Review of species of genus *Cercyon* Leach, 1817 of Russia and adjacent regions. III. Subgenera *Clinocercyon* Orchymont, 1942 and *Conocercyon* Hebauer, 2003 (Coleoptera: Hydrophilidae)

S.K. Ryndevich

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Morphological diagnoses, distribution and environmental preferences of species of the subgenera *Clinocercyon* Orchymont, 1942 and *Conocercyon* Hebauer, 2003 from Russia and adjacent regions are presented. Subgenera *Clinocercyon* and *Conocercyon* are recorded from the Palaearctic for the first time, for some species previously placed in the subgenus *Cercyon*. Lectotypes of *Cercyon placidus* Sharp, *C. aequalis* Sharp, *C. rubicundus* Sharp, and *C. vagus* Sharp are designated.

S.K. Ryndevich, Baranovichy State University, Voykova ul. 21, Baranovichy 225404, Brest Prov., Belarus. E-mail: ryndevichsk@mail.ru

Introduction

The genus *Cercyon* Leach comprises 255 species, is of world-wide distribution and is subdivided into 11 subgenera. My previous articles on the *Cercyon* of Russia and the adjacent regions concern species of the *C. dux* group (Ryndevich, 2001), *C. lateralis* group (Ryndevich 2004a), *C. olibrus* group and *C. rotundulus* group (this issue), all of the subgenus *Cercyon*. The territory under study includes a significant part of Central and Eastern Palaearctic within the former Soviet Union and the adjacent countries of Europe and Asia.

I found that C. placidus, C. aequalis, C. rubicundus and C. vagus previously placed in the subgenus Cercyon (Zaitsev, 1908; Knish, 1924; Winkler, 1926; Hansen, 1999) belong to other subgenera, Clinocercyon Orchymont, 1942 and Conocercyon Hebauer, 2003. These species differ from those of the subgenus Cercyon, first of all, in having not flat horizontal epipleura of elytra, which is characteristic of the subgenera Clinocercyon and Conocercyon. The epipleura of elvtra are distinctly wedge-shaped and bent downwards in Clinocercyon, but only slightly wedge-shaped and bent downwards in Conocercyon. In addition, C. vagus has a characteristic feature of the subgenus Conocercyon: the prosternal process has an apical notch; its metasternum forms a ridge along the posterior margin of mesocoxal cavity, which diverges a little laterally from the cavity and bends backwards thus delimiting a small anterolateral portion of the metasternum (Fig. 10).

The subgenera *Clinocercyon* and *Conocercy*on are reported here from the Palaearctic for the first time. Hitherto, species of *Clinocercyon* were known from the Afrotropical (8 species), Oriental (6 species) and Australian (8 species) regions (Hansen, 1999; Hebauer, 2001, 2005). Hebauer (2003) separated 3 Afrotropical species previously placed in *Clinocercyon* and a new species from Madagascar into a new subgenus *Conocercyon*.

Some type specimens in NHML were provided with lectotype labels by A.G. Shatrovskiy, but as his lectotype designations have not been published, I have not cited these labels to avoid confusion.

Material and methods

The paper is based on collections of The Natural History Museum, London, U. K. (NHML), Zoological Institute of Russian Academy of Sciences, St.Petersburg, Russia (ZISP) and Zoological Museum of Moscow State University, Moscow, Russia (ZMUM).

The possibility of identification of *Cercyon* species according to habitus, colour, male genitalia, structure of mesosternum and metasternum was investigated. The criteria according to which species were united into groups were discussed earlier (Ryndevich, 2004a).

Subgenus Clinocercyon Orchymont, 1942

Type species: Cercyon grandis Castelnau, 1840.

The characteristic features of the subgenus are as follows: body from oval to broadly oval; dorsal convexity not interrupted between pronotum and elytra; epipleura of elytra wedge-shaped, bent downwards; preepisternal elevation forming an elongate subparallel platform and contacting metasternum in a single point; metasternum does not form a ridge delimiting its anterolateral portion (Fig. 11).

At present, the subgenus Clinocercyon includes 26 species (Cercyon aequalis Sharp, C. asperatus Hebauer, C. conjiciens (Walker), C. flaviventris Hebauer, C. fructicola Scott, C. fulvinasus Regimbart, C. fulviventris Hebauer, C. fuscostriatus Fairmaire, C. grandis Castelnau, C. humeronotus Hebauer, C. humeropictus Hebauer, C. incretus Orchymont, C. indicus Orchymont, C. javanus Orchymont, C. latecinctus Hebauer, C. lazarensis Orchymont, C. lentus Balfour-Browne, C. lineolatus (Motschulsky), C. nigerrimus Regimbart, C. placidus Sharp, C. ruber Hebauer, C. umbripennis Hebauer, C. vividus Orchymont, C. xanthaspis Hebauer).

Cercyon placidus group

The group includes species with the body broadly oval (index length/width 1.4-1.6), clypeus linear, head and pronotum reddish brown or brown, maxillary palpi pale, elytra from blackish brown to reddish brown, without microsculpture, elytral intervals flat (females have intervals slightly convex at apex), preepisternal elevation narrow, metasternum without femoral lines, length 2.4-2.5 mm.

Cercyon (Clinocercyon) placidus Sharp, 1884

Cercyon (Cercyon) placidus: Zaitsev, 1908; Knish, 1924; Winkler, 1926; Hansen, 1999.

Lectotype (designated here) Q (left) and paralectotype Q (right) on one card: "Cercyon placidus, Type D.S., Hitoyoshi Japan, 3.5.81, Lewis" (Sharp's writing), "Sharp Coll. 1905-313", "Type", "Syntype", "Lectotypus (left) Cercyon placidus Sharp, design. Ryndevich S., 2005", "Paralectotypus (right), Cercyon placidus Sharp, design. Ryndevich S., 2005 (NHML).

Note. I have not seen the specimen from Nikko mentioned by Sharp (1884) in the original description of *C. placidus*.

Description. Body broadly oval (index length/ width 1.5 in lectotype and 1.6 in paralectotype), getting narrower posteriorly, widest at base of elytra. Dorsal side convex, strongly shiny, without microsculpture. Head reddish brown, with distinct and very dense punctation, base broadly dark. Clypeus linear. Antennae and maxillary palpi yellow or brownish yellow. Pronotum reddish brown or brown, sides lighter, yellowish brown. Punctation of pronotum similar with that of head, but less dense. Pronotum widest at base. moderately narrowed anteriorly, without transverse series of punctures along posterior margin. Sides of pronotum weakly rounded. Lateral margins not continued round posterior angles. Scutellum and elytra blackish brown; elytral suture, sides, apex and humeral tubercles lighter, yellowish brown. Elytra with ten punctate striae. Intervals of elytra flat at base and slightly convex at apex, with very small and shallow punctation, smaller than that on head and pronotum and in punctate striae. Second interval anteriorly markedly wider than the third (starting with elytral suture) and more than twice as wide as first interval. Humeral tubercles distinct. Ventral side and legs yellowish brown, meso- and metasternum brown. Prosternum tectiform and strongly carinate medially. Metasternal pentagon shiny, with dense and shallow punctation, has two small deepenings in posterior and hardly appreciable central groove. Preepisternal elevation narrow (index length/width 3.7-3.8), parallel-sided, contacting metaventrite in a single point. Metasternum without femoral lines. First segment of abdomen with median carina, as long as second and third segments combined. Males unknown. Length 2.4-2.5 mm.

Distribution. Japan.

Environmental preferences. Unknown, probably the species inhabits decaying organic matter.

Cercyon (Clinocercyon) aequalis Sharp, 1884

Cercyon (Cercyon) aequalis Sharp, 1884; Knish, 1924; Winkler, 1926; Nakane, 1965; Hansen, 1999.

Cercyon (Cercyon) placidoides Zaytsev, 1908 (replacement name for *aequalis* Sharp, 1884).

Lectotype (designated here): of, "Cercyon æ qualis, Type D.S., Nikko, Japan, Lewis" (Sharp's writing), "Type", "Sharp Coll. 1905-313", "Syntype", "Lectotypus Cercyon aequalis Sharp, design. Ryndevich S., 2005" (NHML).

Paralectotype: 9, "Niko, 3.VI-21.VI.80", "Japan, Lewis, 1910-320", "Paralectotypus Cercyon aequalis Sharp, design. Ryndevich S., 2005" (NHML).

Description. This species is very similar to *C. placidus*. It differs from *C. placidus* in the form of body, colour and punctation of elytra, and width of elytral intervals.

Body broadly oval (index length/width 1.4-1.5). *C. aequalis* is lighter coloured in comparison with *C. placidus*: head reddish brown, elytra reddish brown to brown, base of elytral suture, humeral tubercles and apex of elytra lighter, yellowish brown. Intervals of elytra flat; females with slightly convex intervals at apex. Punctation of elytral intervals coarser. Second interval anteriorly as wide as or slightly narrower than the third, twice as wide as first interval. Preepisternal elevation narrow (index length/width 3.5-3.6), concave medially, almost parallel-sided. First segment of abdomen with median carina, 1.5 times as long as second segment. Male genitalia as in Figs 1-3. Length 2.4-2.5 mm.

Comparison. Sharp (1884) stated in the original description that \hat{C} . aequalis is extremely similar to C. placidus, but differs in the coarser punctation of thorax and elytra and less deep punctation in striae at the apex of elytra. However, the latter feature cannot be used for exact diagnostics of the species, especially of females. In several species (e.g., C. olibrus, C. vagus), the intervals of elytra are more convex in females than in males. The same is observed in the examined specimens of *C. aequalis*. The lectotype (male) of C. aequalis is lighter coloured than the paralectotype (female) and has virtually flat intervals of elytra at the apex, but the elytral intervals of the female are slightly convex at the apex. That is why it is better to use the width of the intervals and punctation of the elytra for distinguishing C. placidus and C. aequalis.

Distribution. Japan.

Environmental preferences. Unknown, probably the species inhabits decaying organic matter.

Cercyon rubicundus group

The group comprises species with broadly oval body (index length/width 1.2-1.3), linear clypeus, mostly reddish brown colour, pale maxillary palpi, flat elytral intervals, narrow preepisternal elevation, metasternum without femoral lines, length 1.9-2 mm.

Comparison. Species of the *C. rubicundus* group are similar to those of the *C. placidus* group in the structure of the male genitalia (apex of parameres, central lobe of genital segment and base of penis), colour of maxillary palpi, narrow preepisternal elevation and metasternum without femoral lines. They differ from species of the *C. placidus* group in the smaller size, wider body and usually lighter colour of elytra (species of the *C. placidus* group have elytra from blackish brown to reddish brown).

Cercyon (Clinocercyon) rubicundus Sharp, 1884

Cercyon (Cercyon) rubicundus: Knish, 1924; Zaitsev, 1908; Winkler, 1926; Hansen, 1999.

Lectotype (designated here): of, "Cercyon rubicundus, Type D.S., Nagasaki, Japan, 8.4.81, Lewis", "Type", "Sharp Coll. 1905-313", "Syntype", "dissected by A. Shatrovskiy 1987 and contained into D.M.H.F.", "Lecto-



Figs 1-6. Male genitalia of *Cercyon.* 1-3, *C. aequalis*; 4-6, *C. rubicundus.* 1, 4, tegmen with parameres; 2, 5, penis; 3, 8, genital segment. Scale: 0.5 mm.

typus Cercyon rubicundus Sharp, design. Ryndevich S., 2005" (NHML).

Paralectotype: 9, "Miynoshita", "Japan, Lewis, 1910-320", "Paralectotypus Cercyon rubicundus Sharp, design. Ryndevich S., 2005" (NHML). Other material examined. Japan: 1 specimen, "Ichiuchi, 30.IV-2.V.81", "Japan, Lewis, 1910-320" (NHML).

Description. Body broadly oval (index length/ width 1.2-1.3). Dorsal side rather strongly convex, shiny, without microsculpture. Main colour reddish brown, elytra reddish brown to brown, meso- and metasternum brown. Antennae and maxillary palpi yellow. Punctation of head and pronotum distinct and dense. Clypeus linear. Pronotum widest at base, strongly narrowed anteriorly, without transverse series of punctures along posterior margin. Sides of pronotum not rounded. Lateral margins not continued round posterior angles. Elvtra with nine punctate striae and one punctate row. Intervals of elytra flat. Punctation of elytral intervals larger and sparser than punctation of head and pronotum, diameter of punctures is slightly less than diameter of punctures in punctate striae and row. Prosternum tectiform, strongly carinate medially. Preepisternal elevation narrow (index length/width 2.9-3), with very large punctation. Metasternum without femoral lines. Metasternal pentagon shiny. Punctation of metasternum and metasternal pentagon very large and dense. First segment of abdomen with median carina, twice as long as second segment. Male genitalia as in Figs 4-6. Length 1.9-2 mm.

Comparison. C. rubicundus is similar to *C. ruber* Hebauer, but differs in the narrower body posteriorly, male genitalia and punctation of dorsal side. Surface of *C. ruber* is almost impunctate, whereas the punctation of surface in *C. rubicundus* is distinct and dense.

Distribution. Japan.

Environmental preferences. Unknown, probably the species inhabits decaying organic matter.

Subgenus Conocercyon Hebauer, 2003

Type species: Cercyon crenatostriatus Regimbart, 1903.

The characteristic features of the subgenus are as follows: body from oval to broadly oval; dorsal convexity not interrupted between pronotum and elytra; intervals of elytra convex and strongly convex at apex; epipleura of elytra slightly wedge-shaped, slightly bent downwards; preepisternal elevation forming an elongate subparallel platform and contacting metasternum in a single point. Metasternum forms a ridge along the posterior margin of mesocoxal cavity, which diverges a little laterally from the cavity and bends backwards, thus delimiting a small anterolateral portion of the metasternum (Fig. 10).

At present, the subgenus comprises 5 species: C. crenatostriatus Regimbart, C. luteopictus Balfour-Browne, C. pleuralis Hebauer, C. pyriformis Balfour-Browne, and C. vagus Sharp.

Comparison. Species of the subgenus Conocercyon are similar to those of the genus Armostus. However, species of Armostus have the apical segment of labial palpi a little shorter and much narrower than penultimate, elytral intervals strongly convex, metasternum forming a ridge along the posterior margin of mesocoxal cavity, which diverges a little laterally from the cavity and bends backwards, thus delimiting a large anterolateral portion of the metasternum (Fig. 12). Species of the subgenus *Conocercyon* have the apical segment of labial palpi as long as but narrower than the penultimate one. They have the metasternum with a ridge along the posterior mesocoxal margin diverging a little from it laterally and bending backwards delimiting a small anterolateral portion of the metasternum (Fig. 10).

Cercyon vagus group

The group comprises one species with broadly oval body, linear clypeus, black head, brown pronotum and elytra, pale maxillary palpi, convex elytral intervals, narrow preepisternal elevation, metasternum with femoral lines, length 2.5-2.8 mm. This species differs from other representatives of the genus in the metasternum with femoral lines.

Cercyon (Conocercyon) vagus Sharp, 1884

Cercyon (Cercyon) vagus: Zaitsev, 1908; Knish, 1924; Winkler, 1926; Nakane, 1965; Lee et al., 1988; Shatrovskiy, 1989, 1992; Hebauer, 1995; Hansen, 1999.

Lectotype (designated here): Q, "Cercyon vagus, Type D.S., Oyama, Japan, Lewis" (Sharp's writing), "Type", "Sharp Coll. 1905-313", "Syntype", "Lectotypus Cercyon vagus Sharp, design. Ryndevich S., 2005" (NHML).

Paralectotype: Q, "Syntype", "Miynoshita", "Japan, Lewis, 1910-320", "Cercyon vagus, D. S." (Sharp's writing), "Paralectotypus Cercyon vagus Sharp, design. Ryndevich S., 2005" (NHML).

Other material examined. Russia, Primorsk Terr.: 1 spcm, Kamenka nr. Ussuriysk, 15.VI.1984, leg. Nikitskiy (ZMUM); Kuril Islands: 1 spcm, Kunashir, nr. Mendeleevo, 15.VII.1985, leg. Nikitskiy (ZMUM); 1 spcm, Shikotan, Malokurilsk, leg. Kerzhner (ZISP).

Description. Body broadly oval (index length/ width 1.4-1.5). Dorsal side rather strongly convex, shiny, without microsculpture. Head black, with distinct and dense punctation. Clypeus linear. Antennae and maxillary palpi yellow. Pronotum reddish brown or brown, with yellowish brown sides, widest at base, strongly narrowed anteriorly, without transverse series of punctures along posterior margin. Sides of pronotum weakly rounded. Lateral margins not continued round posterior angles. Punctation of pronotum as that of head. Scutellum and elytra brown to dark brown. Elytral suture, sides, apex and humeral



Figs 7-12. Male genitalia and metasternum of *Cercyon* and *Armostus*. 7-9, male genitalia of *C. vagus* (7, tegmen with parameres; 8, penis; 9, genital segment); 10-12, metasternum (10, subgenus *Conocercyon* (*C. vagus*), anterolateral portion of metasternum shown with arrow; 11, subgenera *Clinocercyon* and *Cercyon*; 12, genus *Armostus*, anterolateral portion of metasternum shown with arrow). Scale to figures 7-9: 0.5 mm.

tubercles lighter, yellowish brown or reddish brown (dark specimens). Elytra with ten deep punctate striae. Intervals of elytra convex, strongly so at apex, with shallow and regular punctation smaller than that on head and pronotum and in punctate striae. Intervals of elytra more convex in females than in males. Punctation of elytral intervals very small and shallow. Ventral side brown to dark brown; elytral epipleura, apex of segments of abdomen and legs brownish or yellowish brown. Prosternum tectiform and finely carinate medially. Prosternal process with apical notch. Preepisternal elevation narrow (index length/width 3.5-3.8), narrowed posteriorly. Metasternum with femoral lines, forms a ridge along posterior margin of mesocoxal cavity, which diverges a little laterally from the cavity and bends backwards, thus delimiting a small anterolateral portion of the metasternum (Fig. 10). Punctation of metasternum coarse. Metasternal pentagon shiny, with regular and dense punctation. First segment of abdomen with median carina, more than twice as long as second segment. Male genitalia as in Figs 7-9. Length 2.5-2.8 mm.

Comparison. Among Palaearctic species, the closest to *C. vagus* is *C. costulipennis* Nakane,

1966. Nakane (1966), who described this species on the basis of the single male, states that it possesses weakly but distinctly costate intervals of elytra, which is a distinct differential feature among other species of the genus; besides, the colour of elytra and head are similar to those of C. vagus. The colour of head and pronotum, according to the original description, is closer to that of species of the C. lateralis group. However, intervals of elytra are not costate in species of this group. Only C. inquinatus Wollaston has slightly convex intervals of elytra at the apex (Ryndevich, 2004a). Unfortunately, it was impossible to get the holotype of C. costulipennis for study, that is why it is difficult to define to what subgenus or group of species this species belongs. It is quite possible that it belongs to the genus Armostus, that can be proved by such a feature as costate intervals of elytra.

Rather close to *C. vagus* is *C. alinae* Ryndevich, which has convex intervals of elytra and epipleura of elytra posteriorly slightly wedgeshaped. However, this species belongs to the subgenus *Cercyon*, though it was supposed to belong to *Conocercyon* when it was first described (Ryndevich 2004b). A more detailed study of morphological features drew me to the conclusion that *C. alinae* belongs to the subgenus *Cercyon*, because its metasternum does not form a ridge and does not delimit a small anterolateral portion of the metasternum. On the other hand, *C. alinae* has the epipleura of elytra a little bent downward, which makes this species closer to species of the subgenus *Conocercyon*.

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

Environmental preferences. Inhabits decaying organic matter.

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