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A REVISED ANNOTATED AND DISTRIBUTIONAL CHECKLIST OF CHINESE ANDRACA (LEPIDOPTERA, OBERTHUERIINAE) WITH DESCRIPTION OF A NEW SUBSPECIES

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ABSTRACT

The Chinese Andraca is revised with the check-list annotated. A new bombycid geographic subspecies, *Andraca nobilorum houtuae* Wang & Zolotuhin *subsp. nov.*, is described from Damingshan National Nature Reserve, South China. The new subspecies differs from the nominate *A. nobilorum* in Central Vietnam by the darker marker at the apex of the forewing indistinct but prominent in the holotype of *A. nobilorum*, and its male genitalia with the apex of valva slenderer and pointed. A key to the Chinese *Andraca* species and *Pseudandraca flavamaculata*, and the distributional maps are given. The male holotype specimen of the new subspecies is deposited in SCAU (South China Agricultural University, Guangzhou, China).

Key Words: *Andraca*, Bombycidae, taxonomy, new subspecies, South China

RESUMEN

Se describe una nueva especie de Bombycidae, *Andraca nobilorum houtuae* Wang & Zolotuhin *sp. nov.*, de la Reserva Nacional Natural de Damingshan de la región autónoma de Guangxi en el sur de China. Las manchas en las alas de la nueva especie son muy diferentes de otras especies de *Andraca*, y los genitales masculinos son muy similares a *A. theae* Matsuura, pero se distingue por tener el uncus más ancho, el ápice de la valvula bifurcado, la 1/3 parte distal de la valvula bien esclerotizada con una proyección casi triangular en la parte basal interior de la valva, adeago más corto y más recto. Se provee una lista de las especies del género *Andraca*. Los especímenes tipo de la nueva especie están depositados en SCAU (Universidad Agrícola del Sur de China en Guangzhou, China).

Palabras Clave: *Andraca*, Bombycidae, Taxonomía, nueva subspecie, Sur de China

The genus *Andraca* Walker, 1865 was dealt with 3 times within the last 3 yr. It was briefly reviewed with special reference to the Vietnamese fauna by Zolotuhin & Witt (2009), and 2 new species were described in their paper. Wang et al. (2011) gave a check-list of species of the Chinese fauna and described a new species from Gongshan Mountain, Yunnan Province. Recently Zolotuhin (2012) revised the group, clarified the taxonomic situation with the generotypus that led to corresponding changes in a species checklist of the Chinese fauna. The present article is especially devoted to the *Andraca* fauna of China, because of their economic importance as pests on tea. Also previous identifications are discussed, distributional maps are given for the species based on materials kept in Chinese and European collections, and a new subspecies is described herein.

Material Examined

Material for this article comprises collections kept in different Museums abbreviated here as (alphabetically listed): BMNH, British Museum, Natural History – London, UK; EIHU, Hokkaido University – Sapporo, Japan; HUNAU, Hunan Agricultural University – Changsha, China; MWM, entomological Museum Th. Witt – Munich, Germany; IZAS – Institute of Zoology, Academy of China – Beijing, China; NSMT, National Sci-
ence Museum – Tokyo, Japan; RMS, Riksmuseet Stockholm - Sweden; ZFMK, Zoologisches Forschungsinstut und Museum Alexander Koenig – Bonn, Germany; ZMHU, Zoologisches Museum der A. Humboldt Universität – Berlin, Germany; ZSM, Zoologische Staatssammlung der Bayerischen Staaten – Munich, Germany; Senckenberg Museum – Frankfurt-am-Main, Germany. Further abbreviations used are: TL = type locality; NR= Nature Reserve.

The genitalic preparations illustrated were made using the standard dissecting techniques and mounted in Euparal on glass slides. Photographs of adult, abdomen and male genitalia were taken by a Canon EOS50D and Olympus C-750 camera with Soligor Adapter Tube for Olympus and Slide Duplicator for Digital 10 dptrs modified for object glasses. Morphological terminology used in descriptions follows Lemaire & Minet (1999).

Based on the specimens preserved in the Museums and the materials collected from the field, all nine *Andraca* and *Pseudandraca* species in China were confirmed. The distributional maps of Chinese *Andraca* species and *Pseudandraca flavamaculata* are presented (Fig. 1), and a key to the *Andraca* species and *Pseudandraca flavamaculata* in China is given. Further, a new geographical subspecies of *Andraca nobilorum* is described in details.

*Andraca* Walker, 1865


*Andraca bipunctata* Walker, 1865


*Andraca angulata* sensu Wang et al. (2011).

Diagnosis. No problems were encountered with the determination of the species from most localities, because of the strongly acute hind wings; females are characterized by festooned hind wings. In spite of external differences of populations of southern China, no real characters were found that distinguished them into separate subspecies. Therefore all are considered to belong to one species; but it seems quite possible that they might be separated later based on more refined methods of investigation.

**Biology**

Mountain species. In China and Thailnad *A. bipunctata* seems to be a winter flier from late Aug to Feb at the altitudes from 1,000 to 2,300 m, but in Nepal and India this species develops 2 generations, which appear on the wing during Jun-Jul and Oct-Dec at altitudes from 800 to 2600 m. Preimajunal stages tend to be misidentified as *A. trilochoides* Moore and are illustrated in Zolotuhin (2012).

**Distribution**

China (Yunnan: northern Baoshan (Daoren Shan, Gaoligongshan), Yunxian (Dabingshan), Lancang (Puli Mts.), Yulong (Wubaooshan); Guizhou: Jiangkou (Fanjiangshan); Sichuan: Panzhihua (Daheishan); Myanmar (China State), northern Thailand (Chiang Mai, Nan), Northern India (Sikkim, Darjeeling, Meghalaya), Nepal. The species was absent from a list given by Wang et al. (2011) and only recently has it been noted from China by Zolotuhin (2012).

Taxonomic notes. For a long time *A. bipunctata* has been synonymized with *A. trilochoides*, and in many modern references from China, it is impossible to separate the data about these 2 taxa. This confusion was explained by Zolotuhin (2012) recently and both taxa are considered to be separate species.

*Andraca trilochoides* Moore, 1865


*Andraca trilochoides roepkei* Bryk, 1944

*Andraca röpkei* Bryk, 1944, Ark. Zool. 35A 8: 17, pl. 3, fig. 22 (sic! not 21 as given in the text!). TL: N. E. Burma, Kambaiti, 2,000 m. Lectotype: male (RMS) [examined].

= *Andraca henosa* Chu & Wang, 1993, Sinozoologia 10: 242, fig. 26, pl. 2, fig. 26. TL: China, Yunnan, Yongshan. HOLOTYPE (by original designation): male (IZAS) [not examined].


Diagnosis. Dark colored species with wing margin smooth. Somewhat similar to *A. theae*, but male genitalia are quite different (see Wang et al. 2011 for comparison), also the average size is larger.

**Biology**

The flight period in Vietnam occurs from Apr to Jul and again in Nov. However in China, where many more specimens are known, the species flies from late Apr to Aug and probably develops a few generations. It inhabits altitudes from 900 to 3,500 m, most typically altitudes of 1,600 to 2,400 m. *Tea, Thea sinensis*, is recorded to be a host in India. Chu & Wang (1996: 18) recorded *Camellia japonica* (Theaceae) as a host of *A. henosa,*
Fig. 1. Distribution maps of Andraca spp. and Pseudandraca flavamaculata in China.
and Wang et al. (2011) confirmed that the species is a serious pest on a tea tree and related Camel-
lia assamensis and C. oleifera C. Abel.

Distribution

China (Yunnan: Gongshan (Dulongjiang), Yun-
long (13 km N. Caojian, Wubaoshan), Mojiang (Dajianshan Mts.), Yao’an (Sanfengshan Mts.),
Yongping (Qingshan, Qiongshan), Tenchong (Gaoligong Mts.), Wenshan (Meizhiqing), Yuan-
yang (Baiyantzhan), Dali (Xiaguan); Sichuan: W Mianning (Daxue Shan), NW Chengdu (Qin-
gchengoushan Mts.), Ganzi (Qionglai Shan Mts., 31-13’N, 102-23’E); Anhui: Taihu Mountain (=Tapieh Shan); Jiangxi-Fujian border: Wuyi Mts. (Zhixi)), Myanmar (north-eastern: Kambai-
ti), Northern Vietnam (Lao Cai: Mt. Fan-si-pan; Tam Dao; Son La), northern Thailand (Chiang
Mai, Chiang Nan, Chiang Rai). The nominate subspecies is known from northern India (Sikkim,
Darjeeling) and Nepal. One female with the label “China, Hainan island, Wuzhi Shan Mts., 20-II-
10-IV-2001” in coll. MWM is also attributed to the species but this finding shall to be confirmed after
males will be found from Hainan.

Taxonomic Notes

The species was for a long time confused with A. bipunctata and in many cases it is impossible
to separate the data about both taxa. This confusion was explained by Zolotuhin recently (2012)
and both taxa were considered separate species. The species was listed for China as bipunctata in

Andraca apodecta Swinhoe, 1907
Hist. (7)19: 49. TL: Padang, W. Sumatra. Lecto-
type: male (BMNH).

Diagnosis. The species is easily recognized due
to large size, yellow- or reddish-brown ground
color with darker vague pattern, smooth wing
margin and especially by the absence of cornuti
on a vesica.

Biology

The species is on the wing throughout the yr
on the islands of Sumatra, Borneo and Sulawesi;
and on the Asian continent it is known from Jul
to mid-Sep, where it probably develops 1 genera-
tion per yr. Inhabitats altitudes of 900-1,300 m on
Sulawesi, 500-1,350 m on Sumatra, about 1,450
m on Borneo; on the continent it seems to be a
mountain species with a preference for altitudes
of about 1,600-1,800 m in Vietnam, 1,480-2,200 m
in China and 1,550-2,000 m in Thailand. The cat-
erpillars are collected on tea (Camellia, Theace-
ae) (Roepke, 1924) and Thea sinensis (Owada et
al., 2002).

Distribution

China (Jiangxi-Fujian border: Wuyi Mts.;
Shaanxi: Yuhuangding; Guangxi: Jinzhongshan;
Yunnan: Sanfengshan), Laos, northern Vietnam
(Mt. Fan-si-pan), northern Thailand (Chiang
Mai; Nan), Sumatra, Borneo, Sulawesi.

Andraca melli Zolotuhin & Witt, 2009
Andraca melli Zolotuhin & Witt, 2009, Entomo-
fauna Suppl. 16: 262, pl. 2, fig. 14; color pl. 24,
figs. 11, 12.

HOLOTYPE: male (ZMHU) [examined].
Andraca bipunctata sensu Chu & Wang, 1993:
241, fig. 25, pl. 2, fig. 25, and Zhu & Wang, 1996:
55, fig. 39, pl. 3, fig. 7, nec Walker, 1865.
Diagnosis. The smallest species of the genus.
Shape of the hind wings of the males is diagnostic
(distinctly angled at about 95°; both sides of outer
margin (above and under the angle) are straight).
Female can easily be identified by small size and
rounded external margin of the hind wings.
Horisha, Baibara. HOLOTYPE (by monotypy): male (coll. Sapporo Uni)(EIHU) [examined].

**Andraca olivacea olivaceus** Mell, 1958

**Andraca olivacea** Mell, 1958, D. entomol. Z. (N.F.) 5: 211. TL: [China, Fujian] Kuatun, NW-Fukien. Lectotype: male (ZFMK) [examined]. = **Andraca hedra** Chu & Wang, 1993, Sinozoologia 10: 243, fig. 28, pl. 2, fig. 28. TL: China, Hainan, Jiannfeng. HOLOTYPE (by original designation): male (IZAS) [examined]. = **Pseudandraca ravida** Yang, 1995, Insects of Baishanzu Mountain: 354, figs. 2, 7. TL: [China] Zhejiang Prov., Mt. Baishanzu, 550 m. HOLOTYPE: male (pointed out to be in coll. of Beijing Agricultural University but absent there [Prof. Xin-Li, personal communication]).

**Andraca gongshanensis** X. Wang, Zeng & M. Wang, 2011

**Andraca gongshanensis** X. Wang, Zeng et M. Wang, 2011, ZooKeys 127: 36, fig 1E, 2E. TL: China, Yunnan Province, Gongshan Mt. HOLOTYPE: male (SCAU) [examined].

**Andraca theae** (Matsumura, 1909)

**Oreta theae** Matsumura, 1909, Thous. Insects Japan, Suppl. 1: 134, pl. 13, fig. 10. TL: Formosa, [Beipu]. Lectotype: male (Sapporo University) [examined], here designated.

**Thea sinensis**, *Camellia* spp., *Cleyera ochnaceae* DC, *Eurya japonica* Thunb. (*Theaceae*) and *Melastoma candidum* D. Don (*Melastomataceae*) are host plants (Sonan, 1937). Caterpillar of the nominate population was illustrated by Wang (1995: 20) and for mainland China—by Wang et al. (2011).

**Oreta theae** (Matsumura, 1909)

**Oreta theae** Matsumura, 1909, Thous. Insects Japan, Suppl. 1: 134, pl. 13, fig. 10. TL: Formosa, [Beipu]. Lectotype: male (Sapporo University) [examined], here designated. Diagosis. Expanse males from 35 mm, mostly 42-43 mm, females 42-46 mm, forewing length – (18) 21-22 in males and 22-25 in females. Male genitalia are diagnostic.

**Biology**

Mountain species, collected from 2,100 m in July.

**Distribution**

The species is known from South-west China (Prov. Yunnan). Maybe an endemic of Gongshan Mts.

**Andraca theae** (Matsumura, 1909)

**Oreta theae** Matsumura, 1909, Thous. Insects Japan, Suppl. 1: 134, pl. 13, fig. 10. TL: Formosa, [Beipu]. Lectotype: male (Sapporo University) [examined], here designated.

Diagnosis. Expanse males from 35 mm, mostly 42-43 mm, females 42-46 mm, forewing length – (18) 21-22 in males and 22-25 in females. Male genitalia are diagnostic.

**Biology**

Mountain species, collected from 2,100 m in July.

**Distribution**

The species is known from South-west China (Prov. Yunnan). Maybe an endemic of Gongshan Mts.

**Andraca theae** (Matsumura, 1909)

**Oreta theae** Matsumura, 1909, Thous. Insects Japan, Suppl. 1: 134, pl. 13, fig. 10. TL: Formosa, [Beipu]. Lectotype: male (Sapporo University) [examined], here designated.

Diagnosis. Expanse males from 35 mm, mostly 42-43 mm, females 42-46 mm, forewing length – (18) 21-22 in males and 22-25 in females. Male genitalia are diagnostic.

**Biology**

Mountain species, collected from 2,100 m in July.

**Distribution**

The species is known from South-west China (Prov. Yunnan). Maybe an endemic of Gongshan Mts.

**Andraca theae** (Matsumura, 1909)

**Oreta theae** Matsumura, 1909, Thous. Insects Japan, Suppl. 1: 134, pl. 13, fig. 10. TL: Formosa, [Beipu]. Lectotype: male (Sapporo University) [examined], here designated. The nominate subspecies is endemic to Taiwan.

**Taxonomic Notes**

A mysterious *Pseudandraca ravida* Yang, 1995, described from Mt. Baishanzu is considered here as a synonym of the species; the same conclusion is given by Kishida & Wang (2011: 139) without any explanation. It was described with a scarce number of topotypical specimens (Fig. 2H) collected at the same location by Xing Wang in Apr and Jul 2011 allow us to confirm this synonymy. In any case, studying the type material, or at least its photo of sufficient quality, is necessary to define the status of the taxon more precisely.
Fig. 2. *Andraca* spp. A, D, F. *A. nobilorum nobilorum* Zolotuhin, 2012, male, HOLOTYPE (A. Adult; D. Abdo-
men; F. Genitalia); B-C, E, G. *A. nobilorum houtuae* Wang & Zolotuhin *subsp. nov.* male, HOLOTYPE (B. Adult,
upperside; C. Adult, underside; E. Abdomen; G. Genitalia); H. *A. olivacea* from Baishanzu Mts.; I. *A. theae* from
Taiwan, the lectotype. This plate in color can be seen in the Supplementary Material at Florida Entomologist 95(3)
(2012) online at http://purl.fcla.edu/fcla/entomologist/browse
gling NR). Also, 2 conspecific males are known from West-Nepal (10 km N of Surkhet, 2,000 m, 7-VIII-1996, leg. M. Hreblay & B. Szin—MWM) but probably they might be mislabelled.

Taxonomic Notes

An original Matsumura series of moths was examined in Sapporo University by V. Zolotuhin. The species is designated by the original Matsumura ground label with inscription “Andraca bipunctata Wk. var. Theae Mats.”. Most specimens originated from J. Sonan’s collection and were collected from Taihoku in 1918; and therefore they are automatically rejected from the syntypic series. Only one male (Fig. 2I) satisfied the required data, and its label also bears an additional ink inscription in Taiwanese “Beipu” that in interpreted to mean Beipu town in Hsinchu County. This specimen is considered here as a lectotype of the species. At the same time, the specimen illustrated in the original description of Matsumura seems to be a female. The problem shall not be solved now. Subspecific separation is not clear, but only 2 bp are different between Taiwanese and South Chinese individuals in the COI sequences (658 bp).

Andraca nobilorum Zolotuhin, 2012


Diagnosis. Light yellow ground colour and black basal patches on the fore wings are diagnostic.

Biology

Mountain species, collected from 1,250 m in Jun.

Distribution

The nominate subspecies is known from Central Vietnam (Prov. Kon Tum). Maybe endemic of Annam Mts. or TayNguyen Plateau. Another population is known from Guangxi and described here as a new subspecies.

Andraca nobilorum houtuae Wang & Zolotuhin, subsp. nov. (Figs. 2B-C, 2E, 2G)

Diagnosis. This new geographical subspecies differs from the nominate Andraca nobilorum (Fig. 2A, 2D, 2F) by the absence of an indistinct darker marker in the apex of the forewing, the apex of valve being thinner and pointed.

Male

Medium sized moths with forewing length 18-19 mm (Figs. 2B-C). Head. Small; antennae brown, bipectinate except distal 1/3; vertex covered with short pale gray scales; compound eyes dark brown, naked and large; labial palpi upturned and porrect, covered with brown scales except for orange scales ventrally.

Thorax. Dorsal surface brown with a pale yellow semi-circular spot interiorly. Forewing ground color pale yellow-brown, apex slightly falcate, with a small, obscure, irregular spot; termen slightly arched, curved near apex, fringe dark fuscous; inner margin slightly prominent at basal 1/3; antemedian fascia arched, short, near inner margin; discocellular and postmedian fasciae wavy, postmedian fascia with upper 1/2 liking a lying horizontally “V”; a bigger black spot at basal area and a smaller one at the end of the discal cell; submargin with a brown kidney-shaped spot. Hind wing ground colour pale yellow-brown with densely scaled basally; antemedian fascia black brown, upper half part vague; discocellular and postmedian fasciae black brown, wavy, upper part of postmedian absent; two black dots near middle of submargin; inner margin brown with black markings. Underside of forewing with distinct discocellular fascia, discal cell with a black dot. Underside of hindwing with distinct, well defined discocellular and postmedian fasciae, discal cell with a black dot.

Abdomen. Slender, yellowish brown, each segment with dark brown band posteriorly. Tergite VIII bell-shape, sternite VIII irregularly hexagonal (Fig. 2E).

Male genitalia (Fig. 2G). Uncus broader, duck beak-shaped with long sparsely hairs; gnathos consists of 2 elongate, inflated median arms; valva shuttle-shape with long hairs sparsely, apex very acute, distal 1/3 valva well sclerotized with a nearly triangular inner projection inwards basal valva; sacculus strongly sclerotized, folded upwardly; saccus short and broad; aedeagus slight arched with stronger densely apical spines.

Female

Unknown.

HOLOTYPE ♀ Damingshan National Nature Reserve, Guangxi Zhuang Autonomous Region, China, 2011-VII-09, 1,200 m, Min Wang & Hou Shuai Wang leg., deposited in Department of Entomology, SCAU; PARATYPES, 1♂, same data as holotype, deposited in Institute of Entomology, HUNAU. 1♂, male, Dayaoshan Nature Reserve (23°45’N, 109°45’E, 1,200 m in altitude), Jingxiu, Guangxi, China, 2005-IV, V. Siniaev leg., deposited in MWM.

Biology

Type specimens were collected in Damingshan National Nature Reserve on 9-VIII-2011 by the
light trap in the field surveys conducted. Hosts and preimaginal instars are unknown.

Distribution

China (Guangxi).

Etymology

In the Chinese mythology, Houtu is a Goddess of the Earth. Her color was yellow and she was patronized under the Temple of Sun and under most constellations.

Remarks

The images of adult and of the genitalia of the holotype *Andraca nobilorum* from Central Vietnam (Fig. 2A, 2D, 2F) are provided here for comparing with the new subspecies. Zolotuhin (2012) reported a specimen of *A. nobilorum* from Dayao Shan, Guangxi with a differing by more than 2% in mitochondrial COI gene partial sequences (658 bp) from the holotype. In this paper, we consider that the specimen from Dayao Shan should belong to this new subspecies and define it as a paratype.

*Pseudandraca* Miyata, 1970

Type-species: *Andraca gracilis* Butler, 1885, by original designation.

*Pseudandraca flavamaculata* (Yang, 1995)

*Andraca flavamaculata* Yang, 1995, Ins. Baishanzu Mt.: 354, figs. 3, 8. TL: [Mt. Baishanzu, 1,100 m, Zhejiang Prov., China]. HOLOTYPE: male (asserted to be in coll. Beijing Agricultural University, not it is not found there.

Diagnosis. The species is characterised in external characters by distinct contrasting citrus-yellow spots of the greyish ground color of the wings especially distinct in R-Cu cell of the forewing. Male genitalia are also very characteristic, especially in the shape of the valva and in the presence of a strong sharpened basal inner process.

Biology

Flight period from Mar to beginning of Sep. Inhabits altitudes from 1,100 to 3,200 m. Preimaginal stages, females and food plants unknown. For the subspecies *nabesan*, flight period was given by Owada et al. (2000) to be only in Feb; in MWM, the moths were collected from Apr to Jul and again in Nov and Jan, probably develops 2 generations. Inhabits altitudes from 1,600 to 2,250 m, but mainly 1,600-1,800 m. Preimaginal stages, females and hosts are still unknown.

Distribution

Known only from the southern China (Zhejiang: Mt. Baishanzu; Jiangxi: Guangze (Xipaihe vill); border Jiangxi/Fujian: WuyiShan; Fujian [Fukien]: Kuatun; Yunnan: Yunlong (Fengshuining Msx.); Sichuan: Gongga Shan, 70 km NW Chengdu; Guangdong: Nanling NR; Guangxi: Mao’ershan NR, Jiuyuandashan NR; Hunan: Mangshan NR) and Vietnam (Tam Dao; Lao Cao; Cao Bang; Mt. Fan-si-pan).

**KEY TO THE CHINESE ANDRACA SPECIES AND PSEUDANDRACA FLAVAMACULATA**

1. Forewing with a prominent black basal spot. ........................................... *A. nobilorum houtuae*
   — Forewing without the prominent black basal spot ................................... 2
2. Hindwings angled ......................................................................................... 3
   — Hindwings rounded. .................................................................................. 4
3. Termen of hindwings festooned ................................................................. *A. bipunctata*
   — Termen of hindwings smoothed ............................................................. *A. melli*
4. Ground color brown. .................................................................................. 5
   — Ground color grayish ............................................................................... 7
5. Head covered with reddish brown hairs .................................................... *A. apodecta*
   — Head covered with dark brown hairs .................................................... 6
6. Costa of forewing ornamented with silver scales distinctly; Uncus long with basal narrowing and
CONCLUSION AND DISCUSSION

The phylogenetic position of the genus Andraca is still disputed. Traditionally, it was considered to be within the Bombycidae (Zolotuhin & Witt 2009; Zolotuhin 2012). Recently, Zwick et al. (2011) transferred it to the family Endromiidae based on phylogenetic analysis using molecular data, but only a few samples were included in their study. No doubt the genus Andraca is close to Mustilia Walker, 1865 and Mustilizans Yang, 1995 belonging to the ‘Mustilia lineage’ of the Prismostictinae (Lemaire & Minet 1999; Wang et al. 2011), but the phylogenetic position of the subfamily Prismostictinae must be confirmed in the future work. In this paper, we placed the genus Andraca in the family Bombycidae.

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REFERENCES CITED


