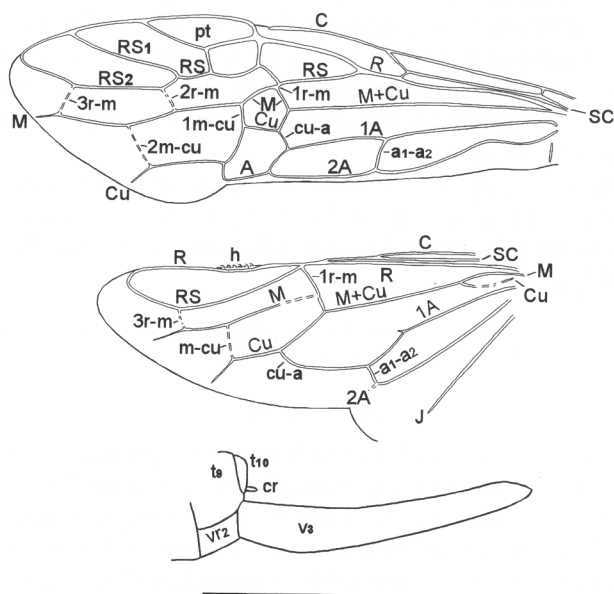


Figure 3. *Xyela lata* Smith, wings and external view of the ovipositor of Bodie specimen. Longitudinal veins are capitalized, crossveins are hyphenated; cr—cercus, h—hamuli, pt—pterostigma, t_9 , t_{10} —abdominal terga, v_3 —sawsheath, vr_2 —second valvifer (basal plate of ovipositor). Scale line = 1 mm.

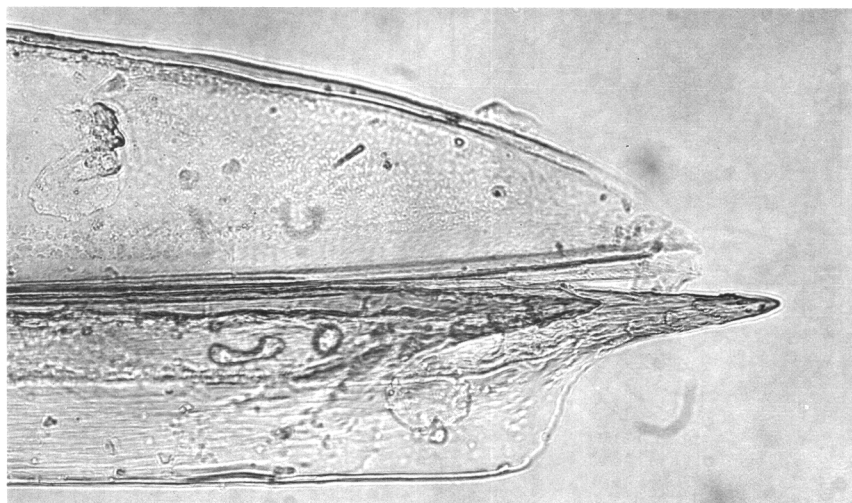


Figure 4. *Xyela lata* Smith, ovipositor blades of Kaiser Pass specimen (v_1 bottom, v_2 top).

narrowed toward needle-like apex armed with 4 oblique, toothed ribs, which are facing cephalad. Dorsal valve (V_2) also high, membranous and lacking visible structure (except for narrow ventral longitudinal rib not reaching apex of valve); narrowing gradually toward simple, hardly visible apex.

Male.—Unknown.

Diagnosis.—*Xyela lata* differs from *X. graciosa* Meunier 1920, in being slightly larger (forewing length 4.0–4.4 mm) and in having the following: antennal flagellum somewhat longer than article III, forewing with SC not reaching the level of RS base, sawsheath more upcurved, widest subbasally, and shorter (equal to distance from forewing R base to 1r-rs). In *X. graciosa* the forewing length is 3.5 mm, antennal flagellum shorter than article III, forewing with SC reaching the level of RS base, sawsheath less curved, widest basally, and as long as the forewing from R base to 2r-rs.

Biology.—One of females was collected “flying around the [male] cone of a white bark pine tree [*Pinus albicaulis* Engelm.] at an elevation of 9,500 feet [= 2,900 m]” (observation by Donald J. Burdick, cited in the San Francisco Chronicle, Sept. 4, 1995, p. 16).

Material Examined.—CALIFORNIA. *FRESNO Co.*: Kaiser Pass, 2900 m, 13 Jun 1966, D. J. Burdick, 1 female. *MONO Co.*: Bodie [2560 m], 12 Jun 1937, W. C. Bush.

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LITERATURE CITED

- Meunier, F. 1920. Quelques insectes de l'Aquitainien de Rott, Sept.-Monts (Prusse rhénane). Koninklijke Akademie van Wetenschappen te Amsterdam, Proceedings, Section of Science, 22: 891–898.
- Rasnitsyn, A. P. 1969. Origin and evolution of Lower Hymenoptera. Trans. Paleontological Institute, Acad. Sci. U.S.S.R., 123 (in Russian; translated into English in 1979 by Amerind Co., New Delhi).
- Rasnitsyn, A. P. 1971. Evolution of Xyelidae (Hymenoptera). In Current problems in paleontology. Trans. Paleontological Institute, Acad. Sci. U.S.S.R., 130: 187–196 (in Russian).
- Rasnitsyn, A. P. 1995. Tertiary sawflies of the Tribe Xyelini (Insecta: Vespida = Hymenoptera: Xyelidae) and their relationship to the Mesozoic and modern faunas. Contributions in Science, Natural History Museum of Los Angeles County, 450: 1–14.
- Smith, D. R. 1990. A new *Xyela* (Hymenoptera, Xyelidae) from the Western United States. Entomol. News, 101: 9–12.
- Sphon, G. G. 1973. Additional type specimens of fossil Invertebrata in the collections of the Natural History Museum of Los Angeles County. Contributions in Science, Natural History Museum of Los Angeles County, 250: 1–75.
- Statz, G. 1936. Über alte und neue fossile Hymenopterenfunde aus den tertiären Ablagerungen von Rott am Siebengebirge. Decheniana, 93: 256–312.

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