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Revision of the genus *Xenonychus* (Coleoptera: Histeridae)

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Abstract. Genus *Xenonychus* Wollaston, 1864 of the subfamily Saprininae is revised herein. It now contains three species: *X. tridens* (Jacquelin du Val, 1852), *X. aralocaspius* Kryzhanovskij, 1976 in Kryzhanovskij & Reichardt (1976) and *X. somaliensis* (Thérond, 1963) comb. nov. (transferred from *Styphrus* Motschulsky, 1845). The three species differ only in minor external characters. *Xenonychus tridens* and *X. aralocaspius* are most readily separated based on their male terminalia, especially aedeagi. All three species are diagnosed and their morphological differences are illustrated using SEM photographs. Male genitalia of *X. aralocaspius* and *X. tridens* are illustrated, and a key to the species is given.

Key words. Histeridae, Saprininae, *Xenonychus*, taxonomic revision, Palaearctic Region, Afrotropical Region

Introduction

The genus *Xenonychus* was designated by Wollaston (1864) based on the species *X. fossor* Wollaston, 1864. This species was later (Schmidt 1887) found to be a junior synonym of *Saprinus tridens* Jacquelin du Val, 1852. After more than a century, another species belonging to this genus, *Xenonychus aralocaspius* Kryzhanovskij, 1976 was described by Kryzhanovskij & Reichardt (1976). Thirteen years earlier, Thérond (1963) described *Styphrus somaliensis* based on several females collected in Somalia, adding a remark that it strikingly resembled the species *Xenonychus tridens*. Upon the inspection of the type specimens of *S. somaliensis* it became clear that it belongs to the genus *Xenonychus* and therefore a new combination is proposed for it in the present paper. This work presents another contribution to the ongoing revisionary work of the genera of the subfamily Saprininae (Lackner 2009a-c, 2010, 2011).

Material and methods

Beetles, after being removed from original cards were side-mounted on triangular points and observed under binocular microscope Nikon 102 with diffuse light. Male terminalia were

first macerated in 10% KOH solution for about 15 minutes, cleared in 80% alcohol, macerated in lactic acid with fuchsine heated up to 60ºC for another two hours. After that, they were treated with aceto-salycilate heated up to 60ºC for 15 minutes and cleared in xylene. They were subsequently observed in α-terpineol in a small dish. Digital photographs were taken by a Nikon 4500 Coolpix camera and edited in Adobe Photoshop CS3. Based on the photographs, observing the actual terminalia, pencil art was drawn; pen art followed, re-tracing the pencil art and making minor corrections. SEM photographs were taken by Hitachi S-2250N camera.

A detailed redescription of the type species, *X. tridens*, was published recently by Lackner (2010) and is not repeated here and only diagnostic characters are therefore mentioned for each species. Morphological terms follow Lackner (2010). Separate lines of the same label are marked by slash (/).

The following acronyms of museums and private collections are used throughout the text:

CNDP Nicolas Dégallier collection, Paris, France;
CPVV Pierpaolo Vienna collection, Venice, Italy;
CRPC Rudiger Peschel collection, Chemnitz, Germany;
CYGN Yves Gomy collection, Nevers, France;
MNHN Muséum National d'Histoire Naturelle, Paris, France (A. Taghavian & Th. Deuve);
MSNG Museo Civico di Storia Naturale "Giacomo Doria", Genoa, Italy (F. Penati);
NHMB Natuurhistorisches Museum Basel, Switzerland (E. Sprecher-Übersax);
RMNH Nationaal Natuurhistorische Museum "Naturalis", Leiden, The Netherlands (A. van Aartsen);
TLAN Tomáš Lackner collection, temporarily housed at Leiden, the Netherlands;
ZIN Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia (B. Kataev).

Taxonomy

Xenonychus Wollaston, 1864

Xenonychus Wollaston, 1864: 179. Type species: *Xenonychus fossor* Wollaston, 1864 (= *Saprinus tridens* Jacquelin du Val, 1852), by monotypy.

Xenonychus: Marseul (1864: 358); Schmidt (1887: 354); Ganglbauer (1899: 394); Reitter (1910: 13, partim); Bickhardt (1913: 32); Bickhardt (1916–1917: 81, 102; partim); Reichardt (1925: 137); Reichardt (1926: 14); Reichardt (1941: 156, 334); Peyerimhoff (1936: 227); Kryzhanovskij & Reichardt (1976: 112, 242); Vienna (1980: 115, 198); Mazur (1984: 108); Mazur (1997: 267); Yélamos (2002: 245, 340); Mazur (2004: 101); Lackner (2010: 62, 225).

Diagnosis. *Xenonychus* has been recently diagnosed by Lackner (2010), but the published diagnosis has to be adapted with respect to the newly included *X. somaliensis* as follows: Cuticle dark brown, with or without bronze to greenish hue; frontal disc smooth or laterally with vaguely impressed rugae (Figs. 2–3), frontal stria straight or slightly curved outwardly (occasionally interrupted, in the case of *X. somaliensis* even absent); eyes flattened, invisible from above (Fig. 29). Pronotal foveae absent, disc shallowly punctate; pronotal hypomeron setose; dorsal elytral striae 1–4 almost reaching elytral apex (Fig. 26); elytral epipleuron setose. Pre-apical foveae large and deep (Fig. 30), both sets of prosternal striae present; lateral discs of ventrites and all visible abdominal sternites setose. Outer margin of protibia with three large distal triangular teeth topped by large triangular rounded denticle, followed by 5 short proximal denticles (Figs. 4–5); claws of meso- and metatarsomeres long, almost straight.

Fig. 1: *Xenonychus tridens* (Jacquelin du Val, 1852), habitus, dorsal view (photo by M. E. Smirnov).

Differential diagnosis. Judging from its general appearance its two Palaearctic representatives could be confused with the other Palaearctic genera *Chivaenius* Olexa, 1980 or *Exaesiopus* Reichardt, 1926, but differ from them by the almost complete dorsal elytral striae; furthermore they differ from *Chivaenius* by the present, well developed pre-apical foveae (absent in *Chivaenius*), setose elytral epipleuron (glabrous in *Chivaenius*) as well as the differently shaped prosternal process (knife-like, strongly compressed in *Chivaenius*) and the differently shaped protibia. From *Exaesiopus* they likewise differ by the length of dorsal elytral striae, the shape of protibia, structure of frontal disc (with elongate rugae in *Exaesiopus* and almost glabrous in *Xenonychus*) and the setose elytral epipleuron. Among the Ethiopian taxa, *Xenonychus somaliensis* could be confused with other Ethiopian (sub)genera: *Gnathoncus* Jacquelin du Val, 1858 (differing from it by the present pre-apical foveae; absent in *Gnathoncus*); *Euspilotus* (subgen. *Neosaprinus* Bickhardt, 1909), likewise differing from it by the large and well developed pre-apical foveae (small and anteriorly connected by a transverse sulcus in *Euspilotus* (*Neosaprinus*). Further taxa that *X. somaliensis* could be confused with are *Saprinus* (subgen. *Pilisaprinus* Kanaar, 1996) (differing from it likewise by the present pre-apical

foveae and present both sets of prosternal striae) or *Terametopon* (subgen. *Psammoprinus* Gomy & Vienna, 1996) differing from it by the well developed and almost complete dorsal elytral striae as well as by the different antennal scape (strongly thickened in *Terametopon* (*Psammoprinus*). The other species occurring in the Ethiopian region, *X. tridens*, is externally most similar to the species of the genus *Terametopon* Vienna, 1987 but differs from them by the absence of massive triangular frontal projection and almost complete dorsal elytral striae 1–3, always shortened apically in *Terametopon*.

Biology. *Xenonychus aralocaspius* and *X. tridens* are typical inhabitants of the arid areas of shifting sands, often found on sand dunes on beach, but present also further inland. They occur on carrion, under desiccating plants, under excrements usually with other psammophilous Saprininae (see also Lackner 2010). Biology of *X. somaliensis* is unknown, but presumably similar to its congeners.

Distribution. *X. tridens* is distributed from the Cape Verde Archipelago and Canary Islands in the west through the Sahara Belt along the Mediterranean coast as far as the Arabian Peninsula in the east, whereas *X. aralocaspius* occurs around the Caspian and Aral Seas, as well as further inland in the middle Asian countries of Kazakhstan, Uzbekistan and Turkmenistan. The representative from the Ethiopian region, *Xenonychus somaliensis* (Thérond, 1963), is currently known only from several females collected in Somalia.

Xenonychus tridens (Jacquelin du Val, 1852)

(Figs. 1, 2, 4, 6, 8–16)

Saprinus tridens Jacquelin du Val, 1852: 703.
Saprinus tridens: Marseul (1855: 501, table XIX, Fig. 118); Schmidt (1885: 309).
Saprinus ciliaris Mulsant & Rey, 1853: 99. Synonymized by Kraatz (1858: 131).
Saprinus serripes Marseul, 1855: 677. Synonymized by Marseul (1862: 482).
Xenonychus fossor Wollaston, 1864: 181. Synonymized by Schmidt (1887: 354).
Saprinus (*Hypocaccus*) *tridens*: Schmidt (1885: 309).
Styphrus tridens: Bickhardt (1910: 107); Müller (1931: 102).
Xenonychus tridens: Ganglbauer (1899: 394); Reitter (1910: 13); Reichardt (1941: 334); Thérond (1963: 69); Kryzhanovskij & Reichardt (1976: 112, 242, Fig. 471); Vienna (1980: 115, 198, Fig. 70); Mazur (1984: 108); Mazur (1997: 267); Yélamos (2002: 245, 340, Figs. 12A, 161H, 170B, 171); Mazur (2004: 101); Lackner (2010: 226, Figs. 28, 72, 106, 139, 711–729).

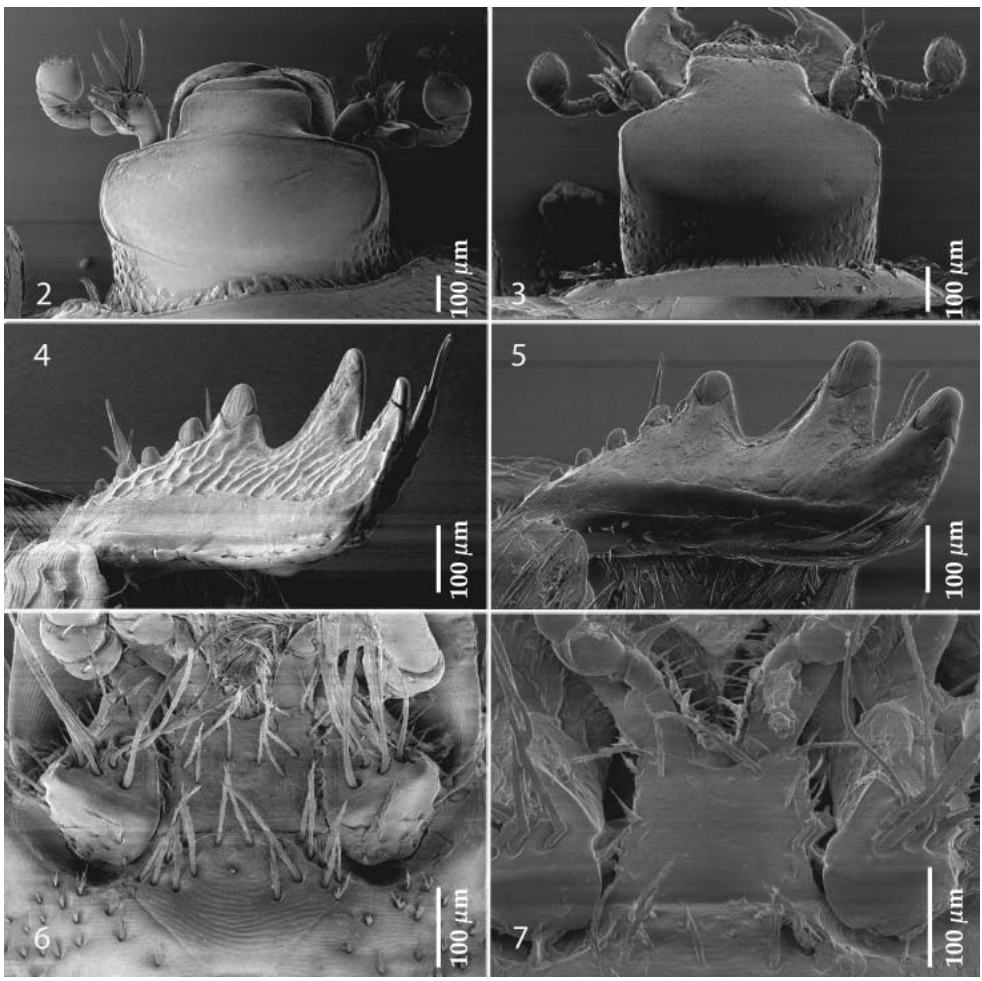
Type locality: France, Le Grau de Roi.

Type specimen examined. *Xenonychus tridens.* Neotype (designated by Lackner 2010: 226): 'FRANCE / Le Grau de Roi / (13) 8.viii.1962' (hand-written); 'tamissage au / pied des / Graminées (hand-written) // Y. Gomy (printed)'; 'Collection Y. Gomy' (printed); 'NEOTYPUS / *Xenonychus* / *tridens* / (Jacquelin-Duval, 1852) / Des. T. Lackner 2009' (red label, hand-written) (MNHN).

Additional material examined. FRANCE: Bouches-du-Rhône: 1 spec., Arles, Longue Montille, 25.iii.2003, J. Dalmon lgt. (CYGN); 2 spec., Faraman, 14.iv.1901 (CDNP); 1 spec., Les Saintes-Maries-de-la-Mer, date unknown, J. Thérond, lgt. (CYGN); 5 spec., Phare de Faraman, 5.–6.v.1902, Fagniez lgt. (CYGN). **Gard:** 3 spec., Le Grau-du-Roi, 11.ii.1939, J. Thérond lgt. (CYGN); 1 spec., same locality, 20.iv.1964, G. Tempère lgt. (CYGN); 1 spec., same locality, 14.viii.1962, Y. Gomy lgt. (CYGN); 1 ♂ 1 spec., same locality, 15.ii.1948, Thérond lgt. (TLAN); 2 spec., Le Grau-du-Roi, Pointe de l'Espiguette, 17.vi.2010, under rabbit head, S. Risser lgt. (CYGN). **Hérault:** 1 spec., Carnon-Plage, 15.v.1988, B. Moncoutier lgt; 1 spec., Mauguio, Le Petit Travers, 6.ii.2000, sand dunes, M. Dierkens lgt. (CYGN); 1 spec., Palavas-les-Flots, 12.xi.1942, J. Thérond lgt. (CYGN). **Var:** 2 spec., surroundings of Toulon, date unknown, Mol. de Boissy lgt. (CYGN); 1 spec., Sablettes, [19]11, Mol. de Boissy lgt. (CNDP); 1 spec., same label data, but 23.ii.1921 (CYGN); 1 spec., Hyères, La Capte, 11.xi.1980, P. Ponel lgt. (CYGN). **ITALY: Lazio:**

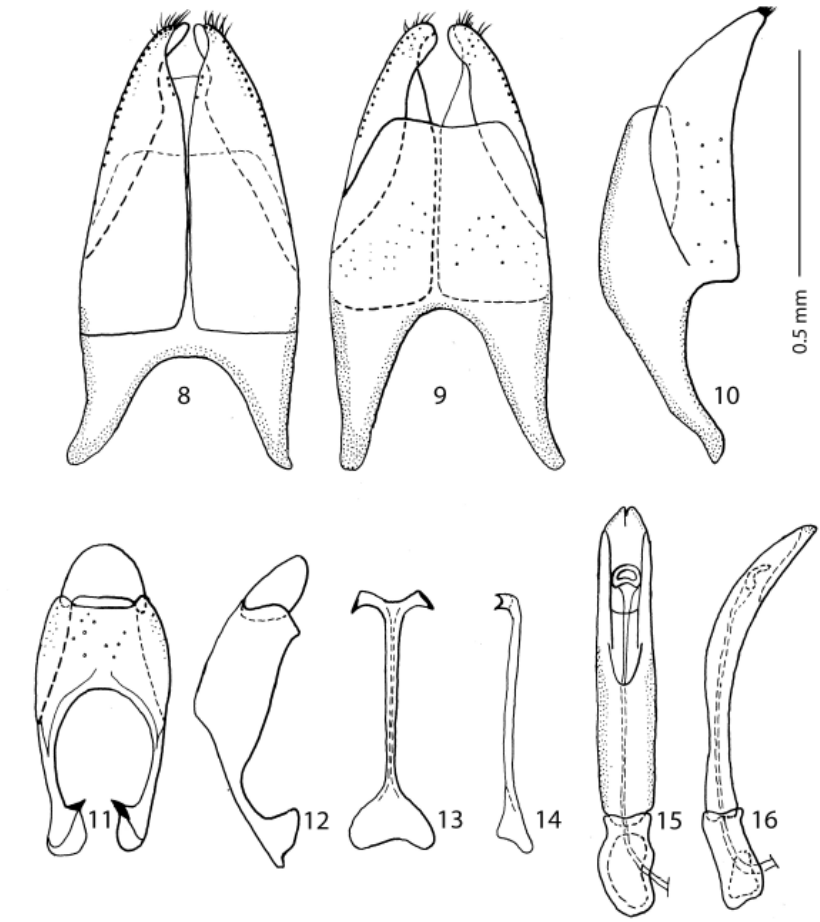
1 spec., Castel Porziano, 10.vii.1975, Rocchi lgt. (CPVV); 1 spec., S. Nicola (Roma), vii.1975, Binaghi lgt. (CPVV); 1 spec., Fregene, 1963, Binaghi & Moro lgt. (MSNG); 1 spec., Passo Oscuro, 1963, Binaghi & Moro lgt. (MSNG); 1 spec., Roma, 1997, Vomero lgt. (CPVV); 1 spec., Marina di Palidoro, loc. San Nicola, without date, Binaghi lgt. (MSNG). **Sardinia:** 1 spec., Giorgino, 1.x.1973, Meloni lgt. (CPVV); 1 spec., same label data (RMNH); 1 spec., Poetto, 18.iv.1973, Meloni lgt. (CPVV); 1 spec., Bagui Giorgino, 1.x.1972, C. Meloni lgt. (CNDP). **Sicily:** 2 spec., Sicily (without further data) (RMNH); 1 spec., Capo Bianco, vi.1969, Bucciarelli lgt. (CPVV) 1 spec., Catania, 1870, Rottemberg lgt. (CPVV); 1 spec., Isola delle Femmine, 17.iv.1970, Aliquò lgt. (CPVV); 1 spec., Lido di Plaia, 1970, collector unknown (MSNG); 1 spec., Portopalo di capo Passero, 13.vi.1996, Angelini lgt. (CPVV). **SPAIN: Catalonia:** 2 spec., Barcelona, El Prat Platja, 15.i.1984, T. Yélamos lgt. (RMNH); 4 spec., Tarragona, Delta de l'Ebre, 13.iii.1982, T. Yélamos lgt. (RMNH); 3 ♂♂, Tarragona, 21.v.1992, Olexa lgt. (RMNH). **Andalucia:** 1 spec., Palmones (Cádiz), 8.v.1966, Ferrer Andreu lgt. (RMNH). **Canary Islands:** 1 ♀, Fuerteventura, Corra, 24.xi.2000, I. Knapp lgt. (RMNH); 1 spec., Maspalomas, dunes, 11.vi.1989, J. Ferrer lgt. (CYGN); 1 spec., Tenerife, El Medano, 10.iii.2004, Bonometo lgt. (CPVV). **Valencia:** 1 spec., La Albufera, iv.1966, S. Doguet lgt. (CYGN). **PORTUGAL: Algarve:** 1 spec., Quarteira, 6.–13.iv.1987, Teunissen lgt. (RMNH). **GREECE: Attika:** 1 spec., Attika, Emgé lgt. (RMNH). **Crete:** 1 spec., Réthimnon, 18.iv.1973, collector unknown (CDNP). **Cyclades:** 1 spec., Iraklia, 17.iv.1984, Dieter Liebegott lgt. (CRPC). **Rhodos:** 1 spec., Lindos, 20.iv.1970, A.C.&W.N. Ellis lgt. (RMNH). **TURKEY: Antalya:** 2 spec., Side (near Manavgat), 6.v.1988, Kanaar lgt. (RMNH). **Mersin:** beach sw of Silifke, 7.v.1993, Kanaar lgt. (CRPC). **Adana:** 1 spec., 4 km W. of Yumurtalik, 10–11.v.1993, Kanaar lgt. (RMNH); 13 spec., same label data (RMNH). **Muğla:** 1 spec., Patora env., 60 km S of Fethiye, 31.viii.1992, Z. Jindra lgt. (TLAN). **CYPRUS:** 1 spec., West Coast, Lara Beach, 8.iii.1994, Meybohm lgt. (RMNH). **SYRIA:** 2 ♂♂, Palmyra env., 25.–27.iv.1982, Olexa lgt. (TLAN). **UNITED ARAB EMIRATES:** 1 spec., SSW of Ad Dhaid 25°09′N, 55°48′E, 24.–30.v.2006, in light traps batch no. 4783, A. van Harten lgt. (RMNH); 1 spec., al-Ajban, 24°36′N, 55°01′E, 19.-26.vi.2006, in light traps batch no. 4461, A. van Harten lgt. (RMNH); 2 spec., same locality, 5.–12.vi. 2006, in light traps batch no. 4270 (RMNH); 2 spec., NARC, near Sweihan, 24°24′N, 55°26′E, 14.iii.–2.iv.2005, in light traps batch no. 1771, A. van Harten lgt. (RMHN); 1 spec., near Mahafiz, 25°09′N, 55°48′E, 19.–26.iv.2006, in light traps batch no. 8514, A. van Harten lgt. (RMHN); 2 spec., Sharjah Desert Park, 25°17′N, 55°42′E, 12.–21.v.2007, in light trap batch no. 7382, A. van Harten lgt. (RMHN); 1 spec., same locality, 30.iv.–31.v.2005, in light trap batch no. 2050 (RMHN). **ALGERIA:** 1 ♂, Sidi Ferdj, 14.x.1980, Olexa lgt. (TLAN); 1 ♂, Iglu, 12.iv.1988, Olexa lgt. (TLAN); 1 ♂, Ghardaia, 1.v.1987, A. Olexa lgt. (TLAN); 10 ♂♂ 3 ♀♀ 5 spec., Sahara, Béni Abbès, 20.x.1980, A. Olexa lgt. (TLAN); 1 ♂, same label data, but 27.iv.1987 (TLAN); 1 ♂, Ain Sefra, 26.iv.1987, A. Olexa lgt. (TLAN); 1 spec., Djanet, 5.v.1987, Olexa lgt. (TLAN); 1 spec., Béni-Abbès, Nebka, 12.ix.1963, under *Tamarix*, C. Girard lgt. (CYGN); 9 spec., Oued Saoura, south of Béni-Abbès, north of Daïa Khetab, v.1950, collector unknown (CYGN); 2 spec., Biskra, 1.iv.1968, S. Doguet lgt. (CYGN). **MOROCCO:** 2 ♀♀ Mogador [= Essaouira], Quedenfeldt lgt. (TLAN); 1 ♂, Mhamid, 12.v.1992, Olexa lgt. (RMNH); 1 ♂, same label data (RMNH); 1 ♂ 1 spec., same label data, but 16.v.1997, Lackner lgt. (TLAN); 4 spec., Anti-Atlas, Bou Izakarn, 24.iv.1972, J. Mateu leg. (CYGN); 1 spec., Nador, Kanet Arkmane, 19.iii.2002, sand dunes, G. Chavanon lgt. (CYGN); 4 spec., Vallée du Draâ, Zagora, 25.iii.1982, J. Gourvès lgt. (CYGN); 12 spec., Bouârfa, 32°29′N, 01°55′W, 1200 m, 7.v.2009, in the sand under *Aristida pungens*, H. Labrique, Y. Gomy & G. Chavanon lgt. (CYGN); 1 spec., Bouârfa, Tamlelt, 32°25′N, 02°36′W, 17.vii.2008, S. Touil lgt. (CYGN); 1 spec., same label data, but 32°30′N, 02°20′W, 15.viii.2008, S. Touil lgt. (CYGN); 1 spec., Kariet Arkmane near Nador, 35°07′N, 02°45′W, 19.iii.2002, in the sand, littoral dunes, G. Chavanon lgt. (CYGN); 1 spec., Figuig, 32°09′N, 01°14′W, 907 m, 18.iv.1998, in the sand under *Aristida pungens*, G. Chavanon lgt. (CYGN); 1 spec., Saïdia, road towards the port, 35°06′N, 02°17′W, 4.iv.1998, sand dunes, G. Chavanon lgt. (CYGN); 1 spec., Erfoud, dirt road to Merzouga, 31°19′N, 04°06′W, 765 m, 7.iv.2010, in the sand under the plants, H. Labrique, Y. Gomy & G. Chavanon lgt. (CYGN); 10 spec., same label data, but 31°23'N, 04°12'W, 780 m, 7.iv.2010, H. Labrique, Y. Gomy & G. Chavanon lgt. (CYGN); 12 spec., Bouânane, road to Boudenib, 31°59′N, 03°19′W, 880 m, dunes, 6.iv.2010, H. Labrique, Y. Gomy & G. Chavanon lgt. (CYGN); 2 spec., same label data, but 31°59′N, 03°20′W, 900 m, 28.iii.2007, H. Labrique & G. Chavanon lgt. (CYGN); 4 spec., Bou Izakarn (Anti-Atlas), 24.iv.1972, J. Mateu lgt. (CYGN); 2 spec., Mohammédia, 20.iii.1982, J. Gourvès lgt. (CYGN); 3 spec., Errachidia, road to Boudenib, 31°55′N, 04°09′W, 1034 m, in the sand, 6.iv.2010, H. Labrique, Y. Gomy & G. Chavanon lgt. (CYGN); 5 spec., Merzouga, 31°04′N, 04°00′W, 720 m, 7.iv.2010, in the sand under the plants, H. Labrique, Y. Gomy & G. Chavanon lgt. (CYGN); 1 spec., Kénitra, Sidi Yahya du Rharb, 28.x.1988, Kanaar lgt. (RMNH). **EGYPT:** 2 spec., road from

Alexandria to Cairo, 27.iii.1981, under *Comulaca monocantha* in the sand, F. Pierre lgt. (CYGN). **TUNISIA:** 1 ♂ 1 spec., Monastir, 12.–15.vi.1982, Olexa lgt. (TLAN); 1 ♂ 1 ♀ 1 spec., Kairuan, 6.-8.xi.1982, Olexa lgt. (TLAN); 1 spec., El Hamma, 29.x.1976, Kanaar lgt. (RMNH); 1 spec., Djerba, surroundings of Midoun, 15.ii.1997, Manfred Egger lgt. (CRPC); 3 spec., Sousse, without date, Normand lgt. (CYGN); 1 spec., El Hamma, i.1949, R. Demoflys lgt. (CYGN); 1 spec., Zarzis, iii.1951, R. Demoflys lgt. (CYGN); 1 spec., Radès, without date, collector unknown (CYGN). **LIBYA:** 1 spec., Benghazi, date unknown, Naldi lgt. (CPVV). **MAURITANIA:** 1 spec., Tamzakt, 29.iv.1995, trap under *Euphorbia balsamifera*, C. Caussanel lgt. (CYGN). **NIGER:** 2 spec., Tamesna In-Abangharhil envir. Monit., date unknown, Weyerich lgt. (CPVV). **CAPE VERDE:** 1 spec., Boa Vista, Praia da Chave (Fabrica), date unknown, Bonometo lgt. (CPVV).



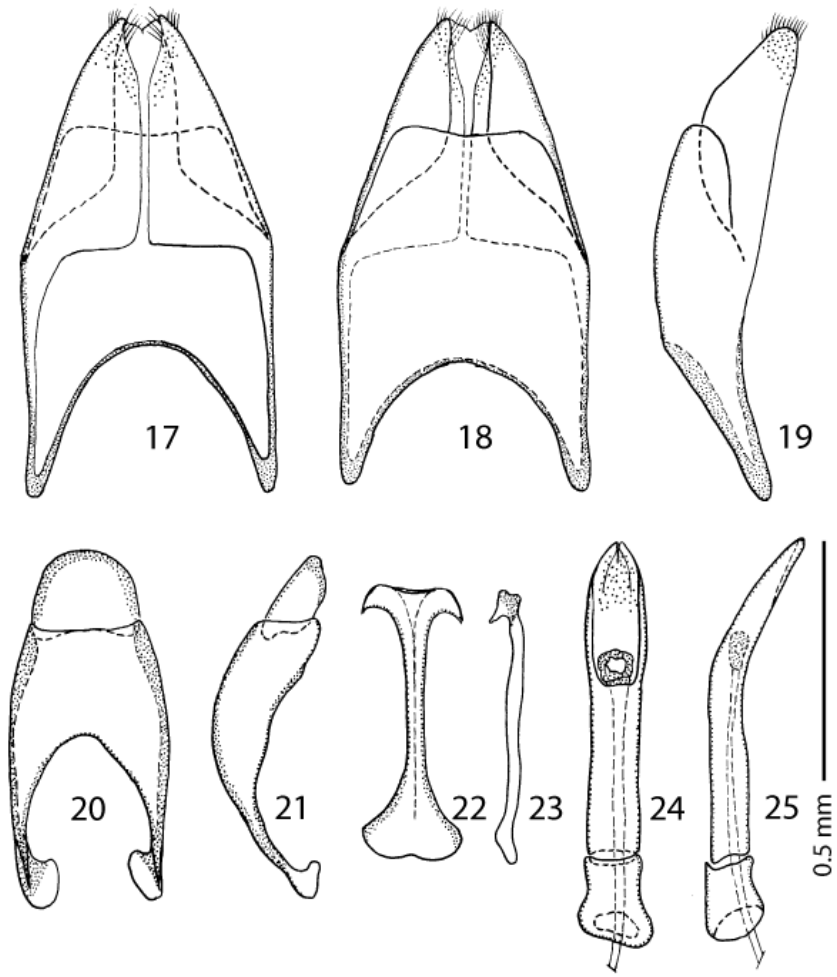
Figs. 2–7. Morphological Details 2–3 – head in dorsal view (2 – *Xenonychus tridens* (Jacquelin du Val, 1852; 3 – *X. somaliensis* (Thérond, 1963)). 4–5 – protibia, ventral view (4 – *X. somaliensis*; 5 – *X. tridens*). 6–7 – mentum, ventral view (6 – *X. tridens*; 7 – *X. aralocaspius* Kryzhanovskij, 1976).

Differential diagnosis. *Xenonychus tridens* is most readily and securely distinguished from the closely related species *X. aralocaspius* by the male terminalia and especially by the shape of the aedeagus which is less dilated on the apical half (compare Figs. 15 and 24). From the Somali species *X. somaliensis* is this species distinguished by the presence of frontal stria (Fig. 2), which can be weakened or interrupted medially, and by the presence of supraorbital stria (absent in *X. somaliensis*; Fig. 3). Likewise, the pronotum of *X. somaliensis* is smooth (Fig. 26), whereas it is always punctate in *X. tridens* (Fig. 1) and the outer part of posterior surface of protibia is areolate-rugose (Fig. 4), whereas it is smooth in *X. somaliensis* (Fig. 5). See also Key to the species and diagnosis of *X. somaliensis*. For complete redescription see Lackner (2010: 226–230).



Figs. 8–16. *Xenonychus tridens* (Jacquelin du Val, 1852). 8 – eighth sternite and tergite, ventral view; 9 – ditto, dorsal view; 10 – ditto, lateral view; 11 – ninth and tenth tergites, dorsal view; 12 – ditto, lateral view; 13 – spiculum gastrale, ventral view; 14 – ditto, lateral view; 15 – aedeagus, dorsal view; 16 – ditto, lateral view. From Lackner (2010).

Biology. This species is a typical psammo-halobiotic element, often found under plants on coastal as well as inland dunes; occasionally found also under carrion on sandy surfaces (T. Lackner, pers. observation).
Distribution. *Xenonychus tridens* is spread from the Cape Verde Archipelago and Canary Islands along the Mediterranean coasts of Spain, France, Italy (including Sicily and Sardinia), Greece, Cyprus, Turkey, Syria, Morocco, Algeria, Tunisia, Libya, Egypt and also through the Sahara Belt (Mauritania, Chad, Niger) as far as the Arabian Peninsula (Mazur 1997).
Remarks. The type material of the two synonymies of this species, *Saprinus ciliaris* Mulsant & Rey, 1853 and *Saprinus serripes* Marseul, 1855 has not been studied.



Figs. 17–25: *Xenonychus aralocaspius* Kryzhanovskij, 1976. 17 – eighth sternite and tergite, ventral view; 18 – ditto, dorsal view; 19 – ditto, lateral view; 20 – ninth and tenth tergites, dorsal view; 21 – ditto, lateral view; 22 – spiculum gastrale, ventral view; 23 – ditto, lateral view; 24 – aedeagus, dorsal view; 25 – ditto, lateral view.

Xenonychus aralocaspius Kryzhanovskij, 1976

(Figs. 7, 17–25)

Xenonychus aralocaspius Kryzhanovskij, 1976 in Kryzhanovskij & Reichardt (1976: 416, Fig. 1).
Xenonychus aralocaspius: Mazur (1984: 108); Mazur (1997: 267); Mazur (2004: 101).

Type locality. Turkmenistan, Cheleken peninsula.
Type specimens examined. Paratypes: 1 ♀, side-mounted on a triangular point, with a pierced hole in the middle of pronotal base: 'Zap. [= Western] Bereg [= Bank] Aral'skogo [= of the Aral] / morja [= Sea] bliz [= near] Komsomol'ska [=of Komsomolsk] / 12.vi.[1]972 / G. Medvedev' (hand-written); '*Xenonychus* 1974 / *aralocaspius* sp.n.'; 'Kryzhanovskij det' (printed and hand-written); 'Paratypus' (red label, hand-written); 'Zoological / Institute Ras / St. Petersburg' (yellow label, printed); '09-055' (yellow label, pencil-written) (ZIN). 1 ♀, side-mounted on a triangular point: 'Aralskoe [= Aral] more [= Sea] o-v [= Island] / Barsakel'mes / N. Zorina 24.vii.[1]973' (written); '*Xenonychus* 1974 / *aralocaspius* sp. n.'; 'Kryzhanovskij det' (printed-written); 'Paratypus' (red label, printed); 'Zoological / Institute Ras / St. Petersburg' (yellow label, printed); '09-056' (yellow label, pencil-written) (ZIN).
Additional specimens examined. UZBEKISTAN: 5 ♂♂ 2 ♀♀ 3 spec., Chiva [=Khiva] Karakum, 3.vi.1978, under *Tamarix*, A. Olexa lgt. (TLAN); 1 ♂, Buchara, Shafirkan, 29.iv.1979, Olexa lgt. (TLAN); 1 spec., Buchara, Kyzylkum, 27.iv.1980, Olexa lgt. (TLAN). **KAZAKHSTAN:** 3 ♂♂ 2 spec., Djambol, Akkol, 9.v.1978, Olexa lgt. (TLAN). **TURKMENISTAN:** 1 ♂, Ashabad, 16.iv.1980, Olexa lgt. (TLAN); 1 spec., same label data, but 6.vi.1979 (TLAN). **AZERBAIJAN:** 1 ♂ 2 spec., Zarat, 12.vi.1979, Olexa lgt. (TLAN); 1 spec., Mardakjany, 24.vi.1982, D. Král lgt. (TLAN); 1 spec., Novchany, 3.vii.1982, D. Král lgt. (TLAN).

Differential diagnosis. Corresponds to *X. tridens* in all characters except the following: Mentum (Fig. 7) medially asetose; apical angles of pronotum blunt; punctuation of pronotum forms laterally elongate wrinkles, between lateral pronotal margin and pronotal punctuation a narrow glabrous longitudinal band present; posterior third of pronotal disc with transverse, almost glabrous patch. Male terminalia (Figs. 17–25) strongly resembling those of *X. tridens*, but aedeagus on apical third more dilated than in *X. tridens*, slightly curved ventrad (compare Figs. 15 and 24). From *Xenonychus somaliensis* it is easily distinguished by the shallowly emarginate mentum (compare Figs. 7 and 28), punctate pronotum, areolate-rugose outer part of posterior surface of protibia or present frontal and supraorbital striae.
Biology. This species is usually collected on sandy soils and in coastal dunes under halophilous plants (Kryzhanovskij & Reichardt 1976); in Uzbekistan (surroundings of Khiva) it has been collected under *Tamarix*.
Distribution. *Xenonychus aralocaspius* is distributed around the Caspian and Aral Seas, known from Turkmenistan, Iran, Azerbaijan, Uzbekistan and Kazakhstan (Mazur 1997).

Xenonychus somaliensis (Thérond, 1963) comb. nov.

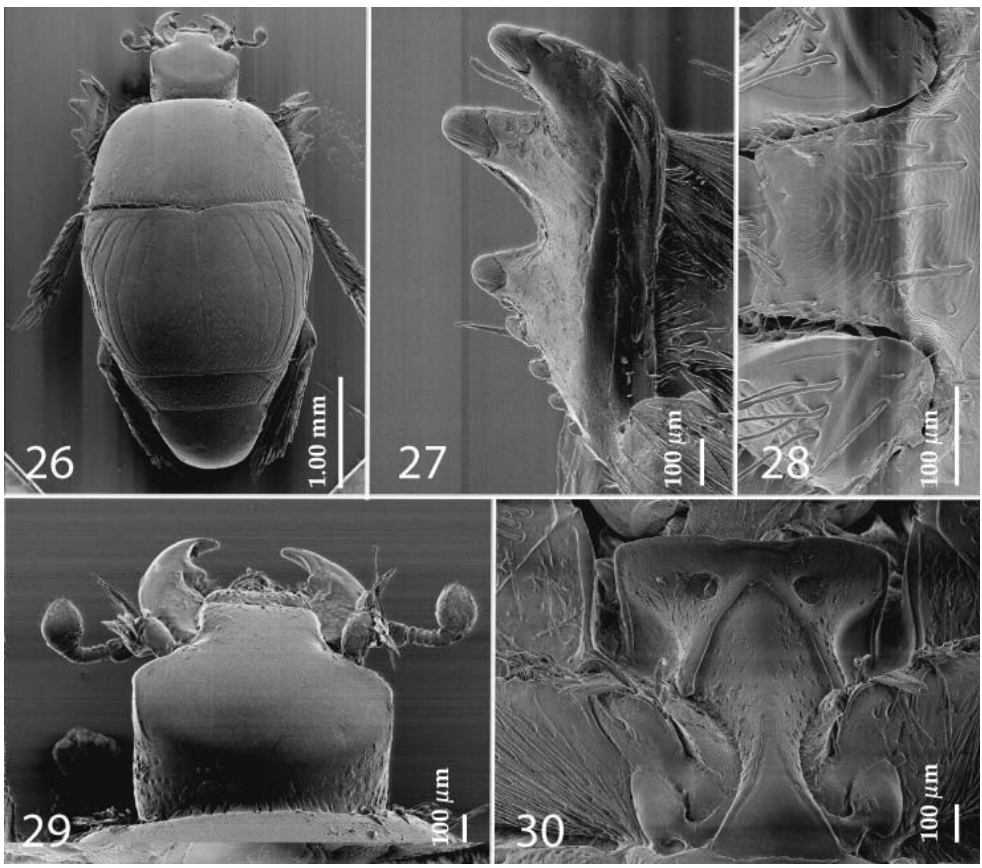
(Figs. 26–30)

Styphrus somaliensis Thérond, 1963: 111.
Styphrus somaliensis: Mazur (1984: 78); Mazur (1997: 245).

Type locality. Somalia, Mudugh, El Cabobe [= Mudug administrative region, Gadgaduud].
Type specimens examined. Holotype: ♀, side-mounted on a triangular point: 'El Cabobe SOMALIA / Mudugh VIII 1958 / C. KOCH' (printed); 'J. Thérond det. 1962 / *Styphrus* / *somaliensis* / n.sp.' (printed-written); 'D07-68' (pink pencil-written label); 'HOLOTYPUS / *Styphrus* / *somaliensis* / Thérond 1963' (red, hand-written). Paratypes: 1 ♀, side-mounted on a triangular point, right mesotibia and metatibia broken off, glued to the triangular point holding the specimen: 'Obbia SOMALIA / Mudugh VIII 1958 / C. KOCH' (printed); 'Paratype / *Styphrus* / *somaliensis* / Thérond 1963' (pink label, printed-written); 1 ♀, side-mounted on a triangular point, with slightly damaged pronotum, right protibia and mesotibia broken off, glued to the triangular point holding the specimen: 'Umgeb. Mogadiscio

/ Somalia / leg. C. Koch, VII 59' (printed); 'Paratype / *Styphrus* / *somaliensis* / Thérond 1963' (pink label, printed and hand-written) (all specimens in NHMB); 1 ♀, side-mounted on a triangular point, right antennal club, both mesotarsi and left metatarsus broken off, missing: 'Somalia, VIII.58 / leg. C. Koch' (printed); 'Uarsclek / Benadir Prov.' (printed); 'Museum Frey / Tutzing' (printed); '*Styphrus* / *somaliensis* / Thérond' (hand-written); 'Paratype' (red label, hand-written) (MNHN).

Differential diagnosis. Corresponding to *X. tridens* and *X. aralocaspius* except for the following characters: cuticle without metallic luster; legs, mouthparts and antennae light brown. Mentum antero-medially with a deep emargination (Fig. 28). Frontal and supraorbital striae absent (Fig. 29); marginal pronotal stria absent anteriorly; disc of pronotum smooth (Fig. 26). Sutural elytral stria weakly impressed, vaguely reaching elytral apex; first dorsal elytral stria continued along elytral base, sometimes intermittent, basally almost connected with fourth elytral stria. Pygidium longer than wide, with scattered fine punctuation confined to basal half, punctures much sparser and finer than those of propygidium; lateral sides of pygidium



Figs. 26–30. *Xenonychus somaliensis* (Thérond, 1963). 26 – habitus, dorsal view; 27 – protibia, ventral view; 28 – mentum, ventral view; 29 – head, dorsal view; 30 – prosternum.

glabrous. Anterior margin of median portion of prosternum (Fig. 30) bisinuate; pre-apical foveae very deep and large (Fig. 30). First abdominal sternite smooth. Outer part of posterior surface of protibia (Fig. 27) smooth; distinctly separated from substrigulate median part of posterior surface; metatibia conspicuously dilated. Unfortunately the only known specimens are females and therefore male terminalia could not be compared.

Variation. Between elytral base and elytral suture in one of the paratypes, housed in MNHN, there is a short but deep stria present on each elytron and carinal prosternal striae are almost complete, reaching united lateral prosternal striae apically.

Biology. Unknown.

Distribution. Known only from surroundings of Muqdisho [=Mogadiscio] and Uarsciek [=Warshiikh] in Banaadir [=Benadir] region, southern Somalia as well as from surroundings of Gadgaduud [=El Cabobe] and Hobyo [=Obbia] in Mudug [=Mudugh] administrative region, northern Somalia.

Remarks. This species does not belong to the genus *Styphrus* Motschulsky, 1845. It differs from it by the following characters: absent frontal stria (complete in *Styphrus*), flattened eyes (distinctly bulging in *Styphrus*), smooth clypeus (covered with scattered punctuation in *Styphrus*), dorsal elytral striae in punctures (impunctate in *Styphrus*), setose elytral epipleuron (glabrous in *Styphrus*), concave and glabrous prosternal process (flattened and setose in *Styphrus*), deeply impressed prosternal foveae (absent in *Styphrus*), complete lateral prosternal striae (shortened with *Styphrus*), shape of outer margin of protibia (teeth are much more articulated than in *Styphrus*), dilated metatibia (slender in *Styphrus*), much longer dorsal elytral striae reaching almost elytral apex (reaching about elytral half apically in *Styphrus*), different chaetotaxy of antennal club as well as other minor characters. See the diagnosis of *Xenonychus* for the autapomorphies of this genus.

Key to the species of the genus *Xenonychus*

1(4) Frontal and supraorbital striae present (occasionally frontal stria interrupted medially, Fig. 2); pronotum punctate (at least laterally; Fig. 1); outer part of posterior surface of protibia areolate-rugose (Fig. 4).

2(3) Apical half of aedeagus slightly dilated, aedeagus strongly narrowed apically (Fig. 24). ..... ***X. aralocaspius*** Kryzhanovskij, 1976

3(2) Apical half of aedeagus not particularly dilated, aedeagus only moderately narrowed apically (Fig. 15). ..... ***X. tridens*** (Jacquelin du Val, 1852)

4(1) Frontal and supraorbital striae absent (Fig. 3); pronotum impunctate (Fig. 26); apart from a row of elongate punctures along pronotal base, outer part of posterior surface of protibia (Fig. 5) smooth. ..... ***X. somaliensis*** (Thérond, 1963)

Discussion

Of all known specialized psammophilous genera of Saprininae, the genus *Xenonychus* is the most widespread. *Xenonychus* occurs from the Cape Verde and Canary Islands in the west, throughout the Sahara, to the shores of the Mediterranean Sea, Somalia, the Arabian

Peninsula, around the Caspian and Aral Seas and Somalia in the east. It now contains three species: the widespread *X. tridens,* that covers most of the above-mentioned distributional area; *X. aralocaspius*, which is distributed around the Caspian and Aral Seas, and *X. somaliensis*, found on the banks of the Indian Ocean in Somalia. The two species, *X. tridens* and *X. aralocaspius*, are very similar regarding their external morphologies and are most readily distinguished by their male terminalia, especially aedeagi. Their similarity can probably be attributed to the fact that the two species are allopatric and branched off from their common ancestor during the Pliocene when the Paratethys Sea became progressively shallower and divided as a result of tectonic uplift and declines in sea level approximately 5.5 million years ago (sensu Rögl 1999). *Xenonychus somaliensis* is currently known only from several females. It differs from the other two species by almost glabrous pronotum and absent frontal and supraorbital striae, as well as other minor characteristics. The punctuation of the dorsal surface is a variable character in the Saprininae and the presence/absence of frontal and supraorbital striae probably best demonstrates that this character can also vary even within one genus. Unfortunately, no males of this species were available, so male terminalia could not be used to elucidate the taxonomic validity of *X. somaliensis*.

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