

STUDIES ON TIGER BEETLES. XC. REVISION OF THE
NEOTROPICAL GENUS *PSEUDOXYCHEILA* GUÉRIN, 1839
(Coleoptera, Cicindelidae)

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INTRODUCTION

The tiger beetle species *Cicindela bipustulata* was described by Latreille (1811), based on material collected by Alexander von Humboldt during his famous expedition to Nueva Grenada. According to the subsequent description given by Dejean (1831), who certainly had the type-specimen(s) for his personal examination, this species is distinctive for the dark blue colour of the body, the black labrum and appendages and the roundish yellow spot, surrounded by a larger velvety blackish area, in the middle of each elytron. Dejean ascribed the species to his newly created genus *Oxycheila* (type species: *Cicindela tristis* Fabricius, 1775), but Guérin-Ménéville (1839) later placed it by its own in a separate new genus, *Pseudoxycheila*.

The exact type locality of *P. bipustulata* is not clear. Latreille (1811) indicated that the insect was found on the Amazon River ("Cette cicindèle est abondante sur les sables humides de la rivière des Amazones"). Dejean (1831) repeated Latreille's locality data and, moreover, added Colombia as the finding locality of the species ("M. Humboldt l'a trouvée abondamment sur les sables humides de la rivière des Amazones. Elle m'a aussi été donnée par M. Goudot, qui l'avait reçue de la Colombie"). However, in a later work, Dejean (1837) simply cited Colombia as the place of origin for *bipustulata*. Chaudoir (1848), on the other hand, indicated a more southern locality, the Río Marañón in Peru, which is a major tributary of the Río Amazon ("Il n'est pas inutile d'observer que les individus qui ont servi de type à Latreille avaient été trouvés par M. de Humboldt sur les bords du Maranon"). Thomson (1857) also mentioned only "Colombie" as the species' type locality. In a personal short note

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which Humboldt himself added to the introduction of Latreille's paper (1811, page 17), Humboldt said that these insects had been collected by his companion, the French botanist A.J.G. Bonpland.

As a matter of fact, Humboldt's 1801-1802 journey did not reach the Río Amazon itself. The famous German geographer and explorer, together with A.J.G. Bonpland, starting from the Caribbean coast on March 1801, went up the Río Magdalena in present-day Colombia to Bogotá, then crossed south-west (via Ibagué-Palmira-Popayán-Tulcán-Ibarra) through Quito and eastern Ecuador, finally reaching the Río Marañón, a large tributary of the River Amazon, near Jaén and Chamaya in northern Peru. They then continued through the mountains on their way to Lima, which they reached in October 1802 (Papavero 1971). Humboldt's "Relation Historique", however, closes its narration on the northern reaches of the Río Magdalena (Humboldt, von 1814-25), and a detailed account of the subsequent trip was never published. Thus, theoretically, both Colombia and the Río Marañón could have been the original type locality of *P. bipustulata*. The former, however, is more credible because no *Pseudoxycheila* species are known to occur on riverbeds or riverbanks. In contrast, *Pseudoxycheila* are known to be mountain dwellers, occupying sloping clay or sandy surfaces along streams, roadcuts and paths at higher altitudes. Latreille's and Dejean's second-hand assumptions about the species' habitat are likely erroneous.

In addition to *bipustulata*, other taxa were subsequently described, namely *P. lateguttata* Chaudoir from Colombia (Chaudoir 1844), *P. angustata* Chaudoir from eastern Peru (Chaudoir 1865), *P. ceratoma* Chaudoir from "Nouvelle Grénade" (Chaudoir 1865), *P. tarsalis* Bates from Costa Rica (Bates 1869) and *P. chaudiroi* Dokhtouroff from Ecuador (Dokhtouroff 1882 and 1883). Bates (1881-84) stated that "five species, feebly differentiated from each other, are known". Fleutiaux (1892), in his Catalogue, also listed five species (*bipustulata*, *lateguttata*, *ceratoma*, *tarsalis*, *angustata*) and considered *chaudoiri* synonymous with *angustata*. Later, however, Walther Horn (1904, 1905, 1910, 1926) synonymized all these forms into a single species, *bipustulata*. Horn kept *ceratoma* and *tarsalis* as subspecies only, but he also described an immaculated individual form ("aberr." *immaculata*, from Pozuzo, Peru) (Horn 1905) and an additional "subspecies" *oxychiloides* from the western range of the Andes of Ecuador (Horn 1927).

More recently *P. tarsalis* has frequently been referred to as a full distinct species (Palmer 1976b and 1976c, Boyd 1982, Wiesner 1992), but the overall status of the genus presently follows the earlier concept of Horn (Blackwelder 1944, Mandl 1941, 1963, 1967; Reichardt 1977; Wiesner 1992). However, early data (partially incorrect) from the present study have been advanced by Nuñez Terán (1994), Fernandez et al. (1994), Pearson (1994), Rodriguez et al. (1994) and Nuñez T. et al. (1994, 1995). More recently, summarized final results have been presented to the XX International Congress of Entomology (Firenze, August 1996) (Cassola 1996).

My interest in *Pseudoxycheila* dates back to 1988, when upon closer scrutiny I came to the conclusion that *ceratoma* is definitely a species distinct from *bipustulata*. This discovery led me to broaden my investigation into the systematics of this intriguing Neotropical genus. In subsequent years I examined nearly 4000 specimens from many different parts of Andean South America and associated Central America (but principally from Costa Rica, Colombia, Ecuador and Bolivia). Much to my surprise, I found that *Pseudoxycheila*, far from being a monobasic genus (Reichardt 1977), is definitely a polytypic genus, including at least twenty-one different species.

Despite a similar general appearance and lack of formally distinctive external characters, examination of male genitalia and other features led me to restore all the previously described taxa as fully distinct species as well as to describe several additional new species. In addition to the shape of penis, most of these species also exhibit often subtle differences in colour, pronotal or elytral shape, proportions of body parts, as well as the general facies. With experience one can discriminate the various species, especially if a reasonably long series of specimens is available. Before the present study even my own earlier identifications were often erroneous. All my determinations subsequent to 1995 and included in the present paper are confirmed with red labels pinned on type specimens or pale green identification labels. All the rest of my determinations (not re-checked, doubtful or tentative identifications) are indicated by white labels only.

However, considerable difficulties in proper discrimination still can be encountered when only a single or female specimens are available. The apparent sympatry of several of these species often makes their separation even more difficult, but it clearly reinforces

my current concept of *Pseudoxycheila* and points to reproductive isolation. It also underscores the good insight of early authors such as Chaudoir, Bates and Dokhtouroff, who, despite the scanty material examined and the lack of profound anatomic background, correctly perceived the forms they described as full distinct species. Walther Horn took the opposite extreme and again lumped them all into *bipustulata*, and moreover he described as a subspecies or only as a simple individual "aberration" the additional new species (*oxychiloides* and *immaculata*) he happened to come across.

Due to the uncertainty of the type locality for *P. bipustulata*, the general taxonomic assessment proposed here must be regarded as preliminary and somewhat tentative. Ironically, one of the least known species in this study proved to be *bipustulata* itself, of which only a limited number of specimens is known. The study of more specimens from additional areas (especially from Colombia), as well as behavioural and ecological field observations of sympatric species, would be an appropriate test of the reproductive isolation necessary to maintain the various species and to validate the systematics I propose for this difficult South American tiger beetle group.

As far as possible, finding localities of the specimens studied have been located and mapped by consulting various geographic atlases as well as maps or travel guides such as those by Dydynski (1988, 1994), Gómez (1996), Keller et al. (1994), Pearson & Middleton (1996), Rachowiecki (1991, 1994) and Swaney (1988).

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SYSTEMATICS

Genus **Pseudoxycheila** Guérin, 1839

Guérin, Dict. pittor. d' Hist. nat. VI, 1839, p. 573, pl. 438, f. 2 (Type-species: *Cicindela bipustulata* Latreille, 1811).

Syn.: *Centrocheila* Lacordaire, 1843, Mém. Soc. Sci. Liège I, p. 91, 98; *Pseudoxychila* Agassiz, 1846 (unjustified emendation: Huber 1986); *Centrochila* Agassiz, 1846 (unjustified emendation: Huber 1986).

IDENTIFICATION. Ground-dweller, medium-sized to large, small-eyed, Neotropical cicindelid beetles, found at lower to middle altitudes of the Andean slopes. Labrum long, dentate, narrowed after base, leaving the mandibles visible at sides; labrum, mouthparts, articles 1-4 of antennae and legs usually pitchy- to shining black. Upperside dark, sericeous, with green, blue or indigo reflections; a large oval velvety black dull area on each elytron, surrounding a roundish, yellow to orange, discal spot in the middle.

DESCRIPTION. Head large, strongly built, as wide as pronotum, no or poorly restricted behind, slightly rounded on cheeks, with just two slight depressions behind the antennal insertion; neck large, thick, subparallel-sided, slightly convex above. Surface nearly smooth, without any apparent striation, completely glabrous, only two iuxtaorbital sensorial hairs near both eyes. Ground colour usually dark, dull, with greenish, bluish or indigo metallic reflections giving the surface a slightly sericeous hue. Eyes small, nearly hemispheric, moderately protuberant.

Labrum shining black, usually longer than its basal width, more or less suddenly narrowed after the base into a long, protruding, laterally dentate point, which leaves the mandibles uncovered at sides; lateral teeth five to seven in number, more or less sharp, with a single long erect seta in each interval between. Mandibles also shining black, sometimes duller, brownish- to pitchy black, with three inner teeth besides the apical tooth and the basal molar. Labial and maxillary palpi shining black; last joint of maxillary palpi shorter than the penultimate one.

Antennae moderately long, usually longer in the males, reaching from one third to past the middle of the elytral length. Scape and articles 2-4 shining black: scape thick, glabrous, with a single hair near the tip; article 2 small, very short; 3rd and 4th joints glabrous, clearly thickened at the apical ends, usually stronger in males, the third one always longer than fourth. Fifth segment of antennae rather unusual in shape, typical of the genus, somewhat intermediate in appearance between articles 1-4 and the outer ones: usually as long or scarcely longer than fourth, slightly compressed laterally, barely curved in shape, partially glabrous and shining black at base, slightly rufescent or dull black in the remaining part, where it is covered with a very fine, short, regular pubescence. Antennomeres 6-11 more tenuous, slender, finely and regularly pubescent.

Pronotum more or less cordiform, as long or slightly longer than wide, sometimes rather trapezoid-shaped or parallel-sided in front half. Front and hind lobes well pronounced, the former usually larger than the latter; transverse grooves more or less evident, discal lobes rounded, moderately convex. Surface and colour as those of head. Notopleural sutures well below the border of pronotum, with a more or less wide epipleural rim in between. Episterna fully glabrous; no clear female coupling sulci are noticeable on mesepisterna.

Elytra more or less elongate and oval-shaped, glabrous, smooth, punctate just near the base; apical angle subtruncate, rounded, sometimes with a very short, blunt, sutural tooth. Shoulders usually large, rounded, well-marked, sometimes even protruding outwards, with some spiniform punctures more or less visible from above. Greenish, bluish or indigo metallic reflections on base, shoulders, the lateral gutter and the apical part; a large rounded velvety black areole in the middle, sometimes protruding in the middle towards the base, surrounding a roundish discal spot (pale yellow to orange in colour) on each elytron. Epipleura dark with metallic reflections.

Hind wings normally shaped, apparently functional to flight, even if the beetles rarely fly. Wing venation lacking the Oblongum Cell, with fourth median vein (M4) situated at the anterior branch of Cubitus (Cu1); SA Cell large, with no trace of 3R Cell (for nomenclature see Ward 1975) (fig. 11).

Underside and episterna fully glabrous, dark, with metallic coloured reflections. Legs rather long, slender, pitchy- to shining black; first two joints of the middle and hind tarsi sometimes perceptibly thickened in males.

Male aedeagus usually long, tapering, arc-shaped, ending into a blunt spatulate apex, sometimes shortly bent downwards; in some species the penis appears to be strongly bent or even twisted in the middle. Inner sac of aedeagus very simple, including only a few sclerites, the most obvious of which is a U-shaped sclerite.

Size of specimens varies from 12 to 20 mm, depending on the species, with sometimes a remarkable variation within the same population. Size of males, unlike that of most other tiger beetle genera, often surpasses that of females.

Larvae of *Pseudoxcheila* are of the usual long, cylindrical, grub-like cicindelid type, with 3 pairs of hooks on abdominal tergite V (fig. 60), and they live in sub-horizontal burrows in steep to vertical clay banks and roadcuts, usually associated with the adult specimens. Full descriptions of larval stages are given below for a new species from Venezuela, and moreover details on the colour and measurements of the third instar larva are included for three additional species.

The genus *Pseudoxcheila*, as it is here above described, far from being monotypic, includes twenty-one species at least, ranging from Central America (Costa Rica, Panama) southwards through the Andean chain down to Bolivia.

1. *Pseudoxcheila bipustulata* (Latreille, 1811) (figs 12, 13, 14, 21, 91, 92)

Cicindela bipustulata Latreille, Voy. Humboldt, Ins., 1811, p. 153, pl. 16, fig. 1, fig. 2 var. ["Cette cicindèle est abondante sur les sables humides de la rivière des Amazons..." (locality doubtful!).

Oxycheila bipustulata; Dejean, Spec. Coléopt. V, Suppl., 1831, p. 205.

Pseudoxcheila bipustulata; Guérin-Méneville, Dict. pittor. Hist. nat. VI, 1839, p. 573.

TYPE SPECIMEN(S). A female specimen in the MNHN, labelled "Colombie, Dejean 711-37" [printed], thus certainly coming from Dejean's collection, should most probably be regarded as the original

type specimen (prototype). It also bears a hand-written label "bipustulata", which does not correspond to Dejean's writing and most likely appears to be an manuscript by Latreille himself [see Horn & Kahle, 1935-37, for reference examples of Dejean's and Latreille's writings] (fig. 2). Shape of pronotum, oval-shaped elytra, large rounded shoulders and dark colour with bluish reflections sufficiently characterize this specimen. However, from Latreille's description it is clear that he examined more than one specimen, since in fig. 2 he related to a specimen qualified as "var." (Latreille 1811). Therefore, the MNHN specimen is here designated to be the species' lectotype and it was given a red label accordingly.

The concept of the species is based also on five additional specimens from the BMNH which, compared to Latreille's prototype, appear to share the same above mentioned characters: a female specimen lacking any locality labels, a smaller male just labelled "Colombia" (from Castelnau's collection), a larger male labelled "Venezuela" (from Fry Collection) and especially two specimens (male and female) just labelled "Cauca" (handscript). All these male specimens show a normal tapered aedeagus, placed on a single geometrical plane, and having a straight slightly spatulated apex.

IDENTIFICATION. Based on Dejean's (1831) and Thomson's (1857) descriptions, as well as on the characters showed by the above mentioned specimens, *P. bipustulata* is a medium-sized, strongly built species having large rounded shoulders, a wide convex pronotum (as wide as long, with anterior angles narrowly convergent), an orange-yellow round elytral spot and a straight, apically spatulated male aedeagus. However, considerable variation occurs among the specimens from various localities, which, provisionally, here are considered to all be *bipustulata*. It is possible that future in depth studies of additional material will lead to the separation of even more specific or subspecific forms.

Thus the species is defined here negatively, i.e. as comprising all those specimens which share the general characters mentioned above but which cannot be ascribed to the other species listed below. These other species are distinguished by characters compared to those of what I have defined as *bipustulata* and will be listed here accordingly in decreasing order of relationship to it.

DESCRIPTION. Head glabrous, dull bluish black with sometimes greenish reflections. Labrum longer than wide, brownish or pitchy

black, strongly narrowed in the middle. Mandibles, palpi and antennae brownish or pitchy black.

Pronotum approximately as long as wide, moderately globose, narrowed behind; angles of the anterior lobe short, narrowly convergent inwards. Glabrous, same colour as the head.

Elytra oval-shaped, rounded at sides, the maximum width about the middle; shoulders strong, rounded. Apical angle subtruncate, sometimes slightly pointed in the male. Bluish, blue-green or greenish reflections in front and apical parts and on the lateral gutter; a large velvety black dull area between, surrounding a roundish orange spot in the middle of the elytral disc.

Underside metallic bluish-black laterally, brownish to pitchy in the middle and apically; glabrous, only two long sensorial setae near the hind margins of sternites 3 and 4. Legs pitchy- to shining black.

Male aedeagus tapering, straight, spatulated apically.

Length: 14-17 mm (without labrum).

DISTRIBUTION. Positively known so far only from Colombia. However, specimens from western Venezuela are also provisionally ascribed to this species (fig. 21). One doubtful record from Ecuador and seven puzzling ones from "Peru" are likely erroneous localities.

MATERIAL EXAMINED. 169 specimens (including lectotype).

COLOMBIA. "Muséum Paris [printed], Colombie [handwritten], Dejean 711-37" [printed], "bipustulata" [handwritten by Latreille?], 1♀ MNHN (lectotypus!). "Colombia", "77.15 E", "Ex Cab. Castelnau", 1♂ 1♀ BMNH. "Columbia, Pascoe Coll. 93.60", 1♂ BMNH. 1♀ BMNH. "Nova Grenada", Fry Coll. 1905-100, 2♂♂ 3♀♀ BMNH. "N. Grenada", Coll. W. Schaufuß, 2♂♂ 1♀ ZMB. "Nuova Granata, D. Deyrolle 1861", 2♀♀ MSNG. "Colombia", Klages Coll., 1♀ CMNH. "Colombia", C.F. Baker Coll., 2♀♀ USNM; Pittier, 1♂ 1♀ USNM. "Columbien, Dolores", 1♂ ZMB; A. Schultze S.G., 1♀ ZMB. "Columbien, angustata Chd.", 1♂ ZMB. "Colombia, Acq. E. Deyrolle, 1870", 1♂ 1♀ MSNG. "Columbien", Mus. Zool. Polonicum, Warszawa, 12/45, 2♂♂ MIST. Otanche (?), X.86, 1♂ AJ. Hac. Pehlke, IV-VI.1908, E. Pehlke, 1♀ MIST. **Antioquia:** Medellín, III.1937, F.L. Gallego, 1♀ USNM; R.A. Toro, 1♂ USNM. Mt. range betw. Bolívar & Carmen, III.1929, W.A. Archer, 2♂♂ 1♀ USNM. Jerico, N. Daniel, 1♂ USNM. Rionegro, 590m, VI.1935, L.M. Murillo, 1♂ USNM; VI.1936, 1♂ USNM. Encarnacion, Cab. Inoerena, 1600m, 17.VIII.89, W. Cubillos, 1♀ FF. Urrao, PNN Orquideas, Camino Calles, 1000-1300m, 7.IV.96, J.Y., D.C., 1♀ FC; Calles, 1000m, IV.96, Giselle Zambrano, 1♂ FF; Frontino, Calles, 1000m, 5.IV.96, E. Palacio, 1♀ FF; Est. Venados, 900m, IV.1996, D. Campos, 1♂ FF; Via Venados a Calle, 1000m, 9.IV.96, E.P., 1♂ FF. **Caldas:** Manizales, A.M. Patino, 1♀ MNHN. **Cauca:** 1♂ 1♀ BMNH, 2♂♂ KW. Kolumbien, Cauca, 1♂ WJ. **Cundinamarca:** Bogotá, Ehrman Coll., 1♂ 1♀ CMNH; Klages Coll., 1♂ 2♀♀ CMNH; Hist.-Coll., Nr.34, 1♂ 2♀♀ ZMB; R.P. Roba, 1♂ 2♀♀ USNM; Kirsch, Mus. Zool. Polonicum, 1♀ MUST. Choachí [E of Bogotá], 1.VII.24, 1♀ ZMB. San Isidro, 26.V.1944, F.R. Fosberg, 1♂ FC. Guayabetal, 2100m, 27.VII.1993, J.-F. Lecrom, 1♂ AJ. **Huila:** Gigante [2°23'N-75°33'E], Malezas, 16.VI.74, A. Casanova, 1♀ FC; I.1983, O. Rojas, 1♂ MIZA (both specimens having an unusually large elytral spot). **Magdalena:**

NW Sierra N. de Sta. Marta, 4000ft, 15-20.VII.1928, Darlington, 2♀♀ USNM. **Meta:** Parque Tinigua, Rio Duoa, 400m, 1994, A. Calixto, 1♀ FF. **Norte de Santander:** Ocaña, 6.VI.1965, J. & B. Bechyné, 2♂♂ 1♀ MIZA, 1♂ FC. **Risaralda:** Pereira, La Florida, La Suiza, Rio Otun, camino piscicultura 1900m, 18.IX.1990, G. Andrade, 1♂ MHNC, 1♂ FC. La Baeoa [?: erroneous misspelling for La Bocana, Quinchía, 1776m, 5°21'N-75°44'E?], 18.IV.1965, R. Restrepo, 1♀ MHNC. **Santander:** Taladro-Palmas [Gámbita, El Taladro, 5°57'N-73°21'E], 2200m, III.1981, 1♀ MHNC; 2200m, I.III.1981, 1♂ MHNC. Charalá, Virolin, 7.I.1981, 1♀ MHNC. **Tolima:** Quebrada Caribe [Coyaima, El Caribe, 3°48'N-75°12'E], Finca Buenos Aires, 27-28.VII.1986, M. Garcia, 1♂ MHNC. **Valle del Cauca:** Cali, 3400ft, Rosenberg, F. Bates Coll. 1911-248, 1♂ BMNH, 2♂♂ FC; 27.IV.1939, B. Losada, 1♂ USNM. Mares above Cali, 2088m, 5.III.1942, 1♀ (just elytra left) USNM. Los Farallones, SE of Cali, 1500m, 2.IV.1977, Silberglie/Aiello, 1♂ USNM. Palmira, 1969, A. Figueroa, 2♀♀ MIZA. Carretera Cali-Buenaventura km 17, 28.IX.1975, 1♂ FC. Buga, near stream in tropical forest, 2.IX.1985, 1♀ TME. Via Bitura-Tatabro 50m, Sept. 1993, J.B. Aldana, 1♂ FF, 1♀ FC.

VENEZUELA. "Venezuela", "8441", Fry Coll. 1905-100, 1♂ BMNH. **Barinas:** El Celoso, 25.VIII.1974, donación Mattei, 1♀ MIZA. **Mérida:** E. Merida, La Mucuy, V.1984, 1♀ JW. "Aguada" [= La Aguada, Teleferico de Merida, Venezuela?: cf. Perrault, 1994], Ex Musaeo E. Steinheil, 1♂ MNHN. **Táchira:** Santa Ana, 23.VII.1972, J. & B. Bechyné, 1♂ 2♀♀ MIZA, 1♀ FC. La Grita, 22.IV.1980, V. Garcia, 1♂ FC. Cobre, 24.III.1982, Donacion I.U.T., 1♀ MIZA. Las Cuevas, Complejo Hidroelectrico L.Ruiz Pineda, 27.VIII.1988, J. Gonzalez & M. Gaiani, 1♀ MIZA. Rio Doradas, 7°45'N-71°45'W, X.1992, F. Godoy, 1♀ AB. Rubio, 3.IV.1082, Donacion I.U.T., 1♂ 1♀ MIZA. Rubio, carretera Bramón-Delicias, Finca Villa Nueva, 27.VI.1995, F. Cassola, 11♂♂ 10♀♀ FC, 1♂ 1♀ QCAZ, 1♀ MZUR, 1♂ 1♀ JW, 1♀ JP, 1♂ WJ; 27.VI.1995, R. Naviaux, 9♂♂ 9♀♀ RN. Cordero, Parque Nacional Chorro del Indio, 1300m, 28.VI.1995, F. Cassola, 2♂♂ 1♀ FC; 28.VI.1995, R. Naviaux, 2♂♂ 1♀ RN.

?ECUADOR: "Quito, coll. Baden Ruge", 1♀ DEI [locality doubtful!].

?PERU: "Peru, Pan do Assucar", 1♂ BMNH; "Peru", 1♀ BMNH; 11452, Fry Coll. 1905-100, 1♀ BMNH; ex Cab. Thomson, 1♀ BMNH; "Peru", 1♀ BMNH; "Yarumal, Peru?", 5500ft", Davidson Collection, 1♂ 1♀ CMNH [locality erroneous?].

Other material: "Peñol, S. Carlos", Ex-Musaeo E. Steinheil, 1♀ MNHN. "Coll. W. Schaufuß", 1♂ ZMB. "Coll. H.C. Vogel", 1♀ ZMB. "Acq. E. Deyrolle, 1870", 1♀ MSNG. "Brasilien", Mus. Zool. Polonicum, Warszawa, 12/45, 1♂ MIST.

REMARKS. Considerable variation appears to exist among the specimens from various localities which, provisionally at least, I have placed in *bipustulata*. Further study may lead to separate additional specific or subspecific forms presently associated with the rather confusing *bipustulata* stem. In particular, the specimens from Táchira (Venezuela) appear to be rather distinct, somewhat intermediate between *bipustulata* and *colombiana* (see below), and they could even represent yet another separate species.

2. *Pseudoxycheila macrocephala* n. sp. (figs 15, 16, 17, 21, 92)

IDENTIFICATION. I separated fourteen specimens from Colombia (MNHN, CMNH, ZMB), together with a fifteenth specimen of doubtful origin (BMNH), into a new species. All these specimens are more robustly built than *bipustulata*, and they differ from it by

having a larger size, slightly longer, parallel-sided elytra, and a proportionally larger head.

DESCRIPTION. Head large, nearly as long as the pronotum, dull black with slight bluish reflections. Labrum, mouth parts and articles 1-4 of antennae shining black, mandibles brownish black.

Pronotum nearly as long as wide, restricted behind, rounded at sides, moderately globose on disc. Anterior corners short, slightly convergent in front. Colour dull black, sometimes with some bluish reflections, slightly shining on the hind lateral corners.

Elytra convex, oval-shaped, proportionally longer than near *bipustulata*, more parallel-sided, slightly rounded in the middle. Shoulders strong, subsquared. Colour dull black, with some bluish or greenish-blue reflections on shoulders, in the lateral gutter and in the apical parts. The large velvety black discal area sometimes poorly apparent because of the dark general colour of elytra. Orange discal spot roundish, larger than that of *bipustulata*.

Underside with metallic, dark, steel blue reflections on episterna and first abdominal sternites, sometimes tinged with indigo-blue laterally. Legs brownish to pitchy black. First hind tarsal segments of male slightly tickened.

Male aedeagus tapering, similar to that of *bipustulata*, however with a straight, more slender apex.

Length: 16-19 mm (without labrum).

ETYMOLOGY. The name comes from the Greek words "makrós" (big, large) and "képhalos" (head), thus referring to the unusually large size of the head (especially noticeable on the males).

DISTRIBUTION. Colombia (fig. 21). A single specimen erroneously labelled as coming from Mexico.

MATERIAL EXAMINED. Holotype (MNHN), allotype (MNHN) and 12 paratype specimens. One additional non-type specimen of doubtful origin.

COLOMBIA. "Colombie", ex Museo Mniszech, 1♂ MNHN (holotype). "Colombie, n. sp.?" [handscript by Chaudoir?], Collection de Bonvouloir, 1♀ MNHN (allotype). "Muséum Paris, Colombie, Coll. Chaudoir 1874", 1♂ MNHN, 1♂ FC. "Columb., 82440, coll. H.C.Vogel", 1♂ ZMB. "Colombia, either Putumayo or Gigante", R.C.Ward Collection, 1♂ 1♀ CMNH. ?**Antioquia**: "Bueyes, Garlepp" [Santa Bárbara, Bueyes, Quebrada La Loma, 5°53'N-75°34'E, 1800m?] [Otto Garlepp, Ausbeuten aus

Columbien, 1910-11, mit A.H.Fassl (Horn & Kahle 1935-37)], 1♂ MNHN. **Caldas:** "Manizales, A.M.Patino", 1♂ MNHN. **Putumayo:** Putumayo, VI.1972, Glaser Collection, 3♂♂ CMNH, 2♂♂ FC.

?MEXICO: "Mexico, Salle Coll.", "Tehuantepec", "B.C.A., Col.I (1), *Pseudoxycheila*", 1♂ BMNH [locality erroneous?].

REMARKS. *P. macrocephala* n.sp. is certainly closely related to *bipustulata*. The examination of intermediate populations and longer series may eventually prove it to be conspecific. However, based on the material at hand, the differences appear to be sufficient to warrant separate specific status, all the more so as their distributional ranges apparently overlap each other.

3. *Pseudoxycheila colombiana* n. sp. (figs 18, 19, 20, 21, 92)

IDENTIFICATION. Several specimens from Tolima, Colombia, are also tentatively separated from *bipustulata* because of their general facies, the darker colour, the paler elytral spots and the more oval-shaped elytra. Most of these specimens were found in the collections ranged amid *tarsalis* specimens. Specimens from additional localities in Colombia are also tentatively ascribed to the same species.

DESCRIPTION. Head dark, dull, with some slight metallic steel blue reflections. Labrum, mouth parts and articles 1-4 of antennae brownish or pitchy black to black.

Pronotum similarly shaped as that of *bipustulata*, glabrous, same colour as on head.

Elytra convex, evenly oval-shaped, the shoulders strong, rounded. Colour dull grey-black with some slight dark steel blue reflections on the lateral gutter and the apical part. A large rounded velvety-black area in the middle, surrounding a pale, straw-yellow, roundish, discal spot.

Underside dark, with metallic blue to violet reflections. Legs pitchy- to shining black, first two hind tarsal segments of males sometimes slightly thickened.

Male aedeagus tapering, slightly curved, narrowly spatulated apically.

Length: 14-17 mm (without labrum).

ETYMOLOGY. The name refers to the species' known distribution, limited so far to Colombia only.

DISTRIBUTION. Colombia (fig. 21).

MATERIAL EXAMINED. Holotype (DEI), allotype (DEI) and 44 paratype specimens. Two additional non-type specimens of unclear origin.

COLOMBIA. "N.Grenada, Pascoe Coll. 93.60", 1♂ BMNH. "Columbia, Bowring. 63.47", 2♂♂ BMNH. "Museum Paris, Colombie?, Coll. Chaudoir 1874", 1♀ MNHN. 1♀ DEI. Coper. Magdalena Tal, 1300m, X.1910, Fassl [Anton Hermann Fassl, 1876-1922, I.Reise nach Columbien (1908-11, 1910-11 zusammen mit O.Garlepp (Horn & Kahle 1935-37)], 1♀ DEI. Minca, 1♂ 1♀ FC, 1♀ CMNH. **Boyacá**: Peñas Blancas [San Pablo de Borbur, Peñas Blancas, 5°39'N-74°05'E], Campamento Minero, 19.I.1980, C.J. Jiménez, 1♂ MHNC. Moniquira, 20.I.1977, E.Cruz, 1♂ MHNC. **Cauca**: Popayán, 1800m, 10-12.XI.1971, M. Cooper, 1♀ BMNH; 22.IV.1973, W.P. MacKay, 1♂ MHNC. **Cundinamarca**: Fugagasugá, 8.V.1946, E.A. Chapin, 2♀♀ USNM. **Magdalena**: Sierra Nevada de Sta Martha, F. Fernandez, 1♀ FF; 10.VII.1968, Ramirez, 2♀♀ MHNC; Ciudad Perdida 1200m, 2.VI.1979, G. Correal, 1♂ 1♀ FC. "Santa Marta", 1♂ 1♀ ZMB (non-types). Onaca, 2500ft, 1♂ 1♀ CMNH. **Meta**: La Macarena, 1.I.1950, L. Richter, 1♀ MHNC. **Santander**: Virolin, Rio Luisito 1760m, 9.III.1991, 1♀ MHNC, 1♂ 1♀ FC. Virolin, Nargen, Rio Guillermo, 13.III.1981, 1♀ MHNC. **Tolima**: C.Columbia, Cañ. d. Tolima, 1600m, X.1909, Fassl, 1♂ DEI (holotype); 1800m, X.1909, Fassl, 1♀ DEI (allotype), 2♀♀ DEI, 1♀ FC. Cañ. d. Tolima 1500m, X.1909, Fassl, 1♀ ZMB. Tolima, Cañ.d.Monte, 1700m, XI.1909, Fassl, 1♂ FC. Cañ. d. Tolima 1600m, X.1909, Fassl, 1♂ DEI. **Valle del Cauca**: "Columbia, Tocota 1400m" [Dagua, Tocotá, 3°39'N-76°42'E], 30.V.08, Fassl, 1♀ DEI. Paso del Chimdin, El Edén, XI.09, Fassl, 1♀ DEI. Cali, 1.V.1970, 1♀ MHNC. Buga la Grande, 26.X.1969, M. Chalarío, 1♀ MHNC. Buga, IV.1991, C. Nedida & C. Rodriguez, 1♂ MHNC. Valle del Cauca, 1.V.1970, 1♀ MHNC.

Other material: "Costa Rica" [locality doubtful!], 2♂♂ 2♀♀ CMNH. "Lw. Rio Negro, '84, Peñol, ex Musaeo E. Steinheil", 1♂ MNHN.

REMARKS. Separation of *colombiana* from *bipustulata* is sometimes difficult or questionable. Further study is needed, based on more material from all over Colombia and surrounding areas, before a clear understanding will be reached of the whole *bipustulata* group. It may be that *colombiana* and/or *macrocephala* will prove to be conspecific with *bipustulata*, or rather that further species (for instance, the specimens from Táchira, Venezuela) will prove to need a separate specific status. However, overlapping distributional ranges seem to prove *colombiana* to be a distinct species from *bipustulata*.

4. *Pseudoxycheila chaudoiri* Dokhtouroff, 1882 (figs 22, 23, 24, 41, 42, 91, 92, 102)

Pseudoxychila chaudoiri Dokhtouroff, Spec. Cic. I, 1882, 89, pl. X, fig. 8; Rev. mens. Entom., 1883, 1, 6 ["Équador, 2 exemplaires"].

Pseudoxychila angustata Chaudoir; Fleutiaux 1892, Cat. syst. Cicind., 16.
Pseudoxychila bipustulata (Fabricius); W.Horn 1926, Col. Cat. 86, 82.
Pseudoxycheila bipustulata (Fabricius); Wiesner 1992, Verzeichnis Sandlaufkäfer
der Welt, 55.

TYPE SPECIMEN(S). Dokhtoureff (1882, 1883) described *P. chaudiroidi* based on two specimens from Ecuador. One of them, a male, was found in W.Horn's collection (DEI), and it bears a green locality label "Equator" [apparently handwritten by Chaudoir] (fig. 5), a label "chaudoiri Dokht., Pseudoxychila" [obviously handwritten by Dokhtoureff himself: see Horn & Kahle 1935-37, Taf. 19, Fig. 33] (fig. 6), a printed label "Type Dokhturow", and a printed red label "Syntypus" of the kind usually added by W.Horn himself. Therefore, such specimen is herein designated to be the species' lectotype and it was given a red label accordingly.

The lectotype's aedeagus does not differ much from that of *angustata* (see below), which would have theoretically the priority in taxonomy, but the general habitus of *chaudoiri* is considerably different: the colour is olive-green to blue-green, the pronotum is larger, heavier and more convex, and the shape of elytra is more oval, rounded, not parallel-sided. Consequently *chaudoiri* is more reminiscent of *bipustulata* than of *angustata* and it is here considered to be a separate distinct species.

IDENTIFICATION. Similar to *bipustulata* but olive-green to bluish-green in colour. Pronotum as long as wide, moderately convex on disc, the anterior corners short, slightly convergent in front. Elytra oval-shaped, evenly attenuated behind, shoulders strong and rounded. Velvety black area well-marked, with a roundish, yellowish, moderately large discal spot.

DESCRIPTION. Head with strong olive-green to bluish-green reflections, giving the surface a sericeous lustre. Labrum, mouth parts and articles 1-4 of antennae shining black.

Pronotum as long as wide, restricted behind, moderately convex on disc, the anterior corners short, slightly convergent in front. Same strong olive-green to bluish-green reflections as on head, giving the surface a sericeous lustre. Hind lateral corners shining metallic golden- or bluish-green.

Elytra oval-shaped, evenly attenuated behind, the maximum width near the middle; shoulders strong, rounded. Strong olive-green

to bluish-green reflections on base, shoulders, lateral margins and the apical area. Velvety black areole apparent, rounded at sides, sometimes protruding in the middle toward the base; a roundish, yellowish, moderately large discal spot in the middle. Epipleura metallic green, darkened in front.

Underside metallic blue-green with golden to violet reflections. Abdominal sternites darker, dark green to pitchy black, with some metallic hue. Legs shining black.

Aedeagus tapering, spatulated apically.

Length: 14-17.5 mm (without labrum).

DISTRIBUTION. Colombia (fig. 41) and Ecuador (fig. 42). A single doubtful record from Peru (Pucallpa).

MATERIAL EXAMINED. 1001 specimens (including lectotype).

ECUADOR. Ecuador, Spillmann coll., "Equateur", "Type Dokhturow", "chaudoiri Dokht., Pseudoxychila", "Syntypus", 1♂ DEI (lectotypus!). "Ecuador, Buckley", "Muséum Paris, N.elle Grenade, Coll. Chaudoir 1874", 1♂ 1♀ MNHN. Ecuador, 1♂ 1♀ BMNH. "Equador, Acq. Boucard, 1870", 1♀ MSNG. Ecuador, Paramba, 3500ft, IV.1897, dry season, Rosenberg, 1♀ BMNH. Ecuador, Napac, 5.VIII.1973, Venedictoff, 1♀ QCAZ. **Azuay:** 17km E Pto Inca [2°00N-80°37W], 1000m, vertical road cut bank, 3.III.1994, J. Buestan, 2♂♂ 3♀♀ QCAZ, 1♂ 2♀♀ FC. **Bolivar:** Balzapamba, R. Haensch, 1♂ 1♀ ZMB; F. Campos, 2♀♀ USNM; 12.V.1966, A. Jasinski, 1♀ AJ. 10km E Balzapamba [1°45S-79°10W], 1000m, 26.II.1994, vertical road cut bank, J. Buestan, 4♂♂ 5♀♀ QCAZ. **Cañar:** Cañar, 500m, Occidente, 5♂♂ 6♀♀ WJ, 1♂ 1♀ FC. 10km E Cochancay [2°27S-79°14W], 830m, brushy road cut, 3.IV.1994, J. Buestan, 4♂♂ 5♀♀ QCAZ, 1♂ 1♀ FC; 20 km W Cochancay, 200m, 5.V.1994, J. Buestan, 1♂ FC; 12km E Cochanchay, 900m, 10.II.1996, J. Buestan, 1♂ DLP. **Carchi:** San Marcos, 890m, IX-X.1983, J. Levy, 1♀ CMNH. Between Goatal 1270m & San Marcos 890m, IX-X.1983, J. Levy, 1♂ FC. Trail from Peña Blanca to San Marcos, 13-17.VII.1983, R. Davidson, 1♂ CMNH. Maldonado, 1200m, 24.V.1997, A. Jasinski, 2♂♂ 5♀♀ AJ; 1600m, 24.V.1997. K. Los, 5♂♂ 10♀♀ KL, 1♂ 1♀ FC. **Chimborazo:** 9 km N Bucay, Río Chagüe, 2°08S-79°07W, 650m, 25.V.1996, J. Buestan, 11♂♂ 8♀♀ FC. **Cotopaxi:** El Corazon 2100m, 20.X.1992, P. Sabre, 1♀?(broken) QCAZ. Las Pampas [0°25S-78°57W], 1500m, X.1982, G. Onore, 2♂♂ BMNH; V.1984, G. Onore, 14♂♂ 17♀♀ QCAZ, 1♀ FC; 1600m, 27.III.1986, A. Vigna Taglianti, 1♂ 2♀♀ FC; 1500m, Rio Negro, 29.III.1986, A. Casale et al., 1♂ 2♀♀ AC; I.1988, G. Onore, 1♂ QCAZ; I.1989, G. Onore, 1♂ QCAZ; XII.1989, G. Onore, 1♂ QCAZ; 1500m, 18.XII.1992, E. Trujillo, 1♂ (broken) 1♀ FC; 1-3.XII.1995, A. Muñoz, 1♀ QCAZ; 1400m, 29.V.1997, A. Di Giulio, 1♀ FC. San Francisco de las Pampas [0°25S-78°57W], 17.XI.1991, A. Bandinelli, 6♂♂ 3♀♀ AB, 1♂ FC; 15.XII.1991, A. Bandinelli, 1♀ AB; 1.III.1994, P. Salvador, 1♂ QCAZ; 1600m, 8.X.1994, V. Roth & A. Paredes, 1♂ QCAZ; 5.XII.1996, A. Tapia, 1♂ FC; 13.XII.1996, E. & I. Tapia, 7♂♂ 9♀♀ FC; 1000m, 14.XII.1996, F. Cassola, 7♂♂ 4♀♀ FC; 1500m, 5.III.1997, G. Onore, 4♂♂ 6♀♀ QCAZ. Via San Francisco de las Pampas-Sigchos, 1850m, 14.XII.1996, F. Cassola, 2♂♂ 1♀ FC. 2 km S Las Pampas, 1820m, 14.XII.1996, A. Vigna Taglianti, 1♂ 2♀♀ MZUR. 17 km N Las Pampas de S.F., 1210m, 20.III.1995, D.L. Pearson, 9♂♂ 3♀♀ DLP; 1200m, 1.VI.1996, M. Vallejo, 2♂♂ QCAZ, 1♀ FC. Las Pampas-Otonga 1500-2000m, 1.VI.1997, A. Di Giulio, 2♂♂ FC, 1♂ 1♀ MZUR. 5 km WNW San Francisco de las Pampas, Otonga Reserve, 00°25S-79°00W, 1880m, cloud forest, 15.V.1994, J. Rawlins, S. Thompson

& G. Onore, 1♀ CMNH. La Otonga 1800-2100m, 19.XI.1994, X. Cisneros, 1♀ QCAZ; 20.XI.1994, L. Salazar, 1♀ DLP; 7.III.1995, G. Onore, 1♂ 1♀ QCAZ; 2.XII.1995, D. Lasso, 1♂ 1♀ QCAZ; 7.I.1996, G. Onore, 1♂ 2♀♀ QCAZ; 10.III.1996, G. Onore, 1♂ FC; 2000m, 20.V.1996, G. Onore, 1♂ FC; 1800m, 25.V.1996, A. Paucar, 1♀ QCAZ; 1500m, 2.VI.1996, T. Lozada & T. Jaramillo, 2♂♂ QCAZ. 34 km S La Maná, 1400m, 18.III.1995, D.L. Pearson, 2♂♂ 2♀♀ DLP. Sigchos-Asache, 31.XII.1995, E. Tapia, 1♀ FC. Galapagos [0°29N-78°44W], III.1985, G. Onore, 1♂ QCAZ. Palo Quemado, 16.IV.1981, D. Mendoza, 1♀ QCAZ. Latacunga, IV.1983, 1♂ 1♀ KW. **El Oro**: Zaruma, XII.1915, F.W. Rohwer, 1♂ USNM; II.1916, F.W. Rohwer, 1♂ USNM. 6km N Chilla, 2100m, 6.XI.1987, R. Davidson, J. Rawlins & C. Young, 1♀ CMNH. 8km W Piñas, 0338S-7944W, 1090m, 20.III.1996, D.L. Pearson, 3♂♂ 4♀♀ DLP, 2♂♂ FC. Balsas, 900m, 14.IV.1997, K. Los, 1♀ AJ. **Esmeraldas**: La Unión, 350m, 18.I.1994, S. Burneo, 1♀ QCAZ. **Imbabura**: La Esperanza, 2900m, 27.I.1988, Blas Loje, 1♂ 1♀ QCAZ. Junin La Mina, 14-22.IX.1995, A. Endara, 1♀ QCAZ. Chaguayacu, 12-20.IX.1995, A. Endara, 1♂ QCAZ. Lita Cristal, Cabecera Rio Negro, 6.XII.1995, M. Vallejo, 1♂ 1♀ FC. **Loja**: "Equateur, Loja, Abbé Gaujon", 4♂♂ 1♀ MNHN. Quilanga [4°17S-79°25W]. I.1987, G. Onore, 2♂♂ FC. Chaguarpamba, 15.II.1985, Ponce & Colomo, 1♀ QCAZ. 15km N Celica, 0402S-7959W, 1450m, 12.III.1996, D.L. Pearson, 4♂♂ 4♀♀ DLP, 1♂ 1♀ FC. 5km W Zumbi, 0354S-7932W, 1300m, 19.III.1996, D.L. Pearson, 2♂♂ 1♀ DLP, 1♀ FC. **Los Rios**: Palenque, 10.I.1987, G. Medina, 2♀♀ QCAZ. **Morona-Santiago**: Limón Indanza, via Sigsig 1050m, 28.XII.1995, G. Onore, 1♀ FC. **Napo**: Yanahurco, IV.1975, R. Delafebre, 1♂ DLP. San Rafael, 1500m, 1.XI.1984, M. Ferro, 1♀ QCAZ. Baeza, 1900m, 11-12.XI.1994, P. Menéndez, 2♂♂ 2♀♀ DLP. Rte Baeza Tena, Cord. Huancamayo 1800m, 8.IV.1980, Porion-Bertrand, 1♂ FC. Tena, 900m, V.1992, 2♀♀ KW; III.1996, G. Onore, 2♀♀ FC. Rio Hollin 1200m, 6.XII.1991, B. Elizalos, 1♀ QCAZ. Via Hollin-Loreto, km 25, 1100m, 6.XII.1987, R. Mendoza, 1♀ QCAZ. Misahualli [1°03S-77°34W], XI.1984, Morejón, 1♂ FC, 2♀♀ QCAZ. Arosamena-Tola, 29.V.1996, K. Los, 1♂ KL. Apuya, 10.V.1997, K. Los, 2♂♂ 10♀♀ KL, 2♂♂ 2♀♀ FC; 800m, 10.IV.1997, F. Castro, 8♂♂ 5♀♀ AJ, 2♂♂ 2♀♀ FC. **Pastaza**: Ecuador, El Porvenir, Fry Coll. 1905-100, 1♂ 2♀♀ BMNH. Rio Bobonaza, betw. headwaters & Mentalval, 21.X.1941, K.A. Rijsterborgh, 2♂♂ FC (black). **Pichincha**: Quito [0°15S-78°30W], VI.1980, 1♂ 1♀ MH; 2800m, 19.I.1993, J. Maschero, 1♂ QCAZ. Nono, 1.I.1994, N. Diaz, 1♀ QCAZ. Niebli 2900m, 10.I.1994, S. Burneo, 1♀ QCAZ; 1500m, 29.XII.1996, F. Saenz, 1♂ FC. Calacali 2870m, 28.II.1993, T. Santander, 1♀ QCAZ. Maquipucuna, 1440m, 25-26.III.1988, I. von Lippke, 1♀ QCAZ. Maquipucuna Reserve, Santa Marianista nr. Quito, 21.VII.1990, P. Richerson, 1♀ WS. Quito-Nanegalito km28, 16.I.1993, D. Alarcón, 1♂ 1♀ QCAZ. Nanegal-Nanegalito [0°03N-78°40W], 1300-2000m, 5.XI.1992, Ehorillo, 2♂♂ 2♀♀ QCAZ; 23.XII.1992, J. Batallas, 1♂ QCAZ; 26.XII.1992, A. Paredes, 3♂♂ 3♀♀ QCAZ, 1♂ FC; 27.XII.1992, J. Nancho & J. Velasco, 1♂ 6♀♀ QCAZ; 27.XII.1992, F. Landimil, 1♀ QCAZ; 28.XII.1992, H. Barragán, 2♀♀ QCAZ; 1.I.1993, D. Villagomez, 1♀ QCAZ; 16.I.1994, I. Paz y Millo & M. Guerrero, 3♂♂ 5♀♀ QCAZ; 23.I.1994, H. Romero, 2♂♂ QCAZ; 7.I.1995, M. Lascano, 8♂♂ 4♀♀ DLP, 1♀ QCAZ; 7.I.1995, X. Salazar, 5♂♂ 5♀♀ DLP; 9.I.1995, M. Montúfar, 5♂♂ 2♀♀ DLP; 15.I.1995, T. Sanchez, 12♂♂ 15♀♀ DLP; 14-15.I.1995, E. Baus, G. Oleas, N. Oleas, T. Sanchez & C. Yumiseva, 9♂♂ 12♀♀ QCAZ, 1♂ 1♀ FC; 21.I.1995, O. Bastidas, 3♀♀ QCAZ, 2♂♂ 1♀ FC; 8.IV.1995, M. Lascano, 2♂♂ 6♀♀ QCAZ, 2♀♀ FC; 8.IV.1995, X. Salazar, 2♂♂ 7♀♀ QCAZ, 1♂ 2♀♀ FC; 8.IV.1995, R. Montufar, 5♂♂ 4♀♀ QCAZ, 1♂ 1♀ FC; 8.VII.1995, F. Sancho, 1♂ FC; 8.VII.1995, O. Bastidas, 1♂ QCAZ; 20.XII.1995, M. Carrera, 1♀ QCAZ; 12.I.1996, A. Paucar, 1♂ QCAZ; 14.I.1996, H. Barragán, 4♂♂ 2♀♀ QCAZ, 1♂ 1♀ FC; 1300m, 11.XII.1996, A. Vigna Taglianti, 7♂♂ 5♀ MZUR, 6♂♂ 4♀♀ FC; 1450m, 11.XII.1996, F. Cassola, 9♂♂ 4♀ FC; 1450m, 11.XII.1996, A. Vigna Taglianti, 4♀♀ MZUR. Nanegalito, 1500m, 27-28.XII.1996, F. Saenz & F. Guaman, 3♂♂ 1♀ QCAZ; 1500m, 10.I.1997, E. Gortaire, 1♂ 1♀ QCAZ, 1♀ FC; 1400m, 13.I.1997, R. Ramirez, 1♀ QCAZ. Nanegalito km 23, 12.VI.1993, E. Silva, 1♂ QCAZ. Via Nanegalito, 1800m, 10.I.1996, M.B. Yébez, 2♀♀ QCAZ; km37, El Vergel, 11600ft, 30.XII.1995, R. Paladines, 1♂ 1♀ QCAZ, 1♀ FC. Nanegalito-La Armenia, km 48, 22.I.1994, C. Garzon, 2♂♂ QCAZ. La Armenia, 1800m, 00°04'30N-78°41'06W, V.1997, H. Mogollón, Gualca, W. Schroter S.V., 1♀

ZMB. Mindo [0°02S-78°46W], 1250-1800m, 27.IV.1985, P. Moret, 1♂ 1♀ PM; 18.V.1991, C. Betancourt, 1♂ QCAZ; 19.V.1991, S. Carrion, 2♂♂ 2♀♀ QCAZ; 29.XII.1991, F. Caceres, 1♀ QCAZ; 16.X.1993, O. Torres, 1♀ QCAZ; 7.V.1994, C. Boada, 2♂♂ FC; 7.VIII.1994, Ohio Univ., 1♀ FC; 3.XII.1994, M. del Pozo, 2♀♀ DLP; 1250m, 10.VI.1995, 2♂♂ QCAZ; 1400m, 29.XII.1995, F. Villacis, 2♀♀ QCAZ; 1500m, 20-22.I.1996, A. Muñoz, 1♂ 1♀ QCAZ; 1500m, 0°02'54S-78°46'21W, 29.II.1996, T. Jaramillo, 1♂ 3♀♀ QCAZ, 1♂ FC; 1500m, 30.VI.1996, D. Lasso, 5♂♂ 3♀♀ QCAZ, 3♂♂ FC; 1500m, 7.I.1997, E. Gortaire, 4♀♀ QCAZ; 1500m, 10.I.1997, J.P. Carrera & N. Vieira, 5♀♀ QCAZ; 1500m, 17.I.1997, R. Oliva, 1♂. 4km NE Mindo, 1600m, 12.XII.1996, F. Cassola, 17♂♂ 13♀♀ FC; 1600m, 12.XII.1996, A. Vigna Taglianti, 2♂♂ 2♀♀ MZUR. Tandayapa [0°01S-78°43W], I.1983, G. Onore, 1♂ MH; 2750m, 14.I.1989, A. Rodriguez, 2♂♂ QCAZ; 1400m, 17.I.1997, M. Bustamante, 1♂ QCAZ; 18.I.1997, K. Proaño, 1♀ FC. Palmeras, 6.VI.1992, J.Lussio, 1♀ QCAZ. Via Tandayapa-Pto Quito, 24.V.1983, R. Nogoia, 1♂ QCAZ. Via Puerto Quito km 113, 750m, XII.1982, M. Lopez, 1♀ QCAZ; 28.V.1983, L. Coloma, 1♂ QCAZ. Via Quito-Los Bancos, Tulipe, Sector Rio Pachijal, 22.IV.1989, S. Carrion, 1♀ QCAZ. Los Bancos, VII.1987, S. Rioscoso, 1♀ QCAZ. Hac. Faisanes [0°13S-78°47W], I.IV.1984, V.Zak, 1♂ 2♀♀ QCAZ. San Miguel de los Bancos, San Jose de Milpe, 1500m, 27.XII.1995, G. Gallardo, 1♀ QCAZ. Puerto Quito, 11.XII.1982, A. Salazar, 1♂ DLP; 4-13.XII.1983, P. Davila, 2♂♂ QCAZ; 700m, 13.XII.1983, Ana M. Velasco, 1♂ FC; XII.1983, 700m, G. Paz y Miño, 2♂♂ QCAZ; 4.I.1984, B. D'Uarea, 1♂ 1♀ QCAZ; 15.I.1984, M.I. Salazar, 1♂ QCAZ, 1♂ FC; 16.I.1984, F. Aiban, 1♀ QCAZ; I.1985, F. Cuesta, 1♀ QCAZ; 26.I.1985, F. Aiban, 1♂ 1♀ QCAZ. Puerto Quito km 113, 4.XII.1982, S. Cárdenas, 1♂ DLP; 11.XII.1982, J. Matheus, 1♀ DLP. Via Puerto Quito-Nono, 5.XII.1982, P. Casares, 1♂ 1♀ QCAZ. Tandapi [=M.Cornejo Astorga, 0°25S-78°49W], 700m, 29.VI.1991, U. Perez, 1♂ QCAZ; 13.I.1992, V. Cano & X. Marin, 2♀♀ QCAZ; 7.III.1992, X. Marin & V. Cano, 2♂♂ QCAZ; 1250-1400m, 6.I.1995, F. Villacis, 1♂ QCAZ; 2100m, 3.V.1996, A. Jasinski, 1♂ AJ, 1♂ FC; 2100-2200m, 3-4.V.1996, K. Los, 8♂♂ 5♀ KL, 3♂♂ FC. Quito-Santo Domingo de los Colorados, Nebelwald, III.1992, Verena Meyer, 1♀ ZMB. 1 km N jct. Old & New Road to Santo Domingo, 865m, 21.III.1995, J. Buescan, 1♀ DLP. Santo Domingo de los Colorados [0°15S-79°10W], VII.1967, R.L. Dressler, 1♂ CB; 7.XI.1971, Venedictoff, 1♀ QCAZ; 7.IV.1973, Venedictoff, 1♀ QCAZ; VIII.1981, G. Onore, 16♂♂ 7♀♀ RN, 2♂♂ FC; X.1981, G. Onore, 1♂ RN; II.1982, G. Onore, 1♂ 1♀ AB; III.1982, T. Mizunuma, 1♀ MH; IV.1982, G. Onore, 1♀ QCAZ, 16♂♂ 23♀♀ FC, 2♂♂ 2♀♀ ZMB, 1♂ 1♀ MHNC, 1♂ 1♀ MNHN, 2♂♂ 2♀♀ DEI, 1♀ WJ; V.1982, G. Onore, 1♂ ABR; IV.1983, G. Onore, 1♂ QCAZ; 18.V.1985, 2♂♂ 1♀ JW; III.1987, 11♂♂ 9♀♀ WJ, 3♂♂ FC. La Favorita, 4.XI.1986, R. Viteri, 2♂♂ QCAZ. Alluriquin [0°20S-78°59W], XI.1978, P. Gomez, 1♂ QCAZ; 9.I.1983, M.A. Calderon, 1♂ QCAZ; 17.I.1986, P. Gonzales, 1♀ QCAZ; I.1988, A. Flachier, 1♂ QCAZ; 15.I.1991, F. Sila, 1♀ QCAZ; 7.XI.1992, F. Rios, 1♂ QCAZ; 9.IV.1996, R. Naviaux, 1♂ RN. Rio Toachi, road to Santo Domingo de los Colorados, 1.IV.1984, J. Boos, 1♀ CMNH. Rio Toachi, VII.1981, G. Onore, 1♂ 1♀ DLP; VII-X.1981, D. Jones, 2♂♂ DLP. La Unión del Toachi, 1000m, 7.V.1992, F. Cassola, 4♂♂ FC. Tinalandia, 800m, 4-5.V.1996, A. Jasinski, 2♀♀ AJ. Las Pampas Argentinas [0°25S-78°59W], VI.1981, 6♂♂ 5♀♀ RN, 2♂♂ FC; 1300m, IV.1988, J. Cordova, P. Casares, J. Galarza, J. Gomez, M. Grijalva, P. Mendoza, A. Rodriguez, I. von Lippke, 13♂♂ 15♀♀ QCAZ, 2♂♂ FC. Machachi, La Esperanza, 1320m, 7.I.1995, P. Clavijo, 1♂ QCAZ, 1♀ FC. Chisínche, Panamericana Sur, 2100m, 13.I.1996, B. Yangari, 1♂ PUCE. Pueblo Nuevo 1700m, 23.XI.1996, I. Muñoz, 1♂ QCAZ. **Sucumbíos**: "Ecuador, Mirador [El Mirador], Fry Coll. BM 1905-100", 1♀ BMNH. El Reventador [0°02S-77°33W], 1400m, 5.XII.1992, J. Hervas, 2♂♂ QCAZ. Lumbaqui, 900m, 24.VII.1973, 1♂ KW. Laguna de Pilchicocha, Sacha Lodge, 0°26S-76°33W, 220m, 20-22.V.1994, J. Rawlins, S. Thompson, D. Schlitter & G. Onore, 1♀ CMNH. **Tungurahua**: Baños, 10.VI.1991, G. Onore, 1♀ QCAZ. **Zamora-Chinchipec**: 8 km NW Zamora, mouth Rio Sabanilla, 1420m, I.XI.1987, C. Young, R. Davidson & J. Rawlins, 1♀ CMNH. Valladolid [4°33S-79°80W], IX.1985, L. Cocona, 1♂ QCAZ. COLOMBIA. "Colombia, F. Bates Coll. BM 1911-248", 1♂ BMNH. "Columb.", 1♂ JW. "Columbien", 1♀ ZMB. "Colombia, S.A., Wickham Collection", 1♂ 1♀ USNM.

Nariño, Barbacoas Al Jaquer, El Barro, 1200m, 22.VII.95, F. Fernandez, 1♂ 1♀ FF. Nariño, La Planada, 1800m, 12.II.95, CSP. 1♂ FF. **Boyacá:** Muzo Emerald Mines, tropical forest, 15.VIII.1980, 8♂♂ 6♀♀ TME. Pajarito, Q. Congutá, 1250m, 9.VII.1981, I. Arévalo, 1♀ MHNC. **Caldas:** Manizales, A.M. Patino, 1♂ 1♀ MNHN; 1♂ BMNH; 5.V.87, 1♂ AJ. **Cauca:** 1♀ BMNH. "Cauca b. Cali, 1896, Bürger S.", 2♂♂ 2♀♀ ZMB. **Meta:** Bellavista [San Martín, 3°42'N-73°42'E], 1200m, 10.IX.1976, C.L. Orazio, 1♂ MHNC. Parque Tinigua, Rio Duoa, 400m, 1994, A. Calixto, 1♀ FF. **Quindío:** Circasia, Fca Bretel, 13.VII.1988, F.Fernandez, 1♀ FF. **Risaralda:** Pueblorrico, 1500m, 13.IV.1991, F. Fernandez, 3♀♀ MHNC. Rio Otún, 14.X.1992, L. Cascedo, 1♂ MHNC. Santuario, Vda Los Planes, Fca Las Delicias 2000m, XI.1991, F. Fernandez, 1♂ 3♀♀ MHNC, 1♂ 1♀ FC. Santuario, Vda Campamento, Fca Bella Vista 2500m, XI.1991, F. Fernandez, 1♂ 1♀ MHNC. **Valle del Cauca:** Restrepo [3°49'N-76°34'E], Camino Rio Bravo-Campo Aisla, 10.II. 1984, D. Agosta, 1♀ MHNC; Vida-Rio Bravo, 900m, 10.II.1984, I. de Arévalo, 1♂ MHNC; Camino Rio Azul-Rio Bravo, 500m, 10.II. 1984, P. Garay, 1♂ MHNC. Calima, II.1983, T. Mizunuma, 1♂ MH; Calima Valley, V.1983, D. Torres, 5♂♂ 4♀♀ CMNH, 1♂ 1♀ FC. Calima Valley, Campoalegre, IV.1990, L.C. Pardo, 2♂♂ 1♀ DLP, 1♂ FC. West-Cordillera 700-1100m, Rio Bravo valley oberhalb, Lake Calima, Umgeb. Buga, Farrell leg., 1♂ KW. Boga [=Buga?], VII.1986, G. Bentz, 3♂♂ 3♀♀ JW.

COLOMBIA?: Cachala, XI.1896, Rosenberg, 1♀ BMNH.
 ?PERU. Ucayali: Pucallpa, 1978, 2♂♂ 1♀ KW, 1♀ WJ [locality doubtful?].
 ?HONDURAS: San Antonio de Oriente, El Tamoran, 15.VII.1989, E. Martinez, 1♂ WJ [locality erroneous!].
 ?BRASIL. "Brasil, '85", 5♂♂ 2♀♀ JW [locality most probably erroneous!].
 ?PARAGUAY: "Paraguay, Sapucay, G. Morewood, 1919-76", 1♂ [aedeagus lacking!] 1♀ BMNH [locality most probably erroneous!].
 Other material: No data, R.D. Ward Collection, 1♀ CMNH.

COLOUR AND MEASUREMENTS OF LARVAE. Data are based on five L3 specimens, which I collected along the road Nanegalito-Nanegal, Pichincha, Ecuador, on 11 December 1996 (elevation 1450m). Identification was made "ex societate imaginis".

Measurements (mm): TL (total length), 23-24; PNW (width of pronotum), 4.0-4.1; PNL (length of pronotum), 2.5-2.6; FW (width of fronto-clypeo-labral area), 1.9-2.0; FL (length of fronto-clypeo-labral area), 1.8-1.9.

Colour of head metallic bronze with cupric reflections above, dull rufous brown below; labrum and mandibles dark brown to black, other appendages testaceous. Disc of pronotum light to dark brown, anterior angles and lateral margins of pronotum testaceous. Setae of head and pronotum pale straw to testaceous, other body setae rufous to brown. Sclerites of abdomen pale brown, distinct.

REMARKS. According with the collecting data given above, *P. chaudiroidi* is apparently the most commonly collected species from both Andean slopes of Ecuador and Colombia. However, records from the eastern slope and lower elevations seem to need

confirmation by means of recent, well-checked material. The large, convex pronotum of *P. chaudiroidi*, as well as its olive-green body colour (sometimes with bluish reflections), make its recognition an easy task. It is obviously a near relative of *bipustulata*, however its sympatry with that species in Colombia makes it clear that the two must be reproductively isolated.

Moreover, despite a remarkably consistent uniformity in series of specimens collected together in the very same sites, some variation occurs among the various populations which I presently place in *chaudiroidi*. For instance, the specimens I collected near Nanegalito, Pichincha, Ecuador, are consistently different from those I collected near Mindo, only a few kilometers apart, which appear to be larger, more robustly built and slightly darker in colour. Two specimens from Lita Cristal, Imbabura, Ecuador, are also very distinctive by having a pronotum more narrowed behind, a darker body colour and smaller elytral spots. A nice series of specimens from Apuya, Napo, differs considerably from most *chaudiroidi* specimens, as they are smaller in size, light-green coloured, and with a narrower weaker pronotum. It may be that further study will prove some populations to deserve separate specific status.

5. *Pseudoxycheila pearsoni* n. sp. (figs 25, 26, 27, 47)

IDENTIFICATION. Similar to *chaudiroidi* but more bluish in colour, with the pronotum narrower, approximately as long as wide, distinctly and abruptly constricted behind the front lobe. Elytral yellow spot relatively small; velvety black area reaching the base of elytra but leaving the elytral spot connected directly with the lateral metallic margin. Aedeagus similar to that of preceding species, tapering, straight, widely spatulated apically.

DESCRIPTION. Head mostly metallic green with bluish reflections. Labrum, mouth parts and articles 1-4 of antennae shining black.

Pronotum approximately as long as wide, slightly restricted behind, moderately convex on disc, distinctly and abruptly constricted behind the anterior lobe; lateral carena well distinct until the middle at least. Colour as on head, with a somewhat velvety appearance.

Elytra relatively large, oval-shaped, acutely attenuated behind, with a strong wide tooth at the sutural angle near the male; convex on disc, the maximum width near the middle. Shoulders rather strong, subsquared. Colour bluish green on shoulders, the lateral margins and the apical area; velvety black area reaching the base of elytra but leaving the elytral spot connected directly with the lateral metallic margin. Elytral discal spot roundish, relatively small. Epipleura metallic bluish-black.

Underside dark metallic with bluish reflections. Last abdominal sternite shining black. Legs shining black.

Aedeagus similar to that of preceding species, tapering, straight, widely spatulated apically.

Length: 15.5-17 mm (without labrum).

ETYMOLOGY. The species is dedicated to my friend Dr. David L. Pearson (Department of Zoology, Arizona State University, Tempe, Arizona, USA), who for some years has carried on intensive field research on the tiger beetle fauna of Ecuador and who was my good companion during a collecting trip to Ecuador in May 1992.

DISTRIBUTION. Known so far from four localities of south-eastern Ecuador only (fig. 47).

MATERIAL EXAMINED. Holotype (DLP), allotype (DLP) and 46 paratype specimens.

ECUADOR. **Zamora-Chinchi**: 16 km SE Zamora, 0404S-7900W, 1250m, 18.III.1996, D.L. Pearson, 1 ♂ DLP (holotype), 1 ♀ DLP (allotype), 1 ♀ DLP, 1 ♂ 1 ♀ FC. Zamora, Rio Jumbos, 26.IV.1997, K. Los, 1 ♂ KL. Rio Sabanilla, 1300m, 22.V.1996, A. Jasinski, 1 ♀ AJ. Veinte y Ocho de Mayo, 23.V.1996, K. Los, 3 ♂♂ 4 ♀♀ KL, 1 ♂ 1 ♀ FC; 1600m, 30.IV.1997, A. Jasinski, 2 ♀♀ AJ; 1600m, 30.IV.1997, K. Los, 1 ♂ 1 ♀ KL, 2 ♀♀ AJ, 1 ♂ FC. 8km S Veinte y Ocho de Mayo, 23.V.1996, A. Jasinski, 1 ♂ 2 ♀♀ QCAZ. Via Veinte y Ocho de Mayo-Guadalupe, 23.V.1996, A. Jasinski, 4 ♂♂ 3 ♀♀ AJ, 1 ♂ 2 ♀♀ FC. Cordillera del Condor, 1300m, 29.IV.1997, A. Jasinski, 2 ♂♂ 1 ♀ AJ, 1 ♂ 1 ♀ FC; 1300m, 29.IV.1997, K. Los, 2 ♂♂ 2 ♀♀ AJ, 1 ♂ FC; 1500m, 1.V.1997, A. Jasinski, 1 ♀ AJ, 1 ♂ FC.

REMARKS. *P. pearsoni* n.sp., as *chaudoiri*, is obviously a close relative of *bipustulata*, and it belongs to the same group of species. However, it can easily be separated by its narrower, shorter pronotum, abruptly constricted behind the front lobe, by its bluish-emerald green body colour and the relatively smaller yellow elytral spot. Its range is apparently restricted to south-eastern Ecuador (Zamora-Chinchi).

6. **Pseudoxycheila atahualpa** n. sp. (figs 28, 29, 30, 41, 47, 94, 104, 105, 106)

IDENTIFICATION. Similar to *chaudoiri* but narrower, more elongate. Pronotum slightly longer than wide, with the anterior corners longer, straight. Steel blue to bluish black reflections on head, pronotum and elytra. Aedeagus slender, longer, straight, slightly spatulated apically.

DESCRIPTION. Head with steel blue to bluish black reflections. Labrum, mouth parts and articles 1-4 of antennae shining black.

Pronotum slightly longer than wide, more obviously in males, slightly restricted behind, side margins nearly straight; sides of the anterior lobe long, straight. Same "cold" steel blue to bluish black reflections as the head.

Elytra oval-shaped, narrow and elongate, acutely attenuated behind, convex on disc, the maximum width near the middle. Shoulders rather strong, subsquared. "Cold" steel blue reflections on base, shoulders, the lateral margins and the apical area. Velvety black areole proportionally small, with a roundish, yellowish, medium-sized discal spot in the middle. Epipleura shining bluish-black to black.

Underside metallic steel blue to bluish black, with some violet reflections. Last abdominal sternites darker, nearly black. Legs shining black.

Aedeagus slender, longer than in preceding species, straight, slightly spatulated apically.

Length: 14-17.5 mm (without labrum).

ETYMOLOGY. The species is dedicated to the memory of the last Inca Emperor Atahualpa, who had formerly ruled the region of Quito for over thirty years as a governor under his father, the Emperor Huayna Capac, and who was later treacherously assassinated by the Spanish "Conquistadores" in 1533.

DISTRIBUTION. Northern Ecuador to south-eastern Colombia (figs 41 and 47).

MATERIAL EXAMINED. Holotype (QCAZ), allotype (QCAZ) and 193 paratype specimens.

ECUADOR. Ost-Kordillere, 1000m, Nebelwald, III.1992, Verena Mever, 1♂ 1♀ ZMB. Napo: X.1995-IV.1996, J.A. Pehna, 1♂ A.J. Papallacta, 3500m, 6.V.1995, N. Marchán, 1♂ FC, 1♀ QCAZ. Baeza, 19.I.1992, V.Yanez, 1♀ QCAZ. Via Baeza-Lago Agrio,

I.1976, F.J. Ortiz, 1♀ QCAZ. San Francisco de Borja, 18.IV.1992, V. Utreras, 26464 135 QCAZ. Sta Rosa de Quijos, 1900m, 8.XI.1985, P. Moret, 1♂ 1♀ PM; 1400m, 3.VIII.1991, A. Bandinelli, 1♂ 1♀ FC, 1♂ ZMB, 1♂ DEI, 1♂ BMNH, 1♂ 1♀ MNHN, 1♂ DEI, 4♂♂ 4♀♀ AB; 1700m, 23.V.1997, A. Vigna Taglianti, 1♂ 2♀♀ MZUR, 2♂♂ 4♀♀ FC; 23.V.1997, A. Di Giulio, 1♂ MZUR, 2♂♂ 1♀ FC; 23.V.1997, A. Casale, 1♂ MRSN, 1♀ AC. Via El Chaco-Lumbaquí, Rio Salado, 1350m, 7.XII.1996, F. Cassola, 1♂ FC. El Chaco, 1200m, 6.V.1995, M. Rodriguez, 1♂ 1♀ QCAZ, 1♂ 1♀ FC; 1200m, 6.V.1995, P. Salazar, 1♂ QCAZ; 1600m, 6.V.1995, R. Paredes, 1♂ 1♀ QCAZ, 1♀ FC; 900m, 30.V.1995, X. Cisneros, 1♀ QCAZ; 460m, 6.VI.1995, V. Quitiguiña, 1♀ QCAZ; 3.IV.1996, R. Naviaux, 2♂♂ 2♀♀ RN, 1♂ FC. San Rafael [0°02S-77°33W], 1500m, 1-2.XI.1984, F. Cuesta, L. Duque, M. Ferro, C. Josse & X. Parriña, 2♂♂ 3♀♀ QCAZ; 3.XII.1988, C. Ayala, 1♀ QCAZ (allotype); 3.XII.1988, V. Cachago, P. Coral, J. Jiménez, K. Paredes, R. Poebela, F. Trujillo & Vivar, 1♂ 6♀♀ QCAZ, 1♂ FC; 20.XI.1993, M. Montalvo, 1♀ QCAZ; 1400m, 4.XII.1993, A. Paucar & K. Proaño, 2♀♀ QCAZ. Coca Falls, 5.II.1977, S. Borman, 1♂ DLP. San Rafael, Cascada de Coca, Rio Reventador, 25.V.1997, A. Di Giulio, 1♂ MZUR, 1♀ FC; 25.V.1997, A. Casale, 1♂ AC. Mondayaco, 700m, 30.V.1991, L. Schel, 1♀ FC. Jumandi [0°50S-77°50W], 18.IV.1992, R. Bernal, 1♂ 2♀♀ QCAZ. Archidona [0°55S-77°51W], XI.1973, 1♂ JW; 500m, XII.1986, J. Naranjo, 1♀ QCAZ; 18.IV.1992, F. Fernandez, 1♂ QCAZ; 1.V.1992, L. Vinuesa, 1♀ QCAZ; 21.V.1993, T. Santander, 1♀ QCAZ. 17km SW Tena, 28.V.1977, P.J. Spangler & D.R. Givens, 3♂♂ USNM; 26-28.V.1977, W.E. Steiner, 1♂ 1♀ CMNH. Via Narupa-Loreto, 7.5 E Narupa, 7-8.XII.1996, F. Cassola, 2♀♀ FC. Between Hollin [0°45S-77°25W] and Loreto [0°40S-77°19W], 1100m, 6.XII.1986, H. Freive, 1♂ 1♀ QCAZ; 5-6.XII.1987, Espinosa, 1♀ QCAZ, 1♀ FC; 6.XII.1987, F. Arellano, R. Boada, A. Cordova, A. Flachier, J. Gomez, N.L. Granda, S. Gutierrez, Hernandez, Manosalvas, H. Peña Herrera, 9♂♂ 4♀♀ QCAZ; 6.XII.1987, M.M. Mena, 1♂ QCAZ (holotype); 6.XII.1987, R. Ortiz, 1♂ WJ. Via Jondachi-Loreto 1100m, 6.XII.1996, J. Castañeda, V. Barragan, J. Gil, G. Granda, J. Lecaro, F. Villalva, 2♂♂ 4♀♀ QCAZ. Hollin 1100m, 7.XII.1991, F. Caceres, 1♂ QCAZ. Rio Hollin 1200m, 6.XII.1991, P. Delgado, M. Endaro & P. Ramón, 2♂♂ QCAZ, 1♂ FC; 1100m, XI.1994, G. Onore, 1♀ QCAZ; 9.XII.1995, D. Prado, 1♂ 1♀ QCAZ; 9.XII.1995, P. Muriel, 1♀ QCAZ; 6-8.XII.1996, F. Maza, 3♂♂ 2♀♀ QCAZ; 1100m, 5-7.XII.1996, M. Avila, M. Bustamante, E. Gortaire, R. Ramirez, 2♂♂ 2♀♀ QCAZ; 1050m, 8.XII.1996, F. Cassola, 3♂♂ 4♀♀ FC; 1050m, 8.XII.1996, A. Vigna Taglianti, 1♀ MZUR. 72km E Baeza, 16.V.1975, waterfall at 4200', A.B. Gurney, 2♂♂ USNM. Loreto, X.1987, G. Onore, 1♀ QCAZ. km 3 à 5 route Paugayacu-Loreto, 1350m, 12-17.VIII.1988, J. Haxaire, 2♂♂ 2♀♀ PM, 2♀♀ FC. **Pichincha** (doubtful records!); Nanegalito 1300m, 1.I.1993, D. Villagomez, 1♀ QCAZ; 1600m, 23.I.1994, H. Romero, 2♂♂ QCAZ, 1♂ FC, 1♀ DEI; 1600m, 8.VII.1995, J. Freile, 1♂ FC, 1♀ QCAZ. Via Nanegalito 1500m, 21.I.1994, F. Sancho, 1♀ BMNH. Mindo, 19-20.VI.1993, M. Gamboa, 1♂ QCAZ; 1500m, 17.I.1997, R. Oliva, 1♀ QCAZ. Tandapi [=M.Cornejo Astorga], V.1985, G. Onore, 1♂ ABr; 13.I.1992, B. Elizalde, 1♂ QCAZ. Santo Domingo de los Colorados, 650m, 18.XII.1992, J. Hervas, 1♂ QCAZ. Via Puerto Quito, 26.XII.1985, 1♀ QCAZ. **Sucumbíos**: El Reventador, V.1988, G. Onore, 1♂ QCAZ, 1♂ FC; 3.XII.1988, F. Maro, H. Pallares & M. Uerena, 2♂♂ 1♀ QCAZ, 1♀ DEI; 8-9.I.1989, S. Sandoval, 3♂♂ 1♀ QCAZ. 2.2km SW El Reventador, 1530m, 6.XII.1996, F. Cassola, 3♂♂ 1♀ FC; 23.V.1997, A. Vigna Taglianti, 1♀ FC. 1km N San Rafael, 1480m, 5.XII.1996, F. Cassola, 1♀ FC. 65km W Lago Agrio, 18.V.1975, A.B. Gurney, 1♀ USNM. **Tungurahua**: Rio Blanco, 1800m, 1♀ AJ.

COLOMBIA. **Boyacá**: Pajarito, Corinto, Queb.[rada] La Conguta, 1250m, 7.IX.1981, I. de Arévalo, 1♀ MHNC, 1♀ FC; 1580m, 9.IX.1981, I. de Arévalo, 1♂ MHNC. **Putumayo**: "Upper Putumayo R., Colombia", 2♂♂ 1♀ USNM. Parque La Paya 400m, 1993, L.F. Segura, 1♂ 1♀ FF, 1♂ FC.

COLOUR AND MEASUREMENTS OF LARVAE. The data indicated below are based on two L3 specimens, which I collected along the road Narupa-Loreto, near the crossing of Rio Hollin, Napo, Ecuador, on 7 December 1996 (elevation 1050m), as well as on two other L3 specimens which I

collected at 1 km N of San Rafael, Sucumbíos, Ecuador, on 5 December 1996. Identification of these larvae was made "ex societate imaginis". Nine additional larvae (5L3, 3L2 and 1L1), which were collected by me and A. Vigna Taglianti along the road Baeza-Lumbaquí, at 3 km N of El Chaco, on 5 December 1996 (elevation 1600m), are also this species, because adult specimens were subsequently collected by A. Vigna Taglianti on the very same roadcut bank.

Measurements (mm): TL (total length), 23-25; PNW (width of pronotum), 4.2-4.3; PNL (length of pronotum), 2.5-2.7; FW (width of fronto-clypeo-labral area), 2.0-2.1; FL (length of fronto-clypeo-labral area), 1.8-1.9.

Colour of head metallic bronze with some cupric or greenish reflections above, dark rufous brown below; labrum and mandibles dark brown to black, other appendages rufous-testaceous. Disc of pronotum light to dark brown, anterior angles and lateral margins of pronotum testaceous, slightly rufescent. Setae of head and pronotum pale straw to testaceous, other body setae rufous to brown. Sclerites of abdomen pale brown, poorly distinct.

REMARKS. *P. atahualpa*, like *chaudoiri* and *pearsoni*, is obviously a close relative of *bipustulata* and it belongs to the same group of species. However, it can be separated by its narrower, more parallel-sided pronotum, and by its darker, steel blue body colour. Its range is apparently restricted to northern Ecuador and south-eastern Colombia. However, records from the western slope of Andes (Pichincha, Ecuador) appear to be doubtful and most probably due to mislabelling.

7. ***Pseudoxyeila angustata*** Chaudoir, 1865 (figs 31, 32, 33, 43, 91, 93)

Pseudoxychila angustata Chaudoir, Cat. Coll. Cicind. 1865, p.62 ["Elle habite le Pérou oriental" (erroneous!)].

Pseudoxychila angustata Chaudoir; Fleutiaux 1892, Cat. syst. Cicind., 16.

Pseudoxyeila angustata Chaudoir; Bates 1891, in E. Whympfer, Suppl. Appendix to Travels etc., 7.

Pseudoxychila bipustulata (Fabricius); W.Horn 1926, Col. Cat. 86, 82.

Pseudoxyeila bipustulata (Fabricius); Wiesner 1992, Verzeichnis der Sandlaufkäfer der Welt, 55.

TYPE SPECIMEN. The type locality for this species was said by Chaudoir (1865, p.62) to be the Eastern Peru ("Pérou oriental"), but

a few pages earlier (p.41) it was indicated by the same author as the "Nouv. Grenade". Although Chaudoir related to have seen several specimens ("...dans plusieurs individus que j'ai vus..."), the species was actually described based on a female specimen only, which was said by Chaudoir to have been given to him by Mniszech ("Elle...m'a été donnée par M. de Mniszech"). As a matter of fact, a female specimen was found in the MNHN collection, bearing a label "Muséum Paris [printed], Nouv. Grenade [handwritten], Coll. Chaudoir 1874 [printed]", which also bears a second label "angustata Chaud., Nouv. Grenade, Mniszech", obviously handwritten by Chaudoir himself [see Horn & Kahle 1935-37, Taf.33, fig.29] (fig. 3). This specimen is therefore assumed to be the original Chaudoir's *angustata* type (prototype) and it is herein designated to be the species lectotype. A red label was added accordingly.

Ecuador is supposed to have been the true collecting locality of the lectotype specimen. In early Nineteen Century, in fact, the name "Nueva Grenada" (Nouvelle Grenade) still designated the territories of what are today Colombia, Panama, Venezuela and Ecuador, although at the Mniszech's and Chaudoir's times it was restricted to present-day Colombia only (República de Nueva Grenada, 1830; Confederación Granadina, 1857; Estados Unidos de Nueva Grenada, 1861) (Dydynski 1988).

The lectotype specimen well corresponds to Chaudoir's description, and its separation from the *bipustulata* female type specimen is obvious. In particular, several features are noticeable, such the smaller size, the greysh bronze colour with slight olive-green reflections, the parallel-sided, not enlarged elytra, the narrower pronotum and the slightly smaller eyes. Similar specimens, including males, were found among the rich material examined from Ecuador.

IDENTIFICATION. Rather small, less robust than preceding species, greysh- to olive-green in colour. Elytra slender, parallel-sided, slightly enlarged behind, the maximum width after the middle. Aedeagus short, tapering, with a straight, slightly spatulated apex.

DESCRIPTION. Head dark with greyish or greenish reflections. Labrum, mouthparts and articles 1-4 of antennae shining black.

Pronotum small, weak, approximately as long as wide, restricted behind, poorly convex on disc. Dark, dull, with same greysh or greenish reflections as on head. Hind lateral corners shining metallic olive- or dark-green.

Elytra slender, sub-parallel sided, slightly enlarged behind, the maximum width after the middle. Greyish to olive-green reflections on base, shoulders, the lateral gutter and the apical part. Velvety black areole poorly apparent in some individuals, a roundish, yellowish, medium-sized discal spot in the middle. Epipleura metallic dark green to black.

Underside dark steel blue with some green or sometimes cupreous reflections. Last abdominal sternite shining black. Legs slender, thin, shining black.

Aedeagus short, tapering, with a straight, slightly spatulated apex.

Length: 13-15.5 mm (without labrum).

DISTRIBUTION. Ecuador (western slope of Andes only) (fig. 43). Two doubtful records from Peru. Most probably to be found in south-western Colombia as well.

MATERIAL EXAMINED. 178 specimens (including lectotype).

ECUADOR? COLOMBIA?: "Muséum Paris, Nouv. Grenade, Coll. Chaudoir 1874", 1♀ MNHN (lectotypus!).

ECUADOR. Ecuador, 1♂ 1♀ BMNH. Ecuador, El Puente, 6000 ft, Dolby-Tyler, G.C. Champion Coll. BM1927-409, 1♀ BMNH. Ecuador, Guayaba, Fry Coll. BM 1905-100, 1♀ BMNH. "Milligalli, 6230 feet" (Bates 1891). **Carchi**: 11 mi. SE Maldonado, 2420m, 27.VII.1983, J.E. Rawlins, 1♂ CMNH. **Cotopaxi**: Las Pampas, II.1986, G. Onore, 2♀♀ QCAZ; 1800m, 1-3.XII.1995, A. Muñoz, 1♀ FC. San Francisco de las Pampas, 17.XI.1991, A. Bandinelli, 1♀ FC. Las Pampas-Otonga 1500-2000m, 1.I.1997, G. Onore, 2♂♂ 1♀ QCAZ, 1♂ 1♀ FC; 1.VI.1997, A. Di Giulio, 1♀ FC. 5 km WNW San Francisco de las Pampas, Otonga Reserve, 00°25'S-79°00'W, 1880m, cloud forest, 15.V.1994, J. Rawlins, S. Thompson & G. Onore, 1♂ CMNH. La Otonga, 1800m, 28.XI.1994, L. De la Torre, 1♂ QCAZ; 10.III.1996, G. Onore, 8♂♂ QCAZ, 1♂ MZUR, 1♀ FC, 1♂ MSNG2000m, 20.V.1996, G. Onore, 1♂ 1♀ FC; 1800m, 1.IX.1996, A. Paucar, 5♂♂ 2♀♀ QCAZ; 2000m, 30-31.V.1997, A. Di Giulio, 1m MZUR. Calupiña, VII.1987, G. Onore, 1♂ 3♀♀ QCAZ. Los Libres, 2000m, 5.XI.1994, X. Cisneros & J. Barragán, 1♀ QCAZ, 1♀ FC; 6.XI.1995, P. Menendez, 2♀♀ QCAZ, 1♀ FC. **Imbabura**: Chaluayacu, 12-20.IX.1995, A. Endara, 1♀ FC. **Loja**: "Ecuador, Cisne [El Cisne], Fry Coll., BM 1905-100", 2♂♂ BMNH, 1♀ FC. 9km N Celica, 0403S-7956W, 1770m, 12.III.1996, D.L. Pearson, 6♂♂ 2♀♀ DLP, 1♂ 1♀ FC. 10 km SE Sozoranga, 0420S-7928W, 2000m, 14.III.1996, D.L. Pearson, 11♂♂ 12♀♀ DLP, 2♂♂ 2♀♀ FC. **Napo** (doubtful records!): Cuyuja, 2200m, 16.I.1988, M. Ponce, 1♂ QCAZ. San Rafael, 1.XI.1984, L. Duque, 1♂ QCAZ; 8.V.1986, P. Vega, 1♀ FC. **Pichincha**: Quito, Fry Coll. 1905-100, 1♂ FC. Calacalí, 26.I.1989, M. Pallares, 1♀ QCAZ. Pahuma, 1740-1800m, 1.IV.1995, T. Sanchez, 1♂ 1♀ QCAZ, 1♀ FC; 3.VI.1995, N. Okar, 1♀ QCAZ; 3.VI.1995, K. Suarez, 1♀ FC; 10.VI.1995, R. Paredes, 1♂ QCAZ. Mindo, 1500m, 30.VI.1996, D. Lasso, 1♀ QCAZ. Nanegalito, I.1987, S. De la Torre, 1♂ 3♀♀ QCAZ; 1900m, 8.VII.1995, A.A. Costa, 1♂ FC; 27.I.1996, M. Rodriguez, 2♂♂ 1♀ QCAZ. Nono-Bancos, VII.1987, J. Ulloa, 1♀ FC. Los Bancos, 11.VII.1987, X. Parmino, 1♂ QCAZ, 1♀ ZMB; 11.VII.1987, O. Vacas, 1♀ QCAZ. Tandayapa, IV.1983, G. Onore, 1♀ QCAZ; 27.V.1984, S. Paredes, 1♂ QCAZ; 30.I.1988, S. Gutierrez, 1♂ QCAZ; 30.I.1988, F. Ulloa, 1♂ QCAZ. 12km Tandayapa, Finca Bellavista, 29.IX.1996, 1♂ 3♀♀ QCAZ. Otongoro, VI.1987, M.H. Lopez, 1♀ QCAZ.

Palmeras [0°13S-78°47W], 1800-2000m, 12.X.1984, M. Bejarano, 1♀ QCAZ; 5.XII.1984, M. Bejarano, 1♂ QCAZ; 14.XII.1986, P. Grijalvo, 1♂ FC, 1♂ 1♀ QCAZ; 1.1987, C. Borja, 1♂ QCAZ; 14.XI.1987, J. Gomez, 1♂ QCAZ; 1.XII.1987, S. Rivas, 1♂ QCAZ; 2.I.1988, Hernandez, 1♂ 1♀ QCAZ; 11.I.1988, A. De la Torre, 1♀ QCAZ; 10.I.1988, N. Silva, 1♀ QCAZ; 3.XI.1988, F. Haro, 1♀ QCAZ; 16.XI.1991, A. Barragàn, 1♀ FC, 1♀ DEI; 24.V.1992, E. Pichilingue, 1♀ QCAZ; 26.V.1992, C. Vinuesa, 1♀ QCAZ; 28.V.1992, B. Elizalde, 1♀ QCAZ; 30.V.1992, F. Rios, 1♀ WJ; 30.V.1992, P. Ortiz, 1♂ QCAZ; 6.VI.1992, J. Lussio, 1♂ FC; 31.X.1992, F. Caceres, 1♂ QCAZ, 1♂ MNHC; 7.XI.1992, P. Salvador, 1♂ QCAZ; 24.XI.1992, D. Sanchez, 1♂ QCAZ; 24.XI.1992, H. Barragàn, 1♀ QCAZ; 19.XI.1994, P. Guarderas, 1♂ DEI; 1800m, 9.XI.1996, M. Bustamante, 1♀ FC. Palmeras, Rio Guajalito (Oagalito) 1800m, 24.X.1987, P. Grijalvo, 1♂ QCAZ; 24.XI.1987, P. Grijalvo, 1♂ QCAZ; XI.1989, F. Romero, 1♂ QCAZ; 31.V.1992, F. Romero, 1♂ QCAZ; 24.X.1992, S. Valarezo, 1♀ QCAZ; 29.XI.1993, N. Neira, 1♀ QCAZ; 1850m, 8.VI.1996, P. Clavijo, 1♂ QCAZ. Las Palmas, 10.III.1985, J. Espinoza, 1♂ DLP. Chiriboga [0°16S-78°40W], I.1984, G. Onore, 1♂ QCAZ; X.1984, M. Garcia, 1♂ 1♀ QCAZ; 10.X.1986, P. Cordono, 1♂ QCAZ; 15.X.1986, P. Leone, 1♀ QCAZ; V.1987, E. Ebriones, 1♂ QCAZ; 22.X.1989, S. Fonseca, 1♀ QCAZ, 1♂ MNHN. M.Cornejo Astorga [=Tandapi], 1700m, 2.XI.1991, R. Sandora, 1♀ QCAZ. Santo Domingo de los Colorados, IV.1982, G. Onore, 1♀ FC; 8.XI.1985, Auelco, 1♀ QCAZ. Puerto Quito, 19.I.1985, X. Buitrón, 1♂ ZMB. Hac. Faisanes, 1.IV.1984, V. Zak, 1♂ QCAZ. P.V. Maldonado, 2.II.1997, G. Onore, 1♀ FC.

?PERU: "Peru, Fry Coll. BM 1905-100", 2♂♂ 2♀♀ BMNH [locality doubtful, one female specimen bearing also a label indicating "Pseudoxycheila bipustulata Latr., Ecuador"]. **Huanuco**: Tingo Maria, Kormilev Collection, 1♀ FC (deformed pronotum!) [locality doubtful?].

Other material: "77-15, E", 1♀ BMNH.

REMARKS. Apparently an Ecuadorian endemic (most probably living on the western slope of Andes only), *P. angustata* is a distinctly characteristic species, less robust and smaller than the preceding ones. The dull olive-grey colouration, the narrower pronotum, the parallel-sided, poorly convex elytra, and the smaller size, clearly distinguish it as a separate species. Records from eastern slope of Andes (Napo, Ecuador) are most likely erroneous.

8. *Pseudoxycheila onorei* n. sp. (figs 34, 35, 36, 47, 93)

IDENTIFICATION. The smallest species in the genus. Similar to *angustata* (possibly conspecific) but smaller, with more oval-shaped elytra and a more bluish-green body colour. Pronotum as long as wide, markedly constricted behind.

DESCRIPTION. Head rather small in proportion, dark bronze with slight steel blue reflections. Labrum, mouthparts and articles 1-4 of antennae shining black.

Pronotum approximately as long as wide, moderately convex on disk, equally coloured as the head, with a sericeous appearance. Side margins parallel in their front half, then markedly narrowed behind.

Elytra convex, oval-shaped, with some olive- to bluish-green reflections outside the velvety black discal area. One round, yellowish, rather large spot in the middle. Epipleura shining black.

Underside bluish-black with some violet to greenish reflections on sternal pieces and first abdominal sternites. Last abdominal sternites shining black. Legs slender, shining black.

Male aedeagus small, tapering, narrowed into a straight, slightly spatulated apex.

Length: 12-14 mm (without labrum).

ETYMOLOGY. I have the pleasure of dedicating this recently discovered new species to my good friend Prof. Giovanni Onore (Departamento de Biología de la Pontificia Universidad Católica del Ecuador, Quito, Ecuador), who very kindly collected or otherwise provided most of the Ecuadorian *Pseudoxycheila* specimens studied.

DISTRIBUTION. Presently known only from Southern Ecuador (fig.47).

MATERIAL EXAMINED. Holotype (QCAZ), allotype (QCAZ), 23 paratype specimens and one additional non-type specimen.

ECUADOR. **Loja:** Catacocha, 2500m, 29-30.XII.1994, G. Onore, 4♂♂ 3♀♀ QCAZ, 2♂♂ 1♀ FC. Las Chinchas, 2200m, 27.XII.1996, G. Onore, 6♂♂ 5♀♀ QCAZ, 2♂♂ 2♀♀ FC. **Zamora-Chinchipec:** Valladolid, IX.1985, L. Coloma, 1♂ QCAZ (non-type).

COLOUR AND MEASUREMENTS OF LARVAE. Data are based on six L3 specimens, which have been collected by G. Onore at Catacocha, Loja, Ecuador, on 29 December 1994 (elevation 2600m). Identification was made "ex societate imaginis".

Measurements (mm): TL (total length), 18-19; PNW (width of pronotum), 3.7-3.8; PNL (length of pronotum), 2.3-2.4; FW (width of fronto-clypeo-labral area), 1.7-1.8; FL (length of fronto-clypeo-labral area), 1.6-1.7.

Colour of head metallic bronze with some cupric reflections above, dull rufous below; labrum and mandibles dark brown to black, other appendages testaceous. Disc of pronotum brown to dark brown, anterior angles and lateral margins of pronotum testaceous. Setae of head and pronotum pale straw to rufous-testaceous, other body setae rufous to brown. Sclerites of abdomen pale brown, distinct.

REMARKS. *P. onorei* n.sp. is obviously a close relative of *angustata*, however, it can be separated by its smaller size, the more convex pronotum and the brighter body colour. The discovery of specimens referable to *angustata* in rather close localities of Southern Ecuador seems to reinforce its status as a separate species. *P. onorei* is the smallest *Pseudoxcheila* species known so far.

9. ***Pseudoxcheila nitidicollis*** n. sp. (figs 37, 38, 39, 41, 43, 93, 103, 107)

IDENTIFICATION. Similar to *angustata*, with same greyish to olive-green reflections, however, easily recognizable by the shining metallic lustre of pronotum. Head and pronotum small in proportion, the latter wider than long, narrowed behind, parallel-sided in the front half. Shoulders and lateral gutter of elytra also having a slight metallic lustre.

DESCRIPTION. Head with olive- to golden-green shining reflections, giving the surface a strong metallic lustre. Labrum, mouth parts and articles 1-4 of antennae shining black.

Pronotum wider than long, parallel-sided in the front half, restricted behind. Same olive- to golden-green reflections as in the head, giving the whole surface a sericeous appearance, however with a marked shining metallic lustre which makes the species unmistakable.

Elytra rather large in proportion, oval-shaped, acutely restricted behind, the maximum width near the middle; shoulders rounded, proportionally small. Strong olive- to bluish-green metallic reflections on shoulders, base, the sutural area behind the scutellum, the lateral gutter and the apical area. A velvety black areole between on disc, with a roundish, yellowish, relatively small discal spot in the middle. Epipleura dark green to black.

Underside olive green to greenish black, with some metallic bluish reflections. Last abdominal sternite shining black. Legs slender, shining black.

Male aedeagus small, tapering, narrowed into a spatulated, slightly down-bent apex.

Length: 14-16 mm (without labrum).

ETYMOLOGY. The name comes from the Latin words "nitidus" (bright) and "collum-i" (neck), thus referring to the shining metallic lustre of pronotum.

DISTRIBUTION. Ecuador (fig.43) and southern Colombia (fig. 41). A single doubtful record from Peru.

MATERIAL EXAMINED. Holotype (QCAZ), allotype (QCAZ) and 248 paratype specimens. One additional non-type specimen of doubtful origin.

ECUADOR. Ecuador, 1♂ BMNH; L. Gomez, BM 1940-219, 3♀♀ BMNH, 1♀ FC, 1♂ DEI. Ecuador, [18]71, E. de Ville, Andrewes Bequest., BM 1922-221, 2♀♀ BMNH. Ecuador, Spillmann coll., 7.X, 1♂ 1♀ ZMB. Ecuador, Fritsche V., 4♀♀ ZMB. "Ecuador, Spillmann coll.", 1♂ USNM. Ecuador, Santa Jnéz, H. Haensch, 1♀ FC. **Esmeraldas** [doubtful record!]; La Concordia [lat. 0°], VII.1972, S.V.D., 1♀ DLP. **Loja:** Loja, II.1996, I. Villafuerte, 1♂ AJ, 1♂ FC. 9km S Yangana, 0422S-7912W, 2090m, 15.III.1996, D.L. Pearson, 1♀ DLP. **Morona-Santiago:** 34km SE Gualaceo, Rio Culebrillas [3°02S-78°37W], 2200m, wet forest, 22-23.X.1987, C. Rawlins, C. Young & R. Davidson, 1♀ CMNH, 1♂ FC. Gualaceo-Limón, 2050m, 19.X.1995, D.L. Pearson, 2♂♂ 3♀♀ DLP, 1♂ 1♀ FC. 20km W Limón, 2050m, 10.X.1985, D.L. Pearson, 1♂ DLP. Limón-Indanza, via Sigsig 1050m, 28.XII.1995, G. Onore, 1♀ DLP, 1♂ FC. Tinajillas, 4.X.1985, F. Bravo, 3♂♂ 2♀♀ DLP, 2♀♀ FC. **Napo:** 30.XI.1985, P. Vega, 1♀ QCAZ. 10km E Papallacta, 15.V.1992, F. Cassola, 1♀ FC. Cuyuja, 2200m, 16.I.1988, M. Ponce, 1♀ QCAZ; 16.I.1989, G. Onore, 1♀ QCAZ. 1km W Cuyuja, 2430m, 4.XII.1996, A. Vigna Taglianti, 2♂♂ 1♀ FC, 1♂ MZUR; 2550m, 21.V.1997, A. Vigna Taglianti, 1♂ MZUR, 4♂♂ 1♀ FC; 2550m, 21.V.1997, A. Di Giulio, 1♂ 1♀ MZUR, 2♂♂ 2♀♀ FC; 2550m, 21.V.1997, A. Casale, 2♂♂ 2♀♀ AC, 2♂♂ 2♀♀ MRSN. "Baiza [=Baeza, 0°26S-77°54W], R. Haensch S.", 1♀ FC; Wickham Collection, 2♂♂ 1♀ USNM. Baeza, 2000m, 3.I.1976, W. Schacht, 1♂ WJ; 5.III.1979, G.A. Marshall, 1♀ WJ; 2000m, 5.III.1979, S. Marshall, 1♂ WJ; 2000m, 1-9.III.1979, M. Kaulbars, 1♀ WJ; 1800m, 30-31.XI.1985, P. Gonzalez, 1♂ MNHN, 1♀ QCAZ; Sara M.Paz, 1♀ QCAZ; 19.I.1992, R. Bernal, 1♀ POCZ; 1900m, 4.V.1995, D. Villagomez, 1♂ QCAZ, 1♂ FC. Umg. Baeza, Rio Machangara, 2000-2100m, 3.I.1976, H. Mühle, 1♂ 1♀ KW. San Francisco de Borja, 18.IV.1992, V. Utreras, 1♂ 1♀ QCAZ. Via El Chaco-Lumbaquí, 7-8km N El Chaco, 9.XII.1996, F. Cassola, 1♂ FC. Santa Rosa de Quijos, 1400m, 7.XII.1991, A. Bandinelli, 1♀ AB. San Rafael, 1.X.1984, M. Ferro, 1♂ QCAZ; 1400m, 9.VIII.1991; G. Onore, 3♀♀ QCAZ; 5.XII.1992, Miroya, 1♀ QCAZ. Via Papallacta-Cosanga, 2250m, 28.IV.1996, A. Merino, 1♂ FC. 4-5km S Baeza, 1870m, 4.XII.1996, F. Cassola, 2♂♂ 2♀♀ FC. 22 km W Baeza, 8000ft, 15.V.1975, A.B. Gurney, 1♀ USNM. Route Baeza-Tena km 29, Huacamayos, 2300m, 9.XI.1985, P. Moret, 1♀ PM. Tena-Baeza, Cosanga, 2000m, 24.V.1996, B. Yangari, 1♂ FC, 1♀ QCAZ. Cosanga [0°34S-77°55W], II.1989, G. Onore, 4♂♂ 2♀♀ QCAZ; 2000m, pasture edge, 20.XI.1991, L. Suarez, 1♂ QCAZ; 27.IV.1992, K. Parades, 1♀ QCAZ; 23.VIII.1992, R. Bernal, 1♀ QCAZ, 1♂ MHCN; 2000m, 24.V.1996, M. Vallejo, 1♂ FC, 2♀♀ QCAZ; 2000m, 25.V.1996, V. Troya & N. Bonilla, 1♂ 1♀ QCAZ; 2000m, 26.V.1996, J. Chaves, 1♂ QCAZ. Cosanga, Hacienda San Isidro, 11.X.1995, M. Lysinger, 1♀ HSI; 12.V.1996, M. Lysinger, walking on ground, sunny, 1♀ HSI; 2200m, 21-22.V.1997, A. Di Giulio, 2♂♂ MZUR, 2♂♂ 1♀ FC. 15 km W Cosanga, 2200m, 29.IX.1994, forested cattle pasture, D.L. Pearson et al., 1♂ (holotype), 1♀ (allotype), 2♂♂ 3♀♀ QCAZ, 1♀ FC. 5.6 km N Cosanga, 1875m, brushy road cut, D.L. Pearson, 1♀ QCAZ. 7km SW Cosanga, 2100m, brushy road cut, 26.IX.1994, F. Bersossa, 1♀ DEI. Pano, 3.XI.1991, M.C. Erazo, 1♀ QCAZ. Misahualli 431 m, 14.I.1994, M. Montalvo, 1♂ QCAZ. Rio Napo, VII.1956, Kormilev Collection, 1♀ USNM. Via Salcedo-Tena, 10.VII.1995, E. Tapía, 2♀♀ QCAZ. **Pichincha** [doubtful

records!]: Quito, 1♀ BMNH. Nanegalito 1400m, 1.I.1993, M. Baldeón, 1♀ MNHN; 1633m, 9.I.1995, R. Montúfar, 1♂ DLP. Gualea, VI.1929, 1♂ WS. Santo Domingo de los Colorados, VIII.1974, N. Venedictoff, 1♂ QCAZ. Rio Blanco, 18.IV.1935, Dr. Schultze, Rhonhof S.G., 1♂ 1♀ ZMB; 8.V.1956, 1♀ WJ. **Sucumbíos**: I.1996, I. Villafuerte, 6♂♂ 3♀♀ AJ, 1♀ FC, 1♀ MSNG. Napo & Aguarico Rivers, 250m, 20.X.1942, K.A. Rijsterborgh, 1♀ USNM. El Reventador, 1400m, 5.XII.1992, E. Barabona, 1♂ QCAZ; J. Arellano, 1♀ QCAZ; X. Carrillo, 1♀ QCAZ; F. De la Torre, 1♀ QCAZ; 2000m, 5.XII.1992, G. Onore, 1♂ CMNH. Rio Azuela, El Reventador, 1600m, 8.I.1976, H. Mühle, W. Schacht & E.J. Reissinger, 1♂ 1♀ KW. Cuyabeno, III.1984, E. Asanza, 1♂ QCAZ. Via La Alegria-La Bonita km32, 9.IV.1986, D. Bastidas, 1♀ DLP. La Bonita [1°50N-77°25W], 22.II.1996, G. Onore, 3♂♂ QCAZ, 1♂ FC; La Fama 2200m, 1.I.1994, G. Onore, 1♂ QCAZ, 1♀ FC. La Bonita, 2000m, 25.V.1997, K. Los, 2♂♂ 2♀♀ KL, 1♂ 1♀ FC; 1900-2100m, 26.V.1997, A. Jasinski, 5♂♂ 3♀♀ AJ, 1♂ FC. Via Tulcan-La Bonita, 17.XI.1984, Glaser Coll., 3♂♂ CMNH, 1♂ FC. Sebundoy, 2200m, XI.1984, J.C. Matheus, 1♀ DLP. **Tungurahua**: Viscaya, 2100m, 6.V.1996, A. Jasinski, 2♂♂ 2♀♀ AJ, 1♂ FC; 7.V.1996, K. Los, 4♂♂ 8♀♀ KL, 2♂♂ 1♀ FC. 7km NW Chimborazo [1°20S-78°52W], 3960m, dry subparamo, 15.X.1987, R. Davidson, J. Rawlins & C. Young, 1♂ CMNH, 1♂ FC. Yungilla, 1500m, VI.1938, W. MacIntyre, 1♂ USNM. Baños [1°21S-78°25W], R. Haensch, 1♂ BMNH; 1800m, F. Campos R., 1♂ 2♀♀ USNM. Baños-Shell, 1♀ AJ. Baños, Rio Blanco, VIII.1936, W. MacIntyre, 1♂ USNM; 14.V.1937, W. MacIntyre, 1♀ USNM; III.1939, W. MacIntyre, 1♀ USNM; 2♀♀ AJ. Rio Verde, 2100-2300m, III-IV.1997, G. Vellastegui, 4♂♂ 6♀♀ AJ, 1♂ 1♀ FC. **Zamora-Chinche**: Valladolid 1645m, 10.VIII.1993, C. Young, G. Onore & E. Tapia, 1♂ CMNH. 6km N Valladolid, 0431S-7920W, 2100m, 15.III.1996, D.L. Pearson, 1♂ DLP. Tucumbatza, 21.II.1981, R. Castelo, 1♂ DLP.

COLOMBIA. Columbia, Bowring. 63-47, 1♀ BMNH. **Huila**: Cueva de los Guacharos, 4.XI.1973, W.D. Mackay, 1♀ WS. **Putumayo**: Sibundoy, W of Mocoa, 2750 m, 25.III.1971, M. Cooper, 1♂ BMNH. Sibundoy, camino a Resguardo, 2100m, 12.IV.1994, F. Fernandez, 1♀ FF, 1♂ FC; 17.IV.94, F. Fernandez, 1♀ FF.

?PERU. **Huanuco**: Tingo Maria, 1♂ WJ [locality doubtful!] (non-type).

REMARKS. An easily recognizable species (because of the transverse shape and the strong metallic lustre of pronotum), which is known so far from Ecuador (eastern Andean slope) and southern Colombia only. Its closest relative is apparently *P. oxychiloides* (see below). Records from the western Andean slope (Pichincha) are most probably to be regarded as erroneous.

10. *Pseudoxcheila oxychiloides* W.Horn, 1927 (figs 40, 43, 91, 94)

Pseudoxchila bipustulata oxychiloides W.Horn, Rev. chil. Hist. nat., 1927, 31: 16 ["from Nanegal and Pilaton, 2 little places situated at a height of 3,000 feet in the western range of the Andes of Ecuador"].

Pseudoxcheila bipustulata oxychiloides W.Horn; Wiesner 1992, Verzeichnis der Sandlaufkäfer der Welt, 55.

TYPE SPECIMEN(S). The four syntype female specimens, listed below, are the only specimens known so far. The one labelled "Ecuad., Nanegal, Spillmann" (DEI) is herein designated to be the species lectotype.

IDENTIFICATION. Similar to *nitidicollis* but much different in colour. Head and pronotum half-shining pitchy black. Elytra wide, rounded, slightly flattened on disc, evenly dilated in the middle; colour more or less blackish-brown, nearly rufescent behind, dull in appearance, no apparent velvety black area in the middle; shoulders and base half-shining pitchy-black. Male unknown.

DESCRIPTION. Head proportionally small, shining pitchy black. Labrum, mouth parts and articles 1-4 of antennae blackish-brown, mandibles slightly rufescent.

Pronotum slightly wider than long, parallel-sided in front half, restricted behind. Same colour as the head, half-shining pitchy-black.

Elytra proportionally large, wide, oval-shaped, slightly flattened on disc, evenly dilated in the middle. Colour more or less blackish-brown, nearly rufescent behind, dull in appearance, no apparent velvety black area in the middle. Discal spot round, yellow. Shoulders and base half-shining pitchy-black. Epipleura testaceous.

Underside blackish brown, nearly rufescent on last abdominal sternites. Episterna half-shining pitchy black. Legs very thin, rufous-brown, darkened on "knees" and apexes of segments.

Male unknown.

Length: 13-15 mm (without labrum).

DISTRIBUTION. Presently known from northern Ecuador only. The only exact localities known so far are in the north-western Andes of Ecuador (Nanegal and Pilaton, Pichincha) (fig. 43), but a fourth specimen appears to have been collected in the Napo River area, thus in the eastern range of Andes, a location which Horn himself (1927) considered to be doubtful.

MATERIAL EXAMINED. 4 specimens (syntypes).

ECUADOR. **Pichincha**: "Ecuad., Nanegal [0°08N-78°41W], Spillmann", 1♀ DEI (lectotypus!), 1♀ FC. "Ecuad., Pilaton, Spillmann", 1♀ DEI. **Napo**: "Ecuad., Napo, Spillmann", 1♀ DEI. All specimens also bear the following printed labels: "Type W.Horn", "Syntypus" [red label].

REMARKS. *P. oxychiloides* is clearly a close relative of *nitidicollis*. It may be that future research will prove them to be conspecific, since the four type specimens strongly resemble dark, decolourized ("sunned") *nitidicollis* specimens. However, they are so much

consistent to each other in general shape, body colour, and proportions of body parts, that these differences are here considered to be sufficient to warrant separate full specific status.

On December 11, 1996, I personally made several vain attempts to find *oxychiloides* in the environs of its type locality of Nanegal, Pichincha, as well as between Nanegal and Nanegalito, but unfortunately only specimens of *P. chaudiroides* were found and collected. Future field research, aimed to re-discover *oxychiloides*, should definitely be focused especially to such an area. As to "Pilatón", this name designates the river valley (a tributary of Río Toachi) which the new road Quito-Santo Domingo runs through (Gómez 1996).

11. **Pseudoxcheila pseudotarsalis** n. sp. (figs 44, 45, 46, 47, 93)

IDENTIFICATION. Similar to *tarsalis* but more blue-green coloured. Males more robustly built, with the pronotum trapezoid-shaped, much wider in front, the anterior corners rather long, slightly convergent inwards. Velvety black elytral area large, with a small, roundish, pale-hued discal spot. First articles of male middle and hind tarsi more or less perceptibly thickened.

DESCRIPTION. Head proportionally large, especially in males, with strong blue-green to indigo reflections. Labrum, mouth parts and articles 1-4 of antennae shining black.

Pronotum more trapezoid-shaped than in *tarsalis*, especially in males, much wider in front, strongly constricted behind, side margins nearly straight. Anterior corners rather long, slightly convergent in front. Colour same as on head, with strong green or blue-green reflections.

Elytra strong, oval-shaped, more parallel-sided in males, acutely narrowed behind; shoulders strong, rounded, well-marked. Strong green to blue-green reflections on shoulders and base, the lateral gutter and the apical part. Black velvety area large, apparent, with a small, roundish, pale-hued discal spot in the middle. Epipleura metallic blue-green.

Underside more or less dark metallic blue-green. Abdominal sternites blackened apically. Legs shining black. First two articles of middle and hind tarsi of male perceptibly thickened.

Male aedeagus similar as those of preceding species; tapering, proportionally small, with a straight spatulated apex.

Length: 13-17 mm (without labrum).

ETYMOLOGY. The name refers to the striking similarity, in body colour and general facies, with the allied species *tarsalis* Bates, from Central America (see below).

DISTRIBUTION. Presently known from north-western Ecuador only (fig. 47). A large geographical gap apparently separates this species from the allied Centro-American *tarsalis*.

MATERIAL EXAMINED. Holotype (QCAZ), allotype (QCAZ) and 23 paratype specimens.

ECUADOR. "Ecuador, Paramba, Rosenberg", 1♀ BMNH. Place 1 (?), 1997, E. Villafuerte, 2♀ AJ, 1♀ FC. **Esmeraldas**: Rio Pizarra, IV.1984, G. Onore, 1♂ 1♀ QCAZ. Pizarra, III.85, G. Onore, 1♀ QCAZ (allotype), 2♂♂ QCAZ, 1♂ FC, 1♂ DEI. Cachabé, low c., XII.[18]96, Rosenberg, Fry Coll. 1905-100, 1♂ 1♀ BMNH. Rio Cayapas-Sta. María, 0°51S-78°58W, 10-14.IV.1996, Guerrero & Jensen, 1♀ MECN. **Pichincha**: Puerto Quito [0°05N-79°15W], XI.1983, F. Cuesta, 1♂ QCAZ; I.1984, P. Ponce Y., 1♂ QCAZ (holotype); 650-700m, 26.VIII.1984, J. Lávate, 1♀ FC; 17.V.1985, S. Struve, 1♂ QCAZ; 9.VI.1985, M. Sancho, 1♀ QCAZ. Puerto Quito km 113, 5.XII.83, V. Cevallos, 1♀ FC. San Bernabe, V.1986, L. Colomo, 1♀ QCAZ. Los Bancos [0°03N-78°55W], 22.VI.1994, A. Coronel, 1♂ QCAZ. Rio San Rimas, 25.III.1996, I. Aldaz, 1♀ QCAZ, 1♀ FC. Maquipucuna, 25-26.III.1988, I. von Lippke, 1♀ QCAZ [locality doubtful?].

REMARKS. Apparently a north-western Ecuadorian endemic, *P. pseudotarsalis* is a bright coloured species which is somewhat reminiscent of *tarsalis* mainly because of the pale-hued discal spot of elytra. However, shape of head and pronotum (especially in males) and lighter bluish body colour make clearly distinguish it as a separate species.

The few localities which are known so far seem to indicate that the species is confined to lower altitudes of Esmeraldas and Pichincha provinces only. Higher easternmost records, such as that from the Maquipucuna area, Pichincha, need to be confirmed. The species is likely to be found in the future in neighbouring areas of south-western Colombia as well.

12. *Pseudoxycheila tarsalis* Bates, 1869 (figs 48, 49, 50, 51, 91, 94)

Pseudoxycheila tarsalis Bates, Ent.Monthly Mag. 1869, 5, 290 ["Costa Rica, Central America"].

Pseudoxychila tarsalis Bates; Fleutiaux 1892, Cat. syst. Cicind., 16.
Pseudoxychila bipustulata tarsalis Bates; W. Horn 1926, Col. Cat. 86, 82.
Pseudoxycheila tarsalis Bates; Wiesner 1992, Verzeichnis der Sandlaufkäfer der Welt, 55.

TYPE SPECIMEN(S). Bates's description (1869) was apparently based on a male specimen only, generically reported from "Costa Rica, Central America" as "taken by the collectors of Mr. O. Salvin". However, two specimens (♂♀) in the BMNH, both bearing a printed round label "Type" (within a red ring), thus here assumed to be the original type specimens, also bear a printed label "Irazu, 6-7000 ft., H. Rogers" (the male also bears the following labels: "Sp. figured" [printed], "*Pseudoxycheila tarsalis* Bates ♂" [handscript by H.W. Bates] (fig. 7). Bates himself (1881-84) later reported *tarsalis* from "Costa Rica, Irazu (Rogers); Panama, Chiriqui (Champion)", thus confirming the above mentioned specimens as being the types of the species. The male specimen is herein designated to be the species' lectotype and it was given by me a red label accordingly.

IDENTIFICATION. Similar to *colombiana*, with shorter, less oval-shaped elytra. Colour dark iron blue, giving a blackish overall appearance, tinged with indigo-blue reflections. Pronotum rather convex on disc, with a somewhat velvety appearance. Elytral discal spot rather small, roundish, pale-straw coloured. First articles of middle and hind tarsi perceptibly thickened in males.

DESCRIPTION. Head proportionally large, dull, dark indigo-blue, sometimes blackish in appearance. Labrum, mouth parts and articles 1-4 of antennae shining black.

Pronotum as long or nearly as long as wide, restricted behind, rather convex on disc, similarly coloured as the head, with somewhat velvety appearance. Anterior angles short, slightly convergent in front.

Elytra large, wide, oval-shaped, evenly narrowed behind, with strong roundish shoulders. Colour dark indigo-blue, sometimes blackish in appearance, with bluish to blue-green reflections on shoulders, the lateral gutter and the apical part. Velvety black discal area large, with a small, roundish, pale-hued elytral spot. Epipleura dark, with metallic blue-green reflections.

Underside dark metallic indigo-blue with some green reflections. Legs shining black. First two articles of middle and hind tarsi of male more or less perceptibly thickened.

Male aedeagus proportionally small, tapering, straight, spatulated apically.

Length: 13-17 mm (without labrum).

DISTRIBUTION. Central America, from northern Costa Rica to central Panama (fig. 51). Doubtful, probably erroneous records from Honduras and Guatemala. The species has also been quoted from Colombia by Fernandez et al. (1994), however its occurrence in this country needs to be confirmed.

MATERIAL EXAMINED. 745 specimens (including 2 syntypes).

COSTA RICA. "Costa Rica" [handwritten by Bates], "H.W. Bates, Biol.Cent.Amer." [printed], "tarsalis Bates" [handscript by H.W. Bates], 1♂ MNHN (aedeagus broken!). "Costa Rica (Pittier.), 97-183", 2♂♂ 2♀♀ BMNH, 1♀ FC. "Costa Rica, Rogers, Sharp Coll.1905-313", 1♂ 4♀♀ BMNH, 1♂ FC. "Costa Rica, D. Bates 1878", 1♂ 1♀ MSNG. "Costa Rica, D. Heyne 1892", 1♂ 1♀ MSNG. Costa Rica, 3♂♂ 2♀♀ BMNH; "F. Bates Coll., B.M. 1911-248", 2♂♂ 2♀♀ BMNH; Wickham coll., 1♂ 1♀ USNM; "Fry Coll., B.M. 1905-100", 1♂ 3♀♀ BMNH; "H.E. Hinton Coll., BM 1977-566", 1♀ BMNH; "Andrewes Bequest., B.M. 1922-221", 1♀ BMNH; "C.H. Lankester, BM 1950-6", 1♀ BMNH; "Salle Coll., B.C.A., Col., I (1), Pseudoxycheila tarsalis", 1♂ BMNH; "Hist.-Coll., 39584, Wagner, Frantz", 2♂♂ 2♀♀ ZMB; "Coll.L.W. Schaufuß", 1♂ ZMB. Costa Rica, IV.1972, 1♂ 1♀ JW; IV.1978, 1♂ 1♀ MH. "Kosta Rica, Heyne", Coll. G. Hauser, 1♀ ZMB. Costa Rica, Costa Pacifico, P. Mannini, 1♂ FC. Costa Rica, Boruca, VIII.1900, 1♀ CMNH. Costa Rica, San Carlos, Collection Schild-Burgdorf, 1♂ DEI (unusually small specimen, only 12.5 mm long). Costa Rica, La Balsa, 25.V.1984, 1♀ RN. Costa Rica (Underwood), Pozo Azul, Perris Riv., Oct., 4♂♂ CMNH. Rio Banano 25m, 5.IV.1935 F. Gongora, F. Nevermann coll., 1♀ USNM. Navarro, 24.V.1936, Merle Dunn, F. Nevermann coll., 1♂ 1♀ USNM. La Palma 1500m, V.06, W.R. Maxon, 1♂ USNM; 7.II.1924, 1♂ 1♀ USNM; VIII.1924, F.Gongora, F. Nevermann coll., 1♂ 1♀ USNM; 21.II.1925, F. Nevermann, 1♂ 2♀♀ USNM; 5000ft, 29.VII.1929, Tristan & Rehn, in forest and small clearings in same, 5♂ 8♀ USNM; 1500m, in swamp, F. Nevermann, 1♂ 1♀ USNM; 4.I.1932, Kupper, F. Nevermann coll., 1♂ USNM; 22.V.1934, E. Azofeifa, C.H. Ballou, 1♂ USNM; 6.VI.1936, F. Nevermann, 3♂♂ 7♀♀ USNM; "im Sonnmuschlein am Felsen am Rio Segundo", F. Nevermann, 1♂ USNM. La Fuente, 24.XII.1931, A. Alfaro, 2♀♀ USNM. La Balsa, V.1984, 1♀ KW. **Alajuela**: Nördl. Alajuela, 1800m, C. Fernandez, F. Nevermann coll., 1♀ USNM. Zarcero, Schild&Burgdorf, Wickham coll., 1♀ USNM. Vara Blanca 1700m, II-III.1931, F. Nevermann coll., 1♂ USNM. 10 mi.N Vara Blanca, 16.VI.1967, Flint & Ortiz, 1♂ 3♀♀ USNM. Rio Sarapiquí, 8km N Vara Blanca, 16.VIII.64, R.B. & G. Roberts, 1♀ FC. **Cartago**: "Irazu, 6-7000 ft., H.Rogers" [printed], "Type" [printed, red ring], "B.C.A.[Biologia Centrali-Americana], Col., I (1), Pseudoxycheila tarsalis" [printed], 1♂ (lectotypus!) 1♀ BMNH (syntype); (the male also bears the following labels: "Sp. figured" [printed], "Pseudoxycheila tarsalis Bates ♂" [handscript by H.W. Bates], "Lectotypus, Pseudoxycheila tarsalis Bates, 1869, Des. F. Cassola, 1996" [handwritten and printed red labels]). "Irazu, 6-7000ft, H.Rogers" [printed], "H.W. Bates, Biol.Cent. Amer." [printed], 1♂ 1♀ MNHN, 1♀ USNM. Volcán Turrialba, 3500ft, 21-25.VIII.1925, Austin Smith, 2♂♂ 1♀ USNM. Turrialba, Schild&Burgdorf, 1♀ USNM; 800m, Schild, F. Nevermann, 1♀ USNM; K.W. Cooper, Glaser Collection, 1♂ CMNH; 1-15.VII.1965, J.P. Miles & J.C. Downey, 1♀ USNM. Volc.[án] Turrialba, Carriker, 4♂♂ 4♀♀ CMNH, 1♂ FC, 1♀ MHNC. Pacayas, C. Werckele, 1♀ USNM. R. Reventazon, 3-5 km E of Turrialba, 18-22.I.1973, W.L. Brown, 1m USNM. Juan Vinas, near Rio Reventazón, 2700ft, 28.IV.1910, P.P. Calvert, 1♂ CMNH. La Estrella, Cartago, 4700ft, 10.I.1923, C.H. Lankester, 2♂ USNM; F.

Nevermann, 1♂ USNM. Estrella Valley, Aurora Farm, 100ft, 11.IX.1925, 2♂ 1♀ USNM.

Guanacaste: Orosi, 1500m, Fassl, 1♂ 1♀ DEI; 1300m, Fassl, 1♂ DEI. Estac. Cacao (Mengo), 1100m, SW side Volcán Cacao, 10°55'N-85°28'W, V-VII.1989, BM 1989-210, 1♂ BMNH. SE slope Volcán Miravaltes, nr. Rio Naranja, 28.III.1973, D.R. Whitehead, 1♂ USNM. **Heredia:** Heredia, Finca La Hondura, 6.IX.1962, R. Casebeer, 1♀ USNM. Montaña, Finca Monta Cristo San José, I. Solis, 6.VII.1973, 1♀ USNM. Cordillera Central, Brailino Carrillo N.P., 3.VII.1989, B.M. 1989-210, 1♂ 3♀♀ BMNH, 2♀♀ FC; El Ceibo, Rio Peje, 10°32'N-84°07'W, 29-31.V.1990, 480m, Holzenthal, Blahnik & Muñoz, 1♀ WJ. Cerro Central, Zurque, 27.XII. C.P. Dodge, 3♂♂ 4♀♀ USNM. Carrillo, F. Bates Coll. BM 1911-248, 2♂♂ BMNH; Coll. Schild-Burgdorf, 1♂ 3♂♂ USNM; A. Nicolay Coll., 1♂ USNM. Sarapiquí region, 24.XII.1973, C. Barfield, 1♂ TME. "Costa Rica, R. Susio [Rio Suci], H. Rogers", "B.C.A., Col., I (1), Pseudoxyscheila tarsalis", 2♂♂ 1♀ BMNH, 1♀ FC; 1♂ 1♀ USNM; 4♂♂ 4♀♀ BMNH; Coll. Kraatz, 1♀ DEI.

Puntarenas: Monteverde, 24.VII.1971, R.D. Ward, 1♂ 1♀ USNM. Monteverde, 4000ft, 24.IV.1971, P. Opler, 2♀♀ WS; 13.VII.1972, R.R. & M.E. Murray, 54♂ 51♀ USNM; 1600m, 10.VI.1973, G. Ekis, 2♀♀ USNM; 1300-1500m, 14-16.VII.1975, E.M. & J.L. Fisher, 1♂ 6♀♀ WS, 1♀ TME; 16.VII.1975, E.M. Fisher, 7♂♂ 5♀♀ WS; 10-14.VIII.1976, J.C. Solomon, 2♀ USNM; 3.IV.1983, 1♀ TME. Monteverde Forest Reserve, 1600m, 17-18.VIII.1976, E.M. Fisher, 1♂ 1♀ WS. Monteverde Cloud Forest, 14-18.VI.1984, 1♀ TME; 1280m, 24.VIII.85, A. Petretti, 1♀ FC; 1500m, 1-2.X.1994, A. Casale, 1♂ MZUR, 1♂ FC. Monteverde, Finca Colibri, 11.IX.1985, W. Calvert, 1♂ 1♀ TME. 2km E Monteverde, on divide road 1600m, 1018N-8448W, 6.VI.1973, T.L. & L.J. Erwin, 19♂♂ 20♀♀ USNM. 2km N Monteverde, SW slope Cerro Amigos, 1019N-8448W, 1680m, 10.VI.1973, T.L. & L.J. Erwin, 1♀ USNM. 5km NE Monteverde, along antenna road, 1019N-8448W, 1500-1700m, 10.VI.1973, T.L.&L.J. Erwin, 1♀ USNM. Guayacan, Limón, VII.1972, W. Klopp, 1♂ CMNH. Monteverde, Powell Prop., 23.VII.1973, D.C. Rentz & K.R. Brodey, Howard Boyd Coll., 2♂♂ 2♀♀ CMNH, 2♀♀ FC. Monteverde, XI.1989, E. Jongerling, 1♂ JW; 13.VII.1972, R.R. & M.E. Murray, 1♂ CMNH, 1♀ FC, 1♂ 1♀ WJ; 16.VII.1975, 1500m, E.M. Fisher, 1♂ JW; 20.VI.1984, along road, G.A. Dahlem, 1♂ WJ; 1400m, 12-14.VIII.1987, H. & A. Howden, 1♀ WJ. San Pedro de Montes de Osa, C.H. Ballou, 3.X.1935, H. Mora, 1♀ USNM. "Costarica, Chiriqui", 6♂♂ 15♀♀ ZMB, 1♂ 4♀♀ FC. "C.Rica, Chiriqui", 2♂♂ BMNH. San Vito de Java, 12-18.II.1970, M. Kosztarab, 2♂♂ 6♀♀ USNM. San Vito, beetles present just prior to rain, V.1967, R.D. Ward, 7♂♂ 5♀♀ USNM. San Vito, 12-16.V.1967, J. Robertson, 1♀ WS; 25.V.1983, 1♀ TME. Nr. San Vito, 23-24.II.1970, M. Kosztarab, 1♂ 4♀ USNM. 5km S of San Vito de Java, Finca Las Cruces, 3800ft, 21.I.1967, I.J. Cantrall, 2♂♂ 2♀♀ USNM. San Vito prov., 2km S San Vito, Finca Las Cruces, 4000', 0842N-8300W, 19-20.III.1965, S.S. & W.D. Duckworth, 1♂ 1♀ USNM; 14.III.1969, D.C. Rentz, 4♀ USNM; 1300m, 2-9.VIII.1970, F.W. Stehr, 1♂ 1♀ USNM; 14.III.1972, R.L. Brown, UV-light, 1♂ USNM; 6.VI.1973, G. Ekis, 2♂ 6♀ USNM; 14.III.1969, D.C. Rentz, 1♀ CMNH; Las Cruces, Wilson Bot. Gdns., 1000m, 25-27.VI.1989, BM 1989-210, 2♀♀ BMNH, 2♀♀ FC. 6km S San Vito, 0842N-8300W, OTS Adv. Zoo. Course, 13-18.III.1967, R. Matthews, 1♂ 1♀ USNM. **San José:** Costa Rica, San José, Klages Coll., 1♂ 4♀♀ CMNH; IV.1984, 2♂♂ KW. San José, C. Werckle S.G., 1♂ ZMB; M. Valerio, 1♂ USNM. San Jose, Finca La Hondura, 6.IX.1962, C.F. Walker, 1♀ USNM. San Isidro bei San José, E. Reimoser, 1♂ 1♀ KW. Bajo La Hondura, 1150m, 3.VIII.1976, E.M. Fisher, 2♂♂ WS. Cerro de la Muerte, 14.XII.1980, J.C. Ducca, 1♂ WJ. Coronado, 1400-1500m, T. Assmann, F. Nevermann coll., 1♀ USNM; 4.VI.1983, Y. Quirós, 1♀ WJ.

PANAMA. Panama, 2-3.IX.1931, 2♀♀ USNM. La Victoria, 3.VIII.1952, G. Fairchild, 1♀ USNM. **Chiriqui:** V. de Chiriqui, 1898, M. de Mathan, 1♂ 2♀♀ MNHN, 1♀ USNM; 1901, M. de Mathan, 1♂ DEI, 1♂ FC. Chiriqui, 1♂ DEI. "V. de Chiriqui, 4000-6000 ft., Champion", 18♂♂ 26♀♀ BMNH, 5♂♂ 3♀♀ ZMB, 9♂♂ 13♀♀ USNM, 1♀ QCAZ, 2♀♀ FC, 1♂ 1♀ AB; "F. Bates Coll., BM 1911-248", 2♂♂ BMNH, 1♂ FC; "B.C.A., Col., I (1), Pseudoxyscheila tarsalis", 3♂♂ 6♀♀ BMNH, 2♀♀ FC, 1♀ MHNC; ex coll. Dr. Richter, 2♀♀ DEI; coll. Kraatz, 1♂ 4♀♀ DEI. Panama, Chiriqui, 1♂ BMNH, 1♂ ZMB, 1♂ MIZA, 1♂ KW; H.C. Fall coll., 1♂ 1♀ USNM; Harris coll., 2♂♂ 3♀♀ USNM; Coll. Kapczy-Haber Lajos, 1♂ KW; Coll. Srnka, 1♀ KW; Coll. G. Hauser, 1♂ 1♀ ZMB; Coll. G. Hauser, 1♂ ZMB; Coll. Baden Ruge, 1♀ DEI; Staudinger, 1♀ DEI. "Chir., '89,

Staudinger", coll. O. Leonhard, 1♀ DEI. Volcán Chiriqui, Sta Clara 4300ft, 17.VIII.1950, 2♂♂ 4♀♀ USNM. Chir. Volcan (30 km NW), 23.VII.1976, W.E. Clark, 1♂ USNM. 12 km NW Volcán, 1450m, 13.VIII.1975, D. Engleman, 4♂ 1♀ USNM. Boquete, 8.III.1923, F.M. Gaige, 1♂ 3♀♀ USNM. Boquette, 17.V.1962, H. Ruckes, 1♀ USNM. Vicinity Boquete, VI.1939, J.R. Slevin, 3♂ 3♀ USNM. 3 mi. NE Boquete, 5200ft, 29.VI.1972, R.R. & M.E. Murray, 6♂ 5♀ USNM. Chiriqui, Cerro Pando, 1535m, 24.V.1973, G. Ekis, 2♂♂ 5♀♀ USNM. Potrerillos, 7.VI.1934, M.A. Cazier collection, 3♂♂ 5♀♀ USNM; VI.1934, M.A. Cazier collection, 3♂♂ USNM; XI.1934, M.A. Cazier collection, 4♂♂ 4♀♀ USNM; 25.I.1935, Van Dyke coll., 1♂ USNM. **Cocle:** El Valle, 30.VI.1940, G. Fairchild, 1♀ USNM; VIII.1946, N.L.H. Krauss, 1♂ 1♀ USNM. El Valle, May, G.B. Fairchild, 1♂ 4♀♀ USNM; 20.VI, 1♂ USNM. 10km N El Copé, Coclé, Alrededor Aserradero, 15-18.VII.1983, M. Garcia et al., 1♂ WJ. **Panamá:** Bugaba, Panama, W. Schaus coll., 1♀ USNM. Cerro Campana, 2500ft, 28.V.1953, G. Fairchild, 1♂ USNM; 11.VI, G.B. Fairchild, 1♀ USNM; IX.1962, W.L. Brown, 1♀ USNM; 11-14.VII.1967, O.S. Flint, Jr., 1♂ 1♀ USNM; VII.1967, W.W. Wirth, 2♀♀ USNM; 800m, 30.V.1970, H.P. Stockwell, B.M. 1972-92, 1♂ BMNH; 3000ft, 29.VII.1970, H. & A. Howden, Glaser Coll., 1♂ CMNH; 11.V.1972, Howard Boyd Coll., 1♂ CMNH; 3.VI.1972, R.T. Allen, under leaf debris, 3♂♂ 7♀♀ USNM; 0840N-7956W, 27.V.1972, B. Birin, 2♀♀ USNM; 3-4.VI.1972, T.L. & L.J. Erwin, 4♂♂ 8♀♀ USNM; 0842N-7955W, 900m, 24.VI.1973, T.L.&L.J. Erwin, 3♀♀ USNM; 0840N-7956W, 850m, 29.VI.1974, on road, T.L. Erwin & D.R. Whitehead, 2♂♂ 1♀ USNM; 860m, 7.VIII.1975, D. Engleman, 1♀ USNM. Cerro Jefe, 0912N-7221W, 700-750m, 20.V.1972, R.T. Allen, 1♀ USNM; near summit, 800m, 4.VII.1994, T. Croat, 1♂ CMNH.

?NICARAGUA: 1923, A.D. Harvey coll., 1♂ 1♀ USNM.

?HONDURAS: Gracias, Kricheldorf 2060, Harris Collection, 1♂ USNM.

?COLOMBIA: "Colombie, Coll. Le Moul" [printed], 1♀ DEI. "Columbien", Mus. Zool. Polonicum, Warszawa, 12/45, 1♂ 1♀ MIST. "Columbien, Hac. Pehlke, E. Pehlke" [printed], 1♂ MIST.

Other material: "British Guiana", 1♀ DEI [locality erroneous!]. "Guyana", Nevins Coll. 1918-14, 1♂ BMNH [locality erroneous!]. "Brazil, S.Paulo, Perenque, 18.XII.1919, J.F. Zikan", 1♀ ABR [locality erroneous!]. "Equador mont., Baumgarten", 1♀ ZMB [locality erroneous!]. "Chili" [printed], "St.(audinger?)" [handscript], 1♀ DEI; "Chile", 82444, coll. H.C. Vogel, 1♂ 1♀ ZMB; "Chile", Mus. Zool. Polonicum, Warszawa, 12/45, 1♂ MIST [locality erroneous! Probably misinterpreted from "Chir.(iqui)"]. 5♀♀ BMNH.

REMARKS. The character of thickened middle and hind tarsi of males, which the species name derives from, is not always obvious, and, moreover, it is sometimes found also in other species such as *macrocephala*, *colombiana*, *chaudoiri*, *pseudotarsalis* and others. *P. tarsalis* is a Central American endemic, known so far from northern Costa Rica to central Panama only. Its occurrence in Colombia has to be confirmed on the basis of recent well-labelled material.

13. *Pseudoxycheila confusa* n. sp. (figs 52, 53, 54, 61, 94)

IDENTIFICATION. Similar to *bipustulata* and allied species (*chaudoiri*, *angustata*, *tarsalis*), however differing in the shape of male aedeagus, which is slightly bent downwards apically. Body colour deep blue or indigo blue to bluish- or olive-green in some specimens.

DESCRIPTION. Head with indigo to blue-green reflections, olive-green in some specimens. Labrum, mouth parts and articles 1-4 of antennae shining black.

Pronotum as long or nearly as long as wide, restricted behind, subparallel-sided in front half; sides of anterior lobe rather long, straight. Transverse grooves well-marked, discal lobes moderately convex. Same indigo to blue-green reflections as the head, olive-green in some specimens.

Elytra rather large in proportion, oval-shaped, evenly rounded behind, the maximum width near the middle; shoulders rounded, small in proportion. Colour indigo to blue-green on shoulders, base, the lateral gutter and the apical part; a velvety black areole on disc, with a roundish, small to medium-sized, yellowish discal spot. Eipleura metallic dark-blue to bluish black.

Underside indigo-blue to bluish-green with violaceous reflections, the last abdominal sternite shining black. Legs slender, pitchy- to shining black.

Male aedeagus slightly bent downwards apically.

Length: 14-17 mm (without labrum).

ETYMOLOGY. The name refers to the fact that this species can be mistaken easily for *bipustulata*.

DISTRIBUTION. Colombia (fig. 61).

MATERIAL EXAMINED. Holotype (DEI), allotype (DEI) and 138 paratype specimens. Seventeen additional non-type specimens of doubtful or unknown origin.

COLOMBIA. "Muséum Paris [printed], Colombie [handwritten], Coll. Chaudoir 1874 [printed]", 1♂ MNHN ("bipustulata Latr., Colombie" [handwritten by Chaudoir?]), 2♀♀ MNHN. "Colombia, 77.15 E", "Ex Cab. Castelnau", 1♂ 1♀ BMNH. "Columbia, 5999 b", 1♂ BMNH. "Columbien, Coll. Eidam", 4♂♂ 4♀♀ ZMB, 1♂♂ 1♀ FC. "Colombia, S.America, Collection Cartwright", 1♂ 3♀♀ USNM. "Colombia, Acq. E. Deyrolle 1870", 1♂ MSNG. "Colombia, D. Deyrolle 1867", 1♂ 1♀ MSNG. "Colombia, H. Deyrolle 1875", 1♀ MSNG. "Columbia, Collection Cartwright", 1♂ 1♀ USNM. "U.S. Colombia, 1922", 1♂ USNM. Colombia, Coll. Eidam, 1♂ DEI. "18, Bowring., 63.47, bipustulata Latr., Colombia", 1♂ BMNH. "Nova Grenada, Fry Coll. 1905-100", 2♂♂ BMNH. "Columbia, Yatune (?), Bowring. 63.47", 1♀ BMNH. "Iateguttata Chaud., Colombia; 2128, Bowring. 63.47", 1♀ BMNH. Bachira, 20.VIII.1957, R. Perry, BM 1958-261, 1♂ BMNH, 1♂ 1♀ FC. "Columbia, Pehlke", 1♀ MIST. Rio Vitaro 2000m, 19.IX.1908, Fassl, 1♀ DEI. Villa Elvira 1400m, 14.IX.1908, Fassl, 1♂ FC(DEI). Paso del Reneio (?), 1700m, 4.III.22, Arn. Schultze S.G., 1♀ ZMB. Nariño, La Planada, 1800m, 1.III.95, C. Estrada, 1♂ FF, 1♂ FC. **Antioquia**: Medellín, R.A. Toro, 1♀ USNM. **Boyacá**: Paipa, La Pradera 2650m, 2.XII.1978, I. Arevoco, 1♀ MNHC. Duitama, via Virolin,

24.XI.1994, M. Ospina, 1♂ FF. Duitama, Vda El Carmen, 2600m, 20.XI.1994, M. Ospina, 1♂ FF. Muzo, 2♂♂ 1♀ KW. **Caldas**: "Manizales, A.M. Patino" [printed], 1♀ MNHN, 1♂ FC. Aguadas Vda, Sta Inés, Los Frailes, 2435m, 2.III.1995, C. Sarmiento, 1♂ FF. **Cauca**: Cauca, 1♂ DEI; 3♂♂ 2♀♀ KW. Mpio Paez, Irlanda, PNN Nevado del Huila 2800-3280m, 11.IX.1980, Lys Arystide, 1♂ FC. "Cauca b. Cali, Bürger S.". 1♀ ZMB. **Caqueta**: Vega del Cagueta, 11.VI.1982, O. Rojas, 1♂ 1♀ MIZA. **Cesar**: Becerril, 2.IV.1974, O. Rangel, 1♀ MHNC. **Chocó**: 26.VIII.1976, B. Gonzales, 1♂ MHNC. "State of Darien, Harold Hodge 1909-30", 1♀ BMNH. **Cundinamarca**: Bogotá, 3♀♀ FC, 1♀ CMNH, 1♂ ZMB; Hist.-Coll., Nr.47, 2♀♀ ZMB; Pehlke, Mus. Zool. Polonicum, Warszawa, 12/45, 1♀ MIST. "Museum Paris, Colombie, Bogota, Parzudacki 1839" [printed], 1♀ MNHN. Bogota, IV.1922, Franklin Helm, 2♂♂ 1♀ USNM, 1♀ FC; 1924, 3♀♀ USNM. "Muséum Paris, Colombie, env. de Bogota (Frère Apollinaire), Frère Héribaud 1910" [printed], 1♂ MNHN. "Muséum Paris, Colombie, Bogota, Hoffmann 1843" [printed], 1♀ MNHN. Bogotá, Cordillera, 1897, Bürger S., 2♂♂ ZMB. Via Sasaima-Bogotá km20, 18.II.1988, C. Sarmiento, 1♂ FF. Via Alban-Sasaima km90, 2095m, 23.III.95, C.P. Muñoz, 1♂ FF. Apulo, 8.XI.1970, E. Furero, 1♀ MHNC. Viotá, 20.V.1972, M.I. Umaña, 1♀ MHNC. La Calera, Mundo Nuevo, 18.V.1980, C. Bohórquez, 1♀ FC. La Mesa, Bürger S., 2♂♂ 2♀♀ ZMB, 1♂ 1♀ FC. Fugasugá, 1♀ BMNH; "D. H. Deyrolle 1875", 1♂ MSNG; E. Pehlke, Mus. Zool. Polonicum, Warszawa, 12/45, 1♂ MIST; 1.XI.1965, V. Romero, 1♂ MHNC; 1700m, XII.96, Bürger S., 1♀ ZMB. Tierra Negra, nr. Fugasugá, 2000m, XII.96, Bürger S., 1♂ ZMB. La Vega [5°00'N-74°20'E], La Primavera, 21.II.1976, A. Jimenez, 1♀ MHNC. Aguadita [Fugasugá, Aguadita, 4°21'N-74°22'E], V.1949, Silva, 1♀ MHNC. Anolaima, V. Puente Tierra, 1795m, 16.V.1992, C. Sarmiento, 1♀ FF. **Huila**: Inzá, Tierras Blancas 2300m, 28.III.1982, 1♀ MNHC, 1♀ FC; 2200m, 26.III.82, 1♀ MNHC; km78, 2630m, 25.III.1982, 2♀♀ MHNC. Huila, near Tijeres, 31.VIII.1969, D.H. Messersmith, 1♀ USNM. La Plata, Belen, Meremberg, 2400m, 21.IX.1980, Lys Aristide, 1♀ MHNC. **Meta**: Villavicencio, Hda La Reforma, 30.IV.1980, C. Bohórquez, 1♂ MHNC. **Risaralda**: Santuario, Vda Los Planes, Fca Las Delicias 2800m, XI.1991, F. Fernandez, 1♂ FC. Santuario, Vda Los Planes, Tarama, X.26, J. Muñoz, 1♀ FF. **Santander**: Charala, Virolin, 8.III, 1♂ MHNC. Correg.Virolin, Fca La Sierra, 12.V.1976, J.H. Torres, 1♂ MHNC, 1♂ FC, 1♂ AB. Gambita, La Palma, El Calvario, Alto La Vieja 2200m, 1.IV.1994, E. Pasacio, 1♂ 1♀ FF, 1♂ FC. **Tolima**: Palmar, Rio Combeima 2500m, XII.1909, Fassl, 1♀ FC. **Valle del Cauca**: "Cali, 3400ft, Rosenberg, F. Bates Coll. 1911-248", 1♀ BMNH. Cali, 27.IV.1939, B. Losada, 1♀ USNM. Farallones, Cali, 2000m, 11.VII.1993, J.-F. Lecrom, 1♀ AJ. San Antonio [10 km NW of Cali], 2000m, IX-X.1908, Fassl, 1♂ DEI (holotype) 1♀ DEI(allotype).

?VENEZUELA: "Amérique du Sud, Venezuela", 1♂ 1♀ FC, 1♀ WJ [locality doubtful!]. "Vénézuéla, Am. mérid.", 1♂ WS [locality doubtful!]. "Trinidad, Am. mérid., 15.V.27", 1♂ WJ [locality erroneous!].

?COSTA RICA: "Chiriqui Bay, Costa Rica", 1♂ 3♀♀ CMNH [locality erroneous!].

?BRAZIL: "Brasilia, coll. G. Hauser", 1♀ ZMB [locality erroneous!].

Other material: "Maripi, Bobisch."(?), 1♀ DEI. "65/4" (?), 1♀ BMNH. "SO Amer., R.D. Ward Collection", 2♂♂ 3♀♀ CMNH. No data, 1♂ 1♀ ZMB. Coll. L.W. Schaufuß, 1♀ ZMB.

REMARKS. The separation of this species proved to be rather difficult. Before discovering that two species were involved, sympatry with *bipustulata* seemed to give the latter a puzzling remarkable variability. However, shape of pronotum, relative proportions of body parts and shape of male aedeagus make *confusa* easily recognizable, especially when a reasonably long series of specimens is available. Its closest relative obviously is the following species.