
A new record species of genus *Odochilus* Harold (Coleoptera: Scarabaeidae: Aphodiinae: Odochilini) from Taiwan

Bin-Hong Ho

Department of Entomology, National Chung Hsing University,
No. 145 Xinda Rd., Taichung, 40227, Taiwan.
Email: binhongho0505@smail.nchu.edu.tw

Abstract

Odochilus (*Parodochilus*) *convexus* Nomura, 1971 a small Aphodiine species, is newly reported from Taiwan, simultaneously, this is also the first record of subgenus *Parodochilus* in Taiwan. Illustrations of habitus, distribution map, diagnosis, bionomics, and Chinese name of known Taiwanese species under the genus is also provided.

Keywords: Aphodiinae, new record, *Odochilus*, Odochilini, Scarabaeidae, Taiwan.

Introduction

Odochilus is a genus in the subfamily Aphodiinae known from Oriental region, and first revised by Rakovič (1987). Thereafter, based on the characteristics of pronotal ridges, Rakovič (1997) established two subgenera: *Odochilus* sensu stricto (with four transversal and continuous pronotal ridges) and *Parodochilus* (fourth ridge interrupted in middle, both sides with small and longitudinal keels or elevated areas).

Masumoto *et al.* (2016) first reported *Odochilus* in Taiwan and described a new species *O. (Odochilus) taiwanus* Masumoto, Lan & Kiuchi, 2016 from Kenting National Park, Pingtung County. Recently, I found an unknown *Odochilus* species belonging to the subgenus *Parodochilus* through the field survey in Jinshan and Kenting National Park. After careful examination, this species was identified as *O. (P.) convexus* Nomura, 1971, the first record in Taiwan. It is also the first record of subgenus *Parodochilus* in Taiwan. Therefore, in this paper, we record these new records together with the illustration of habitus, distribution map, diagnostic key, bionomics and Chinese name.

DOI: <https://doi.org/10.53716/jtc.2.2.2021>

ZOOBANK: <http://zoobank.org/References/248984cb-8f41-4820-b999-880fe9c303b9>

Received: 25 August 2021

Published: 31 December 2021

www.jtcoleop.com

Materials and Methods

All specimens in this study were examined using Olympus SZ 51 stereomicroscope. The specimens were collected from pitfall traps filled with propylene glycol for fixation and placed in the wild about a month, or by sieving sand and soil using a filter net. All photographs were taken by Olympus OM-D E-M 5 mark II camera and Laowa 25 mm F2.8 2.5-5x ultra macro lens, and stacked using Helicon Focus 7. The distribution map was made using Adobe illustrator CC.

The labels data for each specimen is separated by double slashes “//”, while supplementary data is used by square brackets “[]”, unsexed specimens were marked by “ex(s)”.

The voucher specimens of the new record species cited in this study were deposited in proportion at the collection and institute as follows:

BHPC—Bin-Hong Ho personal collection, Taipei, Taiwan

NCHU—Department of Entomology, National Chung Hsing University, Taichung, Taiwan

NMNS—National Museum of Natural Science, Taichung, Taiwan

TARI—Taiwan Agricultural Research Institute, Taichung, Taiwan

TFRI—Taiwan Forestry Research Institute, Taipei, Taiwan

Results

Odochilus (Parodochilus) convexus Nomura, 1971

(Figs. 1-3, 5-10)

Odochilus convexus Nomura, 1971: 64. Type locality: Ohara-kaigan, Iriomote Is.

Chinese name: 隆背角胸蜉金龜

Materials examined. JAPAN: 1 ex, 沖繩県 [Okinawa Pref.], 石垣島 [Ishigaki Is.], 吉原 [Yoshihara], 2000年4月13日 [13.IV.2000], 川井 信矢 採集 [Shinya Kawai leg.]// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2020 (BHPC). **TAIWAN:** 1 ex, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, (PT), 1-2.VI.2020, K.W. Chan leg.// BHPC 000-1319// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2020 (NMNS). 5 exs, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N

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www.jtcoleop.com

121.6462°E, 27.VII.2020, B.H. Ho leg.// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2020 (BHPC). 12 exs, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, 1.IX.2020, B.H. Ho leg.// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2020 (BHPC, NMNS, TARI). 1 ex, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, 21.IX.2020, Yun Ho leg.// BHPC 000-1493// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2020 (BHPC). 1 male 1 female and 3 exs, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, 25.X-17.XI.2020, B.H. Ho leg. (PTs)// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2020 (BHPC). 2 exs, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, 25.X.2020, B.H. Ho leg.// BHPC 000-1480, 000-1481// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2020 (NCHU). 2 exs, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, 21.IX-25.X.2020, Yun Ho leg., (PT)// BHPC 000-1404, 000-1405// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2020 (TFRI). 1 ex, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, 16.XI-21.XII.2020, Yun Ho leg., (PT)// BHPC 000-2000// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2020 (BHPC). 181 exs, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, 27.VII-1.IX.2020, B.H. Ho leg., (PT)// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2020 (BHPC, NCHU, NMNS, TARI, TFRI). 36 exs, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, 21.III-27.IV.2021, B.H. Ho & Y. Ho leg. (PTs) (BHPC, NMNS, TARI). 1 male and 4 exs, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, 18.II-21.III.2021, B.H. Ho leg., (PTs)// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2021 (BHPC, NCHU). 1 female, New Taipei City, Jinshan, Shitoushan Park (獅頭山公園), alt. 38 m, 25.2257°N 121.6462°E, 18.I-18.II.2021, B.H. Ho leg. (PT)// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2021 (BHPC). 26 exs, Pingtung Co., Manzhou, Gangkou river wetland (港口溪濕地), 21.98505°N 120.84392°E, 8.II.2021, B.H. Ho, Y. Ho, Y.H. Lin leg.// *Odochilus (Parodochilus) convexus* Nomura, 1971 det. B.H. Ho, 2021 (BHPC, NMNS).

Diagnosis. This species can be easily distinguished from *O. (O.) taiwanus* by characteristics as follows: 1) Head large and convex with narrow U sharp ridge in middle. 2) Pronotum with three transverse ridges, third ridge connect with upside-down V sharp ridge in middle. 3) Elytra strongly convex, with five vertical costate, two rows of punctures on each interval.

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Received: 25 August 2021

Published: 31 December 2021

www.jtcoleop.com

Distribution. Taiwan (New record), Japan (Iriomote Is., Ishigaki Is., Shimoji Is., and Hateruma Is.).

Bionomics. In Japan, the adults inhabit in seashore sandy land or coastal forest edge with vegetation of Poaceae, mainly collected from the sand or leaf litters around the roots (Kawai *et al.*, 2005). Northern Taiwan population shows similar observation except that it prefers sandy soil with high humidity. In southern Taiwan, the adults inhabit from the deeply finely shell sand near seashore and sympatric with *O. (O.) taiwanus* and *Rakovicius lanae* (Scarabaeidae), the vegetation is not limited to Poaceae.

Remarks. Pittino & Kawai (2007) indication to an *Odochilus* sp. is sympatric with *Psammodyus kobayashii*, *Rakovicius kawaii* (now *R. subopacus*), and *Trichiorhyssemus yumikoeae* in Pai Sha Wan [Shihmen, New Taipei City] and Dong-Gang [Zhuangwei, Yilan County] by sifting sand among grass roots near the seashore, but no any detailed information and identification about the *Odochilus* sp. According to known geographic distribution and bionomics in Taiwan, I reasonable doubt the unknown *Odochilus* is probably also *O. (P.) convexus*.

***Odochilus (Odochilus) taiwanus* Masumoto, Lan & Kiuchi, 2016**

(Figs. 4, 10)

Odochilus (Odochilus) taiwanus Masumoto, Lan & Kiuchi, 2016: 84. Type locality: Jialeshui, Manzhou, Pingtung, Taiwan.

Chinese name: 台灣角胸蜉金龜

Type material examined. Holotype in NMNS. 1 male, Chialeshui, Manzhou, Pingtung, TAIWAN, 28-II-2016, K. MASUMOTO & M. KIUCHI leg. [Printed, white label]// 写真 Holotype [hand writing, light yellow label with orange words]// **HOLOTYPE** *Odochilus (Odochilus) taiwanus* K. Masumoto, 2016 [Printed, red label].

Additional materials examined. TAIWAN: 1 male 2 females, Pingtung Co., Manzhou, Jiupeng (九棚), 10.VII.2018, B.H. Ho leg.// *Odochilus (Odochilus) taiwanus* Masumoto, Lan & Kiuchi, 2016 det. B.H. Ho, 2018 (BHPC). 12 exs, Pingtung Co., Manzhou, Gangkou river wetland (港口溪濕地),

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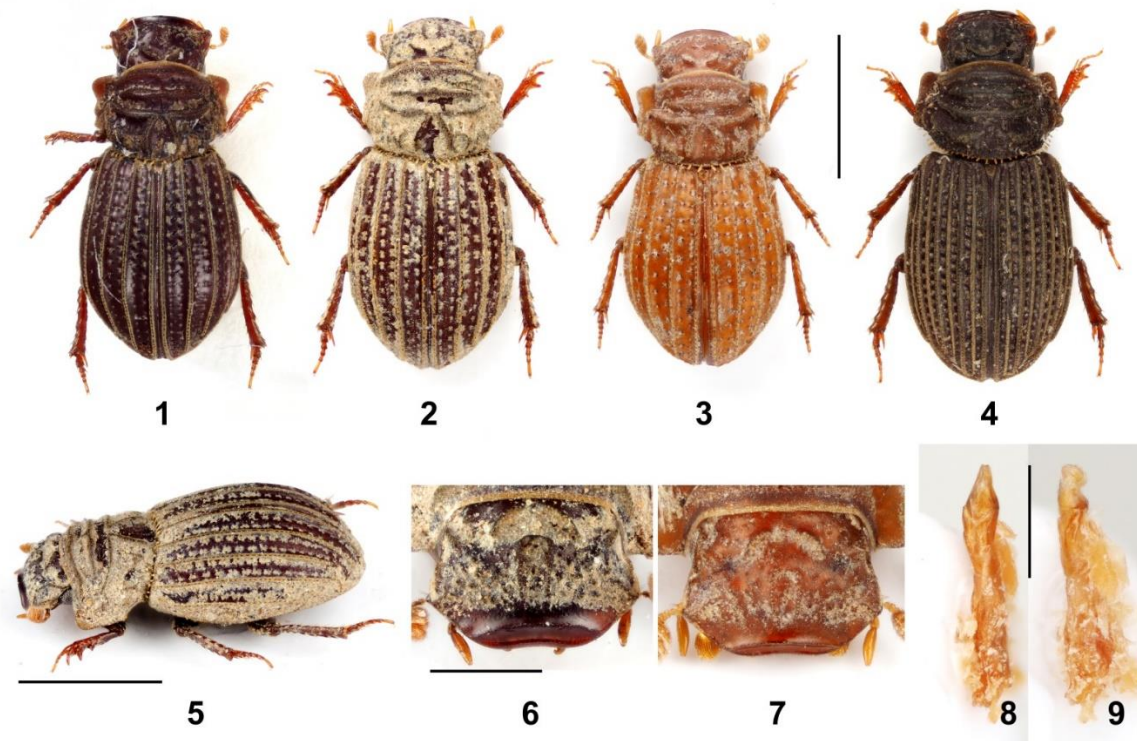
ZOOBANK: <http://zoobank.org/References/248984cb-8f41-4820-b999-880fe9c303b9>

Received: 25 August 2021

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www.jtcoleop.com

21.98505°N 120.84392°E, 8.II.2021, B.H. Ho, Y. Ho, Y.H. Lin leg.// *Odochilus (Odochilus) taiwanus*
Masumoto, Lan & Kiuchi, 2016 det. B.H. Ho, 2021 (BHPC, NMNS).



Figures 1-9. 1-3, 5-9. *Odochilus (Parodochilus) convexus* Nomura, 1971. 1. Japanese specimen (Ishigaki Is.), dorsal view. 2-3, 5-9. Taiwanese specimen. 2, 5, 6. From Jinshan, New Taipei City, 2. dorsal view. 5. lateral-dorsal view. 6. Head, frontal view. 3, 7. From Manzhou, Pingtung County, 3. dorsal view. 7. Head, frontal view. 8-9. Male genitalia. 8 dorsal view. 9. lateral view. 4. *Odochilus (Odochilus) taiwanus* Masumoto, Lan & Kiuchi, 2016, dorsal view. Scale bar for 1-5: 1 mm, for 6-9: 0.5 mm.

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Figure 10. Distribution map of *Odochilus* spp. from Taiwan. Red round: *Odochilus (Parodochilus) convexus* Nomura, 1971. Blue triangle: *Odochilus (Odochilus) taiwanus* Masumoto, Lan & Kiuchi, 2016. Green square: none-identification records about *Odochilus* sp. by Pittino & Kawai (2007).

Diagnosis. See Masumoto *et al.*, (2016).

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Distribution. Taiwan (Kenting National Park).

Bionomics. This species is only known from Kenting National Park in southern Taiwan and sympatric with *R. lanae* and *Nesocaedius taiwanus* (Tenebrionidae) (Masumoto *et al.*, 2016). Through the field survey, this species also sympatric with *O. (P.) convexus* and *Leiopsammodius nomurai* in the specific place, other information please see above.

Remarks. The scale bar of male genitalia in Masumoto *et al.*, (2016): figures 3-4 are probably mismarked. Originally marked as 0.1 mm, but according to the specimens examined, the exact scale bar should be 0.5 mm.

Acknowledgments

I wish to thank the members of Conservation and Evolutionary Biology lab, Department of Entomology, National Taiwan University, Kai-Wei Chan and Yun Ho for the assistance during field survey; Dr. Hui-Yun Tseng for allowing me to participate in the “Biodiversity monitoring project of social ecological production landscape in Jinshan area” to collected *Odochilus* beetles and securing collection permit from Kenting National Park (Permit no. 1100001152). My gratitude to Dr. Makoto Kiuchi (Ibaraki, Japan) for providing Japanese *Odochilus* specimen as reference.

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DOI: <https://doi.org/10.53716/jtc.2.2.2.2021>

ZOOBANK: <http://zoobank.org/References/248984cb-8f41-4820-b999-880fe9c303b9>

Received: 25 August 2021

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DOI: <https://doi.org/10.53716/jtc.2.2.2.2021>

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