

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/325819243>

# A new locality for *Annina lacustris* Budde-Lund, 1908. Some considerations on taxonomy and reproductio of the genera *Annina* and *Exciorlana* (Isopoda, Cirolanidae).

Article · June 2018

CITATIONS

2

READS

71

1 author:



Giuseppe Messina

Italian National Research Council

83 PUBLICATIONS 888 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Biologie [View project](#)



A new insight into the Stygofauna Mundi: assembling a global dataset for aquatic fauna in subterranean environments. [View project](#)

A new locality  
for *Annina lacustris* Budde-Lund, 1908  
Some considerations on taxonomy  
and reproduction  
of the genera *Annina* and *Exciorolana*  
(*Isopoda*, *Cirolanidae*)

PER Dr. Giuseppe MESSANA

(Centro di Studio per la Faunistica ed Ecologia Tropicali  
del Consiglio Nazionale delle Ricerche, Firenze)

Cirolanids belong to a family of mostly marine isopods, with highly euryhaline genera: one of them is *Annina lacustris* Budde-Lund, 1908, collected both in marine and subterranean fresh water of Eastern Africa (Budde-Lund, 1908; Alluaud & Jeannel, 1914; Monod, 1968).

Thanks to the courtesy of Dr. Jocqué of the « Musée Royal de l'Afrique Centrale, Tervuren », I recently examined some specimens collected in the brackish water of a mangrove swamp in the Comoro islands (8.VIII.1981, Grande Comore, S. de Iconi (sous les algues), 1 ♂, MRAC n. 55.270 et 1 ♀, MF\* n. IM81; 7.VIII.1981, Grande Comore, N. de Itsandra (sous les pierres), 3 ♂♂, 12 ♀♀ & 1 ♂ juv., MRAC n. 55.253; 1 ♂ & 1 ♀, MF n. IM82; R. Jocqué leg.). These are ascribed to the species *Annina lacustris* because in addition to the typical sexual dimorphism, the specimens agree in every detail with

---

\* MF = Museo zoologico « La Specola », Firenze.

the accurate redescription of the species given by Monod (1968), except for the number of articles on the peduncle of antenna II and the shape of setae on the last two articles of the mandibular palp. The antenna II in the Comoro specimens has a peduncle with five articles, the first very small and difficult to extract as pointed out by Jones (1983), while the setae of article II and III of the mandibular palp are denticulate instead of smooth as drawn by Budde-Lund (1908) and Monod (1968). Body and body processes teem with tiny setae.

***Annina lacustris*** Budde-Lund, 1908

*Annina lacustris* Budde-Lund, 1908 : 303-305, pl. 18, figs. 1-22.

*Anina* (sic) *lacustris*; Alluaud et Jeannel, 1914 : 365, 381.

*Anina* (sic) *lacustris*; Fage, 1924 : 2128.

*Anina* (sic) *lacustris*; Chappuis, 1927 : 69-70.

*Anina* (sic) *lacustris*; Delamare Deboutteville, 1960 : 645.

*Annina lacustris*; Monod, 1968 : 498-507.

*Excirolana bowmani* Jones & Icely, 1981 : 266-271.

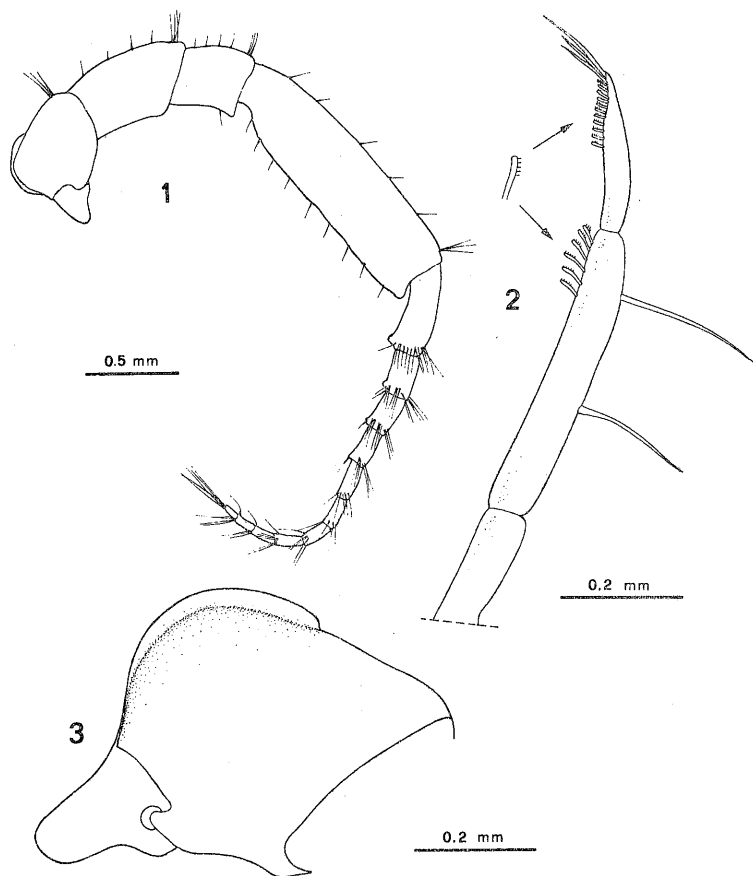
*Annina lacustris* : Jones, 1983 : 309-312.

A dissected female had twelve well developed embryos inside the body and not in a marsupium (oostegites are reduced). This character, never described before in the species, could be considered identical to the ovoviviparity of another cirolanid genus very close to *Annina*.

Ovoviviparity was described by Klapow (1970) as a character of the genus *Excirolana* and also reported by Bowman (1971). Klapow hypothesized that this special adaptation could offer a more efficient protection against damage produced by water turbulence at high tide and/or sand penetration under oostegites during burrowing as well as preserving eggs from the considerable saline fluctuation of the mother's environment.

Both hypotheses are very convincing; the second is particularly suited to *Annina lacustris* as this strongly euryhaline species inhabits both marine and subterranean fresh water.

Klapow (1970) found evidence of ovoviviparity in five species of *Excirolana*: *E. braziliensis* Richardson, 1912, *E. chiltoni* (Richardson, 1905), *E. linguifrons* (Richardson, 1899), *E. mayana* (Yves, 1891) and *E. orientalis* (Dana, 1853).



Figs. 1-3. — *Annina lacustris*: Male II antenna (1) and first two articles (2); last two segments of mandibular palp (3).

*E. natalensis* (Vanhoffen, 1914) also seems to be ovoviviparous as several female specimens from Somalia which I ascribed to this species, were carrying embryos inside the body and not under the postegites.

The genera, *Annina* and *Exciorolana* are closely related and also are the only cirrolanids in which ovoviviparity has been found. The presence of this type of egg incubation in *Annina* raises the question as to whether their systematic position should be revised. Jones (1983) recognizing the need of a complete revision of the genus *Exciorolana* only transferred two of its species into *Annina*, i.e. *E. mesopotamica* Ahmed, 1971 and *E. kumari* Bowman, 1971, the latter showing evidence of ovoviviparity.

In my opinion all the species of the genus *Exciorolana*, showing ovoviviparity should be transferred into the genus *Annina*. Both genera should accordingly be redefined.

#### BIBLIOGRAPHY

- ALLUAUD, Ch., R. JEANNEL, 1914. — In: Jeannel, R. et E.G. Racovitza. Biospeologica. XXXIII. Énumération des grottes visitées (1911-1913). — *Arch. Zool. Exper. Gen.*, 53: 325-558.
- BOWMAN, T.E., 1971. — *Exciorolana kumari*, a new tubicolous isopod from Malaysia. — *Crustaceana*, 20, 1: 70-76.
- BUDDE-LUND, G., 1908. — Isopoda von Madagaskar und Ostafrika mit Diagnosen verwandter Arten. In: Voeltzkow, Reise in Ostafrika in den Jahren 1903-1905. — *Wiss. Ergebn.*, II, Syst. Arb., Heft IV: 263-308.
- CHAPPUIS, P.A., 1927. — Die Tierwelt der unterindischen Gewässer: pp. 5 + 175 (Crust., pp. 35-92). Stuttgart.
- DANA, J.D., 1853. — Crustacea. In: « United States Exploring Expedition », vol. 14: 696-805; atlas 1855: 46-52 (C. Sherman, Philadelphia).
- DELAMARE-DEBOUTTEVILLE, Cl., 1960. — Biologie des eaux souterraines littorales et continentales. — *Vie Milieu*, Suppl. n° 9: 740 pp.
- FAGE, L., 1924. — Sur un type nouveau de Mysidacé des eaux souterraines de l'île de Zanzibar. — *C.R. Acad. Sci.*, 178, n° 25: 2127-2129.

- IVES, E.J., 1891. — Crustacea from the northern coast of Yucatan, the harbour of Vera Cruz, the west coast of Florida, and the Bermuda Islands. — *Proc. Acad. Nat. Sci. Philad.*: 185-189.
- JONES, D.A., 1983. — On the status of the cirolanid isopod genera *Annina* Budde-Lund, 1908 and *Exciorolana* Richardson, 1912. — *Crustaceana*, 45 (3): 309-312.
- JONES, D.A. & J.D. ICELY, 1981. — *Exciorolana bowmani*, a new mangrove-boring isopod from Kenya (Isopoda, Cirolanidae). — *Crustaceana*, 40 (3): 266-271.
- KLAPOW, L.A., 1970. — Ovoviviparity in the genus *Exciorolana* (Crustacea: Isopoda). — *J. Zool., Lond.*, 162: 359-369.
- MONOD, Th., 1968. — In: Gordon, I. et Th. Monod. Sur quelques Crustacés des eaux douces de Zanzibar. — *Bull. I.F.A.N.*, XXX, sér. A, n° 2: 497-517.
- RICHARDSON, H., 1899. — Key to the isopods of the Pacific coast of North America with descriptions of twenty-two new species. — *Proc. U.S. Natl. Mus.*, 21: 815-869.
- RICHARDSON, H., 1905. — A monograph on the isopods of North America. — *U.S. Natl. Mus. Bull.*, no. 54.
- RICHARDSON, H., 1912. — Description of a new genus of isopod crustacean and of two new species from South America. — *Proc. U.S. Natl. Mus.*, 43: 201-204.
- VANHOFFEN, E., 1914. — Die Isopoden der Deutschen Sudpolar-Expedition 1901-1903. — *Dt. Sudpol.-Exped.*, 15: 447-598.

#### RIASSUNTO

Viene scoperta l'ovoviviparità in esemplari di *Annina lacustris* delle Isole Comore. Si propone che tutte le specie del genere *Exciorolana* che presentano questa stessa caratteristica - *E. braziliensis*, *E. chiltoni*, *E. linguifrons*, *E. mayana*, *E. natalensis* & *E. orientalis* - vengano trasferite nel genere *Annina*.

#### SUMMARY

Evidence of ovoviviparity is found in females of *Annina lacustris* from the Comoro Islands. It is proposed that all the species of the genus *Exciorolana* showing evidence of ovoviviparity - *E. braziliensis*, *E. chiltoni*, *E. linguifrons*, *E. mayana*, *E. natalensis* & *E. orientalis* - should be transferred into the genus *Annina*.