

# A List of Chionaspinæ (Hemiptera: Sternorrhyncha: Coccoidea: Diaspididae) Deposited in the Insect Collection of Taiwan Agricultural Research Institute

Shu-Pei Chen<sup>1,\*</sup>, Jen-Yu Wong<sup>2</sup>, and Wen-Jer Wu<sup>3,4</sup>

## Abstract

Chen, S. P., J. Y. Wong, and W. J. Wu. 2014. A list of Chionaspinæ (Hemiptera: Sternorrhyncha: Coccoidea: Diaspididae) deposited in the Insect Collection of Taiwan Agricultural Research Institute. *J. Taiwan Agric. Res.* 63(2):105–121.

A list of 39 species in 9 genera of Chionaspinæ (Hemiptera: Sternorrhyncha: Coccoidea: Diaspididae) with 246 slide mounted specimens deposited at Insect Collection of the Taiwan Agricultural Research Institute (TARI) is provided. The specimens were mainly collected during Japanese Colonial Period. The synonyms, host plants, distribution and photographs of slide-mounted specimen are also provided for each species.

**Key words:** Chionaspinæ (Diaspididae), Slide-mounted specimens, Taiwan Agricultural Research Institute (TARI).

## INTRODUCTION

Scale insects (Hemiptera: Sternorrhyncha: Coccoidea) of Taiwan have been extensively studied by several western and Japanese entomologists such as Green, Ferris and Takahashi since 1923 (Tao 1978). Most of the slide-mounted specimens of Chionaspinæ (Hemiptera: Sternorrhyncha: Coccoidea: Diaspididae) collected by Takahashi were deposited at the Insect Collection, Division of Applied Zoology, Taiwan Agricultural Research Institute (TARI). Among them, a great number of slide-mounted specimens were types designated by Takahashi. However, a considerable number of species names used by Takahashi have been changed or synonymized with other names.

In this study, taxonomic status of all slide-mounted specimens were examined and revised based on the current studies.

## MATERIALS AND METHODS

A total of 246 slide-mounted specimens were examined by using a Leita DMRB light microscope (Leica, Milton Keynes, U.K.) in this study. Distribution data of each species were compiled based on the information provided on the slide-mounted specimens deposited at the TARI Insect Collection. Photographs of slide-mounted specimens (adult female) were taken by using Leita DMRB light microscope, Automatic Piezo stepping motor (Leica Piezo Z-drive, Switzerland) and Leica DFC 420 Digital

---

Received: January 24, 2014; Accepted: March 26, 2014.

\* Corresponding author, e-mail: spchen@tari.gov.tw

<sup>1</sup> Associate Research Fellow, Applied Zoology Division, Taiwan Agricultural Research Institute, Taichung, Taiwan, ROC.

<sup>2</sup> Former Field Technician, Applied Zoology Division, Taiwan Agricultural Research Institute, Taichung, Taiwan, ROC.

<sup>3</sup> Professor, Department of Entomology, National Taiwan University, Taipei, Taiwan, ROC.

<sup>4</sup> Director, Research Center for Plant Medicine, National Taiwan University, Taipei, Taiwan, ROC.

Microscope Cameras (Leica, Switzerland) for each species. The old name and current name of collection locality records are included in the paper based on guidelines developed by Chu & Yamanaka (1973, 1974, 1975) and the Taiwan Geographic Name Information Systems (<http://placesearch.moi.gov.tw/search/index.php>).

## RESULTS

Among the identified 39 species (9 genera) of Chionaspininae in TARI, there were 22 species described by Takahashi, 5 species described by Kuwana, and 5 species described by Green. In the study, there are 10 species not collected in Taiwan, including *Chionaspis lithocarpicola* Takahashi, *Chionaspis salicis* (Linnaeus), *Kuwanaspis linearis* (Green), *Nikkoaspis sasae* (Takahashi), *Nikkoaspis shiranensis* Kuwana, *Pinnaspis javanensis* (Kuwana), *Pinnaspis siamensis* Takahashi, *Unaspis acuminata* (Green), *Unaspis citri* (Comstock), and *Unaspis euconymi* (Comstock). The following list provides comprehensive information on the nomenclature, synonymies, host plants, and distribution of each species. Table 1 is a checklist of the old name and current name of collection locality records included in the paper (Chu & Yamanaka 1973, 1974, 1975).

***Chionaspis cinnamomicola* (Takahashi 1935)** (Fig. 1A) (Takahashi 1935a; Takagi 1970; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Diaspis machilicola* var. *cinnamomicola* Takahashi, 1935. (8 slides)

**Distribution:** Taiwan (Giran: Kussha; Takao: Chushinron near Rokki).

**Host plant:** *Cinnamomum erythrophloia* (Lauraceae).

**Syn.:** *Diaspis machilicola cinnamomicola* Takahashi, 1935; *Diaspis cinnamomicola* (Takahashi 1935).

**Note:** Syntypes, female [six slides collected from Taiwan: Taihoku, Kussha near Shikikun, on *Cinnamomum erythrophloia*, 14-VIII-1934, by R. Takahashi (#26-3-3-1-26-3-4-1)].

***Chionaspis lithocarpicola* Takahashi, 1942** (Fig. 1B) (Takahashi 1942b; Ben-Dov & Miller 2013)

**Original spelling on label:** *Chionaspis lithocarpicola* Takahashi, 1942 (1 slide)

**Distribution:** Thailand (Mt. Sutep).

**Host plant:** *Lithocarpus* sp. (Fagaceae).

**Note:** Syntypes, female [collected from Thailand: Mt Sutep, on *Lithocarpus* sp., 12-IV-1940, by R. Takahashi (#23-4-4-1)].

***Chionaspis machilicola* (Takahashi 1935)** (Fig. 1C) (Takahashi 1935a; Takagi 1970; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Diaspis machilicola* Takahashi, 1935 (4 slides)

**Distribution:** Taiwan (Taito: Chipponsan).

**Host plant:** *Machilus* sp. (Lauraceae).

**Syn.:** *Diaspis machilicola* Takahashi, 1935.

**Note:** Syntypes, female [collected from Taiwan: Taito, Chipponsan, on *Machilus* sp., 23-III-1934, by R. Takahashi (#26-3-2-1-4)].

***Chionaspis rotunda* (Takahashi 1935)** (Fig. 1D) (Takahashi 1935a; Takagi 1970; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Phenacaspis rotunda* Takahashi. (1 slide)

**Distribution:** Taiwan (Heito: Mutosan).

**Host plant:** *Quercus pseudomyrsinifolia* (Fagaceae).

**Syn.:** *Phenacaspis rotunda* Takahashi, 1935; *Chionaspis rotunda* (Takahashi 1935).

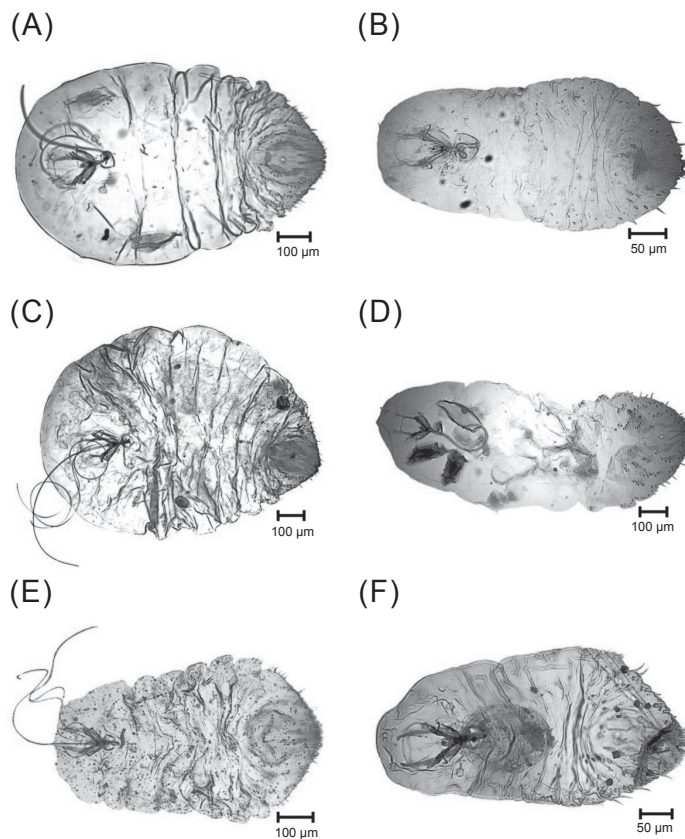
**Note:** Holotype, female [collected from Taiwan: Takao, Heito-Gun, Mutosan, on *Quercus pseudomyrsinifolia*, 23-III-1934, by R. Takahashi (#39-5-3-1)].

**Table 1.** A check list of the old name, current name and Chinese name of collection localities included in the paper.

Old name	Current name	Chinese name
Botel Tobago	Taitung: Lanyu	台東：蘭嶼
Chikushiko	Taipei: Zhuzihu	台北：竹子湖
Chippon	Taitung: Zhiben (Chihpen)	台東：知本
Chipposan	Taitung: Zhiben Mountain	台東：知本山
Churei	Yilan: Chungling	宜蘭：中嶺
Chushinron near Rokki	Kaohsiung: Paoshan near Liouguei	高雄：寶山 近 六龜
Daichikko	Taitung: Dazhu	台東：大竹
Garambi, Garanbi	Pingtung: Eluanbi	屏東：鵝鑾鼻
Habon	Nantou: Holuan	南投：合巒
Heito	Pingtung	屏東
Hichiseizan, Hichiseisan	Taipei: Qixing Mountain (Chihsingshan)	台北：七星山
Hinode	Kaohsiung: Rizhong	高雄：旗山：日中
Hokuto	Taipei: Beitou	台北：北投
Hori, Horin	Nantou: Puli	南投：埔里
Hsintien	New Taipei City: Xindian	新北市：新店
Itabashi	New Taipei City: Banqiao	新北市：板橋
Kaede	Taitung: Fenglin Bridge	台東：海端：楓林橋
Kaho	Taoyuan: Hsiapu	桃園：下埔
Kakayo, Kakayom	Taitung: Jiadai (Chiachiadai)	台東：嘉代 (嘉嘉代)
Kanaron, Kanoron	Taitung: Jinlun (Chinlun)	台東：金崙
Kanshirei	Tainan: Guanziling (Kuantyiling)	台南：關子嶺
Karenko	Hualien	花蓮
Kontei	Pingtung: Kending	屏東：墾丁
Koshun	Pingtung: Hengchun	屏東：恆春
Kotosho	Taitung: Lanyu	台東：蘭嶼
Kuraru	Pingtung: Sheding	屏東：社頂
Kussha	Yilan: Kuochia	宜蘭：庫霞
Maruyama	Taipei: Yuanshan	台北：圓山
Murorafu, Muroruafu, Mururoafu	Yilan: Jialuo Mountain (Chialoshan)	宜蘭：加羅山
Mutosan	Pingtung: Wutoushan	屏東：霧頭山
Oiwake	Taitung: Zhuifen (Chuifen)	台東：追分
Piyahau	Yilan: Bihou (Pihau)	宜蘭：碧候
Raisha	Pingtung: Laiyi	屏東：來義
Riran	Taitung: Lilong	台東：關山：里龍
Sankyo near Taihoku	New Taipei City: Sansia near Taipei	新北市：三峽 近 台北
Sekinon	New Taipei City: Shimen	新北市：石門
Sekitei	New Taipei City: Shiding (Shihding)	新北市：石碇
Shinten	New Taipei City: Xindian (Sindian)	新北市：新店
Shin-Taiheizan	Yilan: Taiping Mountain (Taipingshan)	宜蘭：太平山
Shirin	Taipei: Shilin	台北：士林
Sozan	Taipei: Yangmingshan	台北：陽明山

**Table 1.** A check list of the old name, current name and Chinese name of collection localities included in the paper. (continued)

Old name	Current name	Chinese name
Suisha	Nantou: Shuishe	南投：魚池：水社
Suo	Yilan: Su'ao	宜蘭：蘇澳
Taichu	Taichung	台中
Taiheizan, Taihezan, Taiheisan	Yilan: Taiping Mountain (Taipingshan)	宜蘭：太平山
Taihoku, Taipei	Taipei	台北
Tainan	Tainan	台南
Takao Takaoshu	Kaohsiung	高雄
Tamsui Tansui	New Taipei City: Danshui (Danshuei)	新北市：淡水

**Fig. 1.** (A) *Chionaspis cinnamomicola* (Takahashi 1935); (B) *Chionaspis lithocarpicola* Takahashi, 1942; (C) *Chionaspis machilicola* (Takahashi 1935); (D) *Chionaspis rotunda* (Takahashi 1935); (E) *Chionaspis salicis* (Linnaeus 1758); and (F) *Chionaspis sozanica* Takahashi, 1933.***Chionaspis salicis* (Linnaeus 1758)** (Fig. 1E)

(Linnaeus 1758; Chou 1982; Ben-Dov &amp; Miller 2013)

**(1) Original spelling on label:** *Chionaspisalni* var. *hokkaidensis* Takah. (2 slides)**Distribution:** Japan (Hokkaido: Sapporo).**(2) Original spelling on label:** *Chionaspis salicis* L. (2 slides)**Distribution:** Turkey (Angora).

**(3) Original spelling on label:** *Chionaspis salicis-niger* Walsh. (2 slides)

**Distribution:** Russia (Saghalien: Horo).

**Host plant:** *Alnus hirsuta* (Betulaceae); *Salix* sp. (Salicaceae).

**Syn.:** *Coccus salicis* Linnaeus, 1758; *Coccus cryptogamus* Dalman, 1826; *Aspidiotus salicis* (Linnaeus 1758); *Aspidiotus Populi* Baerensprung, 1849; *Aspidiotus minimus* Baerensprung, 1849; *Diaspis nivea* Bremi, 1849; *Aspidiotus saliceti* Bouché, 1851; *Aspidiotus Vaccinii* Bouché, 1851; *Aspidiotus salicis-nigrae* Walsh, 1868; *Mytilaspis Maquarti* Targioni Tozzetti, 1868; *Mytilaspis cryptogama* (Dalman 1826); *Chionaspis aceris* Signoret, 1869; *Chionaspis alni* Signoret, 1869; *Chionaspis fraxini* Signoret, 1869; *Chionaspis vaccinii* (Linnaeus 1758); *Mytilaspis salicis* LeBaron, 1872; *Diaspis salicicorticis* Bessey, 1874; *Lecanium Vaccinii* (Bouché 1851); *Aspidiotus mytilus* Glaser, 1877; *Coccus (Aspidiotus) mytilus* (Glaser 1877); *Chionaspis sorbi* Douglas, 1893; *Chionaspis ortholobis bruneri* Cockerell, 1898; *Chionaspis salicis-nigrae* (Linnaeus 1758); *Aspidiotus cryptogamus* (Dalman 1826); *Chionaspis salicis* Archangelskaya, 1937; *Aspidiotus aceris* (Signoret 1869); *Aspidiotus alni* (Signoret 1869); *Chionaspis minimus* (Baerensprung 1849); *Aspidiotus salicifex* (Amyot 1847); *Chionaspis salicifex* (Amyot 1847); *Chionaspis montana* Borchsenius, 1949; *Chionaspis polypora* Borchsenius, 1949; *Chionaspis caucasioni* Hadzibejli, 1963.

***Chionaspis sozanica* Takahashi, 1933** (Fig. 1F) (Takahashi 1933; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Chionaspis soza-*

*nica* Takah. (3 slides)

**Distribution:** Taiwan (Taihoku: Sozan).

**Host plant:** *Acer* sp. (Aceraceae).

**Syn.:** *Trichomytilus sozanica* (Takahashi 1933); *Phenacaspis sozanica* (Takahashi 1933).

**Note:** Syntypes, female [collected from Taiwan: Sozan, near Taihoku, on *Acer* sp., 03-VII-1932, by R. Takahashi (#24-3-2-1-3)].

***Chionaspis trochodendri* (Takahashi 1936)** (Fig. 2A) (Takahashi 1936b; Takagi 1969; Chou 1982; Ben-Dov & Miller 2013)

**Original spelling on label:** *Phenacaspis trochodendri* Takah. (4 slides)

**Distribution:** Taiwan (Taihoku: Chikushiko, Sozan).

**Host plant:** *Trochodendron aralioides*, *Trochodendron* sp. (Trochodendraceae).

**Syn.:** *Phenacaspis trochodendri* Takahashi, 1936.

**Note:** Syntypes, female [collected from Taiwan: Chikushiko, near Sozan, Hichiseisan, Rarasan, near Urai, on *Trochodendron aralioides*, 25-XII-1935, by R. Takahashi (#40-1-1-1-40-1-1-4)].

***Duplachionaspis graminis* (Green 1896)** (Fig. 2B) (Green 1896; Ben-Dov & Miller 2013)

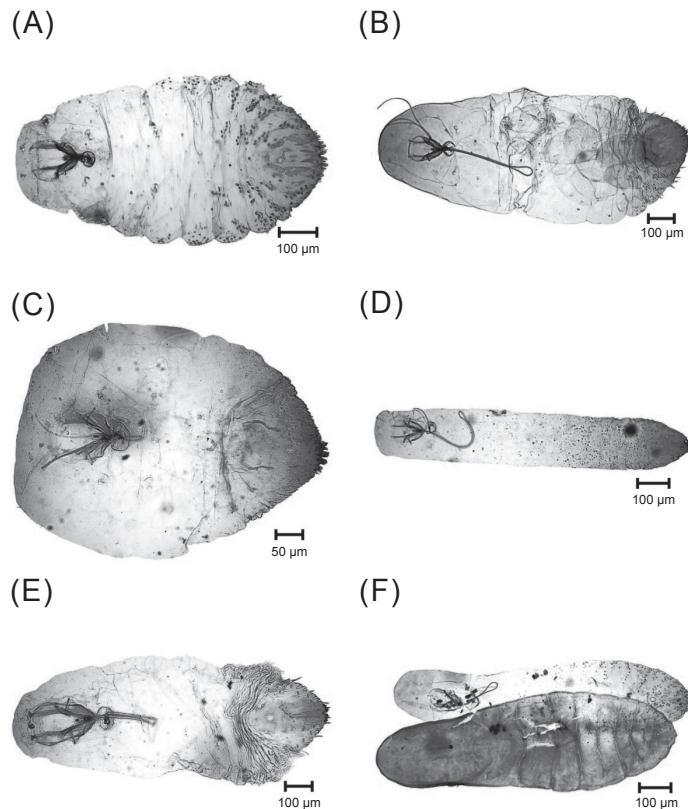
**Original spelling on label:** *Chionaspis graminis* Green. (8 slides)

**Distribution:** Taiwan (Taichu; Taihoku: Shint-en, Taihoku, Tansui).

**Host plant:** *Miscanthus sinensis*, Poaceae, *Spinifex* sp. (Poaceae).

**Syn.:** *Chionaspis graminis* Green, 1896; *Trichomytilus graminis* (Green 1896); *Poliaspis graminis* (Green 1896).

***Duplachionaspis natalensis* (Maskell 1896)** (Fig. 2C) (Tao 1989; Ben-Dov & Miller 2013)



**Fig. 2.** (A) *Chionaspis trochodendri* (Takahashi 1936); (B) *Duplachionaspis graminis* (Green 1896); (C) *Duplachionaspis natalensis* (Maskell 1896); (D) *Greenaspis bambusifoliae* (Takahashi 1930); (E) *Greenaspis elongata* (Green 1896); and (F) *Kuwanaspis annandalei* (Green 1919).

**Original spelling on label:** *Chionaspis stanotophri* Cooley. (5 slides)

**Distribution:** Taiwan (Taihoku; Tainan; Taito; Kanoron).

**Host plant:** *Phragmites* sp., Poaceae, *Saccharum officinarum* (Poaceae).

**Syn.:** *Chionaspis spartinae natalensis* Maskell, 1896; *Chionaspis stanotophri* Cooley, 1899; *Chionaspis natalensis* Maskell, 1896; *Chionaspis (Phenacaspis) natalensis* (Maskell 1896); *Chionaspis graminis aegyptiaca* Hall, 1923; *Trichomytilus stanotophri* (Cooley 1899); *Polyaspis stanotophri* (Cooley 1899); *Poliaspis stanotophri* (Cooley 1899); *Duplachionaspis stanotophri* (Cooley

1899); *Duplachionaspis herbicola* Mamet, 1959.

***Greenaspis bambusifoliae* (Takahashi 1930)** (Fig. 2D) (Takahashi 1930; Tao 1989; Wong *et al.* 1999; Ben-Dov & Miller 2013)

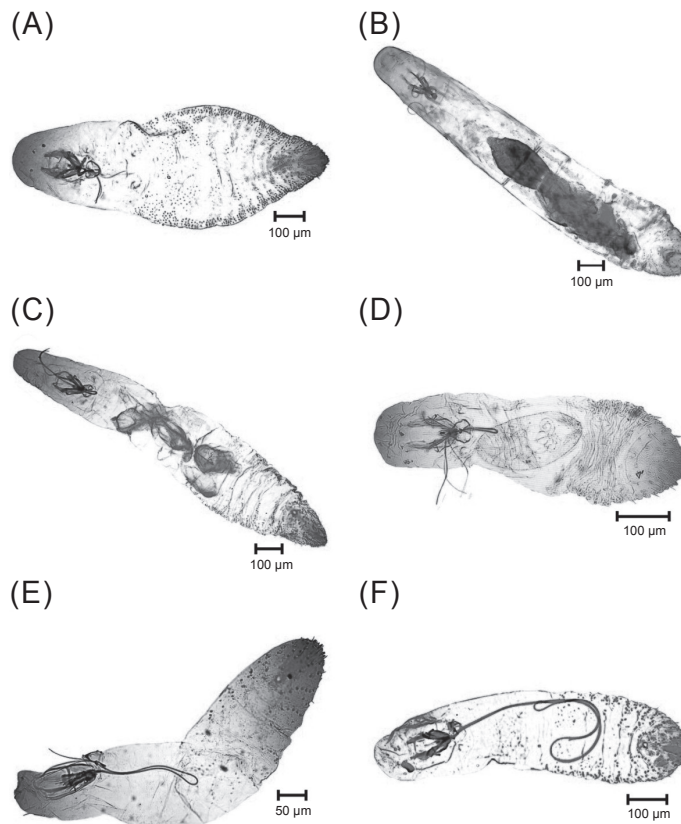
**Original spelling on label:** *Chionaspis bambusifoliae* Takahashi. (11 slides)

**Distribution:** Taiwan (Nantou: Hori, Suisha; Taihoku).

**Host plant:** *Bambusa* sp. (Poaceae).

**Syn.:** *Chionaspis bambusifoliae* Takahashi, 1930.

**Note:** Syntypes, female [collected from Taiwan: Taihoku, on *Bambusa* sp., I-1930, by R. Takahashi (#23-2-2-1-2、#23-2-2-4-5)].

***Greenaspis elongata* (Green 1896)** (Fig. 2E)(Green 1896; Tao 1989; Wong *et al.* 1999; Ben-Dov & Miller 2013)(1) **Original spelling on label:** *Chionaspis elongata* (Green 1896) (15 slides)**Distribution:** Taiwan (Taihoku: Hichiseizan, Hokuto, Itabashi, Maruyama, Sozan, Taihoku; Taito: Riran).(2) **Original spelling on label:** *Greenaspis elongata* Green, 1896 (1 slide)**Distribution:** Malaysia (Malaya: Penang).**Host plant:** *Bambusa* sp. (Poaceae).**Syn.:** *Mytilaspis elongata* Green, 1896; *Chionaspis elongata* (Green 1896); *Trichomytilus elongatus* (Green 1896); *Greenaspis yunnanensis* Ferris, 1952.***Kuwanaspis annandalei* (Green 1919)** (Fig. 2F) (Green 1919; Ben-Dov & Miller 2013)**Original spelling on label:** *Chionaspis annandalei* Green. (1 slide)**Distribution:** Taiwan (Giran: Suo).**Host plant:** Poaceae.**Syn.:** *Chionaspis annandalei* Green, 1919.***Kuwanaspis arundinariae* Takahashi, 1938** (Fig. 3A) (Takahashi 1938; Tao 1989; Ben-Dov & Miller 2013)**Original spelling on label:** *Kuwanaspis arundinariae* Takah. (4 slides)**Distribution:** Taiwan (Giran: Taiheizan).**Host plant:** *Arundinaria* sp. (Poaceae).**Syn.:** *Nikkoaspis arundinariae* (Takahashi 1938).**Note:** Syntypes, female [collected from Tai-

**Fig. 3.** (A) *Kuwanaspis arundinariae* Takahashi, 1938; (B) *Kuwanaspis bambusifoliae* (Takahashi 1934); (C) *Kuwanaspis elongata* (Takahashi 1930); (D) *Kuwanaspis linearis* (Green 1922); (E) *Kuwanaspis neolinearis* (Takahashi 1930); and (F) *Kuwanaspis phragmitis* (Takahashi 1931).

wan: Taiheizan, on *Arundinaria* sp., 14-X-1937 by R. Takahashi (#31-1-1-1-4)].

***Kuwanaspis bambusifoliae* (Takahashi 1934)**

(Fig. 3B) (Takahashi 1934; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Tsukushiaspis bambusifoliae* Takah. (2 slides)

**Distribution:** Taiwan (Taihoku: Hichiseizan).

**Host plant:** *Bambusa* sp. (Poaceae).

**Syn.:** *Tsukushiaspis bambusifoliae* Takahashi, 1934.

**Note:** Syntypes, female [collected from Taiwan: Taihoku, on Mt. Hichisei, on *Bambusa* sp., 27-III-1932 and 23-XI-1933, by R. Takahashi (#31-1-2-4-5)].

***Kuwanaspis elongata* (Takahashi 1930)** (Fig. 3C)

(Takahashi 1930; Tao 1989; Wong *et al.* 1999; Ben-Dov & Miller 2013)

**Original spelling on label:** *Tsukushiaspis elongata* Takahashi. (6 slides)

**Distribution:** Taiwan (Nantou: Suisha; Taihoku: Maruyama).

**Host plant:** *Bambusa* sp., *Dendrocalamus* sp. (Poaceae).

**Syn.:** *Tsukushiaspis elongata* Takahashi, 1930.

**Note:** Syntypes, female [collected from Taiwan: Suisha, on *Bambusa* sp., 2-X-1929, by R. Takahashi (#31-1-3-1-5)].

***Kuwanaspis linearis* (Green 1922)** (Fig. 3D)

(Takahashi 1942a; Chou 1982; Ben-Dov & Miller 2013)

**Original spelling on label:** *Kuwanaspis linearis* Green. (3 slides)

**Distribution:** Malaysia (Malaya: Kuala Lumpur); Singapore.

**Host plant:** *Bambusa* sp. (Poaceae).

**Syn.:** *Chionaspis linearis* Green, 1922; *Tsukushiaspis linearis* (Green 1922).

***Kuwanaspis neolinearis* (Takahashi 1930)**

(Fig. 3E) (Takahashi 1930, 1942a; Tao & Wong 1982; Tao 1989; Wong *et al.* 1999; Ben-Dov & Miller 2013)

**(1) Original spelling on label:** *Chionaspis*

*neolinearis* Takah. (2 slides)

**Distribution:** Taiwan (Nantou: Suisha).

**Note:** Syntype, female [collected from Taiwan: Taihoku, on *Bambusa* sp., 02-X-1929, by R. Takahashi (#23-5-1-2)].

**(2) Original spelling on label:** *Tsukushiaspis neolinearis* Takah. (12 slides)

**Distribution:** Singapore; Taiwan (Giran: Piyahau; Heito: Heito, Kuraru; Hualien: Karenko; Taihoku).

**Host plant:** *Bambusa* sp. (Poaceae).

**Syn.:** *Tsukushiaspis neolinearis* Takahashi, 1930; *Chuaspsis neolinearis* (Takahashi 1930).

***Kuwanaspis phragmitis* (Takahashi 1931)**

(Fig. 3F) (Takahashi 1931; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Tsukushiaspis phragmitis* Takahashi. (6 slides)

**Distribution:** Taiwan (Giran: Suo; Taihoku: Sekinon, Tamsui; Taito: Chippon, Daichikko)

**Host plant:** *Artemisia feddei* (Compositae); *Phragmites* sp. (Poaceae).

**Syn.:** *Tsukushiaspis phragmitis* Takahashi, 1931.

**Note:** Syntypes, female [collected from Taiwan: Suo, Chippon, Daichikko near Daibu, on *Phragmites* sp., 30-XII-1924, by R. Takahashi (#31-3-4-1-2)].

***Kuwanaspis pseudoleucaspis* (Kuwana 1902)**

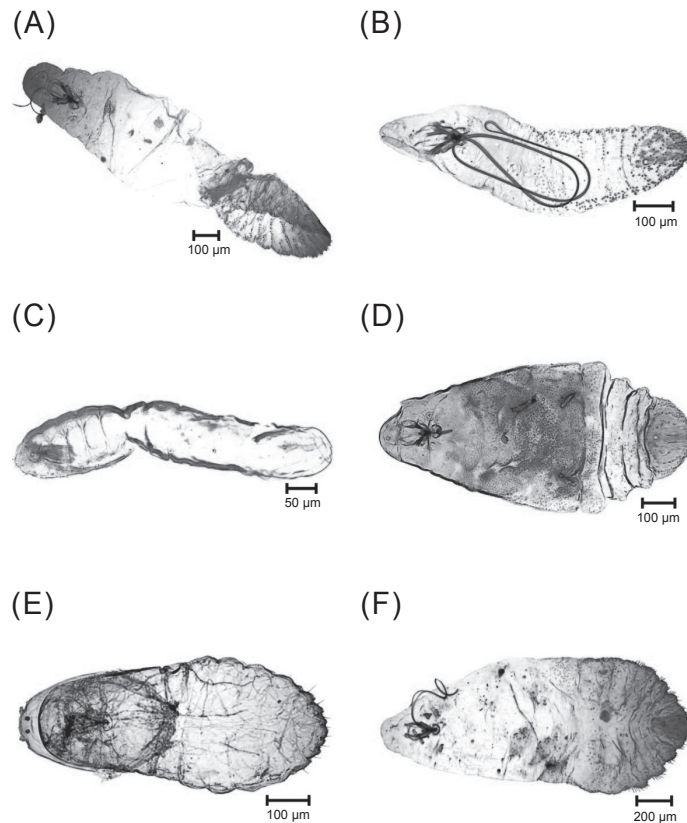
(Fig. 4A) (Kuwana 1902; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Tsukushiaspis bambusae* Kuwana. (2 slides)

**Distribution:** Taiwan (Heito: Raisha).

**Host plant:** *Bambusa* sp. (Poaceae).

**Syn.:** *Leucaspis bambusae* Kuwana, 1902; *Lepidosaphes bambusae* (Kuwana 1902); *Mytilaspis bambusae* (Kuwana 1902); *Chionaspis pseudoleucaspis* (Kuwana 1902); *Tsukushiaspis bam-*



**Fig. 4.** (A) *Kuwanaspis pseudoleucaspis* (Kuwana 1902); (B) *Kuwanaspis suishana* (Takahashi 1930); (C) *Kuwanaspis vermiformis* (Takahashi 1931); (D) *Ledaspis atalantiae* (Takahashi 1933); (E) *Neoquernaspis lithocarpi* (Takahashi 1931); and (F) *Nikkoaspis formosana* (Takahashi 1930).

*busae* (Kuwana 1902); *Tsukushiaspis pseudoleucaspis* (Kuwana 1902); *Lepidosaphoides bambusae* (Kuwana 1902); *Kuwanaspis bambusae* (Kuwana 1902).

***Kuwanaspis suishana* (Takahashi 1930)** (Fig. 4B) (Takahashi 1930, 1942b; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Tsukushiaspis shuishanus* Tak. (15 slides)

**Distribution:** Taiwan (Hualien: Karenko; Nantou: Suisha; Taihoku: Maruyama, Taihoku); Thailand (Chingmai).

**Host plant:** *Bambusa* sp., *Bambusa stenostachya*. (Poaceae).

**Syn.:** *Tsukushiaspis suishanus* Takahashi, 1930; *Kuwanaspis suishanus* (Takahashi 1930).

***Kuwanaspis vermiformis* (Takahashi 1931)** (Fig. 4C) (Takahashi 1931, Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Tsukushiaspis vermiformis* Takah. (4 slides)

**Distribution:** Taiwan (Taihoku: Maruyama, Taihoku).

**Host plant:** *Bambusa* sp., *Bambusa stenostachya*, *Dendrocalamus latiflorus*. (Poaceae).

**Syn.:** *Tsukushiaspis vermiformis* Takahashi, 1931.

**Note:** Syntypes, female [collected from Taiwan: Taihoku, Tosei, on *Bambusa stenostachya*, *Bambusa* sp., *Dendrocalamus latiflorus* (#31-5-3-1-3)].

***Ledaspis atalantiae* (Takahashi 1933)** (Fig. 4D) (Takahashi 1933; Ben-Dov & Miller 2013)

(1) **Original spelling on label:** *Chionaspis atalantiae* Takah. (7 slides)

**Distribution:** Taiwan (Heito: Kontei; Takao).

**Note:** Syntypes, female [collected from Taiwan: Kontei, near Koshun, on *Atalantia lilocularis*, 24-V-1932, by R. Takahashi (#23-1-2-1-23-1-3-1)].

(2) **Original spelling on label:** *Dinaspis atalantiae* Takah. (4 slides)

**Distribution:** Taiwan (Heito: Garanbi).

**Host plant:** *Atalantia lilocularis*, *Severinia buxifolia* (Rutaceae).

**Syn.:** *Chionaspis atalantiae* Takahashi, 1933; *Trichomytilus atalantiae* (Takahashi 1933); *Phenacaspis atalantiae* (Takahashi 1933); *Pseudaulacaspis atalantiae* (Takahashi 1933).

***Neoquernaspis lithocarpi* (Takahashi 1931)** (Fig. 4E) (Takahashi 1931; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Pinnaspis lithocarpi* Takah. (6 slides)

**Distribution:** Taiwan (Nantou: Hori, Suisha).

**Host plant:** *Lithocarpus* sp., *Pasania ternaticupula*. (Fagaceae)

**Syn.:** *Pinnaspis lithocarpi* Takahashi, 1931; *Quernaspis lithocarpi* (Takahashi 1931).

**Note:** Syntypes, female [collected from Taiwan: Suisha, on *Lithocarpus* sp., 23-XI-1929, by R. Takahashi (#41-3-3-1-2)].

***Nikkoaspis formosana* (Takahashi 1930)** (Fig. 4F) (Takahashi 1930, 1934; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Tsukushiaspis formosanus* Takah. (5 slides)

**Distribution:** Taiwan (Nantou: Suisha).

**Host plant:** *Bambusa* sp. (Poaceae).

**Syn.:** *Tsukushiaspis formosanus* Takahashi, 1930; *Kuwanaspis formosana* (Taka-

hashi 1930).

**Note:** Syntypes, female [collected from Taiwan: Suisha, on *Bambusa* sp., 23-XI-1929 (#31-2-1-1-2) and 26-I-1930 (#31-2-1-4-5) by R. Takahashi].

***Nikkoaspis hichiseisana* (Takahashi 1934)** (Fig. 5A) (Takahashi 1934; Takagi 1961; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Tsukushiaspis hichiseisana* Takah. (8 slides)

**Distribution:** Taiwan (Taihoku: Hichiseizan).

**Host plant:** *Bambusa* sp. (Poaceae).

**Syn.:** *Tsukushiaspis hichiseisana* Takahashi, 1934; *Kuwanaspis hichiseisana* (Takahashi, 1934).

**Note:** Syntypes, female [collected from Taiwan: Mt. Hichisei, near Taihoku, on *Bambusa* sp., 23-IX-1933 by R. Takahashi (#31-2-2-1-31-2-3-3)].

***Nikkoaspis sasae* (Takahashi 1936)** (Fig. 5B) (Takahashi 1936a; Takagi 1961; Chou 1982; Ben-Dov & Miller 2013)

**Original spelling on label:** *Tsukushiaspis sasae* Tak. (3 slides)

**TARI specimens Distribution:** China (Zhejiang: Hangzhou, Huchow).

**Host plant:** *Bambusa* sp., *Sasa* sp. (Poaceae).

**Syn.:** *Tsukushiaspis sasae* Takahashi, 1936; *Kuwanaspis sasae* (Takahashi 1936).

**Note:** Syntypes, female [collected from China: Zhejiang, Huchow, on *Sasa* sp., VIII-1935, by S.P. Chu (#31-4-2-1-2)].

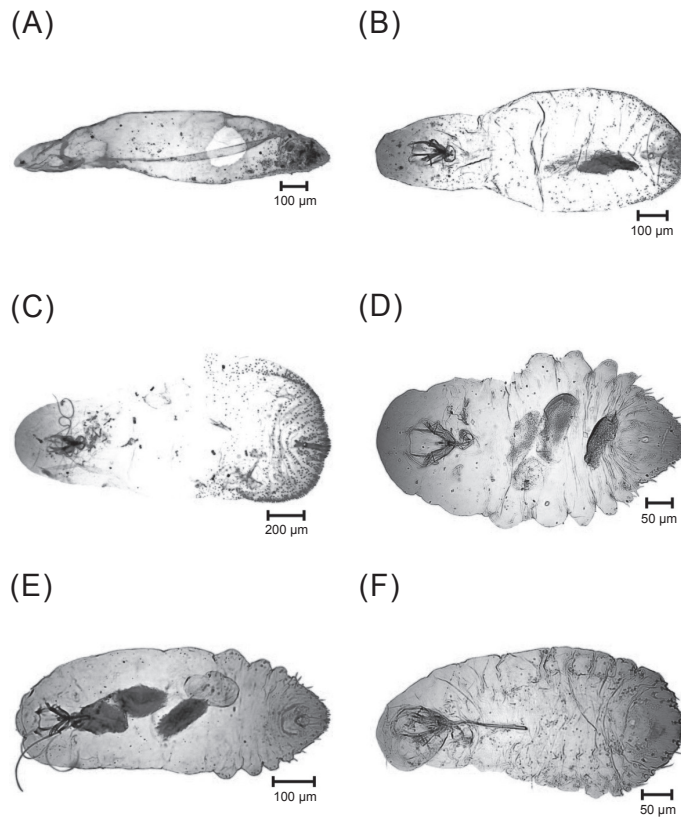
***Nikkoaspis shiranensis* Kuwana, 1928** (Fig. 5C) (Takahashi 1934; Ben-Dov & Miller 2013)

**Original spelling on label:** *Kuwanaspis shiranensis* Kuwana. (1 slide)

**Distribution:** Japan (Hokkaido: Sapporo).

**Host plant:** *Sasa veitchii* (Poaceae).

**Syn.:** *Tsukushiaspis shiranensis* (Kuwana 1928); *Kuwanaspis shiranensis* (Kuwana 1928).



**Fig. 5.** (A) *Nikkoaspis hichiseisana* (Takahashi 1934); (B) *Nikkoaspis sasae* (Takahashi 1936); (C) *Nikkoaspis shiranensis* Kuwana, 1928; (D) *Pinnaspis aspidistrae aspidistrae* (Signoret 1869); (E) *Pinnaspis javanensis* (Kuwana & Muramatsu 1931); and (F) *Pinnaspis siamensis* Takahashi, 1942.

***Pinnaspis aspidistrae aspidistrae* (Signoret 1869)** (Fig. 5D) (Lindinger 1912; Tao 1989; Wong *et al.* 1999; Ben-Dov & Miller 2013)

(1) **Original spelling on label:** *Hemi-Chionaspis aspidistrae* Signt. (1 slide)

**Distribution:** Taiwan (Taihoku).

(2) **Original spelling on label:** *Pinnaspis aspidistrae* Signt. (44 slides)

**Distribution:** China (Foochow); Fiji; Japan (Kyushu: Kagoshima); Okinawa; Malaysia (Malaya: Bukit Asahan, G. Batu Brinchang, Kuala Lumpur, Serdang, Taiping); Taiwan (Giran: Churei; Heito: Garanbi; Hualien: Karenko; Nantou: Habon Near Urai, Suisha; Taihoku: Hinokiyama, Shirin, Taihoku; Tainan; Taito: Kaede,

Kakayo, Oiwake; Takaoshu: Hinode); Thailand (Ubon).

**Host plant:** *Asplenium* sp. (Aspleniaceae); *Citrus* sp. (Rutaceae); *Cyathea* sp., *Cycas* sp. (Cycadaceae); *Cymbidium ensifolium*, Orchid (Orchidaceae), *Daemonorops* sp., *Elaeis guineensis* (Arecaceae); *Diospyros* sp. (Ebenaceae); *Elatostema* sp. (Urticaceae); *Fern* sp. (Psilotaceae); *Ficus* sp., *Ficus pumila*, *Ficus retusa*, *Ficus tinctoria* (Moraceae); *Hydrangea* sp. (Saxifragaceae); *Pandanus* sp., *Pandanus atrocarpus* (Pandananaceae); *Podocarpus* sp. (Podocarpaceae), *Rhododendron probably jasminiflorum* (Ericaceae); *Smilax* sp. (Smi-

lacaceae); *Styrax* sp. (Styracaceae);  
*Viburnum* sp. (Caprifoliaceae).

**Syn.:** *Chionaspis aspidistrae* Signoret, 1869; *Chionaspis brasiliensis* Signoret, 1869; *Chionaspis latus* Cockerell, 1896; *Hemichionaspis aspidistrae brasiliensis* (Signoret 1869); *Hemichionaspis aspidistrae lata* (Signoret 1869); *Chionaspis (Pinnaspis) aspidistrae* (Signoret 1869); *Pinnaspis (Hemichionaspis) aspidistrae* (Signoret 1869); *Pinnaspis brasiliensis* (Signoret 1869); *Pinnaspis ophiopogonis* Takahashi, 1952; *Pinnaspis caricis* Ferris, 1957.

***Pinnaspis javanensis* (Kuwana 1931)** (Fig. 5E) (Takagi 1985; Ben-Dov & Miller 2013)

**Original spelling on label:** *Pinnaspis javanensis* Kuwana. (1 slide)

**Distribution:** Malaysia (Malaya: Sunge Buloh).

**Host plant:** *Hevea* sp. (Euphorbiaceae).

**Syn.:** *Chionaspis javanensis* Kuwana, 1931.

***Pinnaspis siamensis* Takahashi, 1942** (Fig. 5F) (Takahashi 1942b; Ben-Dov & Miller 2013)

**Original spelling on label:** *Pinnaspis lithocarpus* var. *siamensis* Tak. (8 slides)

**Distribution:** Thailand (Mt. Sutep; Siam).

**Syn.:** *Pinnaspis lithocarpus siamensis* Takahashi, 1942; *Quernaspis siamensis* (Takahashi 1942).

**Host plant:** *Lithocarpus* sp. (Fagaceae)

**Note:** Syntypes, female [collected from Thailand: Mt. Sutep, on *Lithocarpus* sp. 09-IV-1940, by R. Takahashi (#41-4-1-1-41-4-2-3)].

***Pinnaspis strachani* (Cooley 1899)** (Fig. 6A) (Tao 1989; Ben-Dov & Miller 2013)

**(1) Original spelling on label:** *Hemichionas-*

*pis minor* Mask. (1 slide)

**Distribution:** Taiwan (Taihoku: Taihoku).

**(2) Original spelling on label:** *Pinnaspis minor* Mask. (12 slides)

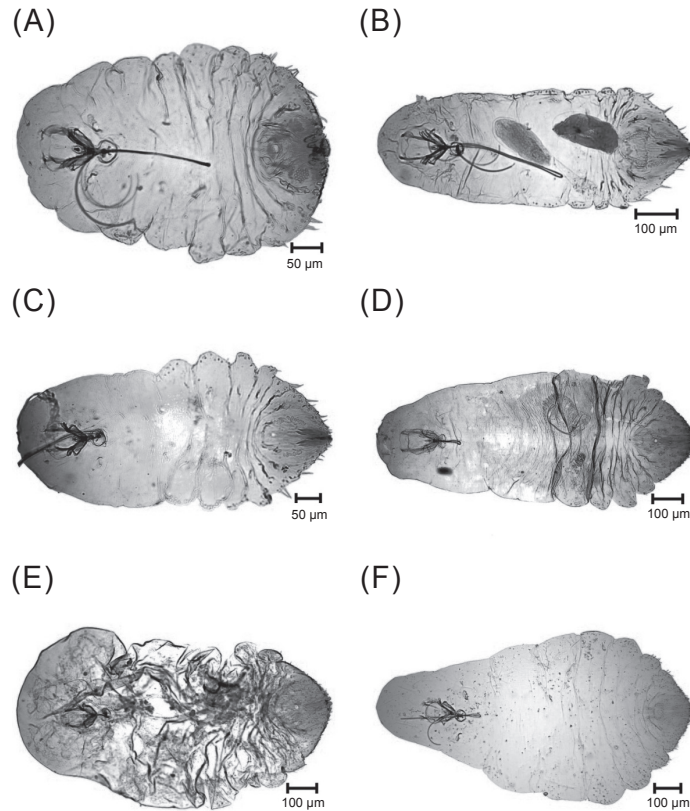
**Distribution:** French Polynesia (Tahiti); Micronesia (Caroline Is.: Ponape; Kolonia); Taiwan (Heito: Koshun; Taihoku: Hichiseizan; Taoyuan: Kaho); Thailand (Bangkok).

**Host plant:** *Chelidonium* sp. (Papaveraceae); *Cocos nucifera* (Arecaceae); *Eurya* sp. (Theaceae); *Planchonella* sp. (Sapotaceae); *Solanum* sp. (Solanaceae).

**Syn.:** *Hemichionaspis minor strachani* Cooley, 1899; *Hemichionaspis Marchali* Cockerell, 1902; *Hemichionaspis townsendi* Cockerell, 1905; *Chionaspis (Hemichionaspis) aspidistrae gossypii* Newstead, 1908; *Hemichionaspis aspidistrae gossypii* (Newstead 1906); *Hemichionaspis proxima* Leonardi, 1914; *Hemichionaspis (Pinnaspis) marchali* (Cockerell 1902); *Pinnaspis minor* (Cooley 1899); *Pinnaspis minor strachani* (Cooley 1899); *Pinnaspis proxima* (Leonardi 1914); *Pinnaspis (Hemichionaspis) aspidistrae gossypii* (Newstead 1908); *Pinnaspis temporaria* Ferris, 1942; *Pinnaspis aspidistrae gossypii* (Newstead 1908); *Pinnaspis gossypii* (Newstead 1908); *Pinnaspis marchali* (Cockerell 1902); *Hemichionaspis gossypii* (Newstead 1908); *Chionaspis (Hemichionaspis) gossypii* (Newstead 1908); *Pinnaspis townsendi* (Cockerell 1905).

***Pinnaspis theae* (Maskell 1891)** (Fig. 6B) (Takahashi 1929; Tao 1989; Ben-Dov & Miller 2013)

**Original spelling on label:** *Pinnaspis theae*



**Fig. 6.** (A) *Pinnaspis strachani* (Cooley 1899); (B) *Pinnaspis theae* (Maskell 1891); (C) *Pinnaspis uniloba* (Kuwana 1909); (D) *Unaspis acuminata* (Green 1896); (E) *Unaspis citri* (Comstock 1883); and (F) *Unaspis euconymi* (Comstock 1881).

Mask. (3 slides)

**Distribution:** Taiwan (Heito: Koshun; Tainan: Kanshirei; Takao).

**Host plant:** *Cleyera japonica*, *Thea japonica*, *Thea* sp. (Theaceae).

**Syn.:** *Chionaspis theae* Maskell, 1891; *Aspidiotus theae* (Maskell 1891); *Chionaspis aspidistrae theae* (Maskell 1891); *Hemichionaspis theae* (Maskell 1891); *Chionaspis separata* Green, 1900; *Hemichionaspis separata* (Green 1900); *Trichomytilus theae* (Maskell 1891); *Pinnaspis separata* (Green 1900).

***Pinnaspis uniloba* (Kuwana 1909)** (Fig. 6C)  
(Ferris 1921; Takahashi 1929; Tao 1989; Wong *et al.* 1999; Ben-Dov & Miller 2013)

(1) **Original spelling on label:** *Pinnaspis simplex* Ferris. (3 slides)

**Distribution:** Taiwan (Tainan: Kanshirei, Sekitei).

(2) **Original spelling on label:** *Pinnaspis uniloba* Kuwana. (1 slide)

**Distribution:** Taiwan (Taihoku: Sozan).

**Host plant:** *Camellia* sp., *Cleyera japonica* (Theaceae).

**Syn.:** *Mytilaspis* (*Lepidosaphes*) *uniloba* Kuwana, 1909; *Lepidosaphes uniloba* (Kuwana 1909); *Jaapia uniloba* (Kuwana 1909); *Lepidaspidis uniloba* (Kuwana 1909); *Pinnaspis simplex* Ferris, 1921.

***Unaspis acuminata* (Green 1896)** (Fig. 6D)

(Green 1896; Chou 1982; Ben-Dov & Miller 2013)

**Original spelling on label:** *Unaspis acuminata* Green. (2 slides)

**Distribution:** Thailand (Chiengsen; Mt. Sutep).

**Host plant:** *Mangifera indica* (Anacardiaceae).

**Syn.:** *Chionaspis acuminata* Green, 1896.

*Unaspis citri* (Comstock 1883) (Fig. 6E) (Chou 1982; Ben-Dov & Miller 2013)

(1) **Original spelling on label:** *Dinaspis veitchi* Green et Laing. (1 slide)

**Distribution:** Papua New Guinea (Admiralty Isls.: Manus).

(2) **Original spelling on label:** *Prontaspis citri* Comst. (1 slide)

**Distribution:** Malaysia (Malaya).

**Host plant:** *Citrus* sp. (Rutaceae).

**Syn.:** *Chionaspis citri* Comstock, 1883; *Howardia citri* (Comstock 1883); *Chionaspis citricola* (Comstock 1883); *Dinaspis annae* Malenotti, 1916; *Prontaspis citri* (Comstock 1883); *Dinaspis veitchi* Green & Laing, 1923; *Trichomytilus veitchi*

(Green & Laing 1923); *Diaspis annae* (Malenotti 1916); *Chionaspis annae* (Malenotti 1916).

*Unaspis euonymi* (Comstock 1881) (Fig. 6F) (Chou 1982; Ben-Dov & Miller 2013)

**Original spelling on label:** *Unaspis nakayamai* Takah. et Kanda. (1 slide)

**Distribution:** Korea (Suigen).

**Host plant:** *Ilex serrata* (Aquifoliaceae).

**Syn.:** *Chionaspis euonymi* Comstock, 1881; *Unaspis euonymi* (Comstock 1881); *Unaspis nakayamai* Takahashi & Kanda, 1939.

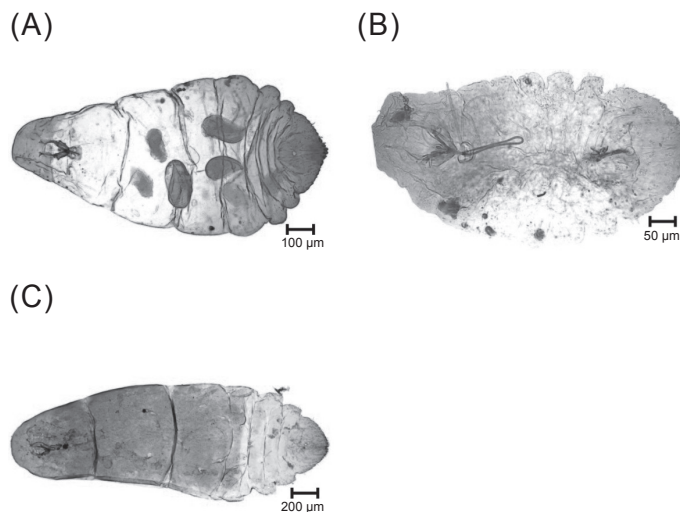
*Unaspis kanoi* (Takahashi 1935) (Fig. 7A) (Takahashi 1935b; Ben-Dov & Miller 2013)

**Original spelling on label:** *Lepidosephas (Coccomytilus) kanoi* Takah. (5 slides)

**Distribution:** Taiwan (Taito: Kotosho).

**Syn.:** *Coccomytilus kanoi* Takahashi, 1935.

**Note:** Syntypes, female [collected from Taiwan: Botel Tobago, on undetermined tree, 1935, by T. Kano (#33-3-4-1-5)].



**Fig. 7.** (A) *Unaspis kanoi* (Takahashi 1935); (B) *Unaspis turpiniae* Takahashi, 1934; and (C) *Unaspis yanonensis* (Kuwana 1923).

***Unaspis turpiniae* Takahashi, 1934** (Fig. 7B)

(Takahashi 1934; Tao 1989; Ben-Dov &amp; Miller 2013)

**Original spelling on label:** *Dinaspis acuminata* var. *turpiniae* Takah. (2 slides)**Distribution:** Taiwan (Giran: Muroruafu).**Host plant:** *Ilex* sp. (Aquifoliaceae).**Syn.:** *Unaspis acuminata turpiniae* Takahashi, 1934; *Chionaspis turpiniae* (Takahashi 1934).***Unaspis yanonensis* (Kuwana 1923)** (Fig. 7C)

(Takahashi &amp; Kanda, 1939; Chou 1982; Ben-Dov &amp; Miller 2013)

**Original spelling on label:** *Prontaspis yanonensis* Kuw. (2 slides)**Distribution:** Taiwan (Taihoku: Sankyo near Taihoku).**Host plant:** *Citrus* sp. (Rutaceae).**Syn.:** *Prontaspis yanonensis* Kuwana, 1923.

## DISCUSSION

Based on the modern taxonomic system, the number of Chionaspinæ species collected and deposited at TARI Insect Collection is 39. The present paper could be a database to set up the online information of scientific name, synonyms, host plants, distribution and digital archives through Digital Insect of TARI website (<http://digiins.tari.gov.tw/>) which will meet the requirement of both basic and applied works and will be helpful to taxonomic researchers, quarantine inspectors and farmers in the future.

## ACKNOWLEDGMENTS

We would like to thank the National Science Council (grant numbers 99-2631-H-055-001 and 100-2631-H-055-001) and Council of Agriculture, Executive Yuan (grant number 102AS-7.1.1-CI-C1) for financial support.

## REFERENCES

Ben-Dov, Y. and D. Miller. 2013. ScaleNet: A database of

the scale insects of the world. (<http://www.sel.barc.usda.gov/scalenet/scalenet.htm>).

- Borchsenius, N. S. 1966. A Catalogue of the Armoured Scale Insects (Diaspidoidea) of the World. Nauka. Moscow & Leningrad. 449 pp. (in Russian)
- Chou, I. 1982. Monograph of the Diaspididae of China. Vol. 1. Shanxi Publishing House of Science and Technology. Shanxi. 195 pp. (in Chinese)
- Chu, Y. I. and T. Yamanaka. 1973. A check list of the present and old name of insect collect localities in Taiwan. *J. Taiwan Mus.* 16:31–72.
- Chu, Y. I. and T. Yamanaka. 1974. A check list of the present and old name of insect collect localities in Taiwan (continued). *J. Taiwan Mus.* 17:51–120.
- Chu, Y. I. and T. Yamanaka. 1975. A check list of the present and old name of insect collect localities in Taiwan (continued). *J. Taiwan Mus.* 17:121–150.
- Ferris, G. F. 1921. Some Coccidae from Eastern Asia. *Bull. Entomol. Res.* 12:211–220.
- Green, E. E. 1896. Catalogue of Coccidae collected in Ceylon. *Indian Mus. Notes* 4:2–10.
- Green, E. E. 1919. Notes on Indian Coccidae of the sub-family Diaspidinae, with description of new species. *Records Indian Mus.* 16:433–449.
- Kuwana, S. I. 1902. Coccidae (scale insects) of Japan. *Proc. Calif. Acad. Sci.* 3:43–98.
- Lindinger, L. 1912. Die Schildläuse (Coccidae) Europas, Nordafrikas und Vorder-Asiens, einschliesslich der Azoren, der Kanaren und Madeiras. Ulmer. Stuttgart. 388 pp. (in German)
- Linnaeus, C. 1758. *Insecta Hemiptera—Coccus*. *Systema naturae. Salvii Holmiae*. Stockholm. 823 pp.
- Takagi, S. 1961. A contribution to the knowledge of the Diaspidini of Japan (Homoptera: Coccoidea). Part II. *Insecta Matsumurana* 24:4–42.
- Takagi, S. 1969. Diaspididae of Taiwan based on material collected in connection with the Japan-U.S. Cooperative science programme, 1965 (Homoptera: Coccoidea). Part I. *Insecta Matsumurana* 32:1–110.
- Takagi, S. 1970. Diaspididae of Taiwan based on material collected in connection with the Japan-U.S. Cooperative Science Programme, 1965 (Homoptera: Coccoidea). Part II. *Insecta Matsumurana* 33:1–142.
- Takagi, S. 1985. The scale insect genus *Chionaspis*; A revised concept (Homoptera: Coccoidea: Diaspididae). *Insecta Matsumurana* (n.s.) 33:1–77.
- Takahashi, R. 1929. Observations on the Coccidae of Formosa. Part I. *Formosa Govt. Res. Inst. Dept. Agric. Rept.* 40. Taihoku. 80 pp.

- Takahashi, R. 1930. Observations on the Coccidae of Formosa. Part II. Formosa Govt. Res. Inst. Dept. Agric. Rept. 43. Taihoku. 45 pp.
- Takahashi, R. 1931. Descriptions of some new Formosan Coccidae. (Rhynchota). Bull. Entomol. Res. 22:211–220.
- Takahashi, R. 1933. Observations on the Coccidae of Formosa. Part III. Formosa Govt. Res. Inst. Dept. Agric. Rept. 60. Taihoku. 64 pp.
- Takahashi, R. 1934. Observations on the Coccidae of Formosa, Part IV. Formosa Govt. Res. Inst. Dept. Agric. Rept. 63. Taihoku. 38 pp.
- Takahashi, R. 1935a. Observations on the Coccidae of Formosa. Part V. Formosa Govt. Res. Inst. Dept. Agric. Rept. 66. Taihoku. 37 pp.
- Takahashi, R. 1935b. Scale insects of the genus *Coccomytilus* from Formosa. Trans. Nat. Hist. Soc. Formosa 25:444–447.
- Takahashi, R. 1936a. Some Coccidae from China (Homoptera). Peking Nat. Hist. Bull. 10:217–222.
- Takahashi, R. 1936b. Some Coccidae from Formosa and Japan (Homoptera). Part I. Mushi 9:1–8.
- Takahashi, R. 1938. Some Coccidae from Formosa and Japan (Homoptera). Part III. Mushi 11:42–45.
- Takahashi, R. 1942a. Some Coccidae from Malaya and Hongkong (Homoptera). Trans. Nat. Hist. Soc. Formosa 32:63–68.
- Takahashi, R. 1942b. Some injurious insects of agricultural plants and forest trees in Thailand and Indo-China. Part II. Coccidae Report. Formosa Govt. Res. Inst. Dept. Agric. Rept. 81. Taihoku. 56 pp.
- Takahashi, R. and S. Kanda. 1939. A new species of Coccidae (Homoptera) from Korea. Annot. Zool. Jpn. 18:185–187.
- Tao, C. C. C. 1978. Check list and host plant Index to scale insects of Taiwan, Republic of China. J. Agric. Res. China 27:77–141. (in Chinese with English abstract)
- Tao, C. C. C. 1989. Scale insects name list of Taiwan, Republic of China. Bull. Taichung Dist. Agric. Improve. Stat. 22:57–70. (in Chinese with English abstract)
- Tao, C. C. C. and C. Y. Wong. 1982. Description of a new genus and species of bamboo scale *Chuaspiis shui-chuensis* (Homoptera: Coccoidea: Diaspididae) from Taiwan, China. Qtrly J. Taiwan Mus. 35:123–125.
- Wong, C. Y., S. P. Chen, and L. Y. Chou. 1999. Guidebook to Scale Insects of Taiwan. Agric. Res. Inst. Pub. No. 89. Taichung. 98 pp. (in Chinese)

# 農業試驗所昆蟲標本館雪盾介殼蟲亞科 (半翅目：胸喙亞目：介殼蟲總科：盾介殼蟲科) 標本名錄

陳淑佩<sup>1,\*</sup> 翁振宇<sup>2</sup> 吳文哲<sup>3,4</sup>

## 摘要

陳淑佩、翁振宇、吳文哲。2014。農業試驗所昆蟲標本館雪盾介殼蟲亞科(半翅目：胸喙亞目：介殼蟲總科：盾介殼蟲科)標本名錄。台灣農業研究 63(2):105-121。

本文羅列 9 屬 39 種 (246 片玻片標本) 農業試驗所館藏之雪盾介殼蟲亞科 [半翅目 (Hemiptera) 胸喙亞目 (Sternorrhyncha) 介殼蟲總科 (Coccoidea) 盾介殼蟲科 (Diaspididae)] 名錄，其中亦包含異名、寄主植物、採集分佈及標本形態圖等資料。

關鍵詞：盾介殼蟲、農業試驗所、館藏標本。

---

投稿日期：2014 年 1 月 24 日；接受日期：2014 年 3 月 26 日。

\* 通訊作者：spchen@tari.gov.tw

<sup>1</sup> 農委會農業試驗所應用動物組副研究員。台灣 台中市。

<sup>2</sup> 農委會農業試驗所應用動物組前技工。台灣 台中市。

<sup>3</sup> 國立台灣大學昆蟲學系教授。台灣 台北市。

<sup>4</sup> 國立台灣大學生物資源暨農學院植物醫學研究中心主任。台灣 台北市。