



## Genus *Aegosoma* Audinet-Serville, 1832, with description of a new species from Vietnam (Coleoptera: Cerambycidae: Prioninae)



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### ABSTRACT

The genus *Aegosoma* Audinet-Serville, 1832, is reviewed. The subspecies *A. sinica legrandi* is moved to the reconfirmed valid species *A. hainanensis*; a new species of the genus from South Vietnam is described; and an identification key for all known members is presented.

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### Introduction

Similar to the related genera *Aegolipton* and *Sinimegopsis*, *Aegosoma* had been considered as a subgenus of *Megopsis*. However, recently many authors have recognized *Aegosoma* to be a distinct genus by Komiya (2005), Drumont and Komiya (2010), Danilevsky (2011), Drumont et al. (2013) and Do and Drumont (2014). It has been found from Europe to East Asia (Russia and China) and extends to South China and South East Asia.

Komiya (2005) defined the genus *Aegolipton* and proposed that *Aegosoma* is typical with two main characteristics: antenna segments III, IV with inner longitudinal grooves and the antennae abruptly narrowing between segments V and VI.

There have been recognized fifteen species to belong to the genus *Aegosoma*: *A. ossea* Aurivillius, 1897; *A. pallida* Komiya & Drumont, 2012; *A. annulicornis* (Komiya, 2001); *A. musaamani* Drumont, Do & Bosuang, 2013; *A. giganteum* Lansberge, 1884; *A. katurai* (Komiya, 2000); *A. cuneicornis* (Komiya, 2000); *A. kusamai* (Komiya, 1999); *A. xentoc* Do & Drumont, 2014; *A. scabricorne* (Scopoli, 1763); *A. guerryi* (Lameere, 1915); *A. ivanovi* Danilevsky 2011; *A. sinica* White, 1853, *A. ornaticolle* White, 1853, and *A. hainanensis* Gahan, 1900. In addition, *A. sinica* consists of four subspecies: *A. sinica legrandi* Komiya & Drumont, 2012, *A. sinica sinica* White, 1853, *A. sinica savoryi* (Kusui, 1973), and *A. sinica validicornis* (Gressitt, 1951).

Only the characteristic of longitudinal groove of antenna has been found in all members of *Aegosoma*, but the distinct gap of width between segment V and VI does not match to all known species of the genus. So in this paper, *Aegosoma* is separated from other related genera by the single characteristic of longitudinal groove on the antennal segments.

In this paper, I review the genus with its geography and evolution, I describe a new species, and I provide an identification key for all members of the genus.

*Aegosoma* Audinet-Serville, 1832

Generotype: *Aegosoma scabricorne* (Scopoli, 1763)

Small to medium Prioninae beetles with cylindrical head, longer than wide, mandible with sharp inner edge, curved inward, and without inner tooth.

Antennae long, with 11 segments; scape large and robust; segment III long; inner side of segment III and IV with a distinct groove. Pronotum round, widest at base and narrowest at apex, never with spines along sides. Elytra flattened, elongate, costae visible or smooth, color changes from hemi-hyaline, white, yellow, red, or brown to dark brown or nearly black. Legs flattened slender, tarsi of the three pairs of legs similar in shape.

Members of *Aegosoma* can be divided into five groups, as follows:

1. *A. xentoc* Do & Drumont, 2014, is known only from South Vietnam. This species differs in having long antennae with the length of antennal segment III equal to combined lengths of segments IV–VII.

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Figs. 1–3. *Aegosoma george*: 1. ♂, dorsal view; 2. ♂, ventral view; 3. ♂, front dorsal view.

2. *A. kusamai* (Komiya, 1999) is known only from Myanmar. Male of this species differs significantly from those of all other species in length of antennae, which are very long, exceeding apical end of elytra by segment V. Segment IV of antenna extremely developed and longer than segments VI–XI combined.



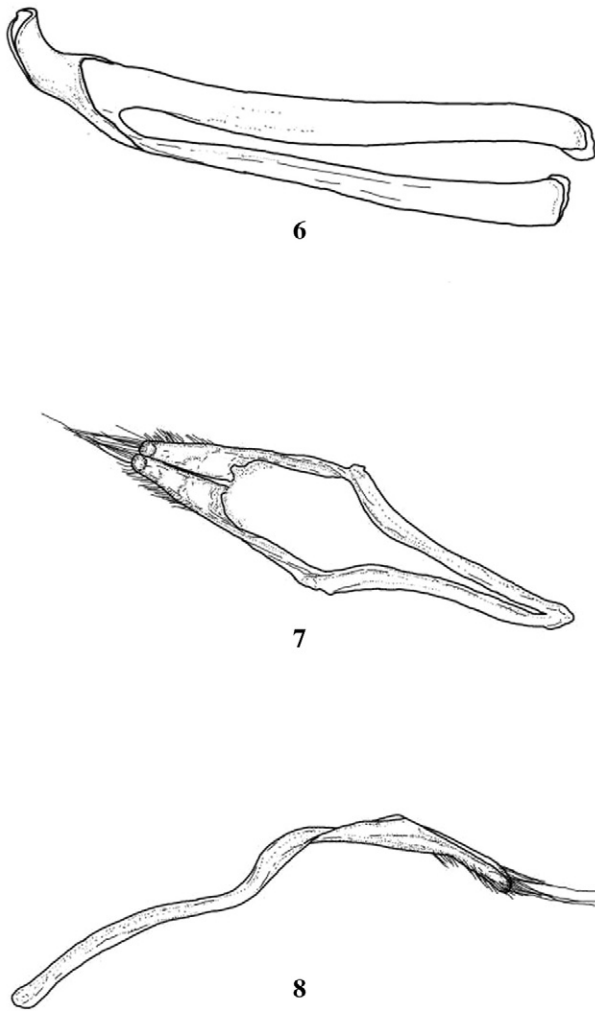
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Figs. 4–5. *Aegosoma george*: 4. ♀, dorsal view; 5. ♀, ventral view.

3. *A. katsurai* (Komiya, 2000); *A. cuneicornis* (Komiya, 2000). This group is only known from the Indochina–Myanmar mainland. Antennae of male are remarkably short, shorter than the length of the body. Segment V of antenna short, nearly equal to segment VI, unlike in other groups of the genus in which segments V and VI usually differ from each other. Two members of this group were described by Komiya (1999), who noted the following differences between *A. cuneicornis* and *A. katsurai*: in *A. cuneicornis*, antenna slender, less granulated, with segment III relatively long and strongly thickened both basally and apically; segments IV to X each strongly thickened apically; segment XI acutely pointed at apex; pronotum hairier and shorter; and the costae of elytron as follows: innermost costae joining not with the second costa but with sutural margin; in *A. katsurai*, antenna thicker, more granulated, segment III shorter, not thickened at base and apex; segment IV to X not visible thickened apically, segment XI stout at apex; the innermost costae of elytron joining with the second costa. However, while studying specimens collected from Lao Cai Province, North Vietnam, the locality of the types of *A. katsurai*, I found that the characteristic of costae in *A. katsurai* is not stable; some individuals of *A. katsurai* have inner costae joining with the inner margin of elytron.
4. *A. giganteum* Lansberge, 1884; *A. ossea* Aurivillius, 1897; *A. pallida* (Komiya and Drumont, 2012); *A. annulicornis* (Komiya, 2001); *A. musaamani* (Drumont, Do & Bosuang, 2013). The members of this group are found on the Indonesia–Malaysia mainland and Borneo. They are light colored *Aegosoma* with slender antennae, segment III of antenna as thick as segment IV in all members of the group.
5. Following species in this group: *A. scabricorne* (Scopoli, 1763); *A. guerryi* (Lameere, 1915); *A. ivanovi* Danilevsky 2011; *A. sinica* White, 1853, *A. ornatocolle* White, 1853, and *A. hainanensis* Gahan, 1900. They typically have a thickened antennal segment III. Members of this group are widely distributed from Europe to Asia and also on the Indonesia–Malaysia areas. Komiya and Drumont (2012)



**Figs. 6–8.** Male genitalia of *Aegosoma xentoc*: 6. penis; 7. tegmen, ventral view; 8. tegmen, lateral view.

examined 50 specimens from Hainan belonging to *A. sinica*/*A. hainanensis*; they found only 6 specimens matching *A. hainanensis*. They wrote “the rest of them belong to ssp. *sinica* or hybrid specimens between two taxa”. Hence they concluded that the taxon “*hainanensis*” is a subspecies of the species *A. sinica*. However, Danilevsky (2011) found that *A. hainanensis* has antennae longer than the body and should be separated as a distinct species from *A. sinica*, with apex of antennae not pass over the body. So the taxon “*hainanensis*” should be retained as an independent species as it shares the same habitat with *A. sinica*. Following that conclusion, the subspecies *A. sinica legrandi* that Komiya and Drumont (2012) described from East Malaysia should be moved as a subspecies of *A. hainanensis*, the species will be considered as an independent species in this paper. Moreover, while studying the species of this group found in Bidoup National Park, Lam Dong province, I found an undescribed species, which I describe below.

*Aegosoma george* new species  
(Figs. 1–3, 4–5 and 6–8).

Among the specimens of *Aegosoma* collected in 2013 from Bidoup National Park, Lam Dong Province, I found a novel *Aegosoma* belonging to the *A. scabricorne* group.

Material examined. Holotype: ♂ 28 IV–10 V 2013. Bidoup National Park, Lam Dong Province, leg. Do, deposited in the Vietnam National Museum of Nature, Hanoi, Vietnam. Paratype: ♂ same data as holotype deposited in Vietnam Museum of Forestry. ♂ same data as holotype

deposited in National History of Nature Museum, London, England; 15 ♂♂, 5 ♀♀ Cuong Do Collection.

**Etymology.** George is a character in the children’s cartoon video series ‘Peppa Pig’, which is produced by the English television entertainment company Astley Baker Davies Ltd. George is Peppa’s little brother and the youngest member in the family. The author’s five-year old son suggested George as the species epithet for this new *Aegosoma*, because *A. george* is the latest discovery in the genus.

**Description of holotype.** Male (Figs. 1–3; 6–8). Body moderately elongated, red brown, covered with short setae, remarkable for the high density of setae on the pronotum.

Head a little longer than wide, with a darker middle carina, cylindrical, uniformly covered with yellow setae; antennal tubercles widely separated; labrum with an apical tuft of long, yellow setae. Mandible dark red brown with inner edge sharp and shiny black; curved inward at 1/2 distally. Eyes with upper lobe smaller than lower lobe. Underside of head rounded, granulated, and less setose than upper side.

Antennae longer than the body, with 11 segments, red brown with black marking in some segments. Segment I dull red, as long as mandible, length about twice its width, surface covered with dense granules; segment III is longest segment, brown red with black apex, granules, particularly spiny at the margin of inner groove, length of segment III about the length of VI–XI combined; Segment IV straight, granulated, slenderer than segment III, about equal in length to segments V–VI combined, dull red in color with black apex, inner groove visible. Segment V granulated, slenderer than segment IV, longer than the length of segments V–VII combined, brown red in color and the apical part more expanded than those of segments III and IV; segments VI–XI black, not granulated, segment VI a little longer than the lengths of segments VII, VIII, IX, and X, which are about equal in length; segment XI longer than segment VI, pointed at apex and slightly curved inward.

Pronotum rounded, about half as long as width at base, widest at base and narrowest at apex. Sides rounded. Surface of pronotum covered with smooth yellow setae.

Scutellum dark brownish red, with black apex, wide at base and strongly narrowing halfway to the apex.

Elytra flattened, elongate, about 5 times as long as wide; gradually narrowing to rounded apex with a small spine. Margin with a black line, the costae are not full clearly appear with two costae joined at 3 1/2 from base of elytron, the inner costae are stronger and more visible.

Legs flattened, slender, femur nearly as long as tibia. Tarsi of the three pairs of legs are similar in shape, with segment 1 longest; segment 2 shortest, with length about half its width; segment 3 with length 1.25 times its width; claw segment as long as segments 1 + 2 + 3.

**Aedeagus (Figs. 6–8):** Penis with curved, obtuse apex and two long flattened branches. Tegmen with a deep cleft at middle, forming two branches that are broad at base and gradually narrow toward apex, each branch covered with tufts of setae, with longer setae at the apex. Length of tegmen about 4 times that of each branch.

**Female (Figs. 4–5):** Similar in shape to that of the male, but pronotum narrower and antenna more slender: segment I is longer and narrower at base than that of male, segments I–V not granulated as in male but smooth like the other segments of the antenna; antenna segments uniform dark red, not marked with black; antenna shorter than the body length. Costae on elytron more visible than those of male.

**Measurements:**

Male holotype length (without mandible): 45.5 mm.

Male holotype width (measure at widest point): 13 mm.

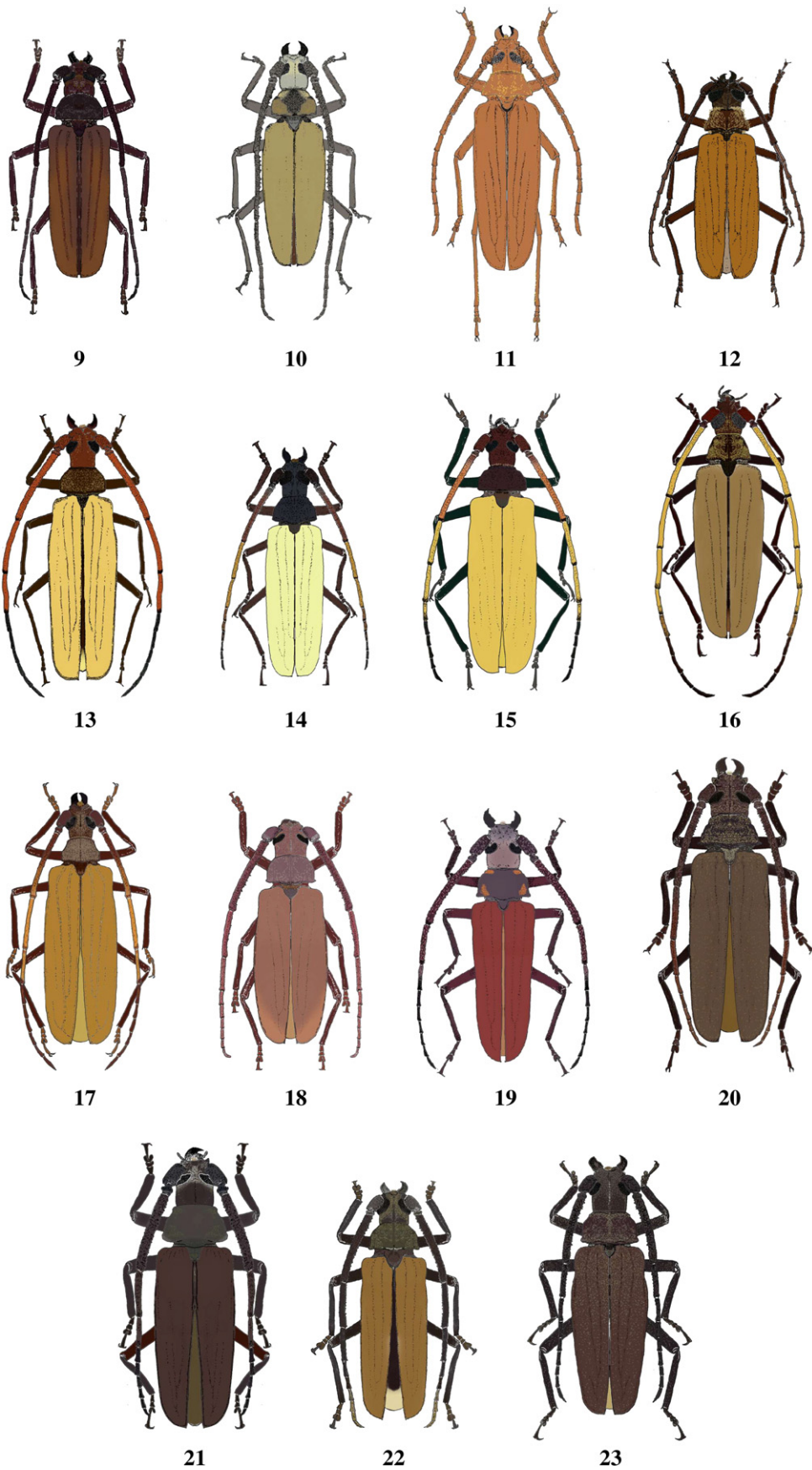
Variation in size of males: length 41–55 mm, width 11–17 mm.

Figs. 9–23.

Variation observed: no variation noted except size variation.

**Habitat:** the habitat of *A. george* is slightly disturbed, humid forests of high elevation (above 1300 m) in Lam Dong Province.

**Diagnosis:** *Aegosoma george* clearly belongs to the *A. scabricorne* group based on the structure of the antenna (with segment III remarkably thicker). However *A. george* differs from other members of the



**Figs. 9–23.** Males in dorsal view of *Aegosoma*. 9. *Aegosoma xentoc*; 10. *Aegosoma kusamai*; 11. *Aegosoma katsurai*; 12. *Aegosoma cuneicornis*; 13. *Aegosoma giganteum*; 14. *Aegosoma ossea*; 15. *Aegosoma pallida*; 16. *Aegosoma annulicornis*; 17. *Aegosoma musaamami*; 18. *Aegosoma scabricorne*; 19. *Aegosoma ornatocolle*; 20. *Aegosoma guerryi*; 21. *Aegosoma sinica*; 22. *Aegosoma hainanensis*; 23. *Aegosoma ivanovi*.

*A. scabricorne* group in the length of antennal segment III. In *A. george*, the length of segment III is about equal to the lengths of segment IV and ½ segment V combined; in all other members of the *A. scabricorne* group, segment III is about equal to the length of segments IV and V combined (*A. guerryi*, *A. hainanensis*, *A. scabricorne*, *A. sinica*) or longer than segments IV and V combined (*A. ivanovi* and *A. ornaticolle*).

Identification key for males of the genus *Aegosoma*

1. Antennal segments V and VI similar in shape (*A. katsurai* group)...  
.....2  
Antennal segments V and VI differ in shape.....3
2. Antennal segment III long and strongly thickened both basally and apically.....*A. cuneicornis*  
Antennal segment III shorter and not thickened basally and apically.....*A. katsurai*
3. Antennal segment III not much thicker than segment IV, body light in color, elytra hemi-hyaline or light in color (*A. giganteum* group).....4  
Antennal segment III remarkably thicker than segment IV, body and elytra neither light in color nor hemi-hyaline.....8
4. Antennae remarkably long, exceeding apical end of elytra by apex of segment VII.....*A. annulicornis*  
Antennae not so long, exceeding apical end of elytra beyond segment VII.....5
5. Antennae short, exceeding apical end of elytra by about apex of segment XI or not extending beyond apex .....*A. ossea*  
Antennae longer, exceeding apical end of elytra always passed over by apex of the last antennal segment.....6
6. Elytra margined by black lines.....*A. giganteum*  
Elytra not margined by black lines.....7
7. Length of segment III of antenna about as long as combination of segments IV and V.....*A. pallida*  
Length of segment III of antenna about length of segment IV and ½ segment V combined.....*A. musaanmani*
8. Antennae very long, exceeding apical end of elytra by apex of segment V.....*A. kusamai*  
Antennae not so long, exceeding apical end of elytra always by segments beyond segment V.....9
9. Length of antennal segment III is similar to or a little longer than combined lengths of segments IV–VII.....*A. xentoc*  
Antennal segment IV shorter than combined lengths of segments IV–VII (*A. scabricorne* group).....10
10. Antennal segment III about length of segment IV and ½ segment V.....*A. george*  
Antennal segment III equal to or longer than length of segment IV and V combined.....11
11. Antennal segment III clearly longer than length of segments IV and V combined.....12  
Antennal segment III about length of segments IV and V combined.....13
12. Antennae short, apex of the last segment ends by or does not reach apical end of elytra, pronotum without 4 tufts of orange setae.....*A. ivanovi*  
Antennae long, apex of last segment passes beyond apical end of elytra, pronotum with 4 tufts of orange setae.....*A. ornaticolle*
13. Antennae short, apex of the last segment not reaching apical end of elytra.....*A. sinica*  
Antennae long, apex of the last segment exceeding the apical end of elytra.....14
14. Costae weak or not clearly visible.....*A. guerryi*  
Costae clearly visible.....15
15. Antennae slender, head and pronotum covered with short or not clearly visible setae.....*A. scabricorne*  
Antennae thicker, head and pronotum covered with clearly visible yellow setae.....*A. hainanensis*

## Geography

Of the five groups of the genus *Aegosoma*, the distribution of the *A. scabricorne*, *A. giganteum*, and *A. katsurai* groups is discussed below.

Members of the *A. scabricorne* group are found from Europe, East Asia, China and South China, Indochina to India and Indonesia–Malaysia area; whereas the *A. katsurai* group is only found from Indochina and southern China; and *A. giganteum* only found from Indonesia–Malaysia areas. It is easy to recognize that the *A. giganteum* and *A. katsurai* groups are separated by the South China sea but the *A. scabricorne* group is distributed on both sides of the sea and also occurs to the north (to Europe) with the appearance of *A. scabricorne*.

The separation of two mainland areas, Indochina–Myanmar and Indonesia–Malaysia has been known that because of increasing of sea level and two parts connected together in the past. So members of *A. scabricorne* group must original before the two mainland areas of Indonesia–Malaysia and Indochina were separated by the sea. And member of *A. giganteum* and *A. katsurai* maybe are younger taxa and they were original from some insects that appeared after the two main lands were separated by the sea because there is none of member of the groups is found from the other side of the sea that separates Indochina and Indo-Malay main lands.

Two species, *A. xentoc* from South Vietnam and *A. kusamai* from Myanmar, are widely separated from all other groups of the genus in general structure of the body. They only are found within a small area in the Indochina–Myanmar areas, where the *A. scabricorne* group and *A. katsurai* group are also found. In general structure, the two species are more similar to members of the *A. scabricorne* group, but the structure of the antenna of *A. katsurai* group is very different, shorter than the body, and there is not much difference between segments IV and V. Hence the ancients of two species maybe closer to ancient of *A. scabricorne* group than it of *A. katsurai* group.

## Acknowledgments

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