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A peculiar new species of *Nyodes* Laporte, 1970 (Lepidoptera: Noctuidae)

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Abstract: A new, externally atypical *Nyodes* is described from Equatorial Africa: *Nyodes paludicola* **sp. nov.** The new species is compared to the superficially most similar *Nyodes steelei* Laporte, 1971, and *N. punctatoides* Laporte, 1973, with the closest genital morphology. The new species is associated with wetland habitats and is widely distributed in West, Central and East Africa. Genetic divergence between the geographically distant populations has been assessed based on mtDNA COI barcodes.

Key words: Afrotropics, DNA barcode, genetic divergence, taxonomy.
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INTRODUCTION

During a series of recent collecting trips in Africa, an unusual looking moth was found in different countries throughout the equatorial belt, often captured near swamps or other wetlands. The habitus of the species was in some respects puzzling, so that judging only on pictures that were shared among lepidopterists it was not even easy to ascribe it to a definite family, Limacodidae or Noctuidae appearing to be the most likely ones. Examination of external morphological features of the specimens revealed distinctly hairy eyes, thus addressing the search towards the old-sense Hadeninae (sensu Hampson 1905). Dissection of the male genitalia fully probated this hypothesis, revealing the specimens to be one of the African endemic genus *Nyodes* Laporte, 1970 (Noctuidae) (Laporte 1970). This group is well known among specialists for both the great diversity of species and the mossy green colouration that most of these exhibit. Species identification is therefore quite difficult without dissection of the genitalia and properly identified comparative material. Having reviewed all known species of *Nyodes* (cf. Poole 1989 for a listing), due to the completely unusual pattern of our samples with respect to other members of this genus, we run an extensive search across African holdings of Noctuidae and also Limacodidae looking for a species matching with our specimens that might have been named outside *Nyodes*. With this intent, we examined the collections of the Natural History Museum (London), African Natural History Research Trust (Leominster), Museum für Naturkunde (Berlin), Zoologische Staatssammlung (Munich), Musée royal de l'Afrique centrale (Tervuren), Carnegie Museum of Natural History (Pittsburgh), Oxford University Museum of Natural History (Oxford) and requested the advice of a number of noctuid specialists, without finding any evidence that this species had already been described. Nevertheless, the search resulted in locating of further five specimens of such species in the unidentified accessions of the Belgian institution, precisely four males collected in Cameroon and a female from the Democratic Republic of the Congo, and one male in the London museum collected in Uganda. We have therefore confidently come to the conclusion that this atypical *Nyodes* is new to science, so that we will proceed with its description in the present work.

Received: 19 October 2023
Accepted: 14 November 2023

METHODS AND MATERIALS

Morphological analysis

Images of adults were taken using a Nikon D90 camera equipped with a Nikkor AF Micro 60 mm lens. The genitalia were dissected and stained either with Eosin Y or Chlorazol Black A applying standard methods of preparation (Lafontaine & Mikkola 1987), then embedded in Euparal on microscope slides. The genitalia preparations were photographed using a Canon EOS 700D camera mounted on either a Leitz Diaplan compound microscope or a Wild M7A stereo microscope.

Molecular testing

The wide geographic origin of the specimens in study and their quite remarkable variation in pattern and morphological features prompted to test some of them after mtDNA COI barcoding (Hebert et al. 2003). COI barcodes (>650 bp) were obtained by removing tarsal segments or whole legs from 8 adult specimens collected in Liberia, Sierra Leone, Zambia and Kenya. The samples were submitted to the Canadian Centre for DNA Barcoding (CCDB, Biodiversity Institute of Ontario, University of Guelph) for DNA extraction, amplification and sequencing of cytochrome oxidase subunit I (COI-5P) applying Single Molecule Real-Time sequencing through the Sequel (PacBio) pipeline (Hebert et al. 2018). All sequences and metadata are accessible in the BOLD public dataset DS-

NYODPAL (doi: https://dx.doi.org/10.5883/DS-NYODPAL). Sequences were aligned using MUSCLE in MEGA version X (Kumar et al. 2018), genetic divergences within and between species were calculated using the Kimura 2-parameter model (Kimura 1980).

Type label data
In the taxonomic section, original label information for the holotype is transcribed verbatim and provided between quotation marks. A new line is denoted with "/", and a different label is denoted with "//".

Acronyms of institutions and collections
ANHRT – African Natural History Research Trust, Leominster, UK
CBG – Centre for Biodiversity Genomics, Guelph, Canada
CCDB – Canadian Centre for DNA Barcoding, Guelph, Canada
CMNH – Carnegie Museum of Natural History, Pittsburgh, USA
MfN – Museum für Naturkunde, Berlin, Germany
NHMUK – Natural History Museum, London, UK
OUMNH – Oxford University Museum of Natural History, Oxford, UK
RCAK – Research Collection of Anthony Kingston, Albrighton, UK
RMCA – Royal Museum for Central Africa, Tervuren, Belgium
ZSM – Zoologische Staatssammlung, Munich, Germany

Other abbreviations
BM – Genitalia slide British Museum (NHMUK)
BOLD – Barcode of Life Data System
HT – Holotype
LG – Genitalia slide prepared by Gyula M. László
PT – Paratype

RESULTS

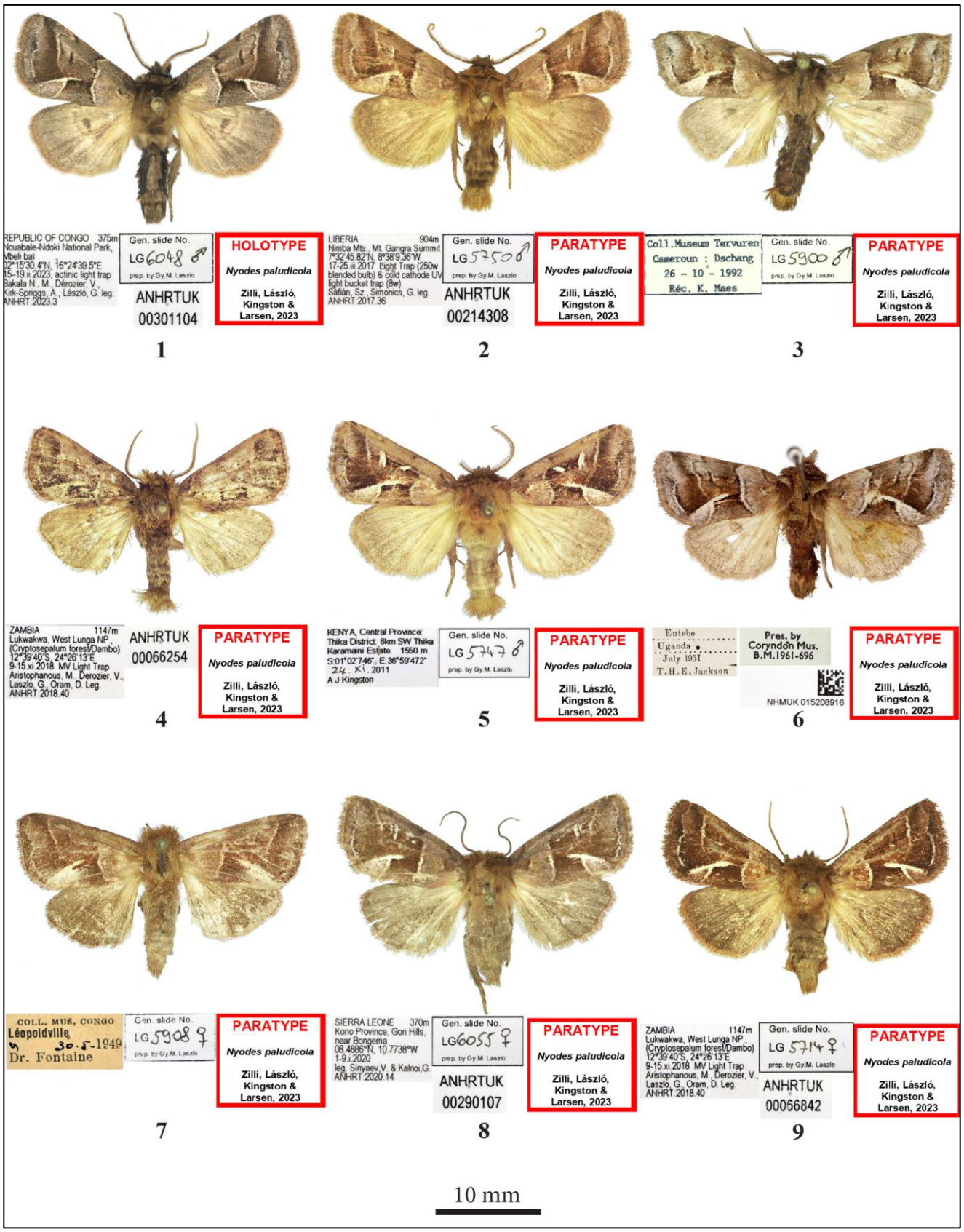
Description of the new species

Nyodes paludicola **sp. nov.** (Figs. 1–9, 12–17, 20–22)
urn:lsid:zoobank.org:act:D1EC1321-2362-4E13-AAF2-4598263ECEF5

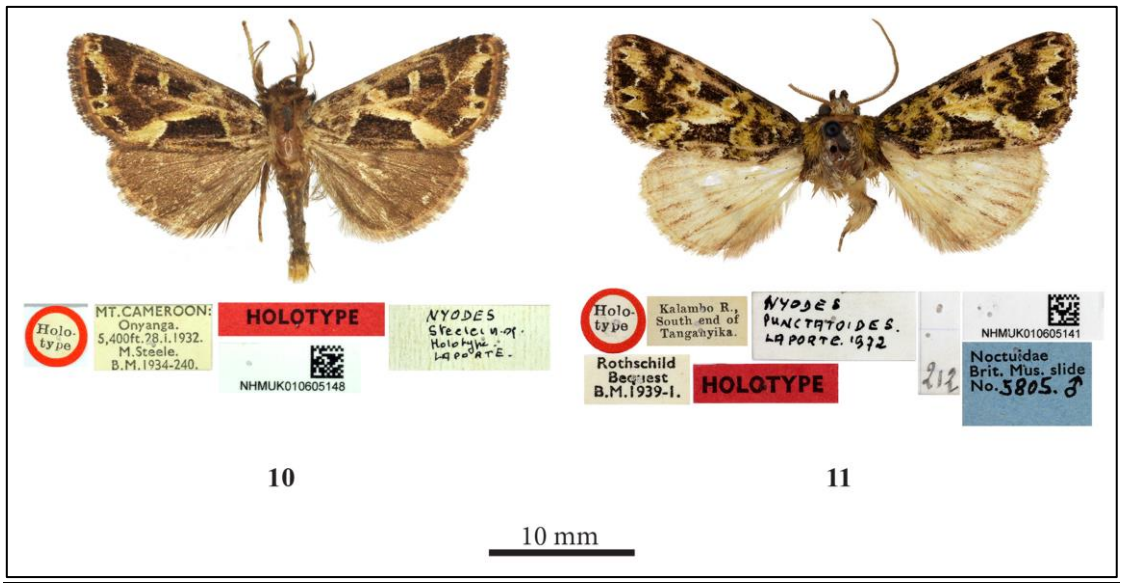
Holotype: ♂, "REPUBLIC OF CONGO 375m / Nouabale-Ndoki National Park, / Mbeli bai / 02°15'30"N, 16°24'39"E / 15–19.ii.2023, actinic light trap / Bakala N., M., Dérozier, V., / Kirk-Spriggs, A., László, G. leg. / ANHRT:2023.3" // unique id.: ANHRTUK 00301104 // gen. slide No.: LG 6048 (ANHRT).

Paratypes:
Sierra Leone: 1♀, Kono Province, Gori Hills, near Bongema, 370m, 08°29'19"N, 10°46'26"W, 1–9.i.2020, leg. Sinyaev, V. & Kalnoi, G., ANHRT:2020.14, unique and DNA sample id.: ANHRTUK 00290107, BOLD process id.: ANLMO4267-23, gen. slide No.: LG 6055 (ANHRT).
Liberia: 1♂, Nimba Mountains, Mount Gangra western slope, 701m, 07°33'30"N, 08°38'16"W, 16–17.iii.2017, Light Trap (250W blended bulb) & cold cathode UV light bucket trap (8W), Sáfián, Sz., Simonics, G. leg., ANHRT:2017.36, unique id.: ANHRTUK 00056183, gen. slide No.: LG 6054; 1♂, Nimba Mts, Mt Gangra summit, 904m, 07°32'46"N, 08°38'09.36"W, 17–25.iii.2017, light trap (250W blended bulb) and cold cathode UV light bucket trap (8W), Sáfián, Sz., Simonics, G. leg., ANHRT:2017.36, unique and DNA sample id.: ANHRTUK 00214308, BOLD process id.: ANLMO2501-23, gen. slide No.: LG 5750 (ANHRT).
Cameroon: 2♂♂, Dschang, 23.x.1992, K. Maes leg., gen. slide Nos: LG 5898, LG 5907; 1♂, same site and collector, 29.x.1992, gen. slide No.: LG 5899; 1♂, same site and collector, 26.x.1992, gen. slide No.: LG 5900 (RMCA).
Republic of Congo: 2♂♂, Nouabale-Ndoki National Park, 372m, Mbeli camp, 02°14'24"N, 16°23'52"E, 14–20.ii.2023, actinic light trap, Bakala N., M., Dérozier, V., Kirk-Spriggs, A., László, G. leg., ANHRT:2023.3, unique id.: ANHRTUK 00301089, gen. slide No.: LG 6056; 1♀, Nouabale-Ndoki National Park, 365m, Mondika camp, 02°21'51"N, 16°16'26"E, 07–14.ii.2023, actinic light trap, Bakala N., M., Dérozier, V., Kirk-Spriggs, A., László, G. leg., ANHRT:2023.3, unique id.: ANHRTUK 00301057, gen. slide No.: LG 6049; 1♂, Nouabale-Ndoki National Park, Ndoki Formation, 352m, 02°12'48"N, 16°23'46"E, 29.ix.–1.x.2022, MV light trap, Dérozier, V., Fouka, B., Kirk-Spriggs, A., Takano, H. leg., ANHRT:2022.14, unique id.: ANHRTUK 00253601; 1♂, Nouabale-Ndoki National Park, Wali Forest, 338m, 02°13'57"N, 16°12'14"E, 10–14.v.2023, actinic light trap, Dérozier, V., Kirk-Spriggs, A., László, G., Mvouende, S. leg., ANHRT:2023.6, unique id.: ANHRTUK 00329637 (ANHRT).
Democratic Republic of the Congo: 1♀, Leopoldville [Kinshasa], 30.v.1949, Dr. Fontaine leg., gen. slide No.: LG 5908 (RMCA).
Uganda: 1♂, Entebe [sic], vii.1951, T.H.E Jackson [leg.], NHMUK 015208916, gen. slide No. NHMUK 010318218 (NHMUK).
Kenya: 1♂, Central Province, Thika District, 8 km SW Thika, Karamaini Estate, 1550m, 01°02'44"S, 36°59'28"E, 24.xi.2011, A.J. Kingston leg., gen. slide No.: LG 5747 (RCAK).
Zambia: 1♀, Nkwaji, Mwinilunga, 1316m, 11°36'22"S, 24°33'17"E, 5–8.v.2014, light trap, Smith, R., Takano, H., Chmurova, L., Smith, L. leg., ANHRT:2017.11, unique and DNA sample id.: ANHRTUK 00235851, BOLD process id.: ANLMO3001-23, gen. slide No.: LG 6057; 1♂, 1♀, Lukwakwa, West Lunga NP, (Crytosepalum forest/Dambo), 1147m, 12°39'40"S, 24°26'13"E, 9–15.xi.2018, MV Light Trap, Aristophanous, M., Dérozier, V., László, G., Oram, D. leg., ANHRT:2018.40, unique and DNA sample ids: ANHRTUK 00066254, ANHRTUK 00066842, BOLD process ids: ANLMO557-23, ANLMO586-23, gen. slide Nos: LG 5780 (male), LG 5714 (female); 1♀, Jiwundu Swamp, 11°51'54"S, 25°33'20"E, 21–24.xi.2014, light trap, Smith, R., Takano, H. leg., ANHRT:2017.12, unique and DNA sample id.: ANHRTUK 00277792, BOLD process id.: ANLMO3661-23 (ANHRT). 1♀, Copperbelt Province, 40 km W of Chingola, Chimfunshi Wildlife Orphanage, Kafue River floodplain, 1261m, 12°21'27"S, 27°31'45"E, 6.xi.2018, AJ. Kingston & P. Schmit leg., gen. slide No.: LG 5748 (RCAK).

Description
Male (Figs. 1–7):
Forewing length 11–13 mm. Ground colour very variable from greyish to chocolate or rusty brown, often with marked purplish or rosy tinge.



Figures 1 to 9 – Adults. **1 –** *Nyodes paludicola* **sp. nov.**, HT, ♂, Republic of Congo (ANHRT). **2 –** *Idem*, PT, ♂, Liberia (ANHRT). **3 –** *Idem*, PT, ♂, Cameroon (RMCA). **4 –** *Idem*, PT, ♂, Zambia (ANHRT). **5 –** *Idem*, PT, ♂, Kenya (RCAK). **6 –** *Idem*, PT, ♂, Uganda, gen. slide No. NHMUK 010318218 (prep. by A. Zilli) (NHMUK). **7 –** *Idem*, PT, ♀, DRC (RMCA). **8 –** *Idem*, PT, ♀, Sierra Leone (ANHRT). **9 –** *Idem*, PT, ♀, Zambia (ANHRT).



Figures 10–11 – Adults. **10 –** *Nyodes steelei*, HT, ♂, Cameroon (NHMUK). **11 –** *N. punctatoides*, HT, ♂, Tanzania (NHMUK).

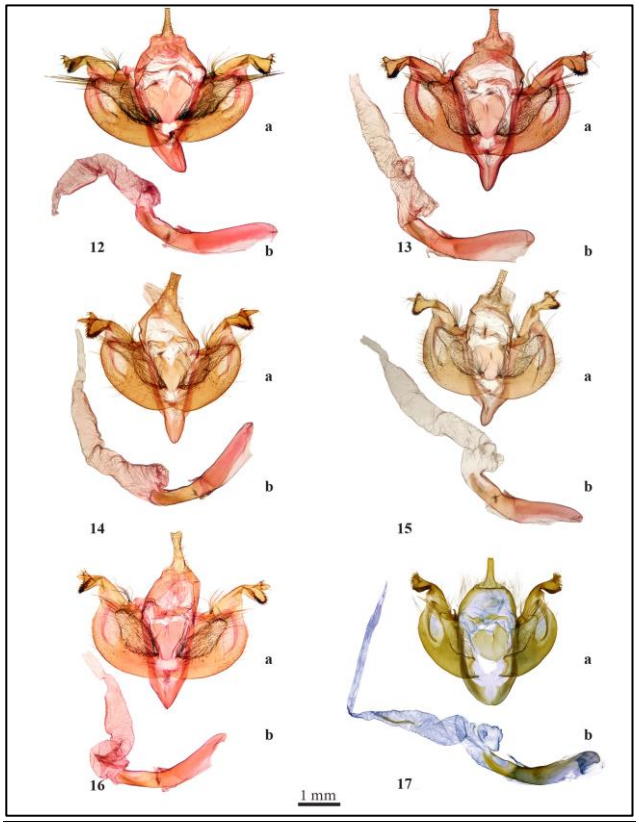
Head: Small, positioned quite ventral; frons flat, roughly scaled such as vertex; eye globular, hairy; antenna bipectinate, with finely ciliated rami ending with conspicuous bristle, and as long as width of flagellum in most basal flagellomeres, then gradually lengthened up to 1.8x the width of flagellum in the medial section of antenna, and eventually shortened so as to leave a short filiform apical flagellar section, flagellomeres also with prominent midventral conical process terminated by short seta, and covered with pale greyish brown scales dorsally; proboscis short, likely unfunctional; labial palpus semi-porrect, short and compactly clothed dorsally and at sides, roughly so ventrally. Collum with thin dark blackish brown vestiture of scales.

Thorax: Dorsally very gibbous, roughly scaled, mostly unicolorous or with some paler terminal lining of patagia and tegulae; forewing short and compact, distally squared off with nearly vertical termen, and straight costal and anal margins, apex rounded, tornal angle broadly rounded; basal field generally paler than median one, but in some specimens costal area of median field may be similarly pale; subbasal line thin, dark brown, as two short strokes separated by Cubitus; antemedial line white followed by brown, smoothly convex or more often sigmoid, more or less shallowly concave in discal cell and smoothly convex below this, inwardly curved at anal margin; orbicular stigma most often absent, or alternatively very narrow and sub-horizontal, white circled by dark brown, reniform stigma variable also, as a thin vertical white mark lined externally by dark brown or reduced to only a narrow dark brown vertical stroke, distal half of section of CuA2 crossing median field conspicuously lined by bright white stroke; median field overall only slightly constricted below discal cell; postmedial line dark brown, occasionally indistinct against particularly dark unicolorous median field, lined externally by white, acutely pointed outwardly below costa, then almost straight vertical, and shallowly concave below CuA1, often poorly expressed just below discal cell so as that colouring of median field merges with that of distal field, but highlighted bright white in the section from CuA2 to anal margin; distal field concolorous or slightly darker than median one, with decreasing intensity of dark tinge towards apical area, crossed inferiorly by bright white stroke lining CuA2, such stroke combining with white one of median field and white lining of postmedial line to produce in tornal area conspicuous mark in shape of letter "y", the triangular space between the strokes of the "v-section" of the y-mark showing admixture of white and brown scales; submarginal line dark brown lined externally by white, smooth or tinily irregularly waved, with shallow inward indentation in correspondence of M2, and indistinct below white subtornal y-mark; adterminal field narrow and of variable colouration, from paler to darker than median field; terminal line little distinct, dark brown; fringe greyish brown to reddish brown. Hindwing rounded, pale beige or purplish tinged with extensive suffusion of grey scales, especially in distal area, pattern elements either indistinct or well expressed, if so consisting of grey discal dot or lunule and postmedial line, the latter rounded, very proximally positioned with respect to discal mark, and faded in anal area; termen and fringe as in forewing. underside of wings unicolorous, paler than upperside with some silky shine, showing grey discal spots and diffuse postmedial lines on both wings discernible. Legs with femora and tibiae densely covered in long, dark to reddish brown hairs, spur formula 0-2-4.

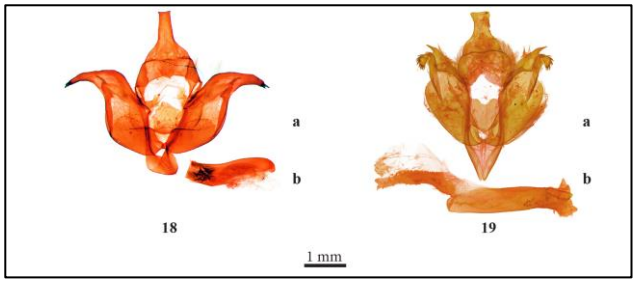
Abdomen: Unicolorous.

Male genitalia (Figs. 12–17): Tegumen short, dome-shaped, posteriorly with moderately dilated, finely scobinated arms; vinculum arms ca. 1.2x longer than tegumen, moderately broad, V-oriented, saccus well prominent, comparatively narrow, ca. 1/3 the length of vinculum arms, apically pointed; valva broadly oval before cucullus, with costal margin slightly concave at base, and ventral one evenly arched; sacculus wide and arched, joined anteriorly with outstanding large and soft, strongly setose conico-triangular lobe, of possible clavar derivation, that occupies most of central area of valva; clasper narrow, rather long and arcuate; ampulla in shape of short erect papilla with apical bundle of long robust setae; cucullus with short and narrow neck, distally trilobate, dilated into ventral triangular plate bearing middorsally a fin-like plate, the former edged by corona of short acute spines; costal prolongations on diaphragma relatively wide, ribbon-like, not co-joined into unique transtilla; juxta very large,

broadly cordiform ; uncus flat and relatively short, with almost parallel or slightly concave sides, quite variable in width between samples, and with truncated apex often showing feebly concave tip, covered in both dorsal and ventral surfaces with sparse short hairs; tuba analis wide and membranous; phallus shaft elongated and of approximately same width, regularly arched dorsally, with short and rounded coecum; vesica long, slightly rugose, with short basal swelling and gradually tapered main tube, lacking cornuti.

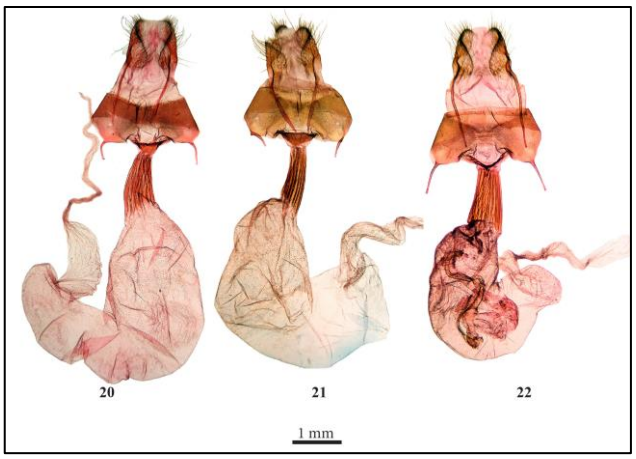


Figures 12–17 – Male genitalia, a: clasping apparatus, b: phallus. **12 –** *Nyodes paludicola* **sp. nov.**, HT, Republic of Congo, gen. slide No.: LG 6048 (ANHRT). **13 –** *Idem*, PT, Cameroon, gen. slide No.: LG 5899 (RMCA); **14 –** PT, Liberia, gen. slide No.: LG 6054 (ANHRT). **15 –** *Idem*, PT, Zambia, gen. slide No.: LG 5780 (ANHRT). **16 –** *Idem*, PT, Kenya, gen. slide No.: LG 5747 (RCAK); **17 –** *Idem*, PT, Uganda, gen. slide No.: NHMUK010318218 (prepared by A. Zilli) (NHMUK).



Figures 18–19 – Male genitalia, a: clasping apparatus, b: phallus. **18 –** *N. steelei*, PT, Cameroon, gen. slide No.: BM Noctuidae 5803 (NHMUK). **19 –** *N. punctatoides*, HT, Tanzania, gen. slide No.: BM Noctuidae 5805 (NHMUK).

Female (Figs. 7–9):
Size, habitus and pattern as in male, with smaller head (ca. 20% less in diameter), labial palpi being particularly smaller, and with filiform, finely ciliated antennae, overall more fuscous hindwing, and less hairy legs. Colouration can be slightly plainer.



Figures 20–22 – Female genitalia (**20 –** ventral view, **21–22 –** dorsal view). **20 –** *Nyodes paludicola* **sp. nov.**, PT, Republic of Congo, gen. slide No.: LG 6049 (ANHRT). **21 –** *Idem*, PT, Sierra Leone, gen. slide No.: LG 6055 (ANHRT). **22 –** *Idem*, PT, Zambia, gen. slide No.: LG 5748 (RCAK).

Female genitalia (Figs. 20–22): Segment A8 short and broad, narrower dorsally; apophysis anterior short and thin; ostium bursae wide and shallow cup-like, lightly sclerotised; ductus bursae comparatively long and wide, ca. as long as apophysis posterior, narrowest posteriorly and gradually dilated towards corpus bursae, with numerous strongly sclerotised ridges; corpus bursae wholly membranous, posteriorly elongated ovoid in shape, and anteriorly strongly bent to left into large , caudally oriented sack-like fundus; appendix bursae conspicuous with very broad basal section branching before terminal end of fundus bursae; ovipositor short, rather blunt, with short intersegmental membrane A8-A9 and large papillae anales; papilla trapezoid in side view, sparsely setose; apophysis posterior rod-like, ca. 4x longer than anterior one.

Diagnosis
The new species is readily distinguished from all other *Nyodes* by its considerably less elongate and apically less pointed forewing and the chocolate brown to rusty brown colouration with some purplish tinge lacking any mossy green mottling, which is typical for the majority of *Nyodes* taxa. The only taxon which is somewhat externally reminiscent of the new species is *N. steelei* Laporte, 1971 (Fig. 10), due to its predominantly dark brown colouration, although it shows some greenish tinge on the pale markings of forewing. A further similarity between the two species consists of a conspicuous pale sub-horizontal streak starting from the median field of forewing that upon crossing the postmedial line bends posteriorly and widens into a triangular mark ending at tornus. However, in the new species this pattern element starts as a short streak only from the middle of the median field and it wholly joins the triangular mark so as to produce a sharply defined, white coloured ‘y’, the space in-between the two strokes (“v”) of such y-mark being darker with an admixture of brown and white scales (to be noted that the most posterior of the two strokes coincides with the lower section of the postmedial line). In *N. steelei*, the median streak is a thicker and longer greenish beige stroke that crosses almost wholly the

median field, and it is thinly albeit distinctly interrupted by the postmedial line, while the tornal triangular mark appears more as an entirely uniform greenish beige stroke. Notably, the new species also has distinctly bipectinate male antennae contrary to filiform ones of *N. steelei*, forewing more squared off with almost vertical termen, white instead of greenish beige pattern elements, smaller stigmata, the orbicular being usually obliterated and the reniform occasionally reduced to thin dark brown dash only, shallower concavity of the inferior section of the postmedial line, and a considerably paler brown hindwing compared to *N. steelei*. In the male genitalia (Figs. 12–18), the new species greatly differs from *N. steelei*, although both of them show an almost parallel-sided and apically truncated uncus. Main differences are to be found in the valval outline, broadly oval in the new species excepting for the cucullus, a massive, soft and sparsely setose lobe of likely clavar origin occupying the middle of valva, the arched clasper without free apical process, a short albeit prominent, papilla-like ampulla with conspicuous bundle of setae, and the narrow-necked albeit apically conspicuously dilated and trilobate cucullus, while this is gradually tapered with sharp apex in *N. steelei*. In the new species, the phallus is longer and slenderer, without cornuti, whereas the vesica of *N. steelei* bears a group of short, thorn-shaped cornuti.

A somewhat externally similar species to *N. steelei* and thence to the new species is *N. punctatoides* Laporte, 1973 (Fig. 11), which however has even wider and more intense green markings than *N. steelei* itself. Interestingly, together with species like *N. rufifusa* Hampson, 1918, *N. rufifusoides* Laporte, 1973, *N. jucunda* Laporte, 1973, and *N. nigrioides* Laporte, 1977, *N. punctatoides* shares with the new species the same configuration of the uncus and multi-lobate cucullus, but in all such species the cucullus is shorter-necked, its distal processes are differently oriented, shorter and generally more sharply tipped, often with a bundle of spines, so that the cuculli are overall tapered. Possibly, the closest species to the new one in the configuration of the male genitalia is really *N. punctatoides* (Fig. 19), as the juxta is similarly broadly cordiform, the ventral plate of the cucullus is distally dilated (albeit lesser), it is edged by a row of spines, and dorsally there is another acutely pointed process. This however well separate from the ventral plate, and the cucullus is also reached by a further hook-like process consisting of the distal free termination of a long straight clasper proceeding from the valvula. Further to this, the cucullus of *N. punctatoides* has no narrow stalk and is thus shorter and more broadly joined to the valvula, there is no voluminous setose lobe on the middle of valva, the uncus is much wider, and the phallus bears a series of small conical cornuti.

Genetic divergence

The intraspecific divergence of the COI mtDNA barcodes of *N. paludicola* was found in the range of 0.00-2.50%. The genetic divergence within single populations seems to be null, in fact it is 0.00% in the Zambian population (n = 4), but it already increases at low geographic distance, e.g. 0.46% when one specimen from Sierra Leone and one from Liberia are compared. The pairwise distance between more separate populations is higher, attaining 2.30-2.50% between the Zambian and West African (n = 2) samples, 1.23% between the Zambian and Kenyan (n = 1) ones, and 1.68-2.00% between those from Kenya and West Africa. Insights into the substitutions occurring in the COI barcodes by these populations however fail to recover full congruence with geographic provenance of the specimens. For instance, two out of the three mutations that separate the Liberian specimen from that of Sierra Leone do not occur in the southeastern African samples, or six out of the eight nucleotides that make the Zambian samples differ from the Kenyan one are unmodified in the West African specimens, while the remaining two differ in the Kenyan specimen and not in the West African + Zambian lot. This overall situation is suggestive of a normal pattern of genetic divergence by distance (cf. Mayr 1963), a circumstance that should always be thoroughly checked with careful analysis of geographically interposed populations when taxonomic conclusions are drawn from barcode data on allopatric populations, and is likely enhanced by the scattered distribution of the swamp-like environments where *N. paludicola* occurs. Further to this, as no definite morphological substantiation of any geographic groupings could be found, e.g. in the narrowness of uncus, broadness of valva or vesical diverticula, the samples are here treated as belonging to a single, widely distributed species.

Etymology

The name *paludicola* (= swamp-dwelling) attributed to the new species is inspired by its preferences for marshes and other wetlands, as features of all known collecting sites indicate.

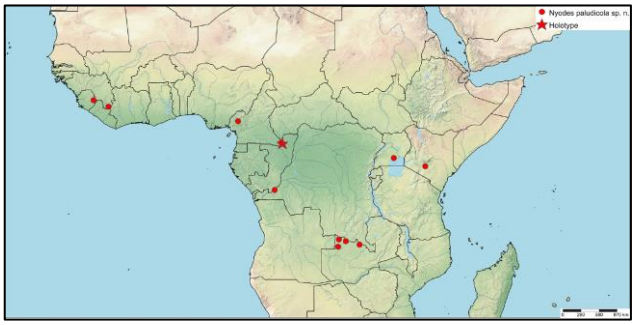


Figure 23 – Distribution records of *Nyodes paludicola* **sp. nov.**

Distribution (Fig. 23)

Nyodes paludicola is widely distributed throughout Equatorial Africa with records from Sierra Leone, Liberia, Cameroon, Republic of Congo, Democratic Republic of the Congo, Uganda, Kenya and Zambia. Despite its extensive range, the species appear to be rather rare and local, confined to wetlands (Figs. 24–26). The fact that marshes and swamps have never been considered popular collecting sites by entomologists in the Afrotropics may have led to the low representation of this peculiar species in Lepidoptera collections.

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Figure 24 – Mbeli Bai (swampy forest clearing) in the Nouabale-Ndoki National Park, Republic of Congo, type locality of *Nyodes paludicola* **sp. nov.** (photo: Gy. M. László).

Figure 25 – Lukwakwa Dambo (seasonal wetland) in the West Lunga National Park, Zambia, habitat of *Nyodes paludicola* **sp. nov.** (photo: Gy. M. László).

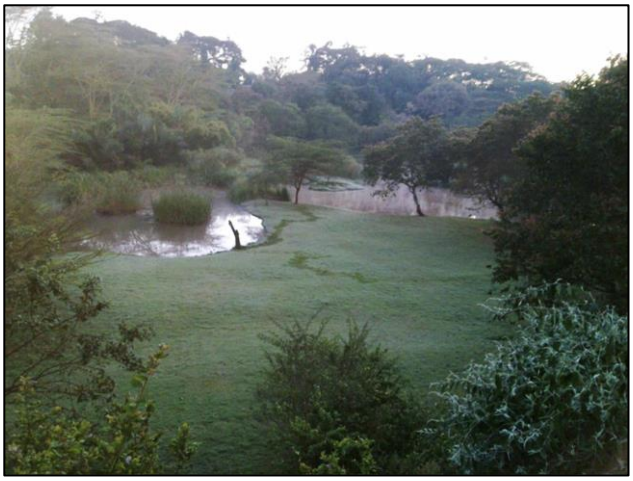

Figure 26 – Karamaini Estate in Thika District, Kenya, collecting site of *Nyodes paludicola* **sp. nov.** (photo: A.J. Kingston).

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The authors declare that to the best of their knowledge they conform to the national regulations and meet with the conditions and requirements of international conventions concerning collecting/export and handling of the specimens presented in this article.

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