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## New microlichens from Taiwan

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As a result of a three week field trip to Taiwan in 2001, 288 species of microlichens and related ascomycetes are reported. All are new to Taiwan, and most are so far unknown from mainland China as well. Of these, 83 species are new to East Asia, and 41 have never been reported from Asia. This includes the following species new to science: *Arthonia parantillarum*, *Rimularia gyromuscosa*, *Rinodina placynthielloides*, *R. pluriloculata* (described from mainland China), *R. punctosorediata* and *Veizdaea flava*.

**Key words:** lichenized ascomycetes, new species, taxonomy

### Introduction

This paper presents new records of microlichens from Taiwan, collected during a field trip in October 2001. As a baseline, we refer to the checklist published by Lai (2000) in which most microlichens are based on Zahlbruckner (1933). Since Lai (2000), 95 additional pyrenocarpous microlichens have been reported and are based on material from the October 2001 expedition. Ten calicioid microlichens (mostly in Sparrius *et al.*, 2002) and 65 additional macrolichens (Ohmura, 2001; Aptroot *et al.*, 2002, 2003; Jørgensen, 2002, Jørgensen and Aptroot, 2003) have also been reported mostly from this expedition. With reports of the collections from the October 2001 field trip, the number of lichen species known to Taiwan has nearly doubled, from 546 in 2000 to 1021. We predict that there are about 200-500 lichen species in Taiwan which have so far escaped attention. This is indicated by the nearly doubling of the known lichen flora as the result of a two-week field trip.

Not all old reports have been evaluated before new species are reported here. In genera such as *Arthonia*, many more species were identified, but their taxonomy is unresolved and the identifications thus uncertain. Zahlbruckner (1933) described many new species of lichens on the basis of the limited

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material from Taiwan available to him, many of which proved to be synonyms of more well-known taxa. Several species have been reported previously in genera such as *Catillaria*, *Graphina* and *Graphis*, and it cannot be ruled out that earlier records of a few species are referable to some of the taxa reported below as new. The latest taxonomy in the *Graphidaceae* is not yet followed here, as many of the required combinations are currently not yet available.

## **Material and methods**

Most specimens reported below were collected in October 2001 by the authors. A few additional specimens collected by D.L. Hawksworth preserved in ABL are also cited.

## **Results and discussion**

The lichen flora of Taiwan mostly constitutes of warm temperate species, with a limited selection of (pan)tropical taxa reaching the southernmost point of the island. The tropical flora and especially the lichen flora on the coastal granitic rocks are very similar to the lichen flora of Hong Kong (Aptroot and Seaward 1999; Lu *et al.*, 2000, Aptroot and Sipman, 2001). The flora in the mountains is relatively rich and the biodiversity is highest in the alpine areas, where the *Rhododendron* shrubs, siliceous rock outcrops and intermittent wood and soil vegetation are all dominated by lichens. The lichen flora and vegetation of the mountains is very similar to that of Bhutan (Aptroot and Feijen, 2002) and especially Yunnan (based on unpublished results from our 2002 field trip). The native gymnosperm forests, although constituting the main part of the natural vegetation in Taiwan, are relative poor in lichens, as they are covered by bryophytes. Although the number of species is much higher than that of e.g. Hong Kong, the biodiversity of the area is well below that of the real hot spots of lichen biodiversity, such as the mountains of Papua New Guinea (Aptroot, 2001a), and is on order of magnitude comparable to that of coastal mountains in Brazil (Aptroot, 2002).

## ***Fungi recorded***

*Acarospora fuscata* (Schrader) Th. Fr.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52751 (ABL), 12 October 2001.

*Acarospora oligospora* (Nyl.) Arnold

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51868 (ABL), 8 October 2001.

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*Acarospora smaragdula* (Wahlenb.) A. Massal.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52752 (ABL), 12 October 2001; Taipei County: Yangmingshan National Park, Hsiaoyiokeng Recreation Area, along Hwy 2, 800 m alt., on rock near sulphur fumaroles. Hawksworth and Taylor (ABL), 19 November 1997.

*Anisomeridium subnexum* (Nyl.) R.C. Harris

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Aphanamixis tripetala*. Sparrius 5371 (Herb. Sparrius) and 5373 (ABL), 17 October 2001.

*Anisomeridium tamarindi* (Fée) R.C. Harris

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Roystonea regia*. Sparrius 5345 (Herb. Sparrius), 17 October 2001.

*Arthonia complanata* Fée

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree. Aptroot 51843 (ABL) and Sparrius 5790 (Herb. Sparrius), 8 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52608 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on *Abies kawakamii*. Aptroot 52810 (ABL) and Sparrius 6324 (Herb. Sparrius), 13 October 2001.

*Arthonia elegans* (Ach.) Almq.

New to Asia, so far known from Europe.

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Roystonea regia*. Aptroot 53232 (ABL), 17 October 2001.

*Arthonia ilicina* Taylor

New to Asia, but furthermore cosmopolitan.

Taipei County: Yangmingshan National Park, broadleaf cloud forest near summit of Mt. Tatan, 900 m alt., 51RUH511859, on *Ficus beeshiana*. Aptroot 53629 (ABL), 23 October 2001.

***Arthonia parantillarum* Aptroot, sp. nov.** (Figs 1-4)

*Arthonia antillarum* similis est sed apotheciis majoribus et UV rubescentibus, thallo UV non flavescente.

*Type*: TAIWAN, Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Roystonea regia*. Aptroot 43224 (B-holotype, ABL, TUNG-isotypes) and Sparrius 5323, 5342 (hb Sparrius-isotypes), 17 October 2001.

*Thallus* (Figs 1, 3) smooth, yellowish-white. *Apothecia* (Figs 1, 3) irregular in outline, starting as a thin line or point, soon branching, finally branches usually mostly confluent, yellowish-brown, ca. 0.3-0.7 mm diam, flat. *Excipulum* absent, but visible as a stronger UV+ reddish zone surrounding the apothecia (Fig. 2). *Asci* globoso-clavate, *Arthonia*-type. *Ascospores* 13.5-15.5 × 3.5-4.5 μm, clavate, consistently 3-septate, 8 per ascus. *Pycnidia*

unknown. *Chemistry*: thallus without secondary substances (C, KOH and UV negative); apothecia K negative but UV+ reddish (Figs 2, 4), with a xanthone (probably arthothelin).

*Additional specimens*: Papua New Guinea, Madang Prov., Karkar Island, 10 m, on *Cocos nucifera*. Aptroot 17530 (ABL), February 1987; near Gogol river Bridge, 17 km S of Madang, 10 m, on *Cocos nucifera*. Aptroot 33273 (ABL), 15 August 1992; Jais Aben Resort ca. 10 km NW of Madang, 1 m, on *Plumiera*. Aptroot 38296 (ABL), 4 November 1995; Chagos, Diego Garcia, 1 m, on *Scaevola sericea*. M. Seaward (Herb. Seaward), 5 March 1996.

*Notes*: This new species closely resembles *Arthonia antillarum* (Fée) Nyl., with which it often occurs. Both species have a similar apothecium shape and colour and thallus colour, and are internally (ascospores, asci) indistinguishable. When growing side-by-side (Figs 1-4), the new species has consistently larger and generally less branched apothecia. Material of the new species has undoubtedly been identified as *A. antillarum* in the past. Although no chemistry was ever reported so far, the latter species is characterized by the bright yellow UV-reaction of the thallus (Figs 2, 4), indicative of the presence of lichexanthone. The new species has no lichexanthone in the thallus, but a UV+ reddish xanthone in the apothecia (Figs 2, 4), especially in the marginal excipular zone (Fig. 2). All Fée material preserved as *Coniocarpon antillarum* in Geneva has a thallus reacting UV+ yellow (Ph. Clerc, pers. comm.). The specimen "ad corticem *Tamarindi officinalis*" in G is herewith selected as lectotype. The new species is widespread and possibly common on exposed trees in the lowland tropics all over the world, especially in coastal regions.

*Arthonia radiata* (Pers.) Ach.

Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Prunus*. Aptroot 53462 (ABL), 20 October 2001.

*Arthonia spadicea* Leighton

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Aphanamixis tripetala*. Aptroot 53163 (ABL), 17 October 2001.

*Arthothelium chiodectoides* (Nyl.) Zahlbr.

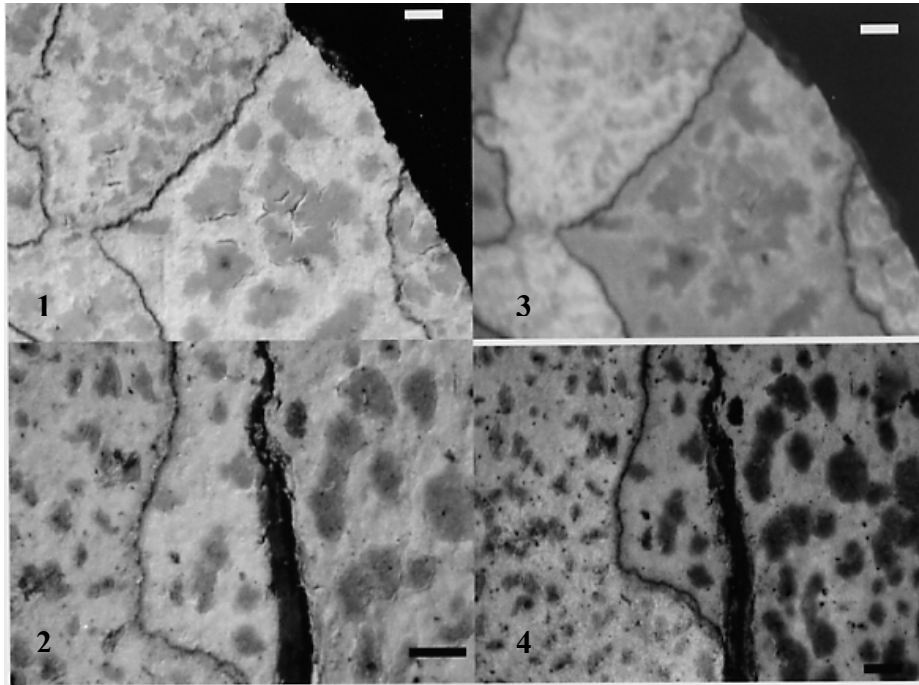
So far only known from India.

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52508 (ABL) and Sparrius 6107 (Herb. Sparrius), 11 October 2001.

*Arthothelium ruanum* (A. Massal.) Körber

New to Asia, so far known from Europe.

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Ficus microcarpa*. Aptroot 53205 (ABL), 17 October 2001.



**Figs 1-4.** *Arthonia parantillarum*, always side-by-side with *A. antillarum* (with smaller apothecia); habitus with apothecia; **1, 3** in daylight; **2, 4** in UV-light. **1-2.** Holotype. **3-4.** Papua New Guinea, Madang Province, Karkar Island, *Aptroot 17530* (ABL). Bar = 0.7 mm.

*Arthrorhaphis alpina* (Schaerer) R. Sant.

Miaoli County: Shei-Pa National Park, 27 km E of Tungshi, near Tahsuehshan, along forest track, 2600 m alt., 51RUG000887, on shale. *Aptroot* 51970 (ABL), 8 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on soil. *Aptroot* 52848 (ABL) and *Sparrius* 6340 (Herb. *Sparrius*), 11 October 2001. Hualien County: Taroko National Park, Hohuan Shan, mountain pass, 3300 m alt., 51RUG247705, on shale. *Aptroot* 52808 (ABL), 13 October 2001. Some locality, on soil. *Sparrius* 6309 (Herb. *Sparrius*), 13 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on soil. *Sparrius* 6443 (Herb. *Sparrius*), 12 October 2001.

*Arthrorhaphis citrinella* (Ach.) Poelt

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on soil. *Aptroot* 52790 (ABL), 12 October 2001. Same locality, on *Tsuga* bark. *Sparrius* 6282 and 6241 (Herb. *Sparrius*), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on shale. *Sparrius* 6174 (Herb. *Sparrius*), 12 October 2001.

*Arthrorhaphis grisea* Th. Fr.

New to E. Asia, so far known from temperate regions on the Northern Hemisphere. As usually growing on *Baeomyces rufus*.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 53744a (ABL), 12 October 2001.

*Bacidia apiahica* (Müll. Arg.) Zahlbr.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica* needles. Aptroot 52197 (ABL), 9 October 2001; Taipei County: Yangmingshan National Park, broadleaf cloud forest near summit of Mt. Tatun, 900 m alt., 51RUH511859, on bamboo. Aptroot 53635 (ABL), 23 October 2001.

*Bacidia arceutina* (Ach.) Arnold

New to East Asia.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Cinnamomum*. Aptroot 51612 (ABL), 7 October 2001. Same locality, on Podocarpus. Aptroot 51629 (ABL), 7 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52512 (ABL), 11 October 2001.

*Bacidia arnoldiana* Körber

Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on sandstone. Aptroot 51730 (ABL), 7 October 2001; Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on sandstone. Sparrius 5682 (Herb. Sparrius), 7 October 2001.

*Bacidia bagliettoana* (A. Massal. & de Not.) Jatta

New to Asia.

Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on soil. Aptroot 52853 (ABL), 13 October 2001.

*Bacidia chlorotricula* (Nyl.) A.L. Sm.

New to Asia.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on sandstone. Aptroot 51676 (ABL) and Sparrius 5672 (Herb. Sparrius), 7 October 2001; Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on sandstone. Sparrius 5740, 5453, 5462 and 5468 (Herb. Sparrius), 7/21 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on shale. Aptroot 53418 (ABL), 20 October 2001; Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52080 (ABL), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on bark of *Fatsia formosana*. Sparrius 6022 (Herb. Sparrius), 10 October 2001. Same locality, on bark of *Eurya*. Sparrius 6004 (Herb. Sparrius), 10 October 2001.

*Bacidia circumspecta* (Norrin & Nyl.) Malme

New to Asia.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52623 (ABL), 12 October 2001.

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### *Bacidia delicata* (Larbal. ex Leighton) Coppins

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Cinnamomum*. Aptroot 51609 (ABL), 7 October 2001; Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on *Prunus*. Aptroot 51504 (ABL), 21 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Aptroot 52132a (ABL), 9 October 2001. Same locality, on *Cryptomeria japonica*. Sparrius 5901 (Herb. Sparrius), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Michelia formosana*. Aptroot 52280 (ABL), 10 October 2001. Same locality, on wood. Sparrius 6006 and 6007 (Herb. Sparrius), 10 October 2001; Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on *Pseudotsuga*. Sparrius 6346 (Herb. Sparrius), 13 October 2001.

### *Bacidia egenula* (Nyl.) Arnold

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on concrete. Aptroot 51669, 51668 and 51666 (ABL), 7 October 2001; Tainan County: Tainan, Anping, Fort Zeelandia, 5 m alt., 51QTF123466, on mortar and brick. Aptroot 53013, 53017 and 53019 (ABL), Sparrius 5430, 5437 (TUNG) and Sparrius 5431 (Herb. Sparrius), 15 October 2001; Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on sandstone. Sparrius 5473 (Herb. Sparrius), 7/21 October 2001.

### *Bacidia laurocerasi* (Delise ex Duby) Zahlbr.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Aptroot 52132 (ABL), 9 October 2001. Same locality, on *Alnus japonica*. Aptroot 52186 (ABL), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Michelia formosana*. Aptroot 52281 (ABL), 10 October 2001.

### *Bacidia medialis* (Tuck. ex Nyl.) B. de Lesd.

Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on *Ficus microcarpa*. Aptroot 53073 (ABL), 16 October 2001.

### *Bacidia polychroa* (Th. Fr.) Körber

New to Asia.

Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Michelia formosana*. Aptroot 52270 and 52274 (ABL), 10 October 2001. Same locality, on *Castanopsis*. Aptroot 52307 and 52321 (ABL) and Sparrius 5987 (Herb. Sparrius), 10 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on *Alnus japonica*. Aptroot 52326 (ABL), 10 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Sparrius 5929 (Herb. Sparrius), 9 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52515, 52514, 52513 and 52598 (ABL), 11 October 2001; Hualien County: Taroko National Park, Lushui-Holio trail, near Hwy 8, 500 m alt., on *Cinnamomum*. Hawksworth (ABL), 4 May 1996.

*Bacidia triseptata* (Hepp) Zahlbr.

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on soil of roadbank. Sparrius 6095 (TUNG), 11 October 2001; Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on sandstone. Aptroot 51680 and 51681 (ABL), 7 October 2001; Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on sandstone. Aptroot 51726 and 51737 (ABL) and Sparrius 5466, 5717 and 5742 (Herb. Sparrius), 7 October 2001; Taichung County: 20 km E of Tungshi, along road to Tahsuehshan at km 37, 1100 m alt., 51RTG947814, on granite. Aptroot 51762 (ABL), 8 October 2001; Taipei County: Yangmingshan National Park, Yang Ming Mountain, Ru-Chiau-Kong, 380 m alt., on volcanic rock. Hawksworth (ABL), 1 May 1996.

*Bactrospora myriadea* (Fée) Egea & Torrente

Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on *Delonix regia*. Aptroot 51533 (ABL) and Sparrius 5664 (Herb. Sparrius), 6 October 2001; Chiai County: 15 km NNE of Chiai, wayside trees in agricultural area, 75 m alt., 51QTG4715, on *Mangifera indica*. Aptroot 53402 (ABL), 18 October 2001; Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on *Acacia confusa*, eutrophicated bark. Sparrius 5301 and 5305 (Herb. Sparrius), 17 October 2001.

*Banhegyia setispora* Zeller & Tóth

New to Asia. A rarely reported non-lichenized ascomycete which is related to some species currently classified in *Melaspilea*.

Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Michelia*. Sparrius 6027 (Herb. Sparrius), 10 October 2001.

*Botryolepraria lesdainii* (Hue) Canals, Hern.-Mar., Gómez-Bolea & Llimona

New to Asia.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on raised coral reef. Aptroot 53101 (ABL) and Sparrius 5406 (Herb. Sparrius), 16 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53583 (ABL), 22 October 2001.

*Buellia aethalea* (Ach.) Th. Fr.

Miaoli County: Shei-Pa National Park. 27 km E of Tungshi, near Tahsuehshan, along forest track, 2600 m alt., 51RUG000887, on shale. Aptroot 51962 and 51965 (ABL), 8 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52761 (ABL) and Sparrius 6267 (Herb. Sparrius), 12 October 2001.

*Buellia americana* Müll. Arg.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Tsuga formosana*. Aptroot 52678 (ABL), 12 October 2001; Taichung County: Taichung, Taichung Park, 100 m alt., 51RTG645721, on *Roystonea regia*. Aptroot 53692 (ABL), 19 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Ardisia sieboldii*. Aptroot 53475 (ABL), 20 October 2001.



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### *Buellia badia* (Fr.) A. Massal.

New to East Asia. The species is often reported as a parasite on other crustose lichens, but was growing here independently and directly on rock.

Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on shale. Sparrius 6407 (Herb. Sparrius, ABL), 13 October 2001.

### *Buellia disciformis* (Fr.) Mudd

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree branches. Aptroot 51793 (ABL), 8 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52632 (ABL) and Sparrius 6375 (Herb. Sparrius), 12 October 2001. Same locality, on shale [atypical substrate]. Sparrius 6269 (Herb. Sparrius), 12 October 2001; Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on *Magnolia grandiflora*. Sparrius 6387 (Herb. Sparrius), 13 October 2001.

### *Buellia efflorescens* Müll. Arg.

Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on *Acacia confusa*. Aptroot 51523 (ABL), 6 October 2001; Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Podocarpus*. Aptroot 51630 (ABL), 7 October 2001; Tainan County: Tainan, Anping, Fort Zeelandia, 5 m alt., 51QTF123466, on *Plumiera*. Aptroot 53026 (ABL), 15 October 2001. Same locality, on *Ficus*. Aptroot 53029 (ABL), 15 October 2001. Same locality, on *Acacia*. Sparrius 5434 (Herb. Sparrius), 15 October 2001; Chiai County: 15 km NNE of Chiai, wayside trees in agricultural area, 75 m alt., 51QTG4715, on *Cinnamomum*. Aptroot 53372 (ABL), 18 October 2001. Same locality, on *Mangifera indica*. Aptroot 53392 (ABL), 18 October 2001; Taichung County: Taichung, Taichung Park, 100 m alt., 51RTG645721, on *Roystonea regia*. Aptroot 53693 (ABL), 19 October 2001. Same locality, on *Ficus*. Aptroot 53682 (ABL) and Sparrius 5161 (Herb. Sparrius), 19 October 2001.

### *Buellia extenuata* Müll. Arg.

Taichung County: Taichung, Taichung Park, 100 m alt., 51RTG645721, on *Arenga*. Aptroot 53679 (ABL) and Sparrius 5159 (Herb. Sparrius), 19 October 2001.

### *Buellia himalayensis* (S.R. Singh & D.D. Awasthi) A. Nordin

A rarely reported species, so far known only from the Himalayas (India and Bhutan: Aptroot 2002).

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on *Rhododendron* wood. Aptroot 53677 (ABL), 12 October 2001.

### *Buellia lauricassiae* (Fée) Müll. Arg.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on *Roystonea regia*. Aptroot 53143 (ABL), 16 October 2001. Same locality, on *Mallotus philippensis*. Sparrius 5400 (Herb. Sparrius), 16 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Lonicera cumingiana*. Aptroot 53284 (ABL), 17 October 2001. Same locality, on *Ficus*. Aptroot 53196 (ABL), 17 October 2001. Same locality, on *Roystonea regia*. Aptroot 53219 (ABL) and Sparrius 5328 (Herb. Sparrius), 17 October 2001.

*Buellia metaleptodes* (Nyl.) G. Pant & D.D. Awasthi

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on *Roystonea regia*. Sparrius 5391 (Herb. Sparrius), 16 October 2001.

***Buellia obscurior* (Stirton) Aptroot, comb. nov.**

*Basionym*: *Pyxine obscurior* Stirton, Trans. Roy. Soc. Victoria 17: 70 (1881).

Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on *Magnolia grandiflora*. Aptroot 52926 (ABL), 13 October 2001.

*Buellia polyspora* (Willey) Vainio

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Podocarpus*. Aptroot 51631 (ABL), 7 October 2001.

*Buellia saxorum* A. Massal.

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52747 (ABL), 12 October 2001.

*Buellia spuria* (Schaerer) Anzi

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52755 (ABL), 12 October 2001.

*Buellia trachyspora* Vainio

New to Asia.

Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53064 (ABL) and Sparrius 5418 (Herb. Sparrius), 16 October 2001.

*Buellia triphragmioides* Anzi

Nantou County: 45 km WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on *Michelia formosana*. Aptroot 52329 (ABL), 10 October 2001.

*Byssoloma leucoblepharum* (Nyl.) Vainio

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Trema orientalis*. Sparrius 5881 (Herb. Sparrius), 9 October 2001.

*Byssoloma subdiscordans* (Nyl.) P. James

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on shale. Aptroot 52239 (ABL) and Sparrius 5960, 5962 and 5967 (Herb. Sparrius), 9 October 2001. Same locality, on *Cryptomeria japonica* needles. Aptroot 52198 (ABL) and Sparrius 5968 (Herb. Sparrius), 9 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Polystichum fronds*. Aptroot 53492 (ABL), 20 October 2001.

*Calopadia puiggarii* (Müll. Arg.) Vězda

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Diospyros maritima* leaves. Aptroot 53131 (ABL), 17 October 2001.

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### *Calopadia subcaerulescens* (Zahlbr.) Vězda

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica* needles. Aptroot 52199 (ABL), 9 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Fatsia* leaves. Aptroot 52407 (ABL), 11 October 2001.

### *Caloplaca arenaria* (Pers.) Müll. Arg.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52893 (ABL), 12 October 2001.

### *Caloplaca bassiae* (Ach.) Zahlbr.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Cinnamomum*. Aptroot 51613 (ABL), 7 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Roystonea regia*. Aptroot 53237 (ABL), 17 October 2001. Same locality, on *Ficus nervosa*. Aptroot 53243 (ABL), 17 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Ardisia sieboldii*. Aptroot 53481 (ABL) and Sparrius 5166 (Herb. Sparrius), 20 October 2001.

### *Caloplaca chrysophthalma* Degel.

Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on *Magnolia grandiflora*. Aptroot 52916 (ABL) and Sparrius 6386 (Herb. Sparrius), 13 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Sparrius 5912 (Herb. Sparrius), 9 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on tree bark. Sparrius 5202 (Herb. Sparrius), 20 October 2001.

### *Caloplaca citrina* (Hoffm.) Th. Fr.

Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on shale. Aptroot 52478 (ABL), 11 October 2001.

### *Caloplaca dalmatica* (A. Massal.) H. Olivier

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on shale. Aptroot 52240 (ABL), 9 October 2001.

### *Caloplaca gambiensis* Aptroot

New to Asia. Only recently described from Gambia (Aptroot 2001b).

Tainan County: Tainan, Anping, Fort Zeelandia, 5 m alt., 51QTF123466, on *Ficus*. Aptroot 53028 (ABL), 15 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Roystonea regia*. Aptroot 53236 (ABL), 17 October 2001. Same locality, on *Acacia confusa*. Aptroot 53178 (ABL), 17 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Prunus*. Aptroot 53459 (ABL), 20 October 2001.

### *Caloplaca leptozona* (Nyl.) Zahlbr.

Tainan County: Tainan, Anping, Fort Zeelandia, 5 m alt., 51QTF123466, on mortar. Aptroot 53009 (ABL), 15 October 2001. Same locality, on brick. Aptroot 53015 (ABL) and Sparrius 5436 (Herb. Sparrius), 15 October 2001. Same locality, on quartzite. Aptroot 53023 (ABL), 15 October 2001; Pingtung County: 45 km SE of Kaohsiung, near Fangshan,

rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53046 (ABL), Sparrius 5410 and 5419 (Herb. Sparrius) and Sparrius 5420 (TUNG), 16 October 2001; Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on conglomeratic rock. Aptroot 53318 (ABL) and Sparrius 5299 (TUNG), 17 October 2001; Pingtung County: Kenting, near Frog Rock, 0-1 m alt., 51QTE727276, on conglomeratic rock. Aptroot 53337 (ABL) and Sparrius 5288 and 5277 (Herb. Sparrius), 18 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53551 (ABL), Sparrius 5493 (Herb. Sparrius) and Sparrius 5490 and 5517 (TUNG), 22 October 2001.

*Caloplaca obscurella* Nyl.

Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on eutrophicated bark of *Acacia confusa*. Sparrius 5303 (Herb. Sparrius), 17 October 2001.

*Caloplaca pulicarioides* Aptroot

Only recently described from Hong Kong (Aptroot and Seaward 1999).

Miaoli County: Shei-Pa National Park, 27 km E of Tungshi, near Tahsuehshan, along forest track, 2600 m alt., 51RUG000887, on *Picea morrisonicola* branches. Aptroot 51953 (ABL), 8 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Tsuga formosana* branches. Aptroot 52730 (ABL), 12 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on *Messerschmidia argentinensis*. Aptroot 53621 (ABL) and Sparrius 5501 (Herb. Sparrius), 22 October 2001. Same locality, on volcanic rock. Sparrius 5494 (Herb. Sparrius), 22 October 2001.

*Candelariella aurella* (Hoffm.) Zahlbr.

Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on *Viburnum*. Aptroot 52836 (ABL), 13 October 2001.

*Candelariella grimmiae* Poelt & Reddi

Only known so far from the Himalayas.

Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on soil. Aptroot 52852 (ABL), 13 October 2001.

*Candelariella nepalensis* Poelt & Reddi

Only known so far from the Himalayas.

Hualien County: Taroko National Park, Hohuan Shan, mountain pass, 3300 m alt., 51RUG247705, on mosses on shale. Aptroot 52803 (ABL), 13 October 2001. Same locality, on soil. Sparrius 6442 (Herb. Sparrius), 13 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on acid soil. Sparrius 6245 (Herb. Sparrius), 12 October 2001.

*Candelariella reflexa* (Nyl.) Lettau

Miaoli County: Shei-Pa National Park, 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on *Picea morrisonicola*. Aptroot 51913 (ABL), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Aptroot 52113 (ABL), 9 October 2001. Same locality, on shale. Aptroot 52235 (ABL), 9 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52521

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(ABL), 11 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Salix*. Aptroot 52722 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, mountain pass, 3300 m alt., 51RUG247705, on bark of *Tsuga*. Sparrius 6300 (Herb. Sparrius), 13 October 2001.

### *Candelariella solediosa* Poelt & Reddi

Only known so far from the Himalayas.

Miaoli County: Shei-Pa National Park, 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on *Picea morrisonicola*. Aptroot 51910 (ABL), 8 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on mature *Castanopsis*. Sparrius 6130 (Herb. Sparrius), 11 October 2001.

### *Candelariella vitellina* (Hoffm.) Müll. Arg.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52886 (ABL) and Sparrius 6226 (Herb. Sparrius), 12 October 2001.

### *Catillaria chalybeia* (Borrer) A. Massal.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52874 (ABL), 12 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53562 (ABL), 22 October 2001.

### *Catillaria nigroclavata* (Nyl.) Schuler

New to Asia.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Aptroot 52109 (ABL), 9 October 2001.

### *Catillaria picila* (A. Massal.) Coppins

Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53058a (ABL), 16 October 2001; Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on conglomeratic rock. Aptroot 53330 (ABL), 17 October 2001; Taichung County: 30 km E of Taichung, 5 km W of Kukwan, along the road, 700 m alt., 51RTG929745, on slate. Sparrius 5228 (Herb. Sparrius), 20 October 2001.

### *Catinaria laureri* (Hepp ex Th. Fr.) Degel.

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52535 (ABL), 11 October 2001; Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on *Eurya*. Aptroot 52964 (ABL), 13 October 2001.

### *Chiodecton aurantiacoflavum* B. de Lesd.

New to Asia. This species is characteristic, but only known sterile, and does not belong to *Chiodecton* s.s., but is more likely to be a *Cryptothecia*.

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52087 (ABL), 9 October 2001; Nantou County: 45 km

WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on *Schima superba*. Aptroot 52347 (ABL) and Sparrius 6038 (Herb. Sparrius), 10 October 2001.

*Chrysothrix candelaris* (L.) J.R. Laundon

Nantou County: 45 km WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on *Michelia formosana*. Aptroot 52328 (ABL), 10 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52528 (ABL), 11 October 2001; Taichung County: 30 km E of Taichung, 5 km W of Kukwan, along the road, 700 m alt., 51RTG929745, on slate. Sparrius 5224 (Herb. Sparrius), 20 October 2001.

*Chrysothrix xanthina* (Vainio) Kalb

Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on *Delonix regia*. Aptroot 51536 (ABL) and Sparrius 5638 (Herb. Sparrius), 6 October 2001; Chiai County: 15 km NNE of Chiai, wayside trees in agricultural area, 75 m alt., 51QTG4715, on *Mangifera indica*. Aptroot 53412 (ABL) and Sparrius 5262 (Herb. Sparrius), 18 October 2001.

*Cresponea premnea* (Ach.) Egea & Torrente

The material is saxicolous and is referable to var. *saxicola* (Leighton) Egea and Torrente.

Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on shale. Aptroot 52483 (ABL) and Sparrius 6083 (Herb. Sparrius), 11 October 2001.

*Cresponea proximata* (Nyl.) Egea & Torrente

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Zelkova serrata*. Aptroot 52046 (ABL), 9 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Ficus*. Aptroot 53198 (ABL), 17 October 2001; Taichung County: 29 km E of Taichung, 6 km W of Kukwan, along a river, 750 m alt., 51RTG926731, on shale. Aptroot 53508 (ABL), 20 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on bark of tree. Sparrius 5208 (Herb. Sparrius), 20 October 2001.

*Cryptolechia saxatilis* (Vězda) D. Hawksw.

New to Asia. So far only known from the type from Argentina.

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52097 (ABL), 9 October 2001.

*Cryptolechia subincolorella* (Nyl.) D. Hawksw.

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Zelkova serrata*. Aptroot 52051 (ABL), 9 October 2001.

*Cryptothecia aleurella* (Nyl.) Makhija & Patwardhan

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on *Cryptomeria japonica*. Aptroot 51826 (ABL), 8 October 2001.

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### *Cryptothecia aleurocarpa* (Nyl.) Makhija & Patwardhan

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Lonicera cumingiana*. Aptroot 53283 (ABL), 17 October 2001.

### *Cryptothecia subnidulans* Stirton

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Zelkova serrata*. Aptroot 52039 (ABL), 9 October 2001.

### *Cryptothecia subtectata* Stirton

Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on *Acacia confusa*. Aptroot 51521 (ABL), 6 October 2001; Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on sapling. Aptroot 51653 (ABL), 7 October 2001.

### *Dichosporidium boschianum* (Mont.) Thor

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on *Diospyros maritima*. Aptroot 53132 (ABL), 16 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Heritiera littoralis*. Aptroot 53264 (ABL), 17 October 2001.

### *Dimerella pineti* (Ach.) Vězda

These specimens are similar to *Dimerella pineti* as it can be found in Europe. The genus *Dimerella* is in need of a revision and we tentatively use this general name until a better name is found.

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Debeyraecea edulis*. Aptroot 52022a (ABL), 9 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on roots. Aptroot 52200 (ABL) and Sparrius 5951 (Herb. Sparrius), 9 October 2001; Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on *Apocyanea*. Sparrius 5650 (Herb. Sparrius), 6 October 2001; Taipei County: 10 km NW of Taipei, Guandu Nature Park, road through *Kandelia* mangrove, 1-100 m alt., 51RUH452786, on *Macaranga*. Sparrius 5481 (Herb. Sparrius), 22 October 2001; Chiai County: 15 km NNE of Chiai, wayside trees in agricultural area, 75 m alt., 51QTG4715, on *Cinnamomum*. Sparrius 5270 and 5269 (Herb. Sparrius), 18 October 2001.

### *Diploschistes actinostomus* (Pers. ex Ach.) Zahlbr.

Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on sandstone. Aptroot 51712 (ABL) and Sparrius 5726 (Herb. Sparrius), 7 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Sparrius 5487 (Herb. Sparrius), 22 October 2001.

### *Diploschistes muscorum* (Scop.) R. Sant.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on soil. Aptroot 52791 (ABL) and Sparrius 6243 (Herb. Sparrius), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, mountain pass, 3300 m alt., 51RUG247705, on soil. Aptroot 52802 (ABL), 13 October 2001; Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on shale. Aptroot 52997 (ABL) and Sparrius 6393 (Herb. Sparrius), 13 October 2001.

*Echinoplaca leucotrichoides* (Vainio) R. Sant.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on wood. Aptroot 51657 (ABL), 7 October 2001. Same locality, on *Cinnamomum*. Aptroot 51606a (ABL), 7 October 2001; Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on sandstone. Aptroot 51734 (ABL) and Sparrius 5454 (Herb. Sparrius), 7 October 2001; Taichung County: 20 km E of Tungshi, along road to Tahsuehshan at km 37, 1100 m alt., 51RTG947814, on granite. Aptroot 51750 (ABL), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica* needles. Aptroot 52192 (ABL), 9 October 2001. Same locality, on *Cryptomeria japonica* bark. Aptroot 52174a (ABL), 9 October 2001. Same locality, on root in underhang. Sparrius 5949 (Herb. Sparrius), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Castanopsis*. Aptroot 52303 (ABL), 10 October 2001; Hualien County: Taroko National Park, near Hwy 8, 2000 m alt., on living leaves of *Pasania kawakamii*. Hawksworth (ABL), 3 May 1996; Taipei County: Yangmingshan National Park, parking place near National Park Visitors Center, 480 m alt., 51RUH533829, on *Cinnamomum*. Sparrius 5248 (Herb. Sparrius), 23 October 2001.

*Elixia flexella* (Ach.) Lumbsch

New to Asia, but doubtlessly overlooked.

Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on *Abies kawakamii* wood. Aptroot 52820 (ABL) and Sparrius 6330 (Herb. Sparrius), 13 October 2001.

*Euopsis pulvinata* (Schaerer) Vainio

Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53071 (ABL), 16 October 2001; Pingtung County: Kenting, near Frog Rock, 0-1 m alt., 51QTE727276, on conglomeratic rock. Aptroot 53346 (ABL), 18 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53572 (ABL) and Sparrius 5486 (Herb. Sparrius), 22 October 2001; Taichung County: 30 km E of Taichung, 5 km W of Kukwan, along the road, 700 m alt., 51RTG929745, on slate. Sparrius 5231 (Herb. Sparrius) and 5225 (TUNG), 20 October 2001.

*Fellhanera bouteillei* (Desm.) Vězda

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Eleagnus* leaves. Aptroot (ABL), 7 October 2001; Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52075 (ABL) and Sparrius 5868 (Herb. Sparrius) and 5867 (TUNG), 9 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica* needles. Aptroot 52193 (ABL) and Sparrius 5909 (Herb. Sparrius), 9 October 2001. Same locality, on root in underhang of roadbank. Sparrius 5950 (Herb. Sparrius), 9 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Diospyros maritima* leaves. Aptroot 53123a (ABL), 17 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Polystichum* fronds. Aptroot 53491 (ABL) and Sparrius 5167 (Herb. Sparrius), 20 October 2001. Same locality, on plastic. Aptroot 53452 (ABL), 20 October 2001; Hualien County: Tienshiang, along Hwy 8, 480 m alt., on living leaves of *Bambusa oldhamii*. Hawksworth (ABL), 3 May 1996.



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### *Fellhanera rhapidophylli* (Rehm) Vězda

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on sandstone. Aptroot 51683 (ABL), 7 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52520 (ABL), 11 October 2001.

### *Fellhanera subfuscata* Lücking

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52077 (ABL), 9 October 2001.

### *Fellhanera subternella* (Nyl.) Vězda

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on leaves of *Podocarpus*. Sparrius 5689 (Herb. Sparrius), 7 October 2001.

### *Fellhanera subtilis* (Vězda) Diederich & Sérus.

New to East Asia.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Podocarpus phyllocladia*. Aptroot 51635 (ABL), 7 October 2001.

### *Fellhanera viridisorediata* Aptroot, M. Brand & Spier

New to Asia. This recently described species was so far only known from western Europe. The material is fertile.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on roots. Aptroot 52208 (ABL), 9 October 2001.

### *Fellhaneropsis kurokawana* G.Thor, Lücking & Tat. Matsumoto

This recently described species was so far only known from Japan. The records below show that it is not obligately foliicolous.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Cunninghamia* needles. Aptroot 51658 (ABL), 7 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Dendropanax* bark. Aptroot 52427 (ABL), 11 October 2001.

### *Fuscidea cyathoides* (Ach.) V. Wirth & Vězda

Hualien County: Taroko National Park, Hohuan Shan, Pseudotsuga forest, 2950 m alt., 51RUG231686, on *Pseudotsuga wilsoniana*. Aptroot 52943 (ABL), 13 October 2001.

### *Graphina acharii* (Fée) Müll. Arg.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Acer*. Aptroot 52190 (ABL), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Eriobotrya*. Aptroot 52251 (ABL), 10 October 2001.

### *Graphina analoga* (Nyl.) Zahlbr.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on *Cryptomeria japonica*. Aptroot 51827 (ABL), 8 October 2001; Taipei County: Yangmingshan National Park, broadleaf cloud forest near summit of Mt. Tatun, 900 m alt., 51RUH511859, on *Ficus beeshiana*. Aptroot 53632 (ABL), 23 October 2001; Taipei County: Yangmingshan National Park, parking place near National

Park Visitors Center, 480 m alt., 51RUH533829, on *Elaeocarpus*. Sparrius 5251 (Herb. Sparrius), 23 October 2001.

*Graphina colliculosa* (Mont.) Hale

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52546 (ABL), 11 October 2001.

*Graphina erythrella* (Mont.) Zahlbr.

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Zelkova serrata*. Aptroot 52048 (ABL), 9 October 2001.

*Graphina hiascens* Müll. Arg.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Podocarpus*. Aptroot 51634 (ABL), 7 October 2001; Taipei County: Yangmingshan National Park, parking place near National Park Visitors Center, 480 m alt., 51RUH533829, on *Eleocarpus silvestris*. Aptroot 53654 (ABL), 23 October 2001.

*Graphina hologlauca* Zahlbr.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on bark. Aptroot 51840 (ABL), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52148 (ABL), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Michelia formosana*. Aptroot 52273 (ABL), 10 October 2001. Same locality, on *Schima superba*. Aptroot 52264 (ABL), 10 October 2001. Same locality, on *Castanopsis*. Aptroot 52320 (ABL), 10 October 2001.

*Graphina mendax* (Nyl.) Müll. Arg.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on liana. Aptroot 53135 (ABL), 16 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Lonicera cumingiana*. Aptroot 53277 (ABL), 17 October 2001. Same locality, on *Aphanamixis tripetala* Aptroot 53163a (ABL), 17 October 2001.

*Graphis benguetensis* Vainio

This species was so far only known from The Philippines.

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on *Picea morrisonicola*. Aptroot 51908 (ABL), 8 October 2001.

*Graphis caesiella* Vainio

Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on *Delonix regia*. Aptroot 51532 (ABL), 6 October 2001. Same locality, on *Mangifera indica* 51548 (ABL), 6 October 2001. Same locality, on *Acacia confusa*. Aptroot 51522 (ABL) and Sparrius 5648 (Herb. Sparrius), 6 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Lonicera cumingiana*. Aptroot 53276 (ABL), 17 October 2001. Same locality, on *Ficus*. Aptroot 53147 (ABL), 17 October 2001; Taichung County: Taichung, Taichung Park, 100 m alt., 51RTG645721, on *Lagerstroemia indica*. Aptroot 53677 (ABL), 19 October 2001; Taichung County: 15 km E of Taichung, garden with

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secondary forest remnants, 100 m alt., 51RTG7873, on tree bark. Sparrius 5705 (Herb. Sparrius), 7 October 2001.

### *Graphis dumastii* Fée

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on *Cryptomeria japonica*. Aptroot 51835 (ABL), 8 October 2001; Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Zelkova serrata*. Aptroot 52045 (ABL), 9 October 2001; Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on *Ehretia*. Aptroot 53074 (ABL), 16 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Ficus*. Aptroot 53095 (ABL), 17 October 2001; Chiai County: 15 km NNE of Chiai, wayside trees in agricultural area, 75 m alt., 51QTG4715, on *Mangifera*. Sparrius 5260 (Herb. Sparrius), 18 October 2001.

### *Graphis glaucescens* Fée

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Pinus*. Aptroot 51644 (ABL), 7 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Castanopsis*. Aptroot 52319 (ABL), 10 October 2001; Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on conglomeratic rock. Aptroot 53332 (ABL), 17 October 2001; Chiai County: 15 km NNE of Chiai, wayside trees in agricultural area, 75 m alt., 51QTG4715, on *Mangifera indica*. Aptroot 53383 and 53401 (ABL) and Sparrius 5254 (Herb. Sparrius), 18 October 2001.

### *Graphis lineola* Ach.

Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on *Mangifera indica*. Aptroot 51554 (ABL) and Sparrius 5644 (Herb. Sparrius), 6 October 2001; Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Podocarpus*. Aptroot 51633 (ABL), 7 October 2001. Same locality, on palm tree. Sparrius 5693 (Herb. Sparrius); Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Aptroot 52111 (ABL), 9 October 2001. Same locality, on *Pinus*. Sparrius 5709 (Herb. Sparrius), 9 October 2001. Same locality, on *Acer*. Sparrius 5703 (TUNG), 9 October 2001; Taipei County: Yangmingshan National Park, broadleaf cloud forest near summit of Mt. Tatun, 900 m alt., 51RUH511859, on *Ficus beeshiana*. Aptroot 53633 (ABL), 23 October 2001; Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Trema orientalis*. Sparrius 5890 (Herb. Sparrius), 9 October 2001.

### *Graphis marginata* Raddi

Nantou County: 45 km WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on *Symplocus*. Aptroot 52340 (ABL), 10 October 2001.

### *Graphis persicina* Meyen & Flotow

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Ficus*. Aptroot 53136 (ABL), 17 October 2001. Same locality, on *Roystonea regia*. Aptroot 53227 (ABL), 17 October 2001.

*Graphis radiata* Mont.

Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on *Mangifera indica*. Aptroot 51544 (ABL) and Sparrius 5645 (Herb. Sparrius), 6 October 2001. Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Ginkgo biloba*. Aptroot 51614 (ABL), 7 October 2001; Chiai County: 15 km NNE of Chiai, wayside trees in agricultural area, 75 m alt., 51QTG4715, on *Mangifera indica*. Aptroot 53384 (ABL) and Sparrius 5259 (TUNG), 18 October 2001.

*Graphis rimulosa* (Mont.) Trevisan

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52547 (ABL), 11 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Ficus microcarpa*. Aptroot 53202 (ABL), 17 October 2001. Same locality, on *Lonicera cumingiana*. Aptroot 53278 (ABL), 17 October 2001; Taipei County: Yangmingshan National Park, broadleaf cloud forest near summit of Mt. Tatun, 900 m alt., 51RUH511859, on *Ficus beeshiana*. Aptroot 53631 (ABL), 23 October 2001. Same locality, on *Machilus thunbergii*. Aptroot 53641 (ABL), 23 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Castanopsis*. Sparrius 5973 (TUNG), 10 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on mature *Shiia*. Sparrius 6064 (Herb. Sparrius), 11 October 2001.

*Graphis triticea* Nyl.

Hualien County: Taroko National Park, Hohuan Shan, Pseudotsuga forest, 2950 m alt., 51RUG231686, on *Pseudotsuga wilsoniana*. Aptroot 52938 (ABL), 13 October 2001; Taipei County: Yangmingshan National Park, broadleaf cloud forest near summit of Mt. Tatun, 900 m alt., 51RUH511859, on *Ficus beeshiana*. Aptroot 53666 (ABL), 23 October 2001.

*Graphis turgidula* Müll. Arg.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree branches. Aptroot 51790 (ABL), 8 October 2001. Same locality, on *Castanopsis*. Sparrius 5972 (Herb. Sparrius), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52171 (ABL), 9 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Machilus thunbergii*. Aptroot (ABL), 11 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52545 (ABL), 11 October 2001; Taipei County: Yangmingshan National Park, broadleaf cloud forest near summit of Mt. Tatun, 900 m alt., 51RUH511859, on *Ficus beeshiana*. Aptroot 53669 (ABL), 23 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Aphanamixis tripetala*. Sparrius 5372 (Herb. Sparrius), 17 October 2001.

*Gyalectidium ciliatum* G.Thor, Lücking & Tat. Matsumoto

This recently described species was so far only known from Japan. The record below shows that it is not obligately foliicolous.

Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Machilus thunbergii* leaves. Aptroot 52287 (ABL), 10 October 2001.

*Gyalidea japonica* Harada & Vězda

This recently described species was so far only known from Japan.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on sandstone. Aptroot 51694 (ABL), 7 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Sparrius 6269 (Herb. Sparrius), 12 October 2001.

*Gyalidea luzonensis* (Kalb and Vězda) Aptroot and Lücking

This taxon was recently raised to species level (Aptroot and Lücking 2003). It was so far only known from The Philippines and Papua New Guinea.

Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on shale. Aptroot 52829 (ABL), 13 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on shale. Aptroot 53447 (ABL), 20 October 2001.

*Gyalideopsis lambinonii* Kalb

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52173 (ABL), 9 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Shiia carlesii*. Aptroot 52441 (ABL), 11 October 2001.

*Gyalideopsis muscicola* P. James & Vězda

New to East Asia.

Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Shiia carlesii*. Aptroot 52458 (ABL), 11 October 2001; Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on *Prunus persica*. Sparrius 5452 (Herb. Sparrius), 7/21 October 2001.

*Gyalideopsis rostrata* Kalb & Vězda

New to Asia.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52174 (ABL), 9 October 2001.

*Gyalideopsis vainioi* Kalb & Vězda

New to Asia.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Cinnamomum*. Aptroot 51606 (ABL), 7 October 2001; Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on *Prunus persica*. Sparrius 5451 (Herb. Sparrius), 7/21 October 2001.

*Haematomma africanum* (Steiner) Dodge

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree branches. Aptroot 51789 (ABL), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Sparrius 5911 (Herb. Sparrius), 9 October 2001.

*Haematomma persoonii* (Fée) A. Massal.

Taipei County: 10 km NW of Taipei, Guandu Nature Park, road through Kandelia mangrove, 100 m alt., 51RUH452786, on *Macaranga*. Aptroot 53547 (ABL) and Sparrius 5480 (Herb. Sparrius), 22 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng,

broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Michelia formosana*. Sparrius 6014 (Herb. Sparrius), 10 October 2001.

*Haematomma wattii* (Stirton) Zahlbr.

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on *Picea morrisonicola*. Aptroot 51904 (ABL) and Sparrius 5830 (Herb. Sparrius), 8 October 2001.

*Hafellia bahiana* (Malme) Sheard

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Pinus* branches. Aptroot 51645 (ABL), 7 October 2001.

*Hafellia curatellae* (Malme) Marbach

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree branches. Aptroot 51766 (ABL), 8 October 2001.

*Halecania alpivaga* (Th. Fr.) M. Mayrhofer

New to Asia.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52753 (ABL), 12 October 2001.

*Heterodermia firmula* (Nyl.) Trevisan

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica* needles. Aptroot 52196 (ABL), 9 October 2001; Nantou County: Taroko National Park, above Meifeng, Hwy 14, 2050 m alt., on *Cyclobalanopsis*. Hawksworth (ABL), 3 May 1996.

*Hymenelia ceracea* (Arnold) Poelt & Vězda

New to East Asia.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on shale. Aptroot 52237 (ABL) and Sparrius 5970 (Herb. Sparrius), 9 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on shale. Aptroot 52481 (ABL), 11 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52879 and 52757 (ABL), 12 October 2001.

*Hymenelia epulotica* (Ach.) Lutzoni

New to East Asia.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on raised coral reef. Aptroot 53109 (ABL), 16 October 2001.

*Hymenelia lacustris* (Duby) Krempelh.

Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on wet pebbles. Aptroot 51562 (ABL), 6 October 2001; Taichung County: 20 km E of Tungshi, along road to Tahsuehshan at km 37, 1100 m alt., 51RTG947814, on granite. Aptroot 51752 (ABL) and Sparrius 5749 (Herb. Sparrius), 8 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51862 (ABL), 8 October 2001; Miaoli County: Shei-Pa National Park. 27 km E of Tungshi, near Tahsuehshan, along forest track, 2600 m alt., 51RUG000887, on wet shale.

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Aptroot 51972 (ABL), 8 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Sparrius 6260 (Herb. Sparrius), 12 October 2001.

*Immersaria athroocarpa* (Ach.) Rambold and Pietschm.

New to East Asia.

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51861 (ABL), 8 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52742 and 52737 (ABL) and Sparrius 6259, 6266 and 6267 (Herb. Sparrius), 12 October 2001.

*Koerberiella wimmeriana* (Körber) B. Stein

New to Asia.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52743 (ABL), 12 October 2001.

*Lasioloma arachnoideum* (Krempelh.) R. Sant.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on *Diospyros maritima* leaves. Aptroot 53115 (ABL), 16 October 2001.

*Lecanora achroa* Nyl.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on *Mallotus philippensis*. Aptroot 53137 (ABL), 16 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Lonicera cumingiana*. Aptroot 53285 (ABL), 17 October 2001.

*Lecanora chlarotera* Nyl.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Aptroot 52122 (ABL), 9 October 2001.

*Lecanora endophaeoides* Hue

Taipei County: Yangmingshan National Park, broadleaf cloud forest near summit of Mt. Tatun, 900 m alt., 51RUH511859, on *Ficus beeshiana*. Aptroot 53628 (ABL), 23 October 2001. Same locality, on *Machilus thunbergii*. Aptroot 53639 (ABL), 23 October 2001; Taipei County: Yangmingshan National Park, parking place near National Park Visitors Center, 480 m alt., 51RUH533829, on *Cinnamomum*. Aptroot 53649 (ABL), 23 October 2001. Same locality, on *Elaeocarpus*. Sparrius 5252 (Herb. Sparrius), 23 October 2001.

*Lecanora expallens* Ach.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on *Tsuga formosana*. Aptroot 52766 (ABL), 12 October 2001.

*Lecanora flavidorufa* Hue

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree branches. Aptroot 51773 (ABL), 8 October 2001. Same locality, on *Cryptomeria japonica*. Aptroot 51804 (ABL) and Sparrius 5788 (Herb. Sparrius), 8 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51876 (ABL), 8

October 2001. Same locality, on *Picea morrisonicola*. Aptroot 51906 (ABL) and Sparrius 5833 (Herb. Sparrius), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52161 (ABL), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Michelia formosana*. Sparrius 6015 (Herb. Sparrius), 10 October 2001.

*Lecanora fulvastra* Krempelh.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52163 (ABL), 9 October 2001. Same locality, on *Populus*. Aptroot 52134 (ABL), 9 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Diospyros kaki*. Aptroot 53489 (ABL), 20 October 2001.

*Lecanora gangaleoides* Nyl.

Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53565 (ABL), 22 October 2001.

*Lecanora hellmichiana* Poelt

The identity is not fully certain; this is a speciose group in the region.

Taichung County: 20 km E of Tungshi, along road to Tahsuehshan at km 37, 1100 m alt., 51RTG947814, on granite. Aptroot 51758 (ABL) and Sparrius 5747 (Herb. Sparrius), 8 October 2001; Miaoli County: Shei-Pa National Park. 27 km E of Tungshi, near Tahsuehshan, along forest track, 2600 m alt., 51RUG000887, on shale. Aptroot 51964 (ABL), 8 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52866 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on shale. Aptroot 52830 (ABL) and Sparrius 6333 (Herb. Sparrius), 13 October 2001; Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on shale. Sparrius 6411 and 6406 (Herb. Sparrius), 13 October 2001.

*Lecanora helva* Stizenb.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Cinnamomum*. Aptroot 51607 (ABL), 7 October 2001. Same locality, on *Cedrus*. Aptroot 51619 (ABL), 7 October 2001. Same locality, on palm tree. Sparrius 5696 (Herb. Sparrius), 7 October 2001; Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree branches. Aptroot 51791 (ABL), 8 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52562 (ABL), 11 October 2001. Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Ficus*. Aptroot 53292 (ABL), 17 October 2001. Same locality, on *Roystonea regia*. Sparrius 5319 (Herb. Sparrius), 17 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Sparrius 5933 (Herb. Sparrius), 9 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on deciduous tree. Sparrius 5811 (TUNG), 8 October 2001.



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### *Lecanora horiza* (Ach.) Lindsay

New to East Asia.

Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Shiia carlesii*. Aptroot 52442 (ABL), 11 October 2001.

### *Lecanora insignis* Degel.

New to Asia.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52664 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on Rhododendron wood. Aptroot 53672 (ABL), 12 October 2001. Same locality, on *Tsuga*. Sparrius 6283 (Herb. Sparrius), 12 October 2001.

### *Lecanora intricata* (Ach.) Ach.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52865 (ABL) and Sparrius 6228 (Herb. Sparrius), 12 October 2001.

### *Lecanora polytropa* (Hoffm.) Rabenh.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52864, 52889 and 52895 (ABL), 12 October 2001.

### *Lecanora pseudistera* Nyl.

Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53067 (ABL) and Sparrius 5411 (Herb. Sparrius), 16 October 2001; Pingtung County: Kenting, near Frog Rock, 0-1 m alt., 51QTE727276, on conglomeratic rock. Aptroot 53369 (ABL) and Sparrius 5282 (Herb. Sparrius), 18 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53563 (ABL) and Sparrius 5507 (Herb. Sparrius), 22 October 2001.

### *Lecanora subimmergens* Vainio

Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on shale. Aptroot 52994 (ABL), 13 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on slate. Sparrius 5218 (Herb. Sparrius), 20 October 2001.

### *Lecanora symmicta* (Ach.) Ach.

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on *Picea morrisonicola*. Aptroot 51928 (ABL), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Alnus japonica*. Aptroot 52183 (ABL), 9 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52644 (ABL), 12 October 2001. Same locality, on wood. Sparrius 6193 (Herb. Sparrius), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on *Tsuga formosana*. Aptroot 52769 (ABL), 12 October 2001. Same locality, on Rhododendron wood. Aptroot 52772 (ABL) and Sparrius 6287 (Herb. Sparrius), 12 October 2001. Same locality, on bamboo. Sparrius 6280 (Herb. Sparrius), 12 October 2001.

*Lecanora tropica* Zahlbr.

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Roystonea regia*. Aptroot 53209 (ABL), 17 October 2001.

*Lecanora vainioi* Vänškä

New to East Asia.

Miaoli County: Shei-Pa National Park, 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51873 (ABL), 8 October 2001.

*Lecanora varia* (Hoffm.) Ach.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on Rhododendron wood. Aptroot 53675a (ABL), 12 October 2001.

*Lecidea aurigera* Fée

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Zelkova serrata*. Aptroot 52043 (ABL), 9 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on bark of mature tree. Sparrius 5214 and 5205 (Herb. Sparrius), 20 October 2001.

*Lecidea erythrophaea* Flörke

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Tsuga formosana* branches. Aptroot 52727 (ABL) and Sparrius 6159 (Herb. Sparrius), 12 October 2001.

*Lecidea fuliginosa* Taylor

New to Asia.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52869 (ABL), 12 October 2001.

*Lecidea hypomela* Nyl.

Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Ardisia sieboldii*. Aptroot 53480 and 53474 (ABL) and Sparrius 5204 (TUNG), 20 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on tree bark. Sparrius 5378 (Herb. Sparrius), 17 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Castanopsis*. Sparrius 5971, 5998 and 6026 (Herb. Sparrius), 10 October 2001.

*Lecidea hypopta* Ach.

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on *Pseudotsuga wilsoniana* wood. Aptroot 52943a (ABL), 13 October 2001.

*Lecidea lapicida* (Ach.) Ach.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52740 and 52896 (ABL) and Sparrius 6231 (Herb. Sparrius), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, mountain pass, 3300 m alt., 51RUG247705, on shale. Sparrius 6318 (Herb. Sparrius), 13 October 2001.

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Taipei County: Yangmingshan National Park, Hsiaoyiokeng Recreation Area, along Hwy 2, 800 m alt., 51RUH533829, on rock near sulphur fumaroles. Hawksworth and Taylor (ABL), 19 November 1997; Taipei County: Yangmingshan National Park, Yang Ming Mountain, Shiau-Yu-Keng, 850 m alt., on volcanic rock. Hawksworth (ABL), 1 May 1996.

*Lecidella achristotera* (Nyl.) Hertel & Leuckert

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Tsuga formosana* branches. Aptroot 52724 (ABL), 12 October 2001.

*Lecidella elaeochroma* (Ach.) M. Choisy

New to East Asia.

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Michelia formosana*. Aptroot 52034 (ABL), 9 October 2001

*Lecidella euphorea* (Flörke) Hertel

Taichung County: Taichung, park around Natural History Museum, 100 m alt., 51RTG630735, on *Koelreuteria formosana*. Aptroot 51567 (ABL), 6 October 2001.

*Lecidella xylophila* (Th. Fr.) Knoph and Leuckert

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on wood. Aptroot 52694 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on wood. Aptroot 52776 (ABL), 12 October 2001.

*Lempholemma chalazanum* (Ach.) B. de Lesd.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on clay in garden. Aptroot 52733 (ABL), 12 October 2001.

*Lepraria caesioalba* (B. de Lesd.) J.R. Laundon

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on soil. Aptroot 52783 (ABL), 12 October 2001.

*Lepraria crassissima* (Hue) Lettau

New to East Asia.

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52086 (ABL), 9 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52151 (ABL), 9 October 2001.

*Letrouitia aureola* (Tuck.) Hafellner & Bellemère

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Vitex quinquefolia*. Sparrius 5375 (Herb. Sparrius), 17 October 2001.

*Letrouitia parabola* (Nyl.) R. Sant. & Hafellner

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Ficus*. Aptroot 53298 (ABL), 17 October 2001.

*Lopadium disciforme* (Flotow) Kullhem

New to Asia.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Sparrius 6137 and 6139 (Herb. Sparrius, ABL), 12 October 2001.

*Maronea constans* (Nyl.) Hepp

New to East Asia. One of the specimens is aberrant in its saxicolous habit.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52160 (ABL), 9 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51867 (ABL), 8 October 2001.

*Mazosia melanophthalma* (Müll. Arg.) R. Sant.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on *Diospyros maritima* leaves. Aptroot 53118 (ABL), 16 October 2001.

*Mazosia ocellata* (Nyl.) Müll. Arg.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on *Erythrina variegata*. Aptroot 53157 (ABL), 16 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Acacia confusa*. Aptroot 53179 (ABL), 17 October 2001. Same locality, on *Roystonea regia*. Aptroot 53234 (ABL), 17 October 2001.

*Megalospora atrorubicans* (Nyl.) Zahlbr. ssp. *atrorubicans*

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52601 (ABL), 12 October 2001.

*Megalospora sulphurata* Meyen

Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Eurya*. Aptroot 52401 (ABL), 11 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52600 (ABL) and Sparrius 6156 (Herb. Sparrius) and 6171 (TUNG), 12 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Abies*. Sparrius 6326 (Herb. Sparrius), 11 October 2001; Hualien County: Taroko National Park, Hohuan Shan, Pseudotsuga forest, 2950 m alt., 51RUG231686, on *Pseudotsuga*. Sparrius 6356, 6361 (Herb. Sparrius) and 6347 (TUNG), 13 October 2001.

*Micarea adnata* Coppins

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on wood. Aptroot 52973 (ABL) and Sparrius 6357 and 6370 (Herb. Sparrius), 13 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on wood. Sparrius 6438 (Herb. Sparrius), 12 October 2001.

*Micarea botryodes* (Nyl.) Coppins

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on wood. Sparrius 6183 and 6185 (Herb. Sparrius), 12 October 2001.

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*Micarea cinerea* (Schaerer) Hedl.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on wood. Sparrius 6177 and 6439 (Herb. Sparrius), 12 October 2001.

*Micarea denigrata* (Fr.) Hedl.

New to East Asia.

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on wood. Sparrius 6329 (Herb. Sparrius), 11 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on wood. Aptroot 52213 (ABL), 9 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on *Michelia formosana* wood. Aptroot 52332 (ABL), 10 October 2001.

*Micarea lignaria* (Ach.) Hedl.

New to East Asia.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on shale. Aptroot 52244 (ABL), 9 October 2001. Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on soil. Aptroot 52789 (ABL), 12 October 2001.

*Micarea lithinella* (Nyl.) Hedl.

New to Asia.

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51888 (ABL), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on shale. Aptroot 52233 (ABL), 9 October 2001.

*Micarea micrococca* (Körber) Gams ex Coppins

New to Asia.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on roots. Aptroot 52204 (ABL), 9 October 2001. Same locality, on *Alnus japonica*. Aptroot 52184 (ABL), 9 October 2001. Same locality, on *Cryptomeria japonica* 52170 (ABL) and Sparrius 5908 (Herb. Sparrius), 9 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on wood. Aptroot 52697 (ABL), 12 October 2001.

*Micarea misella* (Nyl.) Hedl.

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on wood. Aptroot 52695 (ABL), 12 October 2001.

*Micarea neostipitata* Coppins & May

New to Asia. Only recently described from America.

Nantou County: 45 km WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on *Schima superba*. Aptroot 52348 (ABL) and Sparrius 6041 (Herb. Sparrius), 10 October 2001.

*Micarea peliocarpa* (Anzi) Coppins & R. Sant.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on *Cryptomeria japonica*. Aptroot 51828 (ABL), 8

October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on roots. Aptroot 52210 (ABL), 9 October 2001. Same locality, on shale Aptroot 52230 (ABL), 9 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Tsuga* branches. Aptroot 52729 (ABL), 12 October 2001.

*Micarea stipitata* Coppins & P. James

New to East Asia.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on *Cryptomeria japonica*. Aptroot 51837 (ABL), 8 October 2001.

*Micarea sylvicola* (Flotow) Vězda & V. Wirth

New to East Asia.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on shale. Aptroot 52241 (ABL) and Sparrius 5969 (Herb. Sparrius), 9 October 2001; Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on shaded shale. Sparrius 5444 and 5445 (Herb. Sparrius), 13 October 2001; Hualien County: Taroko National Park, Hohuan Shan, Pseudotsuga forest, 2950 m alt., 51RUG231686, on shale. Aptroot 52967 (ABL) and Sparrius 6374 (Herb. Sparrius), 13 October 2001.

*Mycoblastus affinis* (Schaerer) Schauer

Hualien County: Taroko National Park, Hohuan Shan, Pseudotsuga forest, 2950 m alt., 51RUG231686, on *Pseudotsuga wilsoniana*. Aptroot 52976 (ABL), 13 October 2001.

*Ocellularia berkeleyana* (Mont.) Zahlbr.

Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on conglomeratic rock. Aptroot 53315 (ABL), 17 October 2001.

*Ochrolechia africana* Zahlbr.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52633 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on *Pseudotsuga*. Sparrius 6353 (Herb. Sparrius), 13 October 2001.

*Ochrolechia margarita* Poelt

So far only known from the Himalayas.

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on *Picea morrisonicola*. Aptroot 51915 (ABL), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52159 (ABL), 9 October 2001; Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on *Pseudotsuga wilsoniana*. Aptroot 52941 (ABL), 13 October 2001.

*Ochrolechia pallescens* (L.) A. Massal.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52605 (ABL), 12 October 2001; Hualien

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County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on *Tsuga formosana*. Aptroot 52765 (ABL), 12 October 2001.

### *Ochrolechia rosella* (Müll. Arg.) Verseghy

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51863 (ABL), 8 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Shiia carlesii*. Aptroot 52439 (ABL), 11 October 2001.

### *Ochrolechia subpallescens* Verseghy

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree branches. Aptroot 51768 (ABL), 8 October 2001.

### *Ochrolechia yasudae* Vainio

So far only known from the Himalayas and Japan. Reports from Europe are erroneous.

Hualien County: Taroko National Park, Hohuan Shan, Pseudotsuga forest, 2950 m alt., 51RUG231686, on *Pseudotsuga wilsoniana*. Aptroot 52958 (ABL), 13 October 2001.

### *Opegrapha calcarea* Turner ex Sm.

New to East Asia.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on raised coral reef. Aptroot 53111 (ABL) and Sparrius 5402 and 5404 (Herb. Sparrius), 16 October 2001; Kaohsiung County: Kaohsiung, Tsaishan, 5-100 m alt., 51QTF1706, on raised coral reef. Sparrius 5428 (Herb. Sparrius), 16 October 2001.

### *Opegrapha herbarum* Mont.

Pingtung County: Kenting, Eluanbi, southernmost point, 0-1 m alt., 51QTE787230, on *Pemphis maritima* branches. Aptroot 53308 (ABL) and Sparrius 5308 (Herb. Sparrius), 17 October 2001.

### *Opegrapha melanospila* Müll. Arg.

New to Asia. Lichenicolous on *Parmotrema praesorediosum*.

Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53052 (ABL), 16 October 2001.

### *Opegrapha viridis* (Ach.) Nyl.

Chiai County: 15 km NNE of Chiai, wayside trees in agricultural area, 75 m alt., 51QTG4715, on *Mangifera indica*. Aptroot 53389 (ABL), 18 October 2001.

### *Pachyphiale fagicola* (Hepp) Zwackh

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52548 (ABL), 11 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Ardisia sieboldii*. Aptroot 53477 (ABL), 20 October 2001.

### *Peltula bolanderi* (Tuck.) Wetmore

Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53066 (ABL), 16 October 2001; Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on conglomeratic rock.

Aptroot 53320 (ABL), 17 October 2001; Pingtung County: Kenting, near Frog Rock, 0-1 m alt., 51QTE727276, on conglomeratic rock. Aptroot 53338 (ABL), 18 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53588 (ABL) and Sparrius 5497 (Herb. Sparrius), 22 October 2001.

*Peltula euploca* (Ach.) Poelt ex Ozenda & Clauzade

Kaohsiung County: Kaohsiung, Tsaishan, 5-100 m alt., 51QTF1706, on raised coral reef. Aptroot 53035 (ABL), 16 October 2001; Taichung County: 30 km E of Taichung, 5 km W of Kukwan, along the road, 700 m alt., 51RTG929745, on shale. Aptroot 53537 (ABL) and Sparrius 5232 (Herb. Sparrius), 20 October 2001; Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Sparrius 5414 (Herb. Sparrius), 16 October 2001.

*Peltula obscurans* (Nyl.) Gyelnik

Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on sandstone. Aptroot 51721a (ABL), 7 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on shale. Aptroot 52232 (ABL), 9 October 2001; Pingtung County: Kenting, near Frog Rock, 0-1 m alt., 51QTE727276, on conglomeratic rock. Sparrius 5275 (Herb. Sparrius), 18 October 2001; Taichung County: Taichung, park around Natural History Museum, 100 m alt., 51RTG630735, on limestone. Sparrius 5660 (Herb. Sparrius), 6 October 2001; Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on conglomerate rock. Sparrius 5293 (Herb. Sparrius), 17 October 2001.

*Peltula placodizans* (Zahlbr.) Wetmore

Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on conglomeratic rock. Aptroot 53324 (ABL), 17 October 2001.

*Pertusaria amara* (Ach.) Nyl.

The material has KC+ violet soralia and apothecia.

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52593 (ABL), 11 October 2001.

*Pertusaria xanthoplaca* Müll. Arg.

Pingtung County: Kenting, near Frog Rock, 0-1 m alt., 51QTE727276, on conglomeratic rock. Aptroot 53335 (ABL) and Sparrius 5281 (Herb. Sparrius), 18 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53585 (ABL) and Sparrius 5511 (Herb. Sparrius), 22 October 2001; Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on conglomerate rock. Sparrius 5291 (Herb. Sparrius), 17 October 2001.

*Phaeographina chrysentera* (Mont.) Müll. Arg.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree branches. Aptroot 51781 (ABL), 8 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Schima superba*. Aptroot 52265 (ABL), 10 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Prunus*. Aptroot 53461 (ABL), 20 October 2001.



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### *Phaeographina heterospora* (Nyl.) Zahlbr.

New to Asia.

Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on conglomeratic rock. Aptroot 53329 (ABL), 17 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Ficus nervosa*. Aptroot 53472 (ABL), 20 October 2001.

### *Phaeographina prosiliens* (Mont. & van den Bosch) Müll. Arg.

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52630 (ABL) and Sparrius 6148 (Herb. Sparrius), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on *Pseudotsuga wilsoniana*. Aptroot 52979 (ABL) and Sparrius 6363 (Herb. Sparrius), 13 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Abies*. Sparrius 6320 (Herb. Sparrius), 11 October 2001.

### *Phaeographina scalpturata* (Ach.) Müll. Arg.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Podocarpus*. Aptroot 51632 (ABL), 7 October 2001; Taipei County: Yangmingshan National Park, parking place near National Park Visitors Center, 480 m alt., 51RUH533829, on *Eleocarpus silvestris*. Aptroot 53653 (ABL), 23 October 2001. Same locality, on *Acacia confusa*. Aptroot 53645 (ABL), 23 October 2001.

### *Phaeographis neotricosa* Redinger

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Acer*. Aptroot 51640 (ABL), 7 October 2001.

### *Phaeographis planiuscula* (Mont. & van den Bosch) Müll. Arg.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree branches. Aptroot 51770 (ABL), 8 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Shiia carlesii*. Aptroot 52443 (ABL), 11 October 2001.

### *Phlyctis argena* (Sprengel) Flotow

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on *Zelkova serrata*. Aptroot 52055 (ABL), 9 October 2001. Same locality, on *Trema orientalis*. Aptroot 52037 (ABL), 9 October 2001; Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on *Magnolia grandiflora*. Aptroot 52928 (ABL) and Sparrius 6388 (Herb. Sparrius), 13 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on shale. Aptroot 53436 (ABL), 20 October 2001.

### *Phyllopettula corticola* (Büdel & R. Sant.) Kalb

New to Asia. In contrast to its epithet, it seems to prefer rocky substrates in this region.

Koahsiung County: Kaohsiung, Tsaishan, 5-100 m alt., 51QTF1706, on raised coral reef. Aptroot 53033 (ABL), 16 October 2001; Pingtung County: Kenting, near Frog Rock, 0-1 m alt., 51QTE727276, on conglomeratic rock. Aptroot 53340 (ABL), 18 October 2001; Taichung County: 30 km E of Taichung, 5 km W of Kukwan, along the road, 700 m alt., 51RTG929745, on shale. Aptroot 53530 (ABL), 20 October 2001; Taipei County: 25 km N of

Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53600 (ABL), 22 October 2001.

*Phyllopsora albicans* Müll. Arg.

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52068 (ABL), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Machilus thunbergii*. Aptroot 52299 (ABL), 10 October 2001.

*Phyllopsora buettneri* (Müll. Arg.) Zahlbr.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on bark. Aptroot 51854 (ABL) and Sparrius 5783 (Herb. Sparrius), 8 October 2001; Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52069 (ABL), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Castanopsis*. Aptroot 52302 (ABL) and Sparrius 5985 (Herb. Sparrius), 10 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52365 (ABL), 11 October 2001; Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on *Pseudotsuga wilsoniana*. Aptroot 52950 (ABL), 13 October 2001.

*Phyllopsora chlorophaea* (Müll. Arg.) Zahlbr.

Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Castanopsis*. Aptroot 52310 (ABL), 10 October 2001. Same locality, on *Eriobotrya*. Aptroot 52255 (ABL), 10 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52504 (ABL), 11 October 2001.

*Phyllopsora corallina* (Eschw.) Müll. Arg.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on *Cryptomeria japonica*. Aptroot 51839 (ABL), 8 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on *Picea morrissonicola*. Aptroot 51939 (ABL), 8 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52599 (ABL), 11 October 2001.

*Phyllopsora furfuracea* (Pers.) Zahlbr.

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52091, 52070 and 52090 (ABL), 9 October 2001.

*Phyllopsora pannosa* Müll. Arg.

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Heritiera littoralis*. Aptroot 53265 (ABL), 17 October 2001. Same locality, on *Semecarpus*. Aptroot 53175 (ABL), 17 October 2001.

*Physcidia cylindrophora* (Taylor) Hue

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52067 (ABL), 9 October 2001.

## Fungal Diversity

### *Piccolia conspersa* (Fée) Hafellner

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Aralia*. Sparrius 5476 and 5477 (Herb. Sparrius, ABL), 7 October 2001.

### *Piccolia elmeri* (Vainio) Hafellner

A rarely reported species, so far only known from The Philippines and Papua New Guinea.

Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Shiia*. Sparrius 6065 (Herb. Sparrius, ABL), 11 October 2001.

### *Placynthiella icmalea* (Ach.) Coppins & P. James

The material is richly fertile.

Taichung County: Taichung, Tunghai University Campus, 100 m alt., 51RTG5776, on *Eucalyptus*. Aptroot 51519 (ABL) and Sparrius 5651 (TUNG), 6 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on *Picea morrissonicola* wood. Aptroot 51901 (ABL) and Sparrius 5813 (Herb. Sparrius), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on wood. Aptroot 52215 (ABL) and Sparrius 5941 (Herb. Sparrius), 9 October 2001. Same locality, on *Populus*. Sparrius 5930 (Herb. Sparrius) and 5936 (TUNG), 9 October 2001.

Nantou County: 45 km WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on mature *Michelia formosana*. Sparrius 6036 (Herb. Sparrius), 10 October 2001; Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on *Abies kawakamii* wood. Aptroot 52825 (ABL) and Sparrius 6331 (Herb. Sparrius), 13 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on acid soil. Sparrius 6253 (TUNG), 12 October 2001.

### *Placynthiella uliginosa* (Schrader) Coppins & P. James

New to East Asia. The material is richly fertile.

Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on *Abies kawakamii* wood. Aptroot 52827 (ABL), 13 October 2001.

### *Polysporina simplex* (Davies) Vězda

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52882 (ABL) and Sparrius 5224 (Herb. Sparrius), 12 October 2001.

### *Porpidia cinereoatra* (Ach.) Hertel & Knoph

Taichung County: 20 km E of Tungshi, along road to Tahsuehshan at km 37, 1100 m alt., 51RTG947814, on granite. Aptroot 51754 and 51755 (ABL), 8 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51878 (ABL), 8 October 2001; Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52098 (ABL), 9 October 2001; Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on shale. Aptroot 52984 (ABL), 13 October 2001.

*Porpidia crustulata* (Ach.) Hertel & Knoph

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Sparrius 6270 (Herb. Sparrius), 12 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Sparrius 5834 (Herb. Sparrius), 8 October 2001.

*Porpidia macrocarpa* (DC.) Hertel & Schwab

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52897 and 52756 (ABL) and Sparrius 6223 and 6277 (Herb. Sparrius), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on shale. Aptroot 52832 (ABL), 13 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Sparrius 5837 and 5839 (Herb. Sparrius), 8 October 2001.

*Porpidia platycarpoides* (Bagl.) Hertel

Taichung County: 20 km E of Tungshi, along road to Tahsuehshan at km 37, 1100 m alt., 51RTG947814, on granite. Aptroot 51765 (ABL) and Sparrius 5748 (Herb. Sparrius), 8 October 2001; Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on shale. Sparrius 6405 (Herb. Sparrius), 13 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on shale. Sparrius 6160 (Herb. Sparrius), 12 October 2001.

*Protoblastenia rupestris* (Scop.) Steiner

New to East Asia.

Miaoli County: Shei-Pa National Park. 27 km E of Tungshi, near Tahsuehshan, along forest track, 2600 m alt., 51RUG000887, on gneiss. Sparrius 5859 (Herb. Sparrius, ABL), 8 October 2001.

*Protoparmelia atriseda* (Fr.) R. Sant. & V. Wirth

New to Asia.

Hualien County: Taroko National Park, Hohuan Shan, mountain pass, 3300 m alt., 51RUG247705, on shale. Aptroot 52807 (ABL), 13 October 2001.

*Protoparmelia badia* (Hoffm.) Hafellner

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52878 and 52867 (ABL), 12 October 2001.

*Psilolechia lucida* (Ach.) M. Choisy

The material is richly fertile.

Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on shale. Aptroot 52487 (ABL) and Sparrius 6090 (Herb. Sparrius), 11 October 2001.

*Psorotichia murorum* A. Massal.

New to Asia. It seems to be common in Taiwan, especially on artificial substrata, and might have been overlooked elsewhere.

Taichung County: Taichung, park around Natural History Museum, 100 m alt., 51RTG630735, on limestone. Aptroot 51578 (ABL) and Sparrius 5663 (TUNG), 6 October

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2001; Tainan County: Tainan, Anping, Fort Zeelandia, 5 m alt., 51QTF123466, on mortar. Aptroot 53006 and 53008 (ABL) and Sparrius 5432 (Herb. Sparrius), 15 October 2001. Same locality, on brick. Aptroot 53022 (ABL), 15 October 2001; Kaohsiung County: Kaohsiung, Tsaishan, 5-100 m alt., 51QTF1706, on raised coral reef. Aptroot 53031 (ABL) and Sparrius 5427 (Herb. Sparrius), 16 October 2001; Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53070, 53069 and, 53053 (ABL), 16 October 2001; Pingtung County: Kenting, bay between Sail Rock and Eluanbi, 0-1 m alt., 51QTE777238, on concrete. Aptroot 53305 (ABL) and Sparrius 5311 (TUNG), 17 October 2001; Taipei County: 10 km NW of Taipei, Guandu Nature Park, road through *Kandelia* mangrove, 1-100 m alt., 51RUH452786, on concrete. Aptroot 53541 (ABL), 22 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on raised coral reef. Aptroot 53608 (ABL), 22 October 2001.

### *Psorotichia schaeereri* (A. Massal.) Arnold

New to East Asia.

Taichung County: Taichung, park around Natural History Museum, 100 m alt., 51RTG630735, on limestone. Aptroot 51579 (ABL), 6 October 2001; Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on sandstone. Aptroot 51739 (ABL), 7 October 2001.

### *Pterygiopsis convoluta* A. Henssen

New to East Asia.

Taichung County: 30 km E of Taichung, 5 km W of Kukwan, along the road, 700 m alt., 51RTG929745, on shale. Aptroot 53522 (ABL), 20 October 2001.

### *Punctelia perreticulata* Räsänen

New to Asia. In the region, this species has been confused with *Punctelia subrudecta* (Nyl.) Krog.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on *Cryptomeria japonica*. Aptroot 51818 (ABL), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Acer*. Aptroot 52191 (ABL), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Castanopsis*. Aptroot 52322 (ABL), 10 October 2001.

### *Pyrrhospora russula* (Ach.) Hafellner

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on branches. Aptroot 52181 (ABL), 9 October 2001; Nantou County: 44 km WNW of Hualien, Meifeng, broadleaf forest remnant in valley, 2050 m alt., 51RUG146655, on *Michelia formosana*. Aptroot 52284 (ABL) and Sparrius 6012 (Herb. Sparrius), 10 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii* branches. Aptroot 52720 (ABL), 12 October 2001. Same locality, on *Tsuga formosana* branches. Aptroot 52731 (ABL), 12 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Abies*. Sparrius 6323 (Herb. Sparrius), 11 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on *Shiia* branches. Aptroot 53455 (ABL) and Sparrius 5199 (Herb. Sparrius), 20 October 2001; Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on *Magnolia grandiflora* near farmhouse. Sparrius 6378 (Herb. Sparrius), 13 October 2001.

*Ramalodium japonicum* (Asah.) A. Henssen

So far only known from Japan.

Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53037 (ABL), 16 October 2001.

*Rhizocarpon badioatrum* (Flörke ex Sprengel) Th. Fr.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52754 and 52738 (ABL) and Sparrius 6274 (Herb. Sparrius), 12 October 2001.

*Rhizocarpon expallescens* Th. Fr.

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, mountain pass, 3300 m alt., 51RUG247705, on shale. Aptroot 52806 (ABL), 13 October 2001.

*Rhizocarpon intermediellum* Räsänen

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52894 (ABL) and Sparrius 6257 (Herb. Sparrius), 12 October 2001.

*Rhizocarpon plicatile* (Leighton) A.L. Sm.

New to East Asia.

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51874 and 51883 (ABL), 8 October 2001.

*Rhizocarpon reductum* Th. Fr.

New to East Asia.

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51870 and 51871 (ABL), 8 October 2001; Miaoli County: Shei-Pa National Park. 27 km E of Tungshi, near Tahsuehshan, along forest track, 2600 m alt., 51RUG000887, on shale. Aptroot 51966 (ABL), 8 October 2001.

*Rhizocarpon superficiale* (Schaerer) Malme

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52899 (ABL), 12 October 2001.

***Rimularia gyromuscosa* Aptroot, *sp. nov.*** (Fig. 5)

*Rimularia muscicola* apotheciis dense gyrosis, paraphysibus moniliformibus.

Type: TAIWAN, Hualien County: Taroko National Park, Hohuan Shan, mountain pass, 3300 m alt., 51RUG247705, on mosses on shale. Aptroot 52804 (**B-holotype**, ABL, **TUNG-isotypes**), 13 October 2001.

*Thallus* thick, smooth and forming a thick cartilaginous film, brown, waxy where abraded. *Apothecia* (Fig. 5) irregular in outline, starting as a small rounded disc, soon gyrose with branching, black lines, partly in sectors, black, 2-3 mm diam, convex. *Excipulum* black, very dense, *ca.* 50 µm wide.

*Hypotheceum* red-brown, in KOH brown. *Hymenium* hyaline, but with brown sectors, especially towards the bottom, up to 200 µm high. *Epihymenium* bluish, in KOH brown. *Asci* clavate, Rimularia-type, with IKI-positive dome and ring in the tholus, separated by IKI-negative region. *Paraphyses* branched, 2 µm, wide with moniliform cells in KOH. *Ascospores* 10-12.5 × 5-7 µm, ellipsoid, simple, hyaline, wall relatively thick (ca. 0.5 µm), 8 per ascus. *Pycnidia* unknown. *Chemistry*: no secondary substances detected with TLC; all spot reactions negative.

This new species chiefly differs from the ca. 15 other species currently known in the genus by its densely gyrose apothecia, the thick, somewhat waxy thallus, moniliform paraphyses and the substrate preference. It shows most affinities to the lichenicolous species in the genus. It differs from the closely related genus *Lithographa* by the presence of persistent paraphyses.

*Rinodina aspersa* (Borrer) J.R. Laundon

New to East Asia.

Taichung County: 30 km E of Taichung, 5 km W of Kukwan, along the road, 700 m alt., 51RTG929745, on shale. Aptroot 53523 (ABL), 20 October 2001.

*Rinodina capensis* Hampe

New to East Asia.

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52375 (ABL), 11 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52634 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on *Pseudotsuga wilsoniana*. Aptroot 52981 (ABL), 13 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on deciduous tree bark. Sparrius 5808 (Herb. Sparrius), 8 October 2001.

*Rinodina colobina* (Ach.) Th. Fr.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on bark. Aptroot 51847 (ABL), 8 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52374 (ABL) and Sparrius 6112 (Herb. Sparrius), 11 October 2001.

*Rinodina conradii* Körber

Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on mosses on shale. Aptroot 52931 (ABL), 13 October 2001.

*Rinodina gennarii* Bagl.

Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Dendropanax*. Aptroot 52426 (ABL), 11 October 2001.

*Rinodina oxydata* (A. Massal.) A. Massal.

Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53065 (ABL), 16 October 2001; Pingtung County: Kenting, 1 km N of Kenting village, 50 m alt., 51QTE725290, on conglomeratic rock. Aptroot 53312 (ABL), 17 October 2001; Taichung County: Taichung, Taichung Park, 100 m alt., 51RTG645721, on sandstone. Aptroot 53687 (ABL), 19 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on shale. Aptroot 53417 (ABL), 20 October 2001; Taichung County: 30 km E of Taichung, 5 km W of Kukwan, along the road, 700 m alt., 51RTG929745, on shale. Aptroot 53526 (ABL) and Sparrius 5238 (Herb. Sparrius), 20 October 2001; Taipei County: 10 km NW of Taipei, Guandu Nature Park, road through Kandelia mangrove, 1 m alt., 51RUH452786, on volcanic rock. Aptroot 53538 (ABL), 22 October 2001; Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53567 (ABL) and Sparrius 5531 (Herb. Sparrius), 22 October 2001.

*Rinodina perminuta* Groenhart ex H. Mayrhofer

Pingtung County: 45 km SE of Kaohsiung, near Fangshan, rock outcrops, 20 m alt., 51QTE626526, on conglomeratic rock. Aptroot 53055 (ABL), 16 October 2001; Pingtung County: Kenting, near Frog Rock, 0-1 m alt., 51QTE727276, on conglomeratic rock. Aptroot 53344 (ABL), 18 October 2001.

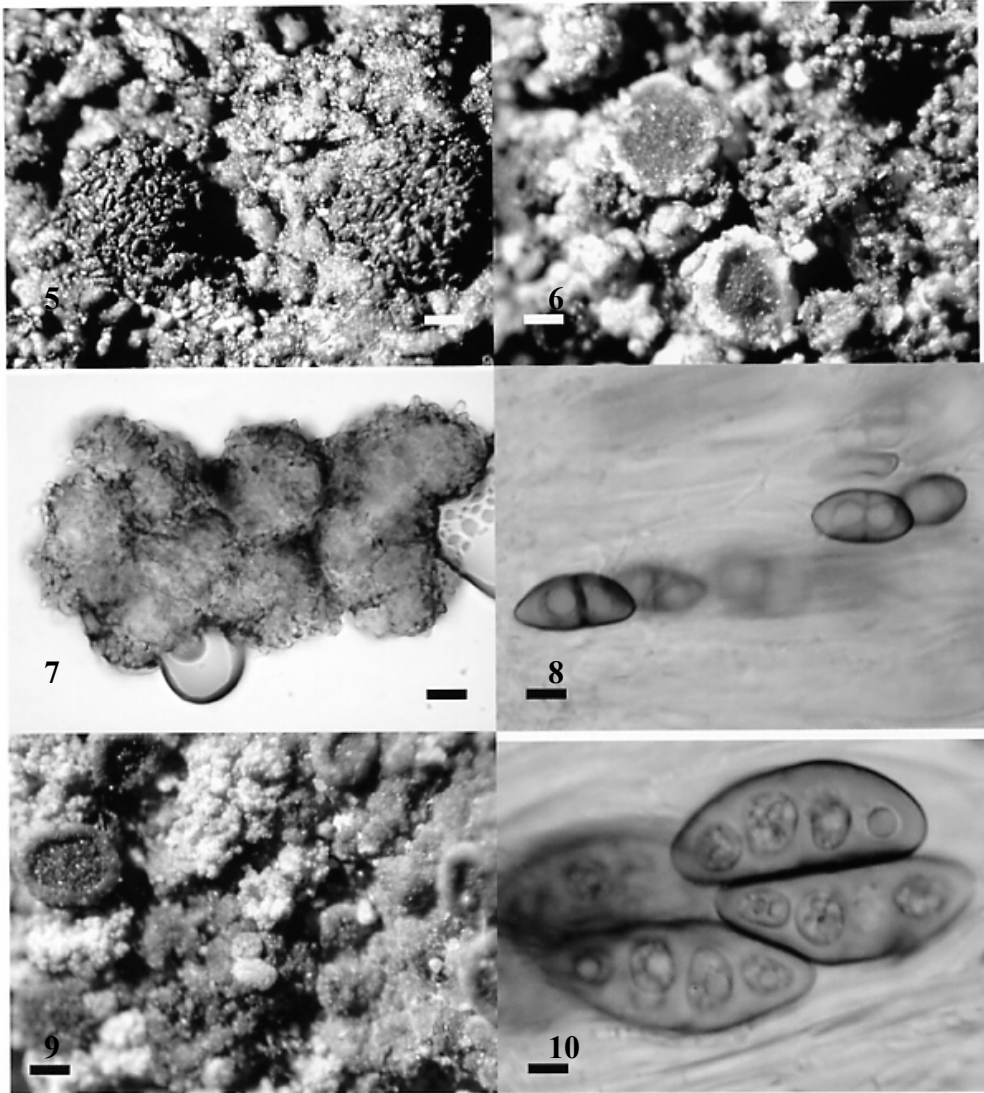
***Rinodina placynthielloides* Aptroot, sp. nov.** (Figs 6-8)

*Rinodina* thallo dense isidioso, ascis tetrasporis, ascosporae typis Pachysporaria.

Type: TAIWAN, Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on granite of wall along path. Aptroot 53451 (B-holotype, ABL-paratypes), 20 October 2001.

*Thallus* rather thin, consisting of greenish grey areoles of c. 0.1-0.3 mm diam., which are a bit radially elongated towards the thallus margin and fuse together in the central part, that becomes usually completely covered (Fig. 6) by isidia. *Isidia* (Fig. 7) cylindrical to gnarled, densely irregularly branched, brownish, tiny (often less than 0.05 mm wide, but 0.3-0.7 mm high), covering most of the thallus, covered by 2-3 µm wide, extruding, spinulose brownish hyphae. *Apothecia* (Fig. 6) rare, sessile, round, 0.3-0.5 mm diam., lecideine (only algae present in the excipulum below the apothecia), margin greenish grey, smooth, with flat, brown disc. *Excipulum* without algae, without distinct cortex. *Hypothecium* hyaline. *Hymenium* hyaline, up to 80 µm high. *Epihymenium* with swollen brown paraphyse-tips. *Ascospores* (Fig. 8) 15-20 × 7-10 µm, ellipsoid with pointed ends, brown, Pachysporaria-type, lumina usually rounded to irregular, 4 per ascus. *Pycnidia* unknown. *Chemistry*: all spot reactions negative, no secondary metabolites found with TLC.





**Figs 5-10.** Holotypes. **Fig. 5.** *Rimularia gyromuscosa*, habitus. **Figs 6-8.** *Rinodina placynthielloides*. **Fig. 6.** Habitus with apothecia and isidia. **Fig. 7.** Isidium. **Fig. 8.** Ascospores. **Figs 9-10.** *Rinodina pluriloculata*. **Fig. 9.** Habitus with apothecia and soredia. **Fig. 10.** Ascospores. Bars: 5 = 0.7 mm; 6, 9 = 0.2 mm; 7 = 10  $\mu$ m; 8 = 6  $\mu$ m; 10 = 5  $\mu$ m.

This new species chiefly differs from the very few (about five) other isidiate species currently known in the genus by areolate thallus with discrete, finely branched isidia and the 4-spored asci.

***Rinodina pluriloculata* Aptroot & Sparrius, sp. nov.** (Figs 9-10)

*Rinodina griseosoralifera* similis, sed species corticola et saxicola et differt ascosporis 4-9-loculatis, 24-30 × 12-15 µm.

Type: CHINA, Yunnan Province, 5 km W of Kunming, just outside of the city, 1750 m alt., 48RTN604714, on bark of treebase of living *Eucalyptus globulus*. Aptroot 55505 (B-holotype; ABL, KUN-isotypes), 16 October 2002.

*Thallus* rather thick, continuous but verrucose, brownish green, covered by initially punctiform, discrete, orbicular, convex to flattened soralia (Fig. 9) of 0.1-0.5 mm diam. *Soredia* granular, bluish, eventually confluent and covering most of the thallus. *Apothecia* (Fig. 9) rather numerous, sessile, round, 0.3-0.5 mm diam., lecanorine, brownish green with a flat, dark brown disc. *Excipulum* lecanorine, at the inner side without algae (parathecium or true exciple present), centrally densely filled with algae, at the outside with a distinct, brownish, ca. 15 µm thick cortex. *Hypothecium* hyaline. *Hymenium* hyaline, up to 150 µm high. *Epihymenium* with swollen brown paraphyse tips. *Ascospores* (Fig. 10) 24-30 × 12-15 µm, ellipsoid, fumose to pale brown, transversely 3-septate to submuriform, with 4-9 irregular rounded lumina, 8 per ascus. *Pycnidia* unknown. *Chemistry*: UV-negative, K+ yellow, P+ yellowish, C-negative (atranorin).

*Additional material*: Yunnan Province, 5 km W of Kunming, just outside of the city, 1750 m alt., 48RTN604714, on soil and shale. Aptroot 55506 and Sparrius 7174 (ABL, hb Sparrius-topotypes), 16 October 2002.

This new species is described here, although we have seen only material from mainland China, because it is somewhat similar to the next species. It differs from the ca. 10 other sorediate to blastidiate species currently known in the genus by the striking 3-9-loculate ascospores. The new species is also remarkable because it grows equally on eutrophicated rock and bark. In the type locality, the species was observed to cover large expanses of tree bases, including rock and soil adjacent to the roots. It is one of the few examples of *Rinodina* species that grow both truly epiphytic and epilithic, other examples being the next species and e.g. *R. gennarii*.

***Rinodina punctosorediata* Aptroot & Sparrius, sp. nov.** (Figs 11-13)

*Rinodina griseosoralifera* similis, sed species corticola et saxicola et differt ascosporis typo *Milvinae* et brevioribus, 14-17 × 8-11 µm.

Type: TAIWAN, Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52373 (c. ap.) and 52378 (ABL-isotype) and Sparrius 6117 (B-holotype; Herb. Sparrius-isotype, c. ap.), 11 October 2001.

*Thallus* thin, consisting of a blackish, smooth hypothallus with small (0.2-0.5 mm diam.), flattened, bluish grey squamules that are usually each completely covered by discrete orbicular, convex to flattened soralia (Figs 11-12) of 0.2-0.5 mm diam. *Soredia* granular, at the surface bluish green,

internally greenish, covering most of the thallus areoles. *Apothecia* (Fig. 12) rare, sessile, round, 0.3-0.7 mm diam., lecanorine, margin grey, stout, smooth to slightly crenate, with flat, redbrown disc. *Excipulum* filled with algae, without distinct cortex. *Hypothecium* hyaline. *Hymenium* hyaline, up to 80  $\mu\text{m}$  high. Epihymenium with swollen brown paraphyse-tips. *Ascospores* (Fig. 13) 15-17.5  $\times$  10-12  $\mu\text{m}$ , ellipsoid, fumose, Milvina-type, lumina usually triangular, 8 per ascus. *Pycnidia* unknown. *Chemistry*: UV-negative, K+ yellow, P+ yellowish, C-negative due to atranorin.

*Additional specimens*: CHINA: Yunnan Prov., Heqin Co., Song Guei village, on slope above highway between Lijiang and Dali, 2400 m alt., 47RPK157000, on *Keteleeria evelyniana*. Sparrius 7597 (hb Sparrius), 21 October 2001; TAIWAN: Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on shale. Aptroot 52489 (ABL, c. ap.), 11 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on shale. Aptroot 52238 (ABL), 9 October 2001.

This new species chiefly differs from the *ca.* 10 other sorediate to blastidiate species currently known in the genus by the distinct, orbicular soralia each covering one areole and the relative small ascospores of the Milvina-type. The new species is also remarkable because it grows equally on eutrophicated rock (Fig. 11) and bark (Fig. 12). In the type locality, the species was observed to cover large expanses of tree bases, including pebbles adjacent to the roots. In another locality, the species was only found saxicolous. It is one of the few examples of *Rinodina* species that grow both truly epiphytic and epilithic, other ones being the preceding species and *R. gennarii*.

*Rinodina pyrina* (Ach.) Arnold

New to East Asia.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Aptroot 52123 (ABL), 9 October 2001.

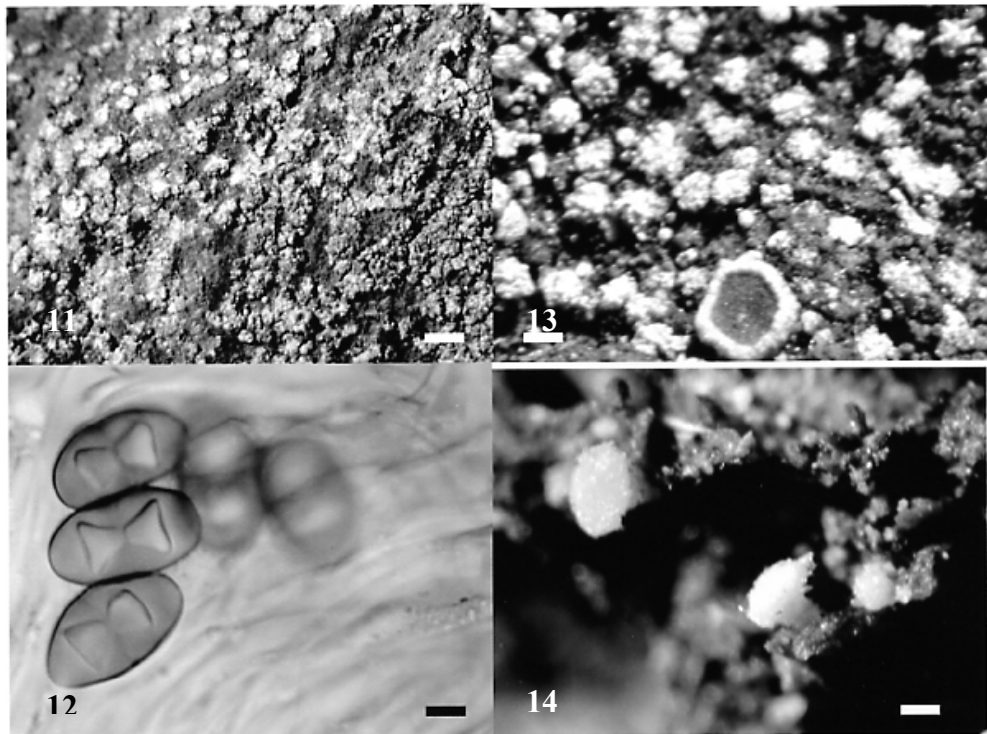
*Rinodina roboris* (Duf. ex Nyl.) Arnold

New to East Asia.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Populus*. Aptroot 52114 (ABL), 9 October 2001.

*Rinodina teichophila* (Nyl.) Arnold

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52376 (ABL), 11 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on *Tsuga formosana*. Aptroot 52763 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on *Abies kawakamii*. Aptroot 52817 (ABL), 13 October 2001; Taipei County: 10 km NW of Taipei, Guandu Nature Park, road through *Kandelia* mangrove, 1 m alt., 51RUH452786, on volcanic rock. Aptroot 53539 (ABL), 22 October 2001.



**Figs 11-13.** *Rinodina punctosorediata*. **Fig. 11.** Topotype on rock, Aptroot 52489 (ABL), habitus with soredia. **Figs 12-13.** Holotype. **Fig. 12.** Habitus with apothecium and soredia. **Fig. 13.** Ascospores. **Fig. 14.** *Vezdaea flava*, holotype, habitus with apothecia. Bars: 11 = 0.6 mm; 12 = 0.3 mm; 12 = 4  $\mu$ m; 13 = 0.15 mm.

*Rinodina thiomela* (Nyl.) Müll. Arg.  
New to Asia.

Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on sandstone. Aptroot 51736 (ABL) and Sparrius 5718 (Herb. Sparrius), 7 October 2001.

*Rinodina turfacea* (Wahlenb.) Körber

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on mosses, soil and shale. Aptroot 52781 (ABL), 12 October 2001

*Rinodina xanthomelana* Müll. Arg.

Pingtung County: Kenting, near Frog Rock, 0-1 m alt., 51QTE727276, on conglomeratic rock. Aptroot 53356 (ABL) and Sparrius 5272 (Herb. Sparrius), 18 October 2001.

## Fungal Diversity

### *Roccellina nipponica* (Nyl.) Tehler

A rarely reported species, so far known from Japan and Hong Kong (Aptroot and Seaward 1999).

Taipei County: 25 km N of Taipei, seashore, volcanic rock outcrop near Sanji, 0-5 m alt., 51RUH501977, on volcanic rock. Aptroot 53573 (ABL) and Sparrius 5519 (Herb. Sparrius), 22 October 2001.

### *Ropalospora phaeoplaca* (Zahlbr.) S. Ekman

A rarely reported species, so far known from Japan.

Taichung County: 22 km E of Tungshi, Tahsuehshan Forest Recreation Area, near entrance, 1500 m alt., 51RTG9482, on tree branches. Aptroot 51769 (ABL), 8 October 2001. Same locality, on *Cryptomeria japonica*. Aptroot 51810 (ABL), 8 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on *Pisana*. Aptroot 52336 (ABL), 10 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on *Shiia carlesii*. Aptroot 52445 (ABL), 11 October 2001; Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on *Pseudotsuga*. Sparrius 6355 (Herb. Sparrius), 13 October 2001.

### *Sarcographa heteroclita* (Mont.) Zahlbr.

Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Lonicera cumingiana*. Aptroot 53287 (ABL), 17 October 2001. Same locality, on *Melia azedarach*. Aptroot 53272 (ABL) and Sparrius 5376 (Herb. Sparrius), 17 October 2001. Same locality, on *Roystonea regia*. Aptroot 53142 (ABL), 17 October 2001. Same locality, on *Ficus*. Aptroot 53193 (ABL), 17 October 2001; Taipei County: Yangmingshan National Park, parking place near National Park Visitors Center, 480 m alt., 51RUH533829, on *Eleocarpus silvestris*. Aptroot 53655 (ABL), 23 October 2001; Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on *Roystonea regia*. Sparrius 5390 (Herb. Sparrius), 16 October 2001.

### *Sarcographa intricans* (Nyl.) Müll. Arg.

Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on *Mangifera indica*. Aptroot 51542 (ABL) and Sparrius 5666 (Herb. Sparrius), 6 October 2001. Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Podocarpus*. Aptroot 51624 (ABL), 7 October 2001. Same locality, on *Acer*. Aptroot 51642 (ABL), 7 October 2001. Same locality, on tree. Sparrius 5707 and 5708 (Herb. Sparrius), 7 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Roystonea regia*. Aptroot 53230 (ABL), 17 October 2001. Same locality, on *Ficus*. Aptroot 53099 (ABL), 17 October 2001. Same locality, on *Lonicera cumingiana*. Aptroot 53286 (ABL), 17 October 2001. Same locality, on tree bark. Sparrius 5377 (Herb. Sparrius), 17 October 2001; Taipei County: Yangmingshan National Park, broadleaf cloud forest near summit of Mt. Tatun, 900 m alt., 51RUH511859, on *Machilus*. Sparrius 5246 (Herb. Sparrius), 23 October 2001.

### *Sarcographa tricosia* (Ach.) Müll. Arg.

Taichung County: Taichung, University Campus, 100 m alt., 51RTG5776, on *Delonix regia*. Aptroot 51531 (ABL) and Sparrius 5641 (Herb. Sparrius), 6 October 2001. Same locality, on *Mangifera indica*. Sparrius 5664 (TUNG), 6 October 2001; Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on *Acer*.

Aptroot 51641 (ABL) and Sparrius 5706 (TUNG), 7 October 2001. Same locality, on palm tree. Sparrius 5694 and 5474 (Herb. Sparrius), 7 October 2001; Taipei County: 10 km NW of Taipei, Guandu Nature Park, road through *Kandelia* mangrove, 1 m alt., 51RUH452786, on *Acer*. Aptroot 53544 (ABL), 22 October 2001; Taipei County: Yangmingshan National Park, parking place near National Park Visitors Center, 480 m alt., 51RUH533829, on *Elaeocarpus*. Sparrius 5250 (Herb. Sparrius), 23 October 2001.

*Scoliciosporum chlorococcum* (Graewe ex Stenhammar) Vězda

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, mountain pass, 3300 m alt., 51RUG247705, on *Tsuga formosana*. Sparrius 6301 (Herb. Sparrius), 13 October 2001.

*Scoliciosporum pruinosum* (P. James) Vězda

New to Asia.

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52153 (ABL), 9 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on *Schima superba*. Aptroot 52349 (ABL) and Sparrius 6044 (Herb. Sparrius), 10 October 2001.

*Scoliciosporum umbrinum* (Ach.) Arnold

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52745 (ABL), 12 October 2001.

*Sculptolumina japonica* (Tuck.) Marbach

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52157 (ABL) and Sparrius 5907 (Herb. Sparrius), 9 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, broadleaf forest remnant on ridge, 2050 m alt., 51RUG145645, on *Michelia formosana*. Aptroot 52330 (ABL), 10 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52517 (ABL), 11 October 2001; Taipei County: Yangmingshan National Park, wayside trees in village of Miaopu, 400 m alt., 51RUH535825, on Liquidamber. Aptroot 53660 (ABL), 23 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on bark of deciduous tree. Sparrius 5795 (Herb. Sparrius), 8 October 2001.

*Sporopodium xantholeucum* (Müll. Arg.) Zahlbr.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on *Diospyros maritima* leaves. Aptroot 53129 (ABL), 16 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on *Myristica* leaves. Aptroot 53162 (ABL), 17 October 2001. Same locality, on *Ficus nervosa* leaves. Sparrius 5348 (Herb. Sparrius), 17 October 2001.

*Stirtonia indica* Makhija and Patwardhan

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52524 (ABL), 11 October 2001; Pingtung County: Kenting Forest Recreation Area, near guesthouse, 200 m alt., 51QTE743300, on

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*Lonicera cumingiana*. Aptroot 53282 (ABL), 17 October 2001. Same locality, on *Ficus*. Aptroot 53098 (ABL), 17 October 2001.

*Tapellaria epiphylla* (Müll. Arg.) R. Sant.

Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52078 (ABL), 9 October 2001.

*Thelotrema lepadinum* (Ach.) Ach.

Hualien County: 43 km WNW of Hualien, Meifeng, roadside with relict mature trees, 2250 m alt., 51RUG1666, on *Castanopsis*. Aptroot 52377 (ABL), 11 October 2001; Hualien County: Taroko National Park, Hohuan Shan, *Pseudotsuga* forest, 2950 m alt., 51RUG231686, on *Pseudotsuga wilsoniana*. Aptroot 52977 (ABL), 13 October 2001.

*Thelotrema weberi* Hale

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on *Abies kawakamii*. Aptroot 52606 (ABL) and Sparrius 6153 (Herb. Sparrius), 12 October 2001.

*Toninia tristis* (Th. Fr.) Th. Fr.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on soil. Aptroot 52779 (ABL) and Sparrius 6232 (Herb. Sparrius), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on soil. Aptroot 52845 (ABL), 13 October 2001.

*Trapelia coarctata* (Sm.) M. Choisy

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on sandstone. Aptroot 51685 (ABL) and Sparrius 5678 (Herb. Sparrius), 7 October 2001; Nantou County: 15 km ENE of Puli, near Wushe, river gorge, 950 m alt., 51RUG068562, on shale. Aptroot 52084 (ABL), 9 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52748 (ABL) and Sparrius 6272 (Herb. Sparrius), 12 October 2001; Taichung County: Taichung, Taichung Park, 100 m alt., 51RTG645721, on shale. Aptroot 53694 (ABL), 19 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt., 51RTG9279, on shale. Aptroot 53444 (ABL), 20 October 2001.

*Trapelia involuta* (Taylor) Hertel

Miaoli County: Shei-Pa National Park. 27 km E of Tungshi, near Tahsuehshan, along forest track, 2600 m alt., 51RUG000887, on shale. Aptroot 51968 (ABL), 8 October 2001.

*Trapelia placodioides* Coppins & P. James

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on sandstone. Aptroot 51686 (ABL), 7 October 2001; Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on sandstone. Aptroot 51742 (ABL), 7 October 2001; Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on shale. Aptroot 51866 (ABL), 8 October 2001; Nantou County: 25 km ENE of Puli, Lushan, roadside, 1300 m alt., 51RUG1557, on shale. Aptroot 52995 and 52982 (ABL), 13 October 2001; Taichung County: 30 km ENE of Taichung, 7 km NW of Kukwan, along mountain trail, 1000-1300 m alt.,

51RTG9279, on shale. Aptroot 53433 (ABL), 20 October 2001; Taipei County: Yangmingshan National Park, along road 101A near park entrance, 350 m alt., 51RUH494877, on volcanic rock. Aptroot 53625 (ABL), 23 October 2001.

*Trapeliopsis flexuosa* (Fr.) Coppins & P. James

Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on *Cryptomeria japonica*. Aptroot 52176 (ABL), 9 October 2001. Same locality, on wood. Sparrius 5943 (Herb. Sparrius), 9 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on wood. Aptroot 52685 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on wood. Aptroot 52775 (ABL), 12 October 2001.

*Trapeliopsis granulosa* (Hoffm.) Lumbsch

Miaoli County: Shei-Pa National Park. 25 km ENE of Tungshi, near Tahsuehshan, at km 48, 1600 m alt., 51RTG996866, on *Picea morrisonicola* wood. Aptroot 51900 (ABL), 8 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52890 (ABL), 12 October 2001. Same locality, on soil. Aptroot 52796 (ABL) and Sparrius 6246 (Herb. Sparrius), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, roadside with relict mature trees, 3200 m alt., 51RUG2572, on *Abies kawakamii* wood. Aptroot 52821 (ABL), 13 October 2001; Hualien County: Taroko National Park, Hohuan Shan, mountain pass, 3300 m alt., 51RUG247705, on soil. Sparrius 6314 (Herb. Sparrius) and 6436 (TUNG), 13 October 2001.

*Tremolecia atrata* (Ach.) Hertel

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Sparrius 6258 (Herb. Sparrius), 12 October 2001.

*Tremolecia lividonigra* (Zahlbr.) Hertel

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on shale. Aptroot 52746 (ABL), 12 October 2001.

*Tricharia vainioi* R. Sant.

Pingtung County: Kenting Forest Recreation Area, forest reserve, 200 m alt., 51QTE745307, on *Diospyros maritima* leaves. Aptroot 53124 (ABL), 16 October 2001.

***Veizdaea flava* Aptroot & Sparrius, sp. nov.** (Fig. 14)

*Veizdaea* apotheciis flavis et stipitatis; ascospores ellipticae, 15-16 × 5-6 μm.

Type: TAIWAN, Nantou County, 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt. On soil in underhang of roadbank, 51RUG1464. Aptroot 52219 and Sparrius 5955 (B-holotype, ABL, Herb. Sparrius, TUNG-isotypes).

*Thallus* inconspicuous, consisting of for the genus typical angular green goniocysts. *Apothecia* stipitate, bright yellow, 0.2-0.4 mm diam. and high, not losing shape or color when dry. *Excipulum* indistinct, but with conglutinated hyphae forming hyaline hairs extruding. *Asci* cylindrical, *Veizdaea*-type. *Ascospores* 15-16 × 5-6 μm, ellipsoid, 8 per ascus. *Pycnidia* unknown. *Chemistry*: no substances detected by TLC.



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*Additional specimens:* Taiwan, Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on shale. Aptroot 52242 (ABL-topotype), 9 October 2001; Taipei County: Yangmingshan National Park, along road 101A near park entrance, 350 m alt., 51RUH494877, on volcanic rock and soil. Aptroot 53622 (ABL) and Sparrius 5239 (Herb. Sparrius), 23 October 2001.

*Notes:* This new species is characterized by the bright yellow, stipitate apothecia, resembling a species of *Dimerella* in the field. Like most other *Vezeadaea* species, it grows on soil and rock in disturbed situations, together with lichen species like *Dibaeis soredata*.

*Vezeadaea stipitata* Poelt & Döbbeler

New to Asia.

Taichung County: 15 km E of Taichung, garden with secondary forest remnants, 100 m alt., 51RTG7873, on sandstone. Aptroot 51684 (ABL) and Sparrius 5680 (Herb. Sparrius), 7 October 2001. Same locality, on treefern. Aptroot treefern 51656 (ABL), 7 October 2001; Taichung County: 15 km E of Taichung, boulders in citrus garden, 450 m alt., 51RTG794731, on mosses on sandstone. Aptroot 51701 (ABL) and Sparrius 5471 (Herb. Sparrius), 7 October 2001; Hualien County: 43 km WNW of Hualien, Meifeng, broadleaf forest remnant near field centre, 2100 m alt., 51RUG1566, on shale. Aptroot 52473 (ABL), 11 October 2001.

*Xylographa parallela* (Ach. : Fr.) Behlen & Desberg

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on wood. Aptroot 52686 and 52687 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on wood. Aptroot 52778 (ABL), 12 October 2001.

*Xylographa trunciseda* (Th. Fr.) Minks ex Redinger

New to East Asia.

Hualien County: Taroko National Park, Hohuan Shan, exposed mountain ridge, 3000 m alt., 51RUG2673, on wood. Aptroot 52777 (ABL), 12 October 2001; Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on wood. Sparrius 6192 (Herb. Sparrius), 12 October 2001.

*Xylographa vitiligo* (Ach.) J.R. Laundon

Hualien County: Taroko National Park, Hohuan Shan, near Field Station, 3200 m alt., 51RUG260725, on wood. Sparrius 6437 (Herb. Sparrius), 12 October 2001; Nantou County: 45 km WNW of Hualien, Meifeng, around field centre, 2000-2100 m alt., 51RUG1464, on wood. Sparrius 5942 (Herb. Sparrius), 9 October 2001.

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