

[研究文章 Research Article]

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Checklist of Determined Insect Specimens in the NCHU Museum of Entomology. I. Dytiscidae (Insecta: Coleoptera)

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Abstract. The NCHU Museum of Entomology, Department of Entomology, National Chung Hsing University is one of the important insect collections in Taiwan. This study aims to present a checklist of the determined diving beetles deposited at the NCHU Museum of Entomology, including 5 subfamilies, 9 genera, and 16 species.

Key words: Checklist, diving beetle, aquatic insect, NCHU museum of entomology

Introduction

The NCHU Museum of Entomology was inaugurated in 1947, and is located on the 10th floor of the Agricultural & Environmental Science Building of National Chung Hsing University. The NCHU Museum of Entomology is managed by the Department of Entomology, National Chung Hsing University, and is one of the most important entomological research collections in Taiwan, with holdings of more than 120,000 specimens (NCHU Museum of Entomology, 2019).

At present, 65 species from the family Dytiscidae are known to occur in Taiwan (Nilsson *et al.*, 1995; Hendrich & Balke, 1997; Wang *et al.*, 1998; Wewalka & Wang, 2007; Liu & Watanabe, 2018; Hájek *et al.*, 2018; Watanabe *et al.*, 2018). In this paper, a checklist of determined dytiscid specimens in the NCHU Museum of Entomology collection is provided. Consequently, 5 subfamilies, 9 genera, and 16 species are recognized.

Material and methods

All of the materials examined in this study are deposited at the NCHU Museum of Entomology, Department of Entomology, National Chung Hsing University, Taichung City, Taiwan. Species-level identifications were determined by the author. Where available, specimen label information relating to collection localities (in English and/or Chinese) is provided in square brackets. Abbreviation used in the paper: cf. (between the generic name and the species name) - this qualifier indicates that most of the diagnostic characters correspond to the species in question, but an examination of internal characters would still be required to support a species-level identification. Thus, while this identification is provisional, is likely to be definitive after a comparison of such characters with reference material.; ex - the sex of dytiscids cannot be easily determined without dissection, so this character is used for unidentified sex specimen(s).

Results

Family Dytiscidae 龍蟲科

Subfamily Agabinae 豆龍蟲亞科

Platynectes gemellatus Stastny, 2003 條紋扁形豆龍蟲

Material examined. TAIWAN: 1 ex. Huisun Forest Area [= in Nantou County, 惠蓀林場], 18-22. I. 1999.

Subfamily Colymbetinae 姬龍蟲亞科

***Rhantus suturalis* MacLeay, 1825 姬龍蝨**

Material examined. JAPAN: 1 ex. Kyusyu, Mt. Hiko-san, 16. VIII. 1941, M. Chujo leg.; 1 ex. Kyusyu, Mt. Hiko-san, 18. VIII. 1941, M. Chujo leg. **TAIWAN:** 1 ex. Taihoku [= in Taipei], 2. V. 1934, K. Sawada leg.; 1 ex. Taichung City, National Chung Hsing University [興大], 31. V. 1977, Shih-Cheng Horng leg.; 1 ex. Shilin District [= in Taipei City, 士林區], Zhishanyan [芝山岩], 9. VI. 1974, R. K. Lien leg.; 1 ex. Zhongxing New Village [= in Nantou County, 中興新村], 12. VII. 1975, Chiu-Kuei Chan leg.; 1 ex. Taichung City, National Chung Hsing University [興大], 23. X. 1980, Shang-Wen Huang leg.; 2 ex. Huisun Forest Area [= in Nantou County, 惠蓀林場], V. 1989, S. K. Su leg.; 1 ex. Taichung City, 1993, Debby leg.; 2 ex. Taoyuan City, Longtan District [龍潭], 2. I. 1994, L. H. Yang leg.; 2 ex. Label data unknown.

Subfamily Copelatinae 扁龍蝨亞科

***Copelatus cf. oblitus* Sharp, 1882 淡紋扁龍蝨**

Material examined. TAIWAN: 1 ex. Taichung City, National Chung Hsing University [興大], 1. I. 1994, JH Lee leg.; 1 ex. Taichung City, 30. V. 1994, Chih-Tsai Tsou leg.; 1 ex. Nantou County, Huisun Forest Rec Area, 1.5km from entrance, after rain, 500m, Acc Ti-82, 24.0802N 121.0053E, at u.v. light, 19. V. 2011, W. M. Hunting leg.

***Copelatus cf. sociennus* J. Balfour-Browne, 1952 友朋扁龍蝨**

Material examined. TAIWAN: 1 ex. Pingdong co. [= Pingtung County], Longluan Lake [龍鑾潭], 21.58549N 120.44091E, by light, 29. VI. 2012, Shih-Ya Li leg.

***Lacconectus cf. formosanus* (Kamiya, 1938) 臺灣橙色扁龍蝨**

Material examined. TAIWAN: 5 ex. Nantou County, Lianhuachi [蓮華池], 4. V. 1991, F. Lee leg.; 2 ex. Taoyuan City, Fuxing township, Beichatien Mountain, 1320m, at night, by hand, 17. VI. 2011, W. M. Hunting leg.

Subfamily Dytiscinae 龍蝨亞科

***Rhantaticus congestus* Klug, 1833 擬姬龍蝨**

Material examined. TAIWAN: 1 ex. Nantou County, Lianhuachi [蓮華池], 1993, Fu-Hua Yan leg.; 5 ex. Miaoli County, 18. XII. 1993, Yu-Chien Chang leg.; 1 ex. Taichung City, Dakeng [大坑], VI. 1993, Fu-Hua Yang leg.; 3 ex. Miaoli County, Tongxiao Township [通霄], 4. XII. 1993, J. H. Lee leg.; 1 ex. Taichung City, 30. V. 1994, Tsai-Chih Tsou leg.

***Eretes griseus* (Fabricius, 1781) 灰色龍蝨**

Material examined. TAIWAN: 1 ex. Taichung City, Ziyou Road [自由路], IV. 1969.; 1 ex. Taichung City, Mt. Anma [鞍馬山], 1975, Mao-Tai Wang leg.; 1 ex. Taichung City, Taiwan Provincial Consultative Council [省議會], 23. III, 1975, Hsuen-Chin Li leg.; 1 ex. Taichung City, National Chung Hsing University [興大], 20. V. 1975, Jui-Shan Chen leg.; 1 ex. Liouguei [in Kaohsiung City, 六龜] 6. VII. 1978, I-Ming Li leg.; 1 ex. 10. X. 1978, Chiao-Chen Hung leg.; 1 ex. 15. X. 1978, Chiao-Chen Hung leg.; 6 ex. Tainan City, Shanhua [善化], 18. VII. 1979, Hsin-Ping Wang leg.; 1 ex. Taichung City, National Chung Hsing University [中興], 31. V. 1985, M. L. Cheung leg.; 7 ex. Taichung City, Wufeng [霧峰], 1993, T. Z. Chen leg.; 1 ex. Taichung City, National Chung Hsing University [興大], 20. V. 1994, W. Y. C. leg.; 1 ex. Taichung City, Fengyuan Dajia River, by hand, 10. X. 2018, Yi-Hao Lin leg.; 19 ex. Label data unknown.

***Hydaticus grammicus* (Germar, 1827) 棕紋麗龍蝨**

Material examined. JAPAN: 1 ex. Kyusyu, Mt. Hiko-san, 18. VIII. 1941, M. Chujo leg.

Hydaticus rhantoides Sharp, 1882 姬麗龍蝨

Material examined. TAIWAN: 1 ex. Taihoku [= in Taipei], 13. IV. 1934, K. Sawada leg.; 1 ex. Taichung City, 26. V. 1975, Hsuen-Chin Li leg.; 1 ex. Taichung City, National Chung Hsing University [興大], 1976, Hsien-Lung Lin leg.; 1 ex. Taichung City, 14. III. 1976, Li-Shan Lin leg.; 1 ex. Sitou [=in Nantou County, 溪頭], 1977, J. T. W leg.; 1 ex. Taichung City, National Chung Hsing University [中興大學], 26. VI. 1977, Ching-Chou Tseng leg.; 1 ex. Taichung City, National Chung Hsing University [興大], 6. VII. 1977, Yung-Chien Cheng leg.; 1 ex. Taichung City, Guguan [谷關], 4. XI. 1977, Pai-Peng Hsiao leg.; 1 ex. Taichung City, National Chung Hsing University [興大], V. 1978, Jan.-Tseng, Hsu leg.; 1 ex. Huisun Forest Area [= in Nantou County, 惠蓀林場], V. 1989, S. K. Su leg.; 1 ex. Pingtung County, Nanren Lake Wetland [南仁湖], 11. V. 1989, Y. H. Huang leg.; 2 ex. Taichung City, National Chung Hsing University [中興大學], 1993, Y.-H. Fu leg.; 1 ex. Taichung City, National Chung Hsing University [興大], 15. XI. 1993, Y.-W. Tsai leg.; 1 ex. Taichung City, Dakeng [大坑], 24. XI. 1993, Y.-W. Tsai leg.; 1 ex. Taichung City, 25. XII. 1993, D. W. L leg.; 2 ex. Taichung City, National Chung Hsing University [興大], 6. I. 1994, C. P. Lin leg.; 1 ex. Taichung City, National Chung Hsing University [中興大學], 20. V. 1994, W. Y. C leg.; 1 ex. Taichung City, National Chung Hsing University [中興大學], 1. VI. 1994.; 2 ex. Taichung City, National Chung Hsing University [興大], 4. VI. 1994, Yu-Chien Chang leg.; 1 ex. New Taipei City, Wulai District, Tonghou hiking trail, 24.8196N 121.6871E, m. v. light sheet on trail, 740m, Acc Ti-147a, 4. XI. 2011, W. Hunting, C. T. Tang leg.; 1 ex. Pingdong co. [= Pingtung County], Longluan Lake [龍鑾潭], 21.58549N 120.44091E, by light, 29. VI. 2012, Shih-Ya Li leg, No. 0009-0524.; 10 ex. Label data unknown.

Hydaticus vittatus (Fabricius, 1775) 黃紋麗龍蝨

Material examined. TAIWAN: 1 ex. Miaoli County, Tongxiao Township [通霄], 4. XII. 1993, J. H. Lee leg.; 1 ex. Label data unknown.

Cybister chinensis Motschulsky, 1854 日本大龍蝨

Material examined. 1 ex. Label data unknown.

Cybister rugosus (MacLeay, 1825) 橙斑大龍蝨

Material examined. TAIWAN: 1 ex. Pingtung County, Nanjenshan, 12. II. 1985, Z. Y. Huang leg.

Cybister sugillatus Erichson, 1834 紅邊大龍蝨

Material examined. TAIWAN: 2 ex. Taitung County, Lanyu [蘭嶼], VIII. 1969, S. C. Chang.; 1 ex. Taipei City, Zhinan Temple [指南宮], 10. X. 1993, Y. T. Horng leg.; 1 ex. Miaoli County, Tongxiao Township [通霄], 4. XII. 1993, J. H. Lee leg.

Cybister tripunctatus (Olivier, 1795) 點刻三線大龍蝨

Material examined. TAIWAN: 1 ex. Taitung County, Donghe [東河], 8. IV. 1971, Jih-Ching Lien leg.; 1 ex. Yangmingshan [= in Taipei City, 陽明山], Zhishanyan [芝山岩], 23. XI. 1972, Jih-Ching Lien leg.; 1 ex. Dongshi [= in Taichung City, 東勢], 20. V. 1973, Ming-Che Chou leg, No. 0011-0318.; 1 ex. Taichung City, Taiwan Provincial Consultative Council [省議會], 7. V. 1975, Po-Hsien Chen leg, No. 0011-0317.; 1 ex. Huisun Forest Area [= in Nantou County, 惠蓀林場], 12. V. 1977, Hsin-Yuan Su leg, No. 0011-0313.; 1 ex. Taichung City, 10. VII. 1977, C. T. Yang leg, No. 0011-0315.; 1 ex. Taichung City, Taiwan Provincial Consultative Council [省議會], 3. V. 1978, Chao-Feng Chen leg, No. 0011-0317.; 1 ex. Taichung City, National Chung Hsing University [興大], 21. V. 1978, Chun-Kuei Chen leg, No. 0011-0314.; 1 ex. Taichung City, National Chung Hsing University [興大], 1980, Kai Chin leg, No. 0011-0316.; 1 ex. Chiayi County, Budai [布袋], 12. II. 1990, C. H. Tung leg, No. 0011-0319.; 1 ex. Nantou County, Lianhuachi [蓮華池], 4-5. V. 1991, C. H. Tung leg, No. 0011-0322.; 2 ex. Miaoli County, 4. XII. 1993, P. J. H leg.; 1 ex. Miaoli County, 24. XII. 1993, Elaine Shyu leg, No. 0011-0323.; 15 ex. Label data unknown.

***Laccophilus chinensis* Boheman, 1858 中華粒龍蝨**

Material examined. TAIWAN: 5 ex. Taichung City, 31. X. 1988, C. F. Hung leg.; 2 ex. Taichung City, 9. XI 1993, Y. H. Leu leg.; 3 ex. Taichung City, 20. XI. 1993, L. J. K leg.; 1 ex. Miaoli County, 4. XII. 1993, P. J. H leg.; 3 ex. Taichung City, 29. XII 1993, J. R. S leg.; 2 ex. Taichung City, National Chung Hsing University [興大], 29. XII. 1993, Y. C Li leg.; 2 ex. Pingtung Co., Kenting National Park, Hengchun Research Station, aquatic plant garden, at light, 19. VIII. 2008, Tsai, JF & Rédei, D leg.

***Laccophilus sharpi* Regimbart, 1889 夏普氏粒龍蝨**

Material examined. TAIWAN: 1 ex. Miaoli County, Tongxiao Township [通霄], 8. VI. 1993, J. T. P leg.; 2 ex. Taichung City, 20. XI. 1993, L. J. K leg.; 1 ex. Pingtung Co., Kenting National Park, Hengchun Research Station, aquatic plant garden, at light, 19. VIII. 2008, Tsai, JF & Rédei, D leg.; 3 ex. Label data unknown.

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Reference

- Brancucci, M. 1983. Révision des espèces est-paléarctiques, orientales et australiennes du genre *Laccophilus* (Col. Dytiscidae). *Entomologische Arbeiten aus dem Museum G. Frey* 31/32: 241–426.
- Hájek, J., Hendrich, L. & Balke, M. 2018. The *Copelatus doriae*-masculus species complex in Greater Sunda, with description of three new species and a new synonymy. *Spixiana* 41 (1):77-90
- Hendrich, L. & Balke, M. 1997. Taxonomische Revision der südostasiatischen Arten der Gattung *Neptosternus* Sharp, 1882 (Coleoptera: Dytiscidae: Laccophilinae). *Koleopterologische Rundschau* 67: 53-97.
- Hendrich, L., Balke, M. & Yang, C.-M. 2004. Aquatic Coleoptera of Singapore - species richness, ecology and conservation. *Raffl Bull Zool* 52: 97-141.
- Liu, H.-C. & Watanabe, R. 2018. New Records of *Copelatus minutissimus* J. Balfour-Browne, 1939 (Coleoptera: Dytiscidae) from Taiwan. *Taiwanese Journal of Entomological Studies* 3 (3): 60-62.
- Miller, K. B. 2002. Revision of the genus *Eretes* Laporte, 1833 (Coleoptera: Dytiscidae). *Aquatic Insects* 24 (4): 247-272.
- Mori, M., & Kitayama, A. 2002. Dytiscoidea of Japan, re-vised ed. Bun-ichi Sogo Shuppan, Tokyo, Japan. 231 pp. (in Japanese)
- NCHU Museum of Entomology. 2019. Available from: <http://nchuentm.biodiv.tw/content/about> (accessed 13 July 2019)
- Nilsson, A.N., Wewalka, G., Wang, L.-J., & Satô, M. 1995. An annotated list of Dytiscidae (Coleoptera) recorded from Taiwan. *Beiträge zur Entomologie* 45: 357-374.
- Nilsson, A. N. & Hájek, J. 2019. A world catalogue of the family Dytiscidae, or the diving beetles (Coleoptera, Adephaga). Version 1.I.2019, 307. Distributed as a pdf file via Internet. Available from: <http://www.waterbeetles.eu> (accessed 11 June 2019)
- Stastny, J. 2003. Dytiscidae: X Review of *Platynectes* subgen. *Gueorguievtes* Vazirani from Southeast Asia (Coleoptera). In: Jäch MA, Ji L (eds.), *Water Beetles of China Vol.III*. Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein Wien, pp. 217-259.
- Wang, L.-J., Sato, M. & Yang, P.-S. 1998. Note on the Genus *Leiodytes* Guigont (Coleoptera: Dytiscidae) with three New Species from Taiwan, Thailand and Vietnam. *Japanese Journal of Systematic Entomology* 4: 161–171.
- Watanabe, K., Liu, H.-C., Mitamura, M. & Yoshii, S. 2018. New Distributional Records of Dytiscid Beetles (Coleoptera, Dytiscidae) from Taiwan. *Elytra, Tokyo, New Series* 8 (2): 429-430.
- Wewalka, G. & Wang, L.-J. 2007. Three new species of the genus *Agnoshydrus* Bistrom, Nilsson & Wewalka from Taiwan and Borneo (Coleoptera: Dytiscidae). *Zeitschrift der Arbeitsgemeinschaft Österreichischer Entomologen* 59: 1-8.
- Wewalka, G. 2016. Revision of the *Hydaticus* (*Prodatiscus*) *pacificus* group of the Palearctic, Oriental and Australian Regions, and description of a new species of the *H. (P.) bihamatus* group (Coleoptera: Dytiscidae). *Koleopterologische Rundschau* 86: 9-45.

國立中興大學昆蟲標本館昆蟲定名標本名錄：I. 龍蝨科（昆蟲綱：鞘翅目）

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摘要: 國立中興大學昆蟲標本館為臺灣重要的昆蟲標本蒐藏館。此研究提供國立中興大學昆蟲標本館的龍蝨科定名標本名錄，共紀錄 5 亞科，9 屬，16 種。

關鍵詞: 名錄、龍蝨科、水生昆蟲、國立中興大學昆蟲標本館