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Taxonomic revision of North American *Eusphalerum* Kraatz, 1857 (Coleoptera, Staphylinidae, Omaliinae)

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Taxonomic revision of North American *Eusphalerum* Kraatz, 1857
(Coleoptera, Staphylinidae, Omaliinae)

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Abstract. The North American species of the genus *Eusphalerum* Kraatz (Coleoptera, Staphylinidae, Omaliinae) are revised. The taxonomic history, natural history, geographical distribution of the genus, characters, species groups, diversity, and biogeography of North American species are presented. Two main phylogenetic lineages and 13 species groups are provisionally recognized. The following **new synonymies** are proposed: *Eusphalerum farrarae* (Hatch, 1944) = *E. lawrencei* Hatch, 1957; *Eusphalerum californicum* (Fauvel, 1878) = *E. atriventre* (Casey, 1894), = *E. nigerrimum* (Casey, 1894), = *E. gilvipenne* (Casey, 1894), = *E. dichroum* (Fall, 1922), = *E. bonnelli* (Hatch, 1944), = *E. lunae* Hatch, 1957; *Eusphalerum fraternum* (Casey, 1894) = *E. minskae* (Hatch, 1944); *Eusphalerum rugulosum* (Mäklin, 1853) = *E. grayae* (Hatch, 1944); *Eusphalerum orientale* (Bernhauer, 1912) = *E. frosti* (Bernhauer, 1928). The following **lectotypes** are designated: *E. subangulatum* (Casey), *E. californicum* (Fauvel), *E. gilvipenne* (Casey), *E. diversicolle* (Casey), *E. convexum* (Fauvel), *E. fraternum* (Casey), *E. horni* (Fauvel), *E. orientale* (Bernhauer), *E. pothos* (Mannerheim), and *E. punctatum* (Casey). The following **new species** are described: *Eusphalerum pilosum* (California); *E. klimaszewskii* (British Columbia); *E. chatzimanolisi* (California); *E. carolinensis* (Kentucky, Missouri, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia); *E. caterinoi* (California); *E. luteipes* (California); *E. thayeranum* (Alberta, British Columbia, Idaho, Indiana (doubtful record), Oregon, Washington); *E. margaretae* (Tennessee); *E. newtoni* (British Columbia, Oregon, California); *E. parvispiculum* (California, Oregon); *E. uncinatum* (British Columbia, California, Oregon, Washington). *Eusphalerum lapponicum* (Mannerheim, 1830) is excluded from the North American fauna. The following **new combination** is proposed: *Xylodromus segmentarius* (Mäklin, 1852: 322) (ex *Omalius*), wrongly attributed to *Eusphalerum* in the literature. *Omalius marginatum* Say, 1832 is considered a doubtful species, probably not *Eusphalerum*. A key to the 27 recognized North American *Eusphalerum* species and a catalog of the species are provided.

Key words. Staphylinidae, Omaliinae, *Eusphalerum*, *Xylodromus*, North America, groups of species, new synonymies, new species, new combination, key, catalogue.

Introduction

This article is a part of a series of contributions aiming at taxonomic revision of the genus *Eusphalerum* Kraatz, 1857 (Coleoptera, Staphylinidae, Omaliinae). The results of the previous research were published in several papers (Zanetti, 1982; 1987; 1990; 1991; 1992; 1993a; 1993b; 1998; 2003; 2004; 2007). Few other authors have dealt with *Eusphalerum* in recent years; only Watanabe (1990) has published a comprehensive work on the Japanese species. The aim of these publications was primarily strictly taxonomic, i.e., the recognition of species based on morphological characters, mostly those of the male genitalia. Some attempts to recognize phylogenetic lineages (species groups) were made, but the poor knowledge of North American species made a general systematic approach impossible. Several years ago, I received for study a substantial amount of North American material from Margaret Thayer (Field Museum of Natural History, Chicago) and Aleš Smetana (Canadian National Collection, Ottawa), but I soon realized that the study of North American species required a preliminary knowledge of the eastern Palaearctic fauna, which is related to that of North America. After the publication of some papers on Central Asian, Chinese and Taiwanese *Eusphalerum*, it is now time to publish a revision of North American species. The material I have studied for this work comprises approximately 5,000 specimens, but undoubtedly more *Eusphalerum* material is stored in American collections. The difficulties with customs regulations and procedure encountered when requesting loans of material from the U.S.A., and the associated risk of losing material, induced me to publish the results based on material seen until the end of 2011. Thus, the task of defining the zoogeographic details for some species and of undertaking a study of the systematics of the group, possibly using also a molecular approach, is left to American students.

Materials and Methods

The *Eusphalerum* material was sent to me by the curators of the following institutions and by private entomologists, to whom I am most grateful.

| | |
|-------|---|
| CNC | — Canadian National Collection, Ottawa (A. Smetana) |
| FMNH | — Field Museum of Natural History, Chicago (M. Thayer) |
| IRSNB | — Institut Royal de Sciences Naturelles de Belgique (Y. Gerard) |
| KSEM | — Snow Entomological Museum, University of Kansas, Lawrence (the late J. S. Ashe) |
| MCSNV | — Museo Civico di Storia Naturale, Verona (L. Latella) |
| MHNG | — Muséum d'histoire naturelle de la Ville de Genève (G. Cuccodoro) |
| MSNG | — Museo Civico di Storia Naturale Giacomo Doria, Genova (R. Poggi) |
| MZH | — Finnish Museum of Natural History, Zoological Museum, Helsinki (J. Muona) |
| MZLU | — Museum of Zoology, Lund University (C. Fägerström) |
| SBMNH | — Santa Barbara Museum of Natural History (M. Caterino) |
| USNM | — National Museum of Natural History, Washington (F. Shockley) |
| ZMUC | — Natural History Museum of Denmark, Copenhagen (A. Solodovnikov) |
| cRen | — collection K. Renner (Bielefeld) |
| cZan | — collection A. Zanetti (Verona) |

Dissected parts of insects, mostly male genitalia, are embedded in Euparal and mounted on plastic labels attached to the specimens.

The color photographs are composite images with progressive focusing obtained with a Nikon DSFi1 digital camera controlled by Nikon DS-L2 stand alone remote controller mounted on a Leica Z6 microscope equipped with a 1.0 × Leica lens and a customized motorized stand made by Luca Toledano, then processed on a Macintosh Mac Book Pro computer with Helicon Focus ® 3.61 program and then optimized with Photoshop® Elements 3.0 on the same computer.

Drawings were performed by Leica Microscope DM100 with camera lucida L 3/20.

The ESEM-EDS analysis (Environmental Scanning Electron Spectroscopy - Energy Dispersion System) of the specimens were carried out with the instrument FEI Quanta 200 FEG-ESEM in low vacuum mode at the Institute of Inorganic Chemistry and Surfaces (ICIS) of the National Research Council of Padua (Italy).

Maps were produced using QGIS 1.7.4.

A complete list of localities of the specimens from Casey's collection was obtained from a manuscript kindly made available to me by Floyd Shockley that reports the unusual scheme for indicating the localities of the specimens. This system is based on a small State abbreviation label to which Casey added various marks or symbols (dots, dashes, and crosses) in black or red ink. The nature, number, arrangement, and color of these marks on the label gives the clue to the definite locality (Buchanan 1935). Holotypes and paratypes of new species described here are labelled as Holotype/Paratype *Eusphalerum* [*speciesname*] Zanetti, det. [date]. In 'Material examined' m = male, mm = males, f = female, ff = females.

Measurements are all in millimeters and report minimum and maximum for each part. Length of head is measured from apex of clypeus to neck, length of elytra from shoulder to apex, and total length with partially extended abdomen.

Taxonomic History

The genus *Eusphalerum* is the only member of the Omaliinae tribe Eusphalerini Hatch, 1957 (type genus *Eusphalerum* Kraatz, 1857), as a new name for Anthobiini Portevin, 1929, which was based on a misidentified genus. Only one Palearctic species was originally included, *E. triviale* Erichson, 1839 (= *primulae* Stephens, 1834).

Erichson (1839) attributed the species now ascribed to *Eusphalerum* to *Anthobium* Leach, 1819, and this name was used for the genus for a long time by both European and American authors. *Eusphalerum*

was considered a junior synonym of *Anthobium* sensu Erichson by most authors and not a separate genus.

Tottenham (1939) recognized that this use was incorrect because the type species of *Anthobium* is *melanocephalum* Marsham, 1802, and Herman (2001) stated finally that the type species is *Omalium atrocephalum* Gyllenhal, 1827 (= *Silpha melanocephala* sensu Marsham, 1802). The name *Anthobium* is now used for the species of *Lathrimaeum* Erichson, 1839, the genus to which *atrocephalum* was usually attributed formerly.

Eusphalerum includes 260 valid species up to date, distributed in the Holarctic region, 27 of them reported here for North America. Mannerheim (1843) described the first North American species as *Anthobium pothos* from Sitkha Island, redescribed one year later as *A. dimidiatum* by Melsheimer (1844), and Mäklin (1853) the second as *Anthobium rugulosum*, also from insula Sitkha. Fauvel (1878) described four species, provided the first key and included in *Eusphalerum* (as *Anthobium*) 2 species previously described as *Omalium* by Say (1832) and Mäklin (1853). Casey (1894) described eight species, Bernhauer (1912, 1928) three, Fall (1922) one, and Hatch (1944 and 1957) seven. Hatch (1957) also provided a key to species of the Pacific North West and proposed several synonymies.

The attempt of Kraatz (1857) to divide *Anthobium* sensu Erichson into 2 genera, *Eusphalerum* (monospecific) and *Anthobium*, was not followed by subsequent authors, who recognized 2 subgenera: *Anthobium* s.str. and *Eusphalerum*, the latter in a meaning wider than in the original description. This is for instance the subdivision followed in Junks catalogue (Bernhauer and Schubert 1910). The nomenclatorial correction introduced by Tottenham (1939), with the adoption of the name *Eusphalerum* for the genus, was associated with a division into three subgenera, *Eusphalerum* s.str. (monospecific), *Abinothum* Tottenham, 1939 and *Onibathum* Tottenham, 1939. Hatch (1957) adopted the subgenera *Eusphalerum* s.str. and *Onibathum* for the North American species, and Coiffait (1959), the first author to study the male genitalia of the genus, divided it into three subgenera, *Eusphalerum* s.str., *Abinothum*, and *Pareusphalerum* Coiffait, 1959. Klinger (1980) proposed a subgeneric division based on structures connected with the abdominal defensive glands. Zanetti (1982 and 1987) recognized only *Eusphalerum* s.str. and *Pareusphalerum*, but more recently *Pareusphalerum* was rejected as a valid subgenus (Tronquet and Zanetti 2008).

The taxonomic knowledge of North American *Eusphalerum* can be considered very poor: 10 new synonymies and 1 new combination are proposed and 11 new species are described from North America in this paper.

Natural History

Eusphalerum species exhibit several features unusual in the Omaliinae and in the Staphylinidae in general. Adults live on flowers of many different plants, where they feed on pollen and nectar (Klinger 1983). They are often found in large or very large numbers, and many species can live together, mostly in wooded hilly and mountainous humid habitats, both deciduous and coniferous, and in marshy places. The highest documented altitude in North America is about 4000 m a.s.l (12,100') for *E. tibiale* in Colorado. Records of low-elevation habitats are rare (in southern North America, only *E. horni* is a low altitude species) and agricultural areas are not frequented.

Concerning the choice of host plants, the records of the materials studied for this revision are referred to at least 38 botanical species belonging to 23 families. These plants (herbs, bushes or trees) are often characterized by umbrella like inflorescences (mostly umbel and corymb) (e.g. *Heracleum*, *Cornus*, *Spiraea*, *Viburnum*, *Ceanothus*), racemes associated in large number (*Rhododendron*, *Kalmia*) or by other more or less compact inflorescences (e.g. *Achlys*, *Camassia*, *Lysichiton*, *Oplopanax*, *Rhus*, *Smilacina*, *Salix*). More sparsely arranged flowers seem less frequently visited. The vast majority of North American *Eusphalerum* specimens have probably been collected more or less incidentally by general collectors, not by people experienced in this genus. Special collecting techniques, i.e. the direct opening of the tubular part of elongate flowers, should be also used, because several European species live in this particular microhabitat, sometimes exclusively (*Eusphalerum robustum* and allied species on yellow *Primula*), sometimes not exclusively (*E. primulae*).

In European species, the adult lifespan is about 5 weeks (Klinger 1983) and all species are univoltine. The available North American records seem to confirm this. The documented limits are March (*E. pilosum*, California) and September (*E. rugulosum*, Alaska). Some species appear early in spring (e.g. *E. horni*, *E. farrarae*, *E. pilosum*, *E. subangulatum*, *E. luteipes*, *E. caterinoi*) mostly in southern areas, but the overall maximum presence of adults in North America is early summer (June-July).

The flight capability of many species is documented by captures at light and by various aerial traps (Malaise trap, Lindgren trap, window or flight intercept trap).

Larvae of *Eusphalerum* (first instar) are characterized by a broad, elongate ligula and the shape of the labrum which is somewhat emarginate in front (Steel 1970). Nothing is known about the larval habits of *Eusphalerum*. Steel (1970) was able to raise from egg to adult representatives of most genera of European Omaliinae. Larvae of most genera proved to be zoophagic, a few others (*Phloeostiba*, *Phloeonomus*, *Acidota*) accepted plant material (banana) as food. *Eusphalerum* larvae refused any kind of offered food. The larval habitat is not known either; very probably they live in the litter. Larvae of *Eusphalerum orientale* associated with adults were found in New Hampshire (Grafton Co Sawyer River nr. Bartlett 1600 sphagnum moss, water edge leg. Newton and Thayer), and many unassociated *Eusphalerum* larvae have been collected in leaf litter or moss (Thayer, personal communication).

Eusphalerum species, like other Omaliinae and related taxa, have a complex of abdominal sternal glands (Klinger and Maschwitz 1977; Klinger 1979, 1980) situated between sternites VII and VIII and composed of a mass of gland cells and a reservoir. Release of the gland secretions occurs in well-defined areas of the basal process of the sternite VIII. The smell of the secretion is strong and unpleasant, and has a defensive role (Klinger 1983).

Geographic Distribution

Eusphalerum is the largest genus in the Omaliinae and some Palaearctic regions show a high or very high species diversity. This is the case with some mountain regions of Europe and Asia: the Pyrenees (11 known species), the Alps (41 species), the Apennines (27 species), the Balkans (23 species), the Caucasus and nearby areas (24 species), the western regions of China (30 species described, surely many still unknown), Japan (52 species) and Taiwan (12 species). The size of distributional ranges is very variable and many species are endemic to a restricted area. This pattern is unusual in the Omaliinae and the factors that determine it are unknown.

Eusphalerum diversity in North America seems to be lower than in the Palaearctic region, and it is concentrated in the states along the Pacific coast: British Columbia (10 species), Washington (8 species), Oregon (11 species), and California (14 species). In most states the number of species is 1-3 and in many states of the central belt between North Dakota and Texas none are known. Possibly unknown species still exist, and some regions like the Appalachian Mountains need more investigation.

Characters and Species Groups

The subdivision of *Eusphalerum* into monophyletic subgenera is now impossible, as mentioned above. The following proposal to ascribe North American *Eusphalerum* to species groups is not definitive, either, because it is not based on a phylogenetic analysis and, mostly, it is focused only on Nearctic species and not on the whole genus. Its aim is to point out some seeming synapomorphies in the group and to recognize probably monophyletic lineages whose relationships are still uncertain, and to make the confident identification of species possible.

Groups of species are defined by the following set of characters already examined in other papers (Zanetti 2004, 2007). In some cases their polarity is clear, in other it is not yet recognizable.

Size small (average below 2 mm) / size intermediate (average between 2 and 3 mm) / size large (average above 3 mm)

Medial margin of eyes with / without wrinkles

Postocular carina present / absent (Fig. 138 and 34)

Temples strongly / feebly convergent caudad

Postantennal depressions confluent with tentorial pits in 2 depressed areas / postantennal depressions not confluent with tentorial pits / head flat without clear impressions
 Head separated / not separated from neck by a clear line
 Legs of male modified / not modified
 Elytra of female truncate at apex / prolonged in a sutural lobe
 Tarsomere 5 of posterior tarsi shorter than 1-4 together / as long as 1-4 together
 Sternite VII of male not modified / modified in the middle
 Sternite VIII of male with / without an elevated plate
 Sternite of male genital segment modified / not modified
 Parameres of aedeagus with 2+2 apical setae / with several apical setae not gathered in 2 groups
 Aedeagus with copulatory sclerites / with spicules or thin spines only
 Spermatheca lollipop-shaped (one part globular, the other rod- or stalk-like) / divided in 2 parts, neither one rod-shaped
 Accessory sclerite of female large / reduced

Characters of parameres and spermatheca seem particularly important to recognize phylogenetic lineages, mostly taking into account the distributions of Nearctic species compared with those of Palearctic species. Moreover, the polarity of character of parameres is clear, because the state 2+2 apical setae is surely plesiomorphic in the Omaliinae and present in all species of most genera, while the state several setae is present only in some well defined eastern Palearctic and North American groups of *Eusphalerum* (see below, Diversity and biogeography). It appears sometimes in genera belonging to other tribes, like *Anthrophagus* Gravenhorst, 1802. The state spermatheca divided in 2 large parts is regarded as plesiomorphic (see Zanetti 1987: 17), the state lollipop-shaped as apomorphic. The latter is always linked to several setae on the male parameres.

Diversity and Biogeography

The diversity of *Eusphalerum* species in North America is illustrated in Tab. 1. The hotspot is the western ranges (Coast Range, Cascade Range and Sierra Nevada). Fourteen species are reported from California, 11 from Oregon, 10 from British Columbia, and 7 from Washington. The number of species from the Rocky Mountains is lower, the maximum being in Idaho (4 species). In the rest of the region, diversity is much lower, varying between 1 and 3 species, with a South-Central belt where none is reported. In some poorly investigated areas, like the Appalachians, other new species may remain to be discovered. The range size of individual species is significant. Eight species are endemic to California (*E. aurifluum* (except 1 locality in Arizona), *E. caterinoi*, *E. chatzimanolisi*, *E. diversicolle*, *E. luteipes*, *E. punctatum*, *E. pilosum*, *E. subangulatum*), 1 to British Columbia (*E. klimaszewskii*), and 1 possibly to Tennessee (*E. margaretae*, only 1 record). Five species (*E. farrarae*, *E. fraternum*, *E. newtoni*, *E. parvispiculum*, and *E. uncinatum*) are widespread in the Coast Range, Cascade Range and Sierra Nevada (*E. uncinatum* also in the Northern Rocky Mountains) from British Columbia to California, and 6 other species (*E. californicum*, *E. swauki*, *E. tibiale*, *E. rugulosum*, *E. fenyesi*, *E. thayeranum*) have wider Western, but more extensive distributions. In the Eastern region the level of endemism is much lower. Besides the above-mentioned *E. margaretae*, *E. carolinensis* is spread mostly in the Appalachian area (North Carolina, Tennessee, Virginia, Ohio) as well as Missouri and Kentucky, and *E. horni* mainly in the southeastern states (Alabama, Florida, Georgia, South Carolina, also Missouri and Oklahoma). Two species (*E. convexum* and *E. orientale*) have a wide north-central to northeastern distribution and one (*E. pothos*) a northern transcontinental distribution in 22 states and provinces. Finally, one introduced species (*E. torquatum*) is recorded.

Concerning the relationships between Nearctic and Palearctic *Eusphalerum* species, the large number of species closely related to the eastern Palearctic ones is to be emphasized. Thirteen American species in the groups with several setae at the apex of the parameres and lollipop-shaped spermatheca share these apomorphies with many species from the Himalayan Region, Burma, China, Korea, Japan, and Taiwan (Zanetti 1992, 1998, 2004; Watanabe 1990), from Siberia, and (2 species) from northern Europe. Among the species with 2+2 setae at the apex of the parameres and a spermatheca divided into

2 large parts, *E. californicum* belongs to a group of closely related species spread from Central Asia to Korea. These connections between the North American and eastern Asian *Eusphalerum* faunas are thought to be related to the presence of a connection between Asia and North America in various phases from the Mesozoic to Pleistocene (Bering land bridge). The lack of a phylogenetic analysis of the whole genus makes much more problematic the recognition of relationships between North American and western Palaearctic *Eusphalerum*, which seem less evident than those between North America and the eastern Palaearctic.

***Eusphalerum* Kraatz, 1857**

Type species: *Anthobium triviale* Erichson, 1839 = *Omalium primulae* (Stephens, 1834), by monotypy.

Anthobium sensu auctt. (not Leach, 1819): LeConte 1861: 70; LeConte 1863: 26; Fauvel 1868: 198; Casey 1894: 426; Bernhauer and Schubert 1910; Blatchley 1910.

Eusphalerum Kraatz, 1857: 1003; Tottenham 1939: 225; Tottenham 1949: 354, 405; Hatch 1957: 52, 82; Coiffait 1959; Steel 1970: 8; Moore and Legner 1975: 190; Moore and Legner 1979: 170; Klinger 1980; Klinger 1983; Campbell and Davies 1991; Downie and Arnett 1996: 438; Newton et al. 2000: 102.

Groups with 2+2 setae at apex of parameres and spermatheca divided in 2 large parts

subangulatum group

Diagnostic characters

Size large (2.2-3.4 mm)

Medial margin of eyes with or without wrinkles

Postocular carina present or modified in angulated temples

Head flat without clear impressions

Elytra of the female truncate at apex

Tarsomere 5 of the posterior tarsi shorter than 1-4 together

Head not separated from neck by a clear line, legs of the males not modified, sternite VII of the male not modified, VIII without an elevated plate, sternite of genital segment of the male not modified

Aedeagus large, internal sac with complex groups of spicules.

Parameres of the aedeagus strongly widened at apex with 2+2 apical setae

Spermatheca divided in 2 large parts

Accessory sclerite of female large

The species of the group have the pronotum strongly punctured and the elytra with long dense pubescence, or short pubescence with some sparse long setae. Males of some species have larger relative heads (allometry). The group includes 4 species, distributed along the Pacific coast from British Columbia to Oregon. Adults active mostly in spring.

***Eusphalerum farrarae* (Hatch, 1944)**

Anthobium farrarae Hatch, 1944: 101.

Eusphalerum farrarae (Hatch); Hatch 1957: 83; Moore and Legner 1975: 190; Herman 2001: 423.

Eusphalerum lawrencei Hatch, 1957: 83; **n. syn.**; Moore and Legner 1975: 190; Herman 2001: 429.

Material examined

Type material. *Anthobium farrarae*: Holotype m Fall City Wash. May 29, 1932 M.H. Hatch (USNM)

Anthobium lawrencei: Holotype f Ashland Ore. 6.12, 1935 (USNM)

Other material (53 specimens). **CANADA. British Columbia** 1 f Vancouver 22.04.1974 leg. N.M. Downie (FMNH); **USA. Oregon** 1 f Estacada Oregon grape blooms 21.03.1947 leg. J. Schuh (FMNH); 1 f Lane Co McCredie Springs 26.04.1947 leg. B. Malkin (FMNH); 1 m 1 f Linn Co Idanha (15 km E) 16.06.1984 leg. Danielsson (MZLU); 1 f Tillamook Co Beaver (16 mi. E) Nestucca R. Acc. Rd. 1900' 12.05.1973 leg. Benedict (CNC); 2 mm Alsea Mt. Salix blossoms 17.03.1936 leg. Schuh (CNC); 4 mm 1 f Alsea Mt. Corvallis (9 mi. N) willow blossom 17.03.1936 leg. K. Gray J. Schuh (FMNH); 2 ff Nelscott Beach in flower head Trifolium 10.04.1949 leg. Roth (CNC); 1 f Philomath (8 mi. W) Mary's Peak 4000' 9.05.1968 leg. Campbell & Smetana (CNC); **Washington** 2 ff King Co North Bend (10 12 mi.N) 1200 ft ca. secondary conifer forest, aerial dredging, daytime 17.04.1983 leg. P.J. and C.C. Johnson (FMNH); 4 mm 3 ff King Co North Bend (10 12 mi.N) ca 1200 ft secondary conifer forest, aerial dredging, daytime 17.04.1983 leg. P.J. and C.C. Johnson (FMNH); 1 m 3 f King Co North Bend (12 mi.N) ca. 1200 ft. 17.04.1983 leg. PJ & CC Johnson (FMNH); 2 mm 1 partial Mt. Rainier N.P. White River Camp. 4300-5000 22/23.07.1954 leg. B. Malkin (FMNH); 1 f Mt. Rainier N.P., Nisqually R. 4000' 16.05.1968 leg. Campbell & Smetana (CNC); 11 ff 10 mm Mt. Rainier N.P., Sunbeam Falls 17.05.1968 leg. Campbell & Smetana (CNC).

Published records. British Columbia, Oregon Washington (Moore and Legner 1975).

Measurements. Head length: 0.31-0.37; head width: 0.66-0.70; pronotal length: 0.57-0.64; pronotal width: 0.86-0.98; elytral length: 1.31-1.57; elytral width: 1.23-1.29; length (clypeus to apex of elytra): 2.22-2.59; total length: 2.5-3.4.

Description. Habitus as in Fig. 1. Head, pronotum, and elytra yellowish, elytra somewhat paler, part of head often darkened; abdomen brown, yellowish from tergite VII, which is partially or entirely pale, in the male, usually yellowish in the female, sometimes brown; prosternum, metasternum, legs, antennae, and mouthparts yellowish.

Head with prominent eyes, postocular carina present and well marked, temples short, strongly convergent in the posterior part, medial margin of eyes without longitudinal wrinkles. Head rather flat, postantennal depressions superficial and tentorial pits small. Neck slightly separated from the head. Punctuation dense on scarcely microsculptured ground. Antennae elongate, antennomere 1 elongate, twice as long as wide, 2 ovoid elongate, 3 twice as long as wide, 4-7 longer than wide, 8-10 subquadrate, 11 twice as long as wide, rather ovoid, sharpened at apex.

Pronotum transverse (ratio width/length = 1.4 on average), anterior margin slightly narrower than the posterior, lateral margins rounded in the middle, convergent caudad in slightly sinuate line, posterior angles marked and scarcely obtuse. Punctuation dense and coarse, ground with isodiametric microsculpture, pubescence long, yellowish, depressions near posterior angles wide, extended in front of middle of lateral margins.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), widened towards apex, truncate in middle in both sexes, punctuation somewhat coarser and less dense than on pronotum, confluent on glossy ground, pubescence variable, more or less long, but always clearly visible with some very long isolated setae.

Abdomen dull, microsculpture clearly visible, formed by almost isodiametrical meshes, pubescence long, decumbent.

Tibiae feebly curved in the male, straight in the female, tarsomere 5 of posterior tarsi shorter than 1-4 together.

Aedeagus as in Fig. 2.

Accessory sclerites of female as in Fig 3, spermatheca as in Fig. 4.

Comparative notes. The species is characterized by large size, color, elongate antennae, elytra truncate in both sexes, sides of pronotum somewhat folded dorsad, elytra with visible pubescence with some very long isolated setae. It is distinguishable from *E. subangulatum* and *E. pilosum* n. sp. by its shorter temples, not angulate, and head not very wide in the male. In the original description of *E. lawrencei* the only distinctive character reported is the dark color of abdomen of the female, this character falls in the intraspecific variability of *E. farrarae*.

Distribution. CANADA: British Columbia; UNITED STATES: Oregon, Washington (Map 4).

Natural history. The species was collected between 350 and 1300 m. Reported host plants: *Mahonia aquifolium* (Pursh) Nutt. (Berberidaceae), *Salix* sp. (Salicaceae), *Trifolium* sp. (Fabaceae) The only macrohabitat reported on the labels is conifer forest (secondary). Most captures between March and June, the latest in July.

***Eusphalerum subangulatum* (Casey, 1894)**

Anthobium subangulatum Casey, 1894: 430; Bernhauer and Schubert 1910: 43.

Eusphalerum subangulatum (Casey) Moore and Legner 1975: 191; Downie and Arnett 1996: 439; Herman 2001: 460.

Material examined (12 specimens)

Type material. Lectotype m [here designated] Lake Tahoe Cal. May 24. 1879 6465 ft., 1 paralectotype m 1 paralectotype f Cal. [with Casey's marks meaning Lake Tahoe, June 1887] (USNM).

Other material. (9 specimens). **USA. California:** 8 mm Placer Co Dutch Flat (CNC); 1 f Sequoia Natl. Park, Wolverton 7000-9000' 17.06.1920 leg. Van Dyke (CNC).

Measurements. Head length: 0.44-0.48; head width: 70-0.75; pronotal length: 0.61-0.64; pronotal width: 0.86-0.94; elytral length: 1.27-1.33; elytral width: 1.12-1.18; length (clypeus to apex of elytra): 2.03-2.29; total length: 2.4-2.7.

Description. Habitus as in Fig. 5. Head, pronotum, and elytra yellowish, elytra somewhat paler, neck somewhat darkened; abdomen from brown to dark brown in male, yellowish brown in female; prosternum and metasternum brownish; legs, antennae, and mouthparts yellowish.

Head very wide in male, almost as wide as pronotum, narrower in female, 0.7 times as wide as pronotum, with prominent eyes, postocular carina absent, temples long and angulate, strongly convergent in the posterior part, medial margin of eyes without longitudinal wrinkles. Head of male rather flat, postantennal depressions superficial and tentorial pits almost absent, somewhat more impressed in female. Neck slightly separated from head. Punctuation dense on glossy ground, almost without microsculpture. Antennae elongate, antennomere 1 elongate, twice as long as wide, 2 ovoid, 3 thin, twice as long as wide, 4-5 longer than wide, 6 subquadrate, 7-10 progressively widened, 10 less than twice as wide as long, 11 twice as long as wide, rather ovoid.

Pronotum transverse (ratio width/length = 1.4 on average), slightly impressed medially in front of posterior margin, convex, widest in the middle, anterior margin as wide as posterior one in male, narrower in female, lateral margins rounded in anterior half, very feebly sinuate in posterior half, convergent caudad in almost straight line, posterior angles marked and scarcely obtuse. Punctuation dense and rather coarse, ground with isodiametric microsculpture, pubescence short, scarcely visible, depressions near posterior angles wide, extending in front of middle of lateral margins.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), widened towards apex, truncate medially in both sexes, punctuation coarser and somewhat less dense than on pronotum, confluent on glossy ground, pubescence very short, with some sparse long setae.

Abdomen glossy, microsculpture superficial, formed by transverse meshes, pubescence long, decumbent.

Tibiae straight in both sexes, not modified, tarsomere 5 of posterior tarsi shorter than 1-4 together.

Aedeagus as in Fig. 6.

Accessory sclerites of female as in Fig. 7, spermatheca as in Fig. 8.

Comparative notes. *Eusphalerum subangulatum*, like *E. pilosum*, is characterized by males with relatively larger heads (allometry), with head almost as wide as pronotum. It is very similar to *E. farrarae* in

habitus. The absence of very long dense pubescence distinguishes it from *E. pilosum*.

Distribution. UNITED STATES: California: Sierra Nevada (Map 4).

Natural history. Information about habitat and host plants is not available. Documented captures in March.

***Eusphalerum pilosum* Zanetti, n. sp.**

Material examined. (36 specimens)

Holotype m 1 paratype m 3 paratypes ff Marin Co Lagunitas 29.03.1908 (CNC)

Other paratypes. USA. California 1 f Alameda Co Oakland Hills Salix 13.03.1962 leg. O'Brien (CNC); 7 mm Alameda Co 00.03.?? (CNC); 1 f Lake Co St. Helena Creek 02/03.1951 leg. Helfer (CNC); 2 ff Marin Co Lagunitas 7.04.1907 leg. Van Dyke (FMNH); 1 m Marin Co Point Reyes 22.03.1925 leg. Helfer (CNC); 1 f Marin Co (CNC); 1 m Mendocino Co Mendocino 20.10.1954 leg. Helfer (CNC); 8 mm 4 ff Corte Madera Cr 13.03.1910 (MSNG); 1 m 1 f Oakland, hills back of 22.03/12.04.1908 (CNC); 2 ff Marin Co Inverness, (3.1 mi. NW) 200 ft *Alnus* forest, on flowers *Heracleum lanatum* 22.05.1976 leg. A. Newton and M. Thayer (FMNH); 1 f Oakland, hills back of 22.03.1908 (CNC).

Measurements. Head length: 0.40-0.48; head width: 0.68-0.79 ; pronotal length: 0.57-0.66; pronotal width: 0.79-0.90; elytral length: 1.18-1.38; elytral width: 1.05-1.18 ; length (clypeus to apex of elytra): 1.94-2.40; total length: 2.2-2.8.

Etymology. Adjective, from the Latin *pilosus* (hairy).

Description. Habitus as in Fig. 9 and 10. Head, pronotum, and elytra yellowish, elytra somewhat paler, neck often darkened; abdomen from brown to dark brown in male, yellowish, somewhat darkened at apex in female; prosternum and metasternum brown; legs, antennae, and mouthparts yellowish, antennae sometimes very feebly darkened at apex.

Head very wide in the male, almost as wide as pronotum, narrower in the female, 0.7 times as wide as pronotum, with moderately prominent eyes, postocular carina absent, temples long and angulate, strongly convergent in posterior part, medial margin of eyes with some longitudinal wrinkles. Head of male rather flat, postantennal depressions superficial and tentorial pits almost absent, somewhat more impressed in female. Neck slightly separated from head. Punctuation dense on glossy ground, almost without microsculpture. Antennae scarcely elongate, antennomere 1 elongate, twice as long as wide, 2 ovoid, 3 thin, twice as long as wide, 4-5 longer than wide, 6 subquadrate, 7-10 progressively widened, 10 twice as wide as long, 11 twice as long as wide, rather ovoid.

Pronotum transverse (ratio width/length = 1.4 on average), slightly impressed medially in front of posterior margin, convex, widest at the middle, anterior margin as wide as posterior in male, narrower in female, lateral margins rounded in the anterior half, somewhat sinuate in posterior half, convergent caudad in almost straight line, posterior angles marked and scarcely obtuse. Punctuation dense and rather coarse, ground with isodiametric microsculpture, pubescence very long, yellowish, depressions near posterior angles wide, extending in front of middle of lateral margins, which are somewhat folded towards back and feebly crenulate.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), widened towards apex, somewhat oblique medially in both sexes, punctuation coarser and somewhat less dense than on pronotum, confluent on glossy ground, pubescence very long, yellowish and somewhat decumbent.

Abdomen dull, microsculpture clearly visible, formed by almost isodiametrical meshes, pubescence long, decumbent.

Tibiae straight in both sexes, not modified, tarsomere 5 of posterior tarsi shorter than 1-4 together.

Aedeagus as in Fig. 11.

Accessory sclerites of female as in Fig 12, spermatheca as in Fig. 13.

Comparative notes. See comparative notes for *E. subangulatum* above.

Distribution. UNITED STATES: California: Coast Range (Map 4).

Natural history. Only one altitudinal record is available (about 60 m). The only reported host plant is *Heracleum maximum* Bartram (= *lanatum*) (Apiaceae), and the only habitat is *Alnus* forest. The species is mostly found in spring, from the beginning of March to the end of May. One record of the end of October is to be confirmed.

***Eusphalerum klimaszewskii* Zanetti, n. sp.**

Material examined. (21 specimens)

Holotype m 1 paratype m 1 f 1 spec. incomplete, British Columbia Mt. Cain 50°13'N 126° 22'W 23.06/7.07.1997 leg. N. Winchester (MCSNV).

Other paratypes: CANADA. **British Columbia** 2 mm 1 f Mt. Cain 50°13'N 126° 21'W 23.05/9.06.1997 leg. N. Winchester (cZan); 3 ff Mt. Cain 50°13'N 126° 22'W 23.05/9.06.1997 leg. N. Winchester (cZan); 3 spec. incomplete Mt. Cain 50°13'N 126° 22'W 9.06/23.06.1997 leg. N. Winchester (cZan); 1 spec. incomplete Mt. Cain 50°13'N 126° 22'W 23.05/9.06.1997 leg. N. Winchester (cZan); 1 m 1 f Mt. Cain 50°15'N 126° 25'W 23.05/9.06.1997 leg. N. Winchester (cZan); 1 f Mt. Cain 50°15'N 126° 25'W 9.06/23.06.1997 leg. N. Winchester (cZan); 1 f Mt. Cain 50°15'N 126° 25'W 23.06/7.07.1997 leg. N. Winchester (cZan); 1 f Aberni (38 mi.W) 24/25.05.1968 leg. Campbell & Smetana (CNC); 2 ff Carmanah Valley (upper) UTM 10UCJ 802998 21.06/3.07.1991 leg. N. Winchester (FMNH).

Measurements. head length: 0.33-0.35; head width: 0.64-0.66; pronotal length: 0.64-0.65; pronotal width: 0.75-0.81; elytral length: 1.44-1.48; elytral width: 1.29-1.33; length (clypeus to apex of elytra): 2.36-2.70; total length: 2.7-2.9.

Etymology. The species is dedicated to Jan Klimaszewski, specialist of Staphylinidae, who provided me most specimens of the type series.

Description. Habitus as in Fig. 14. Head, pronotum, abdomen, and ventral surface blackish, sometimes brown; elytra yellowish to brown, always lighter than rest of body; legs, antennae, and mouthparts yellowish, antennae sometimes very feebly darkened at apex.

Head with strongly prominent eyes, postocular carina extremely reduced, almost absent, temples very short, strongly convergent caudad, medial margin of eyes without longitudinal wrinkles, microsculpture formed by elongate meshes. Clypeus prolonged anterad. Postantennal depressions not much impressed, slightly confluent with the small tentorial pits. Neck separate from head. Punctuation very dense and rather strong, somewhat confluent, ground with superficial microsculpture. Antennae elongate, all antennomeres longer than wide, 4 clearly narrower than 5, 11 almost ovoid, more than twice as long as wide.

Pronotum scarcely transverse (ratio width/length = 1.2 on average), impressed medially in front of posterior margin, convex, widest in front of middle, somewhat narrowed anterad, anterior margin clearly shorter than posterior, lateral margins rounded in anterior two thirds, convergent caudad in almost straight line, posterior angles marked and slightly obtuse. Punctuation very dense and rather coarse, ground glossy with very superficial microsculpture, pubescence very long, whitish, depressions near posterior angles narrow, extended in front of middle of lateral margins.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.1), scarcely widened towards apex, truncate in middle in both sexes, punctuation coarser and somewhat less

dense than on pronotum, confluent on glossy ground, pubescence long, whitish and decumbent.

Abdomen dull, microsculpture clearly visible, formed by almost isodiametric meshes, pubescence long, decumbent.

Tibiae straight in both sexes, not modified, tarsomere 5 of posterior tarsi somewhat shorter than 1-4 together.

Aedeagus as in Fig. 15.

Accessory sclerites of female as in Fig 16, spermatheca as in Fig. 17.

Comparative notes. Dark color, long white pubescence, rather narrow pronotum, and long yellowish antennae make this species easily recognizable among North American *Eusphalerum*. The related species of the subangulatum group are light and have a wider pronotum.

Distribution. CANADA: British Columbia (Map 4), known only from Vancouver Island.

Natural history. All specimens were collected in forest sites. No information about host plants is available, as specimens were collected mostly by traps. Captures between May and beginning of July.

torquatum group

Diagnostic characters

Size small (1.8-2.3 mm)

Medial margin of eyes without wrinkles

Postocular carina present

Temples strongly convergent caudad

Head flat without clear impressions

Head separated from neck by a clear line

Legs of males not modified

Elytra of female prolonged in a sutural lobe

Tarsomere 5 of posterior tarsi as long as 1-4 together

Sternite VII of male not modified

Sternite VIII of male without an elevated plate

Sternite of male genital segment not modified

Parameres of aedeagus with 2+2 apical setae

Aedeagus with spicules only

Spermatheca divided into 2 portions, neither rod-shaped

Accessory sclerite of female rather reduced

The unique species of this group is almost surely adventive in North America from Europe. It is somewhat isolated among the European species (Zanetti 1987). The only distinctive characters of the group are the flat head, and the sutural prolongation of the female elytra.

***Eusphalerum torquatum* (Marshall, 1802)**

Silpha torquata Marshall, 1802.

Eusphalerum torquatum; Moore and Legner 1975: 191; Zanetti 1987: 133; Herman 2001: 463.

Material examined: (13 specimens). CANADA. Newfoundland 2 mm 2 ff Goulds 2.07.1985 leg. Morris (CNC); 2 mm 7 ff St. John's 23.07.1949 leg. Brown (CNC).

Published records. St. Johns and Topsail in 1965 (...); Nova Scotia in 1983 (CNC) (Brown 1967; Klimaszewski et al. 2013).

Measurements. Head length: 0.24-0.29; head width: 0.51-0.68; pronotal length: 0.48-0.57; pronotal width: 0.68-0.83; elytral length: 0.94-1.09; elytral width: 0.88-1.05; length (clypeus to apex of elytra): 1.75-2.01; total length: 1.8-2.2.

Description. Habitus as in Fig. 18. Head, pronotum, and elytra yellowish, elytra somewhat paler, neck often darkened; abdomen blackish or dark brown, prosternum yellowish, metasternum blackish; legs, antennae, and mouthparts yellowish, antennae darkened from antennomere 6-8.

Head with prominent eyes, postocular carina present and well marked, temples short, strongly convergent caudad, medial margin of eyes without longitudinal wrinkles. Head flat, postantennal depressions very superficial and tentorial pits small. Between ocelli a small tubercle (vestigial ocellum?) is often present, as in some European specimens. Neck clearly separated from the head (Fig. 19). Punctuation very superficial on strongly microsculptured, obsolete, ground. Antennae slightly elongate, antennomere 1 rather elongate, twice as long as wide, 2 ovoid elongate, 3 twice as long as wide, 4-7 longer than wide, 8-10 subquadrate, 11 twice as long as wide, rather ovoid, sharpened at apex.

Pronotum transverse (ratio width/length = 1.4 on average), anterior margin wider than posterior in male, as wide as posterior in female, strongly convex in male, less convex in female, with a median superficial furrow in anterior two thirds, widest just in front of middle, lateral margins rounded at middle, convergent caudad in straight line, posterior angles marked and scarcely obtuse. Punctuation dense but very superficial, ground with strong isodiametric microsculpture; pubescence long, yellowish, decumbent, directed caudad on disk, towards midline in front of posterior margin, depressions near posterior angles superficial, extending in front of middle of lateral margin.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), widened towards apex, apices truncate medially in male, prolonged in short lobes (Fig. 21) in female, punctuation somewhat coarse, somewhat confluent on glossy ground, pubescence short but clearly visible, scarcely decumbent.

Abdomen dull, microsculpture well visible, pubescence long, decumbent.

Tibiae straight in both sexes, tarsomere 5 of posterior tarsi slightly shorter than 1-4 together.

Aedeagus as in Fig. 20.

Accessory sclerites of female as in Fig 22, spermatheca as in Fig. 23.

Comparative notes. *Eusphalerum torquatum* is easily separable from the other species living in Canada by its color pattern, which recalls light populations of *E. californicum*. The long pubescence, dense superficial punctuation of pronotum, and impressed line that separates head from neck are distinctive. The form of the elytral apex of the female is also characteristic. The presence of a third vestigial ocellus is also recorded in the European species of the robustum group as well as occasionally in other omaliine-group taxa.

Distribution. North America: CANADA: Newfoundland and Labrador, Nova Scotia (Map 1). Palaearctic region: Iberian Peninsula, Great Britain, Central Europe, mostly in western regions, also reported from Japan (Zanetti 1987). Various forms and subspecies have been described from southern France and Spain, differentiated in color and form of elytra of the females, but their validity is doubtful (Zanetti 1987). The North American specimens belong to the typical form. *Eusphalerum torquatum* is very probably an adventive species in North America.

Natural history. The species is regularly found on broom flowers, mostly *Sarothamnus* (Fabaceae), in Europe. This plant was introduced in North America and it is now widely distributed in the Pacific states, where it is considered a destructive invasive species, but it is not present in Newfoundland. The host plant(s) in this region is not known. Captures of *E. torquatum* in July.

fulvipenne group

Diagnostic characters

Size intermediate/large (2.0-3.5 mm)

Medial margin of eyes without wrinkles
 Postocular carina absent
 Temples strongly convergent caudad
 Postantennal depressions confluent with tentorial pits
 Head not separated from neck by a clear line
 Legs of male not modified
 Elytra of female prolonged in a variable sutural lobe
 Tarsomere 5 of posterior tarsi as long as 1-4 together
 Sternite VII of male not modified
 Posterior margin of male sternite VIII with a more or less developed apical plate rising from surface.
 Sternite of male genital segment not modified
 Parameres of aedeagus with 2+2 apical setae
 Aedeagus with only spicules and thin spines
 Spermatheca divided into 2 parts, neither rod-shaped
 Accessory sclerite of female reduced

Species of the fulvipenne group are widely distributed in central and eastern Asia, north to North Korea (18 described species). Many scarcely differentiated populations, possibly representing new species, were reported by Zanetti (2007). They are absent from Siberia but also occur in North America along the West Coast from British Columbia to Arizona (one very variable species). The distinctive character of the group is the presence of an apical plate on abdominal sternite VIII of the male, which is very variable. On the contrary, the shape of the aedeagus is very constant and is almost the same in all species of the group, both Asian and American.

***Eusphalerum californicum* (Fauvel, 1878)**

Anthobium californicum Fauvel, 1878: 199; Bernhauer and Schubert 1910: 39.
Eusphalerum californicum (Fauvel); Hatch 1957: 84; Moore and Legner 1975: 190; Herman 2001: 420.
Anthobium atriventre Casey, 1894; **n. syn.**, Bernhauer and Schubert 1910: 39.
Eusphalerum atriventre (Casey); Moore and Legner 1975: 190; Herman 2001: 417.
Anthobium nigerrimum Casey, 1894: 427; **n. syn.**, Bernhauer & Schubert 1910: 41.
Eusphalerum nigerrimum (Casey); Moore and Legner 1975: 191; Herman 2001: 441.
Anthobium gilvipenne Casey, 1894: 428; **n. syn.**, Bernhauer and Schubert 1910: 40.
Eusphalerum gilvipenne (Casey); Moore and Legner 1975: 190; Herman 2001: 425.
Anthobium dichroum Fall, 1922; **n. syn.**
Eusphalerum dichroum (Fall); Hatch 1957: 84; Moore and Legner 1975: 190; Herman 2001: 422.
Anthobium bonnelli Hatch, 1944: 103; Hatch 1957: 84 (synonym of *A. dichroum*); Moore and Legner 1975 (synonym of *dichroum*); Herman 2001: 422 (synonym of *A. dichroum*).
Eusphalerum lunae Hatch, 1957: 84; **n. syn.**, Moore and Legner 1975: 191; Herman 2001: 432.
Eusphalerum pacificum Bernhauer, manuscript name.

Material examined

Type material. *Anthobium californicum*: Lectotype m [**here designated**] Mariposa [label not original] / Coll. et det. A. Fauvel *Anthobium californicum* Fauv. R.I.Sc.N.B. 17.479 / Syntype / Lectotype (red) / *Eusphalerum californicum* (Fauvel, 1878) det. A. Zanetti 2010 (IRSNB); 1 paralectotypus m 1 paralectotypus f Mariposa mai juin / Monterey Calif. [additional locality]. Two additional specimens are present in Fauvels collection: 1 m California [with the label not californicum not by Fauvel]; 1 f Baltimore / localit  fausse ? [handwritten by Fauvel].

Anthobium atriventre: Holotype m Los Angeles Cal. (USNM).

Anthobium nigerrimum: Holotype m S Cal. (USNM).

Anthobium gilvipenne: Lectotype m [here designated] 1 paralectotype Sta Cruz Mts Cal. (USNM).

Anthobium dichroum: 2 paratypes ff Korbel Humboldt Co. Cal 16.6.1916 (USNM).

Anthobium bonnelli: Holotype m Sultan Wash. April 14, 1931 (USNM).

Eusphalerum lunae: Holotype f Ida. Craters of the Moon Nat. Mon. July 1952 B. Malkin (USNM).

Anthobium pacificum: 1 female Californien Rivers.

Other material (390 specimens). **USA. Arizona** 2 mm 1 f Graham Mts 18.05.1969 leg. K. Stephan (FMNH); 5 mm Payson 3.07.1927 leg. Hopping (CNC); 3 ff St. Rita Mts. Madera Cyn. 19.05.1968 leg. K. Stephan (FMNH); **California** 1 m Alameda Co 00.04.?? leg. Koebele (CNC); 3 mm S Cal. (USNM); 1 m Alpine Co Eldorado NF, upper Mokelumne River 38.5375°N 119.8257°W 25.08.2005 leg. Caterino (SBMNH); 1 m 1 f Colusa Co Goat Mt. Camassia leichtlinii 30.05.1939 leg. Tucker (CNC); 1 m El Dorado Co. Ralston Pk., Phillips Sta 8000 25.07.1921 leg. F.E. Blaisdell (CNC); 6 mm 1 f Fresno Co Sierra NF John Muir Tr 37.2583°N 118.8654°W 29.08.2006 leg. Caterino (SBMNH); 2 mm Inyo Co Independence 14.06.1929 leg. R.L. Usl. ger (CNC); 1 m Inyo Co Lone Pine 8.06.1929 leg. R.L. Usl. ger (CNC); 1 m Inyo Co Independence 14.05.1920 leg. Usinger (CNC); 3 mm 2 ff Kern Co Los Padres NF, Mt. Pinos 34.8110°N 119.1285°W 3.08.2008 leg. Caterino (SBMNH); 4 ff Kern Co Los Padres NF, Mt. Pinos 34.8160°N 119.1061°W 1.07.2008 leg. Caterino (SBMNH); 1 m Kern Co Sequoia NF, Democrat Hot Spring 35.5311°N 118.6621°W 2.04.2009 leg. Caterino & Hopp (SBMNH); 1 m Kern Co Sequoia NF, Democrat Hot Spring 35.5311°N 118.6621°W 9.03.2005 leg. Caterino (SBMNH); 1 m Los Angeles Co Angeles NF Bell Cyn SDEF 34.1826°N 117.7938°N 13.05.2007 leg. Caterino & Chatzimanolis (SBMNH); 1 m Los Angeles Co Angeles NF F.S.7N23 34.7014°N 118.5383°W 14.05.2008 leg. Caterino & Chatzimanolis (SBMNH); 3 ff Los Angeles Co Angeles NF Hideaway cyn 34.6993°N 118.5465°W 24/28.05.2007 leg. Caterino & Chatzimanolis (SBMNH); 1 m Los Angeles Co Angeles NF Lk Huges rd. 34.6199°N 118.5611°W 31.03.2007 leg. Caterino & Chatzimanolis (SBMNH); 1 m Los Angeles Co Angeles NF Sawmill Mt. 34.6914°N 118.550°W 14.05.2007 leg. Caterino & Chatzimanolis (SBMNH); 13 mm 2 ff Los Angeles Co Angeles NF SDEF Bell Cyn. 34.1826°N 117.7938°W 13/16.03.2007 leg. Caterino & Chatzimanolis (SBMNH); 1 f Los Angeles Co Angeles NF SDEF Tanbark Flat, 34.2048°N 117.7611°W 13.05.2007 leg. Caterino & Chatzimanolis (SBMNH); 2 m 5 ff Los Angeles Co Angeles NF SDEF Tanbark Flat, FIT 34.2084°N 117.7637°W malaise 1.04./23.06.2007 leg. Caterino & Chatzimanolis (SBMNH); 2 mm 1 f Los Angeles Co Angeles NF SDEF Volfe cyn. 34.1825°N 117.7972°W Lindgren trap 2.03/13.06.2007 leg. Caterino & Chatzimanolis (SBMNH); 3 ff Los Angeles Co Cold Ck Preserve 34.0923°N 118.6485°W 22.04.2009 leg. Hopp & Polihronakis (SBMNH); 1 f Los Angeles Co Point Mugu SP, Boney Mtn State Wilderness 34.1354°N 118.9524°W 3.05.2009 leg. Caterino & Hopp (SBMNH); 1 m Madera Co Boggy Mdws 15.07.1946 leg. H. Chandler (CNC); 1 f Marin Co Taylor State Pk. 8.05.1949 leg. Leach (CNC); 1 m Marin Co Lagunitas 11.05.1924 leg. Van Duzee (CNC); 1 m 1 f Marin Co Golden Gate Bridge (end of) 12.04.1953 leg. Leech (CNC); 1 m Marin Co (CNC); 1 m Marin Co Tamalpais 16.04.1927 (CNC); 1 m Marine Co 00.05.1907 leg. Van Dyke (CNC); 1 m Marion Co Lily Pond, Alpine Lake 1500' malaise 17/25.06.1971 leg. Munroe (CNC); 4 mm 1 f Monterey Co Big Creek Res., Gamboa Rd. nr. Whale Pt. cab. el., UCNRS 600' 4.05.2002 leg. Lew (SBMNH); 5 mm 4 ff Napa Co Calistoga (11.4 mi.N) 1600 21.05.1976 leg. A. Newton and M. Thayer (FMNH); 9 mm 10 ff Napa Co Calistoga 14.4 mi.N 1600 ft. on flowers *Rhododendron occidentale* 21.05.1976 leg. A. Newton M. Thayer (FMNH); 10 mm 5 ff Napa Co Calistoga 14.4 mi.N 1600 ft. Azalea flowers 21.05.1976 leg. A. Newton M. Thayer (FMNH); 9 mm 5 ff Napa Co (FMNH); 1 f Obispo Co Simmler, San Luis 20.03.1940 leg. Tillen & Mansfield (CNC); 1 f Obispo Co San Luis 2.05.1938 (CNC); 6 mm 5 ff Placer Co Lake Tahoe, Tahoe Pines 6200 10.08.1969 leg. A. Smetana (CNC); 18 mm 26 ff Placer Co Lake Tahoe, Tahoe Pines 6200' 18.08.1969 leg. Smetana (CNC); 1 f Riverside Co UC James Reserve, SBNF 33.8107°N 116.7753°W 20.05.2005 leg. Caterino (SBMNH); 2 mm 2 ff San Bernardino Co Morongo Valley Preserve 34.0471°N 116.5682°W 3.04.2008 leg. Caterino, Short & Leschen (SBMNH); 1 m 3 ff San Bernardino Co San Bernardino NF, Clark's Ranch Camp 29.05.2004 leg. Caterino (SBMNH); 1 m 1 f San Diego Co Cleveland N.F. Mt. Palomar Observatory 5500 ft on flowers *Ceanothus* (FMNH); 2 ff San Luis Obispo Co Montana de Oro SP, Coon Ck. Cyn. 35.2518°N 120.8728°W 9.04.2009 leg. Caterino (SBMNH); 2 ff San Luis Obispo Co Carrizo Plain N.M. Selby Cmpgrd 2/25.04.2004 leg. Caterino (SBMNH); 3 mm 1 f Santa Barbara Co Los Padres NF, Ranger Peak 3600 on flowers, incl. *Lupinus* sp 10.05.1976 leg. A. Newton M. Thayer (FMNH); 2 mm 1 f Santa Barbara Co Oso Cyn LPNF 34°33.52'N 119°46.29'W 19.05.2002 leg. Caterino (SBMNH); 1 m 2 ff Santa Barbara Co Byrbent Cyn LPNF 34.743°N 120.060°W on *Ceanothus* 17.02.2003 leg. Caterino (SBMNH); 1 m 1 f Santa Clara Co (CNC); 9 mm 9 ff Sonoma Co Glen Ellen 29.04.1950 leg. Leech (CNC); 1 f Toms Place 13.06.1969 leg. K. Stephan (FMNH); 1 m Trinity Co Trinity

N.F. Plummel (?) sp. 23.06.1919 leg. Hopping (CNC); 1 f Tulare Co Exeter (26 mi.E) Balch Camp 11.07.1962 leg. C.D. Johnson (CNC); 3 mm Tulare Co Mineral King 29.07.1935 (CNC); 3 mm 1 f Tulare Co Rattlesnake Creek 26.07.1917 leg. R. Hopping (CNC); 1 m Tuolumne Co Dardanelles (8 mi E) 18.07.1964 leg. O'Brien (CNC); 1 m Ventura Co Murietta Trail LPNF 34.5009°N 119.3899°W 23.06.2006 leg. Caterino (SBMNH); 1 f Ventura Co Matilija Ck LPNF 34.4907°N 119.3153°W 26.03.2006 leg. Caterino (SBMNH); 2 ff Ventura Co Cuyama Valley LPNF 34.6883°N 119.3584°W 30.04.2006 leg. Caterino (SBMNH); 1 m Argus Mts 04.91 (1891?) leg. Koebele Ott. (CNC); 2 mm Miami (FMNH); 2 mm Panamint Mts 04.91 (1891?) leg. Koebele (CNC); 1 m Snow Creek, White Water 1500' 8.03.1955 leg. W.R.M. Mason (CNC); 1 f Big Basin 12.05.1918 leg. Slevin (CNC); 1 f La Honda 2400' 30.04.1927 (CNC); 1 f Placerville 20.05.1918 leg. Essig (CNC); 1 m 1 f Willits 24.05.1930 leg. Hopping (CNC); 1 m 1 f Los Altos SCC 15.05.1930 leg. Ting (CNC); 3 mm 6 ff Lake Tahoe, Tahoe Pines 10.08.1969 leg. Smetana (MHNG); 1 m Bishop 28.07.1940 leg. Beamer (KSEM); 1 m San Simeon 26.03.1933 leg. Hopping (CNC); 1 m San Simeon 26.03.1933 leg. R. Hopping (CNC); 1 m Snow Creek, White Water 1500 8.03.1955 leg. W.R.M. Mason (CNC); **Colorado** 2 mm 2 ff Clear Creek Co Guanella Pass 1.08.1969 leg. Brzoska (KSEM); 4 mm 3 ff Clear Creek Co Berthoud Pass 22.07.1960 leg. Brzoska (KSEM); 8 mm 2 ff Lake Co Independence Pass 12100' tundra 7.07.1961 leg. Poole (CNC); 3 ff Park Co Jefferson 9.07.1969 leg. Brzoska (KSEM); 1 f Routt Co Hy 84 29.06.1969 leg. Brzoska (KSEM); 1 m Loveland Pass (W slope) 8.08.1961 leg. Poole (CNC); 1 f Pingree Park 00.08.1929 leg. Beamer & Lawson (KSEM); 1 m Berthoud Pass 9000 10000 on flower of wild *Geranium* 1.07.1943 leg. O. Bryant (CNC); 1 m Clark 7000 18.07.1943 leg. O. Bryant (CNC); 8 mm 8 ff Doolittle Ranch, Mt. Evans 9800 13.07/9.08.1961 leg. B.H. Poole & J.G. Chillcott (CNC); 1 f Eldora 3.07.1961 leg. J.G. Chillcott (CNC); 1 f Longs Peak Inn 9000 14.07.1926 leg. E.C. Van Dyke (CNC); 1 m 1 f Muddy Pass 8800 15.08.1961 leg. B.H. Poole (CNC); 2 mm 2 ff Rabbit Ears Pass 10000 11000 28.07.1943 leg. O. Bryant (CNC); 1 f Marine Co Muir Woods 05.1908 leg. Van Dyke (FMNH); 1 m 1 f Marin Co McClure's Beach 7.06.1963 leg. Raske (FMNH); 1 f Santa Clara Co 16.04.1939 leg. Nunenmacher (FMNH); 1 f Hulville 10.06.1917 leg. Reynolds (FMNH); **Idaho** Craters of the Moon (type of *A. lunae*); **Oregon** 1 m Benton Co Corvallis 9 mi. N 14/21.04.1960 (CNC); 1 m Clackamas Co Wildwood Rec. site nr. Wildwood 1100 on flowers *Digitalis* 13.07.1975 leg. A. Newton and M. Thayer (FMNH); 1 m Jackson Co Little Applegate riv. 2300 05/06.08.1950 leg. B. Malkin V.E. Thatcher (FMNH); 1 m 1 f Josephine Co Selma (3.5 mi.W) 17.05.1962 leg. J. Schuh (FMNH); 1 f Linn Co Idanha (15 km E) 16.06.1984 leg. Danielsson (MZLU); 1 m 1 f Linn Co Idanha (15 km E) 16.06.1984 leg. Danielsson (MZLU); 1 m Marion Co Breitenbach (2 km E) 17.06.1984 leg. Danielsson (MZLU); 2 ff Corvallis on *Heracleum lanatum* flowers 23.05.1941 leg. Schuh & Gray (FMNH); 1 f Mosier 24.05.1938 leg. Gray & Schuh (CNC); 2 ff Steens Mts., Fish Lake 7500 22/26.06.1951 leg. B. Malkin (FMNH); 1 f Trail Wallowa Lk, Aneroid Lk, 6000 ft 22.07.1956 leg. B. Malkin (FMNH); 1 m Woods Cr. Road 18.05.?? (CNC); 1 m 1 f Josephine Co Selma, 3.5 mi W 17.05.1962 leg. Schuh (FMNH); **Washington** Sultan (type of *A. bonnelli*); **Wyoming** 2 mm 5 ff Norris, Mammoth Springs 1000 - 1300' 21.07.1973 leg. Wittmer (CNC); 2 mm 2 ff Yellowstone Park, Norris, Mammoth Springs 7000 7300 21.07.1973 leg. W. Wittmer (CNC); 8 mm 9 ff Lincoln Co Cottonwood Lake 7000' 10.07.1952 leg. Malkin (FMNH); **México** 1 m Baja California [north]: Sierra Juarez, upper Cañon del Cantil, 19.03.1967 leg. J.A.Powell (Thayer 2003, as *Eusphalerum* sp.).

Published records. The species is reported as *E. atriventre* from southern California, as *E. californicum* from British Columbia, Idaho, Oregon and California, as *E. dichroum* from Washington, Oregon and California, as *E. gilvipenne* from California, as *E. lunae* from Idaho, and as *E. nigerrimum* from southern California (Moore and Legner 1975)

Measurements. Head length: 0.25-0.35; head width: 0.49-0.62; pronotal length: 0.48-0.68; pronotal width: 0.64-0.92; elytral length: 0.98-1.40; elytral width: 0.86-1.18; length (clypeus to apex of elytra): 1.75-2.33; total length: 2.0-3.5.

Description. Habitus as in Fig. 30, 31, and 32. Color very variable, from yellowish with dark metasternum and abdomen, yellowish with dark (at least partially) head, metasternum and abdomen, brown with brownish or yellowish elytra, to entirely brown (type) or black. Legs always yellowish, antennae from entirely yellowish to yellowish with darkened apex from antennomeres 6-7.

Head with prominent eyes, postocular carina absent, temples rather short, strongly convergent caudad, medial margin of eyes without longitudinal wrinkles. Head with large and more or less deep postantennal depressions, confluent caudadly with the tentorial pits forming 2 longitudinal more or less depressed areas. Neck not separated from head. Punctuation rather superficial and sparse on scarcely microsculptured ground. Antennae slightly elongate, antennomere 1 elongate ovoid, twice as long as wide, 2 ovoid, 3 twice as long as wide, 4-6 somewhat longer than wide, 7-10 subquadrate or transverse, 11 twice as long as wide, cylindrical at base, conical at apex.

Pronotum transverse (ratio width/length = 1.3-1.4), anterior margin somewhat narrower than posterior, anterior angles rounded, moderately convex with uniform ground, lateral margins rounded, scarcely convergent caudad in rounded line, posterior angles somewhat rounded and scarcely obtuse. Punctuation variable from sparse and superficial to dense and strong, ground with incised isodiametric microsculpture, pubescence very short, scarcely visible, depressions near posterior angles narrow, reaching the middle of lateral margin.

Elytra rather elongate, scarcely widened towards apex, apex rounded in middle in male, in female prolonged in a very variable lobe (Fig. 45-49; 45: El Dorado, 46: Tulare, 47: Napa, 48: Arizona, 49: Yellowstone), sometimes totally absent; punctuation dense and somewhat confluent on smooth ground, pubescence very short, scarcely visible.

Abdomen rather glossy, microsculpture superficial, pubescence decumbent. Posterior margin of male sternite VIII with a more or less developed apical plate rising from the surface of the segment, sometimes reduced to 2 small elevations, sometimes prolonged at apex (Fig. 38-44 and 50-54; 38: San Bernardino Co., 39: Los Angeles Co., 40: San Bernardino Co., 41: Kern Co., 42: lectotype, 43: Josephine Co., 44: Alpine Co., 50: Napa Co., 51: Los Angeles Co., 52: Lake Co., 53: Santa Barbara Co., 54: Lake Tahoe), variability at least partly related to body size. Tergite VIII as in Fig. 35. Apex of abdomen in large specimens bent towards the ventral surface in a hook-shaped form.

Tibiae very feebly curved in the male, straight in the female. Tarsomere 5 of posterior tarsi as long as 1-4 together.

Aedeagus as in Fig. 33.

Female accessory sclerites as in Fig. 36, spermatheca as in Fig. 37.

Comparative notes. *Eusphalerum californicum* is a very difficult species. It is included in a group of species (fulvipenne group) distributed mostly in Asia, from Central Asia to China to North Korea, characterized by the presence of an apical plate at the apex of male sternite VIII, which is extremely variable in size and shape. Conversely, the aedeagus is very uniform, almost the same in all species (Zanetti 1990, 2007). The limits between species are not clear. North American populations belonging to this group have been described under many specific names, and in fact there are significant differences between them, but many intermediate forms exist too, and a clear morphological limit between them is not recognizable. In China several sympatric closely related species without intermediate specimens were found and named, but this has not been the case for American populations. The variation of the form of the apical plate of male abdominal sternite VIII is illustrated in Fig. 38-44 and 50-54. The shape of the female elytral apex also varies greatly, from greatly extended to almost completely truncate (Fig. 45-49). A similar variability in the females is recorded for the European *E. torquatum* (Zanetti 1987), which is adventive in North America (see above). Allometry is surely involved in this variation, because male specimens with a strongly prolonged sternite VIII apex are large, and the co-collected females have shorter elytra. No intermediate form is known between the patterns of Fig. 43 and 44, strongly prolonged at apex, but it could exist, so a description of a new species for these specimens is not advisable. In large males, the abdominal apex is curled toward the ventral surface of the abdomen, and the shortness of the females elytra could facilitate the mating process. Color patterns are also very variable (see above in description), but no relation between color pattern and sexual characters exists: any form of male abdominal sternite VIII can be associated with any color. Geographical distributions of these shapes show no clear pattern, but in single localities characters are rather constant and variability is low. However, the attribution of all these populations to *E. californicum* is still tentative, and more material and other approaches are necessary to solve the problem definitively.

The single described species and those synonymized with it are discussed here:

Anthobium nigerrimum Casey, 1894: This species was characterized by the author as: “The single male in my cabinet is related to *californicum* but differs in its intensely black and more coarsely sculptured elytra. The anterior tibiae are simple and the median elevated plate of the sixth ventral segment is very large, transverse, twice as wide as long, extending to the apex and with its apex transversely truncate and its sides parallel.” Shape of the male sternite VIII as in Fig. 41, falling within the range of variation described above.

Anthobium gilvipenne Casey, 1894: This species was characterized by the author as: “The two specimens are males, having the median elevated plate of the terminal ventral segment large, trapezoidal in form, twice as wide as long with the apex transversely truncate; anterior tibiae simple. In the female the pronotum will probably prove to be distinctly shorter, as in *californicum*, *tibiale* and *diversicolle*.” The color of the type specimens is light, with brownish head, brownish red pronotum and yellowish elytra. The shape of the male sternite VIII is similar to that of *E. nigerrimum*, and falls in the range of variation described above.

Anthobium atriventre Casey, 1894: This species was characterized by the author as: “... allied to *gilvipenne*, resembling it in general form, but differs in its shorter, more transverse prothorax, which is much more narrowed toward apex, in its larger, more distant ocelli, and in coloration and size. The single male has the sixth ventral thin and transparent, broadly lobed in the middle, the surface before the lobe abruptly elevated, flat, transversely trapezoidal, with the apex of the thickened part not quite attaining the apex of the segment and broadly sinuate in the middle, not truncate as in *gilvipenne*; anterior tibiae simple.” The characters of the sternite VIII represent one extreme of variability of *E. californicum*, with a reduced apical plate (Fig. 38).

Anthobium dichroum Fall, 1922: This species was characterized by the author as: “... distinct in color from all our previously described except *rugulosum* and *gilvipenne*. The latter is evidently different by its strongly shining integuments, the pronotum not distinctly alutaceous. The Alaskan *rugulosum* is perhaps very close, judging solely from the short description, but the elytra are said to be transversely rugulose, which is not at all the case in any example of *dichroum* in front of me.” The color pattern of *E. dichroum* is really characteristic (blackish with yellowish elytra) and the elytra of the female are always strongly elongate, but the form of the sternites VIII apical plate is the same as typical *E. californicum*.

Anthobium bonnelli Hatch, 1944: This species was characterized by the author: “By its dimorphic elytra and the structure of the sixth abdominal segment in the male, this species is related to *tibiale* Csy. from Arizona, from which it differs by its more strongly arcuate pronotal side margins (subparallel, very feebly arcuate in *tibiale*) and longer male elytra (about twice as long as the pronotum in *tibiale*, exposing 4 abdominal segments, as opposed to only two or three in *bonnelli*).” The form of the apical plate of the sternite VIII allows placement in the *californicum* complex, not in the *tibiale* group. It is very similar to that of the typical *E. californicum*, the color pattern recalling *E. gilvipenne*.

Eusphalerum lunae Hatch, 1957: This species was characterized by the author: “Head, prothorax, elytra, and appendages testaceous, the body black. 1.7-2.3 mm.” The type is a female very similar to *E. atriventre*.

Eusphalerum pacificum Bernhauer, manuscript name. One female of the *E. atriventre* pattern, labelled “Californien Rivers”.

Comparative notes. The form of the male sternite VIII allows easy recognition of males of the species. Identification of the very variable females is less easy. The form of the spermatheca, composed of 2 parts very different in size, but neither stalk-like, allows separation from all the species with setose parameres which have a lollipop-shaped spermatheca, and also from the species of the *tibiale* group, in which the 2 parts of spermatheca are similar in size.

Distribution. UNITED STATES: Arizona, California, Colorado, Idaho, Oregon, Washington, Wyoming; MEXICO: Baja California (Map 6).

Natural history. The species is recorded from a very wide altitudinal range, from 200 to 3700 m a.s.l.. Known host plants: *Rhododendron* sp. (Ericaceae), *Ceanothus* sp. (Rhamnaceae), *Digitalis* sp. (Scrophulariaceae), *Lupinus* sp. (Fabaceae), *Heracleum maximum* Bartram (= *lanatum*) (Apiaceae), *Geranium* sp. (Geraniaceae). Scarce information about habitats is available, the specimens from high altitude were found in alpine tundra. Captures from March to August.

tibiale group

Diagnostic characters

Size variable (small / intermediate) (2.0-3.1 mm)
 Medial margin of eyes without wrinkles
 Postocular carina present or absent
 Temples feebly convergent caudad
 Postantennal depressions confluent with dorsal tentorial pits in 2 depressed areas
 Head not separated from neck by a clear line, neck wide especially in males
 Anterior tibiae of male modified as in Fig.72
 Elytra of female more or less prolonged in a sutural lobe
 Tarsomere 5 of posterior tarsi as long as 1-4 together
 Sternite VII of male not modified
 Sternite VIII of male without an elevated plate
 Sternite of genital segment of male convex
 Parameres of aedeagus with 2+2 apical setae
 Aedeagus with copulatory sclerites
 Spermatheca divided into 2 large parts
 Accessory sclerite of female reduced

Males are distinguished by relatively large head, elongate pronotum, modified anterior tibiae, modified sternite VIII, and internal sac of aedeagus with characteristic copulatory sclerites. Species of the group (3) are often found in dry mountain areas, at high altitude, in the west from Alberta to California.

Eusphalerum swauki Hatch, 1957

Eusphalerum swauki Hatch, 1957: 83; Moore and Legner 1975: 191; Herman 2001: 461.
Anthobium californicum sensu Hatch, 1944 (not Fauvel, 1878).

Material examined (121 specimens)

Type material. Holotype f Swauk Cr. Wash. June 22, 1929 M.H. Hatch (USNM)

Other material (120 specimens). **CANADA. Alberta** 1 f Cameron L., Wtn. Natl. Pk. 12.06.1956 leg. O. Peck (CNC); 1 f Waterton Lakes N.P., Chief Mt. Hwy 4500 flight interception trap 7.07.1980 leg. H.J. Teskey (CNC); **British Columbia** 2 f Oliver (17 mi.NW) 6.06.1958 leg. H. & A. Howden (CNC); 1 f Barker-Ville (26 km W) on flowers 14.07.1981 leg. D.E. Bright (CNC); 5 mm 3 ff Fairviewd Rd., Oliver 3000 22.05.1958 leg. H. & A. Howden (CNC); 4 mm Lumby (8 mi.N) 2 mi. E Trinity Valley Fld. Sta. 2.08.1966 leg. E.E. Lindquist (CNC); 1 f Oliver (nr.), Orofino Mt. 4000 15.06.1958 leg. H. & A. Howden (CNC); 1 f Salmo (2 mi.S) 9.06.1968 leg. Campbell & Smetana (CNC); 2 mm Cherryville, Monashee Mtn. 1400-1500 m 8.08.1982 leg. Baranowski (MZLU); 4 ff Cherryville, Monashee summit 1100-1200 m 8.08.1982 leg. Baranowski (MZLU); 2 ff Creston, Kootenay Pass 1500-1800m 18.08.1982 leg. Baranowski (MZLU); 6 mm 17 ff Kamloops (NE) off Todd Mtn. Rd., nr. Community Lks. Lupinus flowers 20.06.1986 leg.

Munroe (CNC); 9 mm 17 ff Kamloops (NW of) jct. Jameson Ck. Rd & Laines Ck. Rd. *Lupinus arcticus* flowers 20.06.1986 leg. Munroe (CNC); **USA. Idaho** 1 f Moscow 4.06.1949 leg. Downie (FMNH); 2 mm Blaine Co Galena Summit 8600 15.07.1961 leg. B.H. Poole (CNC); 2 mm 1 f McCall 21.05.1986 leg. C. & A. v. Nidek (CNC); **Oregon** 7 mm 7 ff Clackamas Co jct US26 Ore 35 (1.3 m E) 3900 ft. on flowers *Lupinus* 12.07.1975 leg. A. Newton M. Thayer (FMNH); 1 m 1 f Wallawa Co Imnaha (24 km SE), Hells Cn. Nat. Rec. Area, Sacajawea Sp. 7000' 27.07.1981 leg. Campbell (CNC); 15 mm 10 ff Aneroid Lake, Wallowa Mts 7600' 22/23.07.1956 leg. Malkin (FMNH); **Wyoming** 1 m 1 f Lincoln Co Cottonwood Lake 7000' 10.07.1952 leg. Malkin (FMNH); 3 ff Yellowstone Park, Norris, Mammoth Springs 7000 7300 21.07.1973 leg. W. Wittmer (CNC); 1 m Teton Co Togwotee Pass 16.08.1961 leg. B.H. Poole (CNC);

Measurements. (male, female): head length: 0.27-0.38; 0.25-0.27; head width: 0.53-0.61; 0.48-0.53; pronotal length: 0.51-0.68; 0.44-0.49; pronotal width: 0.70-0.83; 0.64-0.75; elytral length: 1.18-1.29; 1.11-1.29; elytral width: 1.07-1.09; 0.94-1.05; length (clypeus to apex of elytra): 1.85-2.40; 1.85-2.07; total length: 2.0-3.1; 2.0-2.6.

Description. Habitus as in Fig. 55 and 56. Entirely brown, elytra somewhat paler; legs, antennae, and mouthparts yellowish, antennae more or less darkened from antennomere 7.

Head with prominent eyes, postocular carina absent, temples rather long, one third of the length of the eye in dorsal view, moderately convergent caudad, medial margin of eyes without longitudinal wrinkles. Head with large and more or less deep postantennal depressions, confluent caudadly with tentorial pits, forming 2 longitudinal more or less depressed areas. Neck not separated from head. Punctuation superficial and sparse; ground scarcely microsculptured, except sometimes strongly near eyes. Antennae slightly elongate, antennomere 1 elongate ovoid, twice as long as wide, 2 ovoid, 3 twice as long as wide, 4-6 subquadrate, 7-10 transverse, 11 twice as long as wide, cylindrical at base, conical at apex.

Pronotum scarcely transverse in the male (ratio width/length = 1.2 on average), more transverse in the female (ratio width/length = 1.4 on average), anterior margin narrower than posterior, anterior angles strongly rounded, strongly convex in the male, less convex in the female, lateral margins scarcely rounded, scarcely convergent caudad in rounded line, posterior angles rounded and scarcely obtuse. Punctuation sparse and superficial, ground with scarcely incised isodiametric microsculpture, pubescence short but visible, depressions near posterior angles small, not reaching the middle of lateral margin.

Elytra rather elongate (ratio length from scutellum to apex / combined width of elytra = 1.1-1.2), scarcely widened towards apex, rounded apically in male, prolonged in a very short sutural lobe (Fig. 56) in female, punctuation coarse and confluent on glossy ground, pubescence short but visible.

Abdomen rather glossy, microsculpture superficial, pubescence decumbent.

Anterior tibiae of male modified as in *E. tibiale* (Fig. 72), sternite of male genital segment convex, posterior margin of sternite VIII convex, not elevated in a plate medially (Fig. 58). Tarsomere 5 of posterior tarsi as long as 1-4 together.

Aedeagus as in Fig. 57.

Accessory sclerites of female as in Fig. 59, spermatheca as in Fig. 60.

Comparative notes. Males of all species of the tibiale group are easily recognizable by the form of the anterior tibiae and the long pronotum, scarcely transverse, and large head. *Eusphalerum swauki* is distinct by color, by the shape of the copulatory sclerites of the aedeagus and by the shape of elytral apex of the female, scarcely prolonged at the suture. In some populations, females with more prolonged elytra are present. Separation from females of *E. californicum* is often difficult; the shape of the spermatheca, formed by 2 parts similar in size, is decisive. *Eusphalerum swauki* and *E. tibiale* possibly can be regarded as subspecies of a single species; little material is available from the contact areas between these 2 taxa (southern Idaho, Wyoming) and its identification as *E. swauki* is tentative.

Distribution. CANADA: Alberta, British Columbia; UNITED STATES: Idaho, Oregon, Wyoming (Map 5).

Natural history. Distributed in a wide altitudinal range, between 300 and 2100 m a.s.l. Known host plants: *Lupinus arcticus* S. Wats., *Lupinus* sp. (Fabaceae). No record refers to the macrohabitat, it is probably associated with rather dry places.

***Eusphalerum diversicolle* (Casey, 1894)**

Anthobium diversicolle Casey, 1894: 428; Bernhauer and Schubert 1910: 39.

Eusphalerum diversicolle (Casey); Moore and Legner 1975: 428; Herman 2001: 423.

Material examined (81 specimens))

Type material. *Anthobium diversicolle*: Lectotype m [here designated], 3 paralectotypes mm, 7 paralectotypes ff Cal. [with Casey's marks meaning Lake Tahoe, June 1887]. [1 f Cal. with the marks meaning Truckee Nevada Co., labelled as paratype, but doesn't belong to the typical series because it is not mentioned in the original description. 1 f Cal. with the marks meaning Lake Tahoe, June 1887, originally determined as ?*diversicolle*, actually belongs to this species]; 1 paralectotype m 4 paralectotypes ff Nev. [without marks, the only locality reported in the locality code is Reno, Washoe Co., 4400 ft. above the sea that fit with Reno reported in the original description]; 2 paralectotype mm, 2 paralectotypes ff Ut. [with Caseys marks meaning Lake Tahoe, June 1887] (USNM).

Other material (61 specimens). **USA. California** 1 m 2 ff Breckenridge Mts. 6500' 18.06.1969 (CNC); 2 mm 3 ff El Dorado Co Fallen Leaf 6500' 5/24.07.1935 leg. Blaisdell (CNC); 2 mm 1 f Fresno Co Sequoia NF Boole Tree Tr 36.8219°N 118.8561°W 8.06.2006 leg. Caterino (SBMNH); 3 mm 5 ff Fresno Co Sequoia NF F.S. 13S23 35.7575°N 118.8007°W 7.06.2006 leg. Caterino (SBMNH); 1 f Los Angeles Co Angeles NF Sawmill Mt. 34.6926°N 118.5499°W 14/28.05.2007 leg. Caterino (SBMNH); 1 m 1 f Mono Co Long Valley 24.06.1928 (CNC); 1 f Mono Co Inyo NF Cottonwood Ck. Rd. 37.517°N 118.152°W 26.06.2003 leg. Caterino (SBMNH); 1 f Placer Co 6 leg. Koebele (CNC); 1 m 4 ff San Bernardino Co San Bernardino NF Green Spot 34.2201°N 116.8099°W 25.05.2004 leg. Caterino (SBMNH); 1 m San Bernardino Co San Bernardino NF Clark's Ranch Camp 34.1849°N 116.9794°W 29.05.2004 leg. Caterino (SBMNH); 1 f Siskiyou Co Sacramento Ri. S Fk 1953 leg. H.P. Chandler (CNC); 1 m 1 f Tulare Co Sequoia Nat. Park 7000' 24.05.1984 leg. Baranowski (MZLU); 1 f Tulare Co Sequoia Nat. Park 4000' 24.05.1984 leg. Baranowski (MZLU); 1 f Tulare Co Sequoia Nat. Park, Huckleberry Meadow 6000' 1.06.1984 leg. Baranowski (MZLU); 2 m 5 ff Tulare Co Sequoia Nat. Park, Mineral King 7700' 25.05.1984 leg. Baranowski (MZLU); 3 mm 5 ff Tulare Co Sequoia NF Freeman Ck Groove 36.146°N 118.493°W 21/22.06.2003 leg. Caterino (SBMNH); 1 f Tulare Co Sequoia NF Mosquito Mdw 36.948°N 118°352°W 24.06.2003 leg. Caterino (SBMNH); 3 mm 2 ff Tulare Co Sequoia NF Upp. Freeman Ck. 36.138°N 118.534°W 23.06.2003 leg. Caterino (SBMNH); 1 f Lake Tahoe (l.c.) N.S.A. (FMNH); 1 m 1 f San Bernadino Mts CampAngelus 1.07.1970 leg. K. Stephan (FMNH); 1 f Nevada Co Sagehen Cr. 1.07.1970 leg. Chandler (FMNH);

Published records. Utah, California (Moore and Legner 1975). The record for Utah is to be referred to dark specimens of *E. tibiale*.

Measurements. (male, female): head length: 0.22-0.33; 0.22-0.25; head width: 0.40-0.55; 0.44-0.53; pronotal length: 0.37-0.64; 0.42-0.53; pronotal width: 0.49-0.79; 0.61-0.77; elytral length: 0.83-1.23; 0.98-1.27; elytral width: 0.66-1.07; 0.86-1.05; length (clypeus to apex of elytra): 1.29-2.22; 1.64-1.86; total length: 1.5-2.5; 1.8-2.1.

Description. Habitus as in Fig. 61 and 62. Entirely brown, elytra somewhat paler; legs, antennae, and mouthparts yellowish, antennae more or less darkened from antennomere 7.

Head with prominent eyes, postocular carina absent, temples rather long, one third of the length of the eye in dorsal view, moderately convergent caudad, medial margin of eyes without longitudinal wrinkles. Head with large and more or less deep postantennal depressions, confluent caudally with the tentorial pits forming 2 longitudinal more or less depressed areas. Neck not separated from head. Punctuation

superficial and sparse on scarcely microsculptured ground, microsculpture sometimes strong near eyes. Antennae scarcely elongate, antennomere 1 elongate ovoid, twice as long as wide, 2 ovoid, 3 twice as long as wide, 4-6 subquadrate, 7-10 transverse, 11 twice as long as wide, cylindrical at base, conical at apex.

Pronotum scarcely transverse in male (ratio width/length = 1.3 on average), especially in large ones, more transverse in female (ratio width/length = 1.4 on average), anterior margin narrower than posterior, anterior angles strongly rounded, strongly convex mostly in the male, lateral margins scarcely rounded, scarcely convergent caudad in rounded line, posterior angles rounded and scarcely obtuse especially in large males. Punctuation sparse and superficial, ground with scarcely incised isodiametric microsculpture, pubescence short but visible, depressions near posterior angles small, reaching the middle of lateral margin.

Elytra rather elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), scarcely widened towards apex, rounded in middle in male, slightly prolonged in an obtuse lobe (Fig. 62) in female, punctuation coarse and confluent on glossy ground, pubescence short but visible.

Abdomen rather glossy, microsculpture superficial, pubescence decumbent.

Anterior tibiae of male modified as in *E. tibiale* (Fig. 72), sternite of male genital segment convex, posterior margin of sternite VIII convex, not elevated in a medial plate (Fig. 64). Tarsomere 5 of posterior tarsi as long as 1-4 together.

Aedeagus as in Fig. 63 with copulatory sclerites.

Accessory sclerites of female as in Fig. 65, spermatheca as in Fig. 66.

Comparative notes. *Eusphalerum diversicolle* is extremely similar to *E. swauki* in external characters (see above); only the form of the copulatory sclerites of the aedeagus is distinctive.

Distribution. UNITED STATES: California, Nevada (Map 5).

Natural history. The species was found between 1200 and 2100 m a.s.l. No information about host plants is available. No record refers to the macrohabitat; the species is probably associated with rather dry places.

Eusphalerum tibiale (Casey, 1894)

Anthobium tibiale Casey, 1894: 429; Fall and Cockerell 1907: 168; Bernhauer and Schubert 1910: 44.

Eusphalerum tibiale (Casey); Moore and Legner 1975: 191; Herman 2001: 463.

Material examined (307 specimens)

Type material. *Anthobium tibiale*: Holotype m and paratype f Arizona [photos from USNM]

Other material (305 specimens). **USA. Arizona** 1 m Apache Co Springerville (25 mi. E) Greens Peak 10100' forest - meadow malaise 13.07.1979 leg. Peck (CNC); 5 mm 5 ff Cochise Co Chiricahua Mts. 12.07.1908 leg. Owen (CNC); 1 m Greenlee Co Hanngan Camp 12.07.1968 leg. Bright (CNC); 5 mm 3 ff Pima Co Santa Catalina Mts., Mt. Lemmon 11.06.1984 leg. Baranowski (MZLU); 8 mm 8 ff Bear Wallow. Sta Catalina Mts. *Robinia neomexicana* 00.07.1965 leg. O'Brien (CNC); 4 mm 1 f Graham Mts., Post Crk. 9000' 26.07.1969 leg. Smetana (MHNG); 1 m Huachuca Mts., Miller Cyn 12.05.1932 leg. Martin (CNC); 1 m Oracle 1.07.137 leg. Esros (CNC); 1 m S. Catalina Mts 8500' 16.04.1925 leg. Nichol (CNC); 1 m San Francisco Mts. 25.06.1950 leg. Rozen (KSEM); 6 ff San Francisco Mts., Snow Bowl Road 2400 m 14.08.1988 leg. Baranowski (MZLU); 4 mm 1 f Santa Rita Mts. 5000-8000' 00.07.?? leg. Snow (KSEM); 11 mm 3 ff Graham Co Pinaleno Mts., Post Crk. 9000 26.07.1969 leg. A. Smetana (CNC); 8 mm 3 ff Graham Co Pinaleno Mts., Wet Canyon 6000 29.07.1969 leg. A. Smetana (CNC); 1 m Graham Co Peter's Flat, Pinaleno Mts. 9200' 7.07.1973 leg. Sluss & Chandler (FMNH); 2 mm St. Catalina Mts. Mt. Lemon 05.07.1970 (FMNH); 4 mm 5 ff St. Catalina Mts. 8000 16.06.1968 (FMNH); **Colorado** 2 mm 2 ff Gunnison Co Cottonwood Pass 12100 29.07.1961 leg. B.H. Poole (CNC); 5 mm 11 f Durango, Junction Cr. Rd 9000-10000' malaise 9/17.07.1968 leg. Becker (CNC); 3 mm Durango, Missionary Ridge Rd 10300' 17.07.1968

leg. Becker (CNC); **New Mexico** 6 mm 5 ff Bernalillo Co Sandia Mtns. 9.07.1968 leg. Bright (CNC); 6 mm 4f f Lincoln Co Sierra Blanca 9700' malaise, spruce fir along stream 10/26.06.1979 leg. Peck (CNC); 4 mm 2 ff Lincoln Co Sierra Blanca 11500' 18.07.1969 leg. Smetana (CNC); 21 mm 5 ff Lincoln Co Sierra Blanca Ski area 10600' 17.07.1969 leg. Smetana (CNC); 1 m Cloudcroft 20.07.1973 leg. Campbell (CNC); 4 mm 3 ff Cloudcroft 8500' 20.07.1973 leg. Campbell (CNC); 1 m Cloudcroft 9.08.1903 (KSEM); 1 m Cloudcroft (1 mi. SE) Lincoln N.F. 8750' 13/18.07.1969 leg. Smetana (CNC); 1 m Cloudcroft (1 mi. SE) Lincoln N.F. 8750' 13/18.07.1969 leg. Smetana (CNC); 30 mm 8 ff Lincoln N.F. Sierra Blanca Ski Area 10600' 17.07.1969 leg. Smetana (MHNG); 2 m Huerfano Co La Veta Pass 9400 26.07.1968 leg. E.C. Becker (CNC); 1 m Larimer Co Estes Park (7 mi.E) 7000 on flowers 20.06.1975 leg. A. Newton M. Thayer (FMNH); 1 m 1 f Creede (3 mi.N) 10500 31.07.1968 leg. E.C. Becker (CNC); 1 m Berthoud Pass 9000 10000 on flower of wild *Geranium* 1.07.1943 leg. O. Bryant (CNC); 1 f Del Norte (25 mi.SW), Summitville 3.08.1968 leg. E.C. Becker (CNC); 6 mm 9 ff Durango, Junction Cr. Rd. 10000 Malaise 12/17.07.1968 leg. E.C. Becker (CNC); 1 m 2 Molas Pass (6 mi.S) 9500 1.08.1973 leg. J.M. Campbell (CNC); 2 mm 2 ff Nederland, Science Lodge 9500 1.07.1961 leg. J.R. Stainer (CNC); 1 m Rabbit Ears Pass 10000 11000 28.07.1943 leg. O. Bryant (CNC); 7mm 5 ff Rico (7 mi.SE), Hotel Draw 10000 18.07.1968 leg. E.C. Becker (CNC); 5 mm 5 ff Bernalillo Co Sandia Mts. 9.07.1968 leg. D.E. Bright (CNC); 1 m Lincoln Co Sierra Blanca 11500 18.07.1969 leg. Smetana (CNC); 3 mm 5 ff Santa Fe Co Santa Fe (14 mi.NE) 9600 aspen, stream 3.07.1969 leg. S. & J. Peck (CNC); 1 f Taos Co Tres Ritos (2.2 mi. NE) 8700 ft near stream 3/5.07.1972 leg. A. Newton (FMNH); 8 mm 3 ff Sandia Mts., Cibola N.F., Sandia Crest 10000 10500 7.07.1969 leg. Smetana (CNC); 1 m Tres Ritos 7.07.1918 leg. Hopping (CNC); 1 m 3 ff Rico, Scotch Creek 18.07.1968 leg. E.C. Becker (CNC); **Utah** 2 mm Summit Co Bourbon Lk Rd. (0.8 mi.NW mi.37 Hwy 150) 9600 11.07.1981 leg. leg J.M. Campbell (CNC); 1 m Brightons 07 1918 (FMNH); 1 f Logan 16.07.1955 leg. S.L. Wood (CNC); 1 f Vernal (22 mi.NW) 8.07.1961 leg. Poole (CNC); 1 m (KSEM);

Measurements. (male, female): head length: 0.27-0.35; 0.27-0.29; head width: 0.51-0.64; 0.55-0.68; pronotal length: 0.53-0.72; 0.53-0.62; pronotal width: 0.64-0.88; 0.77-0.86; elytral length: 1.11-1.46; 1.38-1.66; elytral width: 0.92-1.18; 1.07-1.33; length (clypeus to apex of elytra): 1.90-2.51; 2.12-2.40; total length: 2.2-3; 2.1-2.4.

Description. Habitus as in Fig. 67 and 68. Head yellowish, more or less darkened, or brown; pronotum from yellowish to entirely brown; elytra yellowish to yellowish brown; abdomen entirely yellowish to brown, often with yellowish apex in male as in Fig. 67. Legs, mouthparts, and antennae yellowish, often more or less darkened at apex.

Head with prominent eyes, postocular carina absent, temples rather long, one third of the length of the eye in dorsal view, moderately convergent caudad, medial margin of eyes without longitudinal wrinkles. Head with large and more or less deep postantennal depressions, confluent caudally with the tentorial pits forming 2 longitudinal more or less depressed areas. Neck not separated from the head. Punctuation superficial and sparse on scarcely microsculptured ground, microsculpture sometimes strongly near eyes. Antennae scarcely elongate, antennomere 1 elongate ovoid, twice as long as wide, 2 ovoid, 3 twice as long as wide, 4-6 subquadrate, 7-10 transverse, 11 twice as long as wide, cylindrical at base, conical at apex.

Pronotum scarcely transverse in the male (ratio width/length = 1.2 -1.3), more transverse in the female (ratio width/length = 1.4 on average), anterior margin narrower than posterior, anterior angles strongly rounded, strongly convex in the male, less convex in the female, lateral margins scarcely rounded, scarcely convergent caudad in rounded line, posterior angles rounded and scarcely obtuse. Punctuation sparse and superficial, ground with scarcely incised isodiametric microsculpture, pubescence short but visible, depressions near posterior angles small, reaching the middle of lateral margin.

Elytra rather elongate (ratio length from scutellum to apex / combined width of elytra = 1.0-1.1), scarcely widened towards apex, rounded in middle in male, prolonged in a rather long lobe (Fig. 68) in female, punctuation coarse and confluent on glossy ground, pubescence short but visible.

Abdomen rather glossy, microsculpture superficial, pubescence decumbent.

Anterior tibiae of male modified as in Fig. 72, sternite of male genital segment convex, posterior margin of sternite VIII convex, not elevated in a plate medially (Fig. 73). Tarsomere 5 of posterior tarsi as long as 1-4 together.

Aedeagus as in Fig. 69.

Accessory sclerites of female as in Fig. 70, spermatheca as in Fig. 71.

Comparative notes. The species is characterized by the shape of anterior tibiae and of pronotum of the males, like the others of the same group. Shape of copulatory sclerites of the aedeagus and of elytra of the females are distinctive. Most populations of *E. tibiale* have light color, yellowish, but some are dark. Concerning the distinction from *E. swauki*, see above.

Distribution. UNITED STATES: Arizona, Colorado, New Mexico, Utah (Map 5).

Natural history. This species lives at higher altitudes: the available records are from 1200 to 3200 m a.s.l. The only known host plants are *Geranium* sp. (Geraniaceae) and *Robinia neomexicana* A. Gray (Fabaceae). The documented macrohabitats are near streams in woods (spruce fir, aspen) in dry areas.

aurifluum group

Diagnostic characters

Small/medium size (1.6-2.4 mm)

Medial margin of eyes without wrinkles

Postocular carina absent

Temples strongly convergent caudad

Postantennal depressions confluent with dorsal tentorial pits in 2 depressed areas

Head not separated from neck by a clear line

Middle tibiae of male strongly curved

Elytra long, those of female prolonged in a long sutural lobe

Tarsomere 5 of posterior tarsi as long as 1-4 together

Sternite VII of male not modified, rounded in the middle

Sternite VIII of male without an elevated plate

Sternite of male genital segment not modified

Parameres of aedeagus with 2+2 apical setae

Aedeagus with only thin spines

Spermatheca divided into 2 large parts

Accessory sclerite of female reduced

This group includes a single summer mountain species distributed in California and Arizona. The long elytra, with a long sutural lobe in the female, middle tibia strongly curved in the male, and the shape of the aedeagus progressively narrowed from base to apex are distinctive.

***Eusphalerum aurifluum* (Fauvel, 1878)**

Anthobium aurifluum Fauvel, 1878: 201; Bernhauer and Schubert 1910: 39.

Eusphalerum aurifluum (Fauvel); Moore and Legner 1975: 190; Herman 20: 418.

Material examined (95 specimens)

Type material. Holotype f Mariposa Calif. / aurifluum Fvl. / R.I.Sc.N.B. 17.479 *Anthobium* coll. et det. A. Fauvel / Syntype / Holotype (red) / *Eusphalerum aurifluum* (Fauvel, 1878) det. A. Zanetti 2010 [only one specimen is mentioned in the original description].

Other material (94 specimens). **USA. Arizona** 1 m 1 f Santa Rita Mts. 5000-8000' 00.07.?? leg. Snow (KSEM); **California** 1 m Calaveras Co West Point (1.1 mi.E), Winton Rd. 2800 ft. on flowers *Ceanothus* 20.05.1976 leg. A. Newton M. Thayer (FMNH); 1 m 2 f Calaveras Co Stanislaus N.F., Airola Ck., North

of Dorrington 1780 m *Abies magnifica*, *Pinus lambertiana*, *Calocedrus* forest, on white *Ceanothus* flowers 18.06.1988 leg. A. Newton M. Thayer (FMNH); 1 m Cisco (IRSNB); 7 ff El Dorado Co Desolation Valley P.A. Below Eagle Lake 6700' 13.08.1969 leg. Smetana (MHNG); 1 f El Dorado Co Phillips (5 mi.W) 1.06.1961 leg. Howden (CNC); 2 mm El Dorado Co Fallen Leaf 6500 1/29.07.1935 leg. F.E. Blaisdell ; 1 m Fresno Co Sequoia NF, Boole Tree Tr 36.8219°N 118.9561°W 8.06.2006 leg. Caterino & Chatzimanolis (SBMNH); 2 m Fresno Co Sequoia NF, F.S. 13S23 36.7575°N 118.8007°W 7.06.2006 leg. Caterino & Chatzimanolis (SBMNH); 1 m Mather 15.06.1969 leg. K. Stephan (FMNH); 1 m Nevada Co Sagehen Cr. F.S. 38.4298°N 120.2429°W 12/18.08.2003 leg. Caterino (SBMNH); 1 m Placer Co Cisco 5.07.1964 leg. C. W. O'Brien (FMNH); 5 mm 13 ff Placer Co Lake Tahoe, Tahoe pines 6200' 10.08.1969 leg. Smetana (CNC); 1 m Tulare Co Kaweah leg. R. Hopping (CNC); 3 mm 1 f Tulare Co Sequoia Nat. Park, Mineral King 7700' 25.05.1984 leg. Baranowski (MZLU); 4 mm 5 ff Tulare Co Sequoia NF Upr., Freeman Ck. 36.138°N 118.534°W beaten from *Ceanothus* 23.06.2003 leg. Caterino (SBMNH); 1 f Tulare Co Sequoia NF, Boulder Ck. 36.1585°N 118.5406°W 21.07.2005 leg. Caterino (SBMNH); 1 m 3 ff Tulare Co Sequoia NF, Freeman Ck. Grove 36.146°N 118.493°W 21/22.06.2003 leg. Caterino (SBMNH); 1 f Tulare Co UC Whitaker Forest Lindgren 36.7068°N 118.9252°W 5/12.06.2006 ; 6 mm 6 ff Tulare Co Whitaker Forest UC 36.6988°N 118.9290°W/36.7046°N 118.9329°W 5/12.06.2006 leg. Caterino & Chatzimanolis (SBMNH); 3 ff Tulare Co Whitaker Forest UC 36.7025°N 118.9222°W 5.06.2006 leg. Caterino & Chatzimanolis (SBMNH); 2 ff Tulare Co Whitaker Forest UC, Eshom Ck. 36.7060°N 118.9356°W 11.06.2006 leg. Caterino & Chatzimanolis (SBMNH); 3 mm 2 ff Tuolumne Co Calaveras, Big Trees St. Pk. South Grove, tree #200 1460 m *Sequoia gigantea* - conifer mixed forest, on white *Ceanothus* flowers 17.06.1988 leg. A. Newton M. Thayer (FMNH); 1 f Tuolumne Co Cherry Lake area 17.06.1984 leg. Baranowski (MZLU); 7 mm 1 f Tuolumne Co Calaveras, Big Trees St. Pk. South Grove, tree #200 1460 m *Sequoia gigantea* mixex conifer forest, on white *Ceanothus* flowers 17.06.1988 leg. A. Newton and M. Thayer (FMNH); 2 mm Tuolumne Co Darden... (?) (2 mi.E) 18.07.1964 leg. A.G. Raske (CNC); 1 m Mather 15.06.1969 leg. K. Stephan (FMNH); 1 m (IRSNB).

Measurements. (male, female): head length: 0.22-0.25; 0.22-0.24; head width: 0.46-0.53; 0.46-0.53; pronotal length: 0.44-0.55; 0.46-0.51; pronotal width: 0.61-0.75; 0.57-0.77; elytral length: 0.99-1.27; 1.58-1.64; elytral width: 0.89-1.07; 0.98-1.18; length (clypeus to apex of elytra): 1.53-1.96; 1.96-2.29; total length: 1.6-2.4; 1.9-2.3.

Description. Habitus as in Fig. 24. Head, pronotum and elytra yellowish, head very feebly darkened, legs, antennae, and mouthparts yellowish, antennae darkened from antennomere 6-7.

Head with prominent eyes, postocular carina absent, temples short, strongly convergent caudad, medial margin of eyes without longitudinal wrinkles, with microsculpture formed by elongate meshes. Head with rather deep postantennal depressions, confluent caudadly with the tentorial pits forming 2 longitudinal more or less depressed areas. Neck not separated from the head. Punctuation superficial and sparse on scarcely microsculptured ground. Antennae rather elongate, antennomere 1 twice as long as wide, 2 lengthened ovoid, 3 more than twice as long as wide, 4-6 longer than wide, 7-8 subquadrate, 9-10 transverse, 11 twice as long as wide, cylindrical at base, conical at apex.

Pronotum transverse (ratio width/length = 1.3-1.5), anterior margin narrower than posterior, moderately convex, widest at middle, anterior angles strongly rounded, lateral margins strongly rounded, strongly convergent caudad, posterior angles rounded and strongly obtuse mostly in the large males. Punctuation dense and superficial, ground with incised isodiametric microsculpture, pubescence extremely short, scarcely visible, depressions near posterior angles wide, reaching the middle of lateral margin.

Elytra rather elongate (ratio length from scutellum to apex / combined width of elytra = 1.1), scarcely widened towards apex, rounded in middle in male, prolonged in a very long angulate lobe (Fig. 27) in female, punctuation moderately coarse and confluent on glossy ground, pubescence short, scarcely visible.

Abdomen rather glossy, microsculpture superficial, pubescence decumbent.

Middle tibiae of male strongly curved (Fig. 24), male sternite VIII as in Fig. 26. Tarsomere 5 of posterior tarsi as long as 1-4 together.

Aedeagus as in Fig. 25.

Accessory sclerites of female as in Fig. 28, spermatheca as in Fig. 29.

Comparative notes. *Eusphalerum aurifluum* recalls the species of the convexum group, but the curved shape of the male middle tibiae is distinctive. The form of the pronotum, with rounded lateral margins, and its dense and superficial punctation allow rather easy identification of females.

Distribution. UNITED STATES: Arizona, California (Map 8).

Natural history. The species was found between 850 and 2300 m a.s.l. in various forest habitats (*Abies magnifica*, *Pinus lambertiana*, *Calocedrus* forest and *Sequoia gigantea* mixed conifer forest). The only documented host plant is *Ceanothus* sp. (Rhamnaceae). Adults collected from May to August, mostly in June and July.

convexum group

Diagnostic characters

Size intermediate (1.9-2.8 mm)

Medial margin of eyes without wrinkles

Postocular carina absent

Temples strongly convergent caudad

Postantennal depressions confluent with tentorial pits in 2 scarcely depressed areas

Head not separated from neck by a clear line

Legs of males not modified

Elytra long, rounded at apex in male, prolonged in a long sutural lobe in female

Tarsomere 5 of posterior tarsi shorter than 1-4 together

Sternite VII of male modified medially

Sternite VIII of male without an elevated plate

Sternite of male genital segment not modified

Parameres of aedeagus with 2+2 apical setae

Aedeagus with large and complex copulatory sclerites

Spermatheca divided into 2 large parts

Accessory sclerite of female large

The convexum group is well characterized by several characters (long elytra, rounded at apex in the male and prolonged in a long or very long sutural lobe in the female, tarsomere 5 of posterior tarsi shorter than 1-4 together, sternite VII of abdomen of male modified medially, aedeagus with large copulatory sclerites and groups of spicules), and seems rather isolated. It includes 4 species distributed in most of North America.

Eusphalerum convexum (Fauvel, 1878)

Anthobium convexum Fauvel, 1878: 201; Bernhauer and Schubert 1910: 39; Blatchley, 1910: 481.

Eusphalerum convexum (Fauvel); Moore and Legner 1975: 190; Dearborn and Donahue 1994: 13.

Material examined (578 specimens)

Type material. Lectotype m [here designated] Quebec / St. Fabian Canada / Montreal / Lac Inferieur Michipicaten River [...] / Missouri [label of an additional locality, as common in Fauvel collection] / convexum Fvl. / R.I.Sc.N.B. 17.479 *Anthobium* coll. et det. A. Fauvel / Syntype / Lectotypus (red) / *Eusphalerum convexum* (Fauvel, 1878) det. Zanetti 2010 (IRSNB) [apex of the aedeagus and parameres partially broken]; paralectotype f Pennsylvania (IRSNB); paralectotype f Mass. / Springfield / Chicopee Mass. [additional locality] / *Omalium* (protectum) m.s.s (IRSNB).

Other material (576 specimens). **CANADA. New Brunswick** 18 mm 6 ff Kouchibouguac N.P. 14.06/2.09.1977 leg. Miller, Voceroth, Ivanochko, Calderwood & Smetana (CNC); 8 mm 4 ff Kouchibouguac N.P. 5.06/18.07.1978 leg. Goulet, Lyons & Miller (CNC); 1 m St. John sweeping vegetation 19.06.1981 leg. LeSage (CNC); **Newfoundland** 3 mm 2 ff R.A. Squires Prov. Pk 23-07.1970 leg. Bright (CNC); 1 f R.A. Squires Prov. Pk. 23.07.1970 leg. Bright (CNC); 2 mm Raleigh (2 mi. SE) 5.08.1972 leg. Campbell (CNC); **Nova Scotia** 2 m MacNab Is. Halifax 13.07.1967 leg. Gilhen (CNC); 2 mm Cape Breton H.N.P. vegetation along kreek in forest 7.07.1983 leg. LeSage (CNC); 1 f 2 mm Cape Breton H.N.P. MacKenzie Mtn. malaise through 1.07.1983 leg. Vockeroth (CNC); 3 mm 2 ff Cape Breton H.N.P., 60°41'W 46°48'N 400 m fen sweeping 1.06.1983 leg. Goulet (CNC); 1 m Cape Breton H.N.P., Aspy River PG908938 drift net 7.07.1983 leg. L. LeSage (CNC); 6 mm 5 ff Cape Breton H.N.P., Base French Mountain sweeping *Spiraea* 10.07.1983 leg. LeSage (CNC); 3 mm 2 ff Cape Breton H.N.P., Base French Mountain sweeping *Spiraea* 10.07.1983 leg. LeSage (CNC); 1 m Cape Breton H.N.P., Base French Mountain PG585763 sweeping *Spiraea* 10.07.1983 leg. L. LeSage (CNC); 1 m Cape Breton H.N.P., Beulach Ban Falls PG810870 roadside vegetation, *Ranunculus* 6.08.1983 leg. L. LeSage (CNC); 2 mm Cape Breton H.N.P., Cheticamp River sweeping *Salix* 12.07.1982 leg. LeSage (CNC); 2 ff Cape Breton H.N.P., Fishing Cove River PG655780 drift net 11.07.1983 leg. L. LeSage (CNC); 8 mm 4 ff Cape Breton H.N.P., Forest Creek PG824891 sweeping vegetation / wet moss, dead logs, stream and forest 6.07.1983 leg. L. LeSage (CNC); 1 f Cape Breton H.N.P., Grand Falaise (0.5 km N) 30 m forest, flood plain 6.06.1983 leg. Goulet (CNC); 2 mm Cape Breton H.N.P., Green Cove 12.06.1984 leg. Smetana (CNC); 22 mm 18 ff Cape Breton H.N.P., Lone Shieling PG729861 Malaise 06/07.1983 leg. Vockeroth (CNC); 4 mm 2 ff Cape Breton H.N.P., Lone Shieling PG729861 malaise shaded place 06/07.1983 leg. R. Vockeroth & L. Masner (CNC); 1m Cape Breton H.N.P., Lone Shieling PG73258 sweeping vegetation along Grande Anse River 8.07.1983 leg. L. LeSage (CNC); 5 mm 5 ff Cape Breton H.N.P., Lone Shieling on flowers *Heracleum maximum* leg. LeSage (CNC); 1 f Cape Breton H.N.P., Lone Shieling 100-400 m fen, residue photoeclector 6.06.1983 leg. Goulet (CNC); 1 m 1 f Cape Breton H.N.P., Lone Shieling 25/26.06.1983 leg. Bousquet (CNC); 1 f Cape Breton H.N.P., Lone Shieling pans, malaise 28.06.1983 leg. Vockeroth (CNC); 3 mm 1 f Cape Breton H.N.P., Lone Shieling Grande Anse River sweeping vegetation 8.07.1983 leg. LeSage (CNC); 3 mm 1 f Cape Breton H.N.P., MacKenzie Mtn. pan traps 4.07.1983 leg. Vockeroth (CNC); 2 mm 5 ff Cape Breton H.N.P., MacKenzie Mtn. pan traps 19.06.1983 leg. Bousquet (CNC); 1 m Cape Breton H.N.P., MacKenzie Mtn. sweeping *Scirpus*, *Juncus* in ditch 8.06.1983 leg. LeSage (CNC); 6 mm 9 ff Cape Breton H.N.P., MacKenzie Mtn. PG648868 forest pan trap 06/07.1983 leg. R. Vockeroth & Y. Bousquet (CNC); 1 m Cape Breton H.N.P., N. Aspy River sweeping mar. veg. 6.07.1983 leg. LeSage (CNC); 1 f Cape Breton H.N.P., North Mountain on *Potentilla palustris* 6.07.1983 leg. LeSage (CNC); 1 m 2 ff Cape Breton H.N.P., North Mountain pans bog 25.06.1983 leg. Bousquet (CNC); 3 mm 4 ff Cape Breton H.N.P., North Mtn. PG767865 malaise/pan forest trap, near bog 06/07.1983 leg. R. Vockeroth & Y. Bousquet (CNC); 1 f Cape Breton H.N.P., South Harbour PG 960944 mixed wood, sand bar 11/21.07.1983 leg. L. Masner (CNC); 6 mm 3 ff Cape Breton H.N.P., Still Brook temporary stream spruce, forest 5.07.1983 leg. L. LeSage (CNC); 1 f Cape Breton H.N.P., Still Brook Trail QG034838 *Kalmia latifolia* 7.07.1983 leg. L. LeSage (CNC); 1 f Springfield (10 km N) sweeping flowers 20.06.1981 leg. LeSage & Ward (CNC); 1 f Colchester Co Upper Bass River 16.06.1995 leg. Corkum (cZan); 1 m Cumberland Co Spencer's Island 15.06.1995 leg. Corkum (cZan); **Ontario** 1 m 2 ff Ad & Lennox Co 13.06.1948 leg. Brimley (CNC); 2 mm Hasting Co 22.07.1950 leg. Brimley (CNC); 1 m 1 f Hasting Co 4.06.1939 leg. Brimley (CNC); 3 mm 3 ff Hasting Co 4.06.1939 leg. Brimley (CNC); 1 f Prince Edward Co 5.07.1950 leg. Brimley (CNC); 3 ff Alfred bog intercept trap 16.06.1981 leg. Davies (CNC); 1 m Black Sturgeon Lake 1/15.08.1956 leg. Lindberg (CNC); 1 m Britannia 1.06.1918 leg. Hick (CNC); 1 f Carleton Place (7 km SW) 16/30.05.1982 leg. Huggert, Masner & Goulet (MZLU); 2 ff Chalk River 7.06.1960 leg. Howden (CNC); 7 mm Curran (2 mi. W) burned pine, plantation 2.06.1982 leg. Davies (CNC); 1 f Hurkett (46 mi. N), Black Sturgeon Lk. 25.06.1973 leg. Parry & Campbell (CNC); 3 mm 2 ff Hurkett (56 mi. N) 27.06.1973 leg. Parry & Campbell (CNC); 1 m Hurkett (56 mi. N) 27.06.1973 leg. Parr & Campbell (CNC); 1 m Lake Superior Prov. Pk. Gargantua 7.06.1973 leg. Campbell & Parry (CNC); 3 mm 1 f North Bay 19.06.1963 leg. Gagne (CNC); 1 f nr. Clayton carnet 22.05.1981 leg. Babock & Goulet (CNC); 2 m 2 f Ottawa (CNC); 1 m pr. Gravel River 8.08.1956 leg. Lindberg (CNC); 1 m Tillsonburg 1.06.1931 leg. Brown (CNC); 1 f Tillsonburg 1.06.1931 leg. Brown (CNC); 1 m 1 f Tillsonburg 1.06.1031 leg. Brown (CNC); **Prince Edward Island** 1 m Dundee sweeping alders, willows, goldenrods and clover 26.06.1986 leg. LeSage & Rochon (CNC); **Québec** 1 m Drumm. Co St-Cyrille 23.05.1981 leg.

LeSage (CNC); 7 mm 3 ff Gaspé O. Co Mt. Albert sommet N 1100 m sweeping field 18.08.1985 leg. Génier (CNC); 2 mm Levis Co St-Rédempteur 23.06.1981 leg. LeSage (CNC); 1 m Aylmer 31.05.1928 leg. Brown (CNC); 1 m Berthierville 13.07.1940 leg. Robert (CNC); 1 m Black Lake Parc Gatineau *Viburnum lentago* 5.07.1974 leg. Sexton (CNC); 7 mm 1 f Cap Rouge 24.06.1981 leg. LeSage (CNC); 1 m Cap-Rouge 24.06.1981 leg. LeSage (CNC); 4 mm 2 ff Cascapedia 16.06.1933 leg. Brown (CNC); 1 f Charteris, Quyon Crk. 3.06.1969 leg. Smetana (MHNG); 1 m Chelsea Gatineau 14.07.1974 leg. Sexton (CNC); 1 m Gaspé Pr. Pk. 3500' 26.07.1971 leg. Becker (CNC); 1 m Gatineau Pk., Harrinton Lk. 7.06.1954 leg. McCondochie (CNC); 1 m 3 ff Gatineau Pk., Harrinton Lk. 1.06.1954 leg. Huckel & McKondochie (CNC); 1 m Ile de Montreal Beaulieu 21.05.1903 (CNC); 6 ff Kazubazua 6/10.06.1927 leg. Brown (CNC); 2 ff Kazubazua sweep *Alnus*, mtn maple 30.05.1982 leg. Davies (CNC); 1 m Knowlton 18.06.1928 leg. Brown (CNC); 7 mm 5 ff Knowlton 06/06.1927/29 leg. Fisk, Brown & Milne (CNC); 1 m 1 f Laniel 7.06.1963 leg. Gagne (CNC); 2 mm 2 ff Mistassini 25.06.1956 leg. McGills (CNC); 2 mm 3 ff Mistassini Post 4.07.1956 leg. Lonsway (CNC); 3 mm 3 ff Mont Albert Parc Gaspésie 2800' 11.07.1972 leg. Campbell (CNC); 4 mm 4 ff Mont Albert Parc Gaspésie 1000' 7.07.1972 leg. Campbell (CNC); 1 f Mt. Lyall 1500' 29.06.1933 leg. Brown (CNC); 1 f Old Chelsea 22.06.1961 leg. Vockeroth (CNC); 1 m Riviere-a-Claude (4 mi. S) 200' 18.07.1972 leg. Campbell (CNC); 2 ff St. Agathe 10/13.06.1976 leg. Kiteley (CNC); 2 mm St. Agathe 10.06.1974 leg. Kiteley (CNC); 1 f St. Augustin Port 13.07.1959 leg. Aubé (CNC); 1 m Ste. Anne-des-Monts 26.07.1971 leg. Becker (CNC); 1 m Thunder River 23.06.1930 leg. Brown (CNC); 1 m 2 ff Thunder River 23.06.1930 leg. Brown (CNC); 1 f Wakefield 24.05.1929 leg. Brown (CNC); 1 m Wakefield 24.05.1927 leg. Brown (CNC); 4 mm 2 ff 4.06.1957 leg. Aubé (CNC); 1 f Ile Montréal Beaulieu 21.06.1903 (CNC); 1 f Levis Co St. Etienne, 5 mi S 26.05.1979 leg. Suter (FMNH). **USA. Connecticut** 1 m 3 ff Canaan 18.05.1924 leg. Chamberlain (CNC); 3 mm 3 ff Cornwall 31.05.1922 leg. Chamberlain (CNC); **District of Columbia** 10 mm 8 ff Washington (near) 00.04.1927 leg. Curran (CNC); **Indiana** 2 mm Parke Co 25.05.1933 leg. Downie (CNC); 1 f Parke Co Rockville ("Hajji Hollow"), 4 mi W aerial plancton 14.06.1972 leg. Dybas (FMNH); **Kentucky** 1 m 3 ff Irving (11.5 mi. E) 19.04.1967 leg. Bright (CNC); 1 f Rowan Co Morehead 25.05.1975 leg. Watrous (FMNH); **Maine** 2 mm 2 ff Oxford Co Evans Notch (0.4 mi.NE), S of Gilead 450 m *Betula* *Acer* forest, on flowers *Rubus* 12/15.06.1981 leg. A. Newton and M. Thayer (FMNH); 2 ff Oxford Co Gilead (S of), 0.4 mi.NE Evans Notch 450 m *Betula* *Acer* forest, on flowers *Rubus* 12/15.6.1981 leg. A. Newton and M. Thayer (FMNH); 5 mm Framingham 17.05.1913 (FMNH); 1 m Mt. Katahdin 1100' 2.07.1968 leg. Oliver (CNC); **Massachusetts** 1 m Framingham 31.06.1961 leg. Brimley (CNC); **Minnesota** 1 f Brainerd 10.06.1965 leg. Kiteley (CNC); 2 mm 1 f Brainerd 10.06.1965 leg. Kiteley (CNC); **New Hampshire** 8 mm 1 f Carroll Co North Catham (N of), Basin Trail 200-240 m mixed hardwood *Tsuga*, on flowers *Rubus* 13/15.06.1981 leg. A. Newton and M. Thayer (FMNH); 8 mm Grafton Co Bartlett, Sawyer River 500-550 m on flowers *Spiraea* 25.7.1980 leg. A. Newton and M. Thayer (FMNH); 2 mm Mt. Washington 8.08.1954 leg. Becker, Munroe & Mason (CNC); 1 m 1 f Mt. Washington, Oakes Gulf 4000 - 5000' 9.08.1954 leg. Becker, Munroe & Mason (CNC); 8 mm 4 ff Carroll Co North Catham (N of), Basin Trail 200-240 m mixed hardwood *Tsuga*, on flowers *Viburnum cassinoides* 13.06.1981 leg. A. Newton and M. Thayer (FMNH); **New York** 1 m 3 f Katonah (FMNH); 2 mm 1 f Wells N.S.A. (?) 17.07.1925 ; 3 mm 6 ff Bear Mt. 11.05.1941 (FMNH); 3 ff Colden 6.09.1908 leg. van Duzee (CNC); **North Carolina** 1 f 2 mm Haywood Co Blue Rdg. Pkw. Fork Rdg. Overlook 1615 m 30.05.1986 leg. Smetana (CNC); 1 m Jackson Co Highlands Whiteside Mtn. 1350 m 23.05.1986 leg. Smetana (CNC); 1 m 1 f Macon Co Wayah Bald 5300' 20.06.1957 leg. Mason (CNC); 7 mm 4 ff Macon Co Wayah Bald 5300' 20.06.1957 leg. Mason (CNC); 3 ff 2 mm Swain Co Mt. Collins 5900 ft on flowers *Viburnum* 21.05.1977 leg. A. Newton and M. Thayer (FMNH); 1 m 1 f Yancey Co Mt. Mitchell 6000 ft 1.07.1965 leg. C. W. O'Brien (FMNH); 1 m 1 f Balsam 12.07.1959 leg. Rosenberg (CNC); 1 m 3 ff Black Mountains 06/07.1902 (CNC); 1 f Cove Creek 17.06.1963 leg. K. Stephan (FMNH); 1 m Highlands 1.06.1957 leg. Howden (CNC); 5 mm 5 ff Highlands 3800' 8.05.1957 leg. Vockeroth (CNC); 1 f Roan Mt. 25.07.1972 leg. Glover (KSEM); **Ohio** 2 mm Athens Co Troy Twn p. 22.06.1935 leg. Stehr (CNC); 1 m Hocking Co Lancaster (7 mi.S) on flowers 19.06.1977 leg. L. Watrous (FMNH); 2 mm 2 ff Hocking Co Lancaster (7 mi.S) raspberry flowers (*Rubus* sp.) 31.05.1975 leg. L.E. Watrous (FMNH); 2 mm 6 ff Hocking Co Lancaster, 7 mi S 31.05.1975 leg. Watrous (FMNH); 1 f Hocking Co Gibisonville, 2 mi S, Berlese, litter ar. swamp 4.06.1977 leg. Watrous (FMNH); 3 mm 5 ff Hocking Co 3 mi W 33 on 116 31.05.1975 leg. Watrous (FMNH); 1 f Ross Co Tar Hollow St. Pk. 19.05.1974 leg. D. Chandler (FMNH); **Pennsylvania** 2 ff Pike Co Milford 30.05/1.06.1941 leg. Malkin (FMNH); 2 mm Wind Gap 28.05.1931 leg. Green (CNC); 1 f Somerset Co Kantner, 1 mi S, Berlese, forest

litter 10.06.1976 leg. Watrous (FMNH); **Tennessee** 3 mm 1 f G. Smoky Mt. N. Pk., Gatlinburg 14.06.1942 (FMNH); 1 m Gr. Smoky Mt. Nat. Park 6000' *Sambucus* 20.05.1955 (CNC); 1 f Great Smoky Mountains Nat. Pk., Andrews Bald 6000 ft. 18.06.1942 leg. C. H. Seevers (FMNH); 2 mm 2 ff Great Smoky Mountains Nat. Pk., Mt. Collins 6000 *Sambucus* sp. 20.05.1955 (CNC); 1 f Great Smoky Mountains Nat. Pk., Newfound Gap 5000' 9.06.1982 leg. Bousquet & Davies (CNC); **Vermont** 2 mm Townshend (W of) 2.06.1983 leg. Kiteley (CNC); **Virginia** 10 ff Madison Co Shenandoah N.P., Whiteoak Canyon Trail 3500 ft on flowers *Thaspium trifoliatum* 18.05 1977 leg. A. Newton and M. Thayer (FMNH); 3 mm (12 km E) Mtn. Lk. Biol Stn 3820' sweeping mountain ash 11.06.1982 leg. Bousquet & Davies (CNC); 4 mm 1 f Shenandoah N.P., Big Meadow Sky line drive forest 1000 m 14.06.1982 leg. Huggert (MZLU); **West Virginia** 1 m 1 f Nicholas Co Richwood (8.2 km NE) 12.05/6.06.1986 leg. Smetana (CNC); 1 m Randolph Co Mingo 2500' 1.07.1973 leg. Frania (KSEM);

Published records. Eastern States, Connecticut, Indiana (Moore and Legner 1975)

Measurements. head length: 0.24-0.27; head width: 0.49-0.53; pronotal length: 0.38-0.46; pronotal width: 0.66-0.72; elytral length: 1.27-1.40; elytral width: 0.99-1.18; length (clypeus to apex of elytra): 1.85-2.36; total length: 2.0-2.7.

Description. Habitus as in Fig. 74. Head, pronotum and elytra yellowish, elytra somewhat paler, neck somewhat darkened; abdomen brown with paler apex (male) or yellowish (female); prosternum and metasternum yellowish; sometimes (population of Tennessee and North Carolina) head and pronotum brownish, elytra yellowish, ventral surface brownish and abdomen brownish in both sexes. Legs, antennae, and mouthparts yellowish.

Head small with strongly prominent eyes, postocular carina absent, temples short, strongly convergent caudad, medial margin of eyes microsculptured without longitudinal wrinkles. Postantennal depressions superficial, tentorial pits small but well impressed. Neck scarcely separated from head medially. Punctuation rather sparse, superficial, ground with isodiametric microsculpture. Antennae thin, scarcely elongate, antennomere 1 and 2 ovoid, 3 thin, twice as long as wide, 4-5 longer than wide, 6 subquadrate, 7-10 wider than long, 11 twice as long as wide, ovoid at base and conical at apex.

Pronotum transverse (ratio width/length = 1.4), convex, widest just in front of middle, anterior margin much narrower than posterior (Fig. 75), lateral margins strongly convergent anterad, rounded in middle, and scarcely convergent caudad in almost straight line, posterior angles marked and scarcely obtuse. Punctuation dense, thin, ground with isodiametric microsculpture, pubescence very short, scarcely visible, depressions near posterior angles scarcely impressed.

Elytra wide and strongly elongate (ratio length from scutellum to apex / combined width of elytra = 1.2 in male), widened towards apex, rounded at apex in male, prolonged in a long lobe along suture in female (Fig. 76), punctuation denser and stronger than on pronotum, confluent on glossy ground, pubescence very short, almost invisible.

Tibiae of male straight, not modified, tarsomere 5 of posterior tarsi shorter than 1-4 together.

Sternite VII of male entire in the middle, not incised (Fig. 78).

Aedeagus as in Fig. 77.

Accessory sclerites of female as in Fig. 79, spermatheca as in Fig. 80.

Comparative notes. Form of elytra and light color are characteristic for all species of the convexum group. Only *E. aurifluum* is similar, but its curved male middle tibiae allow easy distinction of males; females have rounded lateral margins of pronotum and dense and superficial punctuation. *E. convexum* is very similar to *E. fraternum* and *E. chatzimanolisi*, but has the male sternite VII not incised in the middle and the very complex internal structures of the aedeagus are distinctive. These structures assume a very different appearance in specimens with everted internal sac of the aedeagus, and in this case differences are difficult to evaluate. *E. carolinensis* is somewhat different in external characters too, i.e. pronotum narrowed posteriad and elytra of the female less prolonged at the suture.

Distribution. CANADA: New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Québec; UNITED STATES: Connecticut, District of Columbia, Indiana, Kentucky, Maine,

Massachusetts, Minnesota, New Hampshire, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Vermont, Virginia, West Virginia (Map 1).

Natural history. The species was found from sea level to 1800 m a.s.l. in various woods (hardwood, conifer and mixed) and wetlands. The documented host plants are *Ceanothus* sp. (Rhamnaceae), *Heracleum maximum* Bartram (= *lanatum*) (Apiaceae), *Juncus* sp. (Juncaceae), *Kalmia latifolia* L. (Ericaceae), *Potentilla palustris* (L.) Scop. (Rosaceae), *Ranunculus* sp. (Ranunculaceae), *Rubus* sp. (Rosaceae), *Salix* sp. (Salixaceae), *Sambucus* sp. (Adoxaceae), *Scirpus* sp. (Cyperaceae), *Spiraea* sp. (Rosaceae), *Thaspium trifoliatum* (L.) A. Gray (Apiaceae), *Viburnum cassinoides* (L.) Torr. & A. Gray, *Viburnum lentago* L. (Adoxaceae). The presence of *Eusphalerum* on wind-pollinated plants (*Salix*, *Juncus*, *Scirpus*) is unusual, but is known also for some European and Asian species.

Records from April to September, mostly in June and July.

Note. Some specimens from Illinois (1 m 5 ff Union Co Pine Hills area nr. Wolf L., sweeping vegetation along roadside, 15/16.05.1971 leg. M. Prokop & J. Kethley (FMNH)) have sexual characters of the male (aedeagus and sternite VII) identical to those of *E. convexum*, but the pronotum is similar to that of *carolinensis* and the apex of the female elytra is truncate. It is unclear whether they represent a local population, a different subspecies or a different species. They are included in the key as *convexum*? (population from Illinois).

Eusphalerum fraternum (Casey, 1894)

Anthobium fraternum Casey, 1894: 432; Bernhauer and Schubert 1910: 39.

Eusphalerum fraternum (Casey); Moore and Legner 1975: 190; Herman 2001: 424.

Anthobium minskae Hatch, 1944: 104, **n. syn.**

Eusphalerum minskae (Hatch); Hatch 1957: 83; Moore and Legner 1975: 191; Herman 2001: 437.

Material examined (205 specimens)

Type material. *Anthobium fraternum*: Lectotype m [labelled as paratypus, not original], 2 paralectotypes mm, 3 paralectotypes ff [1 labelled as typus, not original, 1 *Eusphalerum* gr. *pothos*, misidentified] Cal. [with Casey's marks meaning Hoopa Valley, Trinity River, Humboldt Co. (Fort Gaston)] (USNM).

Anthobium minskae: Holotype m Olympic Hot Springs, May 31 1931 M.H. Hatch (USNM)

Other material (201 specimens). **CANADA. British Columbia** 1 m Garibaldi Park, Alouette Lake 9.07.1975 leg. N. M. Downie (FMNH). **USA. California** 11 mm 5 ff Colusa Co Goat Mt. 30.05.1959 ; 1f Del Norte Co Klamath River, mouth 40 m on flowers *Heracleum lanatum*, shade, late afternoon 21.06.1988 leg. A. Newton and M. Thayer (FMNH); 1 f Inyo Co Sylvania (CNC); 1 m 1 f Lake Co Anderson Sprs. 17.03.1951 leg. Bauer (CNC); 1 m Marin Co. (USNM); 2 ff Marin Co Inverness, (3.1 mi.NW of) 200 ft *Alnus* forest, on flowers *Heracleum lanatum* 22.05.1976 leg. A. Newton and M. Thayer (FMNH); 1 m 1 f Marin Co Mill Valley 19.05.1951 leg. Green (CNC); 1 m 1 f Marion Co Lily Pond, Alpine Lake 1500' malaise trap 17/25.06.1971 leg. Munroe (CNC); 5 mm 6 ff Napa Co Calistoga (11.4 mi.N) 1600 on *Azalea* flowers 21.05.1976 leg. A. Newton and M. Thayer (FMNH, cZan); 8 mm 6 ff Napa Co Calistoga (10.1 mi.N) 1900 ft on flowers ?*Rhus diversiloba* 10.05.1976 leg. A. Newton and M. Thayer (FMNH); 8 mm 7 ff Napa Co Calistoga (10.1 mi.N) 1900 on poison oak (*Toxicodendron diversilobum*, syn. *Rhus diversiloba*) 21.05.1976 leg. A. Newton and M. Thayer (FMNH); 1 m 2 ff Napa Co Calistoga (10.1 mi.N) 1900 flood debris forest stream 21.05.1976 leg. A. Newton and M. Thayer (FMNH); 2 ff Placer Co 00.06.?? leg. Koebele (CNC); 6 mm 2 ff Trinity Co Shasta Trinity N.F., Hwy 36, 4.7 m W Forest Glen 1050 m conifer-hardwood forest, on white *Ceanothus* flowers 20.06.1988 leg. A. Newton and M. Thayer (FMNH); 1 f Trinity Co Carrville 1.06.1913 leg. Van Dyke (CNC); 1 f Trinity Co Junction City (16 km N), Upper Canjon Cr. Mdws 4800' 13.07.1979 leg. Campbell (CNC); 1 f Tulare Co Kaweah leg. Hopping (CNC); 1 f Tuolumne Co Buck Meadows (10 mi.E) 3500' 16.06.1984 leg. Baranowski (CNC); 1 m 2 ff Tuolumne Co Dardenelles (2 mi.E) 18.07.1964 leg. Raske (CNC); 4 mm 1 f Alameda (CNC); 1 m Viola (4 mi.W) N.fk.

Battle Cr. ex Mt. Azalea 14.07.1953 leg. Day (CNC); 1 m Ukiah 9.06.1932 leg. Dorn (FMNH); 1 m St. Helena 31.05.1931 leg. Dorn (FMNH); **Oregon** 2 mm 4 ff Clackamas Co jct US26 Ore 35 (1.3 m E) 3900 on flowers *Achlys triphylla* 12.07.1975 leg. M Thayer (FMNH); 1 m Multnomah Co Multnomah Falls 10.06.1962 leg. C. W. OBrien (FMNH); 1 m Clackamas Co jct US26 Ore 35 (1.3 m E) 3900 flood debris forest stream 12.07.1975 leg. M. Thayer (FMNH); 3 mm 6 ff Clackamas Co jct US26 Ore 35 (1.3 m E) 3900 ft on flowers *Achlys triphylla* 12.07.1975 leg. A. Newton and M. Thayer (FMNH); 1 f Clackamas Co Camp Crk. (3.5 mi. SE) 2300-2400' *Rhododendron* 26.06.1974 leg. Smetana (CNC); 1 m 1 f Clackamas Co Mt. Hood N.F., Still Creek Cmpg. 4000' 31.07.1979 leg. Campbell (CNC); 1 f Clackamas Co Wildwood Rec. site nr. Wildwood 1100 on flowers *Digitalis* 13.07.1975 leg. A. Newton and M. Thayer (FMNH); 1 m 3 ff Lane Co Vida 28.06.1941 (FMNH); 1 f Linn Co Idaho (15 km E) 16.06.1984 leg. Danielsson (CNC); 1 m Marion Co Breitenbach (2 km E) 17.06.1984 leg. Danielsson (CNC); 6 mm 4f f Knowlton, Barlow Pass GF 4000' 22.05.1954 (CNC); 1 f Marshfield 12.06.1914 leg. Van Dyke (CNC); 1 f Mt. Hood, Government Camp 3800' 1.07.1974 leg. Smetana (CNC); 1 m Oregon Portland (IRSNB).; 2 mm Santian Pass, Tombstone Prairie at lights 22.07.1949 leg. Roth & Beer (CNC); **Washington** 1 f Clallam Co Sappho (10 km N) 21.06.1984 leg. Danielsson (CNC); 25 mm 21 ff Pierce Co Mt. Rainier N.P., West Side Rd, 3.3 mi N jct Wash. 706 2800 ft on flowers 19.07.1975 leg. A. Newton and M. Thayer (FMNH); 2 mm 2 ff Pierce Co Mt. Rainier N.P., West side Road 1.7 mi. N jct Wash 706 2400 on flowers 19.07.1975 leg. A. Newton and M. Thayer (FMNH); 1 m Whatoom Co Mt. Baker 1500 m 19.06.1987 leg. N. M. Downie (FMNH); 1 m Mt. Rainier N.P., Larrupin Falls 3600' 3.08.1979 leg. Campbell (CNC); 2 mm 1 f Mt. Rainier N.P., end of West Side Road 3700' 3.08.1979 leg. Campbell (CNC); 1 f Mt. Rainier N.P., Laughingwater Cr. 2400' 6.08.1979 leg. Campbell (CNC); 2 mm 4 ff Mt. Rainier N.P., Nisqually River 3900' 8.08.1973 leg. Smetana (CNC); 1 f Mt. Rainier N.P., Puyallup River, N, 3700' 10.08.1973 leg. Smetana (CNC); 1 f Mt. Rainier, Sunrise 11.07.1934 leg. Bryant (CNC); 1 f Lane Co Florence, 5 km N litter in broad leaf/evergreen thicket 7.06.1957 leg. Dybas (FMNH).

Measurements. head length: 0.24-0.31; head width: 0.49-0.57; pronotal length: 0.44-0.51; pronotal width: 0.66-0.77; elytral length: 1.14-1.35; elytral width: 0.92-0.99; length (clypeus to apex of elytra): 1.85-2.29; total length: 1.9-2.4.

Description. Habitus as in Fig. 81. Head, pronotum and elytra yellowish, elytra somewhat paler, neck somewhat darkened; abdomen brown with paler apex (male) or yellowish (female); prosternum and metasternum yellowish; legs, antennae, and mouthparts yellowish.

Head small with strongly prominent eyes, postocular carina absent, temples short, strongly convergent caudad, medial margin of eyes microsculptured without longitudinal wrinkles. Postantennal depressions superficial, tentorial pits small but well impressed. Neck scarcely separated from head medially. Punctuation rather sparse, superficial, ground with isodiametric microsculpture. Antennae thin, scarcely elongate, antennomere 1 and 2 ovoid, 3 thin, twice as long as wide, 4-5 longer than wide, 6 subquadrate, 7-10 wider than long, 11 twice as long as wide, ovoid at base and conical at apex.

Pronotum transverse (ratio width/length = 1.4), convex, widest just in front of middle, anterior margin much narrower than posterior, lateral margins strongly convergent anterad, rounded in middle, and scarcely convergent caudad in almost straight line, posterior angles marked and scarcely obtuse. Punctuation dense and fine, ground with isodiametric microsculpture, pubescence very short, scarcely visible, depressions near posterior angles scarcely impressed.

Elytra wide and strongly elongate (ratio length from scutellum to apex / combined width of elytra = 1.2 in male), widened towards apex, rounded at apex in male, prolonged in long lobe along suture in female, as in *E. convexum* (Fig. 76); punctuation denser and stronger than on pronotum, confluent on smooth ground, pubescence very short, almost invisible.

Tibiae of male straight, not modified, tarsomere 5 of posterior tarsi shorter than 1-4 together.

Sternite VII of male incised medially in a long narrow fissure (Fig. 83).

Aedeagus as in Fig. 82.

Accessory sclerites of female as in Fig. 84, spermatheca as in Fig. 85.

Comparative notes. See *Eusphalerum convexum*. The shape of the male sternite VII deeply incised in the middle is the most distinctive character.

Distribution. CANADA: British Columbia; UNITED STATES: California, Oregon, Washington (Map 1).

Natural history. The species was found from sea level to 1500 m a.s.l. in various forest habitats (e.g., *Alnus* forest). Documented host plants: *Ceanothus* sp. (Rhamnaceae), *Heracleum maximum* Bartram (= *lanatum*), *Rhus diversiloba* (Torr. & Gray.) (= *Toxicodendron diversilobum*), *Achlys triphylla* (Sm.) DC. (Berberidaceae), *Digitalis* sp. (Scrophulariaceae), *Rhododendron* sp. (Ericaceae). Captures from March to August, mostly in June and July.

Note. According to the original description, *Eusphalerum minskae* (Hatch, 1944) differs from *E. fraternum* only in the color of the 4 basal segments of the male abdomen, which is an inconsistent character. Moreover, talking about the sternite VII of the abdomen of the male (as V), Hatch said, “Casey makes no mention of the fissure in his species being itself at the apex of a triangular incision, as in *minskae*.” In fact, Casey wrote, “... the fifth ventral broad, transverse at apex, with a deep abrupt parallel-sided median fissure nearly four times as deep as wide.”

Eusphalerum chatzimanolisi Zanetti n. sp.

Material examined (2 specimens)

Holotype m 1 paratype m California Fresno Co Sequoia NF FS 13S21 36.8105°N 118.9670°W 8.06.2006 leg. Caterino & Chatzimanolis (SBMNH)

Measurements. head length: 0.25-0.27; head width: 0.48-0.51; pronotal length: 0.44-0.46; pronotal width: 0.64-0.70; elytral length: 1.20-1.33; elytral width: 0.96-1.03; length (clypeus to apex of elytra): 1.85-1.97; total length: 2.

Etymology. The species is dedicated to one of its collectors, Stylianos Chatzimanolis, student of systematics of Staphylinidae.

Description. Habitus as in Fig. 93. Head, pronotum, and elytra yellowish, elytra somewhat paler, neck somewhat darkened; abdomen brown (male); prosternum yellowish; metasternum pale brown; legs, antennae, and mouthparts yellowish, antennae strongly darkened from antennomere 6.

Head with prominent eyes, postocular carina absent, temples short, strongly convergent caudad, medial margin of eyes microsculptured without longitudinal wrinkles. Head rather flat, postantennal depressions very superficial, tentorial pits small but well impressed. Neck not separated from head medially. Punctuation rather sparse, superficial, ground with isodiametric microsculpture. Antennae elongate, antennomere 1 and 2 segments twice as long as wide, 3 long and thin, three times as long as wide, 4-5 twice as long as wide, 6 and 7 longer than wide, 8-10 wider than long, 11 twice as long as wide, ovoid at base and conical at apex.

Pronotum transverse (ratio width/length = 1.5), convex, widest just in front of middle, anterior margin much narrower than posterior, lateral margins strongly convergent anteriorly, rounded in middle, and scarcely convergent caudad in almost straight line, posterior angles marked and scarcely obtuse. Punctuation very sparse, superficial, and irregular, ground with isodiametric microsculpture, pubescence very short, scarcely visible, depressions near posterior angles scarcely impressed.

Elytra strongly elongate (ratio length from scutellum to apex / combined width of elytra = 1.2), scarcely widened towards apex, rounded at apex, punctuation much denser and stronger than on pronotum, confluent on glossy ground, pubescence very short, almost invisible.

Tibiae straight, not modified, tarsomere 5 of posterior tarsi shorter than 1-4 together.

Sternite VII emarginate medially as in Fig. 95.

Aedeagus as in Fig. 94 (internal sac partly extruded).

Female unknown.

Comparative notes. *Eusphalerum chatzimanolisi* is very similar to *E. convexum* and *E. fraternum* in external characters: only the very sparse pronotal punctation is distinctive. The shape of the posterior margin of abdominal sternite VIII of the male is also different, recalling *E. carolinensis*, which differs in having the posterior half of the lateral margins of the pronotum convergent. The shape of the internal sac of the aedeagus is also characteristic.

Distribution. UNITED STATES: California (Map 1).

Natural history. The type specimens were collected in June in forest at about 1800 m a.s.l. (altitude inferred from coordinates), host plants not known.

***Eusphalerum carolinensis* Zanetti n. sp.**

Material examined (71 specimens)

Holotype m Wayah Bald 5300 Macon Co., N. C. VI-20-1957 W.R.M. Mason / CNC / *Eusphalerum carolinensis* n.sp. det. A. Zanetti 2012 / HOLOTYPUS (CNC).

Paratypes. USA. Kentucky 1 f Rowan Co Morehead Cave Run Lk (24 km SW) Fagus forest 14.05/20.08.1983 leg. S. & J. Peck (CNC); 1 m 1 f Rowan Co Morehead 25.05.1975 leg. Watrous (FMNH); **Missouri** 1 f Jefferson Co Pevely 7.05.? leg. S.W. Bock (CNC); **North Carolina** 1 m Balsam 12.07.1959 leg. W. Rosenberg (FMNH); 1 f Jackson Co Blue Rdg. Pkw. mi.457 4460' 12.06.1967 leg. G.W. Byers (KSEM); 1 f Jackson Co Cashiers (6 km S) 975 m 20.06.1986 leg. A. Smetana (CNC); 5 mm 3 ff Macon Co Wayah Bald 5300' 20.06.1957 leg. W.R.M. Mason (CNC); 1 m Boone 14.05.1973 leg. J.S. Ashe (KSEM); 1 f Cove Creek 17.06.1963 leg. K. Stephan (FMNH); 2 mm Highlands 1.06.1957 leg. H.F. Howden (CNC); 7 mm 4 ff Macon Co Wayah Bald 5300' 20.06.1957 leg. Mason (CNC); **Ohio** 2 mm 1 f Hocking Co Conckles Hollow St. Pk. 1.05.1974 leg. D. Chandler (FMNH); 20 mm 6 ff Vinton Co Ratcliffburg, 5 mi N litter along stream 15.05.1977 leg. Watrous (FMNH); 2 mm 1 f Hocking Co Lancaster, 7 mi S 31.05.1975 leg. Watrous (FMNH); 1 f Hocking Co 3 mi W 33 on 116 31.05.1975 leg. Watrous (FMNH); **Pennsylvania** 1 m Somerset Co Kantner, 1 mi S Berlese, forest litter 10.06.1976 leg. Watrous (FMNH); **Tennessee** 1 m Sevier Co Greenbrier Cove, Ramsey Cascade Trail 3900 under bark *Aesculus* 18/23.05.1972 leg. A. Newton (FMNH); 1 m Sevier Co Gatlinburg Cherokee Orchard at dung, horse 16/22.05.1972 leg. A. Newton (FMNH); **Virginia** 5 ff Pembroke (12 km E) Mtn. Lk. Biol Stn 3820' sweeping mountain ash 11.06.1982 leg. Bousquet & Davies (CNC);

Measurements. head length: 0.27-0.31; head width: 0.55-0.59; pronotal length: 0.49-0.57; pronotal width: 0.75-0.88; elytral length: 1.25-1.64; elytral width: 1.16-1.51; length (clypeus to apex of elytra): 2.07-2.47; total length: 2.5-2.8.

Etymology. The name is from North Carolina, the state from which part of typical specimens come.

Description. Habitus as in Fig. 86. Head, pronotum, and elytra yellowish, elytra somewhat paler, neck somewhat darkened; abdomen brown in male and yellowish in female, prosternum and metasternum yellowish; legs, antennae, and mouthparts entirely yellowish.

Head with prominent eyes, postocular carina absent, temples short, strongly convergent caudad, medial margin of eyes microsculptured without longitudinal wrinkles. Head rather flat, postantennal depressions very superficial, tentorial pits small but well impressed. Neck scarcely separated from the head. Punctation dense, superficial, ground with isodiametric microsculpture. Antennae thin and scarcely elongate, antennomere 1 and 2 ovoid, 3 twice as long as wide, 4-5 longer than wide, 6 subquadrate, 7-10 wider than long, 11 twice as long as wide, ovoid at base and conical at apex.

Pronotum transverse (ratio width/length = 1.6), convex, widest at middle, anterior margin narrower than posterior, lateral margins rounded in anterior half, rounded in middle, and strongly convergent caudad in almost straight lines, posterior angles marked and obtuse (Fig. 87). Punctation rather

dense and incised, sometimes sparser in the middle, ground with isodiametric microsculpture, pubescence very short, scarcely visible, depressions near posterior angles scarcely impressed.

Elytra wide (ratio length from scutellum to apex / combined width of elytra = 1.0 in male), strongly widened towards apex, rounded at apex in male, prolonged as in Fig. 88 in female, punctation denser and stronger than on pronotum, confluent on glossy ground, pubescence very short, almost invisible.

Abdomen glossy, microscutured, pubescence decumbent.

Sternite VII of the male triangularly emarginate in the middle as in Fig. 90.

Tibiae straight, not modified, tarsomere 5 of posterior tarsi shorter than 1-4 together.

Aedeagus as in Fig. 89.

Accessory sclerites of female as in Fig. 91, spermatheca as in Fig. 92.

Comparative notes. *Eusphalerum carolinensis* is distinct from the other species of the convexum group by the shape of lateral margins of pronotum (convergent caudad in the posterior half) and by the form of the female elytra (less prolonged at the suture). The shape of the posterior margin of the male abdominal sternite VII, triangularly emarginate in the middle, and of the aedeagus, with parameres strongly widened at apex, are characteristic.

Distribution. UNITED STATES: Kentucky, Missouri, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia (Map 1).

Natural history. Specimens were collected between 1000 and 1600 m, the only known host plant is *Sorbus* sp. (Rosaceae) as mountain ash. The adults were found mostly between May and July.

Groups with several setae at apex of parameres and lollipop-shaped spermatheca

rugulosum group

Diagnostic characters

Size intermediate (2.4-3.0 mm)

Medial margin of eyes with scarcely defined longitudinal wrinkles

Postocular carina present

Temples strongly convergent caudad

Postantennal depressions scarcely confluent with tentorial pits

Head not separated from neck by a clear line

Legs of male not modified

Elytra of female prolonged in a sutural lobe

Tarsomere 5 of posterior tarsi as long as 1-4 together

Sternite VII of male not modified

Sternite VIII of male without an elevated plate

Sternite of male genital segment not modified

Parameres of aedeagus with several apical setae not gathered in 2 groups

Aedeagus with spicules and thin spines

Spermatheca lollipop-shaped

Accessory sclerite of female reduced

This group includes a single species from northwestern North America that shares most characters with the pothos group (see below), but is clearly distinct by the elytra of the female, which are prolonged in a sutural lobe. This character is common in species with 2+2 apical setae of the parameres, but no other species with setose parameres and lollipop-shaped spermatheca possesses it.

Eusphalerum rugulosum (Mäklin, 1853)

Anthobium rugulosum Mäklin, 1853: 199; Fauvel, 1878: 199; Bernhauer and Schubert, 1910: 43.

Eusphalerum rugulosum (Mäklin); Moore and Legner 1975: 191; Herman 2001: 453.

Anthobium grayae Hatch, 1944: 102 **n. syn.**

Eusphalerum grayae (Hatch); Hatch 1957: 83; Moore and Legner 1975: 191; Herman 2001: 425.

Material examined (89 specimens)

Type material. *Anthobium rugulosum*: Holotype m Sitcha/Holmberg/Spec. typ./ *Anthobium rugulosum* m. Sitcha Hlbg./13/Zool. Mus. H:fors Spec. typ. No 2128 *Anthobium rugulosum* Mäkl./ *Eusphalerum rugulosum* (Mäklin, 1853) det. A Zanetti 2013/Holotype (red) (MZH). *Anthobium grayae*: Holotype m Seattle Wash. IV.30. 1930 M.H. Hatch (USNM).

Other material (87 specimens). **CANADA. Alberta** 1 f Bilby 22.06.1924 leg. Bryant (CNC); 20 mm 7 ff Onoway (12.07 km W), Sturgeon R., sweeping *Scirpus* & *Juncus* along riverbank 4.07.1979 leg. Roughley (KSEM); 2 mm Wandering River Campground 5/7.06.1985 leg. C. & A. v.Nidek (CNC); **British Columbia** 2 f Hope (12 mi.E) 2.06.1968 leg. Campbell & Smetana (CNC); 1 f Agassiz 13.05.1927 leg. R. Glendenning (CNC); 11 m 6 ff Anhal Lake (Hwy20) 38 km W Heckman Pass 1520 m 13/17.07.1988 leg. Burckhardt & Loebl (MHNG); 2 mm Glacier Nat. Pk., Rogers Pass, (10 mi.E) 17.06.1968 leg. Campbell & Smetana (CNC); 1 f Harrison Mills 2.06.1953 leg. S.D. Hicks (CNC); 3 mm 4 ff Hope (45 km NE) Zopklos Ridge View, Hwy 7 1270 m 10.07.1988 leg. Burckhardt & Loebl (MHNG); 1 m Hot Springs Area, Lakelse L. 14.06.1960 leg. B.S. Heming (CNC); 1 m Lac Le Jeune 26.06.1973 leg. H.J. Teskey (CNC); 1 f Manning PP, Beaver Pond trail 22.05.1988 leg. LeSage (CNC); 2 mm 4 ff Terrace, Lakelse 300 30.05.1960 leg. W.W. Moss (CNC); 7 mm 9 ff Terrace, Lakelse L. bog 14.06.1960 leg. J.G. Chillcott (CNC). **USA. Alaska** 1 f N. End Douglas Is., 15 km N Juneau *Pinus contorta* 9.06.1981 leg. Glossy (CNC); **Oregon** 1 m Klamath Co Oakridge (31 mi. SE) 24.06.1959 leg. Byers (KSEM);

Measurements. Head length: 0.33-0.35; head width: 0.57-0.61; pronotal length: 0.49-0.57; pronotal width: 0.70-0.77; elytral length: 1.16-1.42; elytral width: 1.14-1.18; length (clypeus to apex of elytra): 1.99-2.25; total length: 2.4-3.

Description. Habitus as in Fig. 96 and 97. Head brown, paler, yellowish, between antennae; pronotum yellowish brown with paler lateral margins, sometimes entirely brownish yellow; elytra yellowish; abdomen brown, somewhat paler at apex (male) or entirely brown (female); prosternum yellowish brown; metasternum dark brown, sometimes yellowish in female; legs and mandibles yellowish; maxillary palpi brown or rarely brownish yellow; antennae yellowish strongly darkened from antennomere 6.

Head with prominent eyes, postocular carina well marked; temples short, convergent caudad. Medial margin of eyes with microsculpture forming scarcely defined longitudinal wrinkles, postantennal depression deep, not confluent with the large tentorial pits, punctation rather dense, ground with strong isodiametric microsculpture, rather dull, neck not separated from head medially. Antennae rather elongate, antennomere 1 and 2 ovoid, 3 elongate, twice as long as wide, 4 and 5 each longer than wide, 6-10 subquadrate, progressively widened, 11 twice as long as wide, cylindrical at base, conical at apex.

Pronotum convex, with a medial furrow, moderately transverse (ratio width/length = 1.3), widest in front of middle, anterior margin slightly narrower than the posterior, lateral margins somewhat angulate in front of middle (Fig. 99), scarcely convergent caudad in straight line, posterior angles scarcely obtuse and well marked, punctation very dense and impressed, ground dull owing to the strong isodiametric microsculpture, pubescence extremely short, scarcely visible, depressions near posterior corners superficial, extending in front of middle.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), rounded at apex in male, prolonged at suture in a short lobe in female, moderately widened toward apex, punctation coarse, stronger than on pronotum, irregular and rather confluent, ground glossy, pubescence extremely short and scarcely visible.

Abdomen rather glossy, microsculpture superficial with decumbent pubescence.

Middle and posterior tibiae of male feebly curved, somewhat widened at apex, tarsomere 5 of posterior tarsi shorter than 1-4 together.

Aedeagus as in Fig. 98.

Accessory sclerites of female as in Fig. 100, spermatheca as in Fig. 101.

Comparative notes. *Eusphalerum rugulosum* is characterized by the very dense and impressed punctuation of pronotum, with dull ground. It is the only species with multi-setose parameres and lollipop-shaped spermatheca that has the female elytra prolonged at the suture.

Distribution. CANADA: Alberta, British Columbia; UNITED STATES: Alaska, Oregon (Map 8).

Natural history. The altitudinal range of the species is between 100 and 1500 m. The only reported habitat is river bank with *Scirpus* and *Juncus*. Captures from May and September, maximum in June.

caterinoi group

Diagnostic characters

Size small (1.7-2-2 mm)

Medial margin of eyes without wrinkles

Postocular carina present

Temples strongly convergent caudad

Head scarcely impressed

Head not separated from neck by a clear line

Legs of male not modified

Elytra of female truncate at apex

Tarsomere 5 of the posterior tarsi as long as 1-4 together

Sternite VII of male not modified

Sternite VIII of male without an elevated plate

Sternite of male genital segment modified, angulate apically

Parameres of aedeagus with several apical setae not gathered in 2 groups

Aedeagus with only spicules or thin spines

Spermatheca lollipop-shaped

Accessory sclerite of female reduced

This group includes a single small dark species from California characterized by the sternite of the male genital segment of the male modified, angulate apically.

***Eusphalerum caterinoi* n. sp.**

Material examined (18 specimens)

Holotype m 7 paratypes mm 6 paratypes ff California Lake Co Middletown (5 mi.NW) on Manzanita (*Arctostaphylos* sp.) 24.03.1964 leg. C.W. OBrien (CNC)

Other paratypes. USA. California 1 m Monterey Co UC Big Creek Reserve Gamboa Rd 36.0695°N 121.5875°W 28.03.2004 leg. Caterino (SBMNH); 1 f Monterey Co UC Big Creek Reserve Canogas Falls Tr. 36.0616°N 121.5545°W 27.03.2004 leg. Caterino (SBMNH); 1 f San Luis Obispo Co LPNF Cuesta Ridge 35.3661°N 120.6618°W 14.04.2005 leg. Caterino (SBMNH); 1 f Santa Cruz Co Santa Cruz (SBMNH);

Measurements. Head length: 0.22-0.29; head width: 0.49-0.55; pronotal length: 0.40-0.48; pronotal width: 0.59-0.70; elytral length: 0.92-0.98; elytral width: 0.74-0.88; length (clypeus to apex of elytra): 1.48-1.72; total length: 1.7-2.2.

Etymology. The species is dedicated to one of the collectors, specialist on Histeridae and Californian beetles Michael Caterino.

Description. Habitus as in Fig. 102. Head, pronotum and elytra brown, head somewhat darker than pronotum; abdomen dark brown; ventral surface brown; legs yellowish; antennae yellowish, darkened from antennomere 7.

Head with prominent eyes, postocular carina not much evident, temples convergent caudad in straight line, medial margin of eyes without longitudinal wrinkles. Ground of head scarcely impressed, postantennal depressions and tentorial pits superficial, confluent in 2 longitudinal depressed areas. Neck not separated from the head. Punctuation sparse and irregular, ground with superficial microsculpture. Antennae rather short, antennomere 1 and 2 ovoid, 2 scarcely elongate, 3 twice as long as wide, 4-6 subquadrate, 7-10 transverse, 11 less than twice as long as wide, conical at apex.

Pronotum transverse (ratio width/length = 1.5 on average), convex, widest just in front of middle, anterior margin slightly narrower than posterior, lateral margins rounded in middle, convergent caudad in almost straight line, very feebly sinuate in front of posterior angles that are well marked and scarcely obtuse. Punctuation sparse and superficial on rather irregular ground with isodiametric microsculpture, rather glossy, pubescence short but visible, depressions near posterior angles wide, extending in front of middle of lateral margins.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), scarcely widened towards apex, truncate at apex in both sexes, punctuation coarser and denser than on pronotum, confluent on glossy ground, pubescence short but visible.

Abdomen almost dull, microsculpture clearly visible, pubescence decumbent. Apex of abdomen in male curved ventrad.

Tibiae straight in both sexes, not modified, tarsomere 5 of posterior tarsi longer than 1-4 together.

Sternite of male genital segment modified as in Fig. 107 and 108, sternite VIII as in Fig. 106 and 108.

Aedeagus as in Fig. 103.

Accessory sclerites of female reduced (Fig. 104), scarcely visible, spermatheca as in Fig. 105.

Comparative notes. The small size, entirely dark color (except legs), presence of postocular carina (even if not much marked) and especially shape male sternite IX are distinctive. A confusion with the plate of the sternite VIII of some dark populations of *E. californicum* is possible because this structure covers the genital segment, which is therefore scarcely visible in ventral view. Size is anyway always smaller than in *E. californicum*. *Eusphalerum caterinoi* is most similar to *E. luteipes*, but that species has modified male middle tibiae, unmodified sternite 9 and pronotum without microsculpture. The aedeagi are also clearly different (Fig. 103 and 110).

Distribution. UNITED STATES: California coastal ranges (Map 8).

Natural history. All the specimens were collected at low altitude, Manzanita (*Arctostaphylos* sp., Ericaceae) is reported as host plant. Chaparral is probably the habitat of the species. All specimens were collected in early spring (March-April).

luteipes group

Diagnostic characters

Size small (1.7-2.1 mm)

Medial margin of eyes without wrinkles

Postocular carina present

Temples strongly convergent caudad

Head with scarce impressions

Head not separated from neck by a clear line

Middle tibiae of male modified

Elytra of female truncate at apex
Tarsomere 5 of posterior tarsi as long as 1-4 together
Sternite VII of male not modified
Sternite VIII of male without an elevated plate
Sternite of male genital segment not modified
Parameres of aedeagus with several apical setae not gathered in 2 groups
Aedeagus with only spicules or thin spines
Spermatheca lollipop-shaped
Accessory sclerite of female reduced

This group includes a single small blackish species from California characterized by the middle tibiae of the male being modified, widened in the middle and at the apex (Fig. 113).

***Eusphalerum luteipes* Zanetti n. sp.**

Material examined (6 specimens)

Holotype m 2 paratypes mm 2 paratypes ff California Ventura Co Murietta Trail LPNF 34.5009°N 119.3899°W 26.03.2006 leg. Caterino (SBMNH, 1 paratype cZan).

Other paratypes. USA. California 1 m 1 f (FMNH) [identified as *A. luteipes* Casey (recent label), manuscript name]. Doubtful identification: 2 ff G.P. Mackenzie, Mt. Wilson 2.05.1942 (FMNH).

Measurements. Head length: 0.20-0.24; head width: 0.46-0.49; pronotal length: 0.38-0.44; pronotal width: 0.59-0.64; elytral length: 0.79-0.88; elytral width: 0.75-0.81; length (clypeus to apex of elytra): 1.38-1.51; total length: 1.7-2.1.

Etymology. The name means with yellow legs (*luteus* = golden yellow, *pes* = foot in Latin). It is reported as "*lutipes*" (manuscript name of Casey) on a label of an ancient specimen (FMNH), and it has been maintained, though with a spelling correction.

Description. Habitus as in Fig. 109. Head, pronotum and elytra brown; abdomen dark brown; ventral thoracic surface dark brown; legs yellowish; antennae yellowish, darkened from antennomere 7, or entirely yellowish.

Head with prominent eyes, postocular carina evident, temples strongly convergent caudad in straight line, medial margin of eyes with microsculpture tending to form longitudinal wrinkles. Surface of head scarcely impressed, postantennal depressions and tentorial pits superficial, confluent in 2 longitudinal depressed areas. Neck not separated from the head. Punctuation rather dense and strong, ground glossy almost without superficial microsculpture on the disc. Antennae rather long, antennomere 1 and 2 ovoid elongate, 3 twice as long as wide, 4-6 longer than wide, 7 subquadrate, 8-10 transverse, 11 twice as long as wide, conical at apex.

Pronotum transverse (ratio width/length = 1.5 on average), convex, widest in the middle, anterior margin slightly shorter than posterior, lateral margins strongly rounded, posterior angles obtuse and scarcely marked. Punctuation dense and incised and superficial on glossy ground with very superficial microsculpture, pubescence very short scarcely visible, depressions near posterior angles superficial, extending in front of middle of lateral margins.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), scarcely widened towards apex, punctuation coarse and dense, somewhat confluent on glossy ground, pubescence very scarcely visible.

Abdomen rather glossy, microsculpture superficial, pubescence decumbent.

Male with widened mesofemora and mesotibiae curved and sunken in apical half, widened in an acute internal tip (Fig. 113), tarsomere 5 of posterior tarsi longer than 1-4 together.

Aedeagus as in Fig. 110.

Accessory sclerites of female reduced (Fig. 111), scarcely visible, spermatheca as in Fig. 112.

Comparative notes. The small size, entirely dark color, presence of postocular carina (though not marked), absence of pronotal microsculpture, and especially shape of male middle tibiae are distinctive. *Eusphalerum luteipes* is similar to *E. caterinoi*, but in the latter the male middle tibiae are unmodified, the pronotum is distinctly microsculptured, and the aedeagus is different (Fig. 103 vs. 110) in shorter parameres with less numerous setae and in internal structures.

Distribution. UNITED STATES: California (southern) (Map 8).

Natural history. The types were collected at low altitude, in a chaparral habitat, early in spring (March).

horni group

Diagnostic characters

Size small (1.8-2.3 mm)
 Medial margin of eyes without wrinkles
 Postocular carina present
 Temples strongly convergent caudad
 Postantennal depressions confluent with tentorial pits in 2 depressed areas
 Head not separated from neck by a clear line
 Legs of males not modified
 Elytra of female truncate at apex
 Tarsomere 5 of posterior tarsi as long as 1-4 together
 Sternite VII of male not modified in the middle
 Sternite VIII of male without an elevated plate
 Sternite of male genital segment not modified
 Parameres of aedeagus with several apical setae not gathered in 2 groups
 Aedeagus with only spicules or thin spines
 Spermatheca lollipop-shaped
 Accessory sclerite of female reduced

This group includes a single small yellowish species characterized by parameres of the aedeagus rod-shaped not widened at apex. It is also distinct in ecology (it lives in low warm areas) and distribution (southeastern states, an area where no other *Eusphalerum* is known).

Eusphalerum horni (Fauvel, 1878)

Anthobium horni Fauvel, 1878: 202; Bernhauer and Schubert 1910: 40; Blatchley 1910: 481.

Eusphalerum horni (Fauvel); Moore and Legner 1975: 191; Downie and Arnett 1996: 439; Herman 2001: 425.

Anthobium flavum Bernhauer, manuscript name.

Material examined (46 specimens)

Type material. Lectotype m [here designated] Géorgie [not original] / Coll. et det. A. Fauvel *Anthobium Horni* Fauv. R.I.Sc.N.B. 17.479 / Syntype / Lectotypus (red) / *Eusphalerum horni* (Fauvel, 1878) det. Zanetti 2010 (IRSNB); 1 paralectotype m 1 paralectotype f Géorgie / Missouri [additional locality] / (IRSNB). Two paralectotypes f from Missouri belong to other unidentified species.

Anthobium flavum Bernhauer, manuscript name: 1 f Georgia (FMNH)

Other material (42 specimens). **USA. Alabama** 1 m 4 ff Auburn 5.04.1973 leg. Kiteley (CNC); **Florida** 5 mm 2 ff Destin 2.03.1976 leg. Kiteley (CNC); 3 mm 4 ff Destin 30.03.1981 leg. Kiteley (CNC); **Georgia** 1 f (FMNH); 1 f Towns Co Brasstown Bald, 1 mi S litter under Rhododen. along stream 15.05.1981 leg. Watrous (FMNH); **Missouri** 1 m 4 ff Willard Mo. 11.05.1919 leg. Brower (ZMUC); **Oklahoma** 1 m Latimer Co Wilburn (5 mi. N) 10.04.1985 leg. Pakaluk (KSEM); 4 mm 1 f Latimer Co 00.04.1962 leg. Stephan (CNC); 5 mm 1 f Latimer Co 00.04.1988 leg. Stephan (KSEM); **South Carolina** 2 mm 1 f Florence 10.04.1963 leg. V.M. Kirk (FMNH); 1 m Florence flowers 06.04.1962 leg. V.M. Kirk (FMNH);

Measurements. Head length: 0.24-0.29; head width: 0.51-0.57; pronotal length: 0.38-0.42; pronotal width: 0.64-0.77; elytral length: 0.88-1.07; elytral width: 0.85-1.05; length (clypeus to apex of elytra): 1.53-1.92; total length: 1.8-2.3.

Description. Habitus as in Fig. 114. Head, pronotum and elytra yellowish; abdomen dark lightened from segment VII, apex (male) or all (female) yellowish; prosternum, metasternum, and legs yellowish; antennae yellowish, often feebly darkened from antennomere segment.

Head with prominent eyes, postocular carina well marked, temples short strongly convergent caudad. Medial margin of eyes with microsculpture formed by lengthened meshes, postantennal depressions large rather deep, often confluent with the tentorial pits forming 2 longitudinal depressions in front of ocelli, punctation very sparse, ground glossy with very superficial microsculpture, neck not separated from head. Antennae rather short, antennomere 1 and 2 segment ovoid, 2 smaller than 1, 3 elongate, twice as long as wide, 4 and 5 as long as wide, 6-10 transverse, progressively widened, 10 about twice as wide as long, 11 twice as long as wide, cylindrical in the proximal part, conical at apex.

Pronotum convex, without impressions, transverse (ratio width/length = 1.5 -1.6), widest at the middle, anterior margin slightly narrower than the posterior, lateral margins strongly rounded, posterior angles obtuse and rather rounded, punctation variable, usually very sparse and superficial, ground usually glossy with very superficial microsculpture, in some cases less glossy and more densely punctured, pubescence extremely short, scarcely visible, depressions near posterior angles marked, extended anteriad in front of middle.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), truncate at apex in both sexes, widened toward apex, punctation stronger than on pronotum, irregular and slightly confluent, ground glossy, pubescence extremely short and scarcely visible.

Abdomen rather glossy, microsculpture superficial with decumbent pubescence.

Tibiae of male straight, tarsomere 5 of posterior tarsi as long as 1-4 together.

Aedeagus as in Fig. 115.

Accessory sclerites of female as in Fig. 116, spermatheca as in Fig. 117.

Comparative notes. *Eusphalerum horni* differs clearly from the other small species with yellowish fore body by the strongly rounded lateral margins of pronotum with obtuse posterior angles and very scarce microsculpture. Also the widely yellowish apex of abdomen of the male is characteristic. The form of parameres of the aedeagus, rod-shaped not dilated at apex, is unique among North American species with multi-setose parameres. It recalls the Chinese species of the jizuense group (Zanetti, 2004).

Distribution. UNITED STATES: Alabama, Florida, Georgia, Missouri, Oklahoma, South Carolina (Map 1).

Natural history. All the records are from localities at very low altitudes, but macrohabitats and host plants are not known. Captures from March to May.

fenyesi group

Diagnostic characters

Size small (1.7-2.4, rarely 2.4)

Medial margin of eyes without wrinkles

Postocular carina present
 Temples strongly convergent caudad
 Postantennal depressions confluent with tentorial pits in 2 depressed areas
 Head not separated from neck by a clear line
 Legs of males not modified
 Elytra of female truncate at apex
 Tarsomere 5 of posterior tarsi as long as 1-4 together
 Sternite VII of male not modified
 Sternite VIII of male without an elevated plate
 Sternite of male genital segment not modified
 Parameres of aedeagus with several apical setae not gathered in 2 groups
 Aedeagus with only spicules or thin spines
 Spermatheca lollipop-shaped
 Accessory sclerite of female reduced

Species with setose parameres widened at apex and lollipop-shaped spermatheca without other peculiar distinctive characters are here divided in 2 provisional groups that are distinct only in body size, whose monophyly is yet to be demonstrated. The *fenyesi* group includes 4 small species that occur in various parts of North America.

***Eusphalerum fenyesi* (Bernhauer, 1912)**

Anthobium fenyesi Bernhauer, 1912: 679; Scheerpeltz 1933: 1033.

Eusphalerum fenyesi (Bernhauer); Hatch 1957: 82; Moore and Legner 1975: 190; Herman 2001: 423.

Material examined (99 specimens)

Type material. Holotype m 1 paratype m 1 paratype f Baring Wash. / July / *fenyesi* Bh. typus/cotypus (FMNH).

Other material (96 specimens). **CANADA. Alberta** 1 m 3 ff Edmonton (20 mi.E) 8.07.1968 leg. A.G. Raske (CNC); 1 f Waterton Lakes N.P., Chief Mt. Hwy. 4500 7.07.1980 leg. H.J. Teskey (CNC); 1 m 1 f Waterton Lakes N.P., Hwy. 6, 4.4 km SW Hwy. 5 pantrap 28.06.1980 leg. I.M. Smith (CNC); 1 m 1 f Waterton Lakes N.P., km 9 Chief Mt. Hwy. 4500 17.07.1980 leg. H.J. Teskey (CNC); 3 mm 3 ff Waterton Lakes N.P., km 9 Chief Mt. Hwy. 4500 23.07.1980 leg. H.J. Teskey (CNC); **British Columbia** 1 m Ft. Langley 21.06.1984 leg. N.M. Downie (FMNH); 10 mm 7 ff Bella Coola Hwy 20 0 m 14.07.1988 leg. Burckhardt & Loebl (MHNG); 6 mm 8 ff Bella Coola Valley, Cahooting Creek 500 - 800 m 16.07.1988 leg. Burckhardt & Loebl (MHNG); 1 m Garibaldi P.P., Cheakamus Lk 3000 20.07.1973 leg. A. & Z. & D. Smetana (CNC); 2 mm Golden Ears Prov. Pk., Alouette lake 23.06.1983 (FMNH); 13 mm 4 ff Hope (3 km S) Hwy 1, Silver Hope Creek 150 m 9.07.1988 leg. Burckhardt & Loebl (MHNG); 1 f Hope (45 km NE) Zopklos Ridge View, Hwy 5 127 m 10.07.1988 leg. Burckhardt & Loebl (MHNG); 1 m Kamloops (NW of) jct. Jameson Ck. Rd & Laines Ck. Rd. flowers *Lupinus arcticus* 20.06.1966 leg. Munroe (CNC); 2 mm 1 f Manning PP, Skagit Riv. 21.06.1988 leg. LeSage (CNC); 1 m Manning PP, Rhododendron Trail sweep Rhododendron flowers 20.06.1988 leg. LeSage (CNC). **USA. Montana** 1 m Glacier Nat. Pk. 13.07.1930 leg. Leach (CNC); 1 m Glacier Nat. Pk. 24.07.1946 leg. E.S. Booth (FMNH); **Oregon** 4 mm 1 f Douglas Co Reedsport (5 km S) 7.06.1984 leg. R. Danielsson (MZLU); 10 mm 1 f Linn Co Idanha (15 km E) 16.06.1984 leg. Danielsson (MZLU); 2 mm Linn Co Idanha (15 km E) 16.06.1984 leg. Danielsson (MZLU); 1 m Marion Co Breitenbach (2 km E) 17.06.1984 leg. R. Danielsson (MZLU); **Washington** type m 1 paratype m 1 paratype f Baring VII (FMNH); 1 m Clallam Co Olympic NP, Lake Creek at Hurricane Ridge Rd. 625 m mixed conifer forest on *Fragaria* flowers 09.07.1988 leg. A. Newton M. Thayer (FMNH);

Measurements. Head length: 0.22-0.25; head width: 0.48-0.53; pronotal length: 0.38-0.44; pronotal width: 0.61-0.64; elytral length: 0.86-0.99; elytral width: 0.85-0.88; length (clypeus to apex of elytra): 1.49-1.59; total length: 1.8-2.4.

Description. Habitus as in Fig. 118. Head, pronotum and elytra yellowish; abdomen dark brown, somewhat paler at apex (male) or entirely yellowish, very feebly darkened at apex (female); prosternum yellowish; metasternum at least partly brown; legs yellowish; antennae yellowish, more or less darkened at apex, often entirely yellowish.

Head with prominent eyes; postocular carina well marked; temples short, convergent caudad. Medial margin of eyes with microsculpture formed by slightly lengthened meshes, postantennal depression large, not very deep, confluent with small, rounded tentorial pits, forming 2 superficial longitudinal depressions in front of ocelli; punctation very superficial and sparse; ground with isodiametric microsculpture; neck scarcely separated from head. Antennae rather short, antennomere 1 and 2 ovoid, 3 elongate, twice as long as wide, 4 and 5 longer than wide, 6 subquadrate, 7-10 transverse, 10 less than twice as wide as long, 11 twice as long as wide, cylindrical in the proximal part, conical at apex.

Pronotum not very convex, without impressions, transverse (ratio width/length = 1.5-1.6), widest slightly in front of middle, anterior margin slightly narrower than posterior, lateral margins rounded, posterior angles slightly obtuse and well marked, punctation very sparse and superficial, ground with isodiametric microsculpture, pubescence extremely short, scarcely visible, depressions near posterior angles not very marked, extending anterad in front of middle.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), truncate at apex in both sexes, clearly widened toward apex, punctation much stronger than on pronotum, irregular and scarcely confluent, ground glossy, pubescence extremely short and scarcely visible.

Abdomen rather glossy, microsculpture superficial with decumbent pubescence.

Tibiae straight in both sexes, except posterior very slightly curved in male, tarsomere 5 of posterior tarsi somewhat longer than 1-4 together.

Aedeagus as in Fig. 119.

Accessory sclerites of female as in Fig. 120, spermatheca as in Fig. 121.

Comparative notes. *Eusphalerum fenyesi*, *E. orientale*, *E. thayeranum* and *E. margaretae* are difficult to distinguish. Having the metasternum at least partly brown usually allows distinction of *E. fenyesi* from *E. thayeranum*, which lives in the same regions, but only the aedeagus is surely diagnostic, by lack of 2 large long spines. The eastern *E. orientale* is recognizable by the extremely sparse and superficial punctation of the pronotum and the presence of 2 rows of fine spicules on the internal sac of the aedeagus. The only certain difference from *E. margaretae*, known from a single specimen from Tennessee, is in the shape of the aedeagus, especially the internal sac.

Distribution. CANADA: Alberta, British Columbia; UNITED STATES: Montana, Oregon, Washington (Map 3).

Natural history. The species was found between sea level and 1400 m. The habitat is scarcely documented, the only record is from mixed conifer forest. Recorded host plants: *Lupinus arcticus* S. Wats. (Fabaceae), *Rhododendron* sp. (Ericaceae), *Fragaria* sp. (Rosaceae). Captures in June and July.

***Eusphalerum orientale* (Bernhauer, 1912)**

Anthobium orientale Bernhauer, 1912: 678; Scheerpeltz 1933: 1036; Hatch 1944: 101.

Eusphalerum orientale (Bernhauer); Moore and Legner 1975: 191; Herman 2001: 444.

Anthobium frosti Bernhauer, 1928: 40 **n. syn.**; Scheerpeltz, 1933: 1033.

Eusphalerum frosti (Bernhauer); Moore and Legner 1975: 190.

Material examined (506 specimens)

Type material. Lectotype m (without head and pronotum) [**here designated**, labelled as typus, not designated in the original description] Fall/N.H./Chicago NHMus. Bernhauer Collection/orientale Brh Typus, 1 paralectotype m Fall/N.H./Chicago NHMus. Bernhauer Collection/orientale Brh Cotypus; 1 paralectotype m Mass/Fall/orientale Brh. Cotypus/Chicago NHMus. Bernhauer Collection; 1 paralectotype m Mt. Plst. Hse. N.H. Dr. A. Fenyes/als convexum Fvl von Fenyes/orientale Brh. Cotypus/ Chicago NHMus. Bernhauer Collection (FMNH).

Other material (502 specimens). **CANADA. Manitoba** 1 f Aweme N. Criddle 26.06.1919 (CNC); 4 mm 1 f Angusville 20.07.1954 leg. Brooks & Wallis (CNC); 1 m 4 ff Aweme 3.07.1904 leg. N. Criddle (CNC); 6 mm 3 ff Int. Peace Gardens, Turtle Mtn. For. Res. 17.07.1958 leg. J.G. Chillcott (CNC); **New Brunswick** 4 mm 8 ff Restigouche Co Mt. Carleton Pr. Pk., Mt. Carleton Trail 16.07.1980 leg. I.M. Smith (CNC); 2 mm Restigouche Co Mt. Carleton Prov. Pk., Mt. Carleton Trail 16.07.1980 leg. Smith (CNC); 2 mm 1 f Acadia Exp. Farm 7/18.07.1970 leg. Yoshimoto (CNC); 1 f Burpee Game Refuge 17.06.1981 leg. L. LeSage (CNC); 1 m Coles Island sweeping edge forest 8.07.1985 leg. LeSage (CNC); 1 m 2 ff Fredericton 29.06.1928 leg. W.J. Brown (CNC); 3 mm 1 f Fredericton 29.06.1928 leg. Brown (CNC); 4 mm 4 ff Fredericton (13 mi.E) 13.07.1970 leg. D.E. Bright (CNC); 10 mm 1 f Kouchibouguac N.P. 12.07.1977 leg. M. Ivanochko (CNC); 7 mm 7 ff Kouchibouguac N.P. 7.07.1978 leg. Munro (CNC); 3 mm 2 ff Kouchibouguac N.P. 18.07.1978 leg. Miller (CNC); 1 f Penobsquis sweeping edge for. alders, *Kalmia*, *Solidago Spiraea* 8.07.1985 leg. LeSage (CNC); 5 mm 2 ff Plaster Rock 6.07.1970 leg. D.E. Bright (CNC); **Nova Scotia** 1 f Cumberland Co 17.07.1994 leg. Kehler (cZan); 1 f Guysborough Co. 20.07.1994 leg. Kehler (cZan); 1 f Cape Breton H.N.P., Cheticamp River sweeping Salix 12.07.1983 leg. LeSage (CNC); 3 mm 2 ff Cape Breton H.N.P., Lone Shieling PG729861 malaise 4.07.1983 leg. R. Vockeroth (CNC); 1 f Cape Breton H.N.P., Lone Shieling along Grande Anse River sweeping vegetation 8.07.1983 leg. LeSage (CNC); 8 mm 7 ff Cape Breton H.N.P., Lone Shieling, TP41LL107 on flowers *Heracleum maximum* leg. L. LeSage (CNC); 2 ff Cape Breton H.N.P., MacKenzie Mtn. pans 19.06.1983 leg. Bousquet (CNC); 1 m Cape Breton H.N.P., South Harbour PG960944 mixed woods, sand bar 11/21.07.1983 leg. L. Masner (CNC); 1 m 1 f Cape Breton H.N.P., Still Brook QG034838 temporary stream, spruce forest 5.07.1983 leg. L. LeSage (CNC); 1 f Cumberland Co Fox River 17.07.1994 leg. Kehler (cZan); 1 f Guysborough Co. Upper Smithfield 20.07.1994 leg. Kehler (cZan); 2 mm Hants Co Daisy 4.7.1931 leg. W.H. Brittain (FMNH); **Ontario** 1 f Hasting Co 9.06.1935 leg. Brimley (CNC); 1 m Muskoka Co Gull Lake 11.06.1921 leg. H.S. Parish (CNC); 5 mm 2 ff Peterborough Co 3.07.1950 leg. Brimley (CNC); 1 f Black Sturgeon Lake 15.08.1956 leg. Lindberg (CNC); 1 f Lake Superior Prov. Pk. Frater 9.06.1973 leg. Campbell & Perry (CNC); 1 f Mt. Ste. Anne 2000' 25.07.1971 leg. Beckey (CNC); 1 m 1 f North Bay 19.06.1963 leg. Gagne (CNC); 1 m 1 f Ottawa, Upper Duck Island n 5.07.1981 leg. Ward (CNC); 1 f Rauny R. Distr. 27.07.1924 leg. Brimley (CNC); **Québec** 1 m 1 f Gaspé O. Co Mt. Albert sommet N 1000 19.07.1985 leg. Génier & Klimaszewski (CNC); 2 mm 2 ff Levis Co St-Rédempteur 23.06.1981 leg. L. LeSage (CNC); 3 ff Gaspésie Parc, Lac St. Anne 1500 12.07.1972 leg. J.M. & B.A. Campbell (CNC); 1 m Johnville, near Sphagnum bog 1.07.1980 leg. D.F.J. Hilton (CNC); 2 mm 1 f Knowlton 6.07.1927 leg. W.J. Brown (CNC); 1 m 1 f Knowlton 4.07.1929 leg. L.J. Milne (CNC); 5 mm 2 ff Mont Albert, Parc Gaspésie 2800 11.07.1972 leg. J.M. Campbell (CNC); 1 m 1 f Mont-St.-Pierre 21.07.1972 leg. J.M. Campbell (CNC); 1 m Natashquan 9.07.1929 leg. W.J. Brown (CNC); 1 m Parke Reserve, Kam. Co. (?) 11.07.1957 leg. G.E. Shewell (CNC); 1 m Rimouski 22.06.1981 leg. L. LeSage (CNC); 2 mm 2 ff Rivière-a-Claude (4 mi. S) 200 18.07.1972 leg. J.M. Campbell (CNC); 2 mm Thunder River 27.06.1930 leg. W.J. Brown (CNC); 1 m Baie Comeau 24.07.1971 leg. Becker (CNC); 3 mm 2 ff Black Lake Parc Gatineau *Viburnum lentago* 5.07.1974 leg. Sexton (CNC); 1 m 2 ff Gatineau Park, Lac Bourgeois 8.06.1969 leg. Smetana (MHNG); 1 m Johnville 17.06.1987 leg. Levesque (CNC); 1 f Knowlton 28.06.1929 leg. Milne (CNC); 1 m Knowlton 6.07.1927 leg. Brown (CNC); 3 mm 2 ff Lousville Gatineau 23.06.1973 leg. Sexton (CNC); 6 mm 1 f Mont Albert Parc Gaspésie 1000' 9.07.1972 leg. Campbell (CNC); 1 m 1 f Mont Tremblant Park 29.07.1971 leg. Kiteley (CNC); 1 f Montreal 23.06.1977 leg. Kiteley (CNC) call; 2 mm 13 ff St. Redempteur 23.06.1981 leg. LeSage & *Kalmia* (CNC). **USA. Maine** 21 mm 17 ff Oxford Co Gilead (S of), 0.4 mi. N Evans Notch 450 m *Betula* *Acer* forest on flowers *Rubus* 12/15.06.1981 leg. A. Newton M. Thayer (FMNH); 7 mm 6 ff Oxford Co Gilead (S of), 0.4 mi. NE Evans Notch 450 m *Betula* *Acer* forest, on flowers *Rubus* 13/15.06.1981 leg. A. Newton and M. Thayer (FMNH); 3 mm 3 ff Millinocket

stream (FMNH); 8 mm 3 ff Mt. Katahdin 1100 4636 29.06/5.07.1968 leg. D.R. Oliver (CNC); 4 mm 2 ff Newry 9.07.1966 leg. Kiteley (CNC); **Massachusetts** 1 paratype m [no locality] Fall (FMNH); **Michigan** 2 mm 2 ff Isle Royale Feldtmann Lake (0-3 mi.W) Feldtmann Ridge on flowers *Rubus parviflorus* 30.06.1975 leg. J.S. Slade (FMNH); 1 f Horn Mt Club (?) leg. Van Dyke (CNC); 1 m Hrn. Mtn. Club 6 (CNC); 1 f Marquette 00.06.1928 ; **Minnesota** 1 m Crow Wing Co Brainhard 23.06.1958 leg. A. Raske (FMNH); 1 m Itasca State Pk. Rose [*Rosa* sp. ?] 01.07.1960 (FMNH); 1 m 1 f Itasca State Pk. 1.07.1960 (FMNH); 1 f Brainard, Crow Wing 20.06.1958 leg. Raske (FMNH); **New Hampshire** 1 paratype m Mt. Plst. Hse. leg. A. Fenyes (FMNH); 3 mm Carroll Co Basin Trail, N of N. Chatham 240 m mixed hardwood *Tsuga* forest, on flowers *Viburnum cassinoides* 2/15.06.1981 leg. A. Newton and M. Thayer (FMNH); 8 mm 3ff Carroll Co North Chatham (N of), Basin Trail 200 240 m mixed hardwood *Tsuga*, on flowers *Rubus* 13/15.06.1981 leg. A. Newton and M. Thayer (FMNH); 11 mm 8 ff Coos Co Jefferson Notch 910 m *Picea Abies Betula* forest window trap 14/31.07.1982 leg. A. Newton M. Thayer (FMNH); 14 mm 7 ff Coos Co Jefferson Notch (0.3 mi.S) 895 m *Picea Abies*, window trap 14/31.07.1982 leg. A. Newton and M. Thayer (FMNH); 1 m Coos Co Jefferson Notch (0.3 mi.S) 895 m *Picea Abies* forest window trap 23/27.07.1980 leg. A. Newton M. Thayer (FMNH); 3 m 3 f Coos Co Jefferson Notch (0.7 mi.S) 880 m flowers *Achillea millefolium* 31.07.1982 leg. A. Newton M. Thayer (FMNH); 3 mm 7 ff Coos Co Jefferson Notch (3.1 mi.S) 620 m *Picea Abies Betula Acer* forest, window trap 14/31.07.1982 leg. A. Newton and M. Thayer (FMNH); 1 m 1 f Coos Co Jefferson Notch (3.1 mi.S) 620 m *Picea Abies Betula Acer* forest 23/27.07.1980 leg. A. Newton and M. Thayer (FMNH); 2 mm 3 ff Coos Co Jefferson Notch (5 mi.N) 450 m *Acer* mixed hardwood *Tsuga Picea* forest, window trap 14/31.07.1982 leg. A. Newton and M. Thayer (FMNH); **3** m Coos Co White Mts. N For, Sugarloaf Cpgd. 490 m mixed conifer hardwood forest, window trap 23/27.07.1980 leg. A. Newton and M. Thayer (FMNH); 13 mm 7 ff Coos Co White Mts. N For, Sugarloaf Cpgd. 490 m on flowers *Spiraea* 24.07.1980 leg. A. Newton and M. Thayer (FMNH); 1 f Grafton Co Bartlett, Sawyer River 1600 sphagnum moss, water edge, VOUCHER ASSOCIATED WITH LARVA 25.07.1974 leg. A. Newton and M. Thayer (FMNH); 9 mm 7 ff Grafton Co Bartlett, Sawyer River 530 550 m on flowers *Spiraea* 25.07.1980 leg. A. Newton and M. Thayer (FMNH); 15 mm 12 ff Carroll Co North Chatham (N of), Basin Trail 200 - 240 m mixed hardwood *Tsuga*, on flowers *Rubus* 13/15.06.1981 leg. A. Newton M. Thayer (FMNH); 26 mm 20 ff Carroll Co North Chatham (N of), Basin Trail 200 - 240 m mixed hardwood *Tsuga*, on flowers *Viburnum cassinoides* 13/15.06.1981 leg. A. Newton M. Thayer (FMNH); lectotype m (without head and pronotum) 1 paralectotype m [no locality] Fall (FMNH); **North Carolina** 2 mm 1 f Mitchell Co Roan Mt. 25.06.1967 leg. Greenbaum (KSEM); 1 m Black Mountains 27.06.1930 (FMNH); 1 f Boone 12.05.1970 leg. Ashe (KSEM); 1 m Roan Mt. 25.07.1972 leg. Glover (KSEM).

Measurements. Head length: 0.22-0.29; head width: 0.48-0.55; pronotal length: 0.42-0.49; pronotal width: 0.61-0.72; elytral length: 0.98-1.09; elytral width: 0.81-1.07; length (clypeus to apex of elytra): 1.60-1.85; total length: 1.7-2.2.

Description. Habitus as in Fig. 122. Head, pronotum and elytra yellowish; abdomen entirely dark brown (male) or yellowish, somewhat darkened in apical segments (female); prosternum, metasternum, legs yellowish; antennae yellowish, feebly darkened from antennomere 7.

Head with prominent eyes, postocular carina well marked, temples short convergent caudad. Medial margin of eyes with microsculpture formed by lengthened meshes; postantennal depressions large, not very deep, often confluent with the tentorial pits to form 2 superficial longitudinal depressions in front of ocelli; punctation very superficial and very sparse, ground rather dull owing to the dense isodiametric microsculpture, neck not separated from head. Antennae rather short, antennomere 1 and 2 ovoid, 2 smaller than 1, 3 elongate, twice as long as wide, 4 and 5 longer than wide, 6 subquadrate, 7-10 transverse, 10 about twice as wide as long, 11 twice as long as wide, cylindrical in the proximal part, conical at apex.

Pronotum rather flat, without impressions, transverse (ratio width/length = 1.5 -1.6), widest slightly in front of middle, anterior margin slightly narrower than posterior, lateral margins rounded, posterior angles scarcely obtuse and not much marked, punctation extremely sparse and superficial, ground rather dull owing to isodiametric microsculpture, pubescence extremely short, scarcely visible, depressions near posterior angles not much marked, extended anteriorly in front of middle.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), truncate at apex in both sexes, clearly widened toward apex, punctation much stronger than on pronotum, irregular and scarcely confluent, ground glossy, pubescence extremely short and scarcely visible.

Abdomen rather glossy, microsculpture superficial with decumbent pubescence.

Posterior tibiae of male feebly curved, tarsomere 5 of posterior tarsi as long as 1-4 together.

Aedeagus as in Fig. 123, internal sac with 2 rows of fine spicules.

Accessory sclerites of female as in Fig. 124, spermatheca as in Fig. 125.

Comparative notes. The extremely sparse and superficial punctation of the pronotum, and the presence of 2 rows of fine spines in the internal sac of the aedeagus distinguish *E. orientale* from the similar species (*E. fenyessi*, *E. thayeranum*, *E. margaretae*). Its distribution seems not to overlap with those 3 species.

Distribution. CANADA: Manitoba, New Brunswick, Nova Scotia, Ontario, Quebec; UNITED STATES: Maine, Massachusetts, Michigan, Minnesota, New Hampshire, North Carolina, (Map 3),

Natural history. The species was found at low altitude, between 200 and 900 m. It lives mostly in forest habitats (e.g. *Acer-Tsuga-Picea* forest, *Betula-Acer* forest, *Picea-Abies-Betula-Acer* forest, *Picea-Abies* forest), but also in *Sphagnum* bogs. Reported host plants: *Achillea millefolium* L. (Asteraceae), *Heracleum maximum* Bartram (= *H. lanatum*) (Apiaceae), *Kalmia* sp. (Ericaceae), *Rubus parviflorus* Nutt. (Rosaceae), *Solidago* sp. (Asteraceae), *Spiraea* sp. (Rosaceae), *Viburnum cassinoides* (L.) Torr. & A. Gray, *Viburnum lentago* L. (Adoxaceae). Captures mostly in June and July.

Eusphalerum thayeranum Zanetti n. sp.

Material examined (93 specimens)

Holotype m 4 paratypes mm 2 paratypes ff British Columbia Garibaldi P.P., Cheakamus Lk. 3000 20.07.1973 leg. A. & Z. & D. Smetana (CNC)

Other paratypes. CANADA. Alberta 1 m Ponaka (2 mi.S), Battle R. 6.08.1976 leg. J.M. Campbell (CNC); 1 m Waterton Lks. NP, Crypt Lake Tr. 4500' 22.06.1980 leg. JM Campbell (CNC); 1 m Waterton N.P., Lineham Creek Tr. 5900 6500 3.08.1976 leg. J.M. Campbell (CNC); 4 mm 2 ff Waterton N.P., Rowe Creek 5460 2.08.1976 leg. J.M. Campbell (CNC); 4 ff Waterton N.P., Rowe Creek 5400' 4.08.1976 leg. JM Campbell (CNC); **British Columbia** 1 m Courtney, Forbidden Plateau near Courtney Lookout 25.07.1979 leg. I.M. Smith (CNC); 3 mm 4 ff Klimpton Cr., Kootenay N.P. 4000 21.07.1971 leg. J.M. & B.A. Campbell (CNC); 3 mm 6 ff Kootenay N.P., Kindersley Pass 7000 23.07.1971 leg. J.M. & B.A. Campbell (CNC); 10 mm 11 ff Manning Pr. Pk, Rhododendron Flats *Rhododendron* flowers 21.06.1988 leg. J.M. Campbell (CNC); 1 m Manning Prov. Park, Sumallo Grove (Hwy5a) 650 m 10.07.1988 leg. Burckhardt & Loeb (MHNG); 1 m 3 f Manning Prov. Pk., Sumallo Grove *Cornus* flower 21.06.1988 leg. J.M. Campbell (CNC); 10 mm 10 ff Mount Cain 27.07/10.08.1996 leg. Winchester (cZan); 3 mm Osoyoos grass clippings 24.06.1988 leg. J.M. Campbell (CNC); 2 mm 2 ff Silver Star Prov. Pk. 6200 ground squirrel burrows (1 spec.) 8.08.1973 leg. R.H. Parry (CNC); 1 m 1 f Squamish, Diamond Head Trail 3500 10.08.1953 leg. G.J. Spencer (CNC); 1 m 2 ff Squaw Valley, nr. Mabel Lake 5.08.1982 leg. R. Baranowski (MZLU); 3 mm 6 f Wells Gray Prov. Pk., Falls Ck 30.06.1988 leg. J.M. Campbell (CNC); 10 mm 10 ff Mt. Cain 50°13'N 126°21'W 13.07/27.07.1997 leg. Corkum (cZan). **USA. Idaho** 1 m Bonner Co Sandpoint 20.06.1971 leg. N. M. Downie (FMNH); **Indiana** 1 m Tippecanoe Co 15.05.1976 leg. N.M. Downie (FMNH) [doubtful record]; **Maine (?)**. 1 m Bascea (?) 2000 m 18.07.19?? (interrogation marks in the label) leg. N. M. Downie (FMNH) [doubtful record]; **Oregon** 1 m Clackamas Co jct US26 Ore 35 (1.3 m E) 3900 ft on flowers *Achlys triphylla* 12.07.1975 leg. A. Newton and M. Thayer (FMNH); 1 m 1 f Clackamas Co jct US26 Ore 35 (1.3 m E) 3900 on flowers *Lupinus* 12.07.1975 leg. A. Newton and M. Thayer (FMNH); 5 mm 16 ff Clackamas Co Mt. Hood N.F., Still Creek Cmpg. 4000' 31.07.1979 leg. JM & BA Campbell (CNC); 1 m Wallawa Co Eagles Cap Prim. Area, Moccasin Lk. 7500' 29.07.1981 leg. JM Campbell (CNC);

1 f Mt. Hood, Timberline Lodge Rd. 4800' 29.07.1979 leg. JM & BA Campbell (CNC); **Washington** 2 mm Clallam Co Olympic N.P., Hurricane Ridge Rd 625 m mixed coniferous forest, on flowers *Rubus parviflora* 9.07.1988 leg. A. Newton and M. Thayer (FMNH); 2 mm 2 ff Clallam Co Olympic N.P., Lake Creek at Hurricane Ridge Rd., 625 m mixed conifer forest, on flowers *Clintonia uniflora* 9.07.1988 leg. A. Newton and M. Thayer (FMNH); 9 mm 11 ff Whatcom Co Mount Baker 29.07.1931 leg. M. Sanderson (KSEM); 3 mm 1 f Whatcom Co Mt. Baker 1500 m 19.06.1987 leg. W.M. Downie (FMNH).

Measurements. Head length: 0.20-0.25; head width: 0.42-0.55; pronotal length: 0.35-0.64; pronotal width: 0.42-0.70; elytral length: 0.85-1.12; elytral width: 0.79-1.03; length (clypeus to apex of elytra): 1.42-1.85; total length: 1.8-2.4.

Etymology. The species is dedicated to one of its collectors, Margaret K. Thayer, specialist of Staphylinidae Omaliinae, who has helped me greatly in the study of North American *Eusphalerum*.

Description. Habitus as in Fig. 126. Head, pronotum and elytra yellowish; abdomen dark brown, somewhat paler at apex (male) or entirely yellowish, very feebly darkened at apex (female); prosternum, metasternum, and legs yellowish; antennae yellowish, more or less darkened from antennomere 7, often entirely yellowish.

Head with prominent eyes; postocular carina well marked; temples short, convergent caudad. Medial margin of eyes with microsculpture formed by slightly lengthened meshes; postantennal depression large, not very deep, confluent with the small, rounded tentorial pits forming 2 superficial longitudinal depressions in front of ocelli; punctation very superficial and sparse; ground with isodiametric microsculpture; neck scarcely separated from head. Antennae rather short, antennomere 1 and 2 ovoid, 3 elongate, twice as long as wide, 4 and 5 longer than wide, 6 subquadrate, 7-10 transverse, 10 less than twice as wide as long, 11 twice as long as wide, cylindrical in the proximal part, conical at apex.

Pronotum not very convex, without impressions, transverse (ratio width/length = 1.4-1.5), widest slightly in front of middle, anterior margin slightly narrower than posterior, lateral margins rounded, posterior angles scarcely obtuse and well marked, punctation very sparse and superficial, ground with isodiametric microsculpture, pubescence extremely short, scarcely visible, depressions near posterior angles not much marked, extended anteriorly in front of middle.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), truncate at apex in both sexes, clearly widened toward apex, punctation much stronger than on pronotum, irregular and scarcely confluent, ground glossy, pubescence extremely short and scarcely visible.

Abdomen rather glossy, microsculpture superficial with decumbent pubescence.

Tibiae straight in both sexes, not modified, tarsomere 5 of posterior tarsi as long as 1-4 together.

Aedeagus as in Fig. 127, internal sac with 2 long spines.

Accessory sclerites of female as in Fig. 128, spermatheca as in Fig. 129.

Comparative notes. *Eusphalerum thayeranum* is very similar to *E. fenyesi* in external characters, but metasternum is usually yellowish instead of brownish. The presence of 2 long spines in the internal sac of the aedeagus is very characteristic; those of *E. margaretae* are much shorter.

Distribution. CANADA: Alberta, British Columbia; UNITED STATES: Idaho, Indiana, Oregon, Washington (Map 3). The record from Indiana (Tippecanoe) is questionable, as it is outside the main geographical range of the species and the area does not possess the normal ecological conditions in which *E. thayeranum* lives. Its collector, N. M. Downie, lived and collected for decades in Tippecanoe Co., but also collected extensively in the western USA, so a label mixup may have occurred. The Maine(?) record is likewise doubtful.

Natural history. The species was collected in a wide altitudinal range, between 600 and 2300 m. Reported host plants: *Rhododendron* sp. (Ericaceae), *Cornus* sp. (Cornaceae), *Achlys triphylla* (Sm.) DC. (Berberidaceae), *Lupinus* sp. (Fabaceae), *Rubus parviflorus* Nutt. (Rosaceae), *Clintonia uniflora* (Menzies ex Schult. & Schult.f.) Kunth (Liliaceae). The only macrohabitat reported on the labels is mixed conifer forest. Most captures between June and August.

***Eusphalerum margaretae* Zanetti n. sp.**

Material examined (1 specimen)

Holotype m Tennessee Sevier Co S. Gatlinburg 24.05.1977 leg. M. Thayer.

Measurements. Head length: 0.22; head width: 0.44; pronotal length: 0.44; pronotal width: 0.57; elytral length: 0.88; elytral width: 0.83; length (clypeus to apex of elytra): 1.69; total length: 1.8.

Etymology. The species, like *E. thayeranum* n. sp., is dedicated to its collector, Margaret K. Thayer, specialist of Staphylinidae Omaliinae.

Description. Habitus as in Fig. 130. Head, pronotum and elytra yellowish; abdomen brown, somewhat paler at apex; prosternum yellowish, metasternum brownish, legs yellowish; antennae yellowish, slightly darkened from antennomere 7.

Head with prominent eyes, postocular carina well marked; temples short, convergent caudad. Medial margin of eyes with microsculpture formed by meshes slightly lengthened, postantennal depression large not much deep, confluent with the rounded tentorial pits forming 2 superficial longitudinal depressions in front of ocelli, punctation very superficial and sparse, ground with isodiametric microsculpture, neck scarcely separated from head. Antennae rather short, antennomere 1 and 2 ovoid, 3 elongate, twice as long as wide, 4 and 5 longer than wide, 6 subquadrate, 7-10 transverse, 10 less than twice as wide as long, 11 twice as long as wide, cylindrical in the proximal part, conical at apex.

Pronotum not much convex, without impressions, transverse (ratio width/length = 1.45), widest slightly in front of middle, anterior margin slightly narrower than posterior, lateral margins rounded, posterior angles scarcely obtuse and well marked, punctation very sparse and superficial, surface with isodiametric microsculpture, pubescence extremely short, scarcely visible, depressions near posterior angles distinct, extending anterad in front of middle.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), truncate at apex, clearly widened toward apex, punctation much stronger than on pronotum, irregular and scarcely confluent, ground glossy, pubescence extremely short and scarcely visible.

Abdomen rather glossy, microsculpture superficial, with decumbent pubescence.

Tibiae straight, not modified, tarsomere 5 of posterior tarsi as long as 1-4 together.

Aedeagus as in Fig. 131, internal sac with 2 short spines.

Female unknown.

Comparative notes. *Eusphalerum margaretae* is close to *E. thayeranum*, which has different shaped spines in the internal sac of the aedeagus. It is also similar to *E. fenyesei*, but the latter lacks the spines of the internal sac. The unique known specimen has a brown metasternum (yellowish in *E. thayeranum*). *Eusphalerum orientale* is distinguished by the even more sparse and superficial punctation of the pronotum, and by the presence of 2 rows of fine spines in the internal sac of the aedeagus.

Distribution. UNITED STATES: Tennessee (Map 3).

Natural history. The specimen was collected in May.

pothos group**Diagnostic characters**

Size large (2.0-3.4, rarely smaller)

Medial margin of eyes without wrinkles

Postocular carina present

Temples strongly convergent caudad

Postantennal depressions confluent with tentorial pits in 2 depressed areas

Head not separated from neck by a clear line
Legs of males not modified
Elytra of female truncate at apex
Tarsomere 5 of posterior tarsi as long as 1-4 together
Sternite VII of male not modified
Sternite VIII of male without an elevated plate
Sternite of male genital segment not modified
Parameres of aedeagus with several apical setae not gathered in 2 groups
Aedeagus with copulatory sclerites or with spicules or thin spines
Spermatheca lollipop-shaped
Accessory sclerite of female reduced

As noted above, species with setose parameres widened at apex and lollipop-shaped spermatheca without other peculiar distinctive characters are here divided in 2 provisional groups that are distinct only in body size, whose monophyly is yet to be demonstrated. The pothos group includes 5 large species that occur mostly in western coastal states and provinces. Only *E. pothos* has a transcontinental distribution in North America. This group is closely related to the crebrepunctatum group from China and Nepal.

***Eusphalerum punctatum* (Casey, 1894)**

Anthobium punctatum Casey, 1894: 429; Bernahauer and Schubert 1910: 42.

Eusphalerum punctatum (Casey); Moore and Legner 1975: 191; Herman 2001: 450.

Material examined (42 specimens)

Type material. Lectotype m [here designated] 3 paralectotypes ff Sta. Cruz Mts Cal. (USNM)

Other material (38 specimens). **USA. California** 1 m Marin Co Lagunitas 1.04.1907 leg. Van Dyke (CNC); 13 mm 13 ff Marin Co Inverness (3.1 mi.NW of) 200 ft. *Alnus* forest, on flowers *Heracleum lanatum* 22.05.1975 leg. A. Newton M. Thayer (FMNH); 2 mm 3 ff Marin Co (CNC); 4 mm Marin Co Muir Woods 00.05.1908 (CNC); 1 f La Honda 20.05.1952 leg. Lot (CNC); 1 f Mendocino 15.05.1955 leg. Helfer (CNC);

Measurements. Length of head (clypeus/neck): 0.31-0.33; width of head: 0.53-0.62; length of pronotum: 0.40-0.57; width of pronotum: 0.64-0.83; length of elytra (shoulder/apex): 1.09-1.38; width of elytra: 0.98-1.23; length from clypeus to apex of elytra: 1.70-2.40; total length (with partially extended abdomen): 1.9-2.7

Description. Habitus as in Fig. 132. Head yellowish, sometimes slightly darkened on vertex, with anterior part yellowish in the middle; pronotum and elytra yellowish; abdomen brown with paler apex in male, entirely yellowish in female; prosternum yellowish; metasternum brownish yellow (male) or yellowish (female); legs yellowish; antennae yellowish very feebly darkened at apex.

Head with prominent eyes, postocular carina well marked, temples short and convergent caudad, medial margin of eyes without longitudinal wrinkles, postantennal depressions confluent caudally with the deep tentorial pits forming 2 longitudinal depressions in front of ocelli. Neck not separated from the head. Punctuation rather sparse and superficial on glossy ground, without microsculpture, except sometimes at medial margin of eyes. Antennae moderately elongate, antennomere 1 about twice as long as wide, 2 ovoid, 3 thin, elongate, twice as long as wide, 4-5 longer than wide, 6 subquadrate, 7-10 slightly transverse, 11 twice as long as wide, cylindrical at base and conical at apex.

Pronotum transverse (ratio width/length = 1.4 on average), convex, with feeble median longitudinal impression in large males, often without longitudinal impression. Pronotum widest in anterior half, anterior margin slightly narrower than posterior, lateral margins rounded in the anterior third, conver-

gent caudad in straight or slightly sinuate line in posterior two thirds, posterior angles more or less marked and scarcely obtuse, punctuation dense, irregular and coarse, ground glossy without microsculpture, pubescence extremely short, scarcely visible, depressions near posterior angles narrow, extending to middle of lateral margin.

Elytra scarcely elongate (ratio length from scutellum to apex/combined width of elytra = 1.0 -1.1), truncate at apex in both sexes, scarcely widened towards apex, punctuation less strong than on pronotum, dense, rather confluent, ground glossy, pubescence extremely short, scarcely visible.

Abdomen rather glossy, microsculpture superficial, with decumbent pubescence.

Tibiae straight in both sexes, tarsomere 5 of posterior tarsi as long as 1-4 together.

Aedeagus as in Fig. 133.

Accessory sclerites of female as in Fig. 134, spermatheca as in Fig. 135.

Comparative notes. The pronotum with dense, irregular and coarse punctuation, and with ground glossy without microsculpture clearly distinguishes *E. punctatum* from the others of the pothos group. It recalls *E. horni*, which is smaller and has a completely different aedeagus.

Distribution. UNITED STATES: California (coastal) (Map 9).

Natural history. The species probably lives in forest at low altitude, as one record is from *Alnus* forest. Known host plant: *Heracleum maximum* Bartram (= *lanatum*) (Apiaceae). Captures in April and May.

***Eusphalerum pothos* (Mannerheim, 1843)**

Anthobium pothos Mannerheim, 1843: 235; Fauvel 1878: 203; Bernhauer and Schubert 1910: 42; Van Dyke 1924: 15; Fall 1926: 145.

Eusphalerum pothos (Mannerheim); Hatch 1957: 82; Moore and Legner 1975: 191; Levesque and Levesque 1996: 290; Downie and Arnett 1996: 439; Herman 2001: 447.

Anthobium dimidiatum Melsheimer, 1844: 43; LeConte 1850: 221; Fauvel 1878: 203 (synonym of *E. pothos*); Bernhauer and Schubert 1910: 42 (synonym of *E. pothos*).

Eusphalerum dimidiatum (Melsheimer); Moore and Legner 1975 (synonym of *E. pothos*); Herman 2001: 447 (synonym of *E. pothos*).

Material examined (1773 specimens)

Type material. Lectotype [**here designated**] m Sitka/Holmberg/ Zool. Mus. H:fors Spec. typ. No [no number]/ *Anthobium pothos* Mannh./ *Eusphalerum pothos* (Mannerheim, 1843) det. A. Zanetti 2013/ Lectotype (red); 5 paralectotypes ff same labels of the lectotype/paralectotype (red); 1 paralectotype f Sitka/Holmberg/*Anthobium pothos* Eschsch. Sitka/ Zool. Mus. H:fors Spec. typ. No 2175 *Anthobium pothos* Mannh./ *Eusphalerum pothos* (Mannerheim, 1843) det. A. Zanetti 2013/ paralectotype (red); 1 paralectotype f Sitka/F. Sahlberg/*Anthobium pothos* Eschsch. / Zool. Mus. H:fors Spec. typ. No 2147 *Anthobium pothos* Mannh./ *Eusphalerum pothos* (Mannerheim, 1843) det. A. Zanetti 2013/ paralectotype (red); 1 paralectotype f Sitka/ Holmberg/ *Anthobium pothos* Eschsch. / Zool. Mus. H:fors Spec. typ. No 2146 *Anthobium pothos* Mannh./ *Eusphalerum pothos* (Mannerheim, 1843) det. A. Zanetti 2013/ paralectotype (red) (MZH).

Other material (1764 specimens). **CANADA. Alberta** 1 m Bilby 15.06.1924 leg. O. Bryant (CNC); 3 ff Brunderheim tread *Carex* and moss 1.07.1982 leg. Davies (CNC); 8 mm 1 f Consolation Lake, Banff Nat. Pk 64 - 7000 15.06.1968 leg. Campbell & Smetana (CNC); 1 f George Lake 53°57'N 114°06'W Berlese, seepage stream near lake 1.06.1980 leg. Ashe (KSEM); 2 mm Nordegg (20 km E) 18.07.1985 leg. C. & A. v. Nidek (CNC); 1 f Swan Hills, Goose Mtn. 1356.36 m 31.07.1957 leg. Ashe (KSEM); 1 f Waterton 18.06.1956 leg. O. Peck (CNC); 2 mm Waterton Lake 22.06.1923 leg. J. McDunnough (CNC); 2 mm Waterton Lakes N.P., Cameron Lake 5500 17.07.1980 leg. H.J. Teskey (CNC); 4 mm 1 f Waterton Lakes N.P., Cameron Lakes 5450 4.08.1976 leg. J. M. Campbell (CNC); 1 m Waterton Lakes N.P., km 9 Chief Mt.

Hwy. 4500 10.07.1980 leg. H.J. Teskey (CNC); 6 mm 4f f Waterton Lakes N.P., Krypt Lake Tr. 4500' 22.06.1980 leg. Campbell (CNC); 1 m Waterton Lakes N.P., mi.3, Red Rock Cny. Rd. 4400 26.6.1980 leg. J.M. Campbell (CNC); **British Columbia** 1 m 1 f Vancouver 00.05.1958 leg. W. Lasorko (FMNH); 4 ff North Shore Mts. (10 km N) 25.07.1980 leg. H. & A. Howden (CNC); 1 f Pine Summit (6 mi.SW) 10.07.1972 leg. D.E. Bright (CNC); 3 mm 7 ff Alberni (38 mi.W) 24/25.05.1968 leg. Campbell & Smetana (CNC); 12 mm 7 ff Alberni (30 mi.W) 24.05.1968 leg. Campbell & Smetana (CNC); 1 f Alouette Lake, Garibaldi Park 9.07.1975 leg. Downie (FMNH); 2 mm 1 f Anahim Lake (38 km W) Hwy 20, Heckman Pass 1520 13.08.1988 leg. Burckhardt & Loebl (MHNG); 3 mm 3 ff Barker-Ville (26 km W) 14.07.1981 leg. D.E. Bright (CNC); 3 mm 3 ff Bella Coola Hwy 20 0 m 14.07.1988 leg. Burckhardt & Loebl (MHNG); 4 mm 6 ff Bella Coola Valley, Cahooting Kreek 500 - 800 m 16.07.1988 leg. Burckhardt & Loebl (MHNG); 1 m Bevan 18.06.1955 leg. W.J. Brown (CNC); 1 m 1 f Bowron Lake 18.07.1929 leg. W. Mathers (CNC); 5 mm 1 f Bowser 19.06.1955 leg. W.J. Brown (CNC); 2 mm 1 f Bowser 8/10.06.1955 leg. W.J. Brown (CNC); 1 m 4 ff Bowser 12/19.06.1955 leg. Brown (CNC); 20 mm 9 ff Mt. Cain 50°13'N 126°21'W 13.07/27.07.1997 leg. Corkum (cZan); 8 ff Cherryville, Monashee Summit 1100 - 1200 m 8.08.1982 leg. Baranowski (MZLU); 4 mm 4 ff Courtney, Forbidden Plateau near Courtney Lookout 25.07.1979 leg. I.M. Smith (CNC); 1 m 1 f Creston (W of) 8.05.1981 leg. Askevold (CNC); 1 m Cypress Prov. Park 1500 m 9.07.1980 leg. Downie (FMNH); 2 ff Derek Falls, Manning Prov. Pk. 4000 26.07.1075 leg. J.M. & B.A. Campbell (CNC); 12 mm 6 ff Diamond Head Tr. 3500 4500 18/26.07.1973 leg. A. & Z. & D. Smetana (CNC); 1 f Forbidden Plateau, Jutland Mt. 5200 20.07.1975 leg. J.M. & B.A. Campbell (CNC); 4 mm 2 ff Forest, Garibaldi Pk., nr Haney 3500 15.08.1953 leg. W.R.M. Mason (CNC); 1 m Garibaldi Park, Alouette Lake 3.07.1975 leg. M. N. Downie (FMNH); 1 m Garibaldi Pk., Alice Lake 29.06.1971 leg. M. N. Downie (FMNH); 8 mm 6 ff Garibaldi (10 mi.S) 29.05.1968 leg. Campbell & Smetana (CNC); 1 m 1 f Garibaldi P.P., Black Tusk Trail 5000 23.07.1973 leg. A. & Z. & D. Smetana (CNC); 8 mm 7 ff Garibaldi P.P., Cheakamus Lk. 3000 20.07.1973 leg. A. & Z. & D. Smetana (CNC); 1 m 7 ff Garibaldi P.P., Diamond Head Tr. 3500 25.07.1973 leg. A. & Z. & D. Smetana (CNC); 1 m 4 ff Garibaldi P.P., Diamond Head Trail, nr. Squamish 3500 3.08.1953 leg. S. Hicks (CNC); 1 m 2 ff Garibaldi P.P., Red Heather Camp 4500 4.08.1975 leg. J.M. & B.A. Campbell (CNC); 3 mm 5 ff Garibaldi P.P., Red Heather Camp 4500 4.08.1975 leg. J.M. & B.A. Campbell (CNC); 4 mm 2 ff Goldstream Pk., 5 mi.N Victoria 27.05.1968 leg. Campbell & Smetana (CNC); 1 m 2 ff Hampton Camp, Manning Prov. Park 3500 21.06.1968 leg. Campbell & Smetana (CNC); 1 f Harrison Mills 2.06.1953 leg. S.D. Hicks (CNC); 8 mm 3 ff Heather Mt., Cowichan Lake 10.07.1975 leg. J.M. & B.A. Campbell (CNC); 1 f Hope (10 km E) 250 m 10.07.1988 leg. Burckhardt & Loebl (MHNG); 2 mm 1f Hope (20 mi.E), Manning Pk. 21.06.1968 leg. Campbell & Smetana (CNC); 3 mm 7 ff Hope (3 km S) Hwy 1, Silver Hope Creek 150 m 9.07.1988 leg. Burckhardt & Loebl (MHNG); 2 mm Hope (45 km NE) Zopklos Ridge View, Hwy 6 127 m 10.07.1988 leg. Burckhardt & Loebl (MHNG); 1 m Horseshoe Bay 21.04.1963 leg. C.B.D. Garrett (CNC); 1 m Indian River 25.05.1929 leg. Hop.nig (CNC); 1 m 2 f Inverness 00.07.1910 leg. J.H. Keen (CNC); 4 mm 3 ff Kenny Lk., W of Soda Cr. Sta., Cariboo District on sedge ears (CNC); 1 m Lumby (8 mi.N) 2 mi.E Trinity Valley Fld. Sta. 2.08.1966 leg. E.E. Lindquist (CNC); 2 mm Mainland 00.07.1893 leg. J.H. Keen (CNC); 1 m 6 ff Manning P.P., Skagit Riv. 21.06.1988 leg. LeSage (CNC); 2 mm 1 f Manning P.P., Sumallo Grove, Hwy 5a 10.07.1988 leg. Burckhardt & Loebl (MHNG); 3 mm 5 ff Manning P.P., Sumallo Grove on devils club (*Oplopanax horridus*) 21.06.1988 leg. J.M. Campbell (CNC); 14 mm 3 ff Manning P.P., Sumallo Grove *Cornus* flower 21.06.1988 leg. J.M. Campbell (CNC); 2 ff Mesachie Lk. tribut. Robertson R. sweeping 8.07.1979 leg. I.M. Smith (CNC); 2 mm 5 ff Mission City 19.06.1953 leg. W.R.M. Mason (CNC); 1 f Mission City 18.06.1953 leg. S.D. Hicks (CNC); 2 ff Mt. Revelstoke 6000 6200 28/29.07.1952 leg. G.J. Spencer (CNC); 1 m Mt. Robson Prov. Pk., Trail to Kinney Lk 15.08.1981 leg. Bright (CNC); 3 ff Nelson Td (or Id) on wing 26.05.1916 (CNC); 2 mm 15 ff Nitinat Heather Mtn. 3600 sweep alpine meadows 27.07.1979 leg. I.M. Smith (CNC); 1 m 13 ff Nitinat Heather Mtn. 3600' sweep alpine meadows 27.07.1979 leg. Smith (CNC); 1 f Nitinat, Heather Mtn. 3600 27.07.1979 leg. I.M. Smith (CNC); 2 mm 2 ff Nitinat, Heather Mtn. 3600 27.07.1979 leg. I.M. Smith (CNC); 1 f Otterhead R., Yoho N.P. 4000 4/8.08.1971 leg. J.M. Campbell (CNC); 8 mm 5 ff Pacific Rim N.P., 1 mi.S Darling Riv. 13.07.1975 leg. J.M. & B.A. Campbell (CNC); 1 m 1 f Pacific Rim N.P., 1 mi.S Darling Riv. 13.07.1975 leg. J.M. & B.A. Campbell (CNC); 1 f Paul Ridge, Garibaldi Prov. Pk. 5400 4.08.1975 leg. J.M. & B.A. Campbell (CNC); 1 f Pender Harbor 28.05.1929 leg. K.T. Turner (CNC); 1 f Penticton (15 mi.SE) Apex Mtn. Prov. Pk. 7300 10/11.08.1973 leg. R.H. Parry (CNC); 1 f Penticton Apex Mtn., 6 km. above ski area sweep 4.07.1979 leg. I.M. Smith (CNC); 1f Pine Pass 12.07.1981 leg. D.E. Bright (CNC); 2 ff Prince Rupert

15.06.1959 leg. G.G.E. Scudder (CNC); 18 mm 7 ff Prince Rupert 00.06.1978 leg. Krauss (ZMUC); 2 mm 3 ff Prince Rupert (15 mi.E), Prudhomme Lk. 28.06.1968 leg. Campbell & Smetana (CNC); 2 mm 1 f Prince Rupert (15 mi.E), Prudhomme Lk. 28.06.1968 leg. Campbell & Smetana (CNC); 9 mm 5 ff Prince Rupert, Mt. Hays 1 2000 29.06.1968 leg. Campbell & Smetana (CNC); 1 m 1 f Prince Rupert, Mt. Hays 1 2000 29.06.1968 leg. Campbell & Smetana (CNC); 1 f Queen Charlotte Islands, Graham Island, Rennel Sound rotting mushrooms 13.07.1988 leg. Ashe (KSEM); 1 f Queen Charlotte Islands, Graham Island, Rennel Sound 18.07.1988 leg. Ashe (KSEM); 1 m Queen Charlotte Islands, Graham Is. Mt. Needham 2800' moss and debris along spruce above tree line 27.06.1983 leg. Campbell (CNC); 1 f (FMNH); 1 m Queen Charlotte Islands, Graham Island, Tell River Prov. Pk. 18.07.1988 leg. Ashe (KSEM); 4 mm 4 ff Queen Charlotte Islands, Moresby Is. Tekakia Lk 2100' moss near lake edge 21.07.1983 leg. Campbell (CNC); 11 mm 11 ff Queen Charlotte Islands, Moresby Island Mt. Moresby 2100' sifting moss at edge of forest & on flowers 25.07.1983 leg. Campbell (CNC); 1 f Queen Charlotte Islands, Rennel (4.7 km N), Sound Rd Ghost Cr 700' gravel along stream 19.07.1983 leg. Campbell (CNC); 6 mm 10 ff Queen Charlotte Islands, Slatechuck Mt. 2200' sifting sphagnum edge of seep 14.07.1983 leg. Campbell (CNC); 1 m Revelstoke (60 mi.N) 26.05.1960 leg. J.G. Chillcott (CNC); 1 m 1 f Robson 00.06.1949 leg. H.R. Foxlee (CNC); 1 m Saanich 5.05.1930 leg. W.H. Preece (CNC); 1 m 1 f Sirdar, W side Duck Lake Rose [*Rosa* sp.?] 3.06.1980 leg. Askevold (CNC); 2 ff Squamish (9 mi.N) Mt. Garibaldi 1500 30.05.1968 leg. Campbell & Smetana (CNC); 1 m Squamish Diamond Head Trail 5000 25.08.1953 leg. G.J. Spencer (CNC); 1 m Squamish Diamond Head Trail 3800 10.08.1953 leg. G.J. Spencer (CNC); 1 f Squamish, Diamond Head Trail 5000 25.08.1953 leg. G.J. Spencer (CNC); 1 f Squamish, Garibaldi Pk., Diamond Head Trail 3500 3.08.1953 leg. S.D. Hicks (CNC); 1 m 2 ff Squamish, Garibaldi Pk., Diamond Head Trail 5000 27.08.1953 leg. S.D. Hicks (CNC); 1 f Terrace 8.06.1960 leg. R. Pilfrey (CNC); 2 f Terrace (14 mi.E) 4.06.1960 leg. G.E. Shewell (CNC); 8 mm 7 ff Terrace (14 mi.E) 14.06.1960 leg. C.H. Mann (CNC); 2 ff Terrace (14 mi.E), Kleanza Creek 4.07.1960 leg. J.C. Chillcott (CNC); 2 mm 3 f Terrace (19 mi.N), Kitsumkalum Lake 500 31.05.1960 leg. W.W. Moss (CNC); 1 m 1 f Terrace (20 mi.N), Kitsumkalum Lake 500 flowers *Smilacina* 31.05.1960 leg. G.E. Shewell (CNC); 1 f Terrace (32 mi.W) 11.06.1960 leg. W.W. Moss (CNC); 1 f Terrace (6 mi.W) 24.06.1960 leg. C.H. Mann (CNC); 2 mm 3 ff Terrace (7 mi.E) 26/27.06.1968 leg. Campbell & Smetana (CNC); 1 f Terrace (8 mi.W) Marble Cr. 3.06.1960 leg. R. Pilfrey (CNC); 4 mm 3 ff Terrace, Spring Creek 220 11.06.1960 leg. R. Pilfrey & C.H. Mann (CNC); 4 mm U.B.C. Forest, Garibaldi Pk., nr. Haney 3500 5.08.1953 leg. W.R.M. Mason (CNC); 3 mm 1 f U.B.C. Forest, Garibaldi Pk., nr. Haney 3500 5.08.1953 leg. W.R.M. Mason (CNC); 2 mm Vancouver 23.06.1971 leg. Downie (FMNH); 1 f Vancouver 22.04.1974 leg. Downie (FMNH); 1 m 1 f Vancouver 26.04.1967 leg. E.J. Kiteley (CNC); 2 mm Vancouver 1.05.1945 leg. E.J. Kiteley (CNC); 2 mm Vancouver 8.06.1948 leg. H.F. Folds (CNC); 1 f Vancouver Is., Mesachie Lake, Riverside 200 m 6.07.1980 leg. H. & A. Howden (CNC); 32 mm 24 ff Vancouver, Stanley Park on *Lysichiton americanum* 29.04.1999 leg. Rossi (cZan); 1 m 2 ff W Cedar, Nelson Td (or Id) 25.05.1916 (CNC); 1 f 00.07.1910 leg. J.H. Kem. (CNC); 1 m 2 ff [no locality]; **Manitoba** 1 ? (damaged) Angusville 20.07.1954 leg. Brooks & Wallis (CNC); **New Brunswick** 2 mm Bathurst 13/15.06 leg. J.N. Knull (CNC); 1 m Coles Island sweeping at edge of forest 8.07.1985 leg. L. LeSage (CNC); 10 mm 5 ff Kouchibouguac N.P. 7/19-06..1978 leg. Miller (CNC); 1 m 3 ff Plaster Rock 6.07.1970 leg. D.E. Bright (CNC); **Newfoundland and Labrador** 1 f Forrester's Point 6.08.1972 leg. J.M. & B.A. Campbell (CNC); 1 m Gander 6.07.1949 leg. R.A. Hennigar (CNC); 1 m 2 ff Harmon Field 24.06.1949 leg. Brown (CNC); 2 ff R.A. Squires Prov. Pk 23.07.1970 leg. D. E. Bright (CNC); 3 mm 2 ff Raleigh (2 mi. SE) 5.08.1972 leg. J.M. Campbell ; 1 m 4 ff St. Johns 16.07.1949 leg. Brown (CNC); 1 f St. Johns 9.06.1949 leg. Brown (CNC); 1 f Long Range Mts. 56°56'W 50°34'N 1400' 24.07.1969 (cZan); 1 f St. Johns sweeping vegetation 19.06.1981 leg. L. LeSage (CNC); **Nova Scotia** 1 m 6 ff Cape Breton H.N.P., Beulach Ban Falls 13.06.1984 leg. Smetana (CNC); 4 mm 1 f Cape Breton H.N.P., Highlands Nat. Pk. 25.06.1983 leg. Y. Bousquet (CNC); 3 mm 2 f Cape Breton H.N.P., Lone Shieling PG729861 Malaise 28.06.1983 leg. Vockeroth (CNC); 3 mm 4 ff Cape Breton H.N.P., Lone Shieling PG729861 Malaise 4.07.1983 leg. Vockeroth (CNC); 7 mm 5 ff Cape Breton H.N.P., Lone Shieling PG729861 Malaise 28.06.1983 leg. Vockeroth (CNC); 1 m Cape Breton H.N.P., Lone Shieling PG729861 Malaise 25.06.1983 leg. Vockeroth (CNC); 25 mm 20 ff Cape Breton H.N.P., Lone Shieling PG729861 Malaise 1.07.1983 leg. Vockeroth (CNC); 33 mm 24 ff Cape Breton H.N.P., Lone Shieling 8.06.1984 leg. Smetana (CNC); 2 mm Cape Breton H.N.P., Lone Shieling PG729871 100 400 m Fen, residue photoeclector 6.06.1983 leg. H.Goulet (CNC); 1 m 4 ff Cape Breton H.N.P., Lone Shieling, TP41LL107 on flowers *Heracleum maximum* leg. L. LeSage (CNC); 1 m 1 f Cape

Breton H.N.P., MacKenzie Mtn. PG648868 pan traps 4.07.1983 leg. Vockeroth (CNC); 1 f Cape Breton H.N.P., MacKenzie Mtn., PG648868 300 m pans forest birch 9/10.05.1983 leg. H. Goulet (CNC); 1 m Cape Breton H.N.P., Still Brook QG034838 temporary stream spruce, forest 5.07.1983 leg. L. LeSage (CNC); 1 f Cape Breton, H.N. P., Chéticamp R. Delta PG561689 sweeping 9.06.1983 leg. H. Goulet (CNC); 2 mm McNab Island, Halifax 13.07.1967 leg. J. Gilhen (CNC); 1 m Cumberland Co Leicester, East 14.06.1995 leg. Corkum (cZan); 1 f Cumberland Co Spencers Island 15.06.1995 leg. Corkum (cZan); **Ontario** 2 mm 1 f Ad & Lennox Co 13.06.1948 leg. J.F. Brimley (CNC); 1 f Hasting Co 6.06.1949 leg. J.F. Brimley (CNC); 1 m Rainy R. Dist. 29.06.1924 leg. J.F. Brimley (CNC); 2 ff 2 mm Rainy R. Dist. 22.06.1924 leg. J.F. Brimley (CNC); 1 f Rondeau Prov. South Point Trail pond in maple/beechn for. with dead leaves and sedges 25/30.05.1985 leg. LeSage (CNC); 1 m Armstrong (52 mi.S) 27.06.1973 leg. J.M. Campbell & R. Parry (CNC); 6 ff Chalk River 7.06.1960 leg. H.F. Howden (CNC); 1 f Hurkett (56 mi.N) 27.07.1973 leg. J.M. Campbell & R. Parry (CNC); 1 m 1 f Lake Superior Prov. Pk., Noisy Bay 10.06.1973 leg. J.M. Campbell & R. Parry (CNC); 1 m 1 f Lk. Superior Prov. Park, Agawa Bay 13.06.1973 leg. J.M. Campbell & R. Parry (CNC); 1 m Lk. Superior Prov. Park, Baldhead Lk. 8.06.1973 leg. J.M. Campbell & R. Parry (CNC); 1 f Lk. Superior Prov. Park, Frater 9.06.1973 leg. J.M. Campbell & R. Parry (CNC); 1 f Lk. Superior Prov. Park, Moose Lk. 10.06.1973 leg. J.M. Campbell & R. Parry (CNC); 1 f Lk. Superior Prov. Park, Old Woman Bay 13.06.1973 leg. J.M. Campbell & R. Parry (CNC); 3 mm 1 f Lk. Superior Prov. Park., Gargantua 7.06.1973 leg. J.M. Campbell & R. Parry (CNC); 2 mm 3 ff Lk. Superior Prov. Park., Sand R. 6.06.1973 leg. J.M. Campbell & R. Parry (CNC); 1 m Lk. Superior Prov. Pk., Sand R. 6.06.1973 leg. J.M. Campbell & R. Parry (CNC); 1 m Moosonee 30.06.1973 leg. J.M. Campbell & R. Parry (CNC); 1 f 3 mm Moosonee 30.06.1973 leg. J.M. Campbell & R. Parry (CNC); 1 f Pickle Lake (36 mi.S) 22.06.1973 leg. J.M. Campbell & R. Parry (CNC); 1 f pr. Garvel River 8.08.1956 leg. Lindberg (CNC); **Prince Edward Island** 1 m Charlottetown sweeping around pond in abandoned field 27.06.1985 leg. L. LeSage (CNC); **Québec** 1 m 2ff Drummond Co St-Cyrille 23.05.1981 leg. LeSage (CNC); 1 m 1 f Gaspé O. Co Mt. Albert, sommet Nord 1000 m sweeping field 19/20.07.1985 leg. Génier & Klimaszewski (CNC); 1 f Bradore Bay 2.08.1930 leg. W.J. Brown (CNC); 1 m Gaspé Pr. Pk. 29.06.1954 leg. J.W. Brown (CNC); 1 f Gaspé Pr. Pk. grass-fir pantrap 5.06/23.07.1980 leg. C. Dondale & J. Redner (CNC); 1 m Gaspésie Parc, Lac St. Anne 1500 12.07.1972 leg. J.M. & B.A. Campbell (CNC); 1 m 3 ff Great Whale R., P. 4.08.1949 leg. J.R. Vockeroth (CNC); 4 mm 1 f Isles-de-la-Madeleine, Portage-du-Cap sweeping *Solidago* and *Spiraea* 30.06.1985 leg. L. LeSage (CNC); 1 m Johnville 7.06.1987 leg. C. Levesque (CNC); 1 f Kazubazua 6/10.06.1927 leg. W.J. Brown (CNC); 5 mm 2 ff Kazubazua 6/10.07.1927 leg. W.J. Brown (CNC); 2 f Knowlton 14.06.1928 leg. J.A. Adams (CNC); 1 f Knowlton (6 mi.E) 23/25.06.1970 leg. E.C. Becker (CNC); 3 ff Laniel 7.06.1963 leg. W. Gagne (CNC); 1 m 2 ff Milot (90 mi.N) 22.07.1971 leg. E.C. Becker (CNC); 1 f Mistassini 13.06.1956 leg. J.R. McGillis (CNC); 1 m Mistassini 25.06.1956 leg. J.R. McGillis (CNC); 1 m Mistassini Post 4.07.1956 leg. J. R. Lonsway (CNC); 1 f Mont Albert, Parc Gaspésie 9.07.1972 leg. J.M. & B.A. Campbell (CNC); 2 ff Mont Albert, Parc Gaspésie 9.07.1972 leg. J.M. & B.A. Campbell (CNC); 1 m 1 f Mont Jacques Cartier 4000 22.07.1972 leg. J.M. Campbell (CNC); 1 m 2 ff Mt. Albert, North base 650 10.07.1954 leg. G.P. Holland (CNC); 1 m Mt. Albert, on treeless top 3400 11.07.1954 leg. J.W. Brown (CNC); 2 mm Mt. Albert, Parc Gaspésie 2800 11.07.1972 leg. J.M. Campbell (CNC); 3 mm 5 ff Mt. Lyall 1500 25.06/4.08.1933 leg. J.W. Brown (CNC); 1 f Mt. Ste. Anne 2000 25.07.1971 leg. E.C. Becker (CNC); 1 f Old Chelsea 11.06.1959 leg. J.R. Vockeroth (CNC); 3 mm 3 ff Rimouski 22.06.1981 leg. L. LeSage (CNC); 2 mm Rivière-a-Claude (6 mi. S) 1000 18.07.1972 leg. J.M. Campbell (CNC); 1 m 7 ff Rupert House (60 mi.E), Rupert River 16.07.1963 leg. J.E.H. Martin (CNC); 1 m Rupert River, 16.07.1963 leg. J. E. H. Martin (CNC); 2 mm 1 f St. Agathe 17.06.1971 leg. E.J. Kiteley (CNC); 3 ff Ste-Catherine, Port 24.06.1958 leg. J.-C. Aubé. (CNC); 1 m Ste-Foy 8.06.1972 leg. C. Chantal (FMNH); 6 mm 6 ff Gatineau Park, Lac Bourgeois 8.06.1969 leg. Smetana (MHNG); 3 mm 3 ff Mont Albert, Parc Gaspésie, 1000 9.07.1972 leg. J.M. & B.A. Campbell (CNC); **Saskatchewan** 1 m 1 f Lake Madge 13.07.1954 leg. Brooks Wallis (?) (CNC); 2 mm 3 ff Waskesiu Lake 9.07.1939 leg. A.R. Brooks (CNC). **USA. Alaska** 14 mm 9 ff Ketchikan, Deer. Mtn 2000 3000 23.07.1951 leg. B. Malkin (FMNH); 1 m Ketchikan (8 mi.N), Perseverance L. Ward Lake Areas 22.06.1947 leg. Backer (CNC); 6 mm Ketchikan (8 mi.N), Perseverance L. Ward Lake Areas 22.06.1947 leg. F. Baker (CNC); 3 mm 4 ff Kuiu Isl., Reid Bay 23/25.08.1951 leg. B. Malkin (FMNH); 5 mm Anchorage 6.07.2008 leg. Renner (cRen); 1 m Dall Island, Edna Bay 15.07.1947 leg. G.D. Hanna (CNC); 1 f Denali St. Pk. Byers Crk. at Hwy 1 20.06.1978 leg. Smetana & Becker (CNC); 6 mm Ft. Wrangell g. Wickham (CNC); 14 mm 5 ff, (including homotype, det Campbell) Haines (29 mi.NW), Mosquito Lake 3.07.1968 leg. Campbell

& Smetana (CNC); 3 ff Haines (8 mi.NW) 3.07.1968 leg. Campbell & Smetana (CNC); 28 mm 7 ff Homer, Kenai Penins. 19.07.2008 leg. Renner (cRen); 1 m 1 f Hyder 26.06.1974 leg. Scudder (CNC); 3 mm 3 ff Juneau (16.3 km N) Auke Bay 9.06.1981 leg. Bright (CNC); 5 mm 4 ff Ketchikan 18/27.07.1951 leg. B. Malkin (FMNH); 1 f Ketchikan 24.05.1928 ; 2 mm 7 ff N. End Douglas Is., 15 km N Juneau sweeping 9.06.1981 leg. Bright (CNC); 1 f Prince Williams Sound Hinchinbrook I. 1.08.1937 leg. Norberg (MZLU); 1 m Revillagigedo Island, Herring Cove Reed 1.07.1947 (CNC); 5 mm 6 ff Seward 10.08.1951 leg. Brown (CNC); 17 mm 17 ff Seward, Kenai Penins. 15.07.2008 leg. Renner (cRen); 1 f Wrangell 1/5.08.1951 leg. B. Malkin (FMNH); **California** 1 f Marin Co Inverness, (3.1 mi.NW of) 200 ft *Alnus* forest, on flowers *Heracleum lanatum* 22.05.1976 leg. A. Newton and M. Thayer (FMNH); 1 m Mendocino Co 21.05.1935 (FMNH); 1 f Trinity Co Shasta Trinity N.F., Forest Glen, 4.4 mi.W of Hwy. 36 1005 m mixed conifer-hardwood forest, on *Orobanche* flowers 20.06.1988 leg. A. Newton and M. Thayer (FMNH); **Idaho** 2 mm 2 ff Sandpoint 18/20.07.1969 leg. Downie (FMNH); **Maine** 7 mm Oxford Co Evans Notch (0.4 mi.NE), S of Gilead 450m *Betula Acer* forest, on flowers *Rubus* 12/15.06.1981 leg. A. Newton and M. Thayer (FMNH); 5 mm 1 f Mt. Katahdin 1100 2.07.1068 leg. D.R. Oliver (CNC); 3 mm 1 f Mt. Katahdin 1100 1.07.1068 leg. D.R. Oliver (CNC); 1 m Mt. Katahdin 1100 8.07.1068 leg. D.R. Oliver (CNC); 1 f Mt. Katahdin 2400 6.07.1068 leg. D.R. Oliver (CNC); 1 m 3 ff Mt. Katahdin 2400 5.07.1068 leg. D.R. Oliver (CNC); 1 m Mt. Katahdin 1100 27.06.1968 leg. D.R. Oliver (CNC); 1 m Mt. Katahdin 2400 5.07.1968 leg. D.R. Oliver (CNC); 2 ff Newry 9.07.1966 leg. E.J. Kiteley (CNC); 1 f Portland 10.07.1966 leg. E.J. Kiteley (CNC); 1 m 1 f Sugarloaf Mt. ca 3000 8.07.1968 leg. D.R. Oliver (CNC); **Massachusetts** 1 m Middlesex Co Bedford, MCZ Concord Field Station *Pinus strobus-Quercus* spp. forest window traps 10/24.06.1980 leg. A. Newton and M. Thayer (FMNH); 1 f Cape Cod 6.06.1985 leg. E.J. Kiteley (CNC); **Michigan** 3 mm 2 ff Isle Royale, Feldtmann Ridge, 0-3 mi.W Feldtmann Lake on flowers *Rubus parviflora* 30.06.1975 leg. J. S. Slade (FMNH); **Minnesota** 2 mm 3 ff Brainerd 10.06.1965 leg. E.J. Kiteley (CNC); **Montana** 1 f Glacier Nov. 1954 leg. A. Bryan (FMNH); **New Hampshire** 6 mm 4 ff Carroll Co North Chatham (N of), Basin Trail 200 240 m mixed hardwood *Tsuga*, on flowers *Rubus* 13/15.06.1981 leg. A. Newton and M. Thayer (FMNH); 8 mm 10 ff Coos Co Jefferson Notch (0.3 mi.S) 895 m *Picea Abies* forest, window trap 23/27.07.1980 leg. A. Newton and M. Thayer (FMNH); 8 mm 8 ff Coos Co Jefferson Notch 910 m *Picea Abies Betula* forest, window trap 14/31.07.1982 leg. A. Newton and M. Thayer (FMNH); 15 mm 18 ff Coos Co Jefferson Notch (0.3 mi.S) 895 m *Picea Abies* forest window trap 14/31.07.1982 leg. A. Newton and M. Thayer (FMNH); 2 mm 1 f Coos Co Jefferson Notch (3.1 mi.S) 620 m 24.07.1980 on small white composite flowers [Asteraceae] leg. M. Thayer (FMNH); 2 mm 4 ff Coos Co Jefferson Notch (3.1 mi.S) 620 m *Picea Abies Betula Acer* forest, window trap 14/31.07.1982 leg. A. Newton and M. Thayer (FMNH); 2 mm 4 ff Coos Co Jefferson Notch (3.1 mi.S) 620 m *Picea Abies Betula Acer* forest, on flowers *Achillea millefolium* 23/27.07.1980 leg. A. Newton and M. Thayer (FMNH); 1 m 4 ff Grafton Co Bartlett, Sawyer River 530 550 m on flowers *Spiraea* 25.07.1980 leg. A. Newton and M. Thayer (FMNH); 5 mm 12 ff Mt. Washington, Oakes Gulf 4700 5000 8/9.08.1954 leg. Backer, Munroe, & Mason (CNC); 1 m Mt. Washington, Summit 6200 2.08.1954 leg. Backer, Munroe, & Mason (CNC); 1 f Mt. Washington, Tuckermans Rav. 5100 5400 31.07.1954 leg. Backer, Munroe, & Mason (CNC); 1 m Carroll Co North Chatham (N of), Basin Trail 200 240 m mixed hardwood *Tsuga*, on flowers *Rubus* 13/15.06.1981 leg. A. Newton and M. Thayer (FMNH); **New York** 1 f Adirondacks, Indian Lake (FMNH); 2 mm 2 ff Lake Placid 24.06.1965 leg. E.J. Kiteley (CNC); 1 f Mt. Washington leg. R. Cooper (CNC); **Oregon** 2 mm Benton Co Marys Peak, N slope near summit 1100 m *Abies procera Pseudotsuga Tsuga* forest, on flowers *Achlys triphylla* 25.08.1988 leg. A. Newton and M. Thayer (FMNH); 1 m 1 f Breton Co Marys Peak 3800 27.07.1979 leg. J.M. & B.A. Campbell (CNC); 18 mm 16 ff Clackamas Co jet US26 Ore 35 (1.3 m E) 3900 ft on flowers *Achlys triphylla* 12.07.1975 leg. A. Newton and M. Thayer (FMNH); 1 f Clackamas Co jet US26 Ore 35 (1.3 m E) 3900' on flowers *Lupinus* 12.07.1975 leg. M Thayer (FMNH); 1 f Clackamas Co Camp Crk. (3.5 mi. SE) 2300 2400 Rhododendron 27.06.1974 leg. A. & D. Smetana (CNC); 2 m Clackamas Co Mt. Hood N.F., Still Creek Cmpg 4000 31.07.1979 leg. J.M. & B.A. Campbell (CNC); 1 m Curry Co Humbug Mtn. St. Pk. flood debris, small stream 6/7.07.1975 leg. A. Newton and M. Thayer (FMNH); 2 f Klamath Co Refrigerator Cr. 16.07.1962 leg. J.D. Vertrees (FMNH); 1 m Linn Co Idanha (15 km E) 16.06.1984 leg. Danielsson (MZLU); 1 m Marion Co Breitenbach (2 km E) 17.06.1984 leg. Danielsson (MZLU); 1 m Multnomah Co Multnomah Falls 10.06.1962 leg. C. W. OBrien (FMNH); 1 m Wasco Co Mt Hood near Bennet Pass 26.08.2982 leg. Baranowski (MZLU); 1 f Yamhill Co Dayton 21.04.1947 leg. B. Malkin (FMNH); 1 m Marshfield 12.06.1914 leg. E.C. Van Dyke (CNC); 1 f Mt. Hood, Government Camp

3800 1.07.1983 leg. A. & D. Smetana (CNC); 1 m Mt. Hood, Hood River Meadows 5200 5900 29.06.1974 leg. A. & Z. & D. Smetana (CNC); 1 m Mt. Hood, Government Camp 3800' 1.07.1974 leg. Smetana (CNC); 1 m 1 f Netarts Bay 7.04.1962 leg. Joe Schuh (FMNH); 10 mm 2 ff Clackamas Co Camp Crk. (3.5 mi. SE) 2300 2400 *Rhododendron* 27.06.1974 leg. A. & Z. & D. Smetana (CNC); **Vermont** 1 m 1 f Caledonia Co Peacham, S of Danville town line 1300 ft *Platanthera obtusata* (Orchidaceae) 3.07.1982 leg. N. E. Woodley (FMNH); **Washington** 1 f Clallam Co Mt. Pleasant 23.04.1984 leg. Danielsson (MZLU); 13 mm 15 ff Clallam Co Olympic NP, Hurricane Ridge Rd 625 m mixed coniferous forest, on flowers *Rubus parviflora* 9.07.1988 leg. A. Newton and M. Thayer (FMNH); 3 mm 3 f Clallam Co Olympic NP, Hurricane Ridge, 4.9 mi.ENE Lodge 1150 m Pseudotsuga-Tsuga-Abies-Pinus forest, on flowers *Achlys triphylla* 29.06.1988 leg. A. Newton and M. Thayer (FMNH); 1 m 4 ff Clallam Co Pysht 22.06.1984 leg. Danielsson (MZLU); 4 mm 1 f Clallam Co Sappho (10 km N) 21.06.1984 leg. Danielsson (MZLU); 6 mm 5 ff King Co North Bend (10 12 mi.N) ca 1200 ft secondary conifer forest, aerial dredging, daytime 17.04.1983 leg. P.J. and C.C. Johnson (FMNH); 3 m 1f King Co North Bend (12 mi.N) ca. 1200 ft. 17.04.1983 leg. PJ & CC Johnson (FMNH); 3 mm 4 ff King Co North Bend (12 mi.N) ca 1200 ft secondary conifer forest, daytime aerial dredging 17.04.1983 leg. P.J. and C.C. Johnson (FMNH); 3 mm 5 ff King Co Stevens Pass (10 km SW) 1.07.1984 leg. Danielsson (MZLU); 1 m Mason Co Stimson Cr 14.05.1946 leg. Don Frechin (?) (CNC); 10 mm 4 ff Pierce Co Fort Lewis 10.05.1946 leg. P.H. Arnaud (CNC); 1 f Pierce Co Fort Lewis 3.05.1946 leg. P.H. Arnaud (CNC); 1 f [Pierce Co.] Fort Lewis 5.04/10.5.1945 leg. P.H. Arnaud (CNC); 1 ff Pierce Co Mt Rainier N.P., 2 mi.W jct Wash706 6 Wash123 2600 on flowers 22.07.1975 leg. A. Newton and M. Thayer (FMNH); 2 mm 2 ff Pierce Co Mt Rainier N.P., West side road, 1.7 mi.N jct Wash706 2400 on flowers 19/20.07.1975 leg. A. Newton and M. Thayer (FMNH); 11 mm 16 ff Pierce Co Mt. Rainier N.P., West Side Rd, 3.3 m N jct Wash. 706 2800 ft on flowers 19.07.1975 leg. A. Newton and M. Thayer (FMNH); 2 mm 1 f Pierce Co Mt. Rainier N.P., West side road, 1.7 mi.N jct Wash. 706, 2400 ft on flowers 19.07.1975 leg. A. Newton and M. Thayer (FMNH); 1 m Whatcom Co Mount Baker 29.07.1931 leg. Sanderson (KSEM); 1 f Whatcom Co Mt. Baker 750 m 16.06.1987 leg. Downie (FMNH); 8 mm Mazama (20 mi.W), Rainy Pass 4900 17.08.1975 leg. J.M. & B.A. Campbell (CNC); 1 m Shelton 1.05.1948 leg. Don Frechin (?) (CNC); 1 f Baker N.F., Bagley Crk near Silver Fir Campgr. 2000 10.07.1974 leg. A. & D. Smetana (CNC); 1 m 3 ff Bothell 25/26.05.1949 leg. Geo. Schenk (FMNH); 1 f Bremerton 16.05.1948 leg. Don Frechin (?) (CNC); 2 m 5 ff Chase Lake 16.05.1954 leg. B. Malkin (FMNH); 1 m 2 f Hoquiam 27.05.1914 leg. E.C. Van Dyke (CNC); 1 f Humptulips 28.05.1914 leg. E.C. Van Dyke (CNC); 1 m Mt. Baker 2000 m 25.07.1984 leg. N. M. Downie (FMNH); 1 f Mt. Baker 2000 m 18.07.1972 (FMNH); 1 f Mt. Baker N.F., 6 mi.NE Shuksan Rd. # 401 23.08.1979 leg. J.M. Campbell (CNC); 13 mm 8 ff Mt. Baker N.F., Silver Fir Campgr. 2000' 9.07.1974 leg. A. & D. Smetana (CNC); 1 f Mt. Baker, 1 mi.SW Table Mt. 20.08.1979 leg. J.M. & B.A. Campbell (CNC); 4 mm 3 ff Mt. Baker, Mt. Baker Tr. 4500' 12.08.1979 leg. J.M. & B.A. Campbell (CNC); 5 mm Mt. Rainier 5500' 1.07.1934 leg. O. Bryant (CNC); 1 m 6 ff Mt. Rainier 5500' 1.07.1934 leg. O. Bryant (CNC); 1 m 3 ff Mt. Rainier N.P., end of West Side Road 3700' 3.08.1979 leg. J.M. & B.A. Campbell (CNC); 1 f Mt. Rainier N.P., Fryingpan Crk. 3800' 9.08.1973 leg. A. & Z. & D. Smetana (CNC); 1 f Mt. Rainier N.P., Nisqually River 3900' 8.07.1973 leg. A. & Z. & D. Smetana (CNC); 2 mm 5 ff Mt. Rainier N.P., Van Trump Park 5400' 4.08.1979 leg. J.M. & J.M. Campbell (CNC); 67 mm 7 ff Mt. Rainier N.P., Longmire 2800' 17.05.1968 leg. Campbell & Smetana (CNC); 3 mm 1 f Olympic NP, 1.0 3.0 mi.N Heart Lake 3500-4200' 16.08.1979 leg. J.M. & B.A. Campbell (CNC); 1 f Olympic NP, 1.0-3.0 mi. N Heart Lake 3500'-4200' 16.08.1979 leg. Campbell (CNC); 3 mm 2 ff Olympic NP, 4.0 6.0 mi.SE Soleduck Cmpg. 2500-3100' 15.08.1979 leg. J.M. & B.A. Campbell (CNC); 1 f Olympic NP, Hoh Ranger Stn. 600' 13.05.1968 leg. Campbell & Smetana (CNC); 2 mm Olympic NP, Hot Spgs Boulder Crk. 2200' 2500 29.07.1973 leg. A. & Z. & D. Smetana (CNC); 1 f Olympic NP, Ol. Hot Spgs Boulder Crk. 2200-2500' 29.07.1973 leg. Smetana (CNC); 1 m Olympic NP, Queets Ranger Sta. 15.05.1968 leg. Campbell & Smetana (CNC); 2 mm 3 ff Seattle 9.06.1929 leg. R.A. Flock (CNC); 7 mm 5 ff Sequim (12 mi. S) 12.05.1968 leg. Campbell & Smetana (CNC); 7 mm 5 ff Sequim (12 mi. S) *Sambucus* 12.05.1968 leg. Campbell & Smetana (CNC); 1 f Silver Fir Cpgd, Mt. Baker Hwy 542 24.07.1968 leg. B.V. Peterson (CNC); 2 ff. Swab... (?) 25.05.1958 (FMNH); 2 m The Forks 5.07.1920 leg. E.C. Van Dyke (CNC); **West Virginia** 1 m 1 f Fairmont Musgrave PN [doubtful record] 30.04.1928 leg. Hopping (CNC).

Measurements. Head length: 0.20-0.37; head width: 0.53-0.64; pronotal length: 0.44-0.55; pronotal width: 0.64-0.81; elytral length: 0.98-1.29; elytral width: 0.74-1.11; length (clypeus to apex of elytra): 1.57-2.4; total length: 1.8-3.4.

Description: Habitus as in Fig. 136, 138. Head yellowish, often darkened on neck (male); pronotum yellowish; elytra yellowish, somewhat paler than pronotum; abdomen brown with yellowish apex from segment VII in male, entirely yellowish in female; prosternum yellowish; metasternum yellowish or brown; legs yellowish; antennae yellowish, sometimes very feebly darkened at apex.

Head wide with prominent eyes, postocular carina well marked, temples short and convergent caudad, medial margin of eyes with lengthened meshes of microsculpture, postantennal depressions confluent caudadly with the tentorial pits forming 2 longitudinal depressions in front of ocelli. Neck not separated from head. Punctuation sparse and superficial on microsculptured ground. Antennae moderately elongate, antennomere 1 elongate ovoid, 2 ovoid, 3 thin, twice as long as wide, 4-5 longer than wide, 6 subquadrate, 7-10 slightly transverse, 11 twice as long as wide, cylindrical at base and conical at apex.

Pronotum transverse (ratio width/length = 1.5 on average), convex, with a median longitudinal groove more or less incised but always visible in anterior half. Pronotum widest in anterior half, anterior margin slightly narrower than posterior, lateral margins rounded in anterior third, convergent caudad in straight or slightly sinuate line in posterior two-thirds, posterior angles more or less marked and scarcely obtuse, punctuation sparse and superficial, ground with dense isodiametric microsculpture, pubescence extremely short, scarcely visible, depressions near posterior angles rather wide, not deep, extending in front of middle of lateral margins.

Elytra scarcely elongate (ratio length from scutellum to apex/combined width of elytra = 1.0), truncate at apex in both sexes, widened towards apex, punctuation much stronger and denser than on pronotum, rather confluent, ground glossy, pubescence extremely short, scarcely visible.

Abdomen rather glossy, microsculpture superficial, with decumbent pubescence.

Middle tibiae straight in both sexes, posterior gently curved at apex in male, straight in female. Tarsomere 5 of posterior tarsi longer than 1-4 together.

Aedeagus as in Fig. 137.

Accessory sclerites of female as in Fig. 139, spermatheca as in Fig. 140.

Comparative notes. *Eusphalerum pothos* is the most common and widespread *Eusphalerum* species in North America. The presence of a clearly visible median longitudinal groove on the pronotum usually allows easy distinction from similar species (*E. newtoni*, *E. parvispiculum* and *E. uncinatum*), but in some cases only the shape of the aedeagus is decisive. The color of the metasternum varies from yellowish to brown (mostly in the Western population); this is unusual in *Eusphalerum*, in which color of the metasternum is often diagnostic.

Distribution. Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Quebec, Saskatchewan; UNITED STATES: Alaska, California, Idaho, Maine, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New York, Oregon, Vermont, Washington, West Virginia [doubtful] (Map 2).

Natural history. The species was found from sea level to 2200 m. in a large variety of habitats, mostly forest (e.g. *Abies procera*-*Pseudotsuga-Tsuga*, *Alnus*, *Betula-Acer*, hardwood-*Tsuga*, *Picea-Abies-Betula-Acer*, *Picea-Abies*, *Pinus strobus-Quercus* spp., *Acer-Fagus*, *Pseudotsuga-Tsuga-Abies-Pinus*) but also in alpine meadows and bogs. Documented host plants: *Achlys triphylla* (Sm.) DC. (Berberidaceae), *Heracleum maximum* Bartram (= *lanatum*) (Apiaceae), *Rubus parviflorus* Nutt. (Rosaceae), *Oplopanax horridus* (Smith) Miq. (Araliaceae), *Cornus* sp. (Cornaceae), *Smilacina* sp. (Asparagaceae), *Orobanch* sp. (Orobanchaceae), *Spiraea* sp. (Rosaceae), *Sambucus* sp. (Caprifoliaceae), *Achillea millefolium* L. (Asteraceae), *Platanthera obtusata* (Banks ex Pursh) Lindl. (Orchidaceae), *Rhododendron* sp. (Ericaceae), *Solidago* sp. (Asteraceae), *Lupinus* sp. (Fabaceae), *Lysichiton americanus* Hultén & H. St. John (Araceae). Captures from April to August, mostly in June-July.

Eusphalerum newtoni* Zanetti n. sp.*Material examined** (77 specimens)

Holotype m 3 paratypes mm 1 paratype f California Marin Co Inverness, (3.1 mi. NW of) 200 ft Alnus forest, on flowers *Heracleum lanatum* 22.05.1976 leg. A. Newton and M. Thayer (FMNH)

Other paratypes. CANADA. British Columbia 4 mm 2 ff Bowser 5/19.06.1955 leg. W.J. Brown & R. Coyles (CNC); 1 m Mission City 3.06.1953 leg. W. Mason (CNC); 1 m Prince Rupert, Mt. Hays 1 2000 29.06.1968 leg. Campbell & Smetana (CNC); 2 mm 1 f Vancouver Is., Port Renfrew 12.07.1984 leg. L. Huggert (MZLU). **USA. Oregon** 2 mm 1 f Douglas Co Reedsport (5 km S) 7.06.1984 leg. R. Danielsson (MZLU); Washington 1 f Clallam Co Fairholm (6 mi. ESE), Olympic Nat. Forest sweeping on forest roads and meadows 11.08.1988 leg. R. Baranowski (MZLU); 4 mm 5 ff Clallam Co Olympic NP, Lake Creek at Hurricane Ridge Rd. 625 m mixed conifer forest on flowers *Tiarella trifoliata* 09.07.1988 leg. A. Newton M. Thayer (FMNH); 11 mm 9 ff Clallam Co Olympic NP, Lake Creek at Hurricane Ridge Rd. 625 m mixed conifer forest on flowers *Clintonia uniflora* 09.07.1988 leg. A. Newton M. Thayer (FMNH); 2 ff Clallam Co Olympic NP, Lake Creek at Hurricane Ridge Rd. 625 m mixed conifer forest on flowers *Cornus canadensis* 09.07.1988 leg. A. Newton M. Thayer (FMNH); 1 m 3 f Clallam Co Olympic NP, Lake Creek at Hurricane Ridge Rd. 625 m mixed conifer forest on flowers Asteraceae 09.07.1988 leg. A. Newton M. Thayer (FMNH); 1 m Swob?? 24.05.19?? leg. L. Russell (FMNH); **California** 3 mm 1 f Colusa Co Goat Mt. (?) 30.05.1959 (CNC); 1 m Marin Co Taylor State Pk. flowers *Rubus parviflorus* 8.05.1949 leg. H.P. Leech (CNC); 6 mm 9 ff Marin Co Alpine Lk 11.06.1964 leg. Doyen (FMNH); 1 m Mendocino 26.05.1955 leg. Helfer (CNC); 1 f Napa Co Calistoga (11.4 mi. N) 1600 21.05.1976 leg. A. Newton and M. Thayer (FMNH).

Etymology. The species is dedicated to one of its collectors, the student of evolution of Staphylinidae Alfred F. Newton.

Measurements. Head length: 0.27-0.33; head width: 0.53-0.59; pronotal length: 0.40-0.53; pronotal width: 0.64-0.75; elytral length: 0.99-1.35; elytral width: 0.88-1.11; length (clypeus to apex of elytra): 1.59-2.03; total length: 1.7-2.9.

Description. Habitus as in Fig. 141. Head from yellowish slightly darkened on vertex to brown with anterior part medially yellowish; pronotum yellowish, sometimes darkened on discal part; elytra yellowish; abdomen brown with paler apex in male, entirely yellowish in female; prosternum yellowish; metasternum brownish yellow (male) or yellowish (female); legs yellowish; antennae yellowish at base, more or less darkened from antennomere 6.

Head with prominent eyes, postocular carina well marked, temples short and convergent caudad, medial margin of eyes with microsculpture forming longitudinal wrinkles, postantennal depressions confluent caudadly with the deep tentorial pits forming 2 longitudinal depressions in front of ocelli. Neck wide, not separated from the head. Punctuation rather sparse and superficial on microsculptured ground. Antennae moderately elongate, antennomere 1 about twice as long as wide, 2 ovoid, 3 thin, elongate, twice as long as wide, 4-5 longer than wide, 6 subquadrate, 7-10 slightly transverse, 11 twice as long as wide, cylindrical at base and conical at apex.

Pronotum transverse (ratio width/length = 1.4 on average), convex, with a median longitudinal impression in large males, a narrower furrow in the small males and in females. Pronotum widest in anterior half, anterior margin slightly narrower than posterior, lateral margins rounded in anterior third, usually convergent caudad in straight line in posterior two thirds, posterior angles marked and scarcely obtuse, punctuation rather sparse and superficial, ground with isodiametric microsculpture, pubescence extremely short, scarcely visible, depressions near posterior angles wide, extending in front of middle of lateral margin.

Elytra scarcely elongate (ratio length from scutellum to apex/combined width of elytra = 1.1), truncate at apex in both sexes, scarcely widened towards apex, punctuation stronger than on pronotum, dense, rather confluent, ground glossy, pubescence extremely short, scarcely visible.

Abdomen rather glossy, microsculpture superficial, with decumbent pubescence.

Tibiae straight in both sexes, middle tibiae of male slightly curved internally at apex, tarsomere 5 of posterior tarsi slightly shorter than 1-4 together.

Aedeagus of the type (California) as in Fig. 142, with a large copulatory sclerite, divided in 2 branches in the basal portion and curved in lateral view. In the Northern populations, from British Columbia to Oregon, the copulatory sclerite is somewhat longer.

Accessory sclerites of female as in Fig. 143, spermatheca as in Fig. 144.

Comparative notes. *Eusphalerum newtoni* is similar to *E. pothos*, from which the less defined median groove on the pronotum, which is more convex in the males, is somewhat distinctive. *Eusphalerum parvispiculum* is even more similar, and only the shape of the aedeagus and especially the presence of a characteristic large copulatory sclerite allows sure identification.

Distribution. CANADA: British Columbia; UNITED STATES: Oregon, California (Map 7).

Natural history. The species was documented at low altitude, up to 625 m a.s.l.. Some records are from mixed coniferous forest, one from *Alnus* forest. Known host plants: *Tiarella trifoliata* L. (Saxifragaceae), *Clintonia uniflora* (Menz. ex Sch. & Sch.) Kunth (Liliaceae), *Cornus canadensis* L. (Cornaceae), *Heracleum maximum* Bartram (= *H. lanatum*) (Apiaceae), *Rubus parviflorus* Nutt. (Rosaceae), and unidentified Asteraceae. Captures from May (California) to August (Washington).

***Eusphalerum parvispiculum* Zanetti n. sp.**

Material examined (102 specimens)

Holotype m 9 paratypes mm 10 paratypes ff California Calaveras Co West Point (1.1 mi.E), Winton Rd. 2800 ft. on flowers *Ceanothus* 20.05.1976 leg. A. Newton M. Thayer (FMNH).

Other paratypes. USA. California 2 mm 2 ff Colusa Co Goat Mt. 30.05.1959 (CNC); 1 m El Dorado Co Kyburz (8 mi.E) 5500 11.07.1966 leg. W. Gagnel (FMNH); 1 m El Dorado Co Pollock Pines 28.05.1970 leg. Chandler (FMNH); 2 mm 1 f Mather 15.06.1969 leg. K. Stephan (FMNH); 1 m 1 f Nevada Co Spenceville Wildlife Mgmt. Area on *Brodiaea* 28.03.1983 leg. P.J. Johnson (FMNH); 7 mm 7 ff Nevada Co Spenceville Wildlife Mgmt & Rec. Area on flowers *Brodiaea* 28.03.1983 leg. P.J. Johnson (FMNH); 2 ff Plumas Co Butt Valley Dam 4000 on flowers 30.06.1975 leg. A. Newton M. Thayer (FMNH); 1 f 2 mm Riverside Co James Reserve SBNF, UC 33.8081°N 116.7734°W 19/26.05.2005 leg. Caterino (SBMNH); 3 mm 1 f Riverside Co James Reserve SBNF, UC 33.8107°N 116.7712°W 30.05.2005 leg. Caterino (SBMNH); 5 mm 2 ff Riverside Co San Bernardino NF Fuller's Ridge trailhead 33.8391°N 116.7363°W 16.07.2006 leg. Caterino & Chatzimanolis (SBMNH); 4 mm 1 f San Bernardino Co San Bernardino NF Bluff Lake 34.2187° N 116.9663°W 14.07.2006 leg. Caterino & Chatzimanolis (SBMNH); 1 m San Bernardino Co San Bernardino NF F.S.2N10 34.2262°N 116.93.68°W 14.07.2006 leg. Caterino & Chatzimanolis (SBMNH); 1 m Riverside Co San Bernardino NF Lake Fulmor 33.8060°N 116.7785°W 15.07.2006 leg. Caterino & Chatzimanolis (SBMNH); 5 mm 3 ff Tulare Co Sequoia NF Upr., Freeman Ck. 36.138°N 118.534°W beaten from *Ceanothus* 23.06.2003 leg. Caterino (SBMNH); 1 m Tulare Co Sequoia NF, Boulder Ck. 36.1585°N 118.5406°W 21.07.2005 leg. Caterino (SBMNH); 1 f 2 mm Tulare Co Sequoia NF, Freeman Ck. Grove 36.146°N 118.493°W 21/22.06.2003 leg. Caterino (SBMNH); 2 mm 1 f Tulare Co Whitaker Forest UC 36.6988°N 118.9290°W/36.7046°N 118.9329°W 5/12.06.2006 leg. Caterino & Chatzimanolis (SBMNH); 6 mm 4 ff Pioneer (28 mi.NE) 8.07.1966 leg. C.W. O'Brien (CNC); 3 mm 3 ff Nevada Co Spenceville Wildlife Mgmt & Rec. Area on flowers *Brodiaea* 28.03.1983 leg. Johnson (FMNH). **Oregon** 1 m Jackson Co Ashland (15 km E) Pinehurst 11/12.06.1984 leg. R. Danielsson (MZLU); 1 m 1 f Klamath Co Beatty (10 km SW) 13.06.1984 leg. R. Danielsson (MZLU);

Measurements. Head length: 0.25-0.31; head width: 0.46-0.61; pronotal length: 0.40-0.53; pronotal width: 0.64-0.75; elytral length: 0.99-1.11; elytral width: 0.90-0.99; length (clypeus to apex of elytra): 1.57-2.03; total length: 1.8-3.

Etymology. Adjective, from the latin *parvus* (small) and *spiculum* (spike), referring to the small copulatory sclerite.

Description. Habitus as in Fig. 145. Head yellowish, often somewhat darkened in posterior half; pronotum and elytra yellowish; abdomen light brown in male, yellowish with somewhat darkened apical segments in female; prosternum yellowish; metasternum yellowish or brownish yellow; legs yellowish; antennae yellowish, darkened from antennomere 6.

Head with prominent eyes, postocular carina well marked; temples short, convergent caudad; medial margin of eyes with microsculpture tending to form longitudinal wrinkles; postantennal depressions superficial, confluent caudally with marked tentorial pits, rather far in front of ocelli; neck broad, separated from head only posterior to postocular carina, not medially. Punctuation rather sparse, mostly on vertex, ground microsculptured. Antennae rather robust, segments antennomeres 1-2 ovoid, 3 twice as long as wide, 4-5 subquadrate, 6-10 wider than long, 10 about twice as wide as long, 11 twice as long as wide, cylindrical at base, conical at apex.

Pronotum transverse (ratio width-length = 1.4-1.6), usually convex in males, with a wide slight median impression in male, in female reduced to one or 2 median impressions near anterior and/or posterior margins. Anterior margin slightly wider than posterior. Pronotum widest in front of middle, with rounded lateral margins, convergent caudad in almost straight line, somewhat sinuate in front of posterior margins, which are marked and scarcely obtuse. Punctuation rather sparse and superficial, ground with isodiametric microsculpture, pubescence extremely short, scarcely visible, depressions near posterior angles rather narrow.

Elytra scarcely elongate (ratio of length from scutellum to apex/combined width of elytra = 1), somewhat rounded at apex, punctuation stronger than on pronotum, dense, somewhat confluent, ground glossy, pubescence extremely short, scarcely visible.

Abdomen rather glossy, microsculpture superficial with decumbent pubescence.

Middle tibiae of the male very feebly curved at apex. Tarsomere 5 of posterior tarsi slightly shorter than 1-4 together.

Aedeagus as in Fig. 146, internal sac with small copulatory sclerite divided into 2 slightly differentiated parts.

Accessory sclerites of female as in Fig. 147, spermatheca as in Fig. 148.

Comparative notes. *Eusphalerum parvispiculum* is similar to *E. pothos*, from which the less defined median groove on pronotum, which is more convex in males, is somewhat distinctive. *Eusphalerum newtoni* is even more similar, and only the shape of the aedeagus, and especially the characteristic copulatory sclerite, allows sure identification.

Distribution. UNITED STATES: California, Oregon (Map 7).

Natural history. *Eusphalerum parvispiculum* is probably a mountain species (documented captures between 500 and 1700 m). *Brodiaea* sp. (Asparagaceae) and *Ceanothus* sp. ((Rhamnaceae) are reported as host species. Adults collected mostly from May through July, sometimes also in spring, from late March.

***Eusphalerum uncinatum* Zanetti n. sp.**

Material examined (135 specimens)

Holotype m 5 paratypes mm 7 ff Oregon Clackamas Co Camp Crk. (3.5 mi. SE) 2300-2400' *Rhododendron* 27.06.1974 leg. A. & D. Smetana (CNC)

Other paratypes. CANADA. British Columbia 18 mm 18 ff Manning Pr. Pk Rhododendron Flats *Rhododendron* flowers 21.06.1988 leg. J.M. Campbell (CNC); 6 mm 5 ff Manning Prov. Pk., Rhododendron Trail sweep *Rhododendron* flowers 20.06.1988 leg. L. LeSage (CNC); 2 mm Mt. Revelstoke 6000 25.07.1972 leg. G.J. Spencer (CNC); 1 m Silver Star Prov. Pk. 6200 8.08.1973 leg. R.H. Parry (CNC). **USA. California** 10 m 33 ff El Dorado Co Fallen Leaf 6500 1/29.07.1935 leg. F.E. Blaisdell (CNC); 1 m El. Dorado Co Fallen Leaf 21.06.1915 leg. R.Hopping (CNC); 3 mm 2 ff Fresno Co Huntington Lake swept 3.08.1962 leg. C. D. Johnson (FMNH); 6 mm 3 ff Fresno Co Sierra NF John Muir Tr 37.2583°N 118.8654°W 20.08.2006 leg. Caterino (SBMNH); 1 m 1 f Placer Co Lake Tahoe, Tahoe Pines 6200 10.08.1969 leg. A. Smetana (CNC); 2 mm Tehama Co Wilson Lake 5300 27.06.1966 leg. C.W. O'Brien (CNC); 2 f 1 m Lake Tahoe 23.06.1925 leg. E.H.Nast (CNC); 2 mm Fresno Co Huntington Lake 3.08.1962 leg. C.D. Johnson (FMNH); **Oregon** 1 m Clackamas Co jct US26 Ore 35 (1.3 m E) 3900 on flowers *Lupinus* 12.07.1975 leg. A. Newton M. Thayer (FMNH); 1 m 1 f Douglas Co Lamola Lk. (3.5 mi.S), Umpqua Nat. For. 4400' currant, *Pinus contorta*, rotted wood 22.06.1972 leg. E.H. Benedict (CNC); **Washington** 2 mm 2 ff Chelan Co Leavenworth (10 km NW) 30.06.1984 leg. R. Baranowski (LMZ).

Measurements. head length: 0.31-0.35; head width: 0.53-0.62; pronotal length: 0.46-0.55; pronotal width: 0.72-0.83; elytral length: 0.98-1.14; elytral width: 0.99-1.18; length (clypeus to apex of elytra): 1.66-2.23; total length: 2.1-3.1.

Etymology. The adjective *uncinatum* means hooked in Latin. It refers to the form of median lobe of the aedeagus in lateral view.

Description. Habitus as in Fig. 149. Head and pronotum reddish yellow; neck sometimes somewhat darkened in male; elytra yellowish; abdomen brown, somewhat paler at apex (male) or entirely yellowish (female); prosternum yellowish; metasternum brown, sometimes yellowish in female; legs yellowish; antennae yellowish, more or less darkened from antennomere 6, often entirely yellowish.

Head with prominent eyes; postocular carina well marked; temples short, convergent caudad. Medial margin of eyes with microsculpture forming longitudinal wrinkles; postantennal depressions deep, confluent with tentorial pits, forming 2 longitudinal depressions in front of ocelli; punctation superficial and sparse; ground with microsculpture isodiametric in middle and on neck, longitudinal in depressions in front of ocelli; neck wide, not separated from head. Antennae robust, antennomere 1 and 2 ovoid, 3 elongate, twice as long as wide, 4, 5, and 6 subquadrate, 9-10 transverse, 10 almost twice as wide as long, 11 twice as long as wide, cylindrical in the proximal part, conical at apex.

Pronotum convex, often with a small impression medially near anterior margin, transverse (ratio width/length = 1.4-1.6), widest in middle, anterior margin slightly narrower than posterior, lateral margins usually rounded, sometimes almost rectilinear, posterior angles scarcely obtuse and well marked, punctation sparse and rather superficial, ground with isodiametric microsculpture, pubescence extremely short, scarcely visible, depressions near posterior angles rather wide.

Elytra scarcely elongate (ratio length from scutellum to apex / combined width of elytra = 1.0), truncate at apex in both sexes, moderately widened toward apex, punctation stronger than on pronotum, irregular and rather confluent, ground glossy, pubescence extremely short and scarcely visible.

Abdomen rather glossy, microsculpture superficial with decumbent pubescence.

Tibiae straight in both sexes, not modified, tarsomere 5 of posterior tarsi slightly shorter than 1-4 together.

Aedeagus as in Fig. 150, hooked near apex in lateral view, without large copulatory sclerites.

Accessory sclerites of female as in Fig. 151, spermatheca as in Fig. 152.

Comparative notes. *Eusphalerum uncinatum* is similar to *E. pothos*, from which the absence of a defined median groove on pronotum is somewhat distinctive. *Eusphalerum newtoni* and *E. parvispiculum* are similar, too, and only the shape of the aedeagus, especially the presence of a hook near the apex, visible in lateral view, is distinctive for *E. uncinatum*.

Distribution. CANADA: British Columbia; UNITED STATES: California, Oregon, Washington (Map 9).

Natural history. A mountain species (records between 700 and 2000 m) often associated with *Rhododendron* sp. (Ericaceae) flowers, also on *Lupinus* sp. (Fabaceae). Adults collected from June to August.

Wrong and doubtful records

Eusphalerum lapponicum (Mannerheim, 1830)

Herman (2001: 429) reports this north palaearctic species from USA. In his list of bibliographic references of *E. lapponicum* the following record is included: Van Dyke, 1924: 16 (*Omalium*; Alaska). This quote is wrong because in fact it refers to *Phloeostiba lapponica* (Zetterstedt, 1838) as *Omalium* (*Phleonomus* [sic]) *lapponicus* Zett. *Eusphalerum lapponicum* is to be excluded from the North American fauna.

Xylodromus segmentarius (Mäklin, 1852) n. comb.

Omalium segmentarium: Mäklin, 1852: 322.

Anthobium segmentarium (Mäklin); Fauvel 1878: 200; Bernhauer and Schubert 1910: 43.

Eusphalerum segmentarium (Mäklin); Moore and Legner 1975: 191; Herman 2001: 454.

Examined type material. Holotype male Sitcha/Holmberg/166 [?]/*Omalium segmentarium* Mäkl./Mus. Zool. H:fors/Spec. typ. 2127/Mus. Hels. N:o 1766/*Xylodromus segmentarius* (Mäklin 1852) det. A. Zanetti 2013/Holotypus (red) (MZH).

This species described from “insula Sitkha” (Alaska) was included in *Eusphalerum* (as *Anthobium*) by Fauvel on the basis of the form of the elytral apex (“... ad angulum anteriorem apice producta; verisimile ad differentiam sexualem spectat;” (Mäklin, 1852). The examination of the type demonstrates that the species belongs to the genus *Xylodromus* Heer, 1839 (Fig. 153) and that it is not a junior synonym either of *Xylodromus concinnus* (Marshall, 1802) or of *Xylodromus depressus* (Gravenhorst, 1802), European species both also reported from North America. The validity of *Xylodromus capito* (Casey, 1894) (type from Wisconsin) requires examination of the type.

Omalium marginatum Say, 1832

Omalium marginatus (sic): Say, 1832: 50.

Omalium marginatum Say; Erichson 1840: 890.

Anthobium marginatum (Say); Fauvel 1878: 200; Bernhauer and Schubert 1910: 40.

Eusphalerum marginatum (Say); Moore and Legner 1975: 191; Herman 2001: 436.

This species was attributed to *Eusphalerum* (as *Anthobium*) by Fauvel (1878) on the basis of the original description that mentions for the elytra “exterior hind angles rounded, sutural ones acute”. Fauvel did not know this species directly, the type is almost surely destroyed (see Smetana and Herman 2001), and no *Eusphalerum* is known from Nebraska, the state in which is located Engineer Cantonment (Genoways and Ratcliffe 2008), the uncertain type locality (“I obtained this insect when with Major Longs expedition to the Rocky mountains: I think it occurred at Engineer Cantonment on the Missouri” (Say 1832)). For all these reasons *Omalium marginatum* Say, 1832 must be considered a *species dubia*.

Key to species

- | | | |
|-------|--|----|
| 1. | Tarsomere 5 of posterior tarsi shorter than 1-4 together | 2 |
| — | Tarsomere 5 of posterior tarsi as long as 1-4 together or longer | 10 |
| 2(1). | Elytra long (ratio length of elytra, shoulder-apex / length of pronotum = 2.5-3.3 mm), rounded at apex in the male and prolonged at the suture in the female (except in population from Illinois) (convexum group) | 3 |
| — | Elytra short (ratio length of elytra, shoulder-apex / length of pronotum = 2.0-2.4 mm), truncate at apex in both sexes (farrarae group) | 7 |

- 3(2). Sternite VII of male not incised medially (Fig. 78). Lateral margins of pronotum subparallel in posterior half 4
 — Sternite VII of male incised medially. Lateral margins of pronotum subparallel or convergent in posterior half 5
- 4(3). Lateral margins of pronotum subparallel in posterior half, elytra of female prolonged at the suture in a very long lobe (Fig. 76). Aedeagus: Fig. 77. Length, 2.0-2.7 mm. eastern Canada and US, south to Tennessee and North Carolina ***E. convexum* (Fauvel, 1878)**
 — Lateral margins of pronotum rounded, female elytra truncate apically. Illinois ***E. convexum?***
- 5(3). Sternite VII of male incised medially in long narrow fissure (Fig. 83). Lateral margins of pronotum subparallel in posterior half, female elytra prolonged at suture in a very long lobe (as in Fig. 76). Aedeagus: Fig. 82. Length, 1.9-2.8 mm. British Columbia, Washington, Oregon, California ***E. fraternum* (Casey, 1894)**
 — Sternite VII of male incised medially in a short semicircular or triangular notch (Fig. 90, 95). Lateral margins of pronotum convergent caudad and female elytra slightly prolonged at suture, or lateral margins of pronotum almost parallel in front of posterior angles (female unknown) 6
- 6(5). Lateral margins of pronotum convergent caudad towards posterior angles (Fig. 87), punctuation of pronotum dense. Elytra of female slightly prolonged at suture (Fig. 88). Aedeagus: Fig. 89. Length, 2.5-2.8 mm. Kentucky, Missouri, North Carolina, Ohio, Tennessee, Virginia ***E. carolinensis* n. sp.**
 — Lateral margins of pronotum almost parallel in front of posterior angles, punctuation of pronotum sparse. Female unknown. Aedeagus: Fig. 94. Length, 2.0 mm. California ***E. chatzimanolisi* n. sp.**
- 7(2). Temples short, straight. Head of male normal 8
 — Temples long, angled. Male with relatively larger head (allometry) 9
- 8(7). Blackish with narrow pronotum. Pronotum and elytra with long pubescence. Aedeagus: Fig. 15. 2.7-2.9 mm. British Columbia ***E. klimaszewskii* n. sp.**
 — Head, pronotum and elytra yellowish, pronotum wide. Pronotum and elytra with variable pubescence, always with long isolated setae. Aedeagus: Fig. 2. 2.5-3.4 mm. British Columbia, Oregon, Washington ***E. farrarae* (Hatch, 1944)**
- 9(7). Pubescence long. Aedeagus: Fig. 11. 2.2-2.8 mm. California ***E. pilosum* n. sp.**
 — Pubescence short. Aedeagus: Fig. 6. 2.4-2.7 mm. California ***E. subangulatum* (Casey, 1894)**
- 10(1). Head clearly separated from neck by an impressed line (Fig. 19) (torquatum group). Aedeagus: Fig. 20. Length, 1.8-2.3 mm. Newfoundland ***E. torquatum* (Marsham, 1802)**
 — Head not separated from neck by an impressed line 11
- 11(10). Strongly microsculptured, dull, pronotum as in Fig. 96 and 97, postantennal depressions slightly confluent caudally with tentorial pits. Eyes with postocular carina, female elytra prolonged at suture (Fig. 97). Aedeagus: Fig. 98. Spermatheca lollipop-shaped (Fig. 101). Length, 2.4-3.0 mm (rugulosum group). Alaska, Alberta, British Columbia. ***E. rugulosum* (Mäklin, 1853)**
 — More or less glossy, pronotum of different shape, postantennal depressions confluent caudally with tentorial pits or head almost without impressions. If postocular carina present, female with truncate elytra, if female with prolonged elytra, postocular carina absent 12

- 12(11). Elytra very long, rounded in male, lengthened as in Fig. 27 in female. Middle tibiae of male strongly curved, as in Fig. 24. Aedeagus: Fig. 25. Length, 1.6-2.4 mm. (aurifluum group). California, Arizona ***E. aurifluum* (Fauvel, 1878)**
 — Elytra differently shaped, male middle tibiae differently shaped **13**
- 13(12). Eyes without postocular carina. Spermatheca formed by 2 widened parts or lollipop-shaped **14**
 — Eyes with postocular carina. Spermatheca lollipop-shaped (species recognizable with certainty only by the aedeagus) **17**
- 14(13). Sternite VIII of male with a more or less developed apical plate arising from surface of the segment, sometimes reduced to 2 small elevations (Fig. 38-44 and 50-54); elytra of female mostly prolonged at the suture as in Fig 46-49, sometimes truncate at apex as in Fig. 45; very variable in color, size (Fig. 30-32) and secondary sexual characters. Length, 2-3.5 mm. Aedeagus: Fig. 33. Parts of spermatheca very different in size (Fig. 37). Western, from British Columbia to Baja California and New Mexico ***E. californicum* (Fauvel, 1878)**
 — Sternite VIII of the male without apical plate. Male with lengthened pronotum and anterior tibiae incised as in Fig. 72. Spermatheca formed by 2 parts of similar size but differing in shape (Fig. 60, 66, and 71) (tibiale group) **15**
- 15(14). Elytra of female strongly prolonged as in Fig. 68, copulatory sclerite of aedeagus as in Fig. 69. Length, 2.2-2.9 mm. Arizona, Colorado, Idaho, New Mexico, Utah ***E. tibiale* (Casey, 1894)**
 — Elytra of female scarcely prolonged, as in Fig. 56 and 62, copulatory sclerite of aedeagus different **16**
- 16(15). Copulatory sclerite of the male as in Fig. 63. Length, 1.5-2.5 mm. California ***E. diversicolle* (Casey, 1894)**
 — Copulatory sclerite of the male as in Fig. 57. Length, 2.0-3.1 mm. Alberta, British Columbia, Idaho, Oregon, Wyoming ***E. swauki* (Hatch, 1957)**
- 17(13). Middle tibiae of male as in Fig. 113, male sternite 9 not angulate apically (luteipes group). Entirely blackish. Aedeagus: Fig. 110. Length, 1.7-2.1 mm. California ***E. luteipes* n. sp.**
 — Middle tibiae of male not modified. Head, pronotum and elytra usually yellowish, except one small Californian species blackish **18**
- 18(17). Small, blackish, male sternite 9 angulate apically (Fig. 107 and 108) (caterinoi group). Aedeagus: Fig. 103. Length, 1.7-2.2 mm. California ***E. caterinoi* n. sp.**
 — Male sternite not modified; head, pronotum and elytra light **19**
- 19(18) Smaller, about 2 mm on average **20**
 — Larger, about 2.5 mm on average (pothos group) **24**
- 20(19). Pronotum with rounded obtuse posterior angles, apex of abdomen largely yellowish. Parameres of aedeagus not dilated at apex (horni group). Aedeagus: Fig. 115. Length, 1.8-2.3 mm. Alabama, Florida, Georgia, Missouri, Oklahoma, South Carolina ***E. horni* (Fauvel, 1878)**
 — Pronotum with marked posterior angles, apex of abdomen scarcely lightened. Parameres of the aedeagus dilated at apex (fenyesi group) **21**
- 21(20). Pronotum with extremely sparse and superficial punctation. Aedeagus: Fig. 123. Length, 1.7-2.2 mm. From Manitoba to New Brunswick, northeastern States south to North Carolina ***E. orientale* (Bernhauer, 1912)**
 — Pronotum with denser and deeper punctation **22**

- 22(21). Internal sac of aedeagus with small spicules. Aedeagus: Fig. 119. Length, 1.8-2.4 mm. Alberta, British Columbia, Montana, Oregon, Washington ***E. fenyasi* (Bernhauer, 1912)**
 — Internal sac of aedeagus with 2 spines **23**
- 23(22). Spines of internal sac of aedeagus long. Aedeagus: Fig. 127. Length, 1.8-2.4 mm. Alberta, British Columbia, Idaho, Indiana(?), Oregon, Washington ***E. thayeranum* n. sp.**
 — Spines of internal sac short. Aedeagus: Fig. 131. Length, 1.8 mm. Tennessee
 ***E. margaretae* n. sp.**
- 24(19). Ground of pronotum glossy, without microsculpture. Aedeagus: Fig. 133. Length, 1.9-2.7 mm. California ***E. punctatum* (Casey, 1894)**
 — Ground of pronotum clearly microsculptured **25**
- 25(24). Pronotum with median longitudinal groove. Aedeagus: Fig. 136. Length, 1.8-3.4 mm. Alaska, southern Canada, northern United States south to northern California in the West and to Massachusetts in the East ***E. pothos* (Mannerheim, 1843)**
 — Pronotum without median longitudinal groove or with only a trace of furrow **26**
- 26(25). Aedeagus with apical hook (lateral view): Fig. 150. Length, 2.1-3.1 mm. Inland ranges of British Columbia, California, Oregon, Washington ***E. uncinatum* n. sp.**
 — Aedeagus without apical hook (lateral view) **27**
- 27(26). Internal sac of aedeagus with large copulatory sclerite: Fig. 142. Length, 1.7-2.9. Coastal ranges of British Columbia, Washington, Oregon, California ***E. newtoni* n. sp.**
 — Internal sac of aedeagus with small copulatory sclerite: Fig. 146. Length, 1.8-3.0 mm. Inland Oregon, California ***E. parvispiculum* n. sp.**

Catalog of North American *Eusphalerum*

| Species | Distribution |
|--|--|
| <i>Eusphalerum aurifluum</i> (Fauvel, 1878) | USA: Arizona, California |
| <i>Eusphalerum californicum</i> (Fauvel, 1878) = <i>Eusphalerum atriventris</i> (Casey, 1894) = <i>Eusphalerum nigerrimum</i> (Casey, 1894) = <i>Eusphalerum gilvipes</i> (Casey, 1894) = <i>Eusphalerum dichroum</i> (Fall, 1922) = <i>Eusphalerum bonneli</i> (Hatch, 1944) = <i>Eusphalerum lunae</i> Hatch, 1957 | USA: Arizona, California, Colorado, Idaho, Oregon, Washington, Wyoming, Mexico (Baja California) |
| <i>Eusphalerum carolinensis</i> n. sp. | USA; Kentucky, Missouri, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia |
| <i>Eusphalerum caterinoi</i> n. sp. | USA: California |
| <i>Eusphalerum chatzimanolisi</i> n. sp. | USA: California |
| <i>Eusphalerum convexum</i> (Fauvel, 1878) | CANADA: New Brunswick, Newfoundland and Labrador, Nova Scotia, Prince Edward Island, Québec. USA; Connecticut, Indiana, Kentucky, Maine, Massachusetts, Minnesota, New Hampshire, North Carolina, Ohio, Ontario, Pennsylvania, Vermont, Virginia, Washington DC, West Virginia. |
| <i>Eusphalerum diversicolle</i> (Casey, 1894) | USA: California |
| <i>Eusphalerum farrarae</i> (Hatch, 1944) = <i>Eusphalerum lawrencei</i> Hatch, 1957 | CANADA: British Columbia; USA: Oregon, Washington |
| <i>Eusphalerum fenyasi</i> (Bernhauer, 1912) | CANADA: Alberta, British Columbia; USA: Montana, Oregon, Washington |

| | |
|--|---|
| <i>Eusphalerum fraternum</i> (Casey, 1894) = <i>Eusphalerum minskae</i> : (Hatch, 1957) | CANADA: British Columbia; USA: California, Oregon, Washington, |
| <i>Eusphalerum horni</i> (Fauvel, 1878) | USA: Alabama, Florida, Georgia, Missouri, Oklahoma, South Carolina. |
| <i>Eusphalerum klimaszewskii</i> new. sp. | CANADA: British Columbia |
| <i>Eusphalerum lutipes</i> n. sp. | USA: California |
| <i>Eusphalerum margaretae</i> n. sp. | USA: Tennessee |
| <i>Eusphalerum newtoni</i> n. sp. | CANADA: British Columbia; USA: Oregon, California |
| <i>Eusphalerum orientale</i> (Bernhauer, 1912) = <i>Eusphalerum frosti</i> (Bernhauer, 1928) | CANADA: Manitoba, New Brunswick, Nova Scotia, Ontario, Québec; USA: Maine, Massachusetts, Michigan, Minnesota, New Hampshire, North Carolina, |
| <i>Eusphalerum parvispiculum</i> new sp | USA: California, Oregon |
| <i>Eusphalerum pilosum</i> n. sp. | California |
| <i>Eusphalerum pothos</i> (Mannerheim, 1843) = <i>Eusphalerum dimidiatum</i> (Melsheimer, 1844) | CANADA: Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, Prince Edward Island, Québec, Saskatchewan; USA: Alaska, California, Idaho, Maine, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New York, Oregon, Vermont, Washington, West Virginia. |
| <i>Eusphalerum punctatum</i> (Casey, 1894) | USA: California |
| <i>Eusphalerum rugulosum</i> (Mäklin, 1853) = <i>Eusphalerum grayae</i> (Hatch, 1944) | CANADA: Alberta, British Columbia; USA: Alaska, Oregon |
| <i>Eusphalerum subangulatum</i> (Casey, 1894) | USA: California |
| <i>Eusphalerum swauki</i> Hatch, 1957 | CANADA: Alberta, British Columbia; USA: Idaho, Oregon, Wyoming. |
| <i>Eusphalerum thayeranum</i> n. sp. | CANADA: Alberta, British Columbia; USA: Idaho, Indiana (?), Oregon, Washington |
| <i>Eusphalerum tibiale</i> (Casey, 1894) | USA: Arizona, Colorado, New Mexico, Utah |
| <i>Eusphalerum torquatum</i> (Marsham, 1802) | CANADA: Newfoundland, Nova Scotia |
| <i>Eusphalerum uncinatum</i> n. sp. | CANADA: British Columbia; USA: California, Oregon, Washington |

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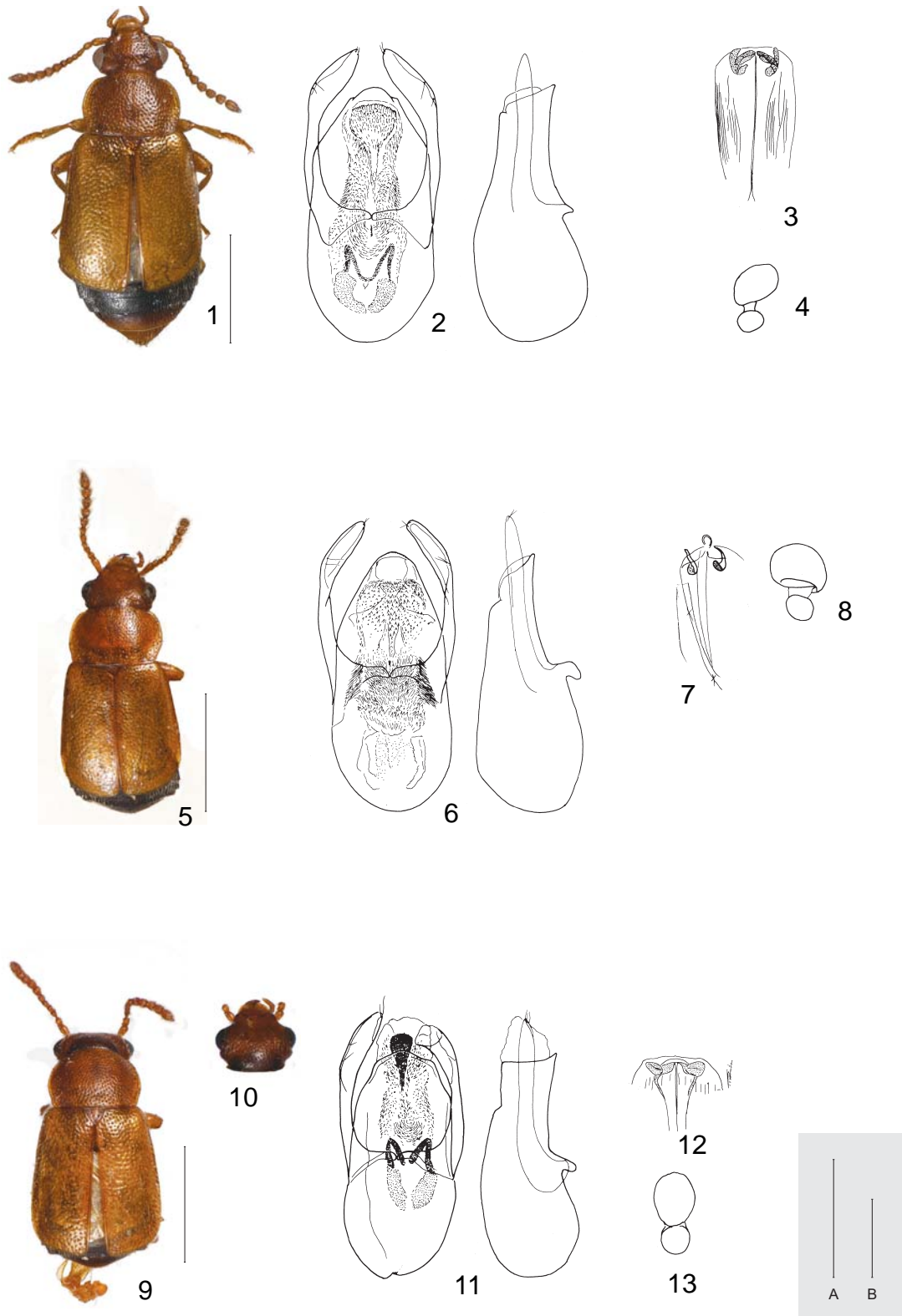
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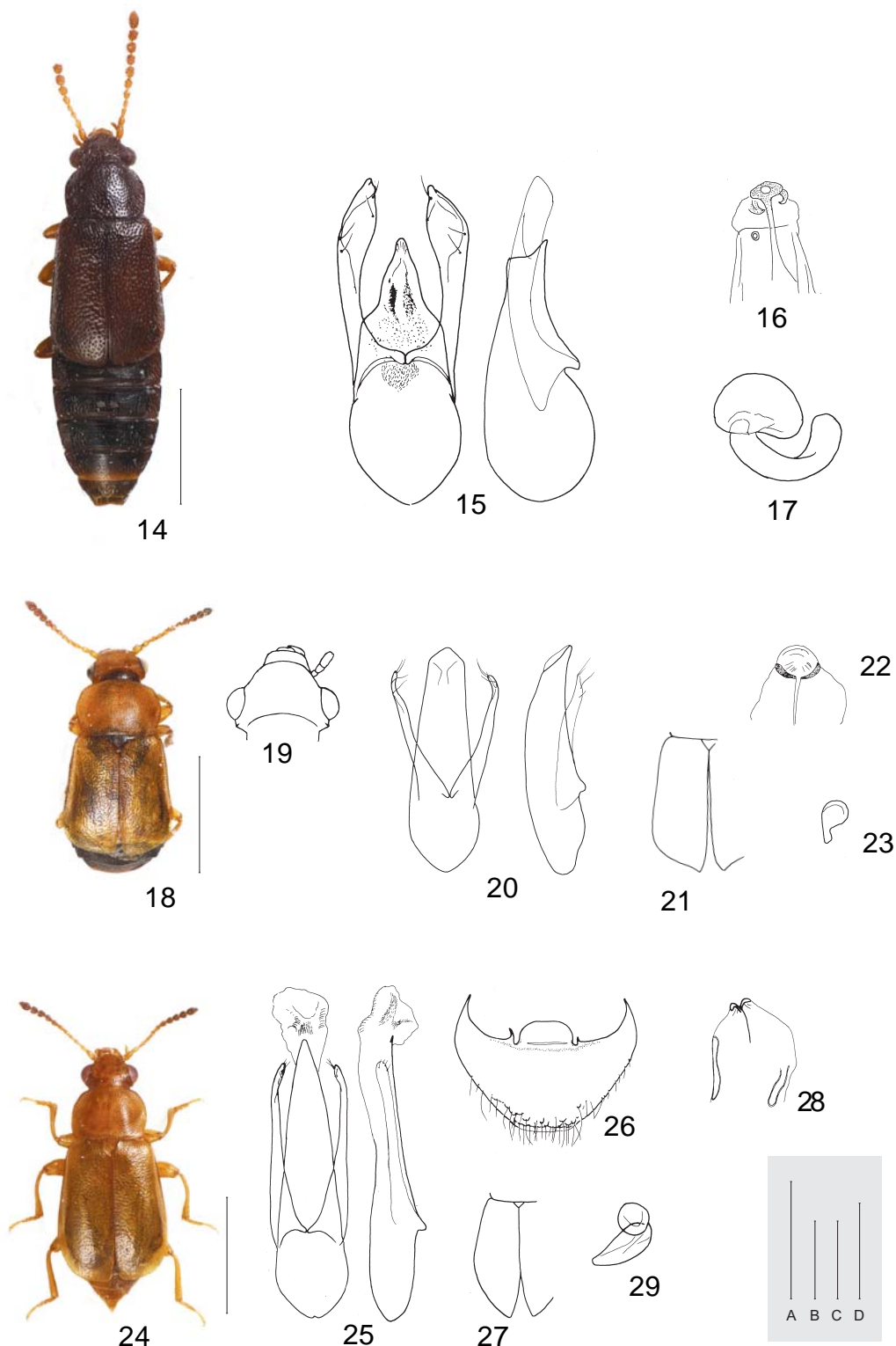
Review Editor: Michael C. Thomas.

Table 1. Number of species of *Eusphalerum* per state or province in North America.

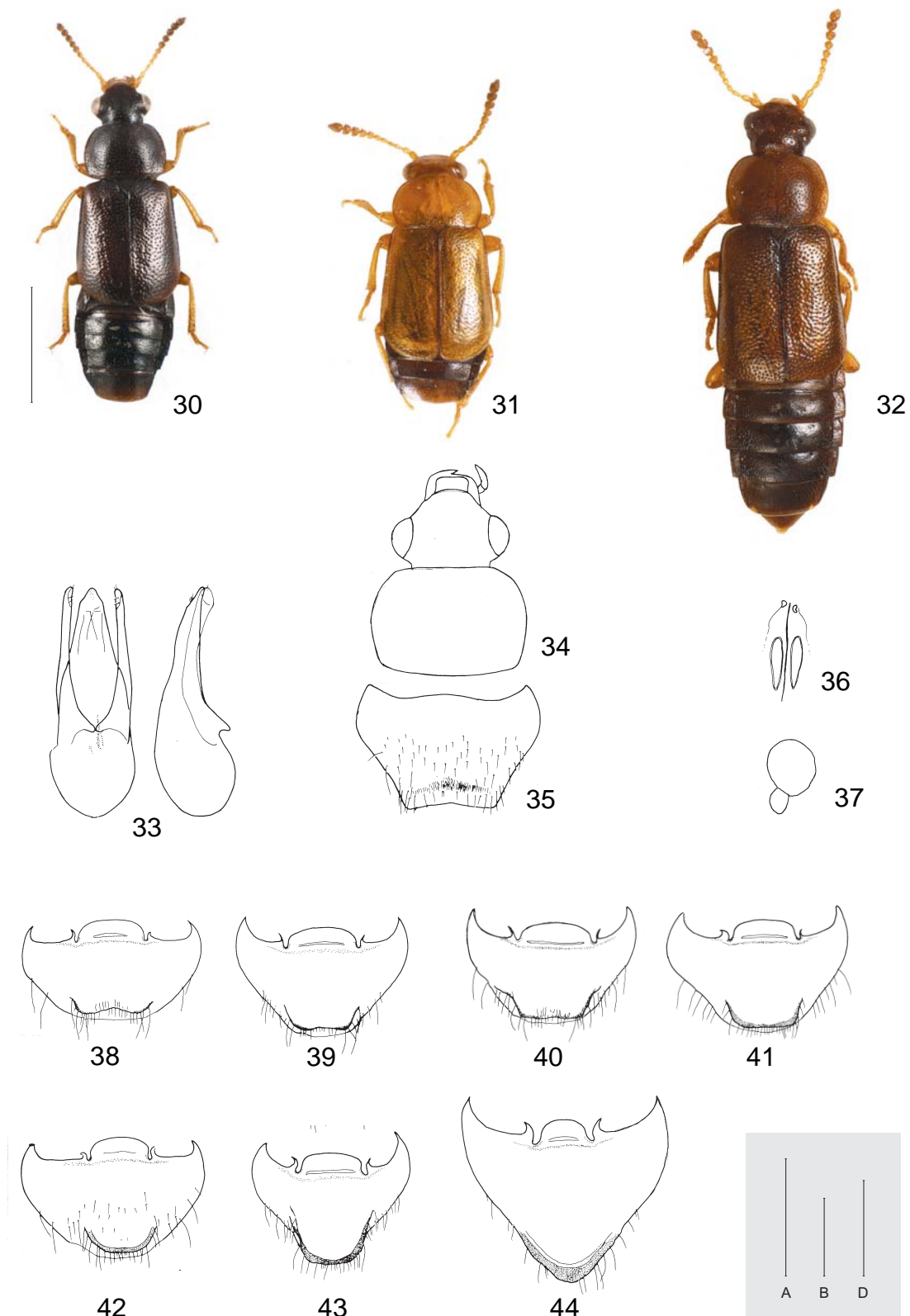
| | |
|---|----|
| California, USA | 14 |
| Oregon, USA | 11 |
| British Columbia, Canada | 10 |
| Washington, USA | 7 |
| Alberta, Canada | 5 |
| Idaho, USA | 4 |
| Nova Scotia, Canada | 4 |
| Arizona, USA | 3 |
| Maine, USA | 3 |
| Massachusetts, USA | 3 |
| Minnesota, USA | 3 |
| New Brunswick, Canada | 3 |
| New Hampshire, USA | 3 |
| Newfoundland and Labrador, Canada | 3 |
| North Carolina, USA | 3 |
| Ontario, USA | 3 |
| Québec, Canada | 3 |
| Alaska, USA | 2 |
| Colorado, USA | 2 |
| Kentucky, USA | 2 |
| Manitoba, Canada | 2 |
| Michigan, USA | 2 |
| Missouri, USA | 2 |
| Montana, USA | 2 |
| Ohio, USA | 2 |
| Pennsylvania, USA | 2 |
| Prince Edward Island, Canada | 2 |
| Tennessee, USA | 2 |
| Vermont, USA | 2 |
| Virginia, USA | 2 |
| West Virginia, USA | 2 |
| Wyoming, USA | 2 |
| Alabama, USA | 1 |
| Baja California, México | 1 |
| Connecticut, USA | 1 |
| Florida, USA | 1 |
| Georgia, USA | 1 |
| Indiana, USA | 1 |
| New Mexico, USA | 1 |
| New York, USA | 1 |
| Oklahoma, USA | 1 |
| Saskatchewan, Canada | 1 |
| South Carolina, USA | 1 |
| Utah, USA | 1 |
| Washington DC, USA | 1 |



Figures 1-13. *Eusphalerum farrarae*. **1)** Habitus (male). **2)** Aedeagus. **3)** Female accessory sclerites. **4)** Spermatheca. *E. subangulatum*. **5)** Habitus (male). **6)** Aedeagus. **7)** Female accessory sclerites. **8)** Spermatheca. *Eusphalerum pilosum*. **9)** Habitus (male). **10)** Dorsal view of head (male). **11)** Aedeagus. **12)** Female accessory sclerites. **13)** Spermatheca. Scale of photos = 1.0 mm, scale A (Fig. 2, 3, 6, 7, 11, 12) = 0.3 mm; scale B (Fig. 4, 8, 13) = 0.1 mm.



Figures 14-29. *Eusphalerum klimaszewskii*. 14) Habitus (male). 15) Aedeagus. 16) Female accessory sclerites. 17) Spermatheca. *E. torquatum*. 18) Habitus (male). 19) Head. 20) Aedeagus. 21) Female elytra. 22) Female accessory sclerites. 23) Spermatheca. *E. aurifluum*. 24) Habitus (male); 25) Aedeagus. 26) Male sternite VIII. 27) Female elytra. 28) Female accessory sclerites. 29) Spermatheca. Scale of photos = 1 mm, scale A (Fig. 15, 16, 20, 22, 25, 28) = 0.3 mm; scale B (Fig. 17, 23, 29) = 0.1 mm; scale C (21, 27) = 1.0 mm; scale D (19) = 0.5 mm.



Figures 30-44. *Eusphalerum californicum*. **30, 31, 32)** Habitus (male). **33)** Aedeagus. **34).** Head and pronotum. **35)** Tergite VIII of male. **36)** Female accessory sclerites. **37)** Spermatheca. **38-44)** Sternite VIII of male. Scale of photos = 1 mm; scale A (Fig. 33, 35, 36, 38-44) = 0.3 mm; scale B (Fig. 37) = 0.1 mm; scale D (Fig. 34) = 0.5 mm.



45



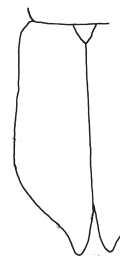
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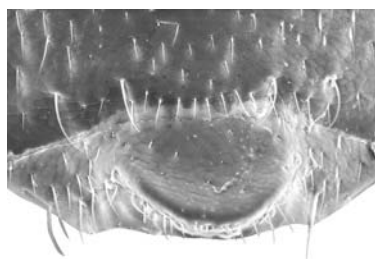
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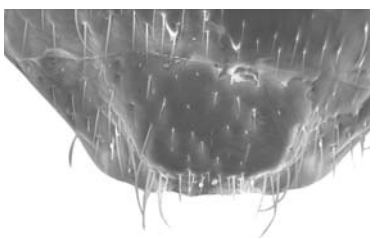
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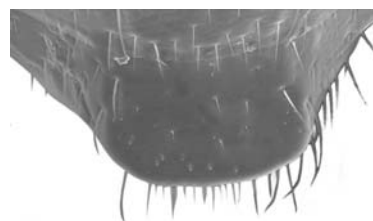
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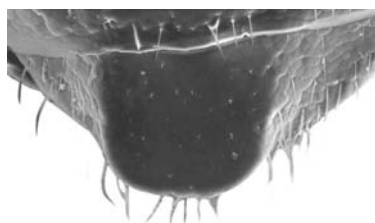
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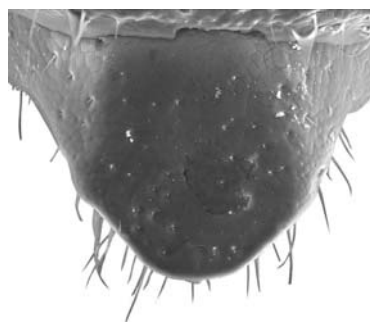
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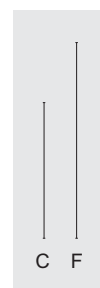
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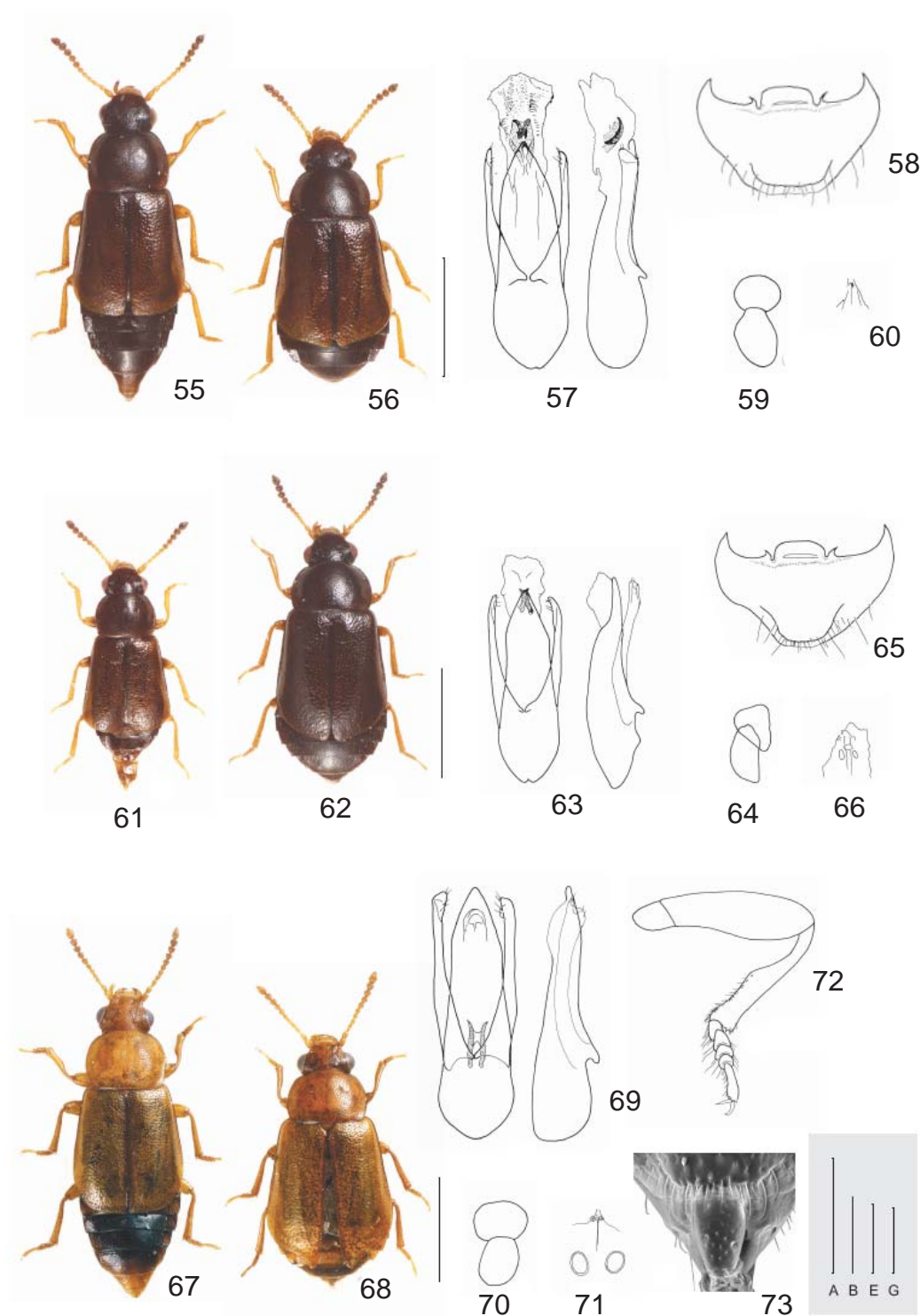
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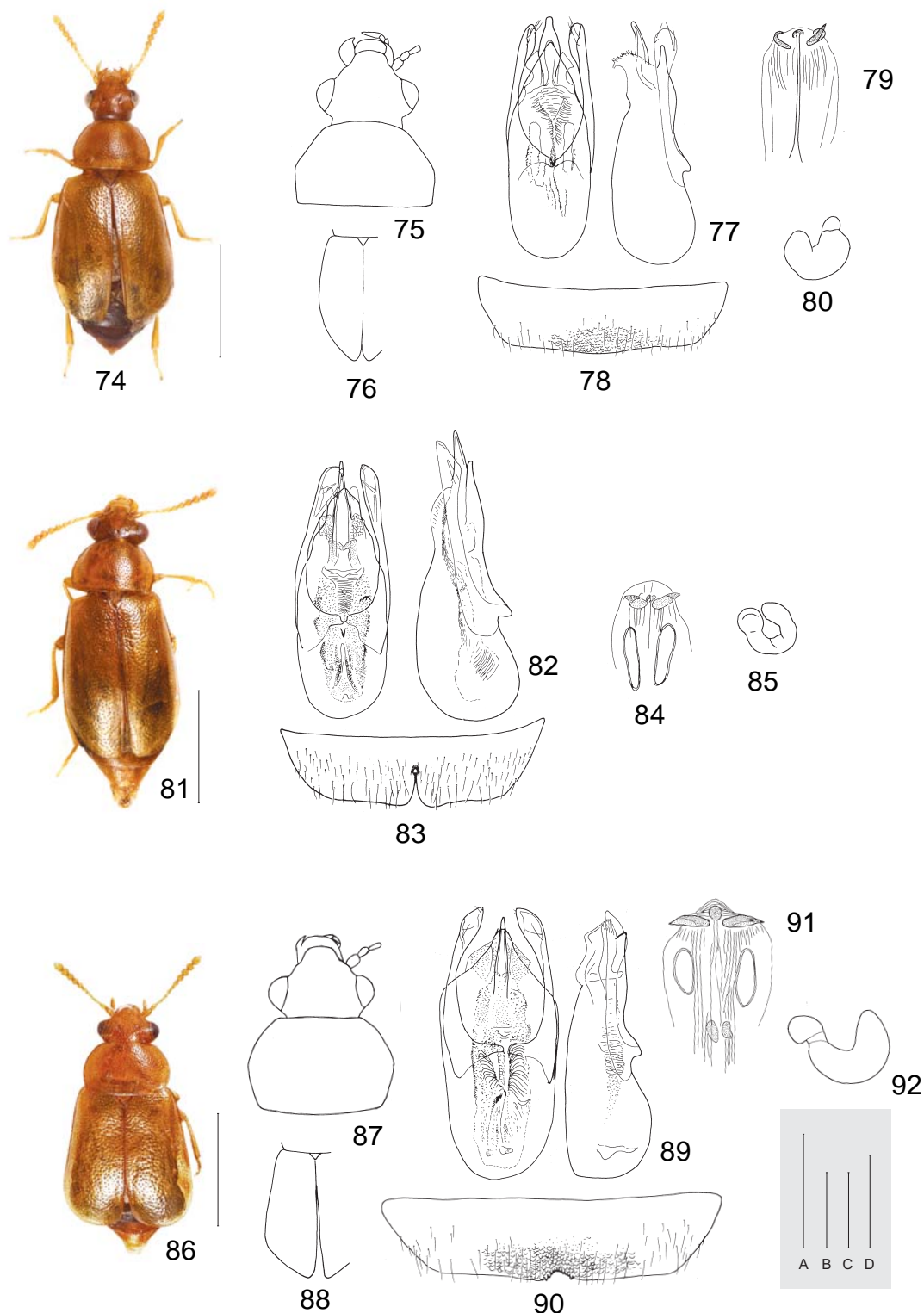
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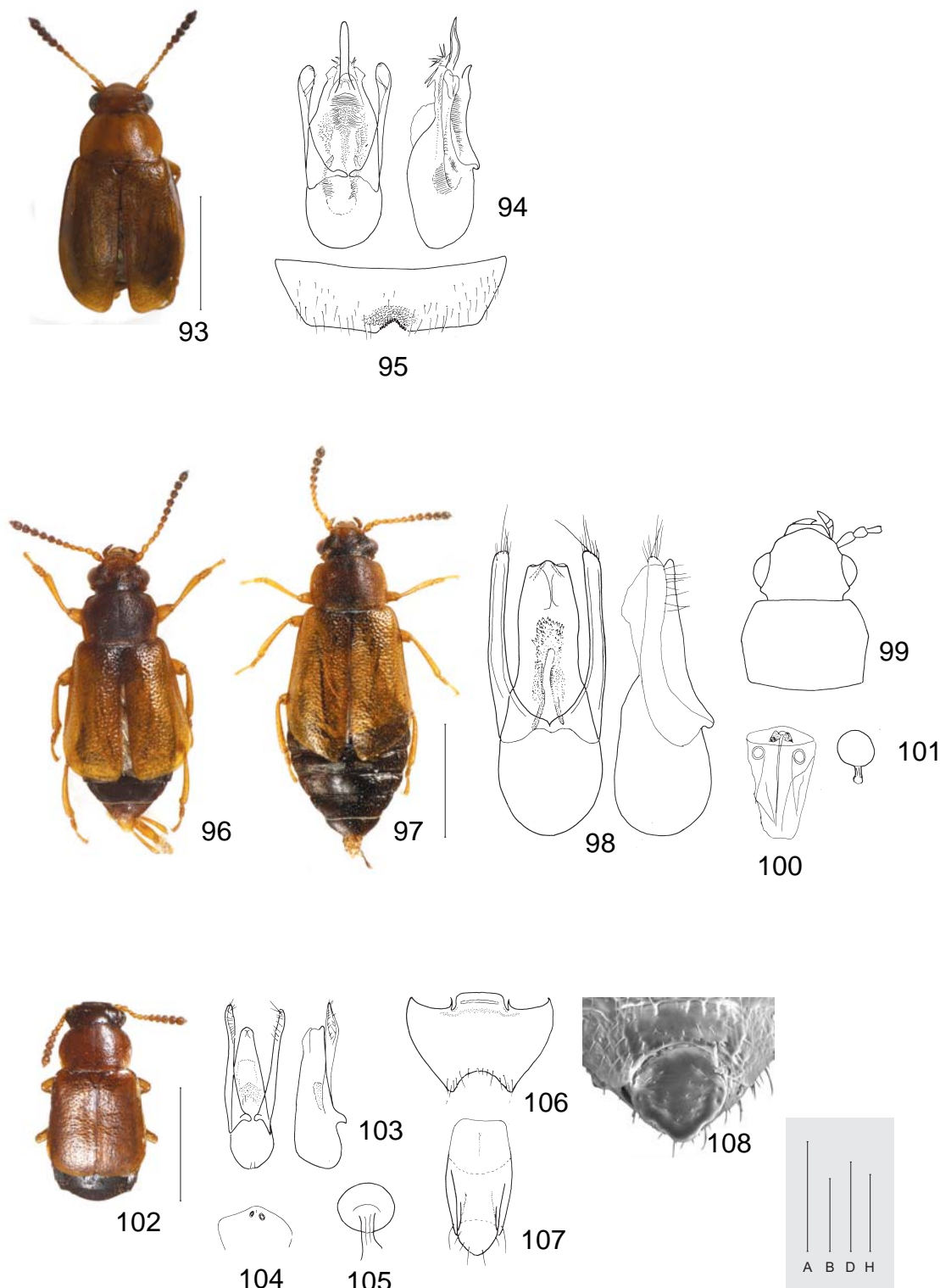
Figures 45-54. *Eusphalerum californicum*. **45-49)** Female elytra. **50-54)** Male sternite VIII. Scale C (Fig. 45-49) = 1 mm; scale F (Fig. 50-54) = 0.2 mm.



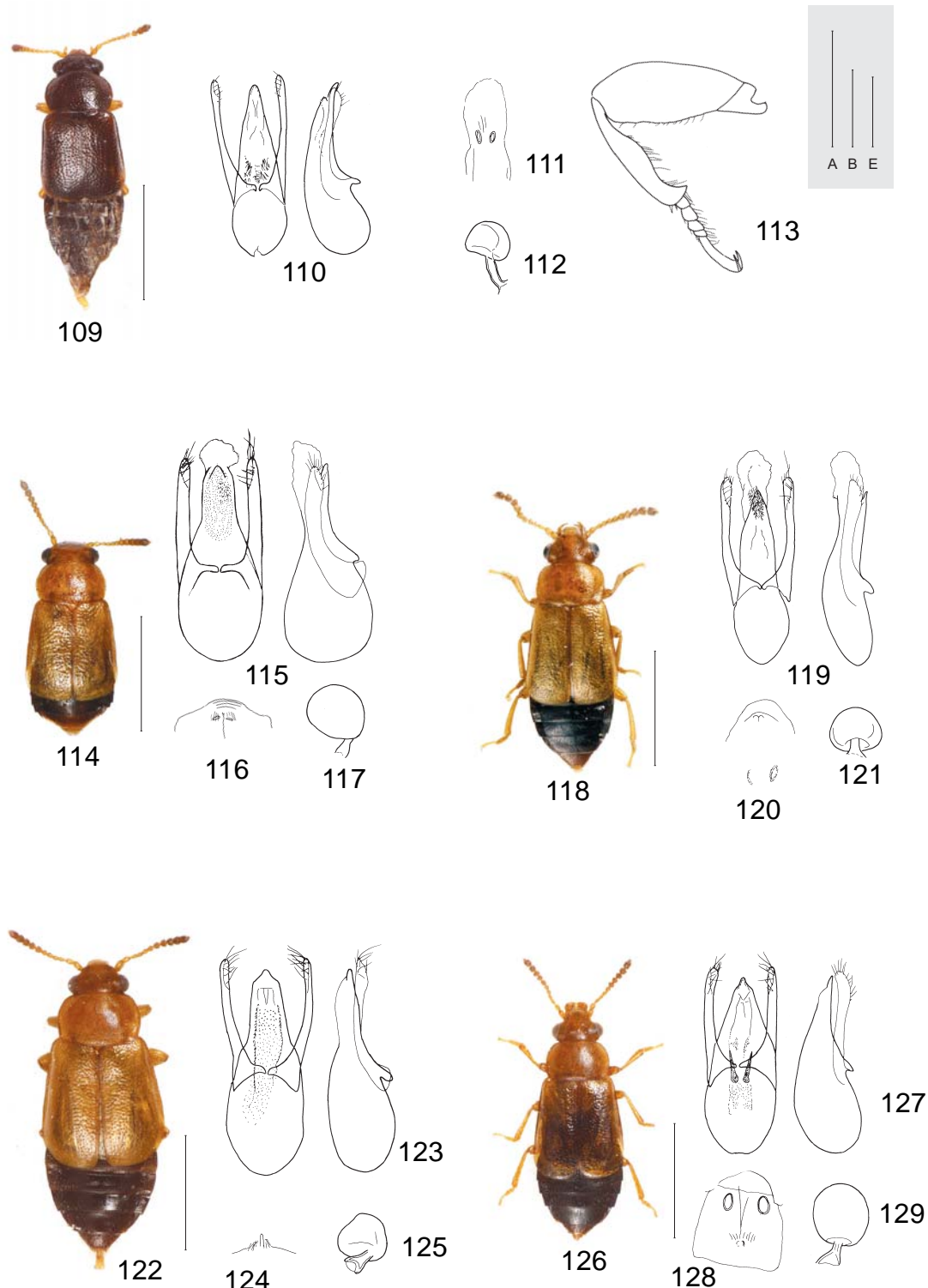
Figures 55-73. *Eusphalerum swauki*. **55)** Habitus (male). **56)** Habitus (female). **57)** Aedeagus. **58)** Sternite VIII of male. **59)** Female accessory sclerites. **60)** Spermatheca. *E. diversicolle*. **61)** Habitus (male). **62)** Habitus (female). **63)** Aedeagus. **64)** Sternite VIII of male. **65)** Female accessory sclerites. **66)** Spermatheca. *E. tibiale*. **67)** Habitus (male). **68)** Habitus (female). **69)** Aedeagus. **70)** Female accessory sclerites. **71)** Spermatheca. **72)** Anterior leg of male. **73)** Male sternite IX. Scale of photos = 1 mm; scale A (Fig. 57, 58, 59, 63, 64, 65, 69, 70) = 0.3 mm, scale B (Fig. 60, 66, 71) = 0.1 mm; scale E (Fig. 72) = 0.2 mm; scale G (fig 73) = 0.1 mm.



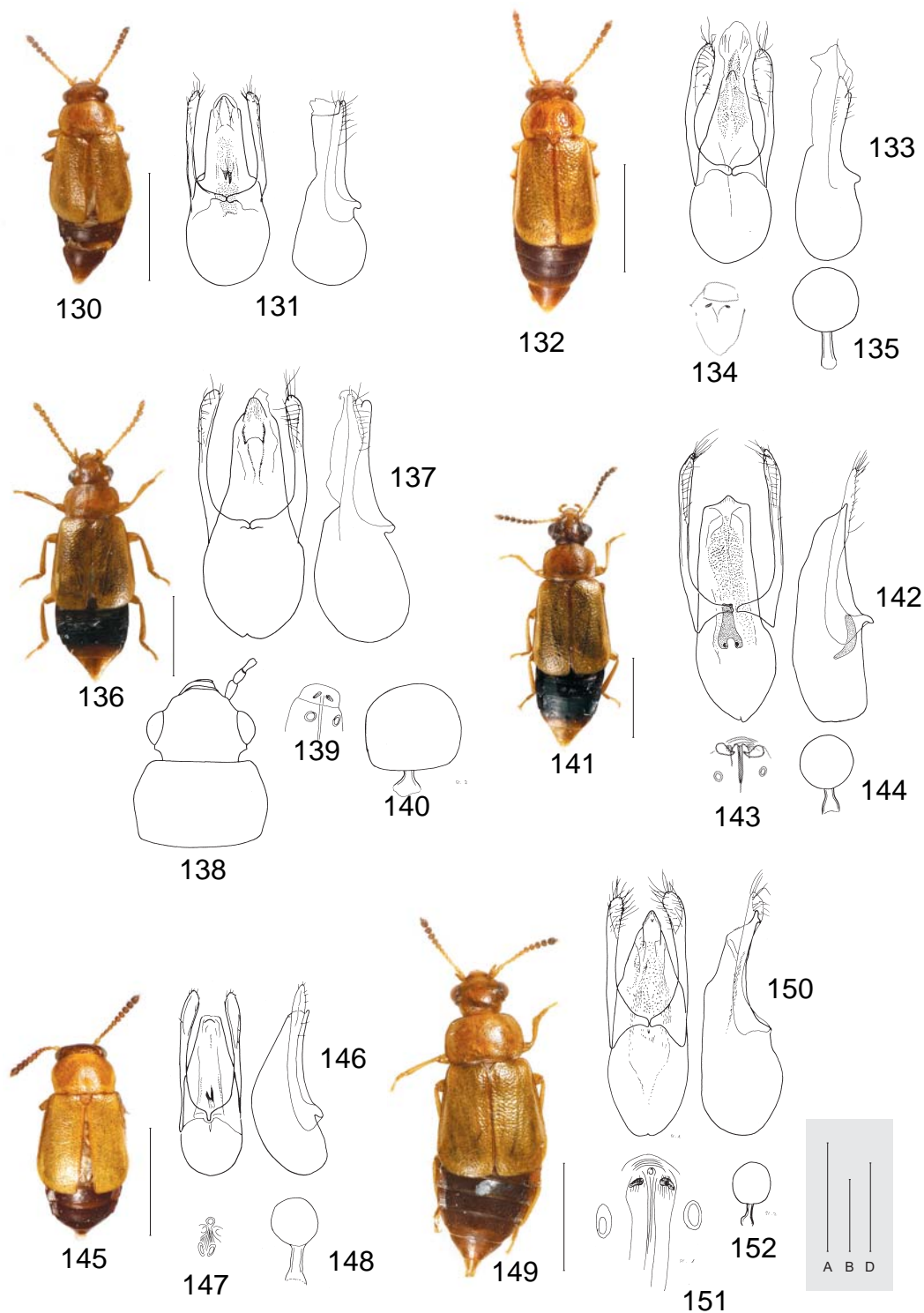
Figures 74-92. *Eusphalerum convexum*. 74) Habitus (male). 75) Head and pronotum. 76) Elytra of the female. 77) Aedeagus. 78) Male sternite VII. 79) Female accessory sclerites. 80) Spermatheca. *E. fraternum*. 81) Habitus (male). 82) Aedeagus. 83) Male sternite VII. 84) Female accessory sclerites. 85) Spermatheca. *E. carolinensis*. 86) Habitus (male). 87) Head and pronotum. 88) Elytra of the female. 89) Aedeagus. 90) Male sternite VII. 91) Female accessory sclerites. 92) Spermatheca. Scale of photos = 1 mm, scale A (Fig. 77, 78, 79, 82, 83, 84, 89, 90, 91) = 0.3 mm, scale B (Fig. 80, 85, 92) = 0.1 mm, scale C (Fig. 76, 88) = 1 mm; scale D (Fig. 75, 87) = 0.5 mm.



Figures 93-108. *Eusphalerum chatzimanolisi*. **93)** Habitus (male). **94)** Aedeagus. **95)** Male sternite VII. *E. rugulosum*. **96)** Habitus (male). **97)** Habitus (female). **98)** Aedeagus. **99)** Head and pronotum. **100)** Female accessory sclerites. **101)** Spermatheca. *E. caterinoidi*. **102)** Habitus (male); **103)** Aedeagus. **104)** Female accessory sclerites. **105)** Spermatheca. **106)** Sternite VIII of male. **107)** Sternite of male genital segment. **108)** Apex of abdomen, ventral view. Scale of photos = 1 mm, scale A (Fig. 94, 95, 98, 100, 103, 104, 106, 107) = 0.3 mm; scale B (Fig. 101, 105) = 0.1 mm, scale D (Fig. 99) = 1 mm; scale H (Fig. 108) = 0.1 mm.



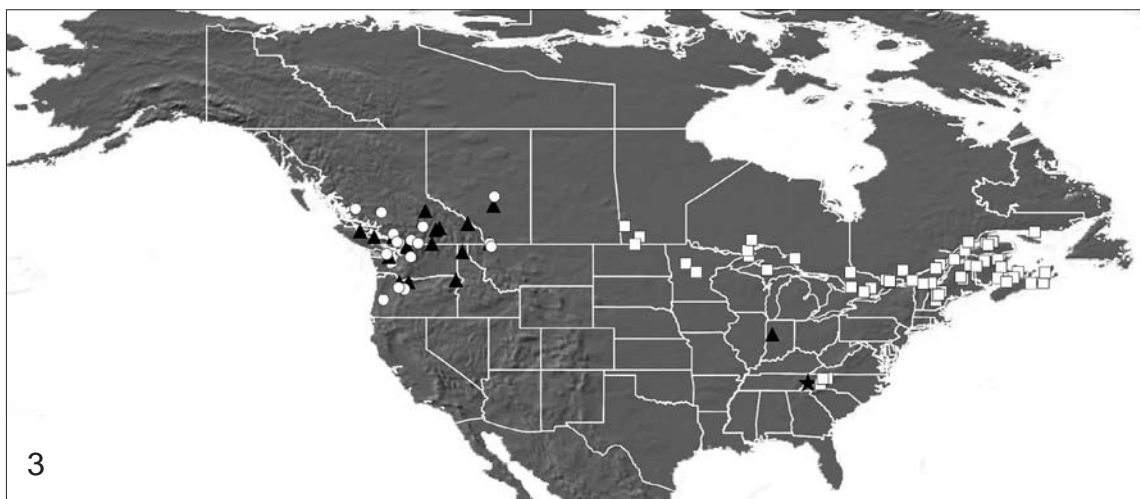
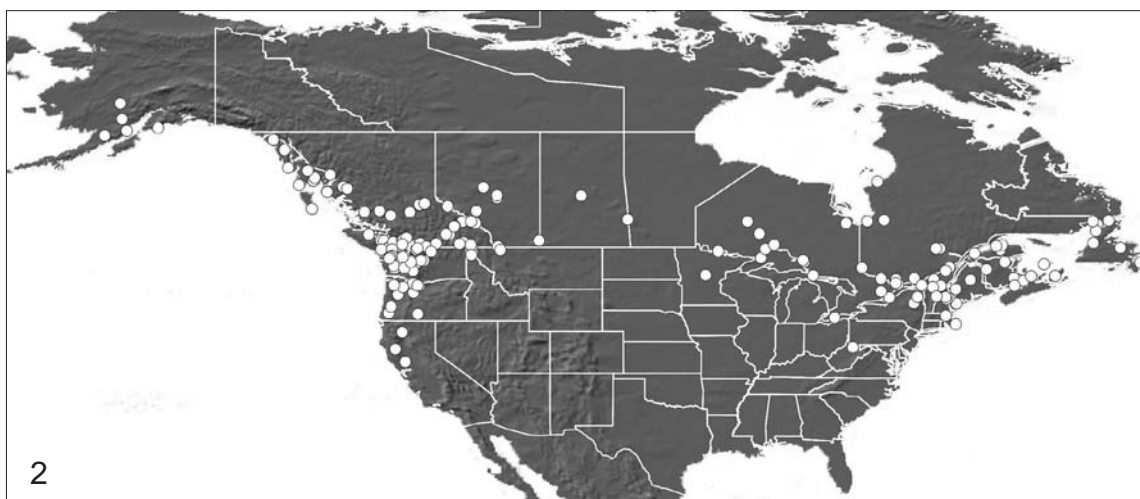
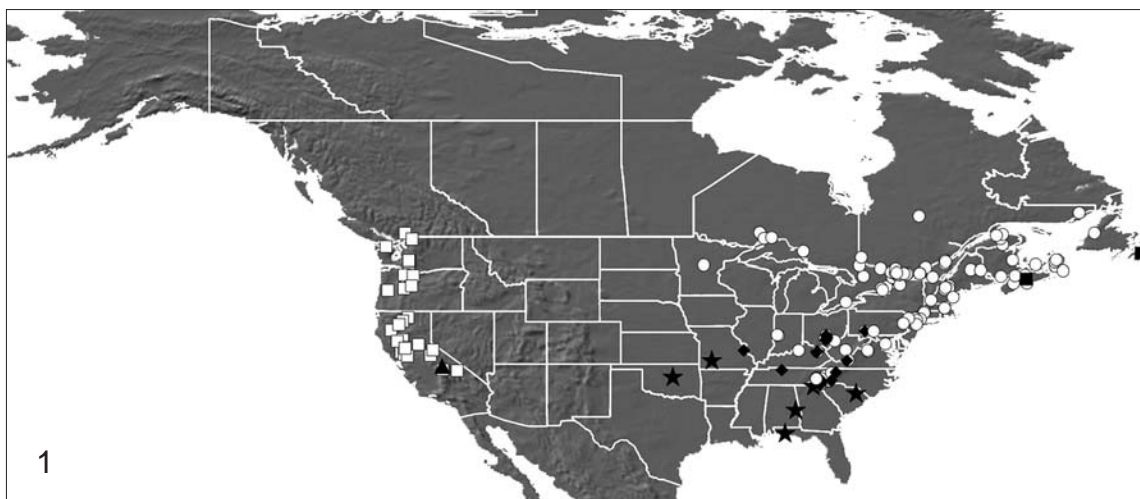
Figures 109-129. *Eusphalerum luteipes*. 109) Habitus (male). 110) Aedeagus. 111) Female accessory sclerites. 112) Spermatheca. 113) Middle leg of male. *E. horni*. 114) Habitus (male). 115) Aedeagus. 116) Female accessory sclerites. 117) Spermatheca. *E. fenyesi*. 118) Habitus (male). 119) Aedeagus. 120) Female accessory sclerites. 121) Spermatheca. *E. orientale*. 122) Habitus (male). 123) Aedeagus. 124) Female accessory sclerites. 125) Spermatheca. *E. thayeranum*. 126) Habitus (male). 127) Aedeagus. 128) Female accessory sclerites. 129) Spermatheca. Scale of photos = 1 mm, scale A (Fig. 110, 111, 115, 116, 119, 120, 123, 124, 127, 128) = 0.3 mm, scale B (Fig. 112, 117, 121, 125, 129) = 0.1 mm, and scale E (Fig. 113) = 0.2 mm.



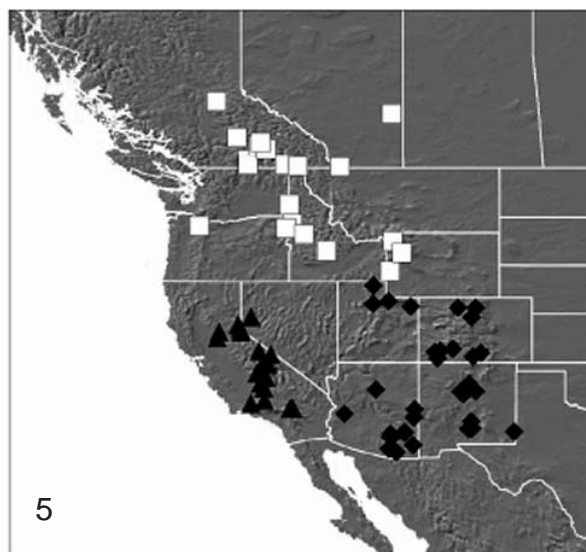
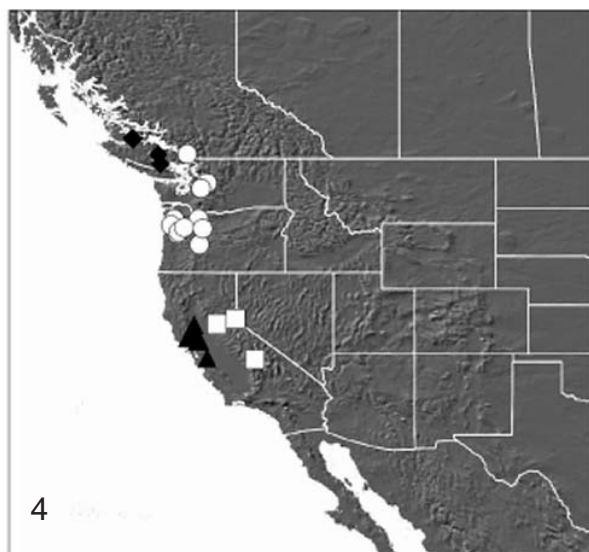
Figures 130-152. *Eusphalerum margaretae*. **130)** Habitus (male). **131)** Aedeagus. *E. punctatum*. **132)** Habitus (male). **133)** Aedeagus. **134)** Female accessory sclerites. **135)** Spermatheca. *E. pothos*. **136)** Habitus (male). **137)** Aedeagus. **138)** Head and pronotum. **139)** Accessory sclerites of female. **140)** Spermatheca. *E. newtoni*. **141)** Habitus (male). **142)** Aedeagus. **143)** Female accessory sclerites. **144)** Spermatheca. *E. parvispiculum*. **145)** Habitus (male). **146)** Aedeagus. **147)** Female accessory sclerites. **148)** Spermatheca. *E. uncinatum*. **149)** Habitus (male). **150)** Aedeagus. **151)** Female accessory sclerites. **152)** Spermatheca. Scale of photos = 1 mm, scale A (Fig. 131, 133, 134, 137, 139, 142, 143, 146, 147, 150, 151) = 0.3 mm, scale B (Fig. 135, 140, 144, 148, 152) = 0.1 mm, scale D (Fig. 138) = 0.5 mm.



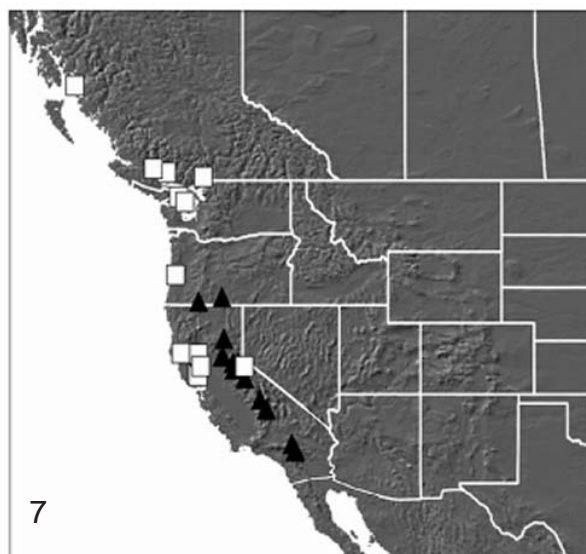
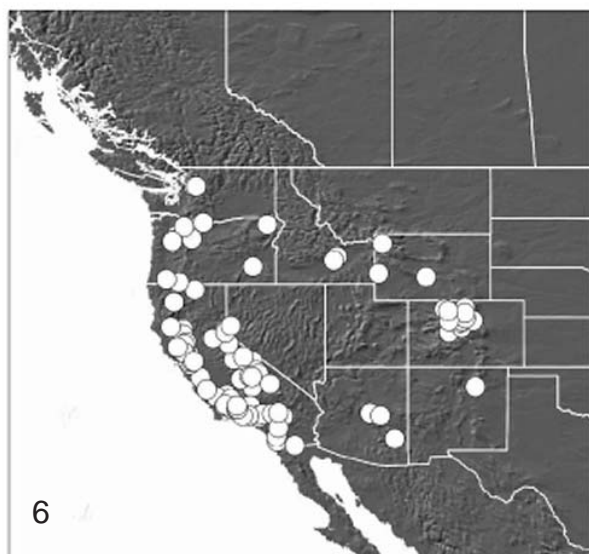
Figure 153. *Xylodromus segmentarius*, habitus, holotype.



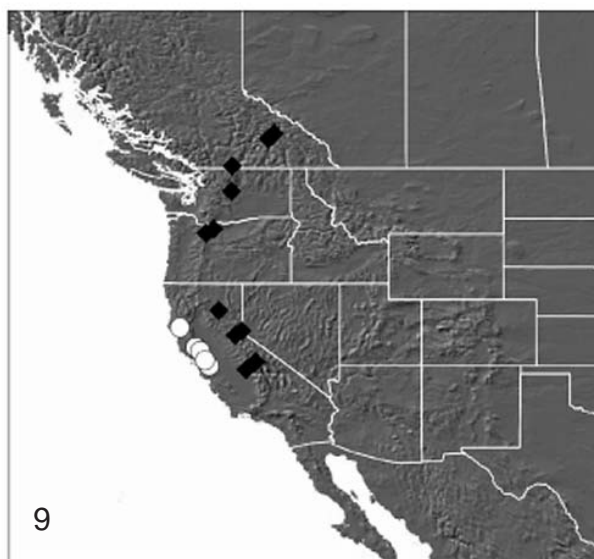
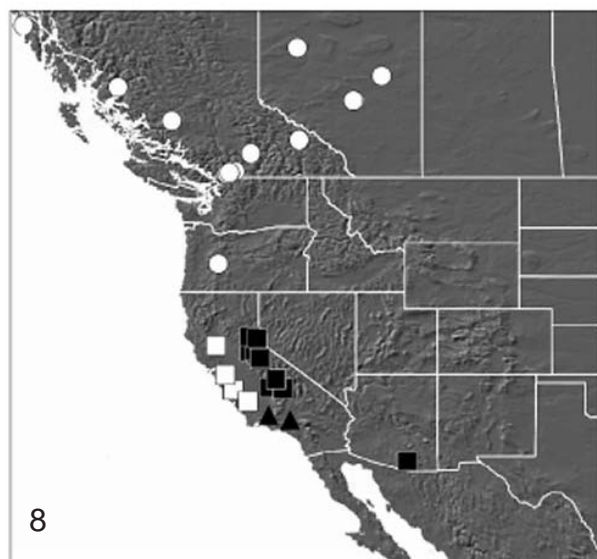
Maps 1-3. 1) White circles: *Eusphalerum convexum*; white squares: *E. fraternum*; oblique black squares: *E. carolinensis*; black triangle: *E. chatzimanolisi*; black stars: *E. horni*; horizontal black squares: *E. torquatum*. 2) White circles: *Eusphalerum pothos*. 3) White circles: *Eusphalerum fenyesi*; black triangles: *E. thayeranum* (record from Indiana is doubtful); white squares: *E. orientale*; black star: *E. margaretae*.



Maps 4.-5 North American distribution of *Eusphalerum* spp. 4) White circles: *Eusphalerum farrarae*; black triangles: *E. pilosum*; white squares: *E. subangulatum*; oblique black squares: *E. klimaszewskii*. 5) White squares: *Eusphalerum swauki*; oblique black squares: *E. tibiale*; black triangles: *E. diversicolle*.



Maps 6-7. North American distribution of *Eusphalerum* spp. 6) White circles: *Eusphalerum californicum*. 7) White squares: *Eusphalerum newtoni*; black triangles: *E. parvispiculum*.



Maps 8-9. North American distribution of *Eusphalerum* spp. **8)** White circles: *Eusphalerum rugulosum*; white squares: *E. caterinoi*; black triangles: *E. luteipes*; black squares: *E. aurifluum*. **9)** Oblique black squares: *Eusphalerum uncinatum*; white circles: *E. punctatum*.