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Description of a new species of *Hydraena* KUGELANN (Coleoptera: Hydraenidae) from the southeastern USA

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Abstract: *Hydraena cornelli* n.sp. is described from North Carolina, South Carolina and Georgia. The new species is closely related to *Hydraena appalachicola* PERKINS. The aedeagi, the female genital sclerites and the spermathecae of both species are illustrated.

Introduction

In 1995 the authors received a number of Hydraenidae from Dr. J.F. Cornell (Charlotte, N.C.) for identification. Among this material was a species of *Hydraena* KUGELANN from North Carolina, South Carolina and Georgia. Tentatively we identified this species as *H. appalachicola* PERKINS, which was so far known only from six specimens collected in New York and Virginia. However, comparison with type specimens of *H. appalachicola* revealed that the specimens from North Carolina, South Carolina and Georgia represent a new species which is described below.

The material used for this study is deposited in following institutions (abbreviations are used to refer to collections in the text):

CCC Coll. Cornell, Charlotte (N.C.)

CDS Coll. Díaz, Santiago de Compostela

FMC Field Museum of Natural History, Chicago

ISNB Institut royal des Sciences naturelles de Belgique, Bruxelles

NMW Naturhistorisches Museum, Wien

SIW National Museum of Natural History, Smithsonian Institution, Washington

Hydraena cornelli nova spec.

Type Material: Holotype male (NMW): "U.S.A.: N - Carolina Watauga Co., Boone 20.6.1974, forest lit. (1A) J.F. Cornell & J.R. Ables". Paratypes (CCC, CDS, FMC, ISNB, NMW, SIW): 104 exs., same locality data as holotype; 2 exs.: "U.S.A.: N - Carolina Haywood Co., 21.8.1981 logs / rocks / litter leg. J.F. Cornell"; 1 ex.: "U.S.A.: N - Carolina Haywood Co., B.R.P. 28.4.1974, P. Teagarden moss / litter u. blackberry leg. J.F. Cornell"; 1 male: "U.S.A.: S - Carolina Caesar's Head St. Pk. 10.8.1980, logs/ litter leg. J.F. Cornell"; 14 exs.: "U.S.A.: Georgia, 31.3.1979 White Co., Unicoi St.Pk. litter u. stones leg. J.F. Cornell".

Description: 1.7 - 1.9 mm long. Brown to dark brown, head and middle of pronotum usually darker than elytra, pronotal margins and body appendages; last segment of

palpi not darkened apically. Labrum deeply excised anteriorly; margins slightly upturned. Clypeus entirely or at least laterally shagreened. Fronto-clypeal suture arcuate, distinct, but not deeply impressed. Middle of frons sparsely punctate, interstices shining or very superficially shagreened; lateral portions of frons more densely punctate, interstices more distinctly shagreened; interocular grooves hardly apparent, very shallow. Eyes rather small, hardly more than 20 facets visible in dorsal view.

Pronotum heart-shaped, distinctly wider than long (length:width = 6.5 - 6.9); anterior margin concave; anterior angles rounded; lateral margin with sides slightly denticulate and moderately produced at middle, distinctly convergent to anterior angle, sinuate and convergent to posterior angle; disc rather flat, moderately densely punctate, foveae hardly perceptible, at most indicated by a few stronger punctures, interstices glabrous; lateral portion of pronotum widely explanate, sparsely punctate, punctures superficially impressed, interstices smooth or superficially shagreened.

Elytra with 8 rows of punctures between suture and shoulder; punctures large, moderately deeply impressed and arranged in partly irregular lines, striae 2 - 3 and 4 - 5 closely approached; intervals flat and glabrous; explanate margin of elytra finely serrate, wide, almost reaching elytral apex.

Mentum and submentum superficially or distinctly shagreened. Genal ridge distinct. Mesosternum with 5 distinct longitudinal ridges; middle of mesosternum deeply transversely impressed. Metasternum deeply impressed between metasternal plaques; metasternal plaques rather inconspicuous, reaching posterior margin of metasternum; posterior margin of metasternum rugulose punctate and impressed in front of hind coxae. Intercoxal segment (= abdominal sternite 2) deeply impressed; first ventrite deeply impressed behind intercoxal segment, and with glabrous areas behind metacoxal sockets distinctly developed; abdominal sternite 7 with large semicircular glabrous area, sternite 8 without hydrofuge pubescence.

Aedeagus (Fig. 1): Phallobase symmetrical, forming a closed ring which is not strongly sclerotized ventrally; main piece moderately long, cylindrical in basal half, apical half dorso-ventrally flattened; in lateral view strongly curved in basal half and rather straight in apical half; without setae; dorsal flattened part with densely arranged minute spinous scales. Distal lobe weakly sclerotized, with a moderately long flagellum and a small area densely covered by hair-like structures. Parameres simple, left one longer than right one, both inserted near phallobase; apices of parameres only slightly widened, each with a group of moderately long setae.

Female tergite X (Fig. 3a): Disc with squamous setae, which are distinctly widened apically and randomly distributed; subapical fringe of setae not interrupted admedially; hyaline apical margin evenly rounded.

Gonocoxite (Fig. 3b, c): Outer plate with a median longitudinal, slightly impressed groove in apical half; lateral margins parallel-sided; anterior corners of inner plate slightly shorter than condyles; cavea reniform, transverse.

Spermatheca (Fig. 3d): Proximal portion without cavea, crescentic, elongate, attenuate proximally; distal portion small, slightly elongate, distal margin upturned.

Secondary sexual characters: Abdominal sternites 7 and 8 slightly larger in male. Female abdominal tergite X with a subapical fringe of blunt setae.

Differential diagnosis: Externally and genitally, the new species is

very similar to *H. appalachicola* the only other species in the USA known to have irregular elytral striae. *H. appalachicola* can be distinguished from *H. cornelli* by the following characteristics: 1) pronotum slightly narrower (length:width = 7.0), 2) lateral portion of pronotum slightly less strongly explanate, with punctures more distinctly impressed, 3) aedeagus (see Fig. 2): apex of main piece less distinctly truncate in ventral view, dorsally with very densely arranged blunt bristles, 4) gonocoxite (Fig. 4b): anterior corners of inner plate longer than condyles, median groove of outer plate complete, cavea of inner plate cordiform, 5) spermatheca (see Fig. 4c): proximal portion gently bisinuous basally, cavea present.

R e m a r k : *Hydraena cornelli* is a member of the *H. circulata* species group. It is probably very closely related to *H. appalachicola*. We have examined the holotype male (SIW): "VIRGINIA, Bath Co. 2mi S. Mountain Grove Blowing Spring PC, sandy area, stream outwash 3-Vi-1973, PD Perkins" and the allotype (SIW): "VIRGINIA, Bath Co. 12mi S. Williamsville pebbly stream PD Perkins" of *H. appalachicola*. The label data of the allotype are somewhat deviating from the data given in the original description.

H a b i t a t : According to a letter of J.F. Cornell (dated 27.X.1997) all specimens were "collected at elevations of 3000' and higher, mostly from seepage areas with wet moss." Thus the label notations ("logs / rocks / litter", etc.) obviously refer to other beetles collected during the same excursion.

D i s t r i b u t i o n : So far known only from Georgia, North Carolina and South Carolina.

E t y m o l o g y : This species is named for Dr. James F. Cornell, Jr. (Consulting Entomologist).

Acknowledgements

We are especially indebted to Dr. J.F. Cornell for the possibility to study his interesting material and for donating his specimens to the NMW. We are obliged to Dr. P. Spangler and Dr. D. Furth for sending the holotype and allotype of *Hydraena appalachicola*.

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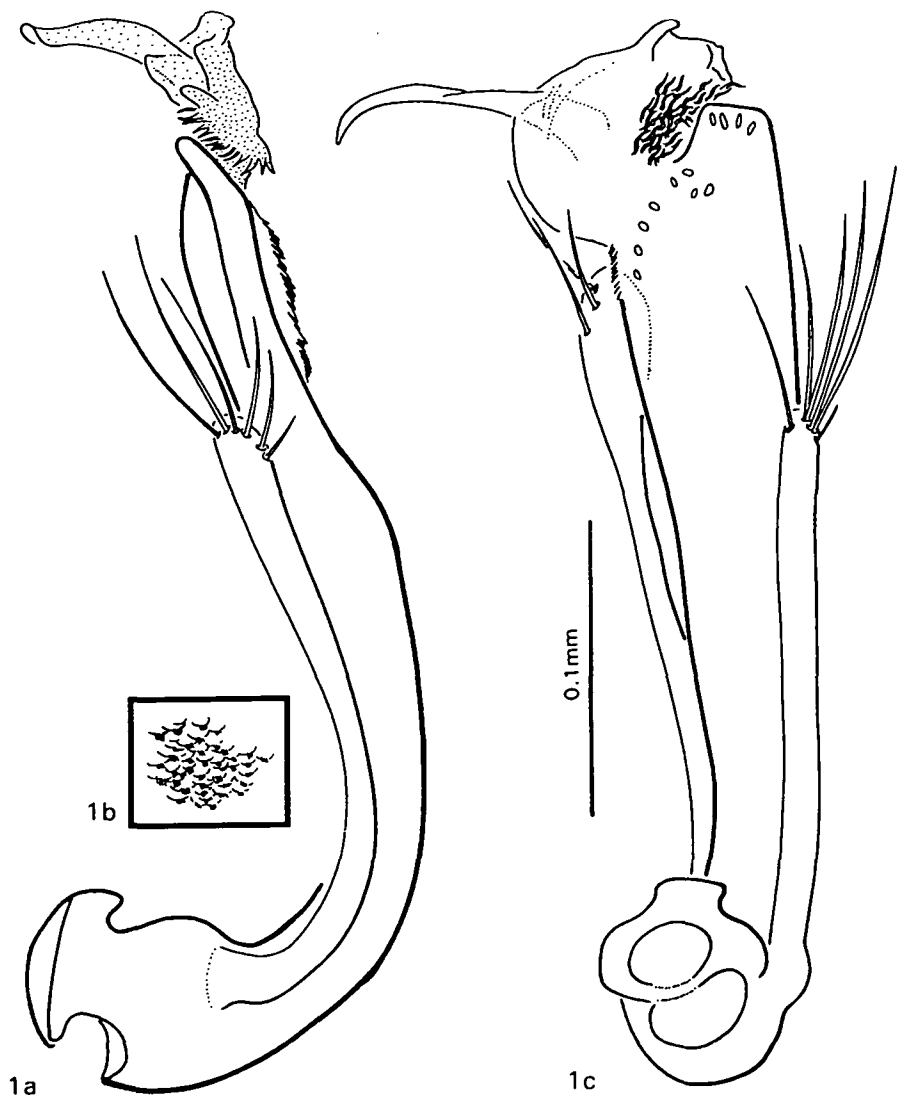


Fig. 1: Aedeagus of *Hydraena cornelli*, a) lateral aspect, b) spinous scales, c) ventral aspect.

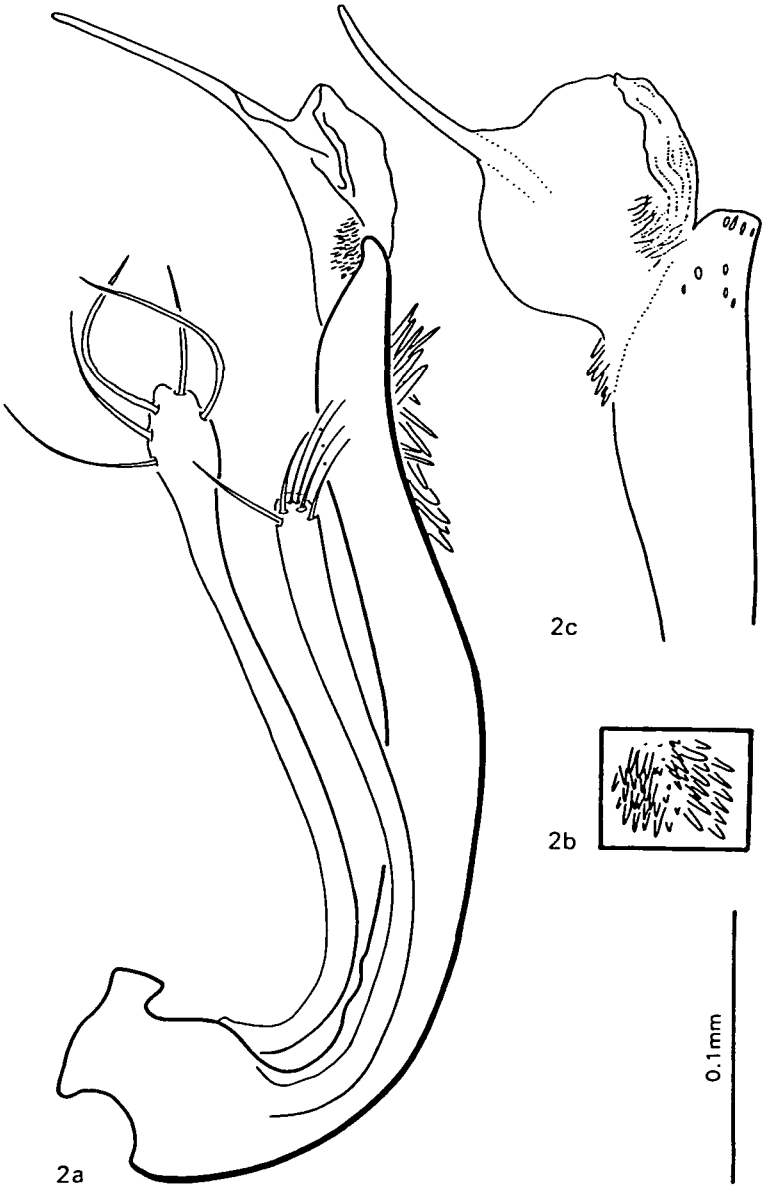


Fig. 2: Aedeagus of *Hydraena appalachicola*, a) lateral aspect, b) blunt bristles, c) ventral aspect of distal lobe and apical half of main piece.

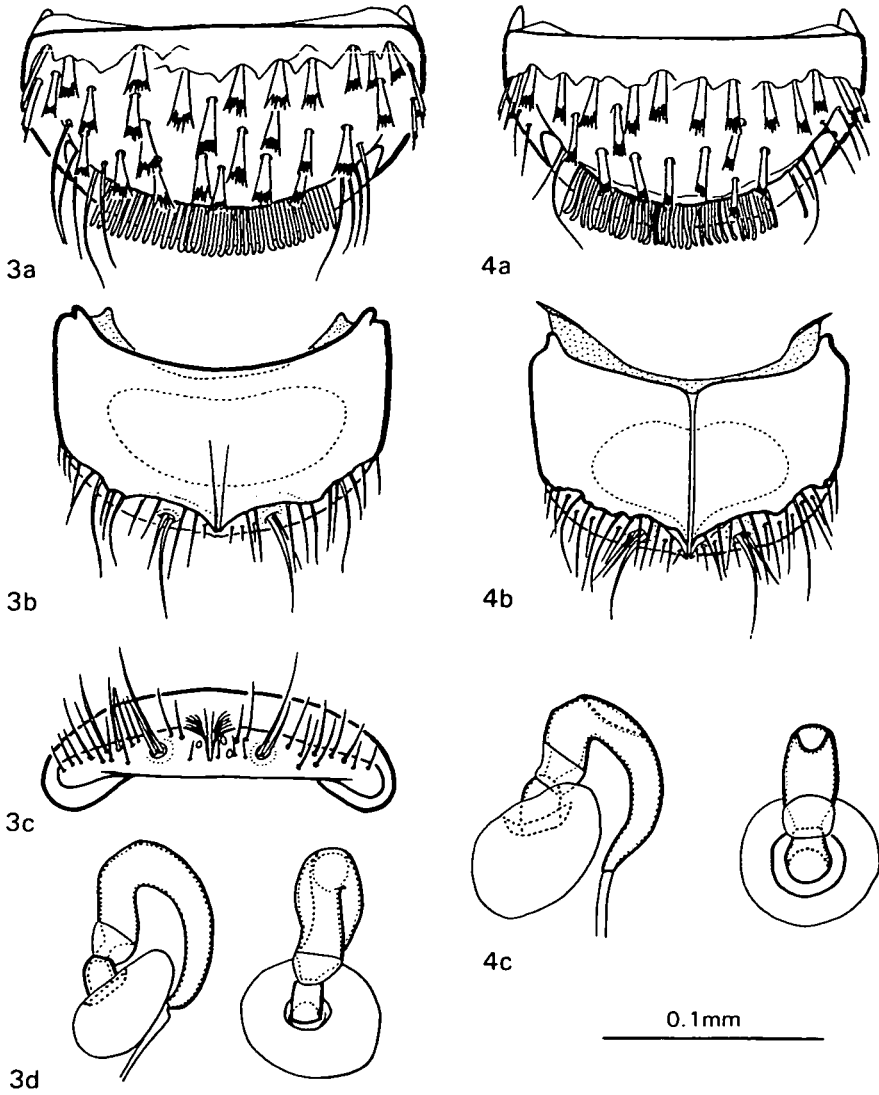


Fig. 3-4: 3 - *Hydraena cornelli*, a) female tergite X, b) fused gonocoxite, c) same, apical aspect, d) spermatheca. 4 - *Hydraena appalachicola*, a) female tergite .X, b) fused gonocoxite, c) spermatheca.

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