

# A Newly Recorded Species of the Genus *Spathius* Nees (Hymenoptera: Braconidae: Doryctinae) with a Checklist in Korea

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## 한국산 자루배고치벌속(벌목: 고치벌과: 중국고치벌아과)의 1미기록종 및 목록

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**ABSTRACT:** In the present study, one species of the subfamily Doryctinae, *Spathius depressithorax* Belokobylskij, 1998, is reported for the first time from Korea. A diagnosis and photographs for the species are provided. Also, a total of 13 species of the genus *Spathius* Nees, 1819 known from Korea is presented with synonymies and distributional ranges.

**Key words:** *Spathius*, Braconidae, Hymenoptera, New record, Korea

**초록:** 본 연구를 통해 *Spathius*속의 *Spathius depressithorax* Belokobylskij, 1998 <납작가슴자루배고치벌 (신칭)>를 우리나라에서는 처음으로 보고한다. 본 종의 식별형질과 성충을 검경하고 도해하였으며, 한국산 *Spathius*속의 목록을 제시한다.

**검색어:** 자루배고치벌속(신칭), 고치벌과, 벌목, 미기록, 한국

The genus *Spathius* Nees is the largest and very polymorphic genus in the subfamily Doryctinae (Belokobylskij, 2003). This genus comprises about 390 species, which have been known mostly from the Oriental and Australasian regions (Belokobylskij, 2003; Tang et al., 2015). About 70 species have been recorded in the East Palaearctic region (Belokobylskij and Maeto, 2009; Yu et al., 2012). Korean species of the genus were studied by Watanabe (1948), Kim (1963, 1970), Papp (1987, 1992), Ku et al. (2001), Ku (2010), Belokobylskij et al. (2012), and Kim et al. (2016).

The members of *Spathius* species are idiobiont ectoparasitoid of various Coleopteran larvae: Anobiidae, Anthribidae, Bostrichidae, Buprestidae, Cerambycidae, Cleridae, Curculionidae, Dryophthoridae, Eucnemidae, Lyctidae, Ptinidae, and Scolytidae (Belokobylskij and Maeto, 2009). Most species of this genus have also been recorded from hymenopteran (Cynipidae and Xiphydriidae) and lepidopteran (Lymantriidae, Sesiidae, Tineidae, and Tortricidae) larvae (Belokobylskij and Maeto, 2009). In this study, we report a species of the subfamily, *Spathius depressithorax* Belokobylskij, for the first time from Korea. Also, a total of 13 known species of the genus *Spathius* Nees, 1819 in Korea is presented with brief information of the species.

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## Materials and Methods

Material examined in this study was deposited at the Science Museum of Natural Enemies, Geochang, Korea (SMNE). The specimens were photographed with Canon Ixys Mark II (MP-E65 mm macro lens). Terminology used in this paper follows that of van Achterberg (1993). Abbreviations used in the present study are as follows: GB, Prov. Gyeongbuk; GN, Prov. Gyeongnam; GW, Prov. Gangwon.

## Results and Discussion

### Systematic accounts

#### Family Braconidae Nees, 1811

#### Subfamily Doryctinae Förster, 1862

#### Genus *Spathius* Nees, 1819 자루배고치벌속(신칭)

*Spathius* Nees, 1819: 301; Nixon, 1943:190; Shenefelt and Marsh, 1976: 1386; Belokobylskij, 2003: 348. Type species (by monotypy): *Cryptus clavatus* Panzer, 1809.

**Diagnosis.** Eyes glabrous or rarely sparsely setose. Vein Cu1a of fore wing sometimes interstitial, but often not interstitial and arising before middle of distal margin of subdiscal cell; subdiscal cell closed. Vein cu-a of hind wing present; vein M+Cu of hind wing 0.4-0.6 times as long as vein 1-M. Ovipositor from rather short to very long, as long as or longer than body.

#### *Spathius depressithorax* Belokobylskij, 1998 납작가슴자루배고치벌(신칭) (Figs. 1, 2)

*Spathius depressithorax* Belokobylskij, 1998: 98; 2003: 384; Belokobylskij and Maeto, 2009: 561; Tang et al., 2015: 40.

**Diagnosis.** This species is closely related to *S. exarator*, but it can be distinguished by the mesosoma distinctly depressed, the mesoscutum weakly and gently elevated above pronotum, and 4th and 5th tergites basally reticulate-punctate.

**Redescription.** Female (Fig. 1). Body length 4.2 mm; fore wing length 3.4 mm. Antenna with 34 segments; 1.25 times longer than body. Frons densely and coarsely striate. Face entirely rugose. Mesosoma slightly distinctly depressed, its length 2.4 times maximum height. Mesoscutum weakly and gently elevated above pronotum. Vein r of fore wing arising almost from middle of pterostigma; vein CU1a not interstitial, arising from anterior 0.3 of distal margin of subdiscal cell; marginal cell not shortened; second submarginal cell weakly narrowed distally. Vein m-cu of hind wing long, curved, distinctly infuscate, antefurcal. Petiole weakly curved ventrally in lateral view; length of petiole 2.5 times its apical width. 4<sup>th</sup> and 5<sup>th</sup> tergites basally reticulate-punctate. Ovipositor almost straight. Ovipositor sheath 1.3 times longer than metasoma, 0.7 times as long as body. Body reddish-brown; legs pale reddish brown; all tibiae pale yellow.

**Male** (Fig. 2). Body length 2.0-2.7 mm; fore wing length 1.6-2.3 mm. Mesosoma length 2.0-2.4 times longer than maximum height. Length of petiole 1.75-1.8 times its apical width. Otherwise similar to female.



Figs. 1-2. *Spathius depressithorax*. 1: habitus, ♀, lateral aspect; 2: habitus, ♂, lateral aspect <scale bars = 1 mm>.

**Material examined.** [KOREA] 1♂, Mt. Bangtae, Misan, Sangnam, Inje, GW, 12 viii 1986 (Deok-Seo Ku); 1♂, Judong, Yeohang, Haman, GN, 1 vi 1987; 1♀, Mt. Mirim, Galsan, Jaesan, Bonghwa, GB, 22 vii 1997 (J.S. Jeon)-coll. SMNE.

**Distribution.** Korea (new record), China (Hebei, Zhejiang), Japan, Russia (Khabarovsk Krai, Primorsky Krai, Sakhalin Oblast).

**Host.** Unknown.

#### Annotated checklist of the genus *Spathius* in Korea

##### Genus *Spathius* Nees, 1819 자루배고치벌속(신칭)

###### 1. *Spathius cavus* Belokobylskij, 1998 굴자루배고치벌(신칭)

*Spathius cavus* Belokobylskij, 1998: 106; Ku et al., 2001: 95; Belokobylskij, 2003: 381; Belokobylskij and Maeto, 2009: 551; Tang et al., 2015: 32.

**Distribution.** Korea, China, Japan, Russia (Far East).

###### 2. *Spathius depressithorax* Belokobylskij, 1998 납작가슴자루배고치벌(신칭)

*Spathius depressithorax* Belokobylskij, 1998: 98; 2003: 384; Belokobylskij and Maeto, 2009: 561; Tang et al., 2015: 40.

**Distribution.** Korea, China, Japan, Russia (Far East).

###### 3. *Spathius exarator* (Linnaeus, 1758) 주름자루배고치벌(신칭)

*Ichneumon exarator* Linnaeus, 1758: 564.

*Spathius exarator*: Marshall, 1885: 61; Watanabe, 1937: 35; Telenga, 1941: 33; Nixon, 1943: 198; Shenefelt and Marsh, 1976: 1400; Belokobylskij and Tobias, 1986: 28; Belokobylskij and Maeto, 2009: 571; Tang et al., 2015: 42.

**Distribution.** Korea, China, Japan, New Zealand, Mongolia, Russia (Far East, Siberia, European part), all Europe.

###### 4. *Spathius fasciatus* Walker, 1874 띠자루배고치벌(신칭)

*Spathius fasciatus* Walker, 1874: 307; Watanabe, 1937: 37; Nixon, 1943: 237; Shenefelt and Marsh, 1976: 1403; Papp, 1987: 158; Belokobylskij, 1998: 93; Ku et al., 2001: 95; Belokobylskij and Maeto, 2009: 575; Tang et al., 2015: 43.

**Distribution.** Korea, Japan, Russia (Far East).

###### 5. *Spathius galinae* Belokobylskij et Strazanac, 2012 호리비단벌레살이고치벌(신칭)

*Spathius galinae* Belokobylskij et Strazanac, in Belokobylskij et al., 2012: 167; Tang et al., 2015: 48.

**Distribution.** Korea, China, Russia (Far East).

###### 6. *Spathius generosus* Wilkinson, 1931 넓은자루배고치벌(신칭)

*Spathius generosus* Wilkinson, 1931: 263; Nixon, 1943: 199; Shenefelt and Marsh, 1976: 1404; Belokobylskij, 1998: 104; Ku et al., 2001: 95; Belokobylskij and Maeto, 2009: 585; Tang et al., 2015: 49.

**Distribution.** Korea, China, India, Japan, Russia (Far East).

###### 7. *Spathius ibarakius* Belokobylskij and Maeto, 2009 알락하늘소살이고치벌

*Spathius ibarakius* Belokobylskij and Maeto, 2009: 602; Tang et al., 2015: 56; Kim et al., 2016: 286.

**Distribution.** Korea, Japan.

###### 8. *Spathius japonicus* Watanabe, 1937 동아시아자루배고치벌(신칭)

*Spathius japonicus* Watanabe, 1937: 36; Nixon, 1943: 279; Shenefelt and Marsh, 1976: 1406; Belokobylskij, 1998: 84; Ku et al., 2001: 96; Belokobylskij and Maeto, 2009: 615; Tang et al., 2015: 56.

**Distribution.** Korea, China, Japan.

###### 9. *Spathius leschii* Belokobylskij, 1998 한중일러자루배고치벌(신칭)

*Spathius leschii* Belokobylskij, 1998: 92; Ku et al., 2001: 96; Belokobylskij and Maeto, 2009: 628; Tang et al., 2015: 60. *Spathius lesovik*: Belokobylskij, 1998: 92; Ku et al., 2001: 97; Belokobylskij, 2003: 430. Syn. by Belokobylskij and Maeto, 2009.

**Distribution.** Korea, China, Japan, Russia (Far East).

**10. *Spathius phymatodis* Fischer, 1966 민뽕하늘소살이고치벌 (신칭)**

*Spathius phymatodis* Fischer, 1966: 219; Tobias, 1971: 197; Shenefelt and Marsh, 1976: 1413; Belokobylskij and Tobias, 1986: 29; Belokobylskij, 1998: 100; Ku et al., 2001: 97; Belokobylskij, 2003: 393; Belokobylskij and Maeto, 2009: 685; Tang et al., 2015: 86.

**Distribution.** Korea, China, France, Hungary, Italy, Japan, Lithuania, Mongolia, Russia (European part, Urals, East Siberia, Far East), Spain, Ukraine.

**11. *Spathius reticulatus* Chao and Chen, 1965 그물등자루배고치벌(신칭)**

*Spathius reticulatus* Chao and Chen, 1965: 106; Shenefelt and Marsh, 1976: 1413; Belokobylskij, 1989: 51; 1988: 80; Ku et al., 2001: 100; Belokobylskij, 2003: 485; Chen and Shi, 2004: 158; Belokobylskij and Maeto, 2009: 701; Tang et al., 2015: 101.

**Distribution.** Korea, China, Japan, Russia (Far East).

**12. *Spathius rubidus* (Rossi, 1794) 적갈색자루배고치벌(신칭)**

*Ichneumon rubidus* Rossi, 1794: 110.

*Spathius rubidus*: Nees, 1834: 14; Marshall, 1888: 195; Telenga, 1941: 38; Nixon, 1943: 200; Shenefelt and Marsh, 1976: 1415; Belokobylskij and Tobias, 1986: 31; Belokobylskij, 1998: 107; Ku et al., 2001: 99; Belokobylskij and Maeto, 2009: 705.

**Distribution.** Korea, Armenia, Japan, Kazakhstan, Morocco, Russia (Far East), Turkey, all Europe.

**13. *Spathius verustus* Chao, 1977 가시고치벌(나무좀살이고치벌)**

*Spathius verustus* Chao, 1977: 208; Chen and Shi, 2004: 166; Tang et al., 2015: 119.

*Spathius radzayanus*: Ratzeburg, 1848: 43; Watanabe, 1948: 95; Kim, 1970: 741; Shenefelt and Marsh, 1976: 1414; Belokobylskij, 1998: 107; Ku et al., 2001: 97; Chen and Shi, 2004: 157; Belokobylskij and Maeto, 2009: 698; Tang et al., 119.

**Distribution.** Korea, China, Japan, Mongolia, Russia (Far East), Central and Western Europe.

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