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Jae-Cheon Sohn
Department of Entomology, University of Maryland, College Park, MD 20742, U.S.A, jsohn@umd.edu

David Adamski
Department of Entomology, National Museum of Natural History, Smithsonian Institution, P.O. Box 37012, MRC 168, Washington, D.C., 20013- 7012, U.S.A., david.adamski@ars.usda.gov

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A NEW SPECIES OF *WOCKIA* HEINEMANN, 1890 (LEPIDOPTERA: URODIDAE) FROM KOREA

JAE-CHEON SOHN AND DAVID ADAMSKI

(JS) Department of Entomology, University of Maryland, College Park, MD 20742, U.S.A (e-mail: jsohn@umd.edu); (DA) Department of Entomology, National Museum of Natural History, Smithsonian Institution, P.O. Box 37012, MRC 168, Washington, D.C. 20013-7012, U.S.A. (e-mail: david.adamski@ars.usda.gov)

Abstract.—***Wockia koreana* Sohn, n. sp.**, is described from Korea, representing the first record of Urodidae in eastern Asia. Biological and distributional data including host-plant records are provided. Photographs of the holotype and dimorphic antennal and hind tibial features are included in addition to illustrations of wing venation and male and female genitalia.

Key Words: Ditrysia, Urodoidea, taxonomy, biogeography, *Salix*

The Urodidae as currently defined (excluding *Homadaula* Lower 1899, Kyrki 1988) includes 59 species in three genera: *Urodus* Herrich-Schäffer, 1854, *Spiladarcha* Meyrick, 1913, and *Wockia* Heinemann, 1870. The family is most diverse in the Neotropics (Kyrki 1988). As evidence of the monophyly of Urodidae, Kyrki (1988) cited characteristics of the adults and larvae: lamellate antenna; a basal hair pencil on the male hindwing; long, slender larval prolegs with crochets in mesoseries; and on the larval 8th abdominal segment, the position of setae L3 ventroanterior to L1 and L2, and SV1 almost horizontal with L3. The relationship of *Homadaula* to Urodidae is questionable. Minet (1986), Kyrki (1990), Common (1990), Scoble (1992), and Kristensen and Skalski (1998) assigned the genus to Galacticidae, but Heppner (1998) included it within Urodidae.

The systematic position of Urodidae remains uncertain. Kyrki (1984) proposed that the family be removed from Yponomeutoidea but offered no further opinion on its placement. In subsequently defining Urodidae to include *Wockia*, Kyrki (1988) discussed its affinities with other superfamilies and noted several shared features with Schreckensteiniidae. However, he did not assign it to any superfamily. Nielsen (1989) first treated urodids as a separate superfamily, Urodoidea, and this assignment is widely accepted.

Wockia is the smallest genus of Urodidae, currently comprising only two species: *W. asperipunctella* (Bruand, 1852) from Europe and eastern North America and *W. balikpapanella* Kyrki, 1986 from Borneo. These are small moths with relatively dull color patterns. Kyrki (1988) provided generic features for *Wockia* and they include: labial palpi porrect, short, thickened medially with scales, blunt apically; antenna lamellate in the male, filiform in the female; chorda of forewing clearly visible; all radial, medial and anterocubital veins present and separate; uncus absent, with laterally lobed membranous structure; gnathos rudimentary; valva deeply di-

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vided terminally; costal lobe digitate; ovipositor telescopic; ductus bursae, dorsoventrally flattened, sclerotized; corpus bursae with two signa; larva with bisetose Af; and one puncture present on larval head.

The systematic position of *Wockia* has varied. The genus has been placed in both Yponomeutidae and Plutellidae (e.g., Leraut 1980, Zagulyaev 1989), but Kyrki (1988) considered it distinct from other yponomeutoid lineages and established the family Urodidae, including *Urodus*, *Spiladarcha*, and *Wockia*. Kyrki's hypothesis is accepted widely, although Fänger (1999) raised questions about the morphological homogeneity of Urodidae, noting that the transphragma of *Wockia* more resembles that of Epermeniidae than of *Urodus*.

Recent discoveries suggest that species richness in *Wockia* is under-studied. Two new species have been discovered in the Neotropics (D. Adamski et al., unpublished). Here we describe a new species from specimens found in the collection of Center for Insect Systematics, Gangwon National University, Korea, supplemented by an adult reared from larvae collected on the foliage of willow trees. This is the first record of *Wockia* from East Asia.

Pinned specimens and slide preparations were examined using dissecting and compound microscopes. Dissections of the male and female genitalia were prepared following Clarke (1941), except chlorazol black and mercurochrome were used as stains. Terminology follows Klots (1970) for genitalia and Forbes (1948) for wing venation. All label data are given verbatim within quotations.

Systematics

Urodidae

[Korean name: So-ku-ri-na-bang-gwa]

Wockia Heinemann, 1870

Patula Bruand 1851: 50. Type species: *Patula asperipunctella* Bruand, 1851, by monotypy. Preoccupied by *Patula* Held, 1837 for Mollusca.

Wockia Heinemann 1870: 102. Type species: *Wockia funebrella* Heinemann, 1870, by monotypy [a junior synonym of *Wockia asperipunctella* (Bruand 1851) by Ragonot, 1895: ccvi].

Wockea Reutti 1898: 291. Unjustified emendation.

Wockeia Spuler 1910: 443. Unjustified emendation.

Wockia koreana **Sohn, new species**

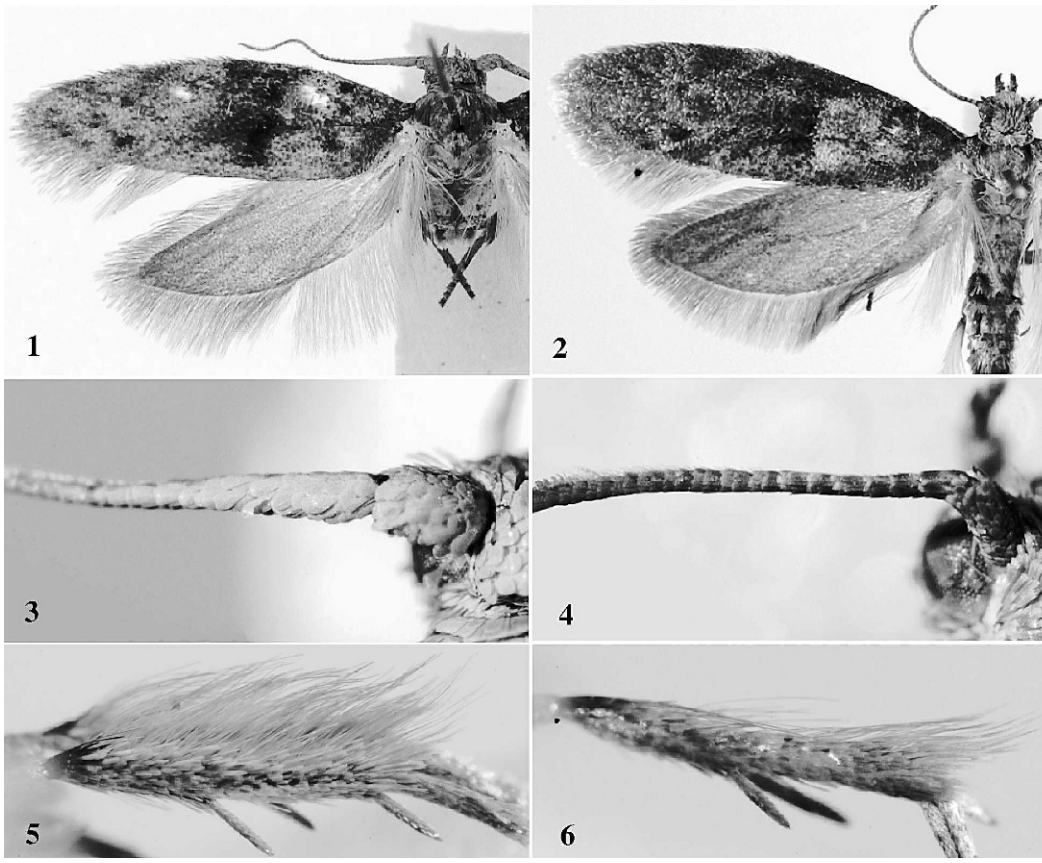
[Korean name: So-ku-ri-na-bang]

(Figs. 1, 3–10)

Diagnosis.—*Wockia koreana* is most similar to *Wockia asperipunctella* in wing pattern (Figs. 1–2), but differs from the latter by being smaller and as follows: valva with cucullus present; saccular process and cornuti absent; corpus bursae elliptical; a pair of spinelike signa present; and appendix bursae absent. In *W. asperipunctella*, the valva lacks a cucullus; saccular process and cornuti present; corpus bursae elongate; a pair of signa shaped as spinulated cones; and appendix bursae present.

Description.—*Head:* Vertex pale brown or dark brownish grey; frontoclypeus brownish grey. Labial palpus upcurved to near middle of frontoclypeus, bluntly pointed terminally, length ratio 1:2:2.5 (from base to distal end); outer surface of 1st segment with brownish white scales; 2nd segment with white-tipped brownish grey scales on basal 2/3, dark brown scales on terminal 1/3 ventrally; 3rd segment brownish white dorsally, dark brown ventrally. Scape wider in male than in female (Figs. 3–4), pale brown dorsally and dark brown ventrally; 1st to 8th flagellomeres wider in male than female.

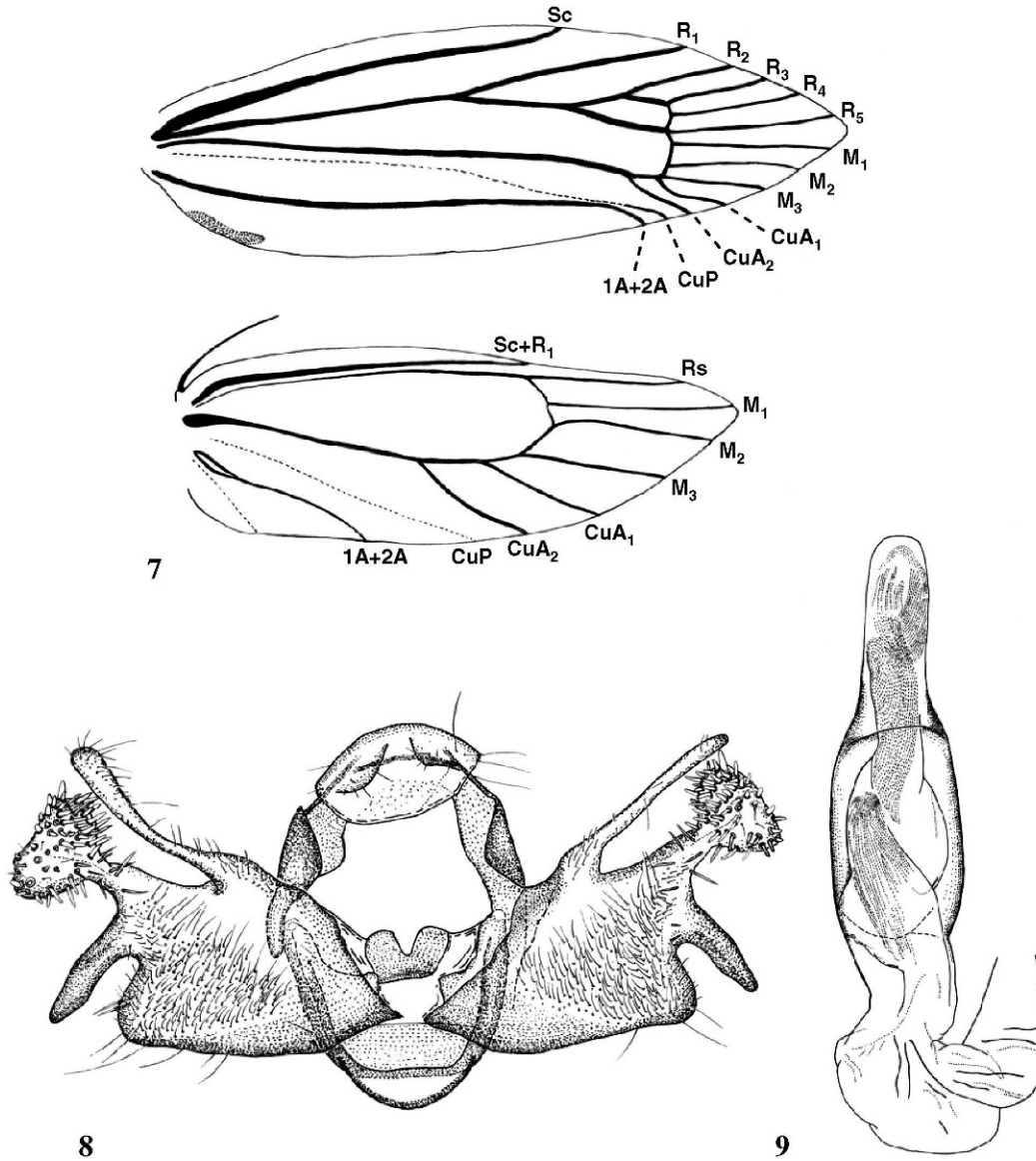
Thorax: Tegula dark grayish brown in female, pale brown on basal half and dark brown on distal half in male. Patagium and mesonotum dark grayish



Figs. 1–6. Adults of *Wockia*. 1–2, Imagos. *Wockia koreana*, holotype, male. 2, *W. asperipunctella*, male. 3–4, Antennal bases of *W. koreana*. 3, Male. 4, Female. 5–6, Hind tibiae of *W. koreana*. 5, Male. 6, Female.

brown. Legs dark brown mixed with pale brown scales; hind tibia with a long, dense tuft in male; tuft shorter in female (Figs. 5–6). Forewing (Fig. 1) length 13.3–15.1 mm (n = 7), narrowly elliptical, bluntly pointed at apex, gray, sparsely mixed with dark brown scales; an oblique, broadly suffused, dark brown band and black streak with erect scales present at about 1/3; base suffused with dark-brown scales and with two black spots; outer margin mottled, including two black spots; costa broadly arched; R_1 arising from radius near midlength, R_2–R_5 arising from accessory cell on anterodistal end of discal cell; M_1 and M_2 almost parallel except M_2 slightly arched from base; CuA_1 divergent from CuA_2 near midlength. Hindwing dark gray; Sc + R_1 reaching margin near 2/3 length; Rs near parallel with M_1; M_1 and M_3 widely separate and slightly divergent, M_2 acutely arched basally, closer to M_1 than to M_3; CuA_1 and CuA_2 nearly parallel; 1A + 2A forked basally.

Male genitalia (Figs. 8–9): Uncus either absent or membranous, with sparsely setose, lateral lobes. Tegumen with ventrolateral margins free; vinculum U-shaped; juxta bilobed dorsoposteriorly. Valva broad, about twice length the distance between dorsal apices of vinculum, triangular at base, deeply dissected distally, forming four lobes; costal lobe digitiform; cucullar lobe spatulate; sac-



Figs. 7–9. Wing venation and male genitalia of *Wockia koreana*. 7, Wing venation. 8, Male genital capsule. 9, Aedeagus.

cular lobe triangular at distal end; dentiform, sclerotized process present between saccular lobe and cucullar neck; inner surface of valva densely setose. Aedeagus about 1/3 length of valva, weakly sclerotized distally; vesica finely pleated longitudinally.

Female genitalia (Fig. 10): Papillae anales lobelike, setose terminally (missing in paratype); ovipositor tubular, telescopic. Apophyses posteriores twice as long as apophyses anteriores. Ostium bursae nearly as wide as ductus bursae from anterior to posterior ends. Lamella antevaginalis emarginate medially, pleated laterally. Ductus bursae nearly as long as ovipositor, flattened, slightly enlarged posteriorly, strongly sclerotized, with

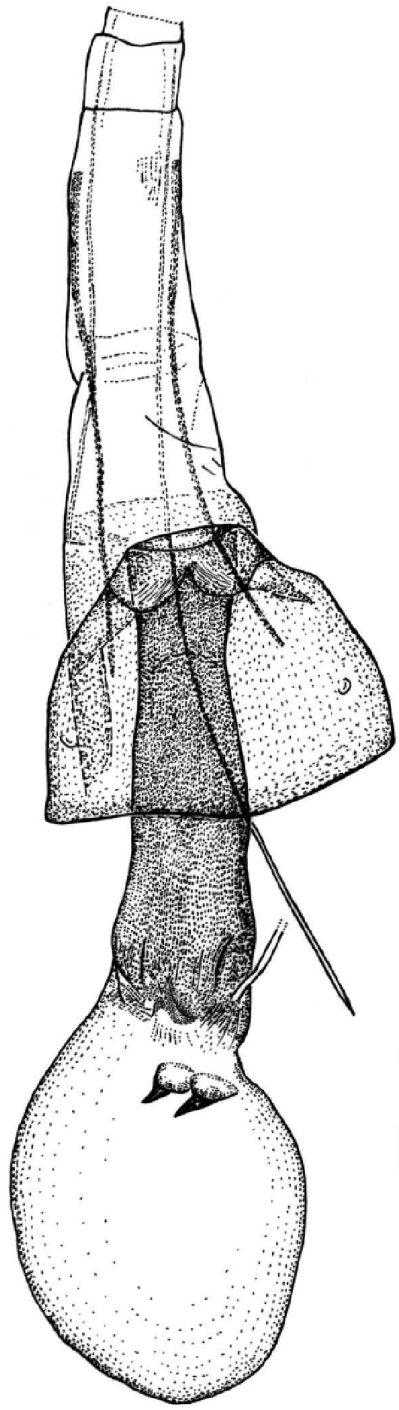


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Fig. 10. Female genitalia of *Wockia koreana* (papillae anales missing).

weak wrinkles and a deep pit near anterior end; inception of ductus seminalis near anterior end of ductus bursae. Corpus bursae slightly elliptical with a pair of conical signa.

Holotype.—♂, "KOREA, Gangwon Province, Hwacheon, July 2 1985, coll. K. T. Park;" "[genitalia slide no.] 1396." Deposited in Department of Plant Medicine, Chungbuk National University [CBNU], Cheongju, Korea.

Paratypes.—3♂, 3♀: 1♀, KOREA, Gyonggi Province, Gwangreung, August 7 1986, coll. K. T. Park, SJC-469; 1♂1♀, the same locality as above, August 13 1986, coll. K. T. Park & U. Park, SJC-472(♂); 1♂ (larva), the same locality as above, August 4 1988, coll. K. T. Park, SJC-468; 1♀, *ditto*, reared from *Salix pseudo-lasiogyne* Lev., August 25 2000, coll. J. C. Sohn, August 26 2000 (pupation), August 30 2000 (adult emergence), SJC-116; 1♂, KOREA, Gyonggi Province, Mt. Soyo-san, August 5 1996, coll. Y. Bae, M. Paek, B. Lee & N. An, SJC-471. Three deposited in CBNU; three deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC, USA [USNM].

Distribution.—South Korea (Gyonggi, Gangwon and Jeonnam provinces).

Host plant.—*Salix pseudo-lasiogyne* Lev. (Salicaceae). Larva feeds on leaves externally.

Remarks.—We found a second new species of *Wockia* in Korea, represented by a single female from Seoul. We postpone its description until a male specimen is discovered. Given these two records from Korea, we think it is highly likely that *Wockia* species will be found in other East Asian countries as well.

Etymology.—The species name is derived from the country of collection.

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