

INSECT FAUNA OF KOREA

Volume 12, Number 24

Weevils VI

Arthropoda: Insecta: Coleoptera: Curculionidae: Platypodinae, Scolytinae (Hylesinitae)

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Sangwook Park

Research Institute of Forest Insect Diversity



The Flora and Fauna of Korea logo was designed to represent six major target groups of the project including vertebrates, invertebrates, insects, algae, fungi, and bacteria.

PREFACE

The biological resources include all the composition of organisms and genetic resources which possess the practical and potential values essential to human live. Biological resources will be firm competition of the nation because they will be used as fundamental sources to make highly valued products such as new lines or varieties of biological organisms, new material, and drugs. As the Nagoya Protocol was adopted in 2010 and entered into force in the 12th Conference of Parties of the Convention on Biological Diversity (CBD) in 2014, it is expected that the competition to get biological resources will be much intensive under the rapidly changed circumstance on the access and benefit sharing of the genetic resources (ABS). To cope with a new international paradigm on all kinds of issues related to biological resources, the Ministry of Environment of Korea enforced a new law called ‘An act on access and benefit sharing of genetic resources’ on August 17th, 2017.

Each nation in the world is investigating and clearing information of native species within its territory in order to secure its sovereignty rights over biological resources. The National Institute of Biological Resources (NIBR) of the Ministry of Environment has published the ‘Flora and Fauna of Korea’ since 2006 to manage biological resources in comprehensive ways and to enhance national competitiveness by building up the foundation for the sovereignty over biological resources. Professional research groups consisting of professors and related experts of taxonomy examined systematically a total of 14,336 species for the past eight years to publish 173 volumes in both Korean and English versions, and two volumes of World Monograph covering 216 species of invertebrates. This year, 13 volumes of the Flora and Fauna of Korea in both Korean and English versions including 1,407 species of invertebrates, insects and vascular plants are additionally published. Flora and Fauna of Korea are the first professional records to describe all the species of the nation in a comprehensive way, and they would contribute to level up the taxonomic capacity.

The NIBR will continue to publish flora and fauna of Korea that will contribute conservation and application of biological resources for successful implementation of the ABS protocol. Finally, I would like to express my sincere appreciation to authors who spared no effort to publish *the Flora and Fauna of Korea*.

President
of the National Institute of Biological Resources

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LIST OF TAXA

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Class Insecta Linnaeus, 1758

Order Coleoptera Linnaeus, 1758

Family Curculionidae Latreille, 1802

Subfamily Platypodinae Erichson, 1847

Tribe Platypodini Erichson, 1847

Genus *Crossotarsus* Chapuis, 1865

Crossotarsus simplex Murayama, 1925

Genus *Dinoplatypus* Wood, 1993

Dinoplatypus calamus (Blandford, 1894)

Dinoplatypus hamatus (Blandford, 1894)

Genus *Platypus* Herbst, 1793

Platypus koryoensis (Murayama, 1930)

Platypus lewisi Blandford, 1894

Genus *Treptoplatypus* Schedl, 1939

Treptoplatypus severini (Blandford, 1894)

Treptoplatypus solidus (Walker, 1858)

Subfamily Scolytinae Latreille, 1804

Supertribe Hylesinitae Erichson, 1836

Tribe Diamerini Hagedorn, 1909

Genus *Sphaerotrypes* Blandford, 1894

Sphaerotrypes pila Blandford, 1894

Tribe Hylastini LeConte, 1876

Genus *Hylastes* Erichson, 1836

Hylastes ater (Paykull, 1800)

Hylastes attenuatus Erichson, 1836

Hylastes brunneus (Erichson, 1836)

Hylastes cunicularius Erichson, 1836

Hylastes opacus Erichson, 1836

Hylastes parallelus Chapuis, 1875

Hylastes plumbeus Blandford, 1894

Genus *Hylurgops* LeConte, 1876

Hylurgops glabratus (Zetterstedt, 1828)

Hylurgops interstitialis (Chapuis, 1875)

Hylurgops longipillus (Reitter, 1895)

Hylurgops palliatus (Gyllenhal, 1813)

Hylurgops spessiwezzeffi Eggers, 1914

Tribe Hylesinini Erichson, 1836

Genus *Alniphagus* Swain, 1918

Alniphagus costatus (Blandford, 1894)

Genus *Hylesinus* Fabricius, 1801

Hylesinus cingulatus Blandford, 1894

Hylesinus eos Spessivtsev, 1919

Hylesinus laticollis Blandford, 1894

Hylesinus nobilis Blandford, 1894

Hylesinus pravdini Stark, 1936

Hylesinus toranio (D'Anthoine, 1788)

Hylesinus tristis Blandford, 1894

Genus *Neopteleobius* Nobuchi, 1971

Neopteleobius scutulatus (Blandford, 1894)

Tribe Hylurgini Gistel, 1848

Genus *Hylurgus* Latreille, 1806

Hylurgus ligniperda (Fabricius, 1787)

Genus *Tomicus* Latreille, 1802

Tomicus brevipilosus (Eggers, 1929)

Tomicus minor (Hartig, 1834)

Tomicus pilifer (Spessivtsev, 1919)

Tomicus piniperda (Linnaeus, 1758)

Tomicus puellus (Reitter, 1895)

Tomicus heuksandoensis Park, 2016

Genus *Xylechinus* Chapuis, 1869

Xylechinus bergeri Spessivtsev, 1919

Xylechinus pillosus (Ratzeburg, 1837)

Tribe Hyorrhynchini Hopkins, 1915

Genus *Sueus* Murayama, 1951

Sueus niisimai (Eggers, 1926)

Tribe Phloeosinini Nüsslin, 1912

Genus *Phloeosinus* Chapuis, 1869

Phloeosinus aubei (Perris, 1855)

Phloeosinus hopehi Schedl, 1953

Phloeosinus perlatus Chapuis, 1876

Phloeosinus pulchellus Blandford, 1894

Phloeosinus rudis Blandford, 1894

Tribe Polygraphini Chapuis, 1869

Genus *Polygraphus* Erichson, 1836

Polygraphus abietis Kurentsov, 1941

Polygraphus horyurensis Murayama, 1937

Polygraphus jezoensis Niisima, 1909

Polygraphus nobuchii Choo & Woo, 1989

Polygraphus proximus Blandford, 1894

Polygraphus subopacus C.G.Thomson, 1871

INTRODUCTION

Studies on the Korean species of the superfamily Curculionoidea have progressed for several years through the series “Invertebrate Fauna of Korea: Weevils I, II, III, IV, V (Insecta: Coleoptera)”. This volume represents the sixth in the series and deals with two subfamilies, Platypodinae and a part of Scolytinae in the family Curculionidae. General information regarding the superfamily and families was introduced in previous volumes. Only the species contained within the above subfamilies are treated in this study.

History of taxonomic studies on Korean Scolytinae and Platypodinae:

The first species of Scolytinae in Korea, *Tomicus piniperda*, was recorded by Ueki in 1911. Strohmeyer (1914) then reported two species, *Hylastes ater* and *H. opacus*. Subsequently Saito (1928 and 1938) and Murayama (1926, 1928, 1929a, 1929b, 1929c, 1929d, 1929e, 1930a, 1930b, 1931, 1932a, 1934a, 1936, 1937, 1940, 1953 and 1957) added an additional 68 species to the Korean fauna. Ju (1964) added 58 species to the Korean fauna in his faunistic report.

In the late 20th century, Choo and Woo (1985b, 1989a, b) and Choo *et al.* (1983a, b, 1988b) added 25 species of Scolytinae. Park and Lyu (2007) added *Treptoplatypus severini* to the known fauna. Knizek (2011) added seven species, *Phloeosinus aubei*, *Cryphalus piceus*, *Orthotomicus erosus*, *O. tosaensis*, *Pseudothysanoes modestus*, *Scolytus frontalis*, and *Xyleborus longipilus*, to Korean fauna in the Catalogue of Palaearctic Coleoptera. Park *et al.* (2017) added one new species, *Tomicus heuksandoensis* and 5 newly recorded species, *Hylurgus ligniperda*, *Sueus niisimai*, *Hylesinus nobilis*, *Phloeosinus pulchellus*, and *Hypothenemus expers*, and Park and Hong (2018, in print) added one species of Platypodinae, *Dinoplatypus hamatus*.

Consequently, a total of 169 species belonging to the two subfamilies currently are recorded for the fauna of Korea. Herein, 50 of these species will be treated in the Invertebrate Fauna of Korea: Weevils VI (Insecta: Coleoptera).

MATERIAL AND METHODS

Specimens referenced in this book are based on various university and institutional collections in Korea. For morphological study, weevils were directly observed through ordinary methods under stereoscopic microscopes (X10-80). We used the Canon 450D Camera, Canon 60D Camera, Canon Macro Photo lens MP-E 65 mm and auto montage program Helicon Focus 6 (HeliconSoft Co., Ukraine) for taking color photos of dorsal and lateral aspects. The number of the species corresponds with the numbers in the checklist and in the colored plates. The type locality is indicated as “TL”, citing their present localities (modified from the spellings in the original descriptions). All available synonyms of the genera and species are listed. In the descriptions of the species, while there are no full descriptions given, the original description, general diagnosis or major characteristics are provided when possible. The **SPECIMENS EXAMINED** section includes a majority of the label data of the available specimens excluding the names of collectors from various collections in Korea and abroad. The **KOREAN RECORDS** section is based on taxonomic review papers, faunistic reports, checklists and catalogues. The **BIOLOGICAL NOTES** section cites host plants related to the larvae from adjacent countries, including the Russian Far East, China, and Japan, but unfortunately details must be largely omitted. The **DISTRIBUTION** section lists the countries and regions where the taxa are distributed. When **KOREA** is mentioned it signifies the occurrence of a local distribution, indicating North (the northern part: HB, HN, RG, JG, PB, PN, HH, and some area of GW), South (the southern part: GG, some area of GW, CB, CN, GB, GN, JB, and JN), and JJ (Jeju Province). The **REMARKS** section provides general information on the species in Korea and other relevant taxonomic information. Abbreviations of the provinces which served as collecting sites are as follows:

HB: Hamgyeongbukdo, HN: Hamgyeongnamdo, RG: Ryangangdo; JG: Jagangdo; PB: Pyeonganbukdo, PN: Pyeongannamdo, HH: Hwanghaedo, GW: Gangwondo, GG: Gyeonggido (including Seoul), CB: Chungcheongbukdo, CN: Chungcheongnamdo, JB: Jeonlabukdo, JN: Jeonlanamdo, GB: Gyeongsangbukdo, GN: Gyeongsangnamdo (including Busan), JJ: Jeju.

Specimens examined are mostly preserved in the collection of Animal and Plant Quarantine Agency (APQA; Gimcheon, Korea), National Institute of Agricultural Science (NIAS; Jeonju, Korea), Korea National Arboretum (KNA; Pocheon, Korea), Research Institute of Forest Insect Diversity (RIFID; Namyangju, Korea), National Institute of Biological Resources (NIBR; Incheon, Korea) and Seoul National University (SNU; Seoul, Korea). Type and voucher specimens were also examined and were preserved in collection of the National Institute for Agro-Environmental Sciences (NIAES; Tsukuba, Japan), the British Museum of Natural History (BMNH; London, United Kingdom), the Smithsonian National Museum of Natural History (NMNH; Washington, D.C., United States of America).

TAXONOMIC NOTES

Phylum Arthropoda von Siebold, 1848

Class Insecta Linnaeus, 1758

Order Coleoptera Linnaeus, 1758

Family Curculionidae Latreille, 1802

Subfamily Platypodinae Erichson, 1847

Tribe Platypodini Erichson, 1847

Key to genera of the tribe Platypodini of Korea

1. Male protibia armed by transverse rugae, female protibia largely granulate, with no more than one or two weak rugae near apex. Femoral grooves of pronotum angulate at anterior extreme *Crossotarsus*
- Male and female protibiae similarly armed by rows of transverse rugae; femoral grooves of pronotum usually angulate at posterior extreme 2
2. Suture at apex of male elytral declivity entire; declivity variously convex, with or without armature of tubercles and spines; if present, female mycetangia pores on pronotum numerous; inner part of hind coxae in male without projection *Platypus*
- Male declivity abruptly truncate, its margin obtuse to very acutely costate along almost a complete circle, apex sometimes strongly, attenuately narrowed, declivital face usually concave; inner part of hind coxae in male with projection 3
3. Male elytral declivity much more broadly truncate, declivital base almost as wide as base of elytra, basal margin abrupt, obtusely to very acutely margined; elytral striae not impressed; pronotum with a narrow patch of punctures *Dinoplatypus*
- Elytral apex of male moderately to exceedingly attenuate, strongly narrowed to true base of declivity, dehiscence of suture sometimes small or obscure; basal margin of declivity usually more gradual, sometimes rounded *Treptoplatypus*

Genus *Crossotarsus* Chapuis, 1865

Type species: *Platypus wallacei* Thomson, 1858.

DIAGNOSIS: Protibiae have sexually dimorphic structures. Male declivity is moderately reduced to be almost absent. Abdomen ascending rather strongly to meet apex. Several large species have rounded nodule on metepisternum. Female pronotum with numerous mycangial pores.

1. *Crossotarsus simplex* Murayama, 1925 (Pl. 1-1) 가시나무긴나무좀

Crossotarsus simplex Murayama, 1925: 231 (TL: Japan; Kyushiu).

DESCRIPTION: Body elongate, cylindrical, dark brown; head and pronotum reddish brown; basal two third of elytra pale brown at sides with T-shaped dark area on basal margin and elytral suture; elytral declivity blackish brown. Head and pronotum reticulate, rugulose, fingerprints-like. Frons almost flat but widely concave longitudinally, sparsely punctate and covered with short and long decumbent hairs sparsely. Pronotum 1.1 times longer than wide; median sulcus of pronotum short, not reaching base. Anterior and basal margin with sparsely decumbent hairs. Elytra two times as long as wide; striae complete and clearly visible; striae of 1st striae more clearly visible than other lines; interstriae flat, but declivital interstriae elevated and highly carinate with long decumbent hairs. Elytral declivity furrowed, slightly narrowing posteriorly, strongly declined, and somewhat flattened at posterior area. Posterior margin with a long spine at each side. First abdominal sternite with long, thick spine produced posteriorly.

MEASUREMENTS: Body length (excluding head). 3.1–3.8 mm.

BIOLOGICAL NOTES: The known host plants are as follows: *Quercus glauca*, *Q. gilva*, *Q. serrata*, *Q. acuta*, *Q. salicina*, *Q. paucidentata*, *Q. myrsinaefolia*, *Albizia julibrissin*, *Acer* sp., *Cleyera japonica*, *Machilus thunbergii*, *Castanopsis cuspidata*, *Pterocarya rhoifolia*, *Ternstroemia japonica*, *Ficus* sp., *Pasania edulis*, *Ilex chinensis*, *Prunus jamasakura* (Choo and Woo, 1985b).

DISTRIBUTION: Korea, Japan, Taiwan.

KOREA: Jeju Is.

KOREAN RECORD: Murayama, 1930b; Murayama, 1931; Murayama, 1934d; Murayama, 1937; Cho, 1957; Cho, 1963; Nobuchi, 1973b; Choo and Woo, 1985a; Choo and Woo, 1985b; Nobuchi, 1993; ESK/KSAE, 1994; Park and Lyu, 2007; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [JJ] 1♂, Jeju, 8.iii.1928, J. Murayama.

REMARKS: The examined specimen, referred to as the first Korean record by Murayama (1930b), is deposited in NMNH, USA.

Genus *Dinoplatypus* Wood, 1993

Type species: *Platypus cupulatus* Chapuis, 1865.

DIAGNOSIS: Male elytral declivity subvertical, obliquely truncate, with sutural apex modestly to very strongly and broadly emarginated, and with subvertical face moderately to strongly concave; upper margin of male declivital face usually acute.

Key to species of the genus *Dinoplatypus* of Korea

1. Pronotum with narrow longitudinal patch of punctures along short longitudinal impressed line behind middle in male and narrow heart-shaped patch of punctures in female; posterior part of elytra briefly and narrowly emarginate in male, and emarginate inner margin gently arced and connected with outer margin and elytral suture faintly connected with posterior emarginate line in female *D. calamus*
- Pronotum with unclear longitudinal patch of punctures along long longitudinal impressed line behind middle in male and elliptical patch of punctures in female; posterior part of elytra widely and deeply emarginate in male and emarginate inner margin narrowly connected with outer margin and elytral suture angulate with posterior emarginate line in female *D. hamatus*

2. *Dinoplatypus calamus* (Blandford, 1894) (Pl. 1-2)

잡목긴나무좀

Platypus calamus Blandford, 1894: 137.

Platypus calamus fukiensis Schedl, 1941: 43.

Dinoplatypus calamus: Wood, 1993: 273.

ORIGINAL DESCRIPTION: Body slender, reddish testaceous; elytra with apex darker and slightly pale at middle. **Male.** Head with frons slightly concave in male. A short longitudinal impressed line in middle of frons. Pronotum with narrow V-shaped patch of punctures along a short longitudinal impressed line behind middle. Apex of elytra with an oblique terminal impressed surface, its outer margin strongly angulated and slightly elevated, curving away from suture so as to form an angle with its fellow above the terminal

impression, and then sinuate at sides. External angles produced in a curve downwards and backwards, and serrate at posterior part. Emargination of posterior margin of elytra deeper than wide, but 1/2 times shorter than terminal suture of declivity. **Female.** Head with frons somewhat more concave than male. A short longitudinal impressed line in middle of frons. Pronotum with narrow heart-shaped patch of punctures along a short longitudinal impressed line behind middle. Punctures of patch on anterior part bigger than on posterior part. Apex of elytra with an truncated and slightly impressed surface, its outer margin not angulate at beginning of declivity. External angles produced in a curve downwards and gently connected with inner emargination. Emargination of posterior margin of elytra wider than deep (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 2.8–3.9 mm.

BIOLOGICAL NOTES: The known host plants are as follows: *Quercus gilva*, *Q. stenophylla*, *Q. grosserrata*, *Q. salicina*, *Q. acuta*, *Q. glauca*, *Q. sessifolia*, *Q. hondai*, *Betula grossa*, *Machilus thunbergii*, *M. japonica*, *M. longifolia*, *Mallotus japonicus*, *Stewartia monodelpha*, *Styrax japonica*, *Illicium religiosum*, *Cleyera japonica*, *Ilex chinensis*, *Prunus spinulosa*, *P. ssiori*, *Symplocos myrtacea*, *Daphnyphyllum teijsmanni*, *Abies firma*, *Aesculus turbinata*, *Meliosoma myriantha*, *Castanea crenata*, *Castanopsis cuspidate* var. *sieboldii*, *Actinodaphne lancifolia*, *Fraxinus japonica*, *Distylium racemosum*, *Ternstroemia japonica*, *Styrax japonica* (Choo and Woo, 1985b).

DISTRIBUTION: Korea, Japan, China (Fujian, Guandong), Taiwan.

KOREA: Jeju Is.

KOREAN RECORD: Lee and Cho, 1959; Nobuchi, 1973b; Choo and Woo, 1985a; Choo and Woo, 1985b; Nobuchi, 1993; ESK/KSAE, 1994; Park and Lyu, 2007; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMEN EXAMINED: [JJ] 1 ex., Harye-ri, Namwon-eub, Seoguipo-si, 2.ix.1996i; 3 exs., Harye-ri, Namwon-eub, Seoguipo-si, 16.ix.1996.

3. *Dinoplatypus hamatus* (Blandford, 1894) (Pls. 1-3, 5-3)

가는긴나무좀

Platypus hamatus Blandford, 1894: 138.

Dinoplatypus hamatus: Wood, 1993: 279.

ORIGINAL DESCRIPTION: Body slightly more slender than *D. calamus*, reddish testaceous, elytra with apex darker and slightly pale at middle. **Male.** Head with frons concave. A short longitudinal impressed line in middle of frons. Pronotum with unclear longitudinal patch of punctures along a long longitudinal impressed line behind middle. Apex of elytra with an oblique terminal impressed surface, its outer margin

strongly angulated and slightly elevated, curving away from suture so as to form an angle with its fellow above the terminal impression, and then sinuate at sides. External angles produced in a curve downwards and backwards. Emargination of posterior margin of elytra wider than deep and two times wider than long. **Female.** Head with frons similarly concave with male. A short longitudinal impressed line in middle of frons. Pronotum with elliptical patch of punctures along a long longitudinal impressed line behind middle. Punctures of patch on anterior part bigger than on posterior part. Apex of elytra with an truncated and slightly impressed surface, its outer margin arced and not angulate at beginning of declivity. External angles produced in a curve downwards and gently connected with inner emargination. Emargination of posterior margin of elytra wider than deep. Emarginate inner margin narrowly connected with outer margin and elytral suture angulate with posterior emarginate line (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 3.6–4.0 mm.

DISTRIBUTION: Korea, Japan.

KOREA: South.

KOREAN RECORD: Park and Hong, 2018.

SPECIMEN EXAMINED: [GN] 443 ex., Gyosan-ri, Hamyang-eub, Hamyang-gun, 26.vi.2013.

Genus *Platypus* Herbst, 1793

Type species: *Bostrichus cylindrus* Fabricius, 1792.

SYNONYM: *Cylindra* Deftschmidt, 1825.

DIAGNOSIS: Posterior portions of metasternum and metepisternum are not impressed or armed. Protibiae have not sexually dimorphic. Sutural apex on elytral declivity of male is not dehiscent. Mycangial pores are numerous when present on pronotum.

Key to species of the genus *Platypus* of Korea

1. Body stout, large; rather strong spines on elytral declivity; apex of declivity with irregular projection; 4th abdominal ventrites with a pair of strongly pointed spines *P. lewisi*
- Body slender, small; spines on elytral declivity of male not so pronounced; apex of declivity crescent-shaped; abdominal sternites without spines *P. koryoensis*

4. *Platypus koryoensis* (Murayama, 1930) (Pl. 1-4)

광릉긴나무좀

Crossotarsus koryoensis Murayama, 1930: 28 (TL: Korea; Koryo).

Platypus koryoensis: Schedl, 1972: 219.

DESCRIPTION: Body reddish brown to dark brown, slender, slightly widened posteriorly. Head with atypic shallow furrows based on minute granulate patterns; frons slightly concave at middle. Frons and vertex sparsely covered with yellowish pubescence on minute punctures. Pronotum 1.2 times as long as wide, widest at posterior margin of fore femoral groove, glabrous on disc; basal and apical areas reticulate, rugulose, fingerprints-like; median blackish groove short on disc just behind middle, punctures on antero-lateral area of this groove smaller and closely situated. Elytra 1.8 times as long as wide, slightly widening to declivity, then slightly narrowing posteriorly and abruptly truncate at posterior margin; striae clear and in shallow grooves, and interstices slightly convex; 1st and 2nd interstices conjoining at beginning of declivity and produced into large spines; elytral declivity covered with golden decumbent hairs and 3rd, 5th and 7th interstices with small spine at beginning of declivity; outer apex of declivity produced into crescent-shaped lobe at each side. Abdominal ventrites unarmed. In female, lateral sides of pronotum more concave, punctures on sides of median sulcus heart-shaped and with 6–10 mycangial pores on it. Apex of elytral declivity truncated.

MEASUREMENTS: Body length (excluding head). 3.8–4.6 mm.

BIOLOGICAL NOTES: The known host plants are as follows: *Quercus serrata*, *Q. acutissima*, *Q. aliena*, *Q. mongolica*, *Acer* sp., *Carpinus laxiflora* (Hong *et al.*, 2006; Beaver and Shih, 2003). Most host records are from the Fagaceae (Beaver and Shih, 2003). There is a clear preference for the genus *Quercus* in Korea.

DISTRIBUTION: Korea, Russia (Ussuri, Primorye), Taiwan.

KOREA: South.

KOREAN RECORD: Murayama, 1930b; Murayama, 1934d; Murayama, 1937; Cho, 1957; Nobuchi, 1973b; Choo and Woo, 1985a; Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Hong *et al.*, 2006; Park and Lyu, 2007; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [SEOUL] 111exs., Mt. Bukhansan, Seongbuk-gu, 23.v.2012; 616exs., Mt. Bukhansan, Seongbuk-gu, 5.vi.2012; 2554exs., Mt. Bukhansan, Seongbuk-gu, 19.vi.2012; 1828exs., Mt. Bukhansan, Seongbuk-gu, 2.vii.2012; 3exs., [GG] 4ex., Kwangreung, Pocheon-si, 11.xi.1981; 14exs., Ibaejae, Seongnam-si, 4.x.2004; 1ex., Paju-si, 30.v.2012; 732exs., Paju-si, 28.vi.2012; [GW] 2ex., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 29.v.2012; 1exs., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 22.vi.2012; 1exs., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 11.ix.2012; [GN] 3exs., Sangrim Park, Hamyang-eub, Hamyang-gun, 26.v.2013.

5. *Platypus lewisi* Blandford, 1894 (Pl. 1-5)

루이스킨나무좀

Platypus lewisi Blandford, 1894: 134 (TL: Japan).

Platypus uncacanthurus Beeson, 1941: 347.

ORIGINAL DESCRIPTION: Body elongate, ferruginous, or inclining to pitch. Male with head similar to female in sculpture, front impressed over mouth and Prothorax oblong, slightly impressed in middle of either side, sulcus surrounded with an oval patch of punctuation narrower than in female, rest of punctures scattered and rather fine, except along lateral border. Elytra sulcate, the sulci wider behind with punctures confluent, interstices convex, shining, with fine scattered oblong punctures, the 1st narrow throughout, base of 3rd enlarged, more closely punctured, bases of 2nd and 4th impressed, punctured, and aspirate as in female, two first with a large common spine, 3rd, 5th, and 7th with small spines at summit of apical declivity, the rest unarmed; declivity convex with the sulci continued on it, and the interstices finely aspirate, the third terminating at a stout tubercle, external angles produced backwards into a vertical subquadrate lobe, with its posterior edge concave, so as to form two blunt teeth at angles. Fourth abdominal segment armed with two spines, the fifth flattened.

Female with front of head flat, dull with very fine cross reticulation, punctures rather fine, longitudinally strigose towards mouth. Prothorax oblong, diffusely punctured, rather closer at extreme sides, with a porelike puncture within anterior angle of emargination and a broad cordate group of small uniform punctures round median sulcus. Elytra sulcate, the sulci with irregular confluent punctures, not widened behind and obliterated before apical impression; interstices convex, shining, with fine scattered oblong punctures, 1st narrow throughout, bases of 2nd and 4th abbreviated, impressed and more strongly punctured, the latter with two or three longitudinal asperities, bases of 3rd and 5th elevated with transverse granulations; apical extremity with interstices dull, granulate, and pilose, terminal impression subtriangular, closely granulate, with erect hairs, suture shining. Underside reddish testaceous, abdomen unarmed (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 5.2–5.8 mm.

BIOLOGICAL NOTES: The known host plants are as follows: *Quercus mongolica* var. *grosseserrata*, *Q. acuta*, *Q. aliena*, *Q. serrata*, *Q. gilva*, *Castanea crenata*, *Aesculus turbinata*, *Abies firma*, *Cryptomeria japonica*, *Betula grossa*, *Fagus crenata*, *Kalopanax septemlobus*, *K. rucinifolium* (Choo and Woo, 1985). This species is polyphagous but has a clear preference for the Fagaceae (Beaver and Shih, 2003).

DISTRIBUTION: Korea, Japan, China, Taiwan, Bhutan, India.

KOREA: South, Jeju Is.

KOREAN RECORD: Murayama, 1932; Murayama, 1934d; Murayama, 1937; Cho, 1957; Ju, 1969; Choo and Woo, 1985a; Choo and Woo, 1985b; Nobuchi, 1993; ESK/KSAE, 1994; Park and Lyu, 2007; Paek *et al.*,

2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GW] 5exs., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 1.v.2012; 238exs., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 29.v.2012; 79exs., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 22.vi.2012; 4exs., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 18.vii.2012; 11exs., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 2.viii.2012; 3exs., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 16.viii.2012; 6exs., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 11.ix.2012; 6exs., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 9.x.2012; [JJ] 1ex., Donneko, Seoguipo, 24.vii-4.viii.2006.

REMARKS: Blandford (1894) confused the description for the male and female and the key in his paper should be modified.

Genus *Treptoplatypus* Schedl, 1939

Type species: *Crossotarsus trepanatus* Chapuis, 1865.

DIAGNOSIS: Male elytral declivity strongly narrowed, rather abruptly, obliquely truncate and dehiscent at sutural apex. Male elytral apex is strongly attenuate; declivity of male is usually concave. Mycangial pores on female pronotum are numerous.

Key to species of the genus *Treptoplatypus* of Korea

1. Frons slightly and longitudinally concave; elytral declivity with parted carinae at each side; metasternum longitudinally concave *T. solidus*
- Frons slightly and roundly concave; elytral declivity not carinate at each side; metasternum not concave ..
..... *T. severini*

6. *Treptoplatypus severini* (Blandford, 1894) (Pl. 1-6)

못뽑이긴나무좀

Platypus severini Blandford, 1894: 136-137 (TL: Japan).

Treptoplatypus severini: Beaver and Shih, 2003: 84.

DESCRIPTION: Body pale brown to ferruginous brown with elytra darker towards apex; antenna, tibia, and tarsus yellowish-brown. Head with front subconcave, covered with close shallow rugose punctation based on minutely granulate patterns, smoother towards mouth; vertex rather abruptly separate from front,

with three smooth vittae, interspaces coarsely punctured. Pronotum 1.1 times as long as wide, median sulcus fine, but sharply marked, surface with fine fingerprint-like reticulation; an indistinct oblique short line at either side of anterior extremity of sulcus in some individuals; punctures on anterior half scattered, absent over middle line, posterior half with punctures slightly larger, closer, shallower, and longitudinally oval. Elytra slightly widened posteriorly, widest at middle, gradually declivous towards apex and produced into two divergent processes, with subsulcate striae that are wider and shallower towards apex, punctures fused; interstices slightly convex, finely reticulate and punctured at base; first and second interstices with single row of punctures along inner border, all interstices flatter towards apex, inconspicuously tuberculate, and with decumbent serrate hairs; apical processes declivous in plane of the posterior termination, produced outwards to form obtuse oval emargination at apex, their upper border curved and continuous with second interstice; extremity bispinous in dorsal view, inner spine longer and truncate. Hind coxae sharply angulate. Prosternum, procoxae, mesocoxae, and ventrites with long pubescences. Last abdominal ventrite subconvex, slightly longer than 3rd and 4th ventrite combined, rugosely punctured.

MEASUREMENTS: Body length (excluding head). 4.7–5.6 mm.

BIOLOGICAL NOTES: The known host plants are *Fagus crenata*, *Tilia japonica*, *Alnus hirsuta*, *Aesculus turbinata* (Murayama, 1925).

DISTRIBUTION: Korea, Japan, southeastern China, Russia (Primorye, Kuril Is), Taiwan.

KOREA: South.

KOREAN RECORD: Park and Lyu, 2007; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GG] 1ex., Gwangneung, Soheul-eub, Pocheon gun, v-x.2008; [JN] 4exs., Piagol, Mt. Jirisan, Gurye-gun, 14.v. 1999.

7. *Treptoplatypus solidus* (Walker, 1858) (Pl. 1-7)

긴나무좀

Platypus solidus Walker, 1858: 286 (TL: Ceylon).

Platypus caudatus Motschulsky, 1863: 509.

Platypus cordatus Motschulsky, 1863: 510.

Platypus exilis Chapuis, 1865: 268.

Platypus obtusus Chapuis, 1865: 268.

Platypus pilifrons Chapuis, 1865: 265.

Platypus rudis Chapuis, 1865: 268.

Treptoplatypus solidus: Wood, 1993: 279.

DESCRIPTION: Body elongate, pale brown with elytra darker towards apex; antennae, femora and tarsi yellowish-brown. Frons slightly concave longitudinally with polygonal irregular wrinkles. Pronotum 1.1 times as long as wide, with very weak fingerprint-like wrinkles and minute or small, irregular punctures; median sulcus fine, short, and but sharply marked; short and an indistinct oblique line at either side of anterior extremity of sulcus. Female with two large pores on anterior part of pronotal sulcus. Elytra 2.1 times as long as wide to posterior tip of elytra, widest at middle, rapidly narrowing posteriorly. Elytral striae clear and dense, interspaces with one or two irregular line of small punctures. Elytral declivity of male matted by irregular minute wrinkles; intervals on declivity with long setae, 8th interval of declivity with embossed linear carinae; declivity prolonged over posterior margin of elytra and comprising thick and bluntly pointed projection; projection slightly cracked. Metasternum longitudinally concave. Hind coxae sharply angulate.

MEASUREMENTS: Body length (excluding head). 3.6–4.2 mm.

BIOLOGICAL NOTES: The host plants are known to *Ficus retusa*, *Canarium* sp., *Hevea brasiliensis* (Choo and Woo, 1985).

DISTRIBUTION: Korea, Japan, Taiwan, Indonesia (Aru Is., Borneo, Sumatra, Java), Malaysia, Moluccas, Philippines, Singapore, Burma, India, Nepal, Sri Lanka, Vietnam, Aroe Is., Australia, Caroline Is., Guam, Mariana Is., New Britain, New Guinea, Solomon.

KOREA: South.

KOREAN RECORD: Murayama, 1930b; Murayama, 1936; Murayama, 1937; Cho, 1957; Nobuchi, 1973b; Choo and Woo, 1985a; Choo and Woo, 1985b; Nobuchi, 1993; ESK/KSAE, 1994; Park and Lyu, 2007; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: 7♂, 1♀, Koryo, 20.viii.1929, Murayama collection in NMNH.

REMARKS: The examined specimens represent those used in the first record in the Korean fauna by Murayama (1930b) and are deposited in NMNH.

Subfamily Scolytinae Latreille, 1804

Key to supertribes of the subfamily Scolytinae

1. Each basal margin of elytra procurved and armed by a series of marginal crenulations (or less commonly by a continuous elevated costa in some Bothrosternini, Diamerini, Polygraphini), usually with a scutellar emargination between them; scutellum usually small and rounded or depressed, absent in some groups; pronotum weakly if at all declivous on anterior half, usually unarmed but crenulations sometimes present on anterolateral areas; head usually visible from above, somewhat wider; protibia usually wider; scales or deeply divided setae a common feature Supertribe Hylesinitae
- Basal margins of elytra forming a straight, transverse line across body, unarmed, rarely (some Scolytini, Cryphalini) with a weakly elevated continuous line; scutellum usually large, flat (rarely absent or highly modified in some Xyleborini); pronotum weakly to strongly declivous on anterior half and usually armed by many asperate crenulations, particularly on median half; head usually partly or entirely concealed from dorsal aspect, somewhat narrow, protibia usually narrow, scales or deeply divided setae an uncommon feature Supertribe Scolytitae

Supertribe Hylesinitae Erichson, 1836

Key to tribes of the supertribe Hylesinitae

1. Scutellar area of metanotum and its postnotum separated by suture-like intersegmental membrane; posterior part of scutoscutellar suture strongly curved mesad to a point near crest of scutellar groove then continuing cephalad parallel to this costa for about two-thirds of metanotum length (except much less in Hyorrhynchini); metapleural suture descending subvertically from pleural wing process to metepisternal groove formed to receive corresponding costal groove and flange of elytron then abruptly angled and continued caudad along this groove to a point near pleural coxal process; scutellum visible; funicle 6- or 7-segmented or if 5-segmented (*Sueus*) then eye divided, male frons not impressed, and antennal club symmetrical 2
- Scutellar area of metanotum and its postnotum completely fused along at least median third, intersegmental suture usually obsolete; scutoscutellar suture less strongly curved, approaching costa of scutellar groove more gradually and continuing cephalad parallel to it for less than half length of metanotum (it never reaches margin of this groove in some groups); metapleural suture sometimes as described above, but more commonly running a more direct route from pleural wing process to pleural costal process, often remote from locked position of costal margin of elytra for most or all of its course; scutellum either not visible or if visible then funicle 5-segmented and male frons impressed 5

2. Eye entire to feebly emarginate; scutoscutellar suture parallel to costa of scutellar groove for two-thirds length of notum; precoxal ridge on prothorax present or absent; antennal funicle 5- to 7-segmented 3
- Eye completely divided by an emargination, halves widely separated; scutoscutellar suture remote from costa of scutellar groove; crenulations on basal margins of elytra low, often poorly formed; precoxal ridge on prothorax never present; antennal funicle usually 6-segmented (5-segmented in *Sueus*) Hyorrhynchini
3. Prothoracic precoxal area rather large, its lateral margins strongly, sharply elevated from anterior margin to coxae; crenulations on elytral bases usually poorly developed; antennal funicle 7-segmented, club conical, first segment of club often as long as others combined; head somewhat prolonged, subrostrate, frons never sexually dimorphic; eyes entire, rather short; Northern Hemisphere, except introduced elsewhere; on Pinaceae Hylastini
- Prothoracic precoxal piece small, short, its lateral areas elevated or not; crenulations on elytral bases more conspicuously elevated, forming a definite row (except fused in *Dactijlipalpus*); antennal funicle variable, 5- to 7-segmented, club weakly to moderately flattened; head less distinctly rostrate, male frons usually impressed, eye oval to elongate, entire to feebly emarginate 4
4. Pronotum asperate on anterolateral areas (except *Hylastinus*), prothorax with elevated costate ridge from coxa to anterior margin; antennal funicle 6- or 7-segmented; mesal surface of elytra at base of suture immediately behind scutellum with an interlocking series of nodules and cavities, this lock interrupting groove and flange of suture (not visible when elytra in locked position); worldwide Hylesinini
- Anterolateral areas of pronotum unarmed; precoxal costa on prothorax absent; funicle 5- to 7-segmented; mesal surface of elytra at suture with interlocking groove and flange continued to base without a series of nodules or cavities immediately behind scutellum; worldwide Hylurgini
5. Lateral margins of pronotum usually subacutely elevated, costate; mesepimeron moderate to very large, its dorsal portion usually grooved for reception of elytral base; scutellar shield under base of elytra large, extending posteriorly beyond visible scutellum; scutoscutellar suture remote from costa of scutellar groove to its base; outer apical angle of protibia often with only one major recurved spine; Africa, southeast Asia to Australia Diamerini
- Lateral margins of pronotum rounded (subcostate in a few neotropical Bothrosternini); mesepimeron not enlarged or grooved (feebly grooved in *Aricerus*), scutellar shield beneath elytra small if present, not extended caudad beyond visible scutellum; scutoscutellar suture near and parallel to costa of scutellar groove on at least anterior fourth of metanotum 6
6. Scutellum visible, elytral bases notched for its reception; third tarsal segment stout, usually somewhat bilobed (except slender in *Chramesus*), mesal surface of elytra at suture immediately behind scutellum with a series of interlocking nodules and cavities Phloeosinini
- Scutellum obsolete, elytral bases only slightly if at all emarginate at suture; third tarsal segment-slender; mesal surface of elytra at suture usually without a special lock, groove and flange extend to base at position of scutellum Polygraphini

Tribe Diamerini Hagedorn, 1909

Genus *Sphaerotrypes* Blandford, 1894

Type species: *Sphaerotrypes pila* Blandford, 1894.

DIAGNOSIS: Pronotum dorsally carinate before basal margin and dorsal carina strongly edged at middle. Lateral margins of pronotum usually subacutely elevated, costate. Mesepimeron moderate to very large and its dorsal portion usually grooved for reception of elytral base. Scutellar shield under base of elytra large and extending posteriorly beyond visible scutellum. Scutoscutellar suture is remoted from costa of scutellar groove to its base. Outer apical angle of protibia often with only one major recurved spine.

8. *Sphaerotrypes pila* Blandford, 1894 (Pls. 1-8, 5-8)

왕둥근나무좀

Sphaerotrypes pila Blandford, 1894: 62.

Sphaerotrypes carpini Eggers, 1926a: 134.

Sphaerotrypes imitans Eggers, 1926a: 134.

ORIGINAL DESCRIPTION: Body very short, oval, exceedingly convex. Head with front flat in female, impressed in male, punctured, and thinly hairy, the hairs ascending on to middle of vertex, which is smooth at the sides, finely reticulate and scantily punctured. Prothorax nearly double as wide as long, its base bordered and produced backwards to form an obtuse angle, and slightly concave on either side, basal angles acute, sides rounded and strongly narrowed from base to apex; dorsum separated throughout from flanks by a fine, ridge, convex, transversely impressed behind apex, with close rugose punctuation and a narrow elevated line from base to middle, somewhat shining with a scanty covering of scales, chiefly at apex and on sides, its anterior border fringed with short hairs. Scutellum oblong, rugose. Elytra rather wider than prothorax and less than twice as long, conjointly emarginate at base, basal borders slightly rounded, crenulate, not overlapping base of thorax, basal angles very broadly rounded, sides rounded from base to apex; above dull brown covered with fuscous scales and with a dusty appearance, due to scattered cinereous scales; striae, the striae rather deep, with obsolete and scattered punctures, interstices quite flat, rugose, more strongly at base. Underside black, punctured, thinly covered with scales. Legs blackish with tarsi lighter (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 2.4–3.0 mm.

BIOLOGICAL NOTES: The examined specimens were collected from dead branches of *Quercus mongolica*.

DISTRIBUTION: Korea, China, Japan, Taiwan.

KOREA: South.

KOREAN RECORD: Murayama, 1930b; Murayama, 1937; Cho, 1957; Choo *et al.*, 1983; Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek, 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GG] 98exs., Unseo-dong, Jung-gu, Incheon-si, 22.vii-1.viii.2007; [JB] 2exs., Asan-ri, Gaejeog-myeon, Gunsan-si, 4.vi.2011.

Tribe Hylastini LeConte, 1876

Key to genera of the tribe Hylastini

1. Third tarsal segments broad, bilobed; pronotum usually constricted anteriorly, usually about equal numbers of small and large punctures intermixed on disc; North America, N Africa, Europe, Asia; *Abies*, *Cedrus*, *Pinus*, 3.3–5.7 mm *Hylurgops*
- Third tarsal segments narrower, emarginate; pronotum not noticeably constricted anteriorly, punctures uniformly large or small, rarely intermixed with a few smaller ones; North America, N Africa, Europe, Asia, Canary Islands; *Abies*, *Cedrus*, *Picea*, *Pinus*, 2.0–5.5 mm *Hylastes*

Genus *Hylastes* Erichson, 1836

Type species: *Bostrichus ater* Paykull, 1800.

SYNONYM: *Ipsocossonus* Oke, 1934: 250 (Type species: *Ipsocossomus anomalus* Oke, 1934 = *Bostrichus ater* Paykull, 1800)

DIAGNOSIS: Body elongate and oval, reddish brown to black, 2.0–6.0 mm in length and approximately 2.6 to 3.2 times as long as wide. Head elongate and frons often carinate with median longitudinal carina or median groove; eyes oval. Scape usually as long as 7-segmented funicle and club ovate with three straight sutures. Pronotum as wide as long, usually with longitudinal median ridge; posterior margin almost straight. Basal margin of elytra weakly arcuate, irregularly crenulate; striae variably impressed, punctures distinct; interstriae variously sculptured; declivity convex, with granules or rarely small tubercles. Procoxae contiguous. Third tarsal segments emarginate. *Hylastes* is very similar to *Hylurgops* LeConte from which it is separated by having equally sized punctures on the pronotum and usually shorter vestiture on the declivity. Additionally, the pronotum usually is not constricted anteriorly as in *Hylurgops*.

Key to the species of the genus *Hylastes* of Korea

1. Body more than 3.5 times as long as wide 2
 - Body less than 3 times as long as wide 5
2. Pronotum as long as wide, not glabrous longitudinally at middle *H. cunicularis*
 - Pronotum longer than wide, weakly glabrous longitudinally from basal two thirds at middle 3
3. Pronotum more than 1.2 times as long as wide, pronotal punctures somewhat small *H. ater*
 - Pronotum less than 1.2 times as long as wide, pronotal punctures somewhat big and clear 4
4. Elytral striae somewhat small, intervals wider than diameter of striole *H. brunneus*
 - Elytral striae somewhat big, intervals same as or narrower than diameter of striole *H. parallelus*
5. Elytral interstriae with a simple row of short setae *H. attenuatus*
 - Elytral interstriae with irregular double rows of short setae 6
6. Pronotum slightly longer than wide, with a clear longitudinal carina *H. plumbeus*
 - Pronotum as long as or shorter than wide, with a weakly elevated longitudinal area *H. opacus*

9. *Hylastes ater* (Paykull, 1800) (Pls. 1-9, 5-9)

소나무먹나무좀

Bostrichus ater Paykull, 1800: 153.*Hylesinus chloropus* Duftschmid, 1825: 102.*Hylastes pinicola* Bedel, 1888: 390.*Hylastes angusticollis* Eggers, 1929a: 9.*Ipsocossonus anomalus* Oke, 1934: 251.

DESCRIPTION: Body elongate and oval, dark brown to blackish brown. Frons with longitudinal carina, densely punctured, setose. Head somewhat regularly punctured with short golden setae; short rostrum with dull longitudinal carina at middle. Pronotum 1.3 times as long as wide, more or less parallel-sided with elevated longitudinal line at middle; punctures large and sometimes confluent. Scutellum oval, setose. Elytra slightly wider than pronotum, widest at middle; striae rough, impressed, punctures large; interstriae almost same width as diameter of striole, slightly convex with rows of irregular short setae with rugose minute tubercles. Declivital interstriae with shorter setae than on disc and covered with minute tubercles.

MEASUREMENTS: Body length (excluding head). 3.8–5.0 mm.

DISTRIBUTION: Korea, China, Japan, Kazakhstan, Russia, Turkey, Europe, Australian Region (introduced); Nearctic Region (introduced).

KOREA: South.

KOREAN RECORD: Murayama, 1930b; Murayama, 1937; Cho, 1957; Choo and Woo, 1985b; Choo and Woo, 1989; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

10. *Hylastes attenuatus* Erichson, 1836 (Pls. 1-10, 5-10)

소나무가는나무좀

Hylastes attenuatus Erichson, 1836: 50.

DESCRIPTION: Body elongate and oval, reddish brown to blackish brown; antennal scape, funicles and tarsi rather brightly colored. Frons convex, rugose with minute shallow punctures. Pronotum slightly longer than wide, slightly widened from base to middle and then gently narrowing anteriorly; longitudinal median line glabrous, slightly elevated; punctures on disc large, setose. Elytra reddish brown, striae large, strongly impressed, interstices slightly convex, as wide as a diameter of striae. Interstices covered with a row of somewhat decumbent golden setae.

MEASUREMENTS: Body length (excluding head). 2.0–3.1 mm.

DISTRIBUTION: Korea, China, Japan, Taiwan, Turkey, Europe, Madeira Archipelago.

KOREA: South.

KOREAN RECORD: Choo and Woo, 1985b; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: Choo and Woo (1985b) did not refer to the locality and examined specimens, but Choo used a male specimen collected from Hadong (GN) in his doctoral dissertation.

11. *Hylastes brunneus* (Erichson, 1836) (Pls. 1-11, 5-11)

검정뿌리나무좀

Hylesinus brunneus Erichson, 1836: 48.

Hylastes aterrimus Eggers, 1933a: 3.

Hylastes rotundicollis Reitter, 1895b: 60.

DESCRIPTION: Body elongate, parallel-sided, blackish brown except reddish brown antennae and tarsi. Head slightly rugose and densely punctate with irregularly shaped punctures; frons with short median

carina between pair of concave areas on anterior part. Pronotum 1.2 times as long as wide, basal angle round, parallel-sided from base to two thirds from base and then gently arched anteriorly; punctures on disc slightly elongate, irregularly sized; median glabrous area somewhat short and narrow. Elytra rugose, parallel-sided, 1.9 times as long as wide; striae smaller than interval width; basal margin of elytra slightly concave; interstices with three or four irregular lines of setae, setae on declivity denser than on disc. All tibiae clearly widened posteriorly and flattened.

MEASUREMENTS: Body length (excluding head). 4.0–4.5 mm.

DISTRIBUTION: Korea, China (Northern East), India, Kazakhstan, Mongolia, Turkey, Russia, Europe.

KOREA: North, South.

KOREAN RECORD: Ju, 1964; Ju, 1969; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GW] 1 ex., Mt. Daeam, Dong-myeon, Yanggu-gun, 23.v.2003.

12. *Hylastes cunicularius* Erichson, 1836 (Pls. 1-12, 5-12)

가문비뿌리나무좀

Hylastes cuniculatus Erichson, 1836: 49.

Hylurgops starki Eggers, 1933a: 1.

DESCRIPTION: Body elongate, stout, blackish brown except reddish brown antennae and tarsi. Head somewhat regularly punctate. Pronotum as long as wide, basal angle slightly angular, parallel-sided from base to middle and then rapidly narrowing anteriorly; punctures on disc somewhat round and larger than on anterior part; median glabrous area almost invisible. Elytra rugose, parallel-sided, 1.9 times as long as wide, wider than pronotum; striae slightly smaller than interval width; basal margin of elytra slightly concave at middle; interstices with three or four irregular lines of setae, setae on declivity becoming short and thick except for a line of setae. All tibiae clearly widened posteriorly and flattened.

MEASUREMENTS: Body length (excluding head). 3.8 mm.

DISTRIBUTION: Korea, China, Japan, Kazakhstan, Russia, Syria, Turkey.

KOREA: North.

KOREAN RECORD: Ju, 1964; Ju, 1969; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: This species was recorded by Ju (1964) and is distributed only in North Korea. Only a voucher specimen could be examined which was collected from Finland and determined by Koponen in BMNH.

13. *Hylastes opacus* Erichson, 1836 (Pls. 2-13, 5-13)

소나무애먹나무좀

Hylastes opacus Erichson, 1836: 51.

Hylastes simplex Rey, 1892: 30.

Descriptions: Body elongate and oval, blackish brown except reddish brown scape, funicles and tarsi. Head regularly punctured with short decumbent setae; eyes elongated vertically. Pronotum 0.95–1.03 times as long as wide, somewhat round, weakly parallel-sided, slightly glabrous longitudinally at middle, with large punctures; punctures with short inwardly decumbent setae. Scutellum small, round. Elytra parallel-sided, 1.6 times as long as wide, striae round and slightly smaller than interval width, interstriae weakly convex with irregular double rows of short hairs.

MEASUREMENTS: Body length (excluding head). 2.5–3.5 mm.

DISTRIBUTION: Korea, Japan, Kazakhstan, Mongolia, Russia, Europe, Nearctic Area (introduced).

KOREA: North, South.

KOREAN RECORD: Murayama, 1929b; Murayama, 1930b; Murayama, 1937; Cho, 1957; Ju, 1964; Ju, 1969; Choo and Woo, 1985b; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: Only a voucher specimen which was collected from Finland and determined by Koponen in BMNH.

14. *Hylastes parallelus* Chapuis, 1875 (Pl. 2-14)

소나무좁은나무좀

Hylastes parallelus Chapuis, 1875: 196.

DESCRIPTION: Body reddish black to brownish black, elongate, cylindrical but slightly flattened; antennal scrobes, funicles, and tarsi pale brown. Pronotum slightly longer than wide, densely punctate with short erect setae in punctures. Punctures slightly distanced. Pronotal disc with median longitudinal impunctate line; impunctate line slightly protruding; pronotum widest just before base, slightly narrowing anteriorly and widely rounded at anterior margin; setae in punctures at lateral margin decumbent outwardly and setae at basal margin decumbent posteriorly. Scutellum round, punctate with short decumbent hairs. Elytra elongate, two times longer than wide, parallel-sided to three fourths of its length, the becoming rounded. Elytral striae clear; striae at least two times larger than pronotal punctures and slightly distanced; interstices as wide

as striae; with two or three irregular lines of short decumbent setae; declivity with small denticles on interstices and three lines of setae, setae at middle narrow, those along sides twice as wide as middle ones. Tarsi same in width from first to third tarsomere, 4th tarsomere small, almost obscure.

MEASUREMENTS: Body length (excluding head). 4.5 mm.

DISTRIBUTION: Korea, China, Japan, Kazakhstan, Mongolia, Taiwan, Turkey, Russia.

KOREA: North, South.

KOREAN RECORD: Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: 1ex., [SEOUL] Hongneung, Dongdaemun-gu, 21.v; [GW] 18ex., Janghak-ri, Dongmyeong, Chuncheon-si, 21.iv-17.v.2011; 11ex., Joyangri, Dongsan-myeon, Chuncheon-si, 21.iv-17.v.2011; 13ex., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 22.vi.2012; [CB] 1ex., Miwon-ri, Miwon-myeon, Cheongju-si, 29.vii-5.viii.2005; [JN] 1ex., Songnim, Hadong-gun, Hadong-eup, 13.ix.1983; 1ex., Is. Heuksan, Heuksan-myeon, Sinan-gun, 4.vi.2015.

15. *Hylastes plumbeus* Blandford, 1894 (Pl. 2-15)

소나무검정좀벌이

Hylastes plumbeus Blandford, 1894: 57.

Hylastes obscurus Chapuis, 1876: 197 (Homonym)

Hylastes septentrionalis Eggers, 1923b: 135.

Hylurgops fushunensis Murayama, 1940: 235.

DESCRIPTION: Body elongate and oval, dark brown to blackish brown, elytra usually slightly brighter than body. Frons convex, closely punctate, with small round groove at middle and pair of transverse concavities just before anterior margin. Pronotum punctate with minute wrinkles, 1.0–1.1 times longer than wide, with long longitudinal line. Punctures on pronotum large dense, with short setae. Scutellum round, setose. Elytra wider than pronotum, 1.6 times as long as wide, basal margin weakly arcuate and crenate; striae weakly impressed; punctures of striae large; interstices narrow, convex with irregular double rows of short setae and minute tubercles.

MEASUREMENTS: Body length (excluding head). 2.6–3.0 mm.

DISTRIBUTION: Korea, China, Japan, Taiwan, Russia, Europe.

KOREA: North, South.

KOREAN RECORD: Murayama, 1936; Murayama, 1937; Cho, 1957; Ju, 1964; Ju, 1969; Choo *et al.*, 1983a;

Choo *et al.*, 1983b; Choo and Woo, 1985b; Choo *et al.*, 1988b; Choo and Woo, 1989a; ESK/KSAE, 1994; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek, 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GG] 2ex., Gwangneung, Soheul-eup, Pocheon-si, 19.v.1966; 1ex., Mt. Youngmunsan, Yeonsu-ri, Yongmun-myeon, Yangpyeong-gun, 1.v.-26.v.2009; [GW] 1ex., Phoenixpark, Myeonol-ri, Bongpyeong-myeon, Pyeongchang-gun, 11.ix.1999; 3ex., Janghak-ri, Dong-myeon, Chuncheon-si, 22.iii-21.iv.2011; 2ex., Joyangri, Dongsan-myeon, Chuncheon-si, 22.iii-21.iv.2011; 392ex., Joyangri, Dongsan-myeon, Chuncheon-si, 21.iv-17.v.2011; 268ex., Janghak-ri, Dong-myeon, Chuncheon-si, 21.iv-17.v.2011; [JN] 1ex., Wando-eup, Wando-gun, 21.iii.1983; 1ex. [GN] Mt. Gajisan, Sangbuk-myeon, Ulju-gun, Ulsan-si, 10.v.1981; 2ex., [GN] Mt. Bugbyeong, Mundong-ri, Sinhyeon-eub, Geoje-si, 13.v.2006.

Genus *Hylurgops* LeConte, 1876

Type species: *Hylastes pinifex* Fitch, 1858.

DIAGNOSIS: Species in this genus range from 3.1 to 5.7 mm and approximately 2.4 to 2.8 times as long as wide. Pronotum usually as long as wide, constricted anteriorly and unarmed, also with differently sized punctures. Scutellum small. Declivity convex, usually bearing granules. Vestiture consisting of both hair-like and scale-like setae, the latter usually restricted to declivity. Frons usually with median carina above epistoma. Anterior margin of compound eye entire. The scape is as long as the 7-segmented funicle; club ovate with two to three straight sutures visible. Procoxae contiguous. *Hylurgops* are very similar to and difficult to distinguish from *Hylastes* Erichson. Most *Hylurgops* have a characteristic declivity vestiture of scale-like setae, while others have rows of long and hair-like setae. Declivital hair-like setae in *Hylastes*, if present, are not longer than the ground vestiture, and scale-like setae are absent in the majority of these species.

Key to species of the genus *Hylurgops* of Korea

1. Second intervals on declivity not impressed and same as 1st and 3rd 2
 - Second intervals on declivity impressed and lower than 1st and 3rd *H. interstitialis*
2. Elytral with short setal hairs from middle to apex 3
 - Elytral with somewhat long setal hairs from middle to apex *H. longipillus*
3. Elytra slightly widened posteriorly. Declivity covered with short, dense scale-like setae 4
 - Elytra almost parallel-sided. Declivity covered with short, sparse scale-like setae *H. spessiwezeffi*
4. Tubercles on declivital interstices somewhat large, short setae on declivity clearly visible. Body 2.5–4.0 mm *H. palliatus*

- Tubercles on declivital interstices somewhat small, short setae on declivity obscure. Body 4.5–5.6 mm ...
 *H. glabratus*

16. *Hylurgops glabratus* (Zetterstedt, 1828) (Pl. 2-16)

갈색소나무좀

Hylurgus glabratus Zetterstedt, 1828: 343 (NP)

Hylastes decumanus Erichson, 1836: 51.

Hylesinus paykullii Duftschmid, 1825: 99. (NO)

Hylesinus tenebrosus C. R. Sahlberg, 1836a: 139.

DESCRIPTION: Body elongate and oval, grabrous reddish brown to dark brown. Mouthpart, antennae and tarsi bright brown. Surface closely covered with short hairs. Head tightly covered with punctures and short hairs. Frons slightly flattened. Eye vertical and elongated oval. Pronotum slightly wider than long, narrower than elytra. One third of latera margin of pronotum parallel-sided and then straightly narrowing anteriorly. Anterior margin of pronotum weakly convex anteriorly. Pronotum regularly punctured without minute punctures. Scutellum somewhat small but clearly visible with minute punctures. Elytra parallel-sided, covered with 4–5 rows of yellowish short decumbent setae on intervals; first interstice narrow at beginning after scutellum and gradually widened posteriorly; short setae on declivity much thicker than basal area; second intervals on declivity not impressed and similar width with 1st and 3rd intervals.

MEASUREMENTS: Body length (excluding head). 4.5–5.6 mm.

DISTRIBUTION: Korea, China, Japan, Kazakhstan, Mongolia, Taiwan, Turkey, Russia.

KOREA: North, South.

KOREAN RECORD: Murayama, 1929b; Murayama, 1930a; Murayama, 1930b; Murayama, 1936; Murayama, 1937; Cho, 1957; Ju, 1964; Ju, 1969; Choo *et al.*, 1983b; Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

17. *Hylurgops interstitialis* (Chapuis, 1875) (Pl. 2-17)

소나무줄나무좀

Hylastes interstitialis Chapuis, 1875: 196.

Hylurgops niponicus Murayama, 1936: 142.

DESCRIPTION: Body robust, elongate and oval, reddish brown to reddish black. Frons with transverse impression in middle, closely punctate with short setae. Clypeus with longitudinal ridge. Pronotum wider than long with longitudinal median line, intermixed small and large punctures. Scutellum small, subcircular, and setose. Elytra wider than pronotum, basal margin weakly curved and crenate. Striae impressed, punctures large; interstriae convex with many short, irregular scale-like setae, a row of somewhat long setae, and small tubercles; 2nd declivital interval slightly narrower than other intervals and weakly concave.

MEASUREMENTS: Body length (excluding head). 4.2–5.2 mm.

DISTRIBUTION: Korea, China, Japan, Russia (Far East).

KOREA: North, South.

KOREAN RECORD: Ju, 1964; Ju, 1969; Choo *et al.*, 1983b; Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [SEOUL] 1ex., Hongneung, Dongdaemun-gu, v.1990; 5ex., Hongneung, Dongdaemun-gu, 2.viii.1990; 4ex., Seodaemun-gu, 14.vii.2007; 1ex., [GG] Mt. Jugyeopsan, Pocheon-si, 21.v.1994; 1ex., Gapyeong-gun, 20.iv.2009; 1ex., Yangyang-gun, 25.vi.1985; 1ex., Temple Sangwonsa, Mt. Odaesan, Jinbu-myeon, Pyeongchang-gun, 24.iv.1997; 17ex., Seosang-ri, Seo-myeon, Chuncheon-si, 21.vii.1997; 17ex., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 1.v.2012; 22ex., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 29.v.2012; 2ex., soksa-ri, yeongpyeong-myeon, Pyeongchang-gun, 15.iv-11.v.2016; 73ex., Janghak-ri, Dong-myeon, Chuncheon-si, 21.iv-17.v.2011; 167ex., Joyangri, Dongsan-myeon, Chuncheon-si, 21.iv-17.v.2011; 666ex., Joyangri, Dongsan-myeon, Chuncheon-si, 22.iii-21.iv.2011; 424ex., Janghak-ri, Dong-myeon, Chuncheon-si, 22.iii-21.iv.2011; [CN] 1ex., Dongam-ri, Banpo-myeon, Gongju-si, 16-23.viii.2005; [JB] 1ex., majeong-ri, Bug-myeon, Jeongeub-si, 26.vii-2.viii.2005; 2ex., majeong-ri, Bug-myeon, Jeongeub-si, 9-16.viii.2005; 2ex., majeong-ri, Bug-myeon, Jeongeub-si, 16-23.viii.2005; 1ex., majeong-ri, Bug-myeon, Jeongeub-si, 30.viii-6.ix.2005; [JN] 20ex., Wando-gun, 21.iii.1983; 1ex., Seungju-eup, Suncheon-si, 14.vii.1999; 1ex., [GN] Okjong-myeon, Hadong-gun, vi.1981; 2ex., Hangye, Okjong-myeon, Hadong-gun, 10.viii.1981; 1ex., Seokgye-ri, Yonghyeon-myeon, Sacheon-si, 15.ix.1998.

18. *Hylurgops longipillus* (Reitter, 1895) (Pl. 2-18)

우쭈리잔털나무좀

Hylurgops longipillus Reitter, 1895b: 63.*Hylastes imitator* Reitter, 1900: 59.*Hylurgops likiangensis* Tsai & Hwang, 1964b: 237, 240.

DESCRIPTION: Body black to blackish brown, except reddish brown antennae, elytra and tarsi. Pronotum wider than long, widest at basal angle, lateral side slightly rounded from base and then slightly narrowing anteriorly; anterior constriction of pronotum short; dorsum of pronotum with glabrous longitudinal area from base to two third at middle; dorsum largely punctate without minute punctures. Scutellum small, round with minute punctures. Elytra slightly wider than pronotum, parallel-sided and gently arched from beginning of declivity; dorsum of elytra covered with short setae; short setae changing narrow scale-like shape from beginning of declivity to apex; single row of somewhat long erected setae on interstices; interstices of declivity with small tubercles.

MEASUREMENTS: Body length (excluding head). 3.9 mm.**DISTRIBUTION:** Korea, China, Japan, Russia (Far East).**KOREA:** North.**KOREAN RECORD:** Ju, 1964; Ju, 1969; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).**SPECIMENS EXAMINED:** Unable to examine any Korean specimens.**19. *Hylurgops palliatus* (Gyllenhal, 1813) (Pl. 2-19)**

눈잣나무좀

Hylesinus palliatus Gyllenhal, 1813: 340.*Bostrichus abietiperda* Bechstein, 1818: 74.*Hylesinus fuscus* Duftschmid, 1825: 105.*Hylurgus helferi* A. Villa & G. B. Villa, 1835: 49.*Hylesinus marginatus* Duftschmid, 1825: 104.*Hylurgops parvus* Eggers, 1933a: 2.*Ips piceus* Marsham, 1802: 58. (NO)*Hylurgus rufescens* Stephens, 1830: 364.*Ips rufus* Marsham, 1802: 57. (NO)

DESCRIPTION: Body robust, elongate, reddish brown to blackish brown. Frons impressed transversely in middle, closely punctate with short hair; longitudinal carina behind clypeus. Antennae with 7 segmented funicles, club coniform with three sutures. Pronotum wider than long, widest behind middle, narrowing anteriorly from middle; dorsum rugosely, closely punctate with only large size of punctures; longitudinal median line slightly convex. Scutellum small, round. Elytra wider than pronotum, basal margin weakly sinuate and crenated; striae impressed, punctures large, interstriae slightly convex with short irregular scale-like setae, a low of somewhat long setae, and small tubercles; 2nd declivital interval nearly same as other intervals and not concave.

MEASUREMENTS: Body length (excluding head). 2.5–4.0 mm.

DISTRIBUTION: Korea, China, Japan, Kazakhstan, Russia, Turkey, Nearctic Region (introduced).

KOREA: North, South

KOREAN RECORD: Ju, 1964; Ju, 1969; Choo and Woo, 1989a; ESK/KSAE, 1994; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

20. *Hylurgops spessiweffi* Eggers, 1914 (Pls. 2-20, 5-20)

비로봉소나무좀

Hylurgops spessiweffi Eggers, 1914b: 187.

Hylurgops modestus Murayama, 1937: 367.

Hylurgops squamosus Murayama, 1942: 56.

DESCRIPTION: Body robust, elongate and oval, blackish brown to black. Frons with transverse impression in middle, closely punctate with short setae. Longitudinal ridge behind clypeus. Pronotum wider than long with longitudinal median line and only covered with large punctures; surface on dorsum slightly glabrous. Scutellum small, subcircular, setose. Elytra wider than pronotum, basal margin weakly curved and crenate; striae impressed, punctures large; interstriae convex with irregular, weak scale-like setae, one row of somewhat long setae, and small tubercles; 2nd declivital interval nearly same as other intervals and not concave.

MEASUREMENTS: Body length (excluding head). 3.9–4.5 mm.

DISTRIBUTION: Korea, China (Northern East), Japan, Russia, Taiwan.

KOREA: North, South.

KOREAN RECORD: Murayama, 1937; Murayama, 1942; Cho, 1957; Ju, 1964; Ju, 1969; Choo and Woo,

1985b; ESK/KSAE, 1994; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GW] 1ex., Konggosan (=Mt. Geumgang, North Korea), 4.x.1933; 8ex., Soksa-ri, Yeongpyeong-myeon, Pyeongchang-gun, 15.iv-11.v.2016.

REMARKS: The examined Korean specimens were used in first record in the Korea by Murayama (1937) and are deposited in NMNH, USA. Those specimens are a type series of *H. modestus* which is a synonym of this species.

Tribe Hylesinini Erichson, 1836

Key to genera of the tribe Hylesinini

1. Funicle 6-segmented; male and female frons impressed, strongly in male, moderately in female, impression not extending above upper level of eyes; eye shallowly emarginate, elytral ground vestiture scalelike, costal margin near apex descending; E. Asia; 2.2–2.8 mm *Neopteleobius*
- Funicle 7-segmented; female frons flat to convex; male frons, if strongly concave, with excavation extending above eyes; eye less strongly to not emarginate 2
2. Eye entire, oval, less than 3.0 times as long as wide; protibia armed on lateral margin of apical fourth by six or more closely set, socketed teeth; body stouter; declivity more gradual, abdomen distinctly ascending to meet elytral apex; elytral vestiture of uniform length, mostly of scales (except almost subglabrous in crenate area), almost worldwide; *Fraximis* and other Oleaceae; 1.7–4.8 mm *Hylesinus*
- Eye shallowly emarginate, somewhat elongate, at least 3.3 times as long as wide; protibia armed by 2–5 socketed teeth; body more slender; declivity shorter, more abrupt, abdomen horizontal, not rising to meet elytral apex; elytral ground vestiture covered by short setae or scales, and interstitial rows of longer, erect bristles Japan to North America; *Alnus*; 2.1–3.4 mm *Alniphagus*

Genus *Alniphagus* Swain, 1918

Type species: *Hylesinus aspericollis* LeConte, 1876.

SYNONYM: *Hylastinoides* Spessivtsev, 1919: 249 (Type species: *Hylastes alni* Niisima, 1909 = *Hylesinus costatus* Blandford, 1894)

DIAGNOSIS: Species in this genus range from 2.1 to 3.4 mm in length and are approximately 2.0 to 2.1 times as long as wide. Two North American species in this genus with slightly contrasting color between pronotum and elytra. Pronotum ranging from dark brown to reddish. Elytra yellowish to light brown. The

pronotum wider than long with the anterolateral areas armed by several asperities. Scutellum small. Declivity convex with pointed tubercles. The vestiture consists of hair-like setae. Anterior margin of the compound eye emarginate. Scape nearly as long as 7-segmented funicle. Club ovate and flattened, marked by three straight sutures; first suture partly septate. Procoxae separated.

21. *Alniphagus costatus* (Blandford, 1894) (Pls. 2-21, 5-21)

거칠오리나무좀 (신칭)

Hylesinus costatus Blandford, 1894: 63.

Hylastes alni Niisima, 1909: 137.

Alniphagus imitator Sokanovskiy, 1958: 38.

ORIGINAL DESCRIPTION: Body oblong, black with elytra obscurely piceous. Head with labrum pitchy, separated by a transverse depression from front, which is flattened, shining, strongly punctured and glabrous; vertex finely reticulate. Antennae ferruginous, club small, pointed, sutures transverse. Prothorax transverse, base biconcave, depressed, scarcely produced in middle, sides strongly rounded; surface convex, finely reticulate and with strong asperate punctuation somewhat weaker at base, with traces of a central elevation; sides tuberculate before apex. Scutellum small, punctured. Elytra wider than prothorax and two and a half times as long, their bases convex, overlapping thorax, sides parallel to middle, then rounded to apex, surface convex cylindrical, strongly declivous behind, with strong punctured striae, the punctures round and distinct; all interstices transversely rugose and punctured to middle, 1, 3, 5, 7 and 9 after middle with a series of transverse asperities which become strongly tuberculate on the apical declivity, where the interstices are elevated; alternate interstices not asperate behind middle, multipunctate. Underside black, punctured, shortly pubescent, metasternum with a deep longitudinal impression, its episterna not very narrow; abdomen scarcely convex longitudinally, its terminal segment rugose. Tibiae spined externally (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 3.4 mm.

BIOLOGICAL NOTES: The known host plants are *Betula* sp., *Alnus* sp., and so on.

DISTRIBUTION: Korea, China, Japan, Russia (Far East), Taiwan.

KOREA: North.

KOREAN RECORD: Ju, 1964; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

Genus *Hylesinus* Fabricius, 1801

Type species: *Bostrichus crenatus* Fabricius, 1787.

SYNONYM: *Leperisinus* Reitter, 1913b: 41 (Type species: *Bostrichus fraxini* Panzer, 1799 =*Bostrichus varius* Fabricius, 1775).

DIAGNOSIS: Species in this genus range from 1.8 to 4.0 mm in length and are 1.8 to 2.0 times as long as wide. Pronotum wider than long and usually armed on anterolateral areas by coarse asperities. Scutellum small. Anterior margin of elytra armed by a row of overlapping crenulations; declivity convex. Vestiture consists of mixture of white, light brown and/or black scales in a variety of patterns. Anterior margin of compound eye sinuate. Scape usually as long as 7-segmented funicle; club large and ovate with three straight sutures. Procoxae subcontiguous. *Hylesinus* can be easily distinguished by characters of the anterior margin of the eye which is sinuate in *Hylesinus*, entire in *Hylastinus* Bedel, and emarginate in *Alniphagus* Swaine. It can also be distinguished by having a patterned coloration, due to the light and dark colored scale-like setae that cover their bodies.

Key to species of the genus *Hylesinus* of Korea

1. Elytral covered with short scale-like hairs and setae 2
 - Elytral covered with narrow setae *H. toranio*
2. Elytral covered with two types of colored scale-like setae forming some pattern 3
 - Elytral covered with one color of scale-like setae without pattern 4
3. Transverse cinereous-brown scale-like setae in vitta which curves backwards at sides on elytra
 - *H. cingulatus*
 - Mostly covered with yellowish red scale-like setae and irregularly striped pattern with brownish hairs on elytra *H. eos*
4. Elytral interstices covered with short scale-like short hairs and a line of short and thin setae *H. nobilis*
 - Elytral interstices with only short scale-like setae except elytral suture and lateral margins 5
5. Pronotal asperities somewhat larger, stout and irregular *H. laticollis*
 - Pronotal asperities somewhat smaller and regular *H. tristis*

22. *Hylesinus cingulatus* Blandford, 1894 (Pls. 2-22, 5-22)

물푸레나무좀

Hylesinus cingulatus Blandford, 1894: 67 [TL: Japan- Lake Junsai].

ORIGINAL DESCRIPTION: Body black, dull. Head closely granulate, front hairy, impressed in male, subconvex in female. Antennae ferruginous, club rather broad, obtusely pointed, with dark pubescence. Prothorax with base bisinuate, not produced as in *H. laticollis* and *H. tristis*, sides rounded at base, thence narrower and straighter to apex; above uniformly convex, thinly hairy, without scales, granulate, the asperities stronger towards the sides, which are distinctly tuberculate in front. Elytra as wide as prothorax, and two and a half times longer, separately rounded at base, overlapping thorax, sides subparallel, feebly sinuate to behind middle, thence rounded; surface convex, obliquely declivous behind, striate, the striae punctured to behind middle, interstices tuberculate at base, then rugose, covered with short hairs and scales, blackish except on middle of elytra, where they form a transverse cinereous-brown vitta, curved backwards at sides so as to cover the apices of the 5th to the marginal interstices, and continued narrowly along apical margin, forming an irregular oval. Underside punctured, with rather dense cinereous pubescence; abdomen not strongly convex. Legs ferruginous or pitchy, with tarsi lighter, front tibiae hairy, spined externally (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 2.3–2.8 mm.

BIOLOGICAL NOTES: The known host plants are *Fraxinus* sp. and *Acer* sp. (Hayashi *et al.*, 1994).

DISTRIBUTION: Korea, China (Heilongjiang, Jilin), Japan, Russia (Far East).

KOREA: North, South.

KOREAN RECORD: Saito, 1938; Saito, 1941; Ju, 1964; Ju, 1969; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GW] 1 ex., Inje-gun, 30.iv.2015.

REMARKS: Holotype specimen was observed and is deposited in BMNH.

23. *Hylesinus eos* Spessivtsev, 1919 (Pls. 2-23, 5-23)

물푸레인피나무좀

Hylesinus eos Spessivtsev, 1919: 248.

DESCRIPTION: Body small, oblong, convex, dark brown. Frons slightly concave, closely covered with setae and granules. Pronotum wider than long, widest at base, bisinuate at basal margin; antero-lateral margin with asperities, closely punctuate, sparsely decumbent setae. Scutellum small, round. Elytra slightly wider

than pronotum, basal margin elevated and crenate; striae clear and impressed, interstriae crenated anteriorly like rugosities, covered with scales forming variegated pattern; declivity broadly rounded, interstriae with tiny rugose tubercles.

MEASUREMENTS: Body length (excluding head). 2.3–2.9 mm.

BIOLOGICAL NOTES: The known host plants is *Fraxinus mandshurica* (Wu, 1990).

DISTRIBUTION: Korea, China (Heilongjiang, Northern East), Japan, Russia (Far East).

KOREA: North, South.

KOREAN RECORD: Ju, 1964; Ju, 1969; Choo and Woo, 1985b; Choo and Woo, 1989a; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GW] 2ex., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 1.v.2012; [GB] 21ex., Habuk-ri, Jukjang-myeon, Yeongil-gun, 16.vii.1983.

REMARKS: Choo and Woo (1985b, 1989a) mis-identified this species as *H. cingulatus*.

24. *Hylesinus laticollis* Blandford, 1894 (Pls. 2-24, 5-24)

들메인피나무좀

Hylesinus laticollis Blandford, 1894: 65.

Hylesinus striatus Eggers, 1933a: 4.

Hylesinus lubarskii Stark, 1936a: 153.

ORIGINAL DESCRIPTION: Body broad, oval, convex, black. Head strongly punctured, front flattened, shortly hairy; in two specimens probably males, impressed over mouth with a fine central carina, and with stronger pubescence; in the other, probably a female, with impression and carina obsolete and hairs scantier; epistoma shortly produced over mandibles, vertex reticulate. Antennae ferruginous, club long, stout, with transverse sutures. Prothorax very transverse, narrowed from base to apex, with sides rounded, base strongly produced in middle, surface asperately punctured, with short bristles, closer at sides, with an indistinct smooth central line, and an oblique impression on either side before and parallel to base; sides muricate towards apex. Scutellum rounded, rugose. Elytra wider than prothorax and two and a half times longer, widest in middle, base of each strongly rounded and crenulate; sides slightly rounded to middle, gradually more strongly towards apex, which is obtuse; surface obliquely and not strongly declivous to apex, with deep rather wide striae, obsoletely punctured to middle, thence smooth, interstices coarsely tuberculate at base, the tubercles becoming finer, and being replaced behind the middle by short fuscous scales, which give the elytra a brownish tinge; the two outer interstices and lateral margin with a close covering of short bristles. Underneath coarsely punctured, shortly hairy; abdomen more convex longitudinally than elytra, first two segments much

longer than last three, fourth and fifth bristly. Spines of anterior tibiae nearly obsolete (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 4.0–4.2 mm.

DISTRIBUTION: Korea, China (Heilongjiang), Japan, Russia (Far East).

KOREA: North.

KOREAN RECORD: Ju, 1964; Ju, 1969; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: Holotype specimen was examined and is deposited in BMNH, London.

25. *Hylesinus nobilis* Blandford, 1894 (Pls. 3-25, 5-25)

가시털떡나무좀

Hylesinus nobilis Blandford, 1894: 64.

Hylesinus shabliovskiyi Kurentsov, 1941: 113, 229.

ORIGINAL DESCRIPTION: Body Oblong-oval, black, dull. Head finely aciculate with scattered punctures, front flattened, shortly pubescent, antennae pitchy-brown with club blackish, longer than funiculus, bluntly pointed, its sutures oblique. Prothorax transverse, base strongly produced behind and biconcave, sides strongly rounded behind, contracted in front and sinuate, apex nearly straight in middle; surface slightly impressed in middle behind apex, not distinctly impressed before base, uniformly and densely granulate, with short pubescence. Elytra wider than prothorax in middle and more than twice as long, humeral angles very obtuse, sides rounded at base, becoming wider, thence nearly straight, gradually and strongly rounded towards apices which are separately rounded; surface convex, more strongly towards apex, with deep indistinctly punctured striae; interstices in front strongly tuberculate, with a few scattered hairs, posteriorly with rugosities weaker, hidden by short fuscous hairlike scales, and with a single row of erect setae; 1st, 3rd and 5th elevated at apical declivity, the two latter conjoined. Underside punctured and finely pubescent, abdominal segments not very convex. Legs black, with tarsi lighter, anterior tibiae distinctly spined on outer side of apex (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 4.6–4.9 mm (Type specimen is 6.0 mm).

DISTRIBUTION: Korea, China (Heilongjiang), Japan, Russia (Far East).

KOREA: South.

KOREAN RECORD: Park *et al.*, 2017.

SPECIMENS EXAMINED: [GW] 1ex., Mt. Gariwang, Jeongseon-gun, 29.v.2012; 1ex., Sangwon-sa, Mt. Odae, Jinbu-myeon, Pyeongchang-gun, 8.vi.2013.

REMARKS: Holotype specimen was examined and is deposited in BMNH, London.

26. *Hylesinus pravdini* Stark, 1936

양털인피나무좀

Hylesinus pravdini Stark, 1936a: 153.

MEASUREMENTS: Body length. 3.9–4.1 mm.

DISTRIBUTION: Korea, Russia (Far East).

KOREA: North.

KOREAN RECORD: Ju, 1964; Ju, 1969; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011)

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: Unable to examine any specimens of this species from Korea or elsewhere.

27. *Hylesinus toranio* (D'Anthoine, 1788) (Pls. 3-27, 5-27)

가는털떡나무좀 (신칭)

Byrrhus toranio D'Anthoine, 1788: 270.

Bostrichus oleiperda Fabricius, 1792: 366.

Ips scaber Marsham, 1802: 56.

Hylesinus bicolor Brullé, 1832: 250.

Hylesinus suturalis W. Redtenbacher, 1842: 21.

Hylesinus essau Gredler, 1863: 370.

Hylesinus antipodus Schedl, 1952a: 17.

DESCRIPTION: Body shortly oblong oval, blackish brown to black, antennae, tibia and tarsi reddish brown and legs and elytra reddish black. Frons slightly flat, shortly setose pubescences of anterior margin of head directed to mandibles, pubescences on vertex and frons directed to middle. Pronotum slightly wider than long, widest at basal angle, lateral margin arched and narrowing anteriorly with weak constriction; dorsum coarsely serrate; asperations on anterior area much bigger, becoming smaller posteriorly and changed to rough punctures. Elytra covered with setose pubescences; but dorsum except 1st interval and lateral intervals covered with somewhat thick setose pubescences; elytral striae clear and located on longitudinal furrows; pubescences on 1st interval and lateral intervals brighter than other pubescences, longer and more erected; intervals roughly tuberculate and reticulate; reticulation becoming weaker posteriorly; setae more setose in

basal area and gradually broadening.

MEASUREMENTS: Body length (excluding head). 2.6 mm.

DISTRIBUTION: Korea, Israel, Japan (Introduced), Lebanon, Turkey, Europe, North Africa.

KOREA: North.

KOREAN RECORD: Ju, 1964; Ju, 1969; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: Although this species was recorded in North Korea, the distributions in other countries are restricted to Europe and adjacent regions. It was also introduced in Japan, so its distribution in Korea is very doubtful.

28. *Hylesinus tristis* Blandford, 1894 (Pls. 3-28, 5-28)

물푸레먹나무좀

Hylesinus tristis Blandford, 1894: 66.

ORIGINAL DESCRIPTION: Body similar in sculpture and appearance to *H. laticollis*, but smaller, more oblong-oval, less strongly convex, the elytra more declivous posteriorly, as convex as ventral surface. Front in male broadly impressed between eyes with a short central carina, pubescent; in female, narrowly impressed over mouth, flat between eyes, with pubescence thin. Prothorax less transverse than in *H. laticollis*, with sides less narrowed to apex, and base less strongly produced in middle, its sculpture similar. Elytra narrower, subparallel to middle, less obtuse at apex, interstices less coarsely tuberculate at base, alternate interstices behind middle with an indistinct row of stronger tubercles in the male; lateral setae shorter throughout, inconspicuous before middle of elytra. Anterior tibiae distinctly spinose on outer margin (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 3.0–3.5 mm.

BIOLOGICAL NOTES: The known host plants are *Juglans sinensis* and *Fraxinus* sp. (Hayashi *et al.*, 1994).

DISTRIBUTION: Korea, Japan.

KOREA: North, South.

KOREAN RECORD: Murayama, 1930b; Murayama, 1936; Murayama, 1937; Cho, 1957; Ju, 1964; Ju, 1969; Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GW] 1 ex., Hoengseong-gun, vi.2007; [GB] 30 ex., Habuk-ri, Jukjang-myeon, Yeongil-gun, 16.vii.1983.

REMARKS: Holotype specimen was examined and is deposited in BMNH.

Genus *Neopteleobius* Nobuchi, 1971

Type species: *Hylesnius scutulatus* Blandford, 1894.

DIAGNOSIS: Oblong, cylindrical. Color pattern composed of dark brown to gray scales in various patters. Frons flattened in female, deeply impressed and clothed with rather broad setae. Eyes oblong, distinctly emarginate in anterior margin. Antennae inserted near base of mandibles; scape long; funicle six-segmented; club elongate-ovate, flat, longer than funicle, with two transverse sutures. Pronotum regularly convex, wider than long, widest near base, broadly narrowing anteriorly on lateral sides, tuberculate on antero-lateral portions and along anterior margin, with short erect setae along anterior margin. Elytra cylindrical, nearly two-thirds as wide as long, subparallel to behind middle on lateral sides; basal margins curved and crenulate; striae narrow and deep; interstriae wide and not or slightly elevated, with rather broad setae; declivity abruptly arched and convex. Anterior coxae widely separated at base; prosternum elevated between coxae. Third tarsal segments widened and bilobed. Abdominal ventrites almost horizontal.

29. *Neopteleobius scutulatus* (Blandford, 1894) (Pls. 3-29, 5-29)

느릅나무좀

Hylesinus scutulatus Blandford, 1894: 67.

Pteleobius trepanatus Wichmann, 1914a: 137.

ORIGINAL DESCRIPTION: Body oblong, cylindrical, black, tessellated with close-lying grey and brownish scales. Head granulate with front flattened, hairy, impressed and more densely hairy in the male. Antennae black, club rather short, acuminate oval, its basal joint large. Prothorax rather broader than long, its base bisinuate, not produced, sides uniformly rounded, tuberculate in front, surface regularly convex, front and sides with short erect bristles. Elytra cylindrical, wider at base than thorax, and a little more than twice as long, base crenulate, sides subparallel to behind middle, apex strongly declivous and convex; with rather fine punctured striae, interstices flat with a single row of setae throughout, and with one or two tubercles at base. Underside strongly punctured with short scalelike hairs, metathoracic episterna narrow, abdomen not convex longitudinally. Legs black, with tarsi lighter (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 2.7 mm.

BIOLOGICAL NOTES: The known host plants are *Zelkova serrata*, *Castanea crenata*, *Ulmus davidiana* var. *japonica*, *Cercidiphyllum japonicum*, *Gleditsia japonica*, *Acer pictum* (Hayashi *et al.*, 1994). In Korea, this species usually occurs on *Zelkova serrata* and overwinters as adults.

DISTRIBUTION: Korea, China, Japan, Russia (Far East).

KOREA: North, South.

KOREAN RECORD: Murayama, 1930b; Murayama, 1937; Cho, 1957; Ju, 1964; Ju, 1969; Choo *et al.*, 1983b; Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [SEOUL] 7ex., Dongdaemun-gu, Hongneung, viii.1990; [GG] 3ex., Pocheon-si Soheul-eup, Gwangneung, 18.ix.1982; 6ex., Pocheon-si Soheul-eup, Gwangneung, 18.x.1982; 2ex., Pocheon-si Soheul-eup, Gwangneung, 18.xi.1982; 3ex., Pocheon-si Soheul-eup, Gwangneung, 3.xii.1982; 1ex., Gunpo-si, Sokdal-dong, Mt. Surisan, 16.x.2008; [JB] 1ex., Jeonju-si, Deokjin-gu, Ua-dong, 1-ga, 3.vi.2011; [JN] 1ex., Suncheon-si, Temple Songgwangsa, 2.ii.1999; 1ex., Jangseong-gun, Temple Baegyangsa, 2.ii.1999.

REMARKS: Holotype specimen was examined and is deposited in BMNH, London.

Tribe Hylurgini Gistel, 1848

Key to genera of the tribe Hylurgini

1. Ground vestiture on elytra scalelike, metepisternal setae scalelike; antennal funicle 5-segmented; median frontal carina present (except absent in a few South American species); procoxae rather widely separated; North and South America, Europe, Asia, Africa, Australia; coniferous and broadleaf hosts; 1.5–3.5 mm *Xylechinus*
- Ground vestiture on elytral disc hairlike, metepisternal setae hairlike 2
2. Procoxae contiguous; pronotum more slender, 0.95–1.1 times as long as wide, only slightly constricted on anterior third; erect interstitial setae abundant, confused; a short median carina from epistomal margin to level of antennal insertion; Europe, W. Asia; 3.1–5.3 mm *Hylurgus*
- Procoxae moderately separated; pronotum stouter, less than 0.85 times as long as wide, strongly constricted on anterior third; erect interstitial setae in uniseriate rows (except confused in *T. puellus*), a fine median carina from epistoma to middle of frons (absent in *T. puellus*), Europe, Asia, N. Africa; 2.5–4.5 mm *Tomicus*

Genus *Hylurgus* Latreille, 1806

Type species: *Bostrichus ligniperda* Fabricius, 1787.

DIAGNOSIS: Species in this genus range from 2.0 to 5.7 mm in length. The pronotum longer than wide.

Declivity convex and unarmed. Sexual dimorphism is present in this genus, in which the second declivital interstriae of females are more clearly impressed than in males. Vestiture consists of hair-like setae. Frons transversely impressed. Anterior margin of compound eye entire. Scape longer than the 6-segmented funicle. Club ovate with 3 straight sutures. Procoxae contiguous. This genus resembles the genus *Dendroctonus* Erichson, which differs in having a 7-segmented funicle.

30. *Hylurgus ligniperda* (Fabricius, 1787) (Pl. 3-30)

왕털소나무좀

Bostrichus ligniperda Fabricius, 1787: 37.

Bostrichus elongatus Herbst, 1794a: 117.

Bostrichus flavipes Panzer, 1799a: 9.

Hylurgus longulus Kolenati, 1846: 38.

DESCRIPTION: Body cylindrical, moderately stout. Derm blackish brown to black covered with brown setae. Antennae and tarsi reddish brown. Antennal funicles 6-segmented. Frons tuberculate with one somewhat big tubercle on anterior part and carinated longitudinally from tubercle to anterior margin. Pronotum as wide as elytra, parallel sided at basal one third, then slightly narrowing anteriorly without distinct constriction. Dorsum clearly punctuate with a longitudinal median impunctate line. Pubescences on dorsum somewhat short and much longer hairs on sides. Elytral striole clear, but intervals rough and more or less serrate. Basal serration gradually smaller and changed to tubercles from beginning of declivity. Elytral declivity covered with dense pubescences and slightly concave in second interval. Procoxae almost contact but clearly separated by narrow bar; mesocoxae departed each other about half of its diameter; hind coxae deeply and triangularly separated by 1st ventrite; tarsomeres 5-segmented, 3rd tarsomere bilobed and 4th tarsomere small but clearly visible.

MEASUREMENTS: Body length (excluding head). 4.0–5.7 mm.

BIOLOGICAL NOTES: The known host plants are *Pinus densiflora* and *Pinus thunbergii* (Hayashi *et al.*, 1994).

DISTRIBUTION: Korea, Japan, China, Europe, Afrotropical region, Australian region, Nerctic Region.

KOREA: South, Jeju Is.

KOREAN RECORD: Park *et al.*, 2017.

SPECIMENS EXAMINED: [GW] 1 ex., Hoengseong-gun, 10. vi. 2007; [JB] 1 ex., Majeong-ri, Jeongeub-si, 19-26.vii.2005; [JN] 1 ex., Seungju-eub, Suncheon-si, 14.vii.1999; [JJ] 1 ex., Ara-dong, Jeju-si, 26.iv.2016.

Genus *Tomicus* Latreille, 1802

Type species: *Dermestes piniperda* Linnaeus, 1758.

DIAGNOSIS: The size of the species in this genus ranges from 2.9 to 5.4 mm in length. Elytral color ranges from yellowish brown to almost black with a darker pronotum. Pronotum wider than long, shiny and unarmed. Scutellum small and depressed. Elytral declivity convex, bearing interstitial granules with vestiture of erect hair-like setae. Frons with median vertical carina above epistoma. Anterior margin of compound eye entire. Scape as long as 6-segmented funicle; club ovate with three straight sutures. Procoxae contiguous with no elevated prothoracic ridges. This genus from the subtribe Tomicina is closely related to *Hylurgus* Latreille. *Tomicus* are less setose overall and the surface of both the frons and the declivity are shiny versus asperate in *Hylurgus*.

Key to species of the genus *Tomicus* of Korea

1. Interstria 2 on declivity with rows of small granules, not impressed (weakly impressed in some *T. minor*) 2
 - Interstria 2 devoid of granules, clearly impressed 4
2. Elytral vestiture consisting of longer, erect interstitial setae in uniseriate rows and shorter decumbent setae (ground vestiture), erect setae longer on declivity. Elytral declivity with conspicuous interstitial tubercles in regular uniseriate rows. Larger species, length 3.1–5.2 mm 3
 - Elytral interstitial setae and ground vestiture equally short, dense, confused, decumbent or nearly so, not longer on declivity. Elytral interstriae strongly crenulate; interstitial tubercles large, transversely confluent, confused. Interstitial punctures confused on declivity, only slightly larger than striae punctures; interstitial tubercles inconspicuous on declivity. Smallest species, length 2.9–3.5 mm. Maternal gallery monoramous, longitudinal *T. puellus*
3. Interstitial punctures on disc and declivity fine points, difficult to see with normal lighting, not dense. Declivital ground vestiture absent or sparse and difficult to see, inconspicuous. Pronotal punctures sparse, most separated by much more than their diameter; most specimens with a distinct central impunctate longitudinal median strip. Antennal club pale to medium brown, at most slightly darker than funicle. Larger, length 3.2–5.2 mm. Maternal gallery biramous, transverse *T. minor*
 - Interstitial punctures on disc and declivity conspicuous, uniformly dense, on declivity only slightly smaller than, or equal to, striae punctures. Declivity densely setose due to abundant conspicuous decumbent ground vestiture. Pronotal punctures dense, separated on average by about their diameter, no impunctate median strip. Antennal club brown to dark brown, distinctly darker than funicle. Smaller, length 3.0–4.3 mm. Maternal gallery monoramous, longitudinal *T. pilifer*

4. Granules on declivity somewhat big, acute, clearly visible on 1st, 3rd, 4th, 5th interstices 5
 – Granules on declivity minute, only several ones clearly visible on 1st and 3rd interstices at elytral summit ..
 *T. heuksandoensis*
5. Erect elytral setae on disc longer, about as long as distance between striae; erect setae on declivity distinctly longer than those on disc. Antennal club brown, antenna uniformly colored. Interstria 2 on declivity strongly impressed and concave, with uniseriate, regularly spaced fine punctures. More slender, elytra 1.7–1.8x longer than wide; larger, length 3.5–5.2 mm. Elytra usually longer than twice the width of pronotum. Maternal gallery monoramous, longitudinal *T. piniperda*
 – Erect elytral setae on disc shorter, about 0.5x as long as distance between striae; erect setae on declivity as long as those on disc. Antennal club brown to dark brown, usually noticeably darker than funicle. Interstria 2 on declivity weakly impressed, with punctures very fine, uniseriate, sparse, often widely spaced or even absent on much of declivity. Stouter, elytra 1.6x longer than wide; smaller, length 3.2–4.4 mm. Elytra shorter than twice the width of pronotum. Maternal gallery unknown, but probably monoramous and longitudinal *T. brevipilosus*

31. *Tomicus brevipilosus* (Eggers, 1929) (Pl. 3-31)

잣나무좀

Blastophagus brevipilosus Eggers, 1929c: 103.

Blastophagus khasianus Murayama, 1959: 75.

Blastophagus multisetosus Murayama, 1963a: 37.

DESCRIPTION: Body dark brown to blackish brown, smaller, stouter; elytra 1.6x longer than wide. Fine punctures of interstria 2 on declivity uniseriate; punctures of striae 1 to 3 on declivity more than twice as large as fine interstitial punctures. Granules on interstriae 2 and 3 on disc closely spaced, most by a distance equal to 1.5–2.5 punctures of adjacent striae. Antennal club brown, same color as or darker than funicle. Elytra shorter than twice width of pronotum. Erect elytral setae on disc shorter, about 0.5x as long as distance between striae; erect setae on declivity as long as those on disc. Antennal club brown to dark brown, usually noticeably darker than funicle. Interstria 2 on declivity devoid of granules and weakly impressed, with punctures very fine, uniseriate, sparse, often widely spaced or even absent on much of declivity. Granules on declivity somewhat big, acute, clearly visible on 1st, 3rd, 4th, 5th interstices.

MEASUREMENTS: Body length (excluding head). 3.2–4.4 mm.

BIOLOGICAL NOTES: The host plants are known to *Pinus koraiensis*, *P. insularis*, *P. parvifolia*, *P. yunnanensis* (Kirkendall *et al.*, 2008).

DISTRIBUTION: Korea, China, Japan.

KOREA: South.

KOREAN RECORD: Choo *et al.*, 1983b; Choo and Woo, 1985b; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: Although Choo *et al.* (1983b) recorded this species and described it with 2–3 lines of short pubescences on the intervals, this character does not occur in the photos of *T. brevipilosus* in Kirkendall *et al.*, (2008) and the homotype preserved in NMNH, Washington D.C.; however, the voucher specimen preserved in Japan, has very short erect setae and 2–3 lines of short decumbent setae and second interstices that are not impressed as in the photos and key in 2008. Therefore, Japanese *T. brevipilosus* specimens should be compared with the original type.

32. *Tomicus minor* (Hartig, 1834) (Pl. 3-32)

애소나무좀

Hylesinus minor Hartig, 1834: 413.

Myelophilus corsicus Eggers, 1911a: 75.

DESCRIPTION: Body large, reddish brown to dark brown. Elytra reddish or slightly lighter color than body or pronotum. Antennal club pale to medium brown, at most slightly darker than funicle. Scutellum conical, shining without setae. Interstrial punctures on disc and declivity fine points, obscure under normal lighting, not dense. Declivital ground vestiture absent or sparse, inconspicuous. Pronotal punctures sparse, most separated by much more than their diameter; most specimens with distinct central impunctate longitudinal median strip. Interstria 2 on declivity with rows of small granules, not impressed; granules on declivity somewhat big, acute, clearly visible on all interstices.

MEASUREMENTS: Body length (excluding head). 3.2–5.2 mm.

BIOLOGICAL NOTES: The known host plants are all *Pinus* spp. in its range (Kirkendall *et al.*, 2008).

DISTRIBUTION: Korea, China, Cyprus, Japan, Kazakhstan, Mongolia, Russia, Turkey, Europe.

KOREA: North, South.

KOREAN RECORD: Murayama, 1929a; Murayama, 1930b; Cho, 1957; Lee and Cho, 1959; Ju, 1964; Ju, 1969; Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: 4ex., [GW] Joyangri, Dongsan-myeon, Chuncheon-si, 22.iii-21.iv.2011; 8ex., Janghak-ri, Dong-myeon, Chuncheon-si, 22.iii-21.iv.2011; 1ex., [GN] Dapcheon-ri, Banseong-myeon, Jinju-

si, 29.viii-12.ix.2005; 1ex., [GN] Jinju-si, 12.vii.2007.

33. *Tomicus pilifer* (Spessivtsev, 1919) (Pl. 3-33)

잣솔털나무좀

Myelophilus pilifer Spessivtsev, 1919: 250.

DESCRIPTION: Body small, somewhat reddish brown to dark brown. Antennal club brown to dark brown, distinctly darker than funicle. Interstrial punctures on disc and declivity conspicuous, uniformly dense; punctures on declivity only slightly smaller than, or equal to, strial punctures; declivity densely setose due to abundant conspicuous decumbent ground vestiture. Pronotal punctures dense, separated on average by their diameter; impunctate median strip absent.

MEASUREMENTS: Body length (excluding head). 3.0–4.3 mm.

DISTRIBUTION: Korea, China, Russia (Far East).

KOREA: North, South.

KOREAN RECORD: Ju, 1964; Ju, 1969; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GG] 3ex., Kwangreung, Soheul-eub, Pocheon-si, 25.vii.2012; [GW] 1ex., Janghak-ri, Dong-myeon, Chuncheon-si, 22.iii-21.iv.2011; 24ex., Joyangri, Dongsan-myeon, Chuncheon-si, 22.iii-21.iv.2011; 6ex., Joyangri, Dongsan-myeon, Chuncheon-si, 21.iv-17.v.2011; 2ex., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 1.v.2012.

34. *Tomicus piniperda* (Linnaeus, 1758) (Pl. 3-34)

소나무좀

Dermestes piniperda Linnaeus, 1758: 355.

Hylurgus analogus LeConte, 1868: 172.

Blastophagus major Eggers, 1943a: 50.

Bostrichus testaceus Fabricius, 1787: 37.

DESCRIPTION: Body large, dark brown to blackish brown. Antennal club brown, antenna uniformly colored or club darker than funicle. Pronotum evenly punctate with erect but slightly decumbent setae on punctures, setae short or long. Scutellum conical, shining without hairs. Erect elytral setae on disc longer,

about as long as distance between striae; erect setae on declivity distinctly longer than those on disc. Interstria 2 on declivity strongly impressed and concave, with uniseriate, fine regularly spaced punctures. Elytra slender, 1.7–1.8x longer than wide, usually longer than twice the width of pronotum. Interstria 2 devoid of granules, clearly impressed. Fine punctures of interstria 2 on declivity uniseriate; punctures of striae 1 to 3 on declivity more than twice as large as fine interstitial punctures; granules on interstriae 2 and 3 on disc closely spaced, most by a distance equal to 1.5–2.5 times punctures of adjacent striae. Granules on declivity somewhat big, acute, clearly visible on 1st, 3rd, 4th, 5th interstices.

MEASUREMENTS: Body length (excluding head). 3.5–5.2 mm.

BIOLOGICAL NOTES: The known host plants are continental *Pinus* spp. and *Pinus pinaster*, not known from *P. yunnanensis* (Kirkendall *et al.*, 2008).

DISTRIBUTION: Korea, China, Cyprus, Japan, Kazakhstan, Mongolia, Russia, Taiwan, Turkey, Europe, North Africa, Nearctic Region (introduced), Oriental Region.

KOREA: North, South.

KOREAN RECORD: Ueki, 1911; Homiki, 1917; Murayama, 1929a; Murayama, 1930b; Murayama, 1936; Cho, 1957; Lee and Cho, 1959; Ju, 1964; Ju, 1969; Choo *et al.*, 1983b; Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GG] 1ex., Seodun-dong, Gwonseon-gu, Suwon-si, 17-18.viii.1996; 1ex., Temple Yongjusa, Songsan-dong, Hwaseong-si, 3.vi.2005; 1ex., Ganghwa-eup, Ganghwa-gun, Incheon-si, 2.vii.2006; 1ex., [GW] Hongcheon-gun, 10.vi.2012; 4ex., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 1.v.2012; 5ex., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 29.v.2012; 1ex., Mt. Gariwangsan, Jeongseon-eub, Jeongseon-gun, 22.vi.2012; 1ex., Heul-ri, Ganseong-eup, Goseong-gun, 15.iv-11.v.2016; 324ex., Joyangri, Dongsan-myeon, Chuncheon-si, 22.iii-21.iv.2011; 1,839ex., Janghak-ri, Dong-myeon, Chuncheon-si, 22.iii-21.iv.2011; 45ex., Joyangri, Dongsan-myeon, Chuncheon-si, 21.iv-17.v.2011; 185ex., Janghak-ri, Dong-myeon, Chuncheon-si, 21.iv-17.v.2011; [JN] 2ex., Piagol, Toji-myeon, Gurye-gun, 17.vii.1968; [GB] 1ex., Namsa-ri, Hyeongog-myeon, Kyeongju-si, 25.viii-2.ix.2005; 1ex., [GN] Okjong-myeon, Hadong-gun, vi.1981; 2ex., Jinju-si, 12.vii.2007.

35. *Tomicus puellus* (Reitter, 1895) (Pl. 3-35)

가문비나무좀

Myelophilus puellus Reitter, 1895b: 53.

Blastophagus orientalis Krivolutskaya, 1956: 828.

Blastophagus starki Eggers, 1929c: 104.

DESCRIPTION: Body representing smallest of species, yellowish brown to pale brown. Elytral interstitial setae and ground vestiture equally short, dense, confused, decumbent or nearly so, not longer on declivity. Elytral interstriae strongly crenulate; interstitial tubercles large, transversely confluent, confused. Interstitial punctures confused on declivity, only slightly larger than striae punctures; interstitial tubercles inconspicuous on declivity.

MEASUREMENTS: Body length (excluding head). 2.9–3.5 mm.

BIOLOGICAL NOTES: The known host plants are *Picea jezoensis*, *P. ajanensis*, *Abies holophylla*, *A. nephrolepis* and *Pinus koraiensis* (Kirkendall *et al.*, 2008).

DISTRIBUTION: Korea, Japan, Russia (Far East).

KOREA: North

KOREAN RECORD: Ju, 1964; Ju, 1969; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

36. *Tomicus heuksandoensis* Park, 2017 (Pl. 3-36)

흑산도소나무좀

Tomicus heuksandoensis Park, 2017

DESCRIPTION: Males and females only distinguishable by form of 7th and 8th tergites. Body dark brown to blackish brown except reddish black elytra and reddish brown antennal funicle and tarsi. Antennal club dark brown and darker than funicles. Head shining, somewhat regularly punctate with short erect setae in punctures. Frons shining, weakly convex; a clear median carina from middle of frons to just above epistoma. Anterior margin of frons protruding with w-shaped form. Antennal funicle with 6 segments; 1st segment bulbed, 2nd slightly longer than wide, 3rd to 6th segments gradually widening, 6th segment discoid; club ovate, narrowly rounded, anterior margin of each segments with dense vestiture of short pale hair-like setae and sparse somewhat long setae. Pronotum evenly punctate with erect but slightly decumbent setae in punctures, slightly narrower than elytra, widest at basal one third, gently narrowing anteriorly with unclear pronotal constriction. Protibia usually with 5 marginal teeth. 1st and 2nd tarsomeres longer than wide, slightly widened, 3rd tarsomere much wide and weakly bilobed, 4th small and 1/2 times as long as 3rd tarsomere. Scutellum small, minutely punctate, shining with inconspicuous setae. Erect elytral setae on disc longer, about as long as distance between striae; erect setae on declivity distinctly longer than those on disc; elytra parallel sided at basal four fifths then gently arced from declivital area; basal margin and area of elytra blackish with abundant crenulate projections. Striae with punctures spaced by approximately two times their diameter; interstriae

similarly sculptured, all but interstria 2 with a row of small conical setigerous tubercles; setae located just behind tubercles; interstria 2 weakly impressed and slightly narrowing posteriorly from beginning of declivity; fine punctures of interstria 2 on declivity uniseriate; punctures of striae 1 to 3 on declivity more than twice as large as fine interstitial punctures; granules on interstriae 2 and 3 on disc spaced by distance equal to 1.5–2.5 times punctures on adjacent striae. Male with 7th tergite regularly punctate and sparsely pubescent with a rough triangular patches; 7th tergite of female densely pubescent toward posterior margin without patches. Male with 8th tergite clearly separate from 7th and visible in dorsal aspect; 8th tergite of female usually inserted under 7th and invisible in dorsal aspect.

MEASUREMENTS: Body length (excluding head). 4.2–4.4 mm.

BIOLOGICAL NOTES: The known host plant is *Pinus thunbergii*.

DISTRIBUTION: Korea.

KOREA: South (only in a few south-western islands).

KOREAN RECORD: Park *et al.*, 2017.

SPECIMENS EXAMINED: Holotype: [JN], Heuksan-do, Sinan-gun, 8.v.2015; Paratypes: 25exs., same locality with holotype, 9.i-8.v.2015.

REMARKS: Males and females of most dried specimens of *Tomicus* are not easily distinguishable. Consequently, the sex of specimens should be checked before drying them. This new species is externally similar to *T. piniperda* but it can be distinguished by the small granules on the declivity and has different occurrence patterns of adults.

Genus *Xylechinus* Chapuis, 1869

Type species: *Hylesinus pilosus* Ratzeburg, 1837.

SYNONYM: *Pruniphagus* Murayama, 1958: 930 (Type species: *Pruniphagus gummensis* Murayama, 1958).

Squamosinus Nunberg, 1964: 431 (Type species: *Squamosinus chiliensis* Nunberg, 1964).

Xylechinops Browne, 1973: 283 (Type species: *Xylechinus australis* Schedl, 1957).

DIAGNOSIS: Species in this genus range from 1.5 to 3.5 mm in length and are approximately 2.0 to 2.4 times as long as wide. Their color ranges from brown to dark brown in species north of Mexico, but it is usually variegated due to a light and dark colored scale-like vestiture in the Neotropical species. The pronotum is usually wider than long, with a few species having it longer than wide, and it is unarmed. The scutellum is small. The declivity is convex, with small granules and a vestiture of small scale-like setae and sparse long, light, semi-erect, thick bristles. Their frons usually has a median carina above the epistoma. The anterior margin of the compound eye is sinuate to slightly emarginate. The scape is nearly as long as the

5-segmented funicle. The club is ovate and has three straight sutures. The prothoracic precoxal ridge is either present or absent. The procoxae are contiguous. *Xylechinus* is unique among the Tomicina in having a slightly emarginate or sinuate anterior margin of the eye. In the subtribe, they share the 5-segmented funicle only with *Dendroctonus* Erichson. They have a similar vestiture to *Hylorgupinus* Swaine but can be distinguished by the number of funicle segments.

Key to species of the genus *Xylechinus* of Korea

1. 1st interstice on elytra with same colored, short scale-like setae on other interstices. Anterior margin of elytra with line of asperities from 2nd to 3rd interstices *X. bergeri*
- Brightly colored, short scale-like setae on 1st interstice of elytra. Anterior margin of elytra with 2–3 line of asperities from 2nd to 3rd interstices *X. pilosus*

37. *Xylechinus bergeri* Spessivtsev, 1919 (Pl. 3-37)

오갈피모피나무좀

Xylechinus bergeri Spessivtsev, 1919: 249.

DESCRIPTION: Body dark brown except reddish brown antennae, legs, middle of prosternum and elytra. Head with short, yellowish, decumbent setae directed towards middle line of frons. Anterior margin of rostrum with somewhat longer decumbent setae anteriorly to mandibular surface. Pronotum slightly wider than long covered with short yellowish grey setae directed towards middle carination; setae on lateral part of prothorax somewhat thin and bisulcate; middle carination obscure; pronotum clearly narrower than elytra. Basal margin of elytra bisinuate and elevated anteriorly with one line of asperities from 2nd to 6th intervals; elytral interstices with a line of somewhat long and thick setae, as well as short, decumbent scale-like setae; long setae, as long as width of interstice and three irregular lines of short setae almost erected; three irregular lines of short setae slightly darker than long setae; setae on humeral angles and lateral margins thin; striae located in longitudinal shallow groove; setae of 1st interval same color as those of other intervals; elytral declivity with same type of setae as other parts of elytra; last interval with deep groove from middle to apex. Procoxae slightly separate, metasternum between mesocoxae much wider but less than two times the width of prosternum between procoxae. Abdominal ventrites normal with close decumbent setae.

MEASUREMENTS: Body length (excluding head). 1.6–1.7 mm.

DISTRIBUTION: Korea, China, Russia (Far East).

KOREA: North.

KOREAN RECORD: Ju, 1964; Ju, 1969; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: Only Chinese and Russian specimens were examined in NMNH.

38. *Xylechinus pillosus* (Ratzeburg, 1837) (Pls. 4-38, 5-38)

가문비모피나무좀

Hylesinus pilosus Ratzeburg, 1837: 178.

DESCRIPTION: Body elongated, blackish brown except reddish brown antennae, legs, elytra. Head and legs covered with whitish yellow hairs. Frons more or less flat and hairs directed to middle area of frons. Hairs on rostral part clearly longer, directed to anterior margin. Pronotum as long as wide, widest at middle and slightly narrower than elytra. Pronotum covered with short and slightly thick decumbent setae and directed to longitudinal median line. Elytra slightly widened to beginning of declivity, then gently arced to apex; elytral striae clear with a thin hair; intervals covered with 4–5 rows of short and thick setae and one row of slightly longer and thicker hairs; two or three irregular bright colored short and thick setae on inner part of 1st interstice; other short hairs on outer part of 1st interstice and all short setae on other interstices with same slightly dark color; anterior margin of elytra with 2–3 line of small asperities from 2nd to 3rd interstices.

MEASUREMENTS: Body length (excluding head). 2.0–2.4 mm.

DISTRIBUTION: Korea, China, Japan, Kazakhstan, Mongolia, Russia (East Siberia, Far East, West Siberia).

KOREA: North.

KOREAN RECORD: Ju, 1964; Ju, 1969; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: Only German and East Siberian specimens were examined.

Tribe Hyorrhynchini Hopkins, 1915

Genus *Sueus* Murayama, 1951

Type species: *Sueus sphaerotrypoides* Murayama, 1951 = *Hyorrhynchus niisimai* Eggers, 1926.

SYNONYM: *Parasphaerotrypes* Murayama, 1958: 933 (Type species: *Sphaerotrypes controversae* Murayama, 1950 = *Hyorrhynchus niisimai* Eggers, 1926).

39. *Sueus niisimai* (Eggers, 1926) (Pl. 4-39)

날개흙줄나무좀

Hyorrhynchus niisimai Eggers, 1926a: 133.*Hyorrhynchus pilosus* Eggers, 1936a: 81.*Sphaerotrypes controversae* Murayama, 1950b: 62.*Sueus sphaerotrypoides* Murayama, 1951: 2.

DESCRIPTION: Body elongate and oval but slightly flattened. Derm reddish brown except yellowish brown antennae and tarsi. Frons carinate longitudinally in middle. Compound eyes divided into two parts; upper one located almost on frons and lower one located ventrally behind; eye on dorsal area bigger than bottom one and almost round but narrowing anteriorly. Pronotum about 1.5 times wider than long, shining with minute shallow punctures and covered with whitish hairy pubescences; lateral margin of pronotum slightly edged, not carinate. Scutellum shining, small, triangular. Elytra 1.25 times as wide as long, parallel-sided, slightly flattened. Basal margin of elytra slightly raised and unevenly carinate; basal area serrate along basal margin without furrows; striae of elytra shallow but clearly visible, arranging on longitudinal furrows; intervals of elytra with minute tubercles, 3–4 times wider than furrows, covered with 3–4 rows of dense and more or less decumbent pubescences. Forecoxae and mesocoxae widely separated. Hindcoxae somewhat narrowly separated.

MEASUREMENTS: Body length (excluding head). 1.6–2.0 mm.**BIOLOGICAL NOTES:** The host plants are known to many kinds of broaden leaves trees (Hayashi *et al.*, 1994).**DISTRIBUTION:** Korea China, Japan, Taiwan, India.**KOREA:** South, Jeju Is.**KOREAN RECORD:** Park *et al.*, 2017.**SPECIMENS EXAMINED:** [GG] 1 ex. Paju-si, 8.viii.2008; 1 ex. Kwangreung, Sohaleub, Pocheon-si, 8.viii.2008; [JJ] 1 ex., Donneko, Seogupo-si, 27.ix.2000; 5 exs., Jeolmul, Donggye-dong, Jeju-si, 27.viii-10.ix.2005; 5 exs., Ara-dong, Jeju-si, 26.iv-25.v.2016.**Tribe Phloeosinini Nüsslin, 1912****Genus *Phloeosinus* Chapuis, 1869**Type species: *Hylesinus thujae* Perris, 1855.

DIAGNOSIS: Species in this genus range from 1.5 to 4.1 mm in length and are 1.8 to 2.1 times as long as wide. Color ranges from brown to black, usually with lighter elytra, which can be reddish brown to brown. Pronotum usually wider than long and unarmed. Scutellum large. Crenulations present on anterior margin of elytra; declivity convex with one or more interstriae, the third interstria usually, armed by pointed tubercles. Vestiture consists of hair-like setae, except for scale-like setae in a few species. Anterior margin of the compound eye emarginate. Scape longer than 5-segmented funicle club ovate, asymmetrical with three straight sutures. Procoxae separate. *Phloeosinus* can be distinguished from the other Phloeosinina by the 5-segmented antennal funicle and the third declivital interstriae which are armed with denticles.

Key to species of the genus *Phloeosinus* of Korea

1. Body elongated oval. Elytral covered with short scale-like setae 2
 - Body oblong oval. Elytral covered with normal setae 3
2. Elytral interstices covered with same dark colored scales *P. perlatus*
 - 2nd and 4th interstices of elytra mostly covered with dark grey scales from middle to apex and other interstices mostly covered with whitish yellow scales *P. pulchellus*
3. Elytral setae decumbent, striae deeply impressed. Tubercles on third interval of declivity arranged linearly 4
 - Elytral setae erect, striae slightly impressed. Tubercles on third interval of declivity arranged convexly towards lateral margin outwardly *P. hopehi*
4. First interstice convex outwardly, declivity regularly covered with similar sized tubercles that are small or almost invisible at posterior margin *P. aubei*
 - First interstice straight and 4–5 large tubercles in linear row on declivity *P. rudis*

40. *Phloeosinus aubei* (Perris, 1855) (Pl. 4-40)

어리노송나무좀 (신칭)

Hylesinus aubei Perris, 1855: 68.

Phloeophthorus praenotatus Gredler, 1866: 370.

Phloeosinus transcaspicus Semenov, 1903: 79.

Phloeosinus hercegovinensis Eggers, 1922b: 120.

Phloeosinus schumensis Eggers, 1922c: 166.

DESCRIPTION: Body blackish brown to black except reddish brown elytra, antennae and tarsi. Pronotum densely covered with punctures. Scutellum slightly wider than long. Elytra slightly wider than pronotum,

striae deeply impressed, first interstice curving laterally at declivity and regularly covered with similar-sized tubercles; tubercles on first interval of declivity regularly and closely located on almost outer margin of interval; 2nd interval glabrous on declivity with short setae.

MEASUREMENTS: Body length (excluding head). 2.4 mm.

DISTRIBUTION: Korea, China, Cyprus, Iran, Israel, Japan, Syria, Taiwan, Turkey, Turkmenistan, Europe, North Africa.

KOREA: South (?)

KOREAN RECORD: Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: This species was recorded by a foreign taxonomist without a Korean name, and the Korean name comes from its similar shapes to *P. rudis*.

41. *Phloeosinus hopehi* Schedl, 1953 (Pl. 4-41)

측백나무좀

Phloeosinus hopehi Schedl, 1953a: 23.

DESCRIPTION: Body elongate and oval, reddish brown to dark brown. Frons clearly and regularly punctate, eye elongate and deeply emarginate anteriorly. Pronotum slightly wider than long, widest at base, weakly narrowing anteriorly until middle; pronotal constriction broad; pronotum regularly punctate with short slightly decumbent setae. Elytra 1.3 times longer than wide, widest at middle, then slightly narrowing and gently arced posteriorly; intervals with a row of clear punctures and somewhat long setae; striae with short setae; declivity with strong tubercles on 1st and 3rd intervals, small tubercles on 7th interval; 2nd interval glabrous on declivity without setae.

MEASUREMENTS: Body length (excluding head). 1.8–2.0 mm.

DISTRIBUTION: Korea, China, Japan, Russia (Far East).

KOREA: South.

KOREAN RECORD: Choo and Woo, 1985b; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [JB] 3ex., Namweon-si, 25.ix.1982.

REMARKS: The examined specimens are deposited in NIEAS, Japan.

42. *Phloeosinus perlatus* Chapuis, 1876 (Pl. 4-42)

향나무좀

Phloeosinus perlatus Chapuis, 1876: 198.

DESCRIPTION: Body oval, convex, reddish brown to black, antennae, tarsi and elytra reddish brown. Frons almost flat, with longitudinal carina, finely and densely punctate, covered with decumbent setae, several tiny tubercles between vicinity of upper part of longitudinal line and eyes. Pronotum nearly as wide as long, closely punctured with longitudinal line from anterior margin to posterior margin. Scutellum trapezoidal. Elytra wider than pronotum, basal margin elevated and crenate; striae strongly impressed; interstriae wide with setae and tiny tubercles, second interstria slightly flattened and narrowing at apex; elytral setae somewhat narrow at base and gradually thickening posteriorly; declivity densely covered with short scale-like setae; tubercles on declivity larger than disc. Foretibia slightly widened at base and rapidly widening after middle.

MEASUREMENTS: Body length (excluding head). 2.4–3.4 mm.

DISTRIBUTION: Korea, China, Japan, Taiwan.

KOREA: North, South.

KOREAN RECORD: Murayama, 1930a; Murayama, 1930b; Murayama, 1934c; Murayama, 1937; Cho, 1957; Ju, 1964; Ju, 1969; Choo and Woo, 1985b; Choo *et al.*, 1988b; Choo and Woo, 1989a; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek, 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

43. *Phloeosinus pulchellus* Blandford, 1894 (Pls. 4-43, 5-43)

줄무늬소나무좀

Phloeosinus pulchellus Blandford, 1894: 69.*Phloeosinus dubius* Blandford, 1894: 70.*Phloeosinus izuensis* Nobuchi, 1959a: 9.

ORIGINAL DESCRIPTION: Body oval, convex, red-brown, elytra closely squamese with alternate lighter and darker stripes. Head impressed over mouth (probably a male character) with a strong frontal carina, punctured, and shortly hairy. Prothorax nearly one-half broader than long, strongly narrowed in front, sides behind nearly straight, then very convex at contraction, becoming straighter in front; base narrowly impressed, surface convex, slightly depressed at apex, and obscurely elevated in middle from base to apical

depression, densely punctured and sprinkled with close-lying yellow scales. Elytra wider than prothorax and twice as long; basal margin crenate, everted at sides, humeral prominences obliterated sides subsinuate to beyond middle, thence rounded; surface slightly dilated at posterior third, then strongly convex to apex, closely squamose, the scales cinnamon-brown on the 2nd, 4th and 6th interstices, yellow on the rest of the elytra; striate, the striae rather wide, with distinct punctures, interstices flat, granulate at base, 2nd widened at base and on summit of declivity, 1st, 3rd and outer interstices inconspicuously tuberculate towards apex. Underside ferruginous, scantily pubescent, strongly punctate on metathorax and two first abdominal segments. Legs ferruginous, anterior tibiae with strong outwardly directed spines at outer apical angle (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 2.2–2.6 mm.

DISTRIBUTION: Korea, Japan.

KOREA: South.

KOREAN RECORD: Park *et al.*, 2017

SPECIMENS EXAMINED: [GG] 1ex., Nohari, Paju-si, 1.v.1997; [GW] 1ex., Janghak-ri, Dong-myeon, Chuncheon-si, 24.iii-21.iv.2011; 1ex., Nodong-ri, Yongpyeong-myeon, Pyeongchang-gun, 15.iv.-11.v.2016; 1ex., Hwagdun-ri, Sinrim-myeon, Wonju-si, 14.iv.-9.v.2016; [GB] 1ex., Daegu-si, 13.ix.1983.

44. *Phloeosinus rudis* Blandford, 1894 (Pl. 4-44)

노송나무좀

Phloeosinus rudis Blandford, 1894: 73.

Phloeosinus shotoensis Murayama, 1955: 88.

ORIGINAL DESCRIPTION: Body black, oval; head strongly punctured, front flattened in female, impressed in male, almost glabrous, except for a few hairs over mouth and a few on vertex in female, eyes perfectly flat. Prothorax transverse, its base produced in middle towards scutellum, slightly contracted towards apex with sides rounded from base; convex, somewhat shining, strongly and closely punctured without asperation, usually with a median shining longitudinal line. Scutellum round, dull, punctured. Elytra scarcely wider than prothorax and rather less than twice as long, their basal borders rounded, crenulate, slightly everted, sides straight at base, rounded from middle to apex; above gradually declivous almost from base, black, with apex sometimes piceous, with short scanty pubescence, without scales or setose hairs, striae rather fine, indistinctly punctured at base, nearly smooth towards apex, interstices granulate to middle, then 2nd and 4th in male smooth, multi-punctate, with one or two tubercles before apex, in the female with a few fine tubercles throughout; 1st in male with about 5, 3rd with about 7 strong spinous tubercles, which do not unite to form a crest, in female with smaller tubercles; outer interstices towards apex with rows of tubercles in both

sexes. Underide black, punctured, pubescent; metasternum rather prominent. Legs black with tarsi lighter (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 4.0–4.2 mm.

DISTRIBUTION: Korea, Japan, France (introduced), Netherlands (introduced).

KOREA: South.

KOREAN RECORD: Choo *et al.*, 1983b; Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: 1ex., [GG] Seodun-dong, Gwonseon-gu, Suwon-si, 26.iv.1989; 1ex., [GG] Gwanggyo, Suwon-si, 22.vi.1989; 2ex., [GG] Seodun-dong, Gwonseon-gu, Suwon-si, 30-31.xiii.1997., [GN] Samdong-myeon, Namhae-gun, 21.x.1982; 1ex.

Tribe Polygraphini Chapuis , 1869

Genus *Polygraphus* Erichson, 1836

Type species: *Bostrichus pubescens* Fabricius, 1792 = *Dermestes poligraphus* Linnaeus, 1758.

SYNONYM: *Lepisomus* Kirby, 1837: 193 (Type species: *Apate rufipennis* Kirby, 1837)

Nipponopolygraphus Nobuchi, 1981a: 12 (Type species: *Nipponopolygraphus kaimochii* Nobuchi, 1981)

Ozophagus Eggers, 1920b: 234 (Type species: *Ozophagus camerunus* Eggers, 1920 = *Polygraphus primus* Wichman, 1915)

Pseudopolygraphus Seitner, 1911: 105 (Type species: *Polygraphus grandiclava* C.G.Thomson, 1886)

Spongotarsus Hagedorn, 1908: 372 (Type species: *Spongotarsus quadrioculatus* Hagedorn, 1908)

DIAGNOSIS: Species in this genus range from 1.8 to 3.1 mm and are approximately 2.0 to 2.4 times as long as wide, black. Pronotum wider than long and unarmed. Scutellum not visible. Declivity convex, bearing granules. Vestiture consisting of abundant, short and light colored scales. Eyes divided into two parts. Antennal scape usually longer than 5- to 6-segmented funicle. Club ovate, flat and without sutures, finely pubescent, and often ending in a pointed tip. Procoxae contiguous. *Polygraphus* can be distinguished from *Carphoborus* Eichhoff by the completely divided eye and an antennal club without sutures.

Key to species of the genus *Polygraphus* of Korea

1. Antennal funicles 6-segmented 2
 – Antennal funicles 5-segmented *P. subopacus*

2. Antennal club dull at apex 3
 – Antennal club pointed at apex 4
 3. Pronotum and elytra covered with somewhat large bright colored scale-like pubescence *P. abietis*
 – Pronotum and elytra covered with small brown to reddish scale-like pubescence *P. proximus*
 4. Frons with somewhat long dense setae *P. horyurensis*
 – Frons with somewhat short sparse setae *P. jezoensis*

45. *Polygraphus abietis* Kurentsov, 1941

분비회색네눈배기나무좀

Polygraphus abietis Kurentsov, 1941: 131, 229.

ORIGINAL DESCRIPTION: Body head, pronotum and elytra blackish, elytral declivity somewhat reddish coloured, legs yellowish red, tibiae black at base, antennae with same colour as sclae. Antennal funicles 6-segmented, club somewhat round at apex. Front closely and finely punctured in male, with short and sparse hairs and paired tubercles at middle, female with longer and denser pubescence. Pronotum and elytra covered with somewhat big bright coloured scale-like pubescences. Pronotum at base somewhat wider than long, gradually narrowing to its front margin, longitudinal median line on pronotum faint, but well seen throughout its length, whole surface with fine and close sculpture, decumbent scales directed to median line. Elytra as wide as pronotum at its base, and one and half time longer than wide, striae fine but nearly invisibly punctate, interstices thickly clothed with light decumbent scales (3–4 scales in a row). Elytral declivity with small tubercle on interstriae. Abdomen and legs covered with short light decumbent hairs (Kurentsov, 1941).

MEASUREMENTS: Body length (excluding head). 2.5–2.8 mm.

DISTRIBUTION: Korea, China (Northern East), Russia (Far East).

KOREA: North.

KOREAN RECORD: Ju, 1964; Ju, 1969; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: Mandelshtam noticed this species to be a junior synonym of *P. proximus*, and noted this observation on a website (Mandelshtam, 2011); however, it has not been officially published.

46. *Polygraphus horyurensis* Murayama, 1937 (Pls. 4-46, 5-46)

앞갈나무가는나무좀

Polygraphus horyurensis Murayama, 1937: 368.

DESCRIPTION: Body cylindrically oblong, dark brown to blackish brown, slightly darker than elytra and legs, antennae yellowish brown. Frons slightly flat, with coarse punctures, densely covered with somewhat long whitish pubescences; 2 small median tubercles in male; eyes deeply emarginated and separated into two parts. Antennal funicle 6 segmented; scape longer than funicles combined; club oval, pointed at apex, densely covered with short decumbent setae. Pronotum wider than long, parallel-sided one thirds from base, then gently arced anteriorly; anterior margin of pronotum slightly emarginated at middle. Elytra 1.6 times as long as wide, basal margins armed with coarse crenulations from suture to humeral angles, submarginal crenulations rather abundant medially, a few smaller ones at sides; elytral sides almost parallel, slightly broadening posteriorly along basal five-sixths, broadly rounded posteriorly; striae and interstriae punctures confused but distinguished by scalelike setae on interstices and short decumbent setae on striae; interstriae indicated by uniseriate small granules on and near declivity; 2nd interstice on declivity slightly flattened. Tibia slightly broadening apically with 3 somewhat large outwardly curving processes at apical area.

MEASUREMENTS: Body length (excluding head). 2.3–2.9 mm.

DISTRIBUTION: Korea, China (Northern East), Japan, Russia (Far East), Taiwan.

KOREA: North, South

KOREAN RECORD: Murayama, 1937; Niijima, 1941; Cho, 1957; Ju, 1964; Ju, 1969; Nobuchi, 1979; Choo and Woo, 1985b; Choo and Woo, 1989a; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [HN] 3ex., Pungryuri, Jangjin-gun, 29.vii.1936; [GG] 6ex., Gwangneung, Soheul-eup, Pocheon-si, 11.xi.1981.

47. *Polygraphus jezoensis* Niisima, 1909 (Pls. 4-47, 5-47)

가문비회색네눈배기나무좀

Polygraphus jezoensis Niisima, 1909: 135.

DESCRIPTION: Body slightly slender, more than 2.28 times as long as wide, blackish brown except reddish brown elytra and yellowish red antennae and legs. Head covered with short setae on frons, somewhat long setae on epistoma; eyes deeply emarginated and separated into two parts. Antennal funicles 6 segmented;

clubs pointed at apex. Pronotum covered with intermixed setae and scales. Elytra long, 1.5 times as long as wide, with a row of distinct tubercles; interstriae finely rough, covered with distinct tubercles; declivity with tubercles on 1st and 3rd interstriae in male.

MEASUREMENTS: Body length (excluding head). 2.4–3.2 mm.

DISTRIBUTION: Korea, Japan, Russia (Far East).

KOREA: North

KOREAN RECORD: Ju, 1964; Ju, 1969; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

48. *Polygraphus nobuchii* Choo & Woo, 1989 (Pl. 4-48)

한라구상나무좀

Polygraphus nobuchii Choo & Woo, 1989: 57. [TL: Jeju Prov. Mt. Hanla]

ORIGINAL DESCRIPTION: Body oblong, cylindrical; yellowish brown to black. Antennae and legs reddish brown. **Male.** Frons convex with two big tubercles in middle, close and large punctures, with long introvent setae and longer and dense setae above epistoma; vertex shining, with small close punctures and longitudinal line in middle, antennal funicle 6-segmented, club oblong-oval, thick in middle, slightly tapered to apex, but not pointed; eyes biparted. Pronotum wider than long, constricted to anteriorly, close punctures intermixed with setae and scales, fine granules, fine granules on around anterior and lateral margin, basal margin slightly sinuate. Scutellum black, shining. Elytra a little wider than pronotum, longer than wide, slightly narrowed to posterior margin, anterior margin tuberculate, granulate around anterior part, striae not impressed, large punctures, interstriae wide, intermixed with short setae and irregular rows of scales, with fine tubercles, 2nd interstriae of declivity impressed, lateral junction part of 5h 3rd, 4th, and 5th abdominal segment black, hardened, look small nodules. **Female.** Similar to the male except the following characters, I.e., frons looks less setae, shining without tubercles, antennal club narrower than that of male (Choo & Woo, 1989b).

MEASUREMENTS: Body length (excluding head). 2.7–3.0 mm.

BIOLOGICAL NOTES: The known host plants is *Abietis koreana* (Choo & Woo, 1989b).

DISTRIBUTION: Korea.

KOREA: Jeju Is.

KOREAN RECORD: Choo and Woo, 1989b; ESK/KSAE, 1994; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [JJ] 4ex., Mt. Halla, Yeongsil, Hawon-dong, Seoguipo-si 18.viii.2017.

REMARKS: The type specimens were lost.

49. *Polygraphus proximus* Blandford, 1894 (Pl. 4-49)

애전나무좀

Polygraphus proximus Blandford, 1894: 75.

Polygraphus oblongus Blandford, 1894: 75.

Polygraphus miser Blandford, 1894: 76.

Polygraphus laticollis Eggers, 1926a: 135.

Polygraphus nigricans Kurentsov, 1948: 50.

Polygraphus magnus Murayama, 1956a: 279, 282, 290.

ORIGINAL DESCRIPTION: Body oblong, black, with elytra becoming gradually reddish towards apex. Head with front slightly convex and with two distinct tubercles at middle in male but slightly impressed in lower part of tubercles, rugosely punctured and rather dull, pubescent, clypeus emarginate in middle, eyes separated two parcels, feebly convex, more distinctly in female, antennal club rather large, infusate and evidently acuminate at inner side of apex, more strongly in male than in female. Prothorax nearly half as broad again as long, strongly constricted towards apex with sides more convex behind constriction than at base; surface rather shining, with close subaciculate punctuation and thin squamous covering; median line slightly elevated, variable in length and distinctness. Elytra more than half as long again as prothorax, one-third longer than wide, slightly but discernibly dilated towards apex, dull, scales close, cinereous with a yellow tinge, striae faint but distinguishable throughout, weaker at apex in female than in male. Legs dark, ferruginous, with tarsi lighter; all tibiae spined at apex (Blandford, 1894).

MEASUREMENTS: Body length (excluding head). 2.4–3.2 mm.

BIOLOGICAL NOTES: The known host plants are *Abies* sp. (Hayashi *et al.*, 1994)

DISTRIBUTION: Korea, China, Japan, Russia (East Siberia, Far East), Europe (introduced).

KOREA: North, South.

KOREAN RECORD: Murayama, 1930a; Murayama, 1930b; Murayama, 1936; Murayama, 1937; Niijima, 1941; Cho, 1957; Ju, 1964; Ju, 1969; Nobuchi, 1979; Choo and Woo, 1985b; ESK/KSAE, 1994; Choi and Ko; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: [GW] 12ex., Mt. Odaesan, Jinbumyeon, Pyeongchang-gun, 12.vi.2009.

50. *Polygraphus subopacus* C.G.Thomson, 1871 (Pl. 4-50)

가문비꼬마나무좀 (개칭)

Polygraphus subopacus C.G.Thomson, 1871: 393.*Polygraphus fontinalis* Kurentsov, 1941: 136.*Polygraphus minor* Lindemann, 1875b: 242.*Polygraphus nanus* Schedl, 1955a: 22.*Polygraphus sachalinensis* Eggers, 1926a: 135.

DESCRIPTION: Body, elongate and oval, reddish brown to black. Frons flat, densely punctured, covered with short setae, frons of male with a pair of small tubercles, concave under them; antennal funicles 5 segmented; club compressed, flat, pointed at apex. Pronotum wider than long, with distinct longitudinal line, covered with punctures and scales. Scutellum small. Elytra 1.5 times as wide as long, basal margin with rows of small crenulations; striae punctured, punctures large; interstriae with scales and tiny tubercles.

MEASUREMENTS: Body length (excluding head). 1.6–2.4 mm.

DISTRIBUTION: Korea, China, Japan, Mongolia, Russia, Europe.

KOREA: North, South.

KOREAN RECORD: Murayama, 1929b; Murayama, 1930b; Murayama, 1937; Nijima, 1941; Cho, 1957; Ju, 1964; Ju, 1969; Nobuchi, 1979; Choo and Woo, 1985b; ESK/KSAE, 1994; Choi and Ko, 2006; Paek *et al.*, 2010; Knizek 2011 (in Löbl and Smetana, 2011).

SPECIMENS EXAMINED: Unable to examine any Korean specimens.

REMARKS: The Korean name has been changed due to the former one sharing the same name with another species.

LITERATURE CITED

- Bever, R. and H.T. Shih. 2003. Checklist of Platypodidae (Coleoptera: Curculionoidea) from Taiwan. *Plant Protection Bulletin*, 45: 75-90.
- Beaver, R., H. Kajimura and H. Goto. 2008. Taxonomic Changes and New Records of Japanese Bark and Ambrosia Beetles (Coleoptera, Curculionidae, Scolytinae). *Elytra*, 36(2): 231-239.
- Beaver, R. and L.Y. Liu. 2010. An annotated synopsis of Taiwanese bark and ambrosia beetles, with new synonymy, new combinations and new records (Coleoptera: Curculionidae: Scolytidae). *Zootaxa*, 2602: 1-47.
- Blandford, W.F.H. 1893. The Scolyto-platypini, a new subfamily of Scolytidae. *Trans. Ent. Soc. London* 425-442.
- Blandford, W.F.H. 1894. The Rhynchoporous Coleoptera of Japan, Part III. Scolytidae *Trans. Ent. Soc. London* 53-141
- Bright, D.E. Jr. 1968. Revision of the tribe Xyleborini in America North of Mexico (Coleoptera : Scolytidae) *Canadian Entomologist* 100:1288-1323
- Bright, D. E. and R. E. Skidmore. 2002. *A Catalog of Scolytidae and Platypodidae (Coleoptera), Supplement 2 (1995-1999)*. NRC. Research Press, Ottawa.
- Bright, D.E. 2014. A Catalog of Scolytidae and Platypodidae (Coleoptera), Supplement 3 (2000-2010), with notes on subfamily and tribal reclassifications. *Insecta Mundi*, 0356: 1-336.
- Browne, F.G. 1981. Bark beetles and ambrosia beetles (Coleoptera, Scolytidae and Platypodidae) intercepted at Japanese ports, with descriptions of new species, VI *Kontyu* 49(4):597-606
- Choi, J.S. and W. Ko. 2006. *Fauna and Distribution of Mt. Baekdusan*. Northeast Normal University Publishing, Gilin, China
- Choo, H.Y., K.S. Woo and B.H. Kim. 1981. Classification of the Scolytidae and Platypodidae intercepted from imported timbers I. *Korean J. Plant Prot.* 20(4):196-206
- Choo, H.Y. and K.S. Woo. 1983. Classification of the Scolytidae and Platypodidae intercepted from imported timbers III. *Korean J. Plant Prot.* 22(1):35-41
- Choo, H.Y., K.S. Woo and A. Nobuchi. 1983a. A list of the bark and ambrosia beetles injurious to fruit and flowering tree from Korea (Coleoptera; Scolytidae) *Korean J. Plant Prot.* 22(3):171-173
- Choo, H.Y., K.S. Woo and K.N. Park. 1983b. On some unrecorded species of Scolytidae (Coleoptera) from Korea *Korean J. Plant Prot.* 22(3):174-181
- Choo, H.Y. and K.S. Woo. 1985a. Taxonomic Studies on the Platypodidae and Scolytidae (Coleoptera) from Korea I. Platypodidae, Scolyto-platypinae and Scolytinae, *Ins. Koreana*. 5: 31-47.
- Choo, H.Y. and K.S. Woo. 1985b. A List of Korean bark and Ambrosia beetles, and their Host Plants. *Korean J. Plant Prot.* 24(3): 163-167.

- Choo, H.Y. and K.S. Woo. 1988. Classification of Korean Bark and Ambrosia Beetles by Their Galleries. J. Plant Prot. 27(3): 131-137.
- Choo, H.Y., K.S. Woo and A. Nobuchi. 1988a. Key to the Subfamilies, Tribes, and Genera of Korean Platypodidae and Scolytidae (Coleoptera). Korean J. Plant Prot. 27(3): 138-143.
- Choo, H.Y., K.S. Woo and C.D. Park. 1988b. Scolytid Beetles Including Two Unrecorded Species Attracted to the Attractant. Korean J. Plant Prot. 27(4): 190-193.
- Choo, H.Y. and K.S. Woo. 1989a. Supplementary Notes on the Bark and Ambrosia Beetles of Korea. 28(1): 4-9.
- Choo, H.Y. and K.S. Woo. 1989b. Four New Species of Scolytidae (Coleoptera) from Korea. Korean J. Plant Prot. 28(2): 57-60.
- Goto, H. 2009. Taxonomic History of Japanese Bark and Ambrosia Beetles with a Check list of Them. J. Jpn. For. Soc. 91: 479-485.
- Ju, D.R. 1964. Biogeographical distribution of the scolytid beetles of Korea. Biology, 3(3): 5-14.
- Ju, D.R. 1969. Checklist of insect classification. Gwahakweon Publishing, Pyeongyang.
- Kirkendall, L.R., M. Faccoli & H. Ye. 2008. Description of the Yunnan shoot borer, *Tomicus yunnanensis* Kirkendall & Faccoli sp. n. (Curculionidae, Scolytinae), an unusually aggressive pine shoot beetle from southern China, with a key to the species of *Tomicus*. Zootaxa, 1819: 25-39.
- Kurensov, A.I. 1941. [Bark-beetles of the Far East, USSR]. Moscow-Leningrad, 234p.
- Mandelstam, M.Y. 2002. New Synonymy, New records and Lectotype designation in Palaearctic Scolytidae (Coleoptera). Far Eastern entomologist. 2002. N 119: 6-11.
- Murayama, J. 1926. Scolytes qui devastent les forets du haut Naiu (japonais). Chosen oyobi Manshiu, Keijo. 228: 37-39.
- Murayama, J. 1928. Supplementary Notes: On the Platypodidae of Formosa II. Journal of the College of Agriculture, Hokkaido Imperial University, Sapporo, Japan 19(5): 283-290.
- Murayama, J. 1929a. Some Scolytid-beetles, parasites on the *Pinus densiflora* S. et Z. of Korea. Journ Chosen Forest. Soc. 47: 41-45.
- Murayama, J. 1929b. Some Scolytid-beetles, parasites on the *Pinus densiflora* S. et Z. and on the *Pinus koraiensis* S. et Z. of Korea. Journ Chosen Forest. Soc. 55: 5-10.
- Murayama, J. 1929c. Sur les Scolytes qui vivent dans les pins et pin coreens (japonais). Chosen Sanrimkaiho, 59: 58.
- Murayama, J. 1929d. Revision des Coleopteres des Ipiniae avec la description d'une nouvelle espece. Journ. Chosen Nat. Hist. Soc. 9:22-31.
- Murayama, J. 1929e. Des especes des Platypides du domaine de l'Empire du Japon ainsi que la devastation par ces insectes. (Japanis). The Journal of the Society of Forestry. Tokyo, XI, 11: 669-682.
- Murayama, J. 1930a. Sur les Scolytes qui attaquent les bois de *Pepicea*, sapin, et les autres conferes (japonais). Chosen Sanrinkaiho, 59: 58-61.

- Murayama, J. 1930b. Revisions des Ipides et des Platypides de Coree. Journ. Chosen Nat. Hist. Soc. 11:6-38.
- Murayama, J. 1931. Revision des familles Ipides et Platypides (Coleopteres) de l'ile de Quelpart. Ann. Zool. Japon. 13:39-62.
- Murayama, J. 1932a. Notes supplementaire a la revision des Ipides et Platypides de la Coree. II. Journ. Chosen Nat. Hist. Soc. 15:14-20.
- Murayama, J. 1932b. Etude sur les organes genitaux du male genre Xyleborus. Journ. Chosen Nat. Hist. Soc. 15:21-35.
- Murayama, J. 1934a. A new species of Cryphalinae (Coleoptera ; Ipidae) from Korea. Journ. Chosen Nat. Hist. Soc. 17:3-4.
- Murayama, J. 1934b. The beetles of the Scolytidae and Platypodidae distributed in Korea and Kyushu. Ann. Zool. Japan. 54: 105-106.
- Murayama, J. 1934c. On the Ipidae (Coleoptera) from Formosa with special reference to their food plants. Journ. Soc. Trop. Agr. Taihoku Imp. Univ. 6:505-512.
- Murayama, J. 1934d. Notes on the Ipidae (Coleoptera) from Kyushu. Ann. Zool. Japan. 14:287-300.
- Murayama, J. 1934e. Supplementary notes on the Platypodidae of Formosa. IV. Jour. Coll. Agr. Hokkaido Imp. Univ. 35(3):133-149.
- Murayama, J. 1936. On the distribution of Scolytid beetles by human agency. Kontyu. 10:113-120.
- Murayama, J. 1937. Notes sur les Scolytides (Coleopteres) de la Coree Tenthredo. 1(4): 367-375.
- Murayama, J. 1957a. Xyloterinae (Coleoptera, Ipidae) from the Northern half of the Far East. Bull. Fac. Agr. Yamaguti Univ. 8:569-586.
- Murayama, J. 1957b. Dryocoetinae (Coleoptera, Ipidae) from the Northern half of the Far East. Bull. Fac. Agr. Yamaguti Univ. 8:582-632.
- Niijima, Y. 1941. Revision und Neubeschreibung der Polygraphus-Arten (Coleoptera, Ipidae) in Japan. Insecta Matsumurana. 15:123-135.
- Nobuchi, A. 1964. Studies on Scolytidae. III. Bull. Gov. For. Exp. Sta. 171:129-134.
- Nobuchi, A. 1971a. Studies on Scolytidae. VIII (Coleoptera) Bull. Gov. For. Exp. Sta. 236:125-127
- Nobuchi, A. 1971b. Studies on Scolytidae. IX (Coleoptera) Key to the subfamilies, tribes and genera of Japan Bull. Gov. For. Exp. Sta. 238:149-164.
- Nobuchi, A. 1973a. The Platypodidae of Japan (Coleoptera) Bull. Gov. For. Exp. Sta. 256:1-22
- Nobuchi, A. 1979. Studies on Scolytidae XVIII. Bark beetles of tribe Polygraphini in Japan (Coleoptera Scolytidae) Bull. For. & For. Prod. Res. Ins. 308:1-16.
- Nobuchi, A. 1993. The Platypodidae (Coleoptera) Found in Japan. Pest in House. 15(1): 33-55.
- Park, S. and D.P. Lyu. 2007. Checklist of the family Platypodidae (Coleoptera) in Korea. J. Asia-Pacific Entomol. 10(3): 275-280.
- Park, S., J.C. Jeong and T. Han. 2017. A New Species and Five Newly Recorded Species of Scolytinae (Coleoptera: Curculionidae) from Korea. Entomological Research Bulletin 33(2) (in print).

- Park, S and K.-J. Hong. 2018. New record of an ambrosia beetle, *Dinoplatypus hamatus* (Blandford) (Coleoptera: Curculionidae: Platypodinae) in Korea. *Journal of Asia-Pacific Biodiversity* 11(1): 151-153.
- Saito, K. 1928. On the pest of The red pine in Chosen. *Journal of Chosen Natural History Society*. 7: 10-13.
- Saito, K. 1931 More important injurious forest insects in Corea Bull. Agr. For. Coll. Suigen, Chosen 4:21-29.
- Saito, K. 1938. Note on the five major pest disease of the ash tree. *Chosen Sanrimkaiho*, 19(155): 9-16.
- Strohmeyer, H. 1914. Borkenkafer aus Korea und Tsushima. *Ent. Blatt*. 10: 32.
- Ueki, H. 1911. Insects nuisibles aux pins en Corée. *Journal of Japanese forest* 345: 17-24.
- Wood, S.L. 1957. Ambrosia beetles of the tribe Xyloterini in North America. *Canadian Entomologist*, 89:337-354
- Wood, S.L. 1989: Nomenclatural changes and new species of Scolytidae (Coleoptera), Part IV. *Great Basin Naturalist* 49: 167-185.
- Wu, L.Y. 1990. Preliminary studies on bionomics and control of *Hylesinus eos*. *Forest Pest and Disease* 1990 (2): 12-13.

PLATES



Plate 1. Platypodinae and Scolytinae. 1. *Crossotarsus simplex*; 2. *Dinoplatypus calamus*; 3. *Dinoplatypus hamatus*; 4. *Platypus koryoensis*; 5. *Platypus lewisi*; 6. *Treptoplatypus severini*; 7. *Treptoplatypus solidus*; 8. *Sphaerotrypes pila*; 9. *Hylastes ater*; 10. *Hylastes attenuatus*; 11. *Hylastes brunneus*; 12. *Hylastes cunicularius*.



Plate 2. Scolytinae. 13. *Hylastes opacus*; 14. *Hylastes parallelus*; 15. *Hylastes plumbeus*; 16. *Hylurgops glabratus*; 17. *Hylurgops interstitialis*; 18. *Hylurgops longipillus*; 19. *Hylurgops palliatus*; 20. *Hylurgops spessiwzeffi*; 21. *Alniphagus costatus*; 22. *Hylesinus cingulatus*; 23. *Hylesinus eos*; 24. *Hylesinus laticollis*.

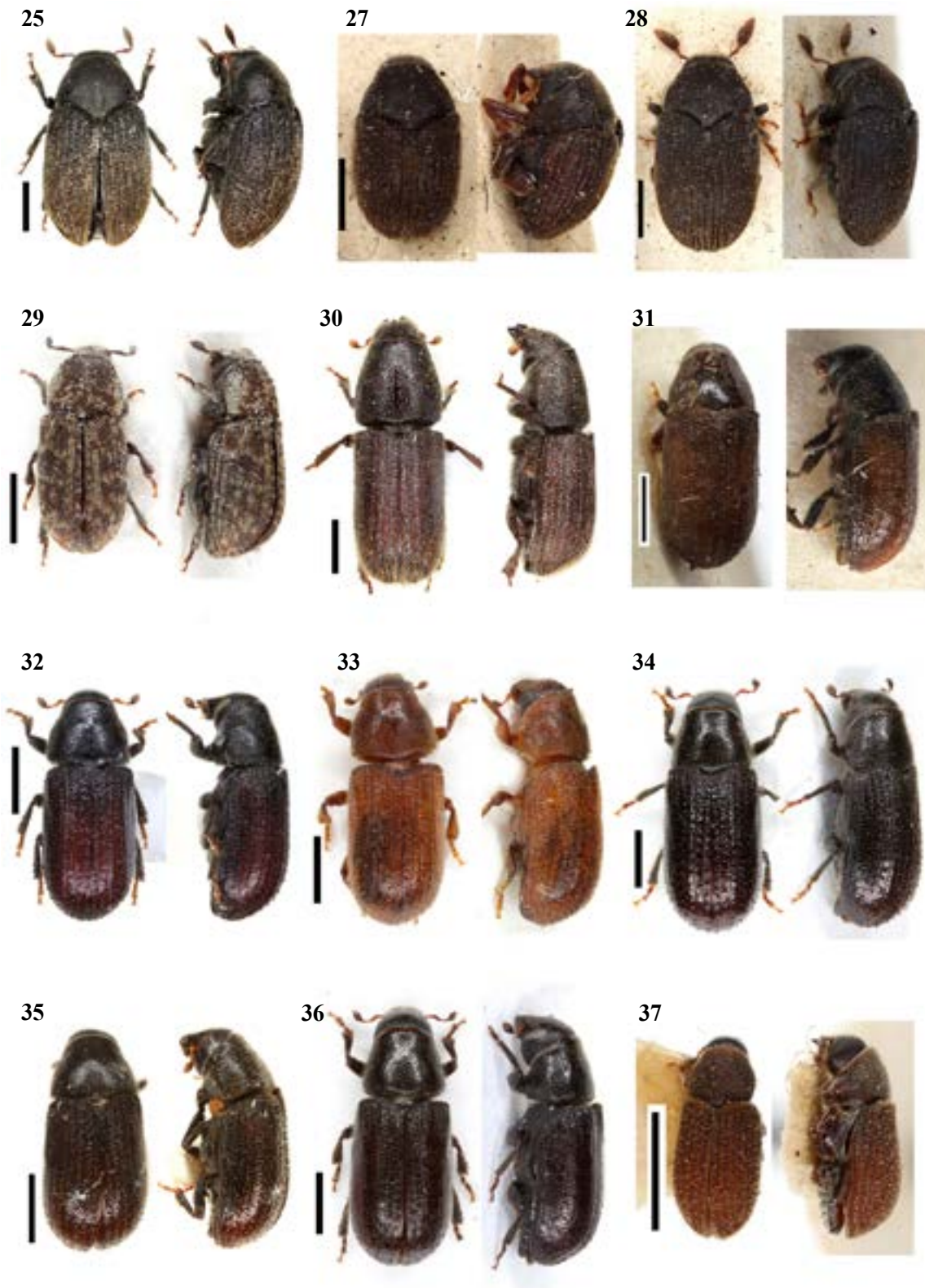


Plate 3. Scolytinae. 25. *Hylesinus nobilis*; 27. *Hylesinus toranio*; 28. *Hylesinus tristis*; 29. *Neopteleobius scutulatus*; 30. *Hylurgus ligniperda*; 31. *Tomicus brevipilosus*; 32. *Tomicus minor*; 33. *Tomicus pilifer*; 34. *Tomicus piniperda*; 35. *Tomicus puellus*; 36. *Tomicus heuksandoensis*; 37. *Xylechinus bergeri*.



Plate 4. Scolytinae. 38. *Xylechinus pillosus*; 39. *Sueus niisimai*; 40. *Phloeosinus aubei*; 41. *Phloeosinus hopehi*; 42. *Phloeosinus perlatus*; 43. *Phloeosinus pulchellus*; 44. *Phloeosinus rudis*; 46. *Polygraphus horyurensis*; 47. *Polygraphus jezoensis*; 48. *Polygraphus nobuchii*; 49. *Polygraphus proximus*; 50. *Polygraphus subopacus*.



Plate 5. Platypodinae and Scolytinae. 3. *Dinoplatypus hamatus*; 8. *Sphaerotrypes pila*; 9. *Hylastes ater*; 10. *Hylastes attenuatus*; 11. *Hylastes brunneus*; 12. *Hylastes cunicularius*; 13. *Hylastes opacus*; 20. *Hylurgops spessiwzeffi*; 21. *Alniphagus costatus*; 22. *Hylesinus cingulatus*; 23. *Hylesinus eos*; 24. *Hylesinus laticollis*; 25. *Hylesinus nobilis*; 27. *Hylesinus toranio*; 28. *Hylesinus tristis*; 29. *Neopteleobius scutulatus*; 31. *Tomicus brevipilosus*; 38. *Xylechinus pillosus*; 43. *Phloeosinus pulchellus*; 46. *Polygraphus horyurensis*; 47. *Polygraphus jezoensis*.

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