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Malcom M. Furniss

University of Idaho, Moscow, Idaho

James B. Johnson

University of Idaho, Moscow, Idaho

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LIST OF IDAHO SCOLYTIDAE (COLEOPTERA) AND NOTES ON NEW RECORDS¹

Malcolm M. Furniss² and James B. Johnson²

ABSTRACT.—Reported are 105 species of Scolytidae (Coleoptera) from Idaho. About one-third of these are rarely collected, of which 22 species are known from a single locality each. Twelve species reported from Idaho for the first time are: *Carphoborus carri* Swaine, *C. sansoni* Swaine, *Phlocosinus hoferi* Blackman, *Conophthorus monophyllae* Hopkins, *Dryocoetes betulae* Hopkins, *Ips confusus* (LeConte), *Pityophthorus absonus* Blackman, *P. aquilus* Blackman, *P. blandus* Blackman, *P. deletus* LeConte, *P. scalptor* Blackman, and *Xyleborinus saxeseni* (Ratzeburg). Significant extensions of the known distributions in Idaho are reported for seven other scolytids: *Abniphagus aspericollis* (LeConte), *Dendroctonus murrayanae* Hopkins, *Phloeotribus lecontei* Schedl, *Procryphalus mucronatus* (LeConte), *Trypophloeus populi* Hopkins, *Xyleborus dispar* (Fabricius), and *X. intrusus* Blandford. *Xyleborus dispar* especially needs study in anticipation that it may become increasingly important in Idaho fruit trees and other woody plants including ornamentals and shade trees.

Idaho has an abundance of trees and shrubs that can serve as scolytid hosts, but the scolytids of Idaho have not been surveyed systematically to determine the total number of species, their specific hosts, and their distributions within the state. Such information is fundamental to the orderly development of the natural history of this region and will facilitate scolytid research. For example, the genus *Dendroctonus* contains several of our most abundant and destructive species (e.g., *D. ponderosae* Hopkins) and one of the least abundant and least destructive (*D. murrayanae* Hopkins). By knowing where *D. murrayanae* occurs, it can be studied and the circumstances that keep it from becoming abundant may prove important in managing species that are sometimes damaging.

Since 1984 we have compiled a comprehensive list of Idaho scolytids from literature, museum specimens, and our own field collections. This task was stimulated by the recent availability of the works of R. L. Furniss and V. M. Carolin (1977), D. E. Bright, Jr. (1981), and, especially, S. L. Wood's monograph on North American bark and ambrosia beetles (1982).

Twenty-two Idaho species are represented by only single specimens or localities. Additional species doubtless occur in Idaho but have not yet been found or reported, and some exotic species may find their way here in

the future, either to settle quietly into their new niches or to attain importance in ornamentals, fruit trees, or forests. So, the list will likely change as our work continues.

Besides the list of 105 species and their abundance, we present notes on 12 species reported from Idaho for the first time and major range extensions within Idaho for 7 other species. All measurements of host material are in metric units, including distances from landmarks, although the latter are invariably in miles on labels of pinned museum specimens. Names of collectors are given as per labels or as stated in the literature. The numbers of known pinned adult specimens follow the collection data. Specimens deposited in the University of Idaho, William F. Barr Entomological Museum, are designated UI-WFBM. Known repositories of others are abbreviated as follows: SLW = S. L. Wood Collection, Brigham Young University, Provo, Utah; WSU = Washington State University, Pullman, Washington; CNC = Canadian National Collection, Ottawa, Ontario, Canada. In other cases, we cite the literature from which we acquired the record.

SPECIES NEW TO IDAHO

Subfamily Hylesiniinae

Carphoborus carri Swaine

¹University of Idaho Agricultural Experiment Station Research Paper No. 8733.

²Department of Plant, Soil and Entomological Sciences, University of Idaho, Moscow, Idaho 83843

TYPE LOCALITY: Edmonton, Alta., Canada. BIOLOGY: Unstudied. Polygynous; breeds in relatively dry, dead bark of boles of small, suppressed spruces and unthrifty, lower branches of living trees. Galleries deeply score the wood (Wood 1982). DISTRIBUTION AND NOTES: CANADA: Alta., Man., New Brun., NWT, Yuk.; USA: Alas., Mont., S. Dak., Wyo., IDAHO: North shore of Henrys Lake, Fremont Co., 21-VII-1985, *Picea glauca*, M. M. Furniss and J. B. Johnson (19 ♀, 17 ♂ UI-WFBM). A southernmost population of white spruce, *Picea glauca* (Moench) Voss, grows on boggy ground along the north shore of Henrys Lake. The trees may be hybrids of white and Engelmann spruce. Five *C. carri* new adults were taken from a lower branch of a recently dead, standing tree that was 50 cm diameter and 37 m tall.

Carphoborus sansoni Swaine

TYPE LOCALITY: Banff, Alta., Canada. BIOLOGY: Unstudied. Polygynous; breeds in bark of the bole of unthrifty, suppressed seedlings and in unthrifty, shaded-out branches of large, living, standing trees (Wood 1982). DISTRIBUTION AND NOTES: CANADA: Alta.; USA: Colo., Ore., Ut., Wyo., IDAHO: Emigration Campground, 24 km W of Montpelier, Bear Lake Co., 24-VII-1984, *Picea engelmannii*, M. M. Furniss and J. B. Johnson. (1 UI-WFBM). Collected from a shaded-out limb on a wind-thrown tree.

Phloeosinus hoferi Blackman

TYPE LOCALITY: Ute Pass, Colo. BIOLOGY: Unstudied. Monogynous. Infests bark of small branches and twigs of dying trees (Wood 1982). DISTRIBUTION AND NOTES: CANADA: B.C.; USA: Ariz., Calif., Colo., Nev., N.M., N.Dak., S.Dak., Tex., Ut., Wyo., IDAHO: Two km N of Almo, Cassia Co., 25-VII-1984, *Juniperus osteosperma*, M. M. Furniss and J. B. Johnson (1 UI-WFBM). Reared from a 23-cm-diameter felled, limbed tree; probably emerged from branches 2–10 cm diameter. At time of collection (25-VII-1984), mature larvae and pupae were present, but these may have been exclusively *P. serratus* LeConte, a larger species that was abundant, especially in the trunk.

Subfamily Scolytinae

Conophthorus monophyllae Hopkins

TYPE LOCALITY: Ventura Co., Calif. BIOLOGY: Unstudied. In other studied species, the female bores into the cone base in spring at the beginning of the second year of cone growth. The egg gallery extends the length of the cone center. Progeny mature during that summer within the cone and generally overwinter there, although in the case of *C. ponderosae* Hopkins (= *C. lambertianae* Hopkins), some adults emerge in the fall and overwinter in the tips of live twigs (R. L. Furniss and V. M. Carolin 1977). DISTRIBUTION AND NOTES: Calif., Nev., Ut., IDAHO: City of Rocks, Cassia Co., 25-VII-1984, *Pinus monophylla* cones, M. M. Furniss and J. B. Johnson (12 UI-WFBM, 5 SLW). Attacked cones common, most contained a single beetle, mired and dead in profuse resin exuded from entrance located at base of cone (i.e., often unsuccessful).

Dryocoetes betulae Hopkins

TYPE LOCALITY: Grant Co., Va. BIOLOGY: Unstudied. Polygynous. It infests bark of stumps and the bole and limbs of recently cut and unthrifty trees (Wood 1982). DISTRIBUTION AND NOTES: CANADA: Alta., B.C., Newf., N.B., Ont., Que.; USA: D.C., Fla., La., Me., Mich., Miss., Mont., N.H., N.J., N.Y., Calif., Penn., Va., V.I., Vt., W.Va., Wash., IDAHO: Reeder Bay, Priest Lake, Bonner Co., 6-VIII-1985, *Betula papyrifera*, M. M. Furniss, J. B. Johnson, and S. J. Gast (13 UI-WFBM). Parents, larvae, and one pupa in phloem of the trunk of a 46-cm-diameter tree toppled by snow in previous winter. Sporadic infestation also noted in 15-cm-diameter basal portion of a tree that had broken off at 3 m height.

Ips confusus (LeConte)

TYPE LOCALITY: Southern Calif. BIOLOGY: Polygynous. Three to four generations per year reported in southwestern states (fewer likely in Idaho). Adults may overwinter en masse under bark of main stem, thoroughly scoring the wood surface (Chansler 1964). DISTRIBUTION AND NOTES: MEXICO: Baja Calif., Chih.; USA: Ariz., Calif., Colo., Nev., N.M., Ut., Tex., (Wyo.), IDAHO: City of Rocks, Cassia Co., *Pinus monophylla*, 14-VI-

1968, W. F. Barr (2 UI-WFBM); same locality, 25-VII-1984, M. M. Furniss and J. B. Johnson (4 UI-WFBM, 3 SLW). Mainly teneral, but some darkened, adults in base of a dead 23-cm-diameter standing tree with bright orange foliage. Some *Pityophthorus* intermingled; *Dendroctonus valens* LeConte and *Hylurgops porosus* LeConte below.

Pityophthorus absonus Blackman

TYPE LOCALITY: Mineral King, Calif. BIOLOGY: Unstudied. Polygynous. Reported fairly common at high elevation (Bright 1981) and infesting small branches and in shaded-out small trees (Wood 1982). DISTRIBUTION AND NOTES: CANADA: Alta., B.C.; USA: Calif., Colo., Mont., Nev., Ut., IDAHO: 16 km E of Wayan, Caribou Co., 21-VII-1984, *Abies lasiocarpa*, M. M. Furniss and J. B. Johnson (9 UI-WFBM, 2 CNC). Attacking shaded-out, 1–2-cm-diameter branches. Eight km S of Old Williamsburg, Caribou Co., 22-VII-1984, *Abies lasiocarpa*, M. M. Furniss and J. B. Johnson (1 UI-WFBM, CNC). Reared from larvae infesting green 0.5–3.5-cm-diameter branches on ground. Six km E of Bostetler Guard Station, Cassia Co., 26-VII-1985, *Abies lasiocarpa*, M. M. Furniss and J. B. Johnson (1 UI-WFBM). Parent beetles from current-year attacks in 0.8–2.0-cm-diameter branches of 30-cm-basal-diameter dead tree with red foliage. Salmon Mtn., Idaho Co., 18-VII-1985, *Abies lasiocarpa*, M. M. Furniss and J. B. Johnson (8 UI-WFBM). Top-killed, 10-cm-diameter, 5-m-tall tree.

Pityophthorus aquilus Blackman

TYPE LOCALITY: Kaibab National Forest, Ariz. BIOLOGY: Polygynous. Infests lateral branches of lodgepole pine in association with the weevil, *Pissodes terminalis* Hopping (Colo.). Attack and emergence occur in mid-summer (Bright 1981). DISTRIBUTION AND NOTES: CANADA: Alta., B.C., Sask; USA: Ariz., Calif., Colo., Mont., N.M., S.Dak., Ut., Wyo., IDAHO: 6 km E of Bostetler Guard Station, Cassia Co., 26-VII-1985, *Pinus contorta*, M. M. Furniss and J. B. Johnson (5 UI-WFBM, 1 CNC). Adults common in current-year egg galleries in 0.8–2.0-cm-diameter branches on a 30-cm-diameter dead, standing tree with red foliage.

Pityophthorus blandus Blackman

TYPE LOCALITY: Argus Mountains, Calif. BIOLOGY: Unstudied. Polygynous. Specimens collected from 3–8-cm-diameter branches and tree tops (Wood 1982). DISTRIBUTION: USA: Ariz., Calif., Colo., Nev., Ut., IDAHO: City of Rocks, Cassia Co., 25-VII-1985, *Pinus monophylla*, M. M. Furniss and J. B. Johnson (10 UI-WFBM, 4 CNC).

Pityophthorus deletus LeConte

TYPE LOCALITY: Veta Pass, Colo. BIOLOGY: Unstudied. Polygynous. The species is extremely variable and as defined may include more than one species or subspecies (Bright 1981). DISTRIBUTION AND NOTES: MEXICO: Coah., Dgo.; USA: Ariz., Colo., N.M., S.C., Tex., Ut., Wyo., IDAHO: 23 km N of Montpelier, Bear Lake Co., 23-VII-1984, *Pinus flexilis*, M. M. Furniss and J. B. Johnson (1 UI-WFBM). Infesting 0.5–1.0-cm-diameter, shaded-out lower branches. City of Rocks, Cassia Co., 24-VII-1985, *Pinus monophylla*, M. M. Furniss and J. B. Johnson (1 UI-WFBM). Parents, larvae, and teneral adults in 0.4–1.0-cm-diameter twigs with red foliage on live tree. Thirteen km E of Bostetler Guard Station, Cassia Co., 25-VII-1985, *Pinus contorta*, M. M. Furniss and J. B. Johnson (4 UI-WFBM). In long tunnels running lengthwise in 2–3-mm-diameter twigs with red foliage, killed by mistletoe.

Pityophthorus scalptor Blackman

TYPE LOCALITY: Julian, Calif. BIOLOGY: Unstudied. Polygynous. DISTRIBUTION AND NOTES: CANADA: B.C.; USA: Calif., IDAHO: Plummer, Benewah Co., 28-IV-1985, *Pinus ponderosa*, M. M. Furniss (2 UI-WFBM). From a shaded-out branch with red foliage on a small, live tree.

Xyleborinus saxesini (Ratzeburg)

TYPE LOCALITY: Europe. BIOLOGY: The following is based on Schedl (1962) and Batra (1963). The dwarfed males are flightless and apparently mate with their brood sisters, although outcrossing may occur rarely when tunnels intersect (or more commonly when males wander from one tunnel entrance to another [S. L. Wood, personal communication]). Male/female ratios range from 1:7 to 1:39. Females construct a 1-mm-diameter,

3–5-cm-long tunnel radially into stems and large branches of dying or fallen trees. An enlarged cavity (brood chamber) is constructed upward and downward at the end of the tunnel, in which eggs are laid one per niche. Up to 100 eggs are laid per female in groups of 5–12. Larvae feed communally, evidently on the yellowish fungus *Ambrosiella sulfurea* Batra (Batra 1967) which covers the wall of the brood chamber. DISTRIBUTION AND NOTES: EUROPE, ASIA, AUSTRALIA, ARGENTINA, BRAZIL, CHILE; CANADA: B.C., Ont.; USA: Ala., Ariz., Ark., Calif., Conn., Del., Fla., Ga., Ill., Ind., Ia., Kan., Ky., La., Me., Md., Mass., Mich., Miss., Mont., N.H., N.J., N.Y., N.C., Ohio, Ore., Penn., S.C., Tenn., Tex., Ut., Va., Wash., IDAHO: Smith Creek, Boundary Co., 8-VI-1986, *Populus tremuloides*, M. M. Furniss and J. B. Johnson (1 ♀ UI-WFBM). Collected from a larval cradle of a *Trypodendron retusum* (LeConte) gallery in a 20-cm-diameter, fire-scored, recently fallen aspen.

EXTENSIONS OF KNOWN GEOGRAPHIC OCCURRENCE IN IDAHO

Subfamily Hylesininae

Alniphagus aspericollis (LeConte)

TYPE LOCALITY: Evidently Santa Barbara, Calif. BIOLOGY: Monogynous. Bivoltine (B.C.); damaged or decadent trees are attacked by the respective generation in May and during July to early August. The typical galleries are unbranched and extend about 8 cm (2.0–4.5 cm in Idaho), parallel with the stem. Only stems of about 10-cm diameter and larger are usually infested. Susceptible phloem is usually restricted to a narrow zone in dying trees, between the lower, living stem and the dead distal portion. Several successive generations may infest a stem before it is completely killed (Bordon 1969). DISTRIBUTION AND NOTES: CANADA: B.C., USA: Alas., Wash., Ore., Calif., Ut., IDAHO: Webb, Nez Perce Co., 4-X-1951, W. F. Barr (5 UI-WFBM). Poverty Flat, Krassel Ranger District, Valley Co., 23-IV-1959, *Alnus* sp., M. M. Furniss (3 UI-WFBM). Deary, Latah Co., 1-X-1963, *Alnus* sp., M. M. Furniss (2 UI-WFBM). Falls Ranger Station, Bonner Co., 29-VI-1967, *Alnus* sp., M. M. Furniss (1 UI-WFBM). Orofino, Clearwater Co., 15-III-

1983, *Alnus* sp., B. J. Bentz and M. M. Furniss (5 UI-WFBM). Fifty-seven km S of Salmon, Lemhi Co., 19-VII-1985, *Alnus incana*, M. M. Furniss and J. B. Johnson (21 UI-WFBM). Infesting a 12-cm-diameter stem; larvae and pupae present. Two km W of Elba, Cassia Co., 25-VII-1985, *Alnus* sp., M. M. Furniss and J. B. Johnson (4 UI-WFBM). New attacks with only one adult in each; sparse exit holes distally on stem from earlier infestation; larvae (some small) and pupae in older attacks; galleries in this stem were entirely in bark and did not etch the wood. Priest Lake Ranger Station, Bonner Co., 7-VII-1985, *Alnus* sp., M. M. Furniss, J. B. Johnson, and S. J. Gast (4 UI-WFBM). Attacking adults only, including one to two per attack site. Moose Cr., 8 km WNW of Bovill, Latah Co., 21-VIII-1985, *Alnus* sp., M. M. Furniss and S. J. Gast (6 UI-WFBM). Three km N of Pinehurst, Valley Co., 10-III-1986, *Betula occidentalis*, M. M. Furniss (3 ♀, 2 ♂ UI-WFBM). Pairs of beetles in new galleries in green phloem in the base of a 25-cm-diameter, progressively dying tree. First record in other than alder. Spread Creek, 6.5 km N of Hwy 2, Boundary Co., 9-VII-1986, *Alnus* sp., M. M. Furniss and J. B. Johnson (4 UI-WFBM). Taken from base of a 15-cm-diameter dead, leafless alder also containing larvae.

Dendroctonus murrayanae Hopkins

TYPE LOCALITY: Keystone, Wyo. BIOLOGY: Monogynous. Not comprehensively studied. Attacks are restricted to the lower bole near ground; galleries extend 12–20 cm downward to below ground. In Utah, first attacks occurred in the second week of July; eggs were present from 12 July to 9 Sept., laid in groups of 20 to 50 or more. Larvae mine in congress. One and perhaps a partial second generation per year occur in Utah (Wood 1982). DISTRIBUTION AND NOTES: CANADA: Alta., B.C., Man., Ont.; USA: Colo., Mich., Minn., Mont., Ut., Wyo., IDAHO: (The only published record is "Targhee N. F." [Wood 1982], but we have been unable to locate any so-labeled specimens.) Five km SW of Bannock Pass, Lemhi Co., 18–19-VII-1984, *Pinus contorta*, M. M. Furniss and J. B. Johnson (9 ♀, 12 ♂ UI-WFBM). Five *D. murrayanae* galleries, containing 1 dead and 5 live parents, were in the base of a 30-cm-diameter, lightning-struck tree. Two examined galleries

had 7 and 23 larvae, probably in their 3rd instar, aligned en masse, side by side in a rather resinous chamber. Associated insects were: *Hylurgops subcostulatus* (Mannerheim) in root crown; and *Ips mexicanus* (Hopkins), *Ips latidens* (LeConte), and *Orthotomicus caelatus* (Eichhoff) in the bole. *Ips mexicanus* was the predominant species throughout the bole above 0.2 m height. Only one *Dendroctonus ponderosae* Hopkins gallery occurred in the tree. A second tree, 10-cm basal diameter, girdled 0.2 m above ground by a porcupine, contained 17 *D. murrayanae* galleries spaced around its circumference. Over 100 live pupae and teneral adults were densely packed in cells in a zone extending from ground level to 5 cm below ground. Three km W of Pass Cr. Summit, Custer Co., 19-VII-1985, *Pinus contorta*, M. M. Furniss and J. B. Johnson (1 ♀, 1 ♂ UI-WFBM). A pair of live beetles was taken from a new gallery in the base of a 23-cm-diameter, 9-m-tall, straw-colored tree. The entrance was 2.5 cm above ground and had external frass similar to that produced by ips beetles; i.e., not resinous (although most *D. murrayanae* entrances have a "pitch tube"). The irregular gallery was not of any characteristic shape, but had two arms, 3 cm and 4 cm long, one running outward, then downward, to the left; and the other outward and upward to the right, with a short side branch. No eggs were present. Wind Lake, Clearwater Co., 17-VII-1986, *Pinus contorta*, M. M. Furniss and E. Christiansen (2 ♂ UI-WFBM). Collected from two current-year galleries 15 cm above ground in a 45-cm-diameter, 22-m-tall, dying tree. Tree crown very sparse, top green, foliage red on lower branches. Bole sparsely infested by *D. ponderosae* in previous year; few brood survived, but blue stain present. Other scolytids present in base were *I. mexicanus* and *Hylurgops* sp.

COMMENTS: We believe that *D. murrayanae* is kept from abundance in its extensively occurring host (in contrast to *D. ponderosae*) by the relative scarcity of trees attractive to it and perhaps by some mechanism, such as a pheromone, that largely excludes *D. murrayanae* from *P. contorta* that are infested with *D. ponderosae*. We collected *D. murrayanae* from 4 trees in Idaho, approximately 10 trees in Montana, and 1 in British Columbia, only 2 of which (mentioned

above) had a *D. ponderosae* gallery in them. We know of no proven instance of *D. murrayanae* occurring in a *P. contorta* that was killed by *D. ponderosae*, although millions of that tree species have been killed in the northern Rocky Mountains in the past decade, and *D. ponderosae* has been studied intensively.

Phloeotribus lecontei Schedl

TYPE LOCALITY: La Veta Pass, Colo. BIOLOGY: Monogamous. The male constructs an entrance tunnel and the bases of two egg galleries that are then completed by the female. The egg galleries run obliquely across the grain of shaded-out branches in merchantable-sized living trees. Adults and larvae may be present throughout the year; overwintering adults may occur in brood galleries, special hibernation or maturation tunnels, or newly formed parental galleries (Wood 1982). DISTRIBUTION AND NOTES: CANADA: Alta., B.C.; USA: Ariz., Calif., Colo., Mont., N.M., Ore., Ut., IDAHO: Franklin Co. (Wood 1982). Priest River Experimental Forest, Bonner Co., 28-VI-1967, *Pinus monticola*, M. M. Furniss (1 UI-WFBM). Herd Lake, Custer Co., 3-IX-1978, *Pseudotsuga menziesii*, M. M. Furniss (7 UI-WFBM). Eight km S of Red Ives Ranger Station, Shoshone Co., 16-V-1983, *Picea engelmannii*, M. M. Furniss (1 ♀, 2 ♂ UI-WFBM). All Idaho specimens were collected or reared from shaded-out, 1–2-cm-diameter lower branches of live or freshly killed trees.

Subfamily Scolytinae

Procryphalus mucronatus (LeConte)

TYPE LOCALITY: La Veta Pass, Colo. BIOLOGY: Monogynous. Prefers soft, fermenting, dead aspen bark; usually follows primary invasion by *Trypophloeus populi* Hopkins. The gallery is narrower and the bark overlying the gallery is thicker than that of *T. populi* and does not split as it does in the case of *T. populi*. One and one-half to two annual generations (Utah), overwintering as larvae and adults. Eggs appear in late May (Petty 1977). DISTRIBUTION AND NOTES: CANADA: Alta., B.C.; USA: Alas., Colo., Nev., N.M., Ut., IDAHO: Beaver Canyon, Franklin Basin, Franklin Co. (Wood 1982). Sixteen km E of Wayan, Caribou Co., 22-VII-1984, *Populus tremuloides*, M. M. Furniss and J. B. Johnson

(4 UI-WFBM). Infesting a 30-cm-diameter tree without leaves that apparently died in the previous year. Many new adults and some larvae present only in necrotic areas surrounded by green phloem on trunk within crown, not in branches. Two Mile Canyon Summit, 6.5 km SE of Malad City, Oneida Co., 24-VII-1984, *P. tremuloides*, M. M. Furniss and J. B. Johnson (4 UI-WFBM). A 25-cm-diameter, 7.6-m-tall tree retaining a few dead leaves, with green bark and moist wood, under attack by many *Trypophloeus populi* Hopkins and a few *Trypodendron retusum* (LeConte) on trunk, especially on south aspect. *Procryphalus mucronatus* infesting crotches of branches 1–3 cm diameter, one gallery per crotch. Henrys Lake, Fremont Co., 21-VII-1985, *P. tremuloides*, M. M. Furniss and J. B. Johnson (4 UI-WFBM). Ten km SW of Victor, Teton Co., 22-VII-1985, *P. tremuloides*, M. M. Furniss and J. B. Johnson (2 UI-WFBM). Six km N of Moscow, Latah Co., 22-VIII-1985, *P. tremuloides*, M. M. Furniss (4 UI-WFBM). Spread Cr., 6.5 km N of Hwy 2, Boundary Co., 9-VII-1986, *P. tremuloides*, M. M. Furniss and J. B. Johnson (12 UI-WFBM). Larvae and pupae present in necrotic area surrounded by green phloem in 8–10-cm-diameter portion of stem of tree with dead top and sparse foliage on lower branches. A few new tunnels of *T. retusum* in base.

Trypophloeus populi Hopkins

TYPE LOCALITY: Williams, Ariz. BIOLOGY: The monogamous female excavates an irregular, 2-cm-long gallery just beneath the bark surface of stems or branches of standing, unhealthy, or dying trees. The galleries and larval mines do not show on the inner surface of the bark. One to one and one-half generations per year occur in Utah, overwintering as larvae; eggs are present in July (Petty 1977). DISTRIBUTION AND NOTES: CANADA: Man., N.B., Sask.; USA: Ariz., Colo., Nev., Ut., IDAHO: South Mtn., Owyhee Co., 1-IX-1958, *Populus tremuloides*, M. M. Furniss (10 UI-WFBM). Two Mile Canyon Summit, 6.5 km SE of Malad City, Oneida Co., 24-VII-1984, *P. tremuloides*, M. M. Furniss and J. B. Johnson (4 UI-WFBM); see notes for *Procryphalus mucronatus*, this date. Hwy 31, 10 km SW of Victor, Teton Co., 22-VII-1984, *P. tremuloides*, M. M. Furniss and J. B. Johnson (4 UI-WFBM).

Xyleborus dispar (Fabricius)

TYPE LOCALITY: Germany. BIOLOGY: Infests unthrifty or injured limbs and stems 5-cm diameter and larger. The female tunnels radially into the xylem for 1–3 cm, then constructs two transverse galleries (that may spiral in small branches). The longitudinal galleries may branch in a fashion similar to the original pair (Wood 1982). The female parent carries an ambrosia fungus, *Monilia candida* Hartig, which grows on the wall of her gallery and which is probably a major source of food for her brood (Batra 1963). In British Columbia the beetle has one generation per year, attacking in mid-April. Adults require exposure to cold (overwinter) before emerging in March and April. The sex ratio is 2.2 females per male. The male is dwarfed and incapable of flight. Related species have the capability of reproducing females sexually or males parthenogenetically (Mathers 1940). DISTRIBUTION AND NOTES: EUROPE; CANADA: B.C., N.S., Ont.; USA: D.C., Me., Md., Mass., Mich., N.C., N.J., N.Y., Ohio, Ore., Penn., R.I., Ut., Va., Wash., W.V., IDAHO (listed alphabetically by county): Adams Co.: Council, 4-VI-1982, *Ulmus pumila*, C. Gibson (lost). Benewah Co.: Plummer, 13–28-IV and 7–14-VII-1977, flight trap, M. M. Furniss (2 UI-WFBM); St. Maries (1 UI-WFBM); St. Maries, 31-V-1960, prune (*Prunus* sp.), R. W. Portman (4 UI-WFBM). Boise Co.: Mile High, 11-VI-1974, UV-light, G. A. Shook (2 UI-WFBM). Bonner Co.: Priest River Experimental Forest, 5-VIII-1985, *Alnus* sp., M. M. Furniss, J. B. Johnson, and S. J. Gast (1 ♀ UI-WFBM). Infesting a mostly dead alder stem of 13-cm diameter. Two km E of Nordman, 6-VIII-1985, *Betula papyrifera*, S. J. Gast, M. M. Furniss, and J. B. Johnson (11 ♀, 2 ♂ UI-WFBM). Parents (no brood) attacking 5.0–7.6-cm-diameter portion of stem of a paper birch of 10-cm basal diameter. Foliage discolored, dying, Fall Creek, Boundary Co., 7-VI-1986, *Betula papyrifera*, M. M. Furniss and J. B. Johnson (2 ♀ UI-WFBM). Tunneling in 2.5–6.0-cm-diameter portion of stem of a 15-cm-diameter pushed-over birch. Green leaves sprouting on stem below the dead, infested portion. *Trypodendron betulae* Swaine tunnels abundant in part of stem containing *X. dispar*. Clearwater Co.: Orofino, 17-IV-1952, W. F. Barr (1 UI-WFBM). Orofino, 10-VII-

1977, *Juglans nigra* (4 WSU). Gem Co.: Emmett, 21-VII-1954, cherry (*Prunus* sp.), H. C. Manis (1 UI-WFBM). Kootenai Co.: Coeur d'Alene, 4-VI-1942, prune (*Prunus* sp.), H. E. Shull (4 UI-WFBM). Carlin Bay, Lake Coeur d'Alene, 26-V-1948 (1 UI-WFBM). Deception Creek Experimental Forest, 18-VI to 24-IX-1968, flight trap, M. M. Furniss (1 UI-WFBM). Harrison, 10-V-1969, *Malus* sp., Davis (1 UI-WFBM). Twelve km N of Worley, 7-VIII-1985, *Populus tremuloides*, M. M. Furniss, J. B. Johnson, and S. J. Gast (2 ♀, 2 ♂ UI-WFBM). Infesting lower stem of a dying 25-cm-diameter aspen, also infested with *T. retusum*. Latah Co.: Moscow Mtn., 9-IX-1947, W. F. Barr (1 UI-WFBM). Sixteen km E of Bovill, 16-V-1948, W. F. Barr (1 UI-WFBM). Moscow Mtn., 13-VIII-1970, *Salix scouleri-ana*, M. M. Furniss (12 UI-WFBM). Nez Perce Co.: Myrtle, 5-VI-1955, W. F. Barr (1 UI-WFBM). Lewiston, 27-IV-1983, *Cornus*, D. White (3 UI-WFBM).

COMMENTS: *Xyleborus dispar* is native to Europe. It was reported in the West (Clarke Co., Wash.) in 1901. The earliest Idaho collection known to us is 1942 (Coeur d'Alene). It infests a wide range of unrelated angiosperms, including fruit trees and ornamentals. It may not yet have reached its eventual distribution in Idaho and may become increasingly important. It merits intensive study.

Xyleborus intrusus Blandford

TYPE LOCALITY: San Geronimo, Guatemala. BIOLOGY: Unstudied. Attacks base of recently killed, standing trees in which decay is well underway, at or near ground level (Wood 1982). Male undescribed. DISTRIBUTION: MEXICO: Chih., D.F., Dgo., Jal., Mex., Mor., Oax., Pue.; GUATEMALA: San Geronimo; HONDURAS: Zamorano; CANADA: B.C.; USA: Ariz., Cal., Col., D.C., Md., Mont., N.C., N.M., Ore., Penn., S.C., S.D., Ut., Va., IDAHO: Stone Airport, Boise River, Ada Co., 1-VIII-1977, ex poplar bark, A. D. Allen (1 A. D. Allen). "Moscow Mts." (Wood 1982). Ten km S of Howe, Butte Co., 18-VIII-1983, *Pseudotsuga menziesii*, J. B. Johnson and F. M. Merickel (656 UI-WFBM). Reared from a rotting stump also occupied by leafcutter bees.

IDAHO SCOLYTIDAE

HYLESININAE	Abundance ³
Hylastini	
<i>Scierus annectens</i> LeConte	U
<i>Scierus pubescens</i> Swaine	R
<i>Hylurgops porosus</i> (LeConte)	C
<i>Hylurgops reticulatus</i> Wood	U
<i>Hylurgops rugipennis pinifex</i> (Fitch)	C
<i>Hylurgops s. subcostulatus</i> (Mannerheim)	C
<i>Hylastes gracilis</i> LeConte	U
<i>Hylastes longicollis</i> Swaine	C
<i>Hylastes macer</i> LeConte	U
<i>Hylastes nigrinus</i> (Mannerheim)	U
<i>Hylastes ruber</i> Swaine	U
<i>Hylastes tenuis</i> Eichhoff	R
Hylesinini	
<i>Hylastinus obscurus</i> (Marshall)	U
<i>Alniphagus aspericollis</i> (LeConte)	U
Tomicini	
<i>Xylechinus montanus</i> Blackman	R
<i>Pseudohylesinus dispar pullatus</i> Blackman	U
<i>Pseudohylesinus granulatus</i> (LeConte)	U
<i>Pseudohylesinus n. nebulosus</i> (LeConte)	C
<i>Pseudohylesinus sericeus</i> (Mannerheim)	R
<i>Dendroctonus brevicornis</i> LeConte	C
<i>Dendroctonus murrayanae</i> Hopkins	R
<i>Dendroctonus ponderosae</i> Hopkins	C
<i>Dendroctonus pseudotsugae</i> Hopkins	C
<i>Dendroctonus rufipennis</i> (Kirby)	C
<i>Dendroctonus valens</i> LeConte	C
Phloeotribini	
<i>Phloeotribus lecontei</i> Schedl	U
Phloeosinini	
<i>Phloeosinus hoferi</i> Blackman	R
<i>Phloeosinus keeni</i> Blackman	U
<i>Phloeosinus punctatus</i> LeConte	C
<i>Phloeosinus scopulorum neomexicanus</i> Blackman	R
<i>Phloeosinus serratus</i> (LeConte)	U
Hypoborini	
<i>Chaetophloeus heterodoxus</i> (Casey)	U
Polygraphini	
<i>Carphoborus carri</i> Swaine	R
<i>Carphoborus pinicolens</i> Wood	R
<i>Carphoborus ponderosae</i> Swaine	R
<i>Carphoborus saouii</i> Swaine	R
<i>Polygraphus rufipennis</i> (Kirby)	C
SCOLYTINAE	
Scolytini	
<i>Scolytus laricis</i> Blackman	C
<i>Scolytus monticolae</i> Swaine	C
<i>Scolytus multistriatus</i> (Marshall)	U
<i>Scolytus opacus</i> Blackman	C
<i>Scolytus piceae</i> (Swaine)	U
<i>Scolytus praeceps</i> LeConte	R
<i>Scolytus rugulosus</i> (Müller)	C
<i>Scolytus subscaber</i> LeConte	R
<i>Scolytus tsugae</i> Swaine	C
<i>Scolytus unispinosus</i> LeConte	C
<i>Scolytus ventralis</i> LeConte	C
Crypturgini	
<i>Crypturgus borealis</i> Swaine	U

³R = rare (5 or fewer collections), U = uncommon (6-14 collections), C = common (15 or more collections).

Dryocoetini

- Dryocoetes affaber* (Mannerheim)
Dryocoetes autographus (Ratzeburg)
Dryocoetes betulae Hopkins
Dryocoetes confusus Swaine

Ipini

- Pityogenes carinulatus* (LeConte)
Pityogenes fossifrons (LeConte)
Pityogenes knechteli Swaine
Pityokteines elegans Swaine
Pityokteines lasiocarpi (Swaine)
Pityokteines minutus (Swaine)
Pityokteines ornatus (Swaine)
Orthotomicus caelatus (Eichhoff)
Ips confusus (LeConte)
Ips emarginatus (LeConte)
Ips integer (Eichhoff)
Ips latidens (LeConte)
Ips mexicanus (Hopkins)
Ips montanus (Eichhoff)
Ips pilifrons utahensis Wood
Ips pini (Say)
Ips p. plastographus (LeConte)
Ips tridens engelmanni Swaine

Xyloterini

- Trypodendron betulae* Swaine
Trypodendron lineatum (Olivier)
Trypodendron retusum (LeConte)
Trypodendron rufitarsis (Kirby)

Xyloborini

- Xyleborus dispar* (Fabricius)
Xyleborus intrusus Blandford
Xyleborinus saxeseni (Ratzeburg)

Cryphalini

- Trypophloeus populi* Hopkins
Trypophloeus striatulus (Mannerheim)
Procryphalus mucronatus (LeConte)
Procryphalus utahensis Hopkins
Cryphalus r. ruficollis Hopkins

Corthylini

- Conophthorus monophyllae* Hopkins
Conophthorus ponderosae Hopkins
Pityophthorus absonus Blackman
Pityophthorus alpinensis G. Hopping
Pityophthorus aquilus Blackman
Pityophthorus blandus Blackman
Pityophthorus boycei Swaine
Pityophthorus confertus Swaine
Pityophthorus confinis (LeConte)
Pityophthorus deletus LeConte
Pityophthorus digestus (LeConte)
Pityophthorus murrayanae Blackman
Pityophthorus nitidulus (Mannerheim)
Pityophthorus nitidus Swaine
Pityophthorus opaculus LeConte
Pityophthorus pseudotsugae Swaine
Pityophthorus scalptor Blackman
Pityophthorus serratus Swaine
Pityophthorus toralis Wood
Pityophthorus tuberculatus Eichhoff
Gnathotrichus retusus (LeConte)
Gnathotrichus sulcatus (LeConte)

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