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# New Record of *Sternuchopsis waltoni* (Boheman) (Coleoptera, Curculionidae, Molytinae, Mecysolobini) from South Korea

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# 한국산 바구미 *Sternuchopsis waltoni* (딱정벌레목, 바구미과, 참바구미아과, Mecysolobini족)의 보고

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**ABSTRACT:** A female specimen of *Sternuchopsis* (*s. str.*) *waltoni* (Boheman, 1844), belonging to the tribe Mecysolobini (Curculionidae: Molytinae), was collected by beating method from Gadeok-do in Busan, the southern part of the Korean Peninsula. This weevil pest is designated as a quarantine pest under the Plant Quarantine Act (2019) in Korea. It is considered unreasonable to determine whether this species is an invasive or native species in Korea, as damage to crops has not been confirmed and there is no other collection information. This study aims to provide accurate diagnosis information including illustration and ecological information to gain more domestic occurrence information on this weevil.

**Key words:** Curculionidae, Molytinae, Mecysolobini, *Sternuchopsis waltoni*, Korea

**초 록:** Mecysolobini족에 속하는 *Sternuchopsis* (*Sternuchopsis*) *waltoni* (Boheman, 1844) (메꽃통바구미; 신칭) 암컷 1개체를 한반도의 남단인 부산의 가덕도 야산에서 떨어잡기를 통해 채집하였다. 이 바구미가 국내 식물방역법상 검역해충으로 지정되어 있어 침입종 또는 자생종 인지 여부를 판단할 필요가 있으나 현재 작물에 대한 피해가 확인되지 않고 있고, 그 밖의 채집정보도 없어 그 판단은 무리가 있다고 생각된다. 본 연구는 이 바구미에 관한 국내 발생정보를 더 확보하기 위한 정확한 진단정보 및 생태정보를 제공하고자 한다.

**검색어:** 바구미과, 참바구미아과, 메꽃통바구미, *Sternuchopsis waltoni*, 한국

*Sternuchopsis* (*Sternuchopsis*) *waltoni* (Boheman, 1844), belonging to the tribe Mecysolobini (Curculionidae: Molytinae), is known as an important insect pest that damages crops such as sweet potato (*Ipomoea babatas*), water spinach (*I. aquatica*) and brinjal (*Solanum melongena*) in the tropical and subtropical regions of southern China and Southeast Asia (Chao and Chen, 1980; Singh, 1990).

This weevil pest is designated as a quarantine pest under the Plant Quarantine Act (2019) in Korea. Author collected an individual of this species by beating method from wild condition of Gadeok-do in Busan, the southern part of the Korean Peninsula. It is considered unreasonable to determine whether this species is an invasive or native species in Korea, as damage to crops has not been confirmed and there is no other collection information.

This study aims to provide accurate diagnosis information including illustration to gain more occurrence information on this weevil, *S.* (*s. str.*) *waltoni* (Boheman).

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## Materials and Methods

Examined specimen was collected an individual of this species by beating method from wild condition of Gadeok-do in Busan, Korea on June 2, 2023. Specimens were taken pictures with a digital USB 3.0 microscope camera (DMC5400) that is attached to Leica M125 Stereo microscope. The pictures were stacked by using the LAS software (version X). Specimens examined in this study are deposited in insect collections of the Department of Agricultural Life Science in SCNU.

## Taxonomic Accounts

### Tribe Mecysolobini Reitter, 1913

**Genus *Sternuchopsis* Heller, 1918**

*Sternuchopsis* Heller, 1918: 212. [Type species: *Alcides pectoralis* Boheman, 1836]

***Diagnosis.*** Body robust and elliptic. Frons between eyes deeply depressed. 7th segment of antennal funicle almost as wide as 1st segment of club and continuous with club. Elytra in basal half very dense white hairs, with shoulders strongly expanded laterally. Procoxae lying in the middle of prosternum between submarginal sulcus and basal margin. Metasternum between meso- and metacoxae about as long as mesocoxa, more or less bulged. Tibiae mucronate and further uncinate, protibiae with conspicuous sharp triangular subapical tooth.

***Distribution.*** Korea, Japan, China, Taiwan, Philippines, Vietnam, Thailand, Burma, Siberia, Kazakhstan, C. Asia.

**Subgenus *Sternuchopsis* s. str.**

*Sternuchopsis* Heller, 1918: 212. [Type species: *Alcides pectoralis* Boheman, 1836]

*Pseudmesalcidodes* Pajni and Dhir, 1987: 33. [Type species: *Alcides waltoni* Boheman, 1844]

***Diagnosis.*** Body oblong. 7th segment of antennal funicle almost as wide as 1st segment of antennal club and continuous with club. Pronotum granulated. Procoxae lying behind the middle of prosternum. Protibiae without a subapical tooth. Profemoral tooth usually smooth at its outer margin.

***Sternuchopsis* (*Sternuchopsis*) *waltoni* (Boheman, 1844) 메꽃통바구미(신칭) (Fig. 1-2)**

*Alcides waltoni* Boheman, 1844: 58.

*Alcides albolineata* Roelofs, 1875: 152 (homonym).

*Alcides roelofsi* Lewis, 1879: 23.

*Alcides sexvittatus* Faust, 1894: 258.

***Diagnosis.*** Body (Fig. 1) long and narrow, base of elytra slightly wider, narrowed toward apex, black and shiny, covered with hair-like scales, dorsum with yellowish scales, and sternum with pale yellowish scales. Head with scattered punctures and long punctures. Rostrum cylindrically elongated, slightly curved, 1.1x longer than pronotum, scattered rough punctures, their punctures connected with each other at the front of the base of the antennae, and smaller at the end. Antennae covered with white hairs, scape short in length 0.73x as long as funicle, 1st segment of funicle longer than 2nd segment, 3rd to 6th segments slightly spherical, 7th segment nearly funnel-shaped. Forehead with fovea in the middle. Pronotum wider than long, narrowed forward, slightly rounded on both sides, constricted at the anterior margin, deeply concave at the posterior margin, slender in the middle lobe, densely covered with four-shaped granular protrusions on the surface, and formed a longitudinal stripe by dense scales in the center. Scutellum quadrangular, wider than long, slightly narrowed forward. Elytra long and narrow, 3 times as long as the central length of pronotum, wider at the base than the prothorax, gradually narrowing backwards, protruding forward into lobe-shaped, punctate after base, rounded at apex; shoulders obvious; interval narrow and descending, smooth, bases of 2nd, 3rd and 4th intervals more raised and, wider, square-punctures, pit-shaped; scales on 3rd and 8th intervals and 5th stria do not easy to fall off, which are its special white stripes. Prolegs longer than other legs; femur widest at the tooth, with a non-serrated tooth; tibia with mucro well developed, the middle part of inner margin of protibia slightly protruded. Metasternum scattered with granules, Abdomen almost U- shaped, with horizontally straight sternites, 1st sternite longer than the other sternites, 3rd to 4th stenites almost equal in length, 5th sternite in female having yellowish erect setae at the posterior margin. Female genitalia shown as Fig. 2; spermatheca with an acute angle between arms; 8th sternite with Y- shaped spiculum ventrale.

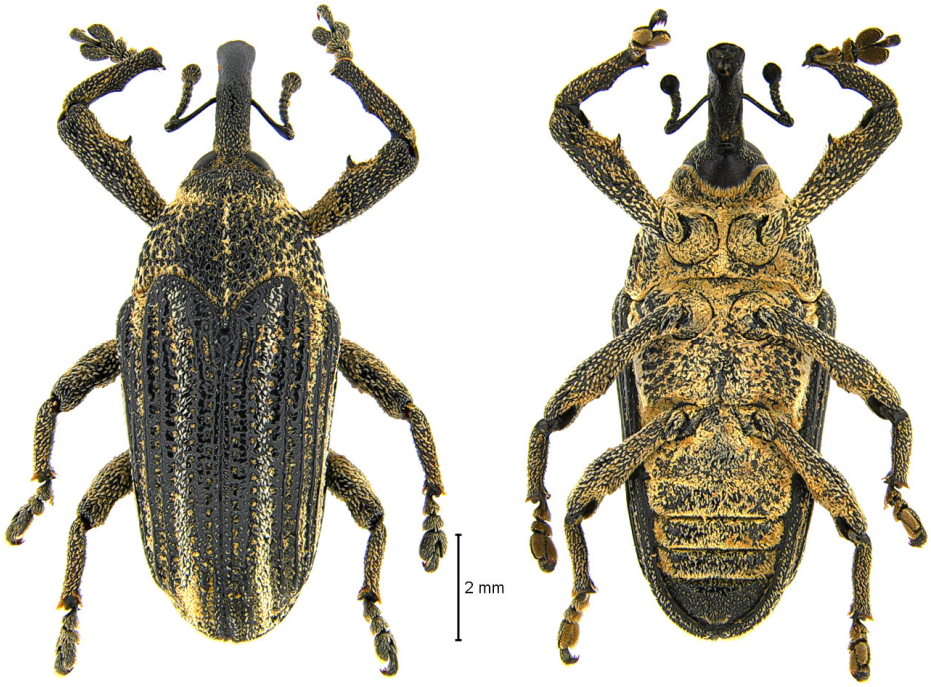


**Fig. 1.** Habitus of *Sternuchopsis* (*s. str.*) *waltoni* (Boheman).


**Fig. 2.** Female genitalia of *Sternuchopsis* (*s. str.*) *waltoni* (Boheman).

Body length (excluding rostrum) 9.5 mm, body width (between shoulders) 4.2 mm.

**Specimen examined.** 1♀, Gadeok-do Is., 162-1 Daehang-dong, Gangseo-gu, Busan [35°00'22N 128°49'38E H31m], 2.vi.2023, collected by beating method under various shrubs, K.-J. Hong leg.

**Distribution.** Korea (new record – South); Japan (?) (Morimoto and Kojima, 2007), China (Fujiang, Guangdong, Guangxi, Hongkong, Hubei, Hunan, Jiangxi, Sichuan, Shaanxi, Yunnan, Zhejiang), Taiwan, Iran (Alonso-Zarazaga, 2013); Myanmar, Sri Lanka, Vietnam (Zhejiang Agricultural University, 1982); India (Singh, 1990); Cambodia, Philippines, Indonesia (Andrew and Ramamurthy, 2010), Thailand (Hua, 2002).

**Food plants.** Adults are polyphagous, and can harm to 25 species of plants belong to 10 families including sweet potato, water spinach, soybean (Glycine max), sunflower (Helianthus annuus), kudzu (Pueraria lobata), peach (Prunus persica), citrus (Citrus), mu-oil tree (*Aleurites montana*), white-backed leaf (*Mallotus apelta*), potato (*Solanum tuberosum*), and mulberry (*Morus alba*) in China (Zhejiang Agricultural University, 1982), and also found from *Pinus*, *Quercus*, *Phoebe, Camellia sinensis, Rhus chinensis, Juglans regia*, *Lespedeza bicolor* (Hua, 2002) and *Ailanthus altissima* (Ding et al., 2006).

Larvae affected plants of the family Convolvulaceae such as

sweet potato (*Ipomoea batatas*), water spinach (*Ipomoea aquatica*), and moonflower (*Ipomoea alba*) in China (Chao and Chen, 1980), and brinjal (*Solanum melongena*) of Solanaceae in India (Singh, 1990).

**Biological notes.** In China, the damage of this weevil is particularly important to sweet potato. The infestation rate of sweet potato stems often reaches 55-70%, and the yield loss of sweet potato tubers can reach 56%. The larvae bore into stems and damage the main stems, which affects yield of sweet potatoes; if the damage is severe at the seedling stage, it can cause a large number of seedling shortages. Adults are harmless on Fabaceae, Rosaceae, Compositae and other plants. Adults overwinter in rocky crevices on hills. Some adults and larvae overwinter in the tubers. Adults lay eggs on stems or petioles. When laying eggs, first bite a small hole with rostrum, and then lay an egg in the hole (Chao and Chen, 1980). This weevil was also observed causing severe damage to brinjal of Solanaceae in India (Singh, 1990).

According to Zhejiang Agricultural University (1982) in China, there are 1~3 generations a year in Fujian province, and their generations overlap. There are mainly 2 generations a year in the north of Fuzhou, Jiangxi province, and are more than 5 generations every 2 years and 3 generations a year in the south of Fuzhou. Each female can lay 7-75 eggs during her lifetime. The longevity of adults is as short as 50-85 days, and as long as 273-370 days. The egg period is 3.5-4.5 days from June to August, and 5-7 days from September to November. The larval stage usually takes 23-35 days, but the overwintering larvae can last as long as 157-177 days. The pupal stage takes 4-5 days in July-August, 6-10 days in June-September, and 13-15 days in April-May and October-November.

## Key to the Species of Tribe Mecysolobini in Korea

1. 7$^{th}$ segment of antennal funicle narrower than 1$^{st}$ segment of antennal club and separate from club ····· 2
- 7$^{th}$ segment of antennal funicle almost as wide as 1$^{st}$ segment of antennal club and continuous with club ····· 5

2. Metasternum between meso- and metacoxae much longer than mesocoxa; 5$^{th}$ tarsal segment projecting more than half its length out of 3$^{rd}$ segment in general; body more or less parallel-sided (**Genus *Merus* Gistel**) ····· 3
- Metasternum between meso- and metacoxae about as long as mesocoxa, more or less bulged; (**Genus *Neomecyslobus* Pajni et Dhir**) ····· ***N.* (*s. str.*) *nigrofasciata* (Kôno)**

3. Scales on elytra not integrated with bands or stripes ····· ····· ***M.* (*s. str.*) *erro* (Pascoe)**
- Scales on dorsum with bands or stripes ····· 4

4. Elytra dark red on background, with an oblique band in the middle and a straight grayish hairy band in apical 1/3 ····· ***M.* (*s. str.*) *nipponicus* (Kôno)**
- Elytra colored black on background, covered sparsely with yellowish hairs and indistinctly bright hairy band ····· ····· ***M.* (*s. str.*) *flavosignatus* (Roelofs)**

5. Subapical tooth of fore tibiae conspicuous, sharp triangular; procoxae lying in the middle of prosternum between submarginal sulcus and basal margin; body elliptic (**Subgenus *Mesalcidodes* Voss**). Elytra with very strongly protruding shoulders, densely covered with whitish hairy scales on the posterior three-fifth part ····· ····· ***S.* (*Mesalcidodes*) *trifida* (Pascoe)**
- Subapical tooth of fore tibiae small and obtuse triangular if present; procoxae lying behind the middle of prosternum; body oblong (**Subgenus *Sternuchopsis* Heller**) ····· 6

6. Elytra with weakly protruding shoulders, nearly parallel-sided to three-fourth part, with dark-reddish transverse band of hairy scales before apex ····· ····· ***S.* (*s. str.*) *saitoi* (Kôno)**
- Elytra with strongly protruding shoulders, densely covered with whitish scale stripes on 3$^{rd}$ and 8$^{th}$ intervals and 5$^{th}$ stria ····· ***S.* (*s. str.*) *waltoni* (Boheman)**

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## Statements for Authorship Position & Contribution

Hong, K.-J.: Sunchon National University, Professor, Ph.D; Examined specimen and designed the research

Jeong, K.: Sunchon National University, Researcher; Collected specimen.

All authors read and approved the manuscript.

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