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# ***Hygrotus (Leptolambus) natrun* nov.sp. from northern Egypt (Coleoptera, Dytiscidae, Hydroporinae)**

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**A b s t r a c t:** *Hygrotus (Leptolambus) natrun* nov.sp. is described from Wadi El Natrun and other localities in northern Egypt. The species is supposed to be halophile because it was found at sites which are known for their alkaline waters. It is compared with the externally similar *H. (L.) lernaesus* (SCHAUM, 1857), and *H. (L.) orthogrammus* (SHARP, 1882) from which it can be distinguished by the shape of the female and male genitalia. The key to Palearctic *Hygrotus* published by FERY (2003) is modified in part to include the new species.

**K e y w o r d s:** Coleoptera, Dytiscidae, *Hygrotus*, *Leptolambus*, new species, key to species, salinity, Egypt.

## **Introduction**

Currently, the genus *Hygrotus* STEPHENS, 1828 includes 132 species (plus 3 subspecies) worldwide (cf. NILSSON & HÁJEK 2024b) in four subgenera: *Coelambus* THOMSON, 1860, *Hygrotus* s.str., *Hyphoporus* SHARP, 1882, and *Leptolambus* VILLASTRIGO et al., 2017. The subgenus *Leptolambus* has 53 (plus 2 ssp.) members, 19 (plus 1 ssp.) of them are Palearctic and three Holarctic. According to the Catalogue of Palearctic Dytiscidae (NILSSON & HÁJEK 2024a) eight species of *Hygrotus* occur in Egypt, three of them belong to subgenus *Leptolambus*: *Hygrotus (L.) inscriptus* (SHARP, 1882), *Hygrotus (L.) lernaesus* (SCHAUM, 1857), and *Hygrotus (L.) saginatus* (SCHAUM, 1857). None of these species is considered endemic to this country.

SHARP (1882: 405) was the first to record *H. (L.) lernaesus* from Egypt (under *Hydroporus*). In the same year MARSEUL (1882: 83) gave also Egypt in his catalogue, but it is likely that he had this information from SHARP (1882). Other authors (e.g. RÉGIMBART (1895: 35), BEDEL (1925: 339)) recorded it from northern Africa, but did not distinguish between Egyptian and more western populations. GUIGNOT (1959: 329 ff.) listed in his "groupe *parallelogrammus* [sic!]" three species for the North-African fauna all of which currently are included in subgenus *Leptolambus*: *H. (L.) parallelogrammus* (AHRENS, 1812), *H. (L.) lernaesus* and *H. (L.) elevatus* (SHARP, 1882). For latter two species he gave explicitly "Egypte" as part of their distribution area. In a footnote (l.c. p. 332) he mentioned that records of *lernaesus* from southern Spain, Tunisia, Algeria and Morocco should be attributed to *H. (L.) parallelogrammus*; however, he acknowledged that specimens from southern Europe and northern Africa deviate in some respects from northern populations of that species.

Furthermore, he provided in his description (l.c. p. 332) of the median lobe of *H. (L.) lernaues*: "le dernier tiers plus effilé, un peu relevé et l'extrémité renforcée en un minuscule renflement, visible seulement de profil et à un fort grossissement" (= "last third more pointed, somewhat curved upwards and the extremity reinforced into a tiny bulge, visible only in profile and at high magnification"). This description shows clearly that he based his (incorrect) description of the median lobe of *H. (L.) lernaues* on that of a male *H. (L.) orthogrammus* (SHARP, 1882) (see Figs 18, 18a). The reason for this mistake bases on GUIGNOT's treatment of *H. (L.) orthogrammus* as synonym of *H. (L.) lernaues*. In males of the latter species, the apex of the median lobe is by no means reinforced, but rather simply pointed (see Fig. 16).

FERY (1992a) could show that the population from southern Spain, Tunisia, Algeria and Morocco mentioned by GUIGNOT belong to *H. (L.) lagari* (FERY, 1992). Furthermore, FERY (1992b) proved that *H. (L.) elevatus* is a junior subjective synonym of *H. (L.) saginatus*.

In the present work it is shown that the Egyptian "*lernaues*" belongs to a new species: *Hygrotus (L.) natrun* nov.sp. It is described and compared with the externally similar *H. (L.) lernaues* and *H. (L.) orthogrammus*. The relevant part of the key to Palearctic members of *Hygrotus* provided in FERY (2003) is modified to include the new species. Together with the new one, the number of species in the genus *Hygrotus* increases to 133 and in the subgenus *Leptolambus* to 54.

### Material, methods, and acknowledgement

The *Hygrotus* specimens were studied with an Olympus SZX16 stereomicroscope. Photographs were taken with a Canon EOS 650D digital camera attached to the microscope. Helicon Focus 6.4.1 software was used to combine stacks of photos and Adobe Photoshop CS5 software was used to retouch photos and ink drawings. Figures of the genitalia of *H. (L.) lernaues* and *H. (L.) orthogrammus* are modified versions of those given in FERY et al. (2005). The terminology to denote the orientation of the median lobe follows MILLER & NILSSON (2003). Genitalia were studied in wet condition. Specimens are glued on cards together with their genitalia and last abdominal ventrites.

The following acronyms for collections from which I have studied material are used in the text:

CHF..... coll. H. Fery, Berlin, Germany, property of NHMW  
 CLH ..... coll. L. Hendrich, Munich, Germany (property of NHMW)  
 MNHN ..... Muséum National d'Histoire Naturelle, Paris, France (H. Perrin, A. Mantilleri)  
 NHMW ..... Naturhistorisches Museum Wien, Austria (M.A. Jäch, H. Shaverdo)  
 OLML ..... Oberösterreichisches Landesmuseum, Linz, Austria (F. Gusenleitner, E. Ockermüller)  
 ZSM ..... Zoologische Staatssammlung München, Munich, Germany (L. Hendrich)

Abbreviations used in the text are: TL (total length), MW (maximum width) and hw (handwriting). Label texts are cited in quotation marks. Additional comments are given in square brackets. Coordinates are given in decimal notation and were checked with Google Earth Pro. Label texts are cited in quotation marks, additional comments are

given in square brackets. I would like to thank all colleagues and curators mentioned above for loaning material and other diverse other support.

## Systematics

### *Hygrotus (Leptolambus) natrun nov.sp.*

? *Hydroporus lernaesus* SCHAUM, 1857; SHARP 1882: 405 (partim).

? *Coelambus parallellogrammus lernaesus* (SCHAUM, 1857); BEDEL 1895-1925: 339, footnote (partim).

*Coelambus lernaesus* (SCHAUM, 1857); RÉGIMBART 1895: 35 (partim); ZIMMERMANN 1919: 151 (partim); 1920: 68 (partim); 1930: 101 (partim); GUIGNOT 1959: 332 (partim); ALFIERI 1976: 33.

*Hygrotus (Coelambus) lernaesus* (SCHAUM, 1857); ZALAT et al. 2000: 26; NILSSON 2001: 207 (partim); 2003: 72 (partim).

*Hygrotus (Leptolambus) lernaesus* (SCHAUM, 1857); NILSSON & HÁJEK 2024a: 46 (partim); 2024b: 197 (partim).

**Type locality:** Wadi El Natrun (also Wadi Natrun, Wadi an-Natrun, Wadi Natroun), ca. 100 km NW Cairo, ca. 30.41N 30.30E. **Note:** This wadi is about 25 m below sea level and about 38 m below the level of the Nile.

**Material examined:** Holotype: ♀, "Wadi Natroun, 2.5.[19]27" [hw Guignot], "Coll. Alfieri, Egypte" [printed], "♀", "Muséum Paris, 1960, Coll. F. Guignot" [printed]; "Holotype, *Hygrotus (Leptolambus) natrun nov.sp.*, H. Fery det. 2024" [red, printed] (MNHN) [for labels see Fig. 1; specimen until now kept in coll. Guignot under *Coelambus lernaesus* var. *orthogrammus*]. Paratypes: 2♂♂, "Ägypten 27.9.1982, Wadi Natrun, Kafr Daoud, Sattm." [hw ?] (NHMW, CHF). 2♂♂, "Bahariva Oases, 20.-24.3 [19]25" [printed], "Egypt, Min. Agric. (Egypt), Coll. A. Alfieri" [printed], "Coll. Gschwendtner" [printed], "*lernaesus* SCHAUM., det. Gschwendtner" [first line hw, second line printed] (OLML). 1♀, "Egypt, W Desert Oasis Bahariva [= Bahariya, ca. 28.33N 29.00E, ca. 300 km SW Cairo], 30.IV.1996 W.G. Ullrich" [printed] (CLH). 1♀, "Kairo" [hw Zimmermann], "Samml. A. Zimmermann" [printed], "*Coelambus, lernaesus*, (SCHAUM), Fery det. 19[91] [hw Fery], "SNSB-ZSM Coleoptera, ID No. 000124" [printed] (ZSM). All paratypes provided with the respective red label.

### Description of the holotype:

**Habitus** elongate oval, sides evenly rounded (Fig. 1), body outline in dorsal view without distinct discontinuity at shoulders. Maximum width near midlength of body. Elytra brownish yellow, with blackish longitudinal vittae. Head and pronotum more reddish yellow, with brownish spots. Entire dorsal surface shiny although weakly reticulated in part.

**Head:** Anterior margin medially almost straight, but appearing semicircular if observed in perpendicular view on entire body of specimens because anterior margin not visible; anteriorly between eyes with two clypeal grooves. Whole surface finely reticulated, but not matt. Third and fourth antennomeres equal in length, thinner and shorter than first and second as well as rest of them. Punctuation on clypeus fine and sparse, diameter of punctures that of one mesh, distance between punctures that of about 5 meshes; on frons punctures larger, diameter that of about three meshes, distance that of about three meshes; on vertex punctures again smaller and sparser; in clypeal grooves punctures very dense; line of coarse punctures alongside inner margin of eyes. Clypeus with two ill-defined, brownish interocular spots; above insertions of antennae (between clypeal grooves and anterior margin) shining through brownish; vertex dark brownish.

Antennae reddish-yellowish with antennomers progressively darkened distally, beginning with fifth.

**Pronotum:** Sides slightly rounded, with distinct brownish rim; posterior angle: more or less right-angled. Punctuation on disc rather fine (as on clypeus), becoming coarser laterally; centre of disc with one small longitudinal puncture; directly behind anterior margin punctuation very fine and sparse, but then before disc very coarse; before posterior margin again very coarse; near lateral margins punctuation much denser. Few coarser punctures near margin with extremely short seta. Surface of pronotum smooth and shiny, but directly behind anterior margin distinctly reticulated and matt. Disc with one large ill-defined, brownish spot; anterior margin appearing dark brownish because dark vertex of head shining through.

**Elytra:** In dorsal view lateral margin of elytron visible only near elytral base and before apex because else sides of elytra turned inwards. Epipleural rim in lateral view weakly ascending towards humeral angle. Surface smooth in anterior two thirds, behind reticulated, but not distinctly matt. Punctuation double; coarse punctures interspersed with small punctures; coarse punctures progressively becoming more numerous posteriad, but near apex punctures smaller. Each elytron in anterior half with two indistinct puncture lines, which coincide more or less with second and fourth vittae; in anterior quarter between fifth vitta and elytral margin some larger punctures indicating a third line; no sutural line perceptible. Most coarser punctures with very short seta, almost imperceptible on disc, otherwise slightly longer; in posterior half a very few punctures with a longer seta; however, generally setation only well visible if adequately illuminated. Each elytron with suture, four discal vittae, a lateral and a submarginal vitta blackish; elytral base medially with blackish stripe. Second vitta reaching base, fourth vitta ending just before base, first and third vittae ending far before base; lateral vitta short, only present in anterior half, and ending far before base; submarginal vitta present only in posterior half, more or less parallel to elytral margin, reaching until apex, and here fused with sutural line. First, second and third vittae fused just before apex, third and fourth vittae short behind midlength of elytra.

**Ventral surface:** Head, prosternum, epipleura and legs light brownish, metaventrite and abdomen predominantly black; metacoxal processes apically, neighbouring small parts of metacoxal plates, first abdominal ventrite, hind margins of third to fifth abdominal ventrites and sixth abdominal ventrite apically shining through brownish. Almost entire venter reticulated, only slightly shining, but not distinctly matt; metaventrite medially without reticulation and here more shiny; small brownish parts of metacoxal plates neighbouring apex of metacoxal processes smooth and shiny. Punctuation on metacoxal plates and metaventrite distinct; on metaventrite punctures somewhat larger; punctures absent in small posterior part of metacoxal plates and on areas right and left of medial part of metaventrite; medial part of metaventrite with irregular lines of small punctures; metacoxal processes with sparse small punctures. Abdominal ventrites generally punctured; punctures progressively becoming smaller to last ventrite; second and third ventrites medially fused and here with only very few small punctures. Third to fifth ventrites medially with few densely arranged punctures, these with long and backwardly directed setae. Prosternal process (Fig. 2) lanceolate, longitudinally carinate, with tectiform cross section; apex rounded, sides slightly flattened and here with some punctures, lateral margin rimmed (for comparison see flat

process of *H. (L.) orthogrammus* in Fig. 3); prosternal column coarsely punctured with small transverse elevation between anterior coxae; medial part of prosternum (before column) vaulted and very coarsely sculptured. Epipleura in anterior third more or less as broad as apex of mesotibia, with some punctures and extremely weak reticulation; evenly narrowed behind; humeral part of epipleura with oblique carina delimiting genicular fossa; carina forming with epipleural rim an angle of about 25° (see details in VILLASTRIGO et al. (2017)). Hind margins of metacoxal processes slightly slanted, interlaminary bridge well exposed, forming a more or less triangular (or wing-like shaped) elevation on first and second abdominal ventrites (see details in FERY & RIBERA (2018)). Metacoxal lines diverging forwards, ending before hind margin of metaventrite. Protarsal claws thin, evenly curved and more or less identical.

**G e n i t a l i a:** Gonocoxae in ventral view as in Fig. 4; in lateral view (Fig. 5) distinctly flatter than in *H. (L.) lernaesus* (Fig. 8); proximal portion less curved upwards than in *H. (L.) lernaesus* (Figs 7, 8), but more than in *H. (L.) orthogrammus* (Figs 10, 11); distal margins slightly concavely emarginate (see arrow in Fig. 4). Gonocoxosternum as in Fig. 6; differences to those of *H. (L.) lernaesus* (Fig. 9) and *H. (L.) orthogrammus* (Fig. 12) present, but irrelevant for diagnostic purposes.

**M a l e s:** Externally similar to females, but pro- and mesotarsi broader and anterior (inner) claw of protarsi strongly enlarged and curved (Fig. 22). Median lobe of aedeagus in ventral and lateral view as in Figs 13 and 14; apex simple, not bulged as in *H. (L.) orthogrammus* (Figs 18 and 18a); left paramere as in Fig. 19. Medial part of median lobe in lateral view significantly thinner (see arrow in Fig. 14) than in other two species (compare Figs 16 and 18); corrugated membrane (see FOSTER & ANGUS (1985: 8)) extending less far distally (compare Figs 13, 15 and 17); for comparison of parameres see Figs 20 and 21.

**M e a s u r e m e n t s:** TL: 3.7–4.25 mm, MW: 1.8–2.2 mm, TL/MW: 1.93–2.01 (holotype: TL: 3.9 mm, MW: 1.95 mm, TL/MW: 2.00).

**V a r i a b i l i t y:** The variation of external morphological characters of the specimens studied is scanty. Worth mentioning are only: the spots on head and pronotum and the elytral vittae can be more blackish; the degree of fusion of the elytral vittae can vary; the small brownish parts on metathorax and abdomen can be darker or even black; the areas with coarser punctures on pronotum can be extended more mediad. The variation in the shape of the median lobe is small, but in some specimens the corrugated membrane extends a little more distally (ventral view). The variation in the shape of the parameres is somewhat greater, particularly because the distal part may be slightly curved inward. This also applies to the other two species and therefore the shape of the parameres is more or less unsuitable for diagnostic purposes. **N o t e s:** The females studied have a shiny upper surface, but the existence of a matt morph cannot be excluded.

**D i s t r i b u t i o n:** Endemic to Egypt. In ALFIERI (1976: 33) is given: "*in swamps around Cairo*". In ZALAT et al. (2000: 26) is given: "*Nile valley & Delta, eastern & western desert. Months of abundance: April, July-August. Habitat: collected from margins of swamps and marshes of rich vegetation; fresh and brackish water.*" (both under "*lernaesus*"). Unfortunately, I was not enabled to study respective material.

**D e r i v a t i o n o m i n i s:** The new species is named after the type locality.

## Discussion

The new species cannot be reliably identified based on external morphological characters. At least in dorsal view it is very similar to *H. (L.) lernaeus* and *H. (L.) orthogrammus* and could also be confused with *H. (L.) lagari*, which is widespread in the western Mediterranean. However, the separation of *H. (L.) orthogrammus* is relatively easy if the venter is observed – the prosternal process is clearly flattened in this species, whereas it is tectiform in the other three species (see Figs 2 and 3). This conspicuous character of *H. (L.) orthogrammus* was overlooked by all authors until FERY et al. (2005) recognised it and reinstated this taxon as valid species.

The study of male and especially female genitalia was not common before the mid-20th century. Therefore, it is not surprising that the four species under consideration were not separated much earlier. A separation of *H. (L.) lagari* is especially easy (see fig. 1 in FERY (1992a)), the male genitalia of which are much more similar to those of *H. (L.) parallelogrammus* and the Sardinian *H. (L.) sanfilippoi* (FERY, 1992) (see figs 2 and 4 in FERY (1992a)). Based on the female and male genitalia also the other three species can be relatively easily separated. Finally, it is also helpful to include the distribution areas in the determinations, as these areas are, according to current knowledge, well delimited from one another. Currently only a few specimens of the new species were available for studies. Future collections are necessary to clear up the entire distribution area. In particular, alkaline waters and nearby freshwaters in Egypt and other East African countries should be investigated to collect more specimens of this apparently halophile species.

I also have reflected on the possibility that *H. (L.) natrun* nov.sp. should be considered a subspecies of *H. (L.) lernaeus*. However, the distinct distinguishing characters – shape of male and female genitalia – in combination with the relatively large gap of ca. 500 km separating their known distributional areas and the lack of any intermediate forms led me to discard this idea.

## Modified key to Palearctic species of *Hygrotus* (in part)

The key is a modification of that given in FERY (2003) which was already modified in FERY et al. (2005). The abbreviations "fig." and "figs" relate to these works, numbers with an asterisk (\*) relate to figures in FERY (2003).

- 8 Habitus more elongate. Median lobe in lateral view evenly curved in proximal two thirds, almost straight in distal third (figs 31\*–35\*). Gonocoxae more or less heart-shaped (figs 41\*–46\*). Parameres broadly triangular (figs 36\*–39\*), except in *H. inscriptus* (fig. 40\*). .....9
- Habitus more rounded. Median lobe in lateral view and parameres of various shape. Gonocoxae not heart-shaped. ....13
- 9 Smaller (3.5–4.2 mm). Usually each elytron beside black suture with only two vittae, sometimes with a third vitta, very rarely a fourth one indicated; submarginal vitta in posterior half weakly indicated, often absent. Median lobe as in fig. 35\*, paramere almost L-shaped, not broadly triangular (fig. 40\*). Gonocoxae (fig. 41\*) rather long; gonocoxosternum as in fig. 47\*. ....*H. inscriptus* (SHARP)

- Larger (3.9–5.5 mm). Each elytron with four, more or less well developed discal vittae; a fifth vitta near sides represented by a short longitudinal spot which can be absent; submarginal vitta in posterior half distinct. Parameres broadly to narrowly triangular (figs 36\*–39\*, figs 5–8, Figs 19–21). Gonocoxae shorter. (The following eight species can only be reliably determined by examining the male and/or female genitalia.) ..... 10
- 10 Median lobe in lateral view in distal third rather thin; distribution: eastern Mediterranean, Near and Middle East. .... 10a
- Median lobe in lateral view in distal third thicker; two smaller species (4.1–4.9 mm) from western Mediterranean, and a larger one (4.5–5.5 mm) distributed from Central Europe to eastern Siberia. .... 11
- 10a Median lobe in lateral view straight or only slightly curved in distal third (fig. 34\*, figs 3–4, Figs 14, 16, 18); tip with or without enlargement in lateral view. .... 10b
- Median lobe in lateral view strongly curved in distal third (figs 1–2); tip with enlargement in lateral view. .... 10d
- 10b Median lobe in lateral view straight in distal third (fig. 3, Fig. 18), tip with triangular enlargement or at least obliquely truncate (fig. 3a, Fig. 18a); prosternal process rather flat (Fig. 3), apex broadly rounded; coarser punctures between puncture lines sparse in distal third; gonocoxae in perpendicular view longer (fig. 12, Figs 10, 12); distribution: Persian Gulf region and southern Iran. .... *H. orthogrammus* (SHARP)
- Median lobe in lateral view slightly curved in distal third (fig. 4, Figs 14, 16), tip simply pointed; prosternal process carinate, apex shortly rounded; coarser punctures between puncture lines numerous in distal third. .... 10c
- 10c Body shape slightly more oval; pronotum in the centre and head between eyes with dark spots; vertex transversely blackish; females with gonocoxae in perpendicular view very short, proximal portion strongly curved upwards (fig. 46\*, figs 13, 13a, Figs 7–8), distal margin weakly emarginate. Median lobe as in fig. 34\*, fig. 4, Figs 15–16; distribution: southeastern Europe, Asia Minor, Near East (see also notes below). .... *H. lernaeus* (SCHAUM)
- Body shape slightly more elongate oval; pronotum in the centre and head between eyes only with diffusely darkened areas, on vertex transversely darkened; females with gonocoxae in perpendicular view longer, proximal portion less strongly curved upwards (Figs 4–5), distal margin distinctly emarginate (Fig. 4, arrow). Median lobe as in Figs 13–14, in lateral view medial part distinctly thinner; distribution: Egypt. .... *H. natrun* nov.sp.
- 10d Smaller (3.8–4.5 mm); distribution: Fars province in Iran; median lobe in lateral view strongly curved (fig. 1); enlargement of tip as in fig. 1a. .... *H. curvilobus* FERY, SADEGHI & HOSSEINIE
- Larger (4.6–5.0 mm); distribution: central and northern provinces in Iran; median lobe less strongly curved (fig. 2); enlargement of tip as in fig. 2a. .... *H. stefanschoedli* FERY, SADEGHI & HOSSEINIE
- 11 Usually larger (4.5–5.5 mm); male protarsomeres rather broad. Median lobe, paramere, gonocoxae, and gonocoxosternum as in figs 31\*, 36\*, 42\*, 48\*; distribution: Palearctic. .... *H. parallelogrammus* (AHRENS)
- Usually smaller (4.1–4.9 mm); male protarsomeres less broad; distribution: West Mediterranean. .... 12
- 12 Median lobe, paramere, gonocoxae, and gonocoxosternum as in figs 32\*, 37\*, 44\*, 50\*; distribution: southern Iberian Peninsula, North Africa, and Sicily. .... *H. lagari* (FERY)
- Median lobe, paramere, gonocoxae, and gonocoxosternum as in figs 33\*, 38\*, 45\*, 51\*; distribution: Sardinia. .... *H. sanfilippoi* (FERY)
- 13 Males with metatarsal claws of unequal length, posterior claw shortened, thickened and curved, anterior one simple. Females with apex of gonocoxae prolonged, finger-like (figs 61\*–64\*) (*H. (L.) saginatus*-group). .... 14

N o t e s : According to the Catalogue of Palearctic Dytiscidae (NILSSON & HÁJEK 2024a: 46) the distribution of *Hygrotus (L.) lernaeus* extends in Asia eastwards as far as

Uzbekistan, Afghanistan and Kyrgyzstan. Material from these countries urgently needs revision.

### Zusammenfassung

Aus der Untergattung *Leptolambus* VILLASTRIGO et al., 2017 der Gattung *Hygrotus* STEPHENS, 1828 waren bisher drei ägyptische Arten bekannt: *Hygrotus* (L.) *inscriptus* (SHARP, 1882), *H.* (L.) *lernaues* (SCHAUM, 1857) und *H.* (L.) *saginat* (SCHAUM, 1857).

Die Untersuchung von ägyptischem Material des *H.* (L.) *lernaues* aus verschiedenen Sammlungen zeigen jedoch, dass diese Exemplare sowohl anhand der weiblichen als auch der männlichen Genitale klar von Exemplaren aus europäischen und asiatischen Populationen unterschieden werden können. Die neue Art wird als *Hygrotus* (*Leptolambus*) *natrun* nov.sp. beschrieben und der Holotypus festgelegt (deponiert im MNHN, Paris).

Der locus typicus der neuen Art ist das Wadi El Natrun, welches im Nordwesten Ägyptens, zwischen Kairo und Alexandria liegt, etwa 100 km NW Kairo. Dieses Wadi liegt etwa 25 m unter dem Meeresspiegel und rund 38 m unter dem Niveau des Nils. Einige der untersuchten Exemplare stammen jedoch auch aus dem Wadi Bahariya, ca. 300 km SW Kairo. In beiden Wadis gibt es stark alkalihaltige Seen, aber auch Bereiche mit Brackwasser und sogar Frischwasser (siehe auch ALFIERI (1976: 33)).

Viele Arten der Gattung *Hygrotus* sind als halophil bekannt (siehe z.B. VILLASTRIGO et al. (2018)). Insofern ist das Auftreten der neuen Art in diesen Wadis nicht überraschend. Allerdings kann wohl ausgeschlossen werden, dass sie in den zum Teil extrem hochkonzentrierten Salzseen selbst vorkommen. Nachforschungen in weiteren Wadis Ägyptens wären wünschenswert.

Die neue Art wird anhand mehrerer Abbildungen mit den äußerlich ähnlichen *H.* (L.) *lernaues* und *H.* (L.) *orthogrammus* (SHARP, 1882) verglichen. Der Bestimmungsschlüssel für die paläarktischen Vertreter der Gattung *Hygrotus* aus FERY (2003) und FERY et al. (2005) wird modifiziert, um die neue Art einzuschließen. Die Gattung *Hygrotus* umfasst nun 133 Arten (plus 3 Unterarten), die Untergattung *Leptolambus* 54 Arten (plus 2 Unterarten), davon sind 19 (plus eine Unterart) paläarktisch und drei holarktisch.

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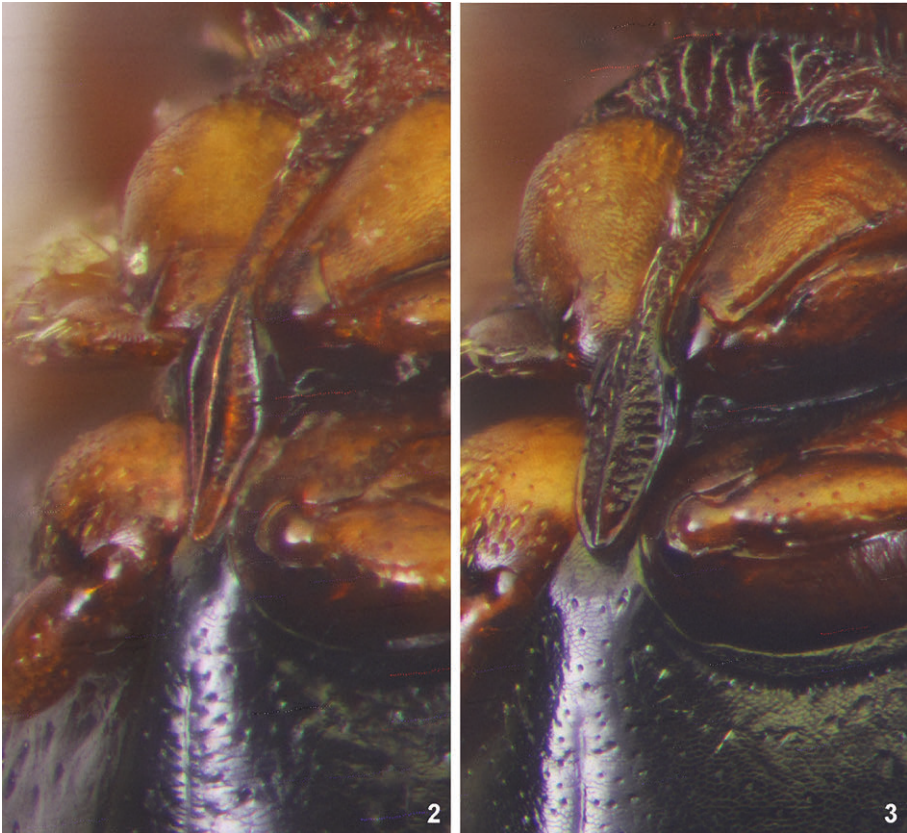


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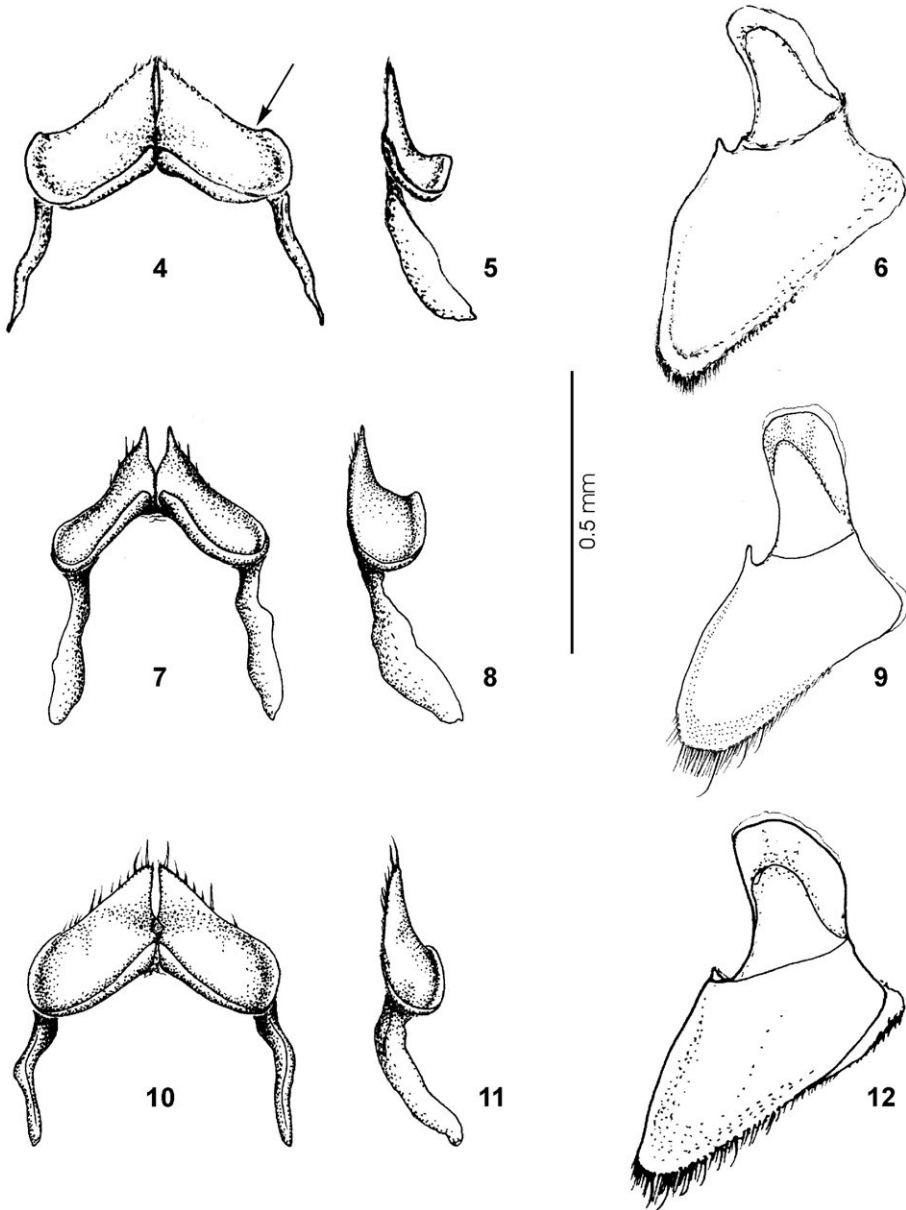
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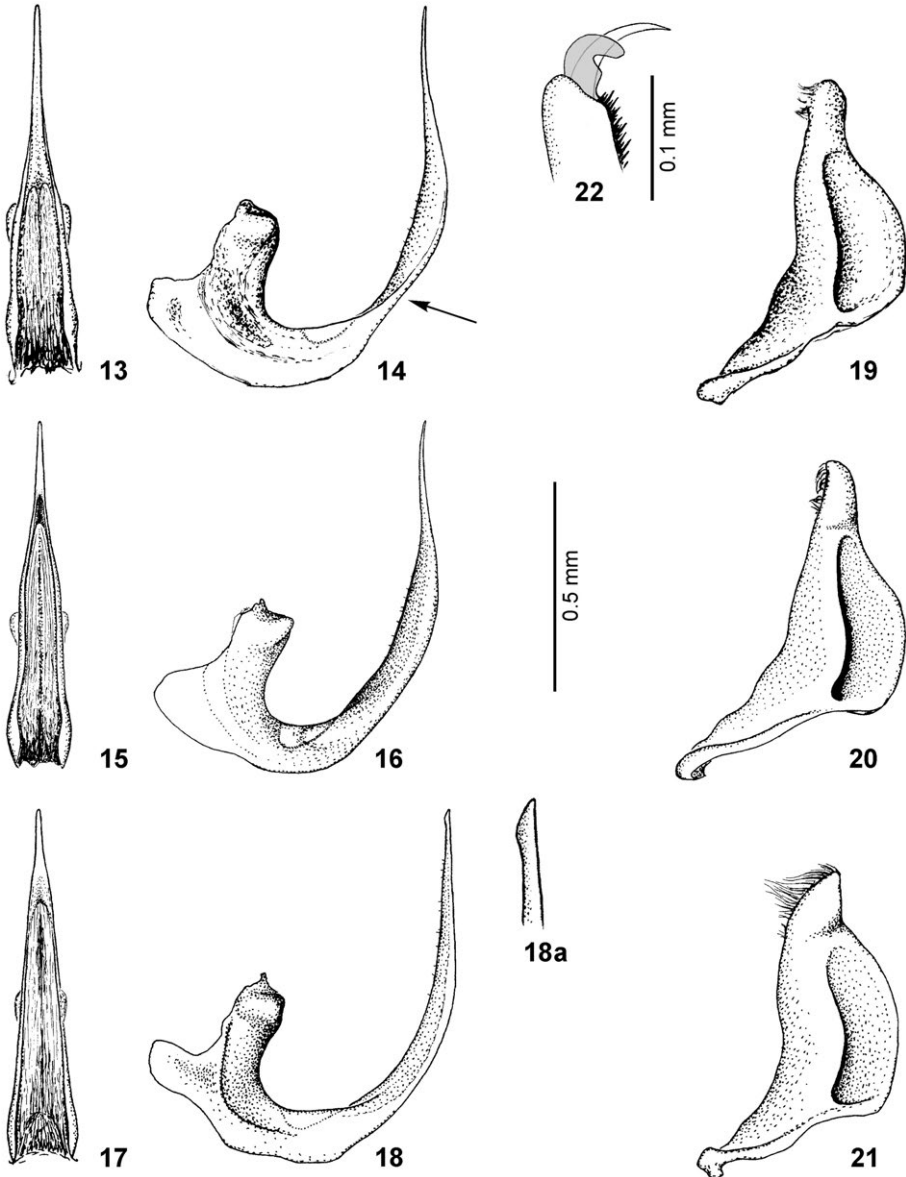
**Fig. 1:** Habitus of *Hygrotus* (*Leptolambus*) *natrun* nov.sp. and labels (holotype from Wadi El Natrun, Egypt).



**Figs 2-3:** Prosternal process. (2) *Hygrotus (Leptolambus) natrun* nov.sp.; (3) *Hygrotus (L.) orthogrammus* (SHARP, 1882).



**Figs 4-12:** Gonocoxae in ventral and lateral view and gonocoxosternum. (4-6) *Hygrotus (Leptolambus) natrun* nov.sp.; (7-9) *Hygrotus (L.) lernaesus* (SCHAUM, 1857); (10-12) *Hygrotus (L.) orthogrammus* (SHARP, 1882).



**Figs 13-22:** Median lobe in ventral and lateral view (13-18) and left paramere (19-21). (13, 14, 19) *Hygrotus (Leptolambus) natrun* nov.sp.; (15, 16, 20) *Hygrotus (L.) lernaeus* (SCHAUM, 1857); (17, 18, 21) *Hygrotus (L.) orthogrammus* (SHARP, 1882) (18a: detail of apex). **Fig. 22:** Claws of left protarsus of male *H. (L.) natrun* nov.sp. (anterior claw in front).

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