

Various notes concerning *Milax barypus* Bourguignat, 1866 (Mollusca, Gastropoda, Pulmonata, Milacidae)

Diverses notes concernant *Milax barypus* Bourguignat, 1866 (Mollusca, Gastropoda, Pulmonata, Milacidae)

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Résumé – Différents aspects concernant la couleur du mucus et les patrons chromatiques des limaces appartenant au complexe *Milax barypus* en Israël sont listés. Une révision de ce complexe est nécessaire afin de vérifier le statut taxonomique de ces limaces. Un des buts de cette révision serait de répondre à la question de la synonymie de *Milax cyprius* et de *Milax barypus*.

Mots-clés – Mollusca, Gastropoda, Milacidae, *Milax*, *Micromilax*, taxonomique, polychromique, distribution, Israël, Cyprus.

Abstract – Various aspects concerning the color of the mucous and the color patterns of slugs belonging to the *Milax barypus*-complex occurring in Israel are listed. A revision of this complex in Israel is needed. The results of such a revision would shed more light on the possible synonymy between *Milax cyprius* and *Milax barypus*.

Keywords – Mollusca, Gastropoda, Milacidae, *Milax*, *Micromilax*, taxonomy, polychromy, distribution, Israel, Cyprus.

In a recent paper dealing with the slugs of Cyprus, Vardinoyannis *et al.* (2012) mentioned *Milax barypus* Bourguignat, 1866 (Fam. Milacidae) from three localities on that Eastern Mediterranean island and stated that the species is endemic to Cyprus. The latter statement is an error (confirmed by one of the authors: Prof. A. Wiktor, personal communication), because the type locality of *M. barypus* is the vicinity of Nazareth (Israel). Moreover, it has been reported from various other localities in Israel (Forcart 1960, van Regteren Altena 1969, Wiktor 1987). Yet the problems surrounding this species seem to be much more complex than expected, as suggested by the observations presented here.

Original description

The original description by Bourguignat (1866) consisted of a brief Latin diagnose and a much longer French one. Since this original description may play a crucial role in unraveling the problems in the *Milax barypus*-complex, the French one is here copied in its original spelling.

"Animal assez grêle, s'effilant à sa partie postérieure, munie d'une forte carène dorsale, légèrement

blanchâtre, s'étendant de l'extrémité caudale au bouclier. Tissu épidermique d'une teinte bleuâtre, passant à une nuance beaucoup plus pâle vers les bords du pied. Rides dorsales très-prononcées, légèrement subtétragones, séparées par de petites linéoles faiblement noirâtres d'une extrême ténuité. Pied d'un ton jaunacé. Bouclier exigu, presque rond, très-éloigné de la tête, subgranuleux, biparti, c'est-à-dire présentant une petite ligne indicatrice de la limacelle, circonscrivant la partie (de forme subtétragone) supérieure et postérieure du bouclier. Ce bouclier, d'une teinte bleuâtre moins nette bien que plus foncée que celle du corps, est orné d'une quantité de très-petites taches noirâtres, inégalement espacées, et de deux zonules interrompues, de même nuance, qui bordent la ligne indicatrice de la limacelle. Orifice pulmonaire presque central, échancrant fortement le bouclier. Tentacules violacés, granuleux; les supérieurs grêles et allongés, les inférieurs médiocres.

Limacelle très-exiguë, ovulaire, à stries concentriques peu visibles, à nucléus supérieur médian. Mâchoire lisse, cornée, large atténuée à ses extrémités, munie d'un rostre médian prononcé et orné, en outre, en dessus, d'une petite zonule plus foncée, parallèle au bord supérieur externe de la mâchoire.

Losrqu'elle a séjourné quelque temps dans l'alcool, cette espèce perd sa couleur bleuâtre pour prendre un ton gris-jaunacé devenant presque noirâtre vers la carène dorsale. Longueur de l'animal en marche... 43 millim. Longueur de l'animal contracté... 22 millim."

The description of the living animal was most probably provided by the collector Félicien de Saulcy, who had found this slug among stones in the vicinity of Nazareth (Bourguignat, 1866).

Color patterns, mucus color and their geographical distribution in Israel

Specimens fitting the description of Bourguignat (1866) have so far been collected only in the northern part of the Golan Heights and in the foothills of the Hermon Mountain, both in the extreme north of Israel. Slugs found there show a blue upper part which becomes paler and even yellowish near the rim of the yellow sole. The mucus of such blue specimens is rather sticky and of a bright yellow to orange color.

In the rest of the mountainous part of Israel, characterized by Mediterranean climate and vegetation, slugs of the *barypus* complex have a pale yellow-greyish dorsum and an even paler sole. The mucous of these pale slugs is less sticky and without color.

Just west of Baniyas, near the foothills of the

Hermon we have collected slugs of a yellowish color (Figure 1). These yellow slugs produced a yellowish mucous.

Unfortunately all the specimens dissected by Forcart (1960), van Regteren Altena (1969) and Wiktor (1987) from localities in Israel consisted of preserved animals lacking the original colors of living specimens. However, according to the localities mentioned by these authors, they were probably all of the pale type.

We do not know whether these differences in the color of the animals and the mucous have any taxonomic value at the species or subspecies level.

Milax barypus, *Milax cyprius* and *Micromilax*

Slugs resembling *Milax barypus* have also been found on Cyprus. They were described by Simroth (1906) as *Amalia cypria*. It became the type species of the genus *Cypria* Simroth, 1910, which turned out to be a junior homonym of *Cypria* Zenker, 1854 (Ostracoda), therefore Hesse (1926) proposed the new name *Micromilax* and considered it a subgenus of *Milax* Gray, 1855.

Micromilax differs from *Milax* by the presence of a single thick canal between the accessory gland and the atrium, while in other species belonging to the genus *Milax* there are about a dozen of such canals, which are however very thin. In the most recent revision of the family Milacidae by Wiktor



Figure 1 – "Yellow" form of *Milax barypus* collected west of Baniyas, Israel (Photography by Oz Rittner)

(1987) *Micromilax* was synonymized with *Milax*.

Milax barypus and *M. cyprius* have been synonymized by Forcart (1960), van Regteren Altena (1969), Wiktor (1987) and Vardinoyannis et al. (2012). Yet Rähle (1991) has questioned this act and listed not less than seven points in which dissected specimens of *Milax cyprius* seem to differ from *Milax barypus* from localities in Israel. Moreover, as mentioned above, the dissected specimens from Israel most probably did not belong to the "blue" form originally described by Bourguignat (1866).

We do not know whether the three color forms of *Milax barypus* occurring in Israel belong to a single polychromous species or to a species complex. In addition we do not know whether the anatomy of the "blue" form of *Milax barypus* is identical with that of the specimens of *Milax cyprius* dissected by Rähle (1991). The results of such a research could alter the status of *Micromilax*.

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