

***Straneostichus* gen.n., a new genus and four new species from China**

(Coleoptera: Carabidae: Pterostichinae)

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Abstract

The new carabid genus *Straneostichus* gen.n. and four new species from China are described and figured. This new genus is allied to *Pterostichus* BONELLI, but the elytral discal setae are completely missing and the ostium of the aedeagus is rotated by 180°. The four species are *S. vignai* sp.n. (with ssp. *romani* n.) and *S. ovipennis* sp.n. from Sichuan, *S. kirschenhoferi* sp.n. from Yunnan and *S. fischeri* sp.n. from Gansu. The four species form two natural groups: the *S. vignai* group (including *S. vignai* sp.n. and *S. kirschenhoferi* sp.n.), characterized by the smooth head and multiple lateral setae of pronotum, and the *S. fischeri* group (including *S. fischeri* sp.n. and *S. ovipennis* sp.n.) characterized by the punctate head and single lateral seta of pronotum.

Key words: Carabidae, *Straneostichus*, new genus, new species, China, taxonomic revision.

Zusammenfassung

Die neue Gattung *Straneostichus* und vier neuen Arten aus China werden beschrieben und abgebildet. Diese Gattung ist mit *Pterostichus* BONELLI verwandt, aber die Discalborsten der Flügeldecken fehlen und das Ostium des Aedeagus ist um 180° gedreht. Die vier neuen Arten sind *S. vignai* sp.n. (mit ssp. *romani* n.) und *S. ovipennis* sp.n. aus Sichuan, *S. kirschenhoferi* sp.n. aus Yunnan und *S. fischeri* sp.n. aus Gansu. Sie bilden zwei natürliche Verwandtschaftsgruppen: die *vignai*-Gruppe (*S. vignai* sp.n. und *S. kirschenhoferi* sp.n.), charakterisiert durch den unpunktierter Kopf und einige Halsschildrandborsten, und die *S. fischeri*-Gruppe (*S. fischeri* sp.n. und *S. ovipennis* sp.n.) charakterisiert mit punktiertem Kopf und einer einzigen Halsschildrandborste.

The study of recently collected material of Carabidae from China by several entomological expeditions allowed me to discover four undescribed species of Pterostichini. Although superficially similar to various subgenera of *Pterostichus* BONELLI, the peculiar structure of their aedeagus, whose ostium is rotated by 180° in comparison to the "normal" *Pterostichus*, and the complete lack of elytral setae persuaded me that these species cannot be attributed to any of the genera known until today. The descriptions of the new genus and of the new species are given below.

Abbreviation: NMV - Naturhistorisches Museum in Wien (Vienna).

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Straneostichus gen. n.

Type-species: *Straneostichus vignai* sp.n.

Derivatio nominis. This genus of Pterostichinae is dedicated to Prof. Ing. S. L. Straneo, expert of this difficult subfamily of Carabidae.

Diagnosis. A genus of Pterostichinae close to *Pterostichus* but without discal setigerous punctures on elytra and with ostium rotated on the right and ventral side of the aedeagus.

Description. Colour metallic in all the species known up today, bronze, green or violet. Head strongly triangular, smooth or punctate. Mandibles long and slender, strongly curved at the tip; maxillary and labial palps long and slender.

Pronotum strongly restricted, generally sinuate, before the hind angles, that are right or obtuse. Basal and lateral setae present. Median sulcus deep and well-defined.

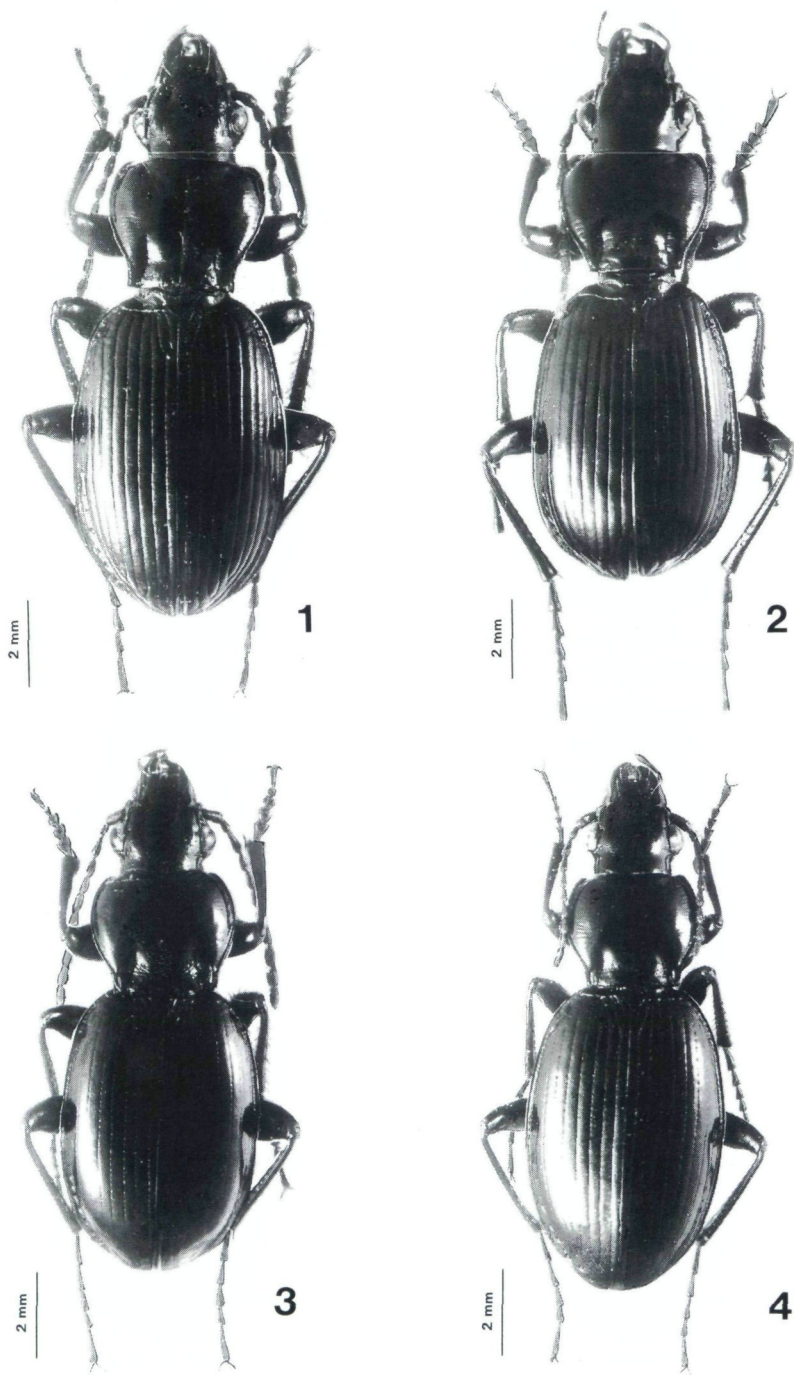
Elytra oval, without discal setigerous punctures. Scutellar stria and parascutellar seta present. Pygidium with two couples of setae in the female, one couple, seldom two, in the male. Legs long but thick. The three first protarsomeres of male evidently dilated. Three or four couples of setae under the onychium.

Aedeagus with rounded apex, apical lamella quite long, shovel-shaped; ostium migrated to the right and ventral side of the aedeagus.

Geographic distribution. All the species known live in south-western China, between northern Yunnan and southern Gansu. This is an area still of typically Palaearctic fauna, while at short distance, in southern Yunnan, many elements are Oriental, showing an endemism rate that is one of the highest known in the world.

Systematic position. Although similar in external appearance to several species of *Pterostichus* like e.g. *P. rutilans* or *P. walteri*, the species of this new genus possess some characters that indicate a position quite isolated within the subfamily Pterostichinae. Although the aedeagus has a rotated ostium, it is not "inverse", like in the genus *Pristosia* or in *Calathus mexicanus* (see LINDROTH 1956), because the "conchoid" paramere is on the left side and the "styloid" one on the right. I do not know any other species of Pterostichinae showing a similar structure. In the subg. *Rhagadus* of *Pterostichus*, that probably deserves generic status, the ostium is strongly moved to the left and ventral side of the aedeagus, but this is only a stronger development of a tendency typical of the tribe Pterostichini (*sensu* JEANNEL 1942). The rotation of the ostium of *Straneostichus*, on the other hand, is completely different from that and seems to have occurred in a different way. Anyway, this is perhaps the only known instance within this subfamily in which the aedeagus can almost be defined "catopic".

The position of the ostium is not an "absolute" character as JEANNEL (1942) believed. As a matter of fact there are some subgenera in which it is almost symmetrical (e.g. *Euryperis* and *Feroperis*), even though they certainly belong to the genus *Pterostichus*. In the case of *Straneostichus* gen.n. the rotation is so evident and strong that I cannot consider it as a simple variation within the genus *Pterostichus*. A similar rotation can be observed, outside the Pterostichinae but among the Lebiinae, in the genus *Pseudomasoreus*, whose species have the ostium rotated of 180° if compared with those of the related genus *Cymindis* (JEANNEL 1942).



Figs. 1 - 4: Habitus of (1) *Straneostichus vignai* sp.n., (2) *S. kirschenhoferi* sp.n., (3) *S. fischeri* sp.n., (4) *S. ovipennis* sp.n.

This character is so unusual among Pterostichinae that I am inclined to give it a primary importance and describe *Straneostichus* gen.n. as a separate genus. Even though the systematics of the subfamily Pterostichinae is not clear enough yet, the position of the ostium and the lack of elytral setae make me believe that the position of this group cannot be inside the genus *Pterostichus*, but must be outside, as a separate genus.

***Straneostichus vignai* sp.n.**

Locus typicus: China, N Sichuan, 30 km N of Nanping, Jiuzhaigou, 3100 m.

Type-series. Holotypus ♂, 13-15.VI.1992, leg. Turna (NMV). 7 paratypes ♂♂♀♀ collected with holotypus, leg. Turna, in coll. Sciaky; 4 paratypes ♂♂♀♀ from Jiuzhaigou, m 3100-3150, 15.VII.1992, leg. A., G. and M. Casale, in coll. Casale; 2 paratypes ♂♀ from Jiuzhaigou, m 2750-3100, 9.VII.1992, leg. A., G. and M. Casale, in coll. Casale; 1 paratype ♀ from Uang Long, m 3100-3200, 12.-14.VII.1992, leg. A., G. and M. Casale, in coll. Casale; 5 paratypes ♂♂♀♀ from Nanping, Jiuzhaigou, m 3100, Long Lake, 10.-15.VII.1992, leg. Vigna Taglianti, in coll. Vigna Taglianti and Sciaky; 1 paratype ♀ from Nanping, Jiuzhaigou, m 3000, Sword Rock, 10.-15.VII.1992, leg. Vigna Taglianti, in coll. Vigna Taglianti; 1 paratype ♀ from N Sichuan, Sanggarpar, m 4200, 28.VI.1991, leg. Kaláb, in coll. Sciaky.

Diagnosis. A *Straneostichus* of medium size (11.9 - 14.8 mm), superiorly violet, with three or four lateral setae of pronotum and sides strongly sinuate before the hind angles.

Habitus (Fig. 1). Size 11.9 - 14.8 mm. Colour violet on head, pronotum and elytra.

Head smooth, only in a few specimens with a few additional points behind the eyes, frontal sulci moderately deep, eyes very big and convex. Mouth parts blackish.

Pronotum weakly transverse; sides almost parallel in the anterior half, markedly sinuate towards the base. Anterior angles weakly projecting forward, basal angles right. Anterior margin almost straight, base weakly bisinuate. Basal impression single, linear, deep and impunctate; lateral gutter narrow and well-defined almost until the hind angles. Three or four setiferous punctures along the sides; in the anterior half, the posterior one sometimes just after the middle.

Elytra rather wide, regularly rounded at sides, widest in middle (male) or little after it (females), with rounded shoulders. Basal margin forming a curve with the lateral one. Striae deep and impunctate, intervals distinctly convex.

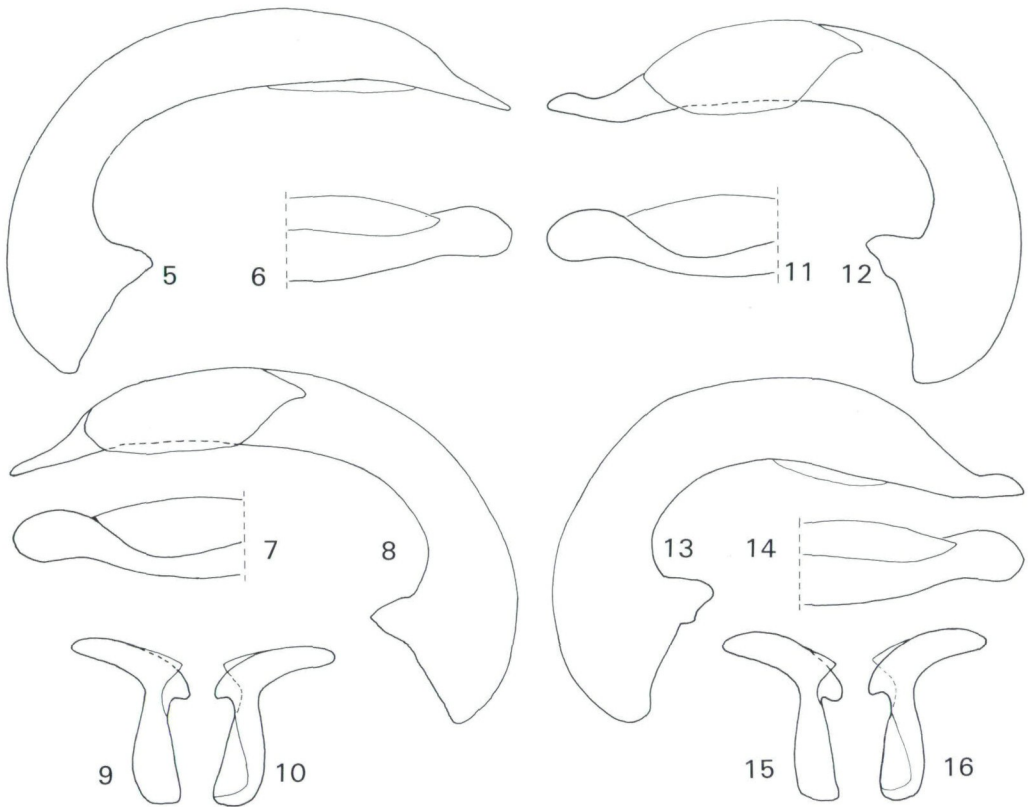
Legs moderately long and slender, completely black.

Aedeagus (figs. 5 - 8) long and slender, apex sinuate, dilated in preapical portion. Right paramere (figs. 9 - 10) quite long, bent at obtuse angle almost in the middle.

Systematic observations. This species is more closely allied to *Straneostichus kirschenhoferi* sp.n. than to the other two species here described; the two share three important characters, namely the smooth head, the multiplication of the marginal pronotal setae and the laterobasal impressions of pronotum which are single, linear and impunctate.

Distribution. This species has been collected both in cloud forest and in alpine meadows at elevations varying from 2750 to 4200 m. The two localities are in northern Sichuan, in areas where recent explorations are revealing an unsuspectedly rich and varied fauna of Carabidae.

Derivatio nominis. This species is dedicated to my dearest friend Prof. Augusto Vigna Taglianti from Rome, whom I consider one of my teachers in the study of Carabidae.



Figs. 5 - 10: *Straneostichus vignai vignai*: Aedeagus in (5) left lateral, (6) superior, (7) ventral and (8) right lateral view; right paramere in (9) right and (10) left view.

Figs 11 - 16: *Straneostichus vignai romani*: Aedeagus in (11) ventral, (12) right lateral, (13) left lateral and (14) superior view; right paramere in (15) right and (16) left view.

Straneostichus vignai romani ssp.n.

Locus typicus: China, W Sichuan, Zhi-Long (Shou-Ji).

Type-series. Holotypus ♂, 3-8.VIII.1992, leg. Sauer, in coll. Sciaky; 2 paratypes ♂♂ collected with holotypus in coll. Pavese and Sciaky.

Diagnosis. A *Straneostichus* very similar to *S. vignai vignai*, from which it differs mainly in the shape of aedeagus, without preapical sinuation.

Description. The new subspecies differs from *S. vignai vignai* in the following characters: head constantly smooth, without additional points behind the eyes, shoulders weakly angulate, aedeagus shorter and thicker, in lateral view with preapical sinuation (figs. 11 - 14), right paramere slenderer in the proximal portion (figs. 15 - 16).

Systematic observations. Although in the beginning I thought that the specimens from northern and western Sichuan might belong to the same taxon, the differences in the

aedeagal structure persuaded me to describe the populations from western Sichuan as a distinct subspecies. The differences in the structure of aedeagus are not inferior to those observed among other species, but the external aspect is so similar that I prefer to describe *S. v. romani* ssp.n. as a subspecies of *S. vignai* rather than as a distinct species.

Distribution. Known from a few specimens collected in western Sichuan, apparently missing from other stations of the same region frequently explored in recent years, like Emei Shan or Gongga Shan. It seems, therefore, that this subspecies is rarer than *S. vignai vignai*.

Derivatio nominis. Dedicated to my friend Roman Sauer, from Prague, who has often collected and presented me with very interesting material.

Straneostichus kirschenhoferi sp.n.

Locus typicus: China, Yunnan, Heishui, 35 km N Lijiang, 27°13'N 100°19'E.

Type-series. Holotypus ♂, 1-19.VII.1992, leg. Jendek (NMV). 20 paratypes ♂♂♀♀ collected with holotypus, leg. Jendek and Bečvář, in coll. NMV, Pavese and Sciaky; 18 paratypes ♂♂♀♀ topotypical, 18.VI-4.VII.1993, leg. Bečvář, in coll. Bulirsch, Pavese and Sciaky.

Diagnosis. The largest *Straneostichus* known to day (12.8 - 15.1 mm); dark metallic green, with pronotum weakly sinuate before the base and the hind angles obtuse. Elytra rather wide, dilated at middle.

Habitus (Fig. 2). Size 12.8 - 15.1 mm. Colour dark metallic green on head, pronotum and elytra.

Head smooth, frontal sulci moderately deep, eyes very big and convex. Mouth parts blackish.

Pronotum weakly transverse; sides regularly rounded in anterior half, weakly sinuate towards base. Anterior angles weakly projecting forward, basal angles obtuse. Anterior margin almost straight, base weakly bisinuate. Basal impression single, linear, deep and impunctate; lateral gutter narrow and well-defined almost until the hind angles. Three or four setigerous punctures on the sides, in anterior half.

Elytra rather wide, regularly rounded at the sides, widest at two-thirds, with rounded shoulders. Basal margin forming a curve with the lateral one. Striae deep and impunctate, intervals distinctly convex.

Legs moderately long and slender, completely black.

Aedeagus (figs. 17 - 20) long and slender, apex weakly sinuate, dilated in preapical portion. Right paramere (figs. 21 - 22) quite long, obtusely angulate near middle.

Systematic observations. This species is certainly allied to *S. vignai* sp.n. (see above). They share the lack of punctuation on head and the multiple lateral setae of pronotum, but differ in the shape of pronotum and the proportion of elytra.

Distribution. Known only from a single locality in northern Yunnan, where it had been found by two expeditions in 1992 and 1993. In the same locality many interesting species

of *Pterostichus* of several subgenera have been found, some of which are new (SCIACY 1994), but all belonging to groups whose distribution center is certainly in Sichuan.

Derivatio nominis. This species is dedicated to Mr. Erich Kirschenhofer (Perchtoldsdorf near Vienna), well known specialist of Carabidae, who, having several specimens of this species, kindly accepted to let me describe it.

Straneostichus fischeri sp.n.

Locus typicus: China, Gansu, 120 km SW of Lanzhou, Ponggartang.

Type-series. Holotypus ♂, 30.VI-2.VII.1992, leg. Turna, in coll. Sciaky. 7 paratypes ♂♂♀♀ collected with holotypus, in coll. Sciaky and Pavesi. 7 paratypes ♂♂♀♀ from Gansu, Xiahe env., VII.1992, leg. Bousquent, in coll. Dacatra, Sciaky and Pavesi.

Diagnosis. The smallest *Straneostichus* known to day (11.2 - 12.1 mm), bronze-green, with punctate head, strongly transverse pronotum with a single lateral seta on each side and basal angles right. Elytra short and wide, regularly rounded at sides.

Habitus (Fig. 3). Size 11.2 - 12.1 mm. Colour green or bronze on head, pronotum and elytra.

Frons covered with sparse punctation, frontal sulci moderately deep, eyes very big and convex. Mouth parts dark brown.

Pronotum transverse; sides restricted in anterior half, markedly sinuate towards base. Anterior angles hardly projecting forward, basal angles right. Anterior margin almost straight, base weakly bisinuate. Basal impressions double, deep and punctate; lateral gutter narrow and well-defined until hind angles. One setigerous puncture in anterior half.

Elytra rather wide, regularly rounded at sides, widest in the middle or before it, with rounded shoulders. Basal margin forming an obtuse angle with the lateral one. Striae superficial but punctate, intervals flat.

Legs moderately long and slender, dark brown or blackish, but never clearly black.

Aedeagus (figs. 23 - 26) long and slender, apex distinctly pointed downward, not dilated in preapical portion. Right paramere (figs. 27 - 28) quite long, bent at obtuse angle almost in the middle.

Systematic observations. This species is certainly more allied to *S. ovipennis* sp.n. (see below) than to the two species described above. They share the punctation on head and the single lateral seta of pronotum, but differ in the shape of pronotum and the proportions of their elytra.

Distribution. This species is known only from southern Gansu, an area whose fauna is similar to that of Sichuan. As an example of this I can mention *Pterostichus* subg. *Morphohaptoderus* TSCHITSCHERINE, of which ten are endemic to Sichuan, one to Gansu and one which lives in both regions (SCIACY 1994).

Derivatio nominis. I am glad to name this new species in honor of Dr. Max Fischer, Head of the Entomological department of the NMV, for his retirement.

Straneostichus ovipennis sp.n.

Locus typicus: China, N Sichuan, Hongyuan, 4200 m.

Type-series. Holotypus ♀, 21.VII.1991, leg. Málek, in coll. Sciaky. 2 paratypes ♀♀ collected with holotypus in coll. Pavesi and Sciaky.

Diagnosis. A rather small *Straneostichus* (11.2 - 12.6 mm), light green, with punctate head, weakly transverse pronotum with a single lateral seta on each side and basal angles obtuse. Elytra long and narrow, gently rounded at sides.

Habitus (Fig. 4). Size 11.2 - 12.6 mm. Colour green with bronze reflections on head, pronotum and elytra.

Frons covered with sparse punctation, frontal sulci moderately deep, eyes very big and convex. Mouth parts dark brown.

Pronotum transverse; sides restricted in anterior half, weakly and shortly sinuate towards base. Anterior angles hardly projecting forward, basal angles obtuse. Anterior margin almost straight, base weakly bisinuate. Basal impressions double, deep and punctate; lateral gutter narrow and well-defined until the hind angles. One setigerous puncture in anterior half.

Elytra rather long and narrow, rounded at sides, widest after middle, with rounded shoulders. Basal margin forming an obtuse angle with the lateral one. Striae deep and punctate, intervals flat.

Legs moderately long and slender, completely black.

Male unknown.

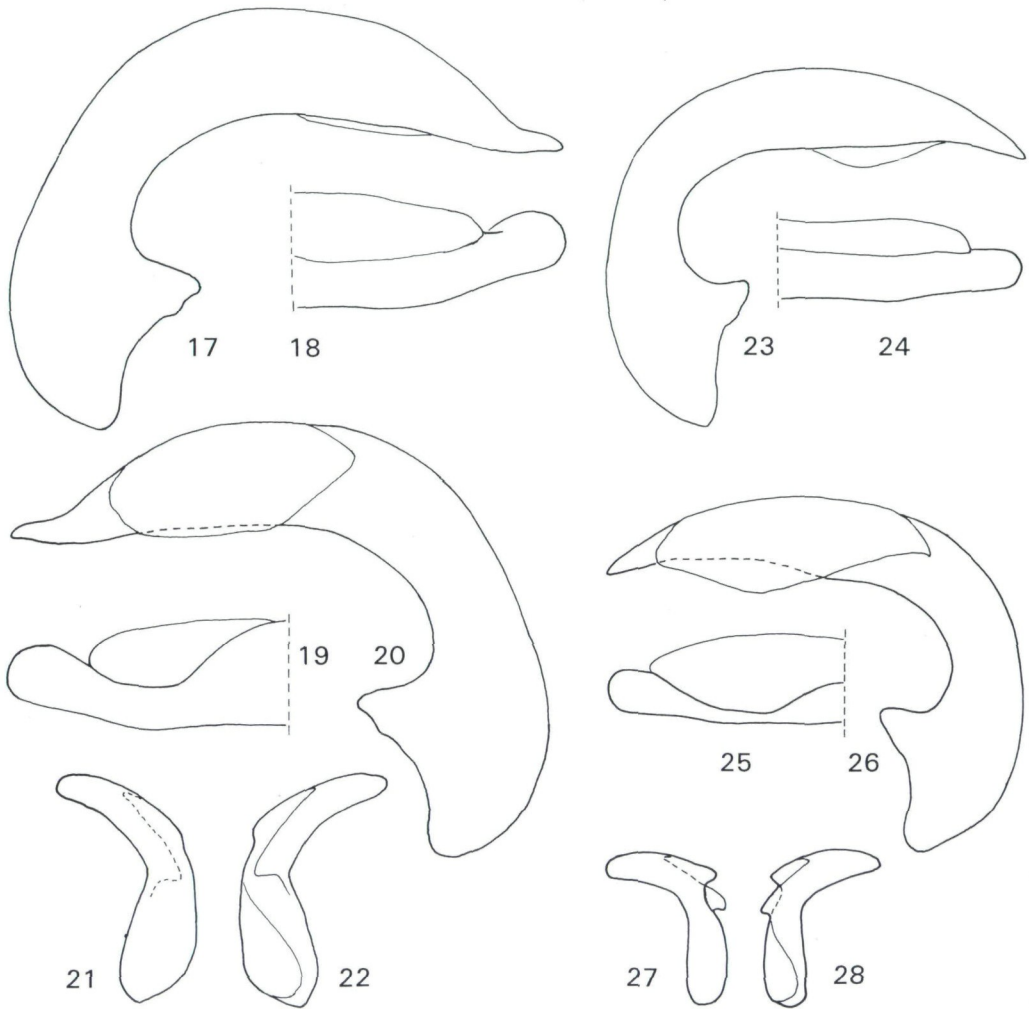
Systematic observations. Even though this species is known only from three female specimens, it seems related to *S. fischeri* sp.n. The punctate head and single lateral setigerous puncture of pronotum isolate these two species from *S. vignai* sp.n. and *S. kirschenhoferi* sp.n. The longer elytra, the darker legs and the more deeply engraved striae allow an easy distinction between *S. ovipennis* sp.n. and *S. fischeri* sp.n.

Distribution. This species is known from northern Sichuan, almost the same region where *S. vignai vignai* has been collected. In spite of this, I do not know any locality where the two species have been found in sympatry.

Derivatio nominis. This name, derived from Latin, alludes to the ovoid shape of the elytra.

Final observations

The four species here described altogether occupy an area quite homogeneous from the faunistic point of view, although very rich in endemic elements. If new species of this genus are to be found, I can expect this to occur in eastern Qinghai or maybe in southern Shaanxi, two regions still very inadequately explored from the faunistic point of view, whose exploration will certainly allow discovery of many new taxa.



Figs. 17 - 22: *Straneostichus kirschenhoferi* sp.n.: Aedeagus in (17) left lateral, (18) superior, (19) ventral and (20) right lateral view; right paramere in (21) right and (22) left view.

Figs. 23 - 28: *Straneostichus fischeri* sp.n.: Aedeagus in (23) left lateral, (24) superior, (25) ventral and (26) right lateral view; right paramere in (27) right and (28) left view.

Key to the species and subspecies of *Straneostichus*

- | | | |
|---|--|-------------------------|
| 1 | three or four setigerous punctures on the sides of pronotum; head smooth | 2 |
| - | only one setigerous puncture on the sides of pronotum; head punctate | 4 |
| 2 | color violet, basal angles of pronotum right; Sichuan | 3 |
| - | color dark green, basal angles of pronotum obtuse, Yunnan | <i>S.kirschenhoferi</i> |

- 3 shoulders completely rounded, aedeagus with apex not sinuate (figs. 5, 7), Northern Sichuan..... *S. vignai* ssp. *vignai*
- shoulders weakly angulate, aedeagus with apex sinuate (figs. 11, 13), Western Sichuan..... *S. vignai* ssp. *romani*
- 4 elytra very short and wide (length/width ratio < 1.5), Gansu *S. fischeri*
- elytra longer and slenderer (length/width ratio > 1.5), Sichuan *S. ovipennis*

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