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Stenolophus (Egadroma) marginatus Dejean, 1829 – a new carabid beetle for Switzerland (Coleoptera, Carabidae)

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Several individuals of *Stenolophus (Egadroma) marginatus* Dejean, 1829 were found in a southern locality of the canton of Ticino during two field trips undertaken in 2015. These are the first valid records of this species in Switzerland. Belonging to a different subgenus than other species of Swiss *Stenolophus* s.str., *S. marginatus* is photographed and some diagnostic characters are presented. Its general distribution and ecology are briefly discussed. 530 carabid species are now known from Switzerland.

Keywords: New records, Switzerland, carabid beetle, *Stenolophus marginatus*, faunistics

INTRODUCTION

Within the sub-tribe Stenolophina, the genus *Stenolophus* Dejean, 1821 is represented by four species in Switzerland. If *Stenolophus teutonius* (Schrank, 1781) and *S. mixtus* (Herbst, 1784) are relatively common and widely distributed, *S. skrimshiranus* Stephens, 1828 and *S. discophorus* (Fischer von Waldheim, 1823) are exceptionally rare, the latter considered extinct in Switzerland (Luka *et al.* 2009). These four species belong to the nominal subgenus *Stenolophus*.

The subgenus *Egadroma* Motschulsky, 1855 (sensu Jaeger & Kataev 2003), sometimes considered a genus (Vigna Taglianti 2013), is not cited in Switzerland according to Luka *et al.* (2009). An old and unverifiable literature reference (Stierlin & Gautard 1867) indicating «Lausanne, [by] Heer», however, mentions *Stenolophus (Egadroma) marginatus* Dejean 1829 for Switzerland. Two incompletely labeled and undated specimens («Valais, Switzerland, coll. [Maerky, ex coll.] Poncy») are also present in the Museum of Natural History of the City of Geneva. These data, however, were deemed insufficient to consider the species as belonging to the Swiss fauna (Maggi 1992), especially given its Mediterranean distribution. The only European member of the subgenus *Egadroma* was thus withdrawn from the Swiss list in 2005 (Huber & Maggi 2005, «kein Element der Schweizer Fauna») and subsequently dismissed (Luka *et al.* 2009). The recently published procedure for establishing national taxonomic lists (Monnerat *et al.* 2015) confirmed the validity of this decision, given the lack of sufficient evidence that would have allowed the species to be put on a Swiss list.

Catches of several individuals of *Stenolophus (Egadroma) marginatus* in 2015 in the canton of Ticino therefore represent the first valid records of the species in Switzerland.

MATERIAL AND METHODS

Given the promising results obtained in 2014 from research targeted at specific ground beetles (Chittaro & Marggi 2015), the first author continued to perform surveys in 2015, mainly focused on species on the Swiss red list (Luka *et al.* 2009) and/or on the list of National Priority Species in Switzerland (OFEV 2011). Target-oriented prospecting (searches under rocks, tree trunks on ground and plant remains, on the sand and gravel along rivers, etc.) was undertaken in all types of environments throughout the year.

The voucher material is deposited in the private collection of the first author (CH-1964 Conthey).

RESULTS

Among the numerous carabid beetles collected, many were verified or determined by the second author. Upon examination, it was found that a specimen from the canton of Ticino, first identified as *Stenolophus mixtus*, could in fact be assigned to *Stenolophus marginatus* (Fig. 1). Absent from Central Europe and not mentioned on the Swiss species list, this species was therefore not included in the standard determination key (Freude *et al.* 2006), which explains its erroneous and somewhat hasty attribution to *S. mixtus*, of rather similar habitus (Fig. 1).

The first individual of *S. marginatus* was found under a clump of earth at the bottom of a furrow in a cornfield in southern Ticino. Following this discovery, the area was revisited two months later. Several other specimens were then found. All were under plant remains (grass cuttings) on bare soil (tractor trenches, mounds of earth) bordering cropland (Fig. 2). The substrate was slightly moist, while surrounding areas not covered by grass cuttings were dry.



Fig. 1. Habitus of a male individual of *S. marginatus* (from Mendrisio TI, 12.VIII.2015, 5.4 mm), left, and of a male individual of *S. mixtus* (from Gy GE, 06.III.2015, 4.9 mm), right.

Details of catches:

— 1 specimen, Mendrisio TI, Colombera, 717/078, 03.VI.2015, 340 m, leg. & coll. Y. Chittaro, det. W. Marggi.

— 14 specimens, Mendrisio TI, Colombera, 717/078, 12.VIII.2015, 340 m, leg. Y. Chittaro, det. & coll. Y. Chittaro & W. Marggi.

The 26 companion species encountered during the two-day search period (Tab. 1) are mostly species typical of agricultural landscapes (Luka *et al.* 2009). Catches of *Tachyura hoemorrhoidalis* (Ponza, 1805) and *Agonum antennarium* (Duftschmid, 1812), however, are particularly notable. These species were previously known from only two and three Swiss localities respectively, all also located in southern Ticino.



Fig. 2. Habitat of *S. marginatus*. All individuals were found on bare soil (tractor furrows, above; heaps of earth in the middle of a field, below) covered with plant remains (grass cuttings).

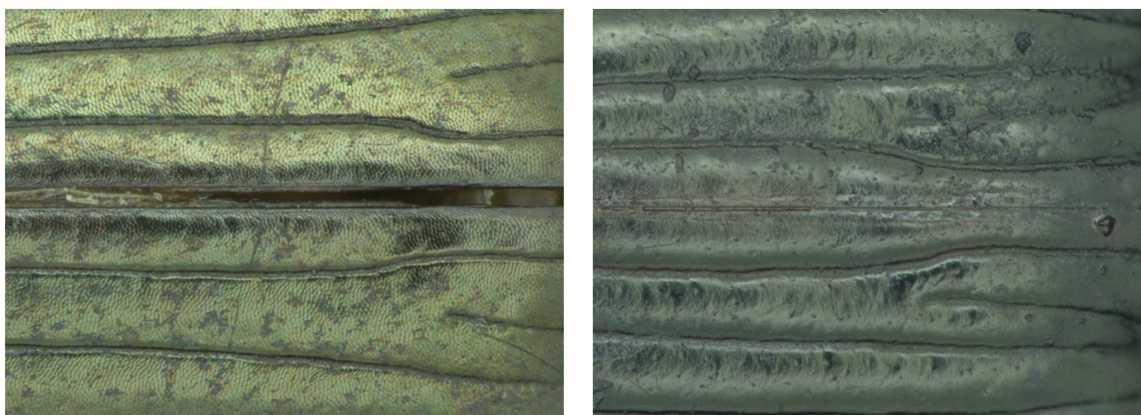


Fig. 3. Elytral surface of the first three interstices (on both sides of the elytral suture) of *S. marginatus* (left) and *S. mixtus* (right) (200 x).

DISCUSSION

Among European *Stenolophus*, only one species of the subgenus *Egadroma* is present in Europe (Kataev & Jaeger 2003): *S. (E.) marginatus*. This species differs from the other species belonging to the nominal subgenus by the unkeeled exterior surface of the hind tarsi, the glabrous abdominal segments, the greenish metallic colour and the elytral microsculpture with dense mesh (Fig. 3).

Stenolophus marginatus is a typically Mediterranean species and is widespread in warm regions of the western Palearctic, Portugal and Northern Africa to Kyrgyzstan, Tajikistan, Afghanistan (Jaeger & Kataev 2003) and Kazakhstan

Tab. 1. Other carabid beetles encountered in the sampled locality. Nomenclature follows Löbl & Smetana (2003).

Species	03.VI.2015	12.VIII.2015
<i>Abax continuus</i> Schaubberger, 1925	x	
<i>Abax exaratus</i> Schaubberger, 1927	x	
<i>Agonum afrum</i> (Duftschmid, 1812)	x	
<i>Agonum antennarium</i> (Duftschmid, 1812)	x	
<i>Agonum muelleri</i> (Herbst, 1784)	x	x
<i>Agonum viduum</i> (Panzer, 1796)	x	
<i>Amara aenea</i> (De Geer, 1774)	x	x
<i>Amara fulvipes</i> (Audinet-Serville, 1821)		x
<i>Amara kulti</i> Fassati, 1947		x
<i>Anchomenus dorsalis</i> (Pontoppidan, 1763)	x	
<i>Anisodactylus binotatus</i> (Fabricius, 1787)	x	
<i>Anisodactylus signatus</i> (Panzer, 1796)	x	
<i>Bembidion lampros</i> (Herbst, 1784)	x	
<i>Bembidion lunulatum</i> (Geoffroy, 1785)	x	
<i>Bembidion properans</i> Stephens, 1828		x
<i>Bembidion quadrimaculatum</i> (Linnaeus, 1761)		x
<i>Clivina fossor</i> (Linnaeus, 1758)	x	
<i>Diachromus germanus</i> (Linnaeus, 1758)	x	
<i>Harpalus affinis</i> (Schrank, 1781)	x	x
<i>Harpalus griseus</i> (Panzer, 1796)	x	x
<i>Harpalus rubripes</i> (Duftschmid, 1812)	x	
<i>Harpalus rufipes</i> (De Geer, 1774)	x	x
<i>Poecilus cupreus</i> (Linnaeus, 1758)		x
<i>Stenolophus teutomus</i> (Schrank, 1781)	x	x
<i>Tachyura hoemorrhoidalis</i> (Ponza, 1805)		x
<i>Trechus quadristriatus</i> (Schrank, 1781)	x	

(Kataev & Kabak 2014). Close to Switzerland, the species is reported from France in Rhône-Alpes, but only in southern Drôme and southern Ardèche (Coulon *et al.* 2000), where it is considered to be uncommon and exhibits an exclusively southern distribution. In northern Italy, *Stenolophus marginatus* was recently reported from Asti in Piedmont (Allegro 2013). In Italy, it was already known from Veneto and central-southern regions (Magistretti 1965). *S. marginatus* is not reported from either Germany or Austria. The nearest known neighboring localities are all at least 100 kilometers away from Swiss territory. The findings in Ticino in 2015 therefore extend the known distribution significantly northward.

S. marginatus is generally described as riparian and swamp-dwelling in literature (Marggi 1992, Coulon *et al.* 2000). It occurs near freshwater, particularly irrigation canals and swamps. The locations where the Swiss individuals were collected are agricultural areas, just like the specimens of Piedmont (Allegro 2013), and thus differ from the habitat type described in the literature. The moisture retained by the plant remains under which specimens of *S. marginatus* were hiding seems to satisfy their water requirements. In the same vein, *Tachyura hoemorrhoidalis*, found in the same conditions, is also a species typically cited for wetlands.

The relatively large number of individuals captured in 2015 confirms that the species is indigenous to Switzerland. It is thus surprising that it has not been discovered before, assuming that it has not arrived recently. This may be explained by the fact that the agricultural environment inhabited by this species in Switzerland is not often visited by entomologists.

523 species of carabid beetles were listed by Luka *et al.* (2009) for Switzerland. In the meantime, two recently described species (Szallies & Schüle 2011, Szallies & Huber 2014) and one newly discovered species (Marggi *et al.* 2010b) must be added to the list, as well as three species previously considered as subspecies or synonyms whose taxonomic status was recently reassessed (Marggi *et al.* 2010a, Marggi 2013, Szallies & Huber 2013).

The discovery of *S. marginatus* increases the actual number of resident carabid species in Switzerland to 530.

RÉSUMÉ

Stenolophus (Egadroma) marginatus Dejean, 1829 – un carabe nouveau pour la Suisse (Coleoptera, Carabidae). Plusieurs exemplaires ont été trouvés en 2015 dans une localité du sud du Tessin, au cours de deux excursions. Il s'agit des premières mentions valides de l'espèce pour notre pays. Appartenant à un sous-genre différent des autres *Stenolophus* s. str. suisses, l'espèce est illustrée et quelques éléments de détermination sont indiqués. Sa distribution générale et son écologie sont brièvement commentées. 530 espèces de Carabes sont maintenant connues de Suisse.

ZUSAMMENFASSUNG

Stenolophus (Egadroma) marginatus Dejean, 1829 – eine für die Schweiz neue Carabidenart (Coleoptera, Carabidae). Zahlreiche Exemplare konnten 2015 während zweier Exkursionen im Südtessin gefunden werden. Es handelt sich um die ersten sicheren Nachweise dieser Art in unserem Land. Die Art, welche zur Untergattung *Egadroma* Motschulsky, 1855 und nicht zu *Stenolophus* s. str. gehört, ist abgebildet, notwendige Unterscheidungsmerkmale sind erwähnt und die Gesamtverbreitung und Ökologie werden kurz umrissen. Mit dieser Neumeldung erhöht sich die Zahl der in der Schweiz vorkommenden Laufkäfer auf 530 Arten.

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