

Preliminary notice on the genus *Carabus* Linnaeus, 1758 (Coleoptera Carabidae) of the islands of Peter the Great Gulf in the far East of Russia, Primorski province, Vladivostok area with description of a new subspecies

Ivan Rapuzzi

Via Cialla, 47 - 33040 Prepetto, Udine, Italy; e-mail: info@ronchidicialla.it

ABSTRACT

In the present paper the Fauna of *Carabus* Linnaeus, 1758 of some islands of the Peter the Great Gulf in the Far East of Russia (Vladivostok area) is investigated. After the study of large series of *Carabus* specimens from the islands and the mainland a new subspecies, *Carabus (Morphocarabus) hummeli putyatini* n. ssp., is described and figured; moreover, comparative notes with the closest taxa are provided.

KEY WORDS

Carabus; new subspecies; Peter the Great Gulf; Vladivostok; Russia.

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INTRODUCTION

The Peter the Great Gulf is the largest gulf of the Sea of Japan adjoining the coast of Primorski Krai (Fig. 1). The Muravyov-Amursky Peninsula and a chain of outlying islands divide the gulf of about 6,000 km² into the Amur Bay and the Ussuri Bay. The coastline of about 1,500 kilometres is indented by many smaller bays. The islands include two archipelagos separate from the mainland by the Eastern Bosphorus: Rimsky-Korsakov Archipelago consists of six small islands (the largest are Askol'd Island and Putyatin Island) and few rocky islets (kekurs) which are uninhabited and very hard to reach. Eugénie de Montijo Archipelago is a group of five large islands (Popov Island, Shkota Island, Reyneke Island, Russky Island and Rikord), and a lot of small islands, islets and rocks (Figs. 2-5). Despite the vicinity with the large town of Vladivostok the genus *Carabus* Linnaeus, 1758 of the islands is still little known while the *Carabus* Fauna from the mainland is well known and investigated from many years.

The first notice for the genus *Carabus* for the Islands of Peter the Great Gulf was the paper dated 1932 by Semenov and Znojko with the description of *C. (Aulonocarabus) praedo* Semenov & Znojko, 1932 now considered a mere synonym of *C. (Aulonocarabus) careniger careniger* Chaudoir, 1863 by different Authors (Shutze & Kleinfeld, 1999; Brezina, 2003; Deuve, 2004;). After that only very few information are available by the literature: *C. (Aulonocarabus) canaliculatus jankowskiellus* Deuve, 1991 and *C. (Morphocarabus) hummeli vladobydovi* Obydov, 2009. Other works on *Carabus* of these regions have been carried out by different authors: Kraatz (1878), Haury (1879), Semenov-Tian-Shansky (1898; 1906), Breuning (1932-1936), Deuve (1991; 1997; 2012), Imura (1993), Ivanovs (1993), Shilenkov (1996), Obydov (2005; 2009), Deuve & Li (2007), Kleinfeld & Reuter (2009).

Untill the XXI century the knowledge of the *Carabus* from these Islands was poor and lacunose. In the last 20 years thanks to the investigations of Mr. Andrey Plutenko (Russia) who visited part of the

islands (Reyneke, Shkota, Putyatin, and Askol'd) a lot of new data became available and new taxa were described (Rapuzzi, 2010): *C. (Megodontus) vietin-ghoffi rugicolor* Rapuzzi, 2010, *C. (Coptolabrus) smaragdinus robinzoni* Rapuzzi, 2010 and *C. (Aulonocarabus) gossarei mareschii* Rapuzzi, 2010.

In the present paper the results of the recent research in the area are provided. The examination of some *Carabus* specimens from Putyatin Island have identified a new taxon following described.

ABBREVIATION. RC = I. Rapuzzi collection.

RESULTS

Carabus (Morphocarabus) hummeli putyatini n. ssp.

EXAMINED MATERIAL. Holotypus male (Fig. 6), Russia, South Pimorskiy region, Putyatin Island, 50-200 m, 14/22.VIII.2008, A. Plutenko leg. The holotypus is deposited in the author collection. Paratypes: 32 males and 32 females, same data as holotypus. The paratypes are deposited in Plutenko and author collections.

DESCRIPTION OF HOLOTYPE MALE. Length including mandibles: 28.3 mm, maximum width of elytra: 9.8 mm. Color black with metallic luster on dorsum brownish-violet with margin of pronotum copper and green, margin of elytra golden-green and primary foveae violet, shiny. Femora reddish-brown. Head moderately thickened. Frontal impressions deep anteriorly, exceeding anterior margin of eyes; vertex slightly convex, surface of the vertex slightly punctured, posterior margins of eyes with punctures deep and subrugose; very short neck. Mandibles short with dorsal surface smooth. Palpi thin and long, labial palp bi-setose. Eyes very salient. Antennae extending with 5 antennomeres beyond pronotal base. Pronotum not sinuate, transverse, about 1.37 times as broad as long, slightly convex; sides of pronotum very narrow margined, not bent upwards; hind angles very short, truncate, slightly protruding behind its base, inclined downwards; surface of pronotum strongly punctured, coarsely distributed, more dense and roughly at sides and base; basal depressions small and deep, roughly punctured with metallic luster. Elytra very elongate, oval, convex, maximum width behind middle; shoulders rather narrow and roun-

ded; sculpture triploid homodyname, intervals uniformly convex, interrupted in the row in quite long links, slightly punctured striae. Male aedeagus (Fig. 10) characteristic of the species but with the median portion larger, apex shorter and less curved.

VARIABILITY. The length of the body ranges from 22 mm to 30 mm. Very few variable color: dorsum with more or less intense brownish-violet and margins green or golden-green. Pronotum sometimes slightly less transverse. Intervals sometimes more interrupted.

ETIMOLOGY. The given name is dedicated in honor to the famous Russian diplomatic Admiral Yevfimiy Putyatin (1803-1883).

COMPARATIVE NOTES. *C. (Morphocarabus) hummeli* Fischer von Waldheim, 1823 is a very variable species with several subspecies described from the Vladivostok area: *C. hummeli smaragdulus* Kraatz, 1878 (Figs. 7, 11), *C. hummeli pusongensis* Imura, 1993 (= *C. hummeli gustavi* Shilenkov, 1996) (Figs. 8, 12), *C. hummeli tristiculus* Kraatz, 1878 (Figs. 9, 13), and *C. hummeli vladobydovi* Obydov, 2009.

C. hummeli smaragdulus: the new subspecies differs by stronger body, more transverse pronotum, different color, uniformly and regular intervals, and shape of aedeagus. *C. hummeli smaragdulus* is the closest subspecies to *C. hummeli putyatini* n. ssp.

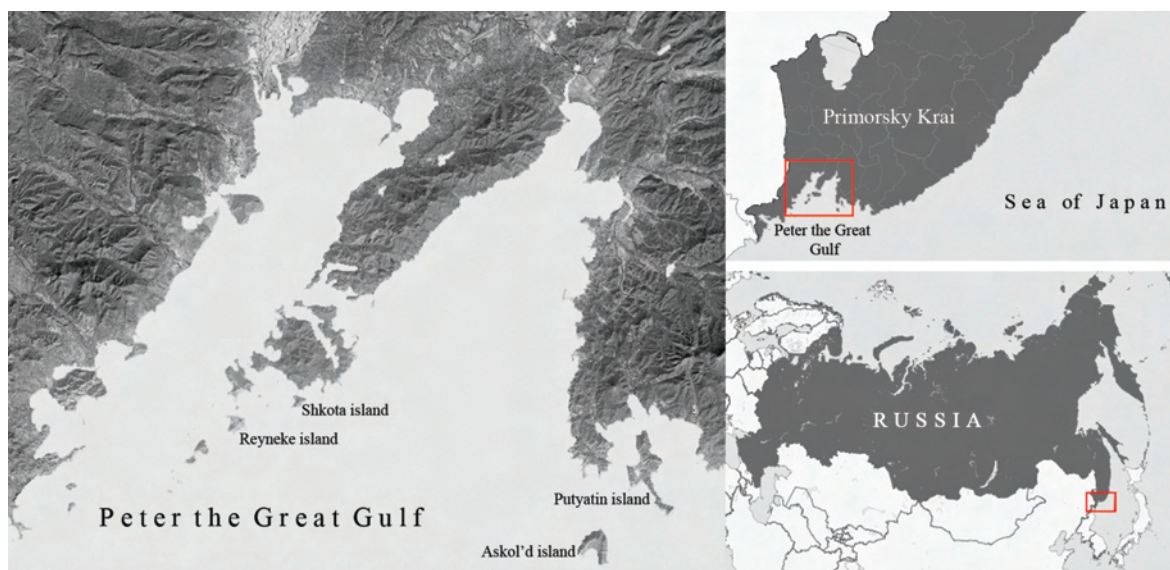
C. hummeli pusongensis and *C. hummeli tristiculus*: *C. hummeli putyatini* n. sp. is definitely different by the larger size, transverse pronotum, color and shape of aedeagus. *C. hummeli tristiculus* is the geographical closest subspecies on the mainland.

C. hummeli vladobydovi: the new subspecies differs for the larger size and stronger body, more transverse pronotum and intervals less interrupted forming longer links. *C. hummeli vladobydovi* was described from Popov Island in the Eugénie de Montijo Archipelago and seems to be more related with *pusongensis/tristiculus* group.

List of the Carabus from the investigated islands of Peter the Great Gulf

I. REYNEKE ISLAND

1. *C. (Parhomopterus) billbergi* Mannerheim, 1827
2. *C. (Carabus) granulatus telluris* Bates, 1883
3. *C. (Carabus) arvensis faldermanni* Dejean, 1829
4. *C. (Morphocarabus) venustus* Morawitz, 1862



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Figure 1. Peter the Great Gulf in the far East of Russia. Figure 2. Reyneke Island. Figures 3, 4. Putyatin Island. Figure 5. Askol'd Island.

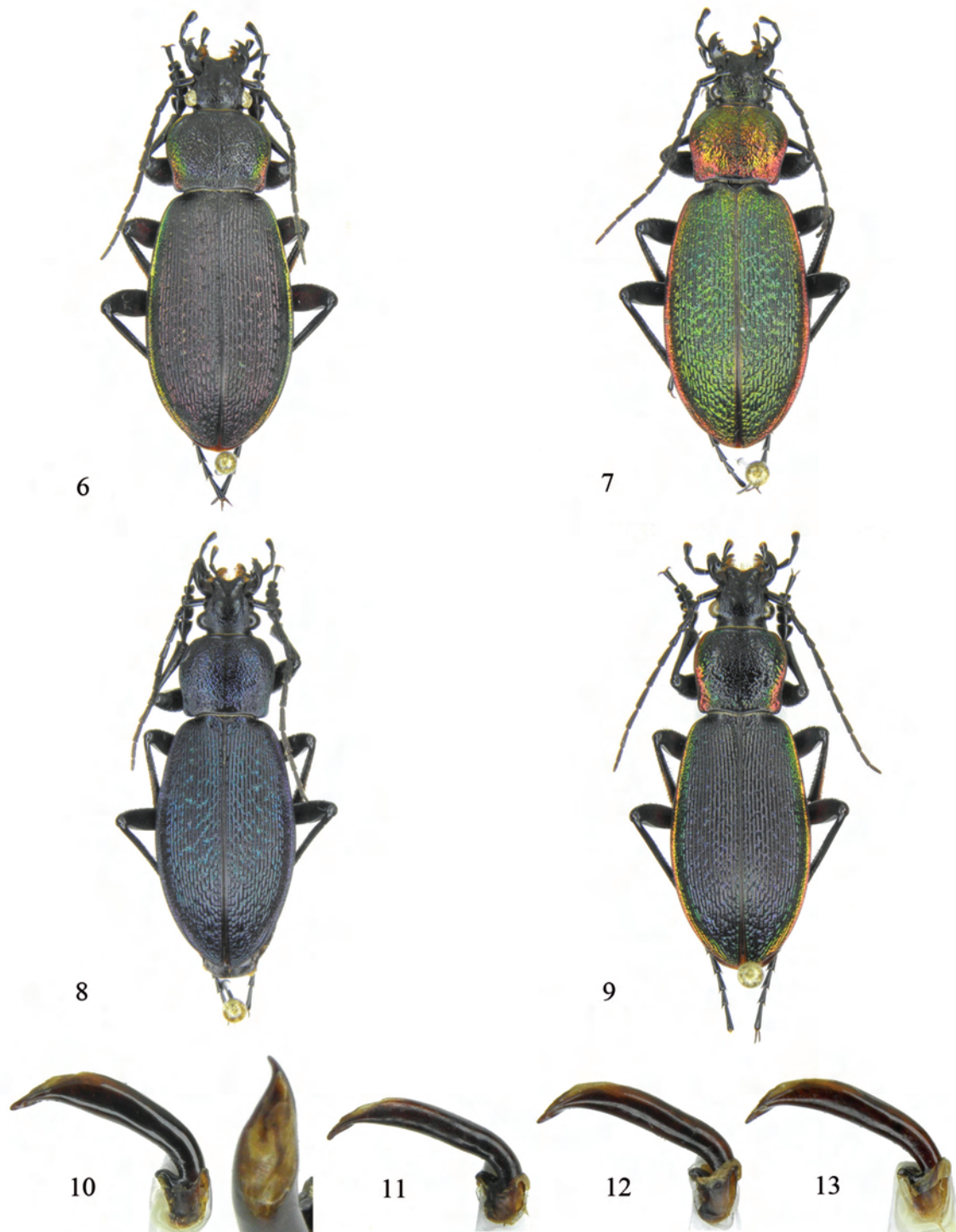


Figure 6. *Carabus (Morphocarabus) hummeli putyatini* n. ssp., holotypus and (Fig. 10) aedeagus: lateral (left) and frontal view (right). Figure 7. *C. (M.) hummeli smaragdulus*, Russia, Primorskyi reg., Ozyornyi klutsch river, A. Plutenko leg. (RC) and (Fig. 11) aedeagus, lateral view. Figure 8. *C. (M.) hummeli pusongensis*, Russia, Primorskyi reg., Nadezhdenskyi distr., Anan'jevka riv., A. Plutenko leg. (RC) and (Fig. 12) aedeagus, lateral view. Figure 9. *C. (M.) hummeli tristiculus*, Russia, Primorskyi reg., Shkotovka river, 10 km East from Novaya Moskva vil., A. Plutenko leg. (RC) and (Fig. 13) aedeagus, lateral view.

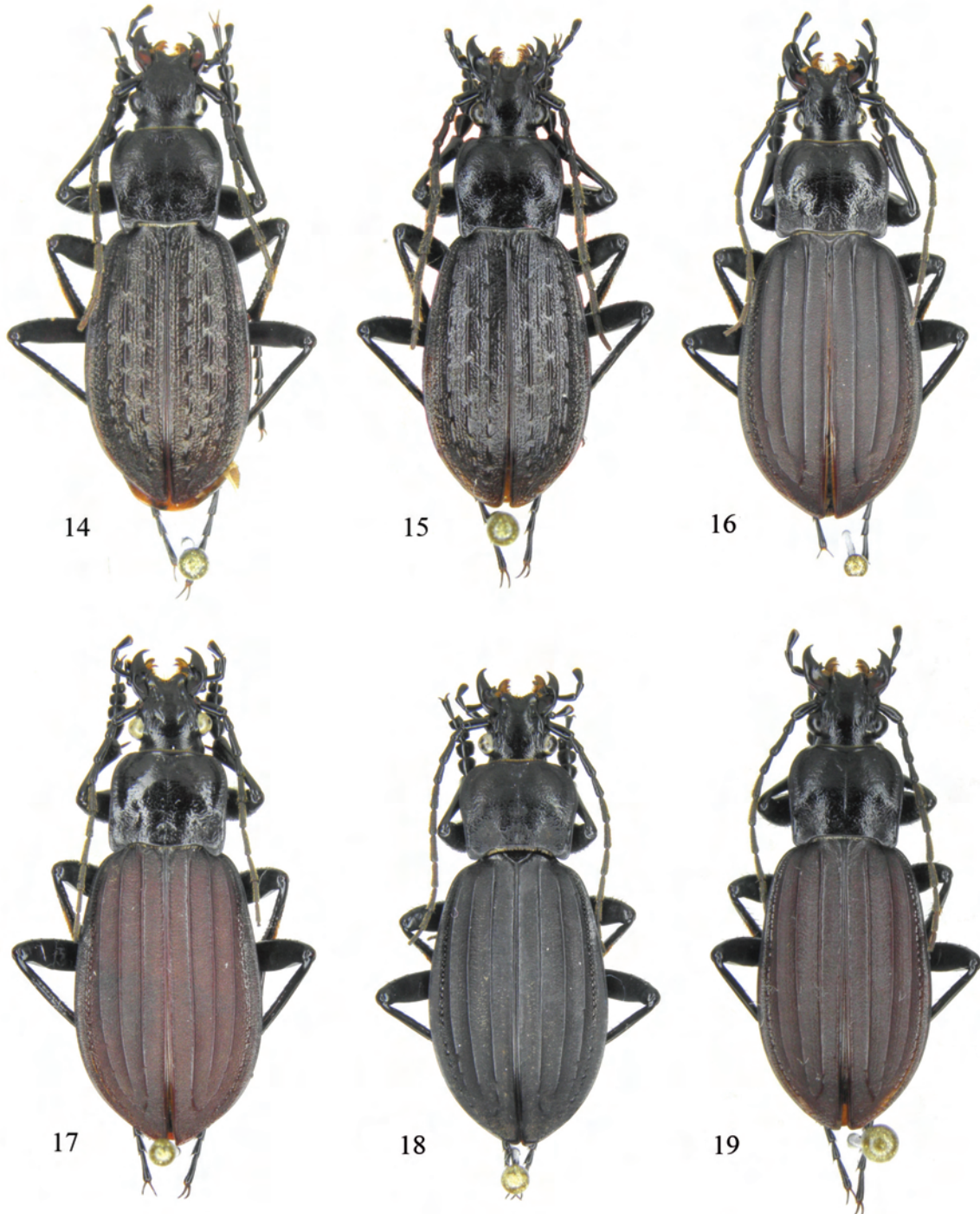


Figure 14. *Carabus (Aulonocarabus) gossarei* Haury, 1879. Russia, Primorskiy reg., Shkotovskiye distr., Anisimovka vill., Livadiyskiy Mt. Rng., 1000 m (CR). Figure 15. *C. (Aulonocarabus) gossarei mareschii*, holotypus, Askol'd Island (CR). Figure 16. *C. (Aulonocarabus) canaliculatus jankowskiellus*. Russia, Primorskiy reg., Maravyov, Bogataya riv., Okeanskiy khrebet, 150/200 m (CR). Figure 17. *C. (Aulonocarabus) canaliculatus jankowskiellus*, Reyneke island (CR). Figure 18. *C. (Aulonocarabus) careniger*. Russia, Primorje, Kamenushka (CR). Figure 19. *C. (Aulonocarabus) careniger*, Askol'd Island (CR).

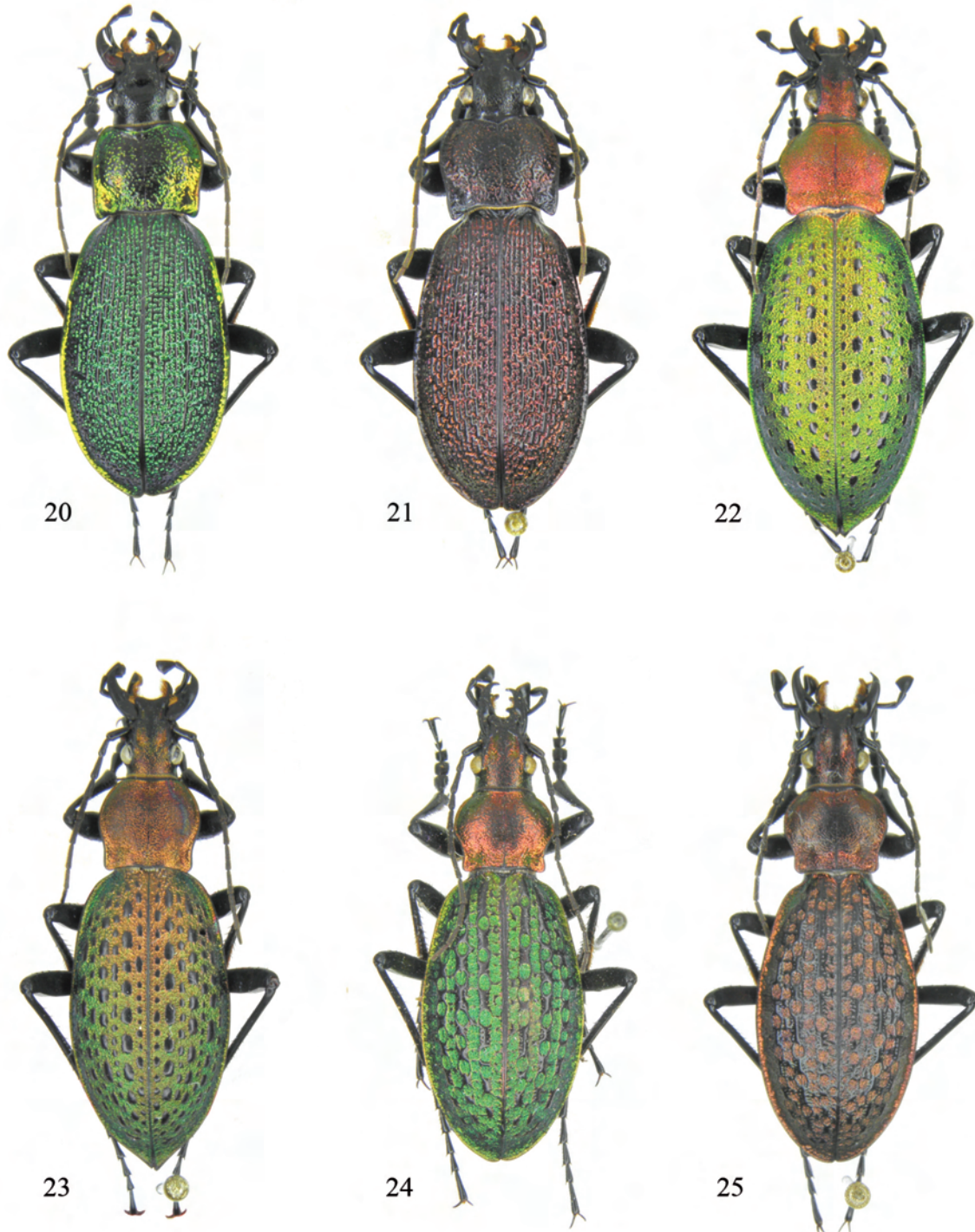


Figure 20. *Carabus (Megodontus) vietinghoffii caesareus* Semenov, 1906. Russia, Primorskiy reg., Zanadvorovka vill. env. (CR). Figure 21. *C. (Megodontus) vietinghoffii rugicolor*, holotypus, Reyneke island (CR). Figure 22. *C. (Coptolabrus) smaragdinus mandschuricus* Semenov, 1898. Russia, Primorskiy reg., Ertem env., Ozernyi kluch (CR). Figure 23. *C. (Coptolabrus) smaragdinus robinzoni*, holotypus, Reyneke island (CR). Figure 24. *C. (Acoptolabrus) schrencki* Motschulsky, 1860. Russia, Far East, Chernye Mts, Sukhaya (CR). Figure 25. *C. (Acoptolabrus) schrencki hauryi*, Putyatina Island, 50/200 m (CR).

5. *C. (Aulonocarabus) canaliculatus jankowskiellus* Deuve, 1991 (Figs. 16, 17)
6. *C. (Hemicarabus) tuberculatus* Dejean, 1829
7. *C. (Megodontus) vietinghoffii rugicolor* Rapuzzi, 2011 (Figs. 21, 26, and ssp. *caesareus* Semenov, 1906 Fig. 20)
8. *C. (Acoptolabrus) schrencki hauryi* Géhin, 1885
9. *C. (Coptolabrus) smaragdinus robinzoni* Rapuzzi, 2011 (Figs. 23, 29)

II. SHKOTA ISLAND

1. *C. (Parhomopterus) billbergi* Mannerheim, 1827
2. *C. (Carabus) granulatus telluris* Bates, 1883
3. *C. (Carabus) arvensis faldermanni* Dejean, 1829
4. *C. (Morphocarabus) venustus* Morawitz, 1862
5. *C. (Aulonocarabus) canaliculatus jankowskiellus* Deuve, 1991
6. *C. (Acoptolabrus) schrencki hauryi* Géhin, 1885 (Fig. 27)
7. *C. (Coptolabrus) smaragdinus* cfr. *mandschuricus* Semenov, 1898

III. PUTYATIN ISLAND

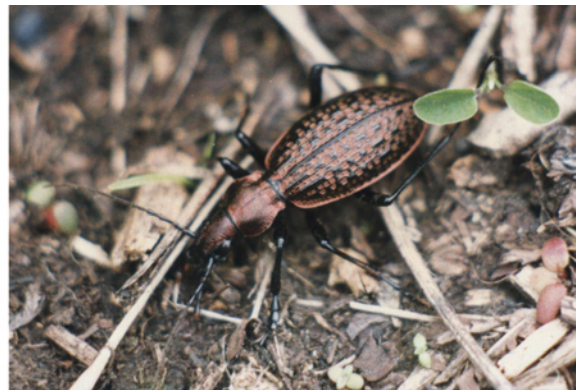
1. *C. (Parhomopterus) billbergi* Mannerheim, 1827
2. *C. (Carabus) granulatus telluris* Bates, 1883
3. *C. (Carabus) arvensis faldermanni* Dejean, 1829
4. *C. (Morphocarabus) venustus* Morawitz, 1862
5. *C. (Morphocarabus) hummeli putyatini* n. ssp.
6. *C. (Aulonocarabus) careniger* Chaudoir, 1863 (= *praedo* Semenov & Znojko, 1933)
7. *C. (Acoptolabrus) schrencki hauryi* Géhin, 1885 (Figs. 25, 28)

IV. ASKOL'D ISLAND

1. *C. (Parhomopterus) billbergi* Mannerheim, 1827
2. *C. (Carabus) granulatus telluris* Bates, 1883
3. *C. (Carabus) arvensis faldermanni* Dejean, 1829
4. *C. (Morphocarabus) venustus* Morawitz, 1862
5. *C. (Aulonocarabus) gossareii mareschii* Rapuzzi, 2011 (Figs. 14, 15)
6. *C. (Aulonocarabus) careniger* Chaudoir, 1863 (= *praedo* Semenov & Znojko, 1933) (Figs. 18, 19)



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Figure 26. *Carabus (M.) vietinghoffii rugicolor* from Reyneke Island. Figure 27. *C. (A.) schrencki hauryi* from Reyneke Island. Figure 28. *C. (A.) schrencki hauryi* from Putyatın Island. Figure 29. *C. (C.) smaragdinus robinzoni* from Reyneke Island.

7. *C. (Acoptolabrus) schrencki hauryi* Géhin, 1885
 8. *C. (Coptolabrus) smaragdinus* cfr. *mandschuricus* Semenov, 1898

V. POPOV ISLAND

1. *C. (Morphocarabus) hummeli vladobydovi* Obydov, 2009

CONCLUSIONS

The *Carabus* inhabiting the investigated islands of Peter the Great Gulf are closely related with the *Carabus* inhabiting the mainland. Five *Carabus* taxa of subspecific rank are endemic to single islands: *C. (Morphocarabus) hummeli vladobydovi*, *C. (Morphocarabus) hummeli putyatini* n. ssp., *C. (Aulonocarabus) gossarei mareschii*, *C. (Megodonus) vietinghoffi rugicolor*, *C. (Coptolabrus) smaragdinus robinzoni*. All the other *Carabus* are distributed on the mainland and islands.

Further investigation will be necessary to better understand the *Carabus* fauna of the region.

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