

广东石门台自然保护区藓类植物初报

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摘要: 石门台自然保护区位于广东省中北部, 面积 82 260 hm², 是全省面积最大的保护区。根据我们过去三年的初步调查和研究, 石门台保护区共有藓类植物 33 科 89 属 158 种 (含 1 亚种 3 变种), 其中广东新记录属 3 属, 分别是 *Eccremidium*、*Phyllodon* 和 *Stereodontopsis*; 另外, *Eccremidium brisbanicum* 等 23 种为广东新记录种。

关键词: 藓类植物; 名录; 新记录; 石门台自然保护区; 广东

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A Preliminary List of Mosses from Shimentai Nature Reserve, Guangdong

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Abstract: Shimentai Nature Reserve is situated in the center of north Guangdong, 24°17'49"–24°31'02"N, 113°01'11"–113°46'22"E. It occupies about 82 260 hectares, and is the largest nature reserve in Guangdong. According to our field surveys and studies in the past three years, 158 species of mosses in 89 genera and 33 families are recognized from Shimentai Nature Reserve. Among them, 3 genera (*Eccremidium*, *Phyllodon*, and *Stereodontopsis*) and 23 species are newly recorded for Guangdong.

Key words: Mosses; List; New records; Shimentai Nature Reserve; Guangdong

Shimentai Nature Reserve (abbreviated hereafter as Shimentai) lies in the center of north Guangdong, administratively belongs to Yingde, Qingyuan. It locates just outside the north border of Tropic of Cancer (23°27'N), 24°17'49"–24°31'02"N, 113°01'11"–113°46'22"E, with a land area of 82 260 hectares. It is the largest nature reserve in Guangdong. Geographically, Shimentai borders Hengshishui on the east, Boluo on the west, and is adjacent to Shigutang, Hengshitang, Yunling and Dazhen on the south, and Wongyuan, Qujiang and Ruyuan on the north (Fig. 1).

Shimentai is generally rugged topographically. Mountainous landscape occupies about 83.6% of the total land area, and the average altitude of mountainous

regions ranges 800–1400 m. The basic rocks generally compose of granite, sandy shale, and limestone. The northern part of Shimentai is higher than the southern. The highest peak is Chuandiding on the north border with Qujiang, reaching 1 586 m above sea level. Shimentai has a subtropical monsoon climate, with annual mean temperature 20.9°C, mean annual rainfall 1 882.8 mm, and mean annual non-frost time 317 days. The major vegetation types are monsoon valley evergreen broadleaved forest, montane evergreen broadleaved forest, subtropical evergreen coniferous - broadleaved forest. The soil types are latosolic red earth (below 300 m alt.), montane red soil (300–600 m alt.) and montane yellow soil (above 600 m alt.)^[1-3].

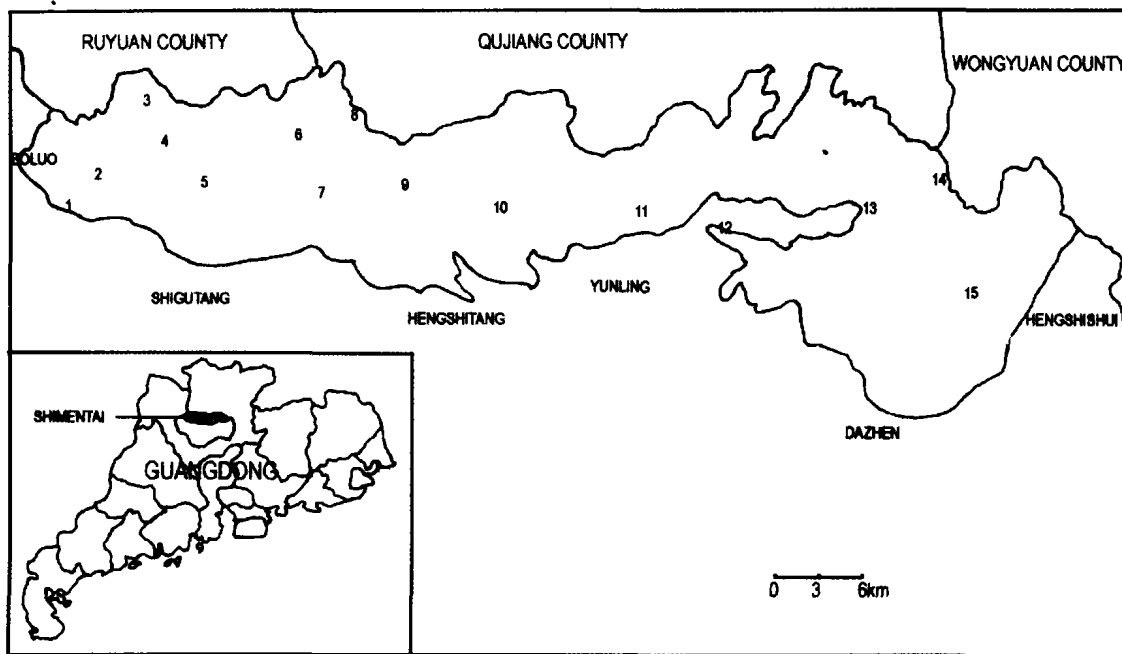


Fig. 1 Map of Shimentai Nature Reserve, Guangdong. Numbers show the localities of sites surveyed. 1 Genggu, 2 Huawu, 3 Ludong, 4 Zhongkong, 5 Huangdong, 6 Jinzikeng, 7 Lianshan, 8 Chuandiding, 9 Laowuchang, 10 Shuitou, 11 Huangdong Waterpower Station, 12 Shakou, 13 Chaitoushan, 14 Huashuishan, 15 Daxishan.

Sporadic collections and studies have been carried out in Shimentai previously. We checked the bryophyte collections in the Herbarium of South China Institute of Botany, the Chinese Academy of Sciences (IBSC), and found that the first collection was made by Mr. Liang Bao-han in 1943. Three specimens were collected. Afterward, Prof. Xu Xiang-hao collected 31 bags of mosses in 1956, and Mr. Chen Xue-xian collected 3 in 1957. At the same year, South China Institute of Botany organized an expedition team (IBSC Geo. Dept.) for phytogeographical survey, 31 bags of bryophyte specimens were collected. All these specimens were collected from Huashuishan. Some of these collections were studied and reported in various references^[4-7]. Recently, Forestry College of South China Agricultural University and Biology Department of Guangzhou University reported 65 species of mosses in 38 genera and 23 families from Shimentai in an unpublished paper¹⁾, unfortunately they cited no any specimens. Obviously, the knowledge on the diversity of Shimentai bryophytes was far to complete.

1 Materials and methods

Two field surveys have been carried out in November, 2001 and March, 2003. In total, 532 bags of bryophytes were collected. Based on the microscopical identification of our collections, the previous collections deposited in IBSC, and consulting relevant references, we recognized 158 species (including 1 subspecies and 3 varieties) in 89 genera and 33 families of mosses occurred in Shimentai. Among them, three genera (*Eccremidium*, *Phyllodon*, and *Stereodontopsis*) and 23 species (*Barbella flagellifera*, *Bryum paradoxum*, *B. pseudotriquetrum*, *Campylopus fragilis*, *C. taiwanensis*, *Dicranodontium didictyon*, *Duthiella speciosissima*, *Eccremidium brisbanicum*, *Ectropothecium obtusulum*, *Homalothecium laevisetum*, *Isopterygium minutirameum*, *Leucobryum aduncum* var. *scalare*, *Macromitrium angustifolium*, *Phyllodon lingulatus*, *Plagiothecium eurphyllum*, *Polytrichastrum alpinum*, *Ptychomitrium dentatum*, *Pyrrhobryum latifolium*, *Rhynchostegium contractum*,

1) Forestry College of South China Agricultural University, Biology Department of Guangzhou University. A list of higher plants from Shimentai Nature Reserve, Guangdong. In: Pang X F, Zhang J Q. Collected papers for investigation in Shimentai Nature Reserve, Guangdong. The Administrative Bureau of Shimentai Nature Reserve, Guangdong, 2001, 229-293. (in Chinese)

Sphagnum cuspidatum, *S. ovatum*, *Stereodontopsis pseudorevoluta*, and *Vesicularia ferriei*) were new additions to Guangdong.

The liverwort flora of Shimentai will be reported in a separate paper.

2 A preliminary list of mosses from Shimentai Nature Reserve

- (1) In this list, the family arrangement follows Chen^[8]. Genera and species are arranged alphabetically. The Latin binomials generally were checked by consulting Redfearn et al.^[10], in addition to update references.
- (2) For saving space, specimen collectors are abbreviated as Z for Zhang Li and ZH for Zhang Li & He Zu-xia. Other collectors were not shortened.
- (3) All specimens examined are deposited in Herbarium of South China Institute of Botany, the Chinese Academy of Sciences (IBSC).
- (4) The species and genera new to Guangdong are indicated by an asterisk (*) and double asterisks (**), respectively.

Sphagnaceae

1. **Sphagnum cuspidatum* Enrh. ex Hoffm. — Midway from Lianshan to Jinzikeng, 1 000 m, on soil in sparse forest, Z2785.
2. *Sphagnum junghuhnianum* Dozy & Molke. — Zhongkong 510 m, on rock in forest, Z2626.
3. **Sphagnum ovatum* Hamp. — Chuandiding, 1 350 m, on rock in sparse forest, Z2840; 1 540 m, on rock in bamboo forest, Z2827. Midway from Jinzikeng to Huangdong, 940 m, on rock in forest, Z2843; 950 m, on rock in forest, Z2849. Zhongkong, 465 m, on rock in forest, Z2631.
4. *Sphagnum palustre* L. — Zhongkong, 465 m, on soil in forest, Z2641.

Ditrichaceae

5. *Ditrichum difficile* (Duby) Fleisch. — Shigutang, 580 m, on rock in forest, Z2742.
6. *Ditrichum heteromallum* (Hedw.) Britt. — Shakou, 36 m, on rock in grassland, ZH3277.
7. *Ditrichum pallidum* (Hedw.) Hamp. — Midway

from Jinzikeng to Chuandiding, 1 250 m, on trunk, Z2800.

8. ***Eccremidium brisbanicum* (Broth.) Stone & Scott. — Huangdong Waterpower Station, 408 m, on soil in forest, ZH3333, ZH3335, ZH3337. Shuitou, 220 m, on soil by a rice field, ZH3223. Previously, this genus or species was known for China only from Hong Kong^[11]. Guangdong is the second locality.
9. *Garckea flexuosa* (Griff.) Marg. & Nork. — Huangdong Waterpower Station, 270 m, on rock by a stream, ZH3258; 300 m, on soil in forest, ZH3264.

Dicranaceae

10. *Campylopus atrovirens* De Not. — Jinzikeng, 1 400 m, on rock by a path, Y.-H. Yan59. Shigutang, 535 m, on rock in forest, Z2730; 595 m, on rock in forest, Z2744.
11. *Campylopus ericoides* (Griff.) Jaeg. — Huashuishan, 1 000 m, on trunk, IBSC Geo. Dept. 6100^[4, 5] (with *C. gracilis*). Midway from Jinzikeng to Chuandiding, 1 160 m, on trunk, Z2788; 1 235 m, on rock in forest, Z2796.
12. **Campylopus fragilis* (Brid.) B.S.G. — Midway from Jinzikeng to Chuandiding, 1 240 m, on soil in grassland, Z2792.
13. *Campylopus gracilis* (Mitt.) Jaeg. — Huashuishan, 1 000 m, on trunk, IBSC Geo. Dept. 6100^[4, 5] (with *C. ericoides*).
14. *Campylopus hemitrichius* (C. Muell.) Jaeg. — Chaitoushan, 170 m, on rock by a stream, ZH3290.
15. **Campylopus taiwanensis* Sak. — Chaitoushan, 170 m, on rock in forest, ZH3296; 410 m, on rock in forest, ZH3302.
16. *Campylopus umbellatus* (Arn.) Paris — Huangdong Waterpower Station, 350 m, on rock in forest, ZH3239. Shuitou, 279 m, on concrete in sparse forest, ZH3179; 350 m, on soil in forest, ZH3211.
17. *Dicranella austro-sinensis* Herz. & Dix. — Huangdong Waterpower Station, 300 m, on soil by a path, ZH3232.
18. *Dicranella coarctata* (C. Muell.) Bosch & Sande Lac. — Huangdong Waterpower Station, 270 m,

- on rock, ZH3256, ZH3260. Shakou, 90 m, on soil by a path, ZH3289. Shuitou, 260 m, on soil by an agricultural field, ZH3215; 300 m, on soil by a path, ZH3195.
19. *Dicranella varia* (Hedw.) Schimp. — Huangdong Waterpower Station, 270 m, on rock by a stream, ZH3257.
20. **Dicranodontium didiactyon* (Mitt) Jaeg — Jinzikeng, 800 m, on thin soil over rock, Y.-H. Yan56. Midway from Jinzikeng to Chuandiding, 1 335 m, on rock in forest, Z2820, Z2821.
21. *Dicranodontium filifolium* Broth. — Huashuishan, IBSC Geo. Dept. 6172^[4, 5].
22. *Dicranodontium papillifolium* C. Gao — Zhongkong, 510 m, on rock in forest, Z2622.
23. *Dicranodontium uncinatum* (Harv.) Jaeg. — Laowuchang, 665 m, on rock in forest, Z2671, Z2681. Midway from Lianshan to Jinzikeng, 830 m, on rock in forest, Z2777.
24. *Dicranoloma dicarpum* (Nees) Paris — Chuandiding, 1 570 m, on humus in forest, Z2832. Jinzikeng, 1 000 m, on rock by a path, Y.-H. Yan60. Midway from Lianshan to Jinzikeng, 1 000 m, on rock in forest, Z2780; 1 330 m, on rock in forest, Z2817.
25. *Dicranoloma fragile* Broth. — Midway from Jinzikeng to Chuandiding, 1 340 m, on rock in forest, Z2822. Zhongkong, 510 m, on rock in forest, Z2620.
26. *Holomitrium densifolium* (Wils.) Wijk. & Marg. — Midway from Jinzikeng to Chuandiding, 1 165 m, on rock in forest, Z2790; 1 235 m, on rotten branch, Z2795.
27. *Leucoloma okamurae* Broth. — Midway from Lianshan to Jinzikeng, 855 m, on rock in sparse forest, Z2778.
28. *Trematodon longicollis* Michx. — Huangdong Waterpower Station, 270 m, on rock by a stream, ZH3252, ZH3255, ZH3259; 408 m, on soil in forest, ZH3334. Midway from Lianshan to Jinzikeng, 1 020 m, on soil in sparse forest, Z2784.
- ex Fleisch.) A. Eddy — Midway from Lianshan to Jinzikeng, 785 m, on rock in forest, Z2775.
30. *Leucobryum boninense* Sull. & Lesq. — Huangdong Waterpower Station, 300 m, on rock by a path, ZH3233.
31. *Leucobryum bowringii* Mitt. — Laowuchang, 510 m, on rock in forest, Z2679. Ludong, 275 m, on rock in forest, Z2602. Zhongkong, 650 m, on rotten wood in forest, Z2604.
32. *Leucobryum chlorophyllosum* C. Muell. — Huashuishan, 274 m, on rock by a stream, ZH3321. Shuitou, 279 m, on thin soil over rock in sparse forest, ZH3180.
33. *Leucobryum javense* (Brid.) Mitt. — Daxishan, 310 m, on branch, Z2703. Jinzikeng, 1 000 m, on rock by a path, Y.-H. Yan45. Laowuchang, 665 m, on trunk, Z2669. Midway from Jinzikeng to Chuandiding, 1 260 m, on rotten branch, Z2799.
34. *Leucobryum juniperoideum* (Brid.) C. Muell. — Chaitoushan, 400 m, ZH3297. Huawu, 525 m, on rotten tree base, Z2556. Shuitou, 300 m, on soil by a stream, ZH3198.
35. *Leucobryum scabrum* Sande Lac. — Huashuishan, H.-X. Xu 11(2)^[4, 5]. Shuitou, 300 m, on rock by stream, ZH3213. Zhongkong, 465 m, on rock in sparse forest, Z2634.
36. *Leucophanes octoblepharioides* Brid. — Ludong, 295 m, on rock in forest, Z2584.
37. *Octoblepharum albidum* Hedw. — Laowuchang, 345 m, on tree base, Z2677. Ludong, 290 m, on trunk, Z2601. Zhongkong, 515 m, on rock in forest, Z2624.

Fissidentaceae

38. *Fissidens crispulus* Brid. — Daxishan, 395 m, on rock by a stream in forest, Z2722.
39. *Fissidens dubius* P. Beauv. — Midway from Jinzikeng to Huangdong, 505 m, on rock in forest, Z2864. Shuitou, 300 m, on rock in forest, 3210. Zhongkong, 525 m, on rock in forest, Z2614.
40. *Fissidens geminiflorus* Dozy & Molk. — Midway from Jinzikeng to Huangdong, 505 m, on rock in forest, Z2862. Shuitou, 283 m, on rock in sparse forest, ZH3187.

Leucobryaceae

29. **Leucobryum aduncum* var. *scalare* (C. Muell.

41. *Fissidens javanicus* Dozy & Molk. — Ludong, 275 m, on soil in forest, Z2589. Midway from Lianshan to Jinzikeng, 590 m, on rock in forest, Z2768.
42. *Fissidens jungermannioides* Griff. — Daxishan, 390 m, on rock in forest, Z2721. Laowuchang, 665 m, on rock in forest, Z2682.
43. *Fissidens nobilis* Griff. — Huawu, 490 m, on soil in forest, Z2564.
44. *Fissidens oblongifolius* Hook. — Huangdong Waterpower Station, 290 m, on concrete by a stream, ZH3267. Huawu, 525 m, on soil in forest, Z2555.
45. *Fissidens taxifolius* Hedw. — Huawu, 500 m, on soil in forest, Z2557.
46. *Fissidens tosaensis* Broth. — Huangdong Waterpower Station, 290 m, on concrete by a stream, ZH3269.
47. *Fissidens wichurae* Broth. & Fleisch. — Huawu, 525 m, on soil in forest, Z2552.

Calymperaceae

48. *Calymperes afzelii* Schwaegr. — Laowuchang, 465 m, on rock in forest, Z2676.
49. *Syrrhopodon gardneri* (Hook.) Schwaegr. — Laowuchang, 520 m, on rock in forest, Z2678. Shuitou, 300 m, on rock by a stream, ZH3200.
50. *Syrrhopodon japonicus* (Besch.) Broth. — Huangdong Waterpower Station, 320 m, on rock in forest, ZH3261. Laowuchang, 345 m, on tree base, Z2675. Midway from Jinzikeng to Huangdong, 945 m, on rock in forest, Z2841. Shuitou, 280 m, on rock by a stream, ZH3182, ZH3205. Zhongkong, 615 m, on rock in forest, Z2609, Z2610.
51. *Syrrhopodon prolifer* Schwaegr. var. *tosaensis* (Card.) Orban & Reese — Laowuchang, 665 m, on trunk, Z2672. Shigutang, 545 m, on rock in forest, Z2737. Zhongkong, 515 m, on rock in forest, Z2625; 665 m, on trunk, Z2603.

Pottiaceae

52. *Anoetangium stracheyanum* Mitt. — Ludong, 265 m, on thin soil over rock in sparse forest, Z2591.
53. *Hyophila involuta* (Hook.) Jaeg. — Huangdong

Waterpower Station, 270 m, on rock by a stream, ZH3251. Shuitou, 300 m, on concrete by a stream, ZH3197.

54. *Pseudosymblepharis angustata* (Mitt.) Chen — Ludong, 265 m, on rock by a stream, Z2598; 270 m, on thin soil over rock by a stream, Z2599.
55. *Trichostomum hattorianum* Tan & Iwats. — Genggu, 310 m, on limestone in forest, Z2643; 365 m, on limestone in forest, Z2650. Huangdong Waterpower Station, 290 m, on concrete by a stream, ZH3268, 3271. Huawu, 550 m, on rock in forest, Z2548. Ludong, 265 m, on soil in forest, Z2590.
56. *Weissia controversa* Hedw. — Genggu, 335 m, on soil in forest, Z2647.

Ptychomitriaceae

57. **Ptychomitrium dentatum* (Mitt.) Jaeg. — Laowuchang, 665 m, on rock in forest, Z2664.

Funariaceae

58. *Funaria hygrometrica* Hedw. — Midway from Lianshan to Jinzikeng, 1 020 m, on soil in sparse forest, Z2782.
59. *Physcomitrium coorgense* Broth. — Shakou, 90 m, on soil by a farmland, ZH3284, 3286.
60. *Physcomitrium eurystomum* Sendtn. — Chaitou-shan, 170 m, on soil, ZH3291.

Bryaceae

61. *Bryum argenteum* Hedw. — Huangdong Waterpower Station, 350 m, on rock by a path, ZH3244. Shuitou, 300 m, on soil by a stream, ZH3199.
62. *Bryum billardieri* Schwaegr. — Shuitou, 280 m, on rock by a stream, ZH3181.
63. *Bryum caespiticium* Hedw. — Genggu, 335 m, on soil in forest, Z2646.
64. *Bryum cellulare* Hook. in Schwaegr. — Laowuchang, 630 m, on rock in forest, Z2687.
65. *Bryum coronatum* Schwaegr. — Huangdong Waterpower Station, 408 m, on concrete, ZH3332.
66. **Bryum paradoxum* Schwaegr. — Chaitou-shan, 170 m, on rock, ZH3292.
67. **Bryum pseudotriquetrum* (Hedw.) Gaertn., Meyer & Schreb. — Huangdong Waterpower Station,

290 m, on rock by a stream, ZH3272.

68. *Pohlia nutans* (Hedw.) Lindb. — Shuitou, 300 m, on concrete, ZH3192.

Mniaceae

69. *Plagiomnium acutum* (Lindb.) T. Kop. — Chaitoushan, 400 m, on thin soil over rock in forest, ZH3298. Huawu, 430 m, on soil in sparse forest, Z2571. Shakou, 36 m, ZH3275. Shuitou, 270 m, on rock in sparse forest, ZH3207.
70. *Plagiomnium cuspidatum* (Hedw.) T. Kop. — Huashuishan, 274 m, on soil by a stream, ZH3319.
71. *Plagiomnium succulentum* (Mitt.) T. Kop. — Huawu, 435 m, on soil in forest, Z2577. Ludong, 275 m, on rock in forest, Z2593; 275 m, on thin soil over rock in forest, Z2594. Midway from Jinzikeng to Huangdong, 360 m, on rock in forest, Z2867. Shuitou, 220 m, on rock by a stream, ZH3217.
72. *Plagiomnium vesicatum* (Besch.) T. Kop. — Huangdong Waterpower Station, 270 m, on rock by a stream, ZH3247. Shuitou, 280 m, on rock by a stream, ZH3183.

Leptodontaceae

73. *Caduciella guangdongensis* Enroth — Huashuishan, 760 m, on bark, IBSC. Geo. Dept.6070⁽⁷⁾.

Rhizogoniaceae

74. **Pyrrhobryum latifolium* (Bosch & Sande Lac.) Mitt — Midway from Jinzikeng to Chuandiding, 1 260 m, Z2804. Zhongkong, 625 m, on rock in forest, Z2607.
75. *Pyrrhobryum spiniforme* (Hedw.) Mitt. — Huashuishan, 274 m, on rock by a stream, ZH3323. Midway from Jinzikeng to Huangdong, 905 m, on rock in forest, Z2851. Midway from Lianshan to Jinzikeng, 555 m, on rock in forest, Z2755. Shigutang, 545 m, on rock in forest, Z2738. Zhongkong, 500 m, on rock in forest, Z2629.

Bartramiaceae

76. *Philonotis lancifolia* Mitt. — Chaitoushan, 400 m, on rock, ZH3295.
77. *Philonotis thwaitesii* Mitt. — Huangdong Water-

power Station, 300 m, on rock in forest, ZH3231.

78. *Philonotis turneriana* (Schwaegr.) Mitt. — Daxishan, 300 m, on rock, Z2697. Jinzikeng, 300 m, on soil by a path, Y.-H. Yan53.

Orthotrichaceae

79. **Macromitrium angustifolium* Dozy & Molk. — Huashuishan, IBSC Geo. Dept.6098, IBSC Geo. Dept.6099. Laowuchang, 665 m, on log in forest, Z2667.
80. *Macromitrium ferriei* Card. & Thér. — Genggu, 325 m, on tree base in sparse forest, Z2652. Huashuishan, IBSC Geo. Dept.6180.
81. *Macromitrium formosae* Card. — Huashuishan, 500 m, on wet rock, X.-X. Chen 80011.
82. *Macromitrium gymnostomum* Sull. & Lesq. — Huawu, 430 m, on log in sparse forest, Z2572. Midway from Jinzikeng to Chuandiding, 1 280 m, on rotten log in forest, Z2806. Midway from Lianshan to Jinzikeng, 985 m, on branch in forest, Z2781.
83. *Macromitrium japonicum* Dozy & Molk. — Huawu, 525 m, on trunk, Z2554. Shuitou, 295 m, on trunk of *Bischofia polycarpa*, ZH3203.
84. *Macromitrium nepalense* (Hook. & Grev.) Schwaegr. — Huawu, 555 m, on trunk, Z2549. Midway from Lianshan to Jinzikeng, 585 m, on rotten log in forest, Z2762.
85. *Schlotheimia grevilleana* Mitt. — Huashuishan, 870 m, on beech, X.-H. Xu10(4). Huawu, 435 m, on trunk in sparse forest, Z2569. Midway from Jinzikeng to Huangdong, 725 m, on rotten log in forest, Z2855. Shigutang, 600 m, on rotten log in forest, Z2746.
86. *Schlotheimia pungens* Bartr. — Huashuishan, IBSC Geo. Dept.6173, IBSC Geo. Dept.6179. Midway from Jinzikeng to Chuandiding, 1 230 m, on trunk, Z2794; 1 310 m, on trunk, Z2808, Z2811.

Racopilaceae

87. *Racopilum aristatum* Mitt. — Huashuishan, 218 m, on humus by a stream, ZH3316. Laowuchang, 670 m, on log in forest, Z2670.

Trachypodaceae

88. **Duthiella speciosissima* Broth. ex Card. — Midway from Jinzikeng to Chuandiding, 1 310 m, on rock in forest, Z2809.

Pterobryaceae

89. *Garovaglia elegans* (Dozy & Molk.) Hampe ex Bosch & Sande Lac. — Midway from Jinzikeng to Huangdong, 600 m, on trunk, Z2857.

Meteoriaceae

90. *Aerobryidium levieri* (Ren. & Card.) S. H. Lin — Daxishan, 360 m, on rotten branch in forest, Z2716.
91. *Aerobryopsis parisii* (Card.) Broth. — Chuandiding, 1 400 m, on branch, Z2836.
92. *Aerobryopsis subdivergens* (Broth.) Broth. — Ludong, 270 m, on trunk, Z2588. Shigutang, 595 m, on branch, Z2743 (with *Barbella flagellifera*).
93. *Aerobryum speciosum* Dozy & Molk. — Chuandiding, 1 400 m, on trunk, Z2838.
94. **Barbella flagellifera* (Card.) Nog. — Daxishan, 310 m, on branch, Z2701; 325 m, on branch by a stream in forest, Z2712. Genggu, 325 m, on tree base in sparse forest, Z2651. Midway from Jinzikeng to Chuandiding, 1 250 m, on branch, Z2801. Shigutang, 610 m, on branch, Z2751; 580 m, on rotten branch, Z2740. Zhongkong, 515 m, on branch, Z2623.
95. *Chrysocladium retrorsum* (Mitt.) Fleisch. — Huawu, 520 m, on rock in forest, Z2543.
96. *Meteoriopsis reclinata* (C. Muell.) Fleisch. in Broth. — Midway from Jinzikeng to Chuandiding, 1 305 m, on trunk, Z2812.
97. *Meteorium subpolytrichum* (Besch.) Broth. — Huawu, 425 m, on log in sparse forest, Z2573. Midway from Jinzikeng to Huangdong, 720 m, on rotten log, Z2854.
98. *Neobarbella comes* (Griff.) Nog. — Daxishan, 360 m, on rotten branch, Z2714; 375 m, on branch, Z2719.
99. *Neodicladiella pendula* (Sull.) Buck. — Midway from Jinzikeng to Chuandiding, 1 310 m, on trunk, Z2810.
100. *Pseudobarbella attenuata* (Thwait. & Mitt.)

- Nog. — Laowuchang, 455 m, on trunk, Z2696. Ludong, 280 m, on trunk, Z2581. Shigutang, 535 m, on branch, Z2735.

Neckeraceae

101. *Homaliodendron exiguum* (Bosch & Sande Lac.) Fleisch. — Daxishan, 360 m, on rotten branch, Z2717. Huashuishan, IBSC Geo. Dept.6045. Laowuchang, 670 m, on branch, Z2662.
102. *Homaliodendron flabellatum* (Sm.) Fleisch. — Chuandiding, 1 380 m, on trunk, Z2825. Daxishan, 305 m, on rock in forest, Z2700; 310 m, on branch, Z2705; on rock in forest, Z2706. Laowuchang, 480 m, on rock in forest, Z2695. Ludong, 290 m, on rock in forest, Z2583. Midway from Jinzikeng to Huangdong, 945 m, on rotten trunk, Z2848. Midway from Lianshan to Jinzikeng, 600 m, on rock in forest, Z2766. Shigutang, 535 m, on rock in forest, Z2727.
103. *Pinnatella anacamptolepis* (C. Muell.) Broth. — Huashuishan, on trunk, X.-H. Xu 23 (3)^[7]. Ludong, 280 m, on rock in forest, Z2579.
104. *Thamnobryum subseriatum* (Mitt. ex Sande Lac.) Tan — Midway from Lianshan to Jinzikeng, 590 m, on rock in forest, Z2769.
- Hookeriaceae**
105. *Callicostella prabaktiana* (C. Muell.) Bosch & Sande Lac. — Midway from Lianshan to Jinzikeng, 610 m, on rock in forest, Z2771.
106. *Calyptrochaeta japonica* (Card. & Ther.) Iwats. & Nog. — Midway from Lianshan to Jinzikeng, 600 m, on rock in forest, Z2770.
107. *Distichophyllum collenchymatosum* Card. var. *collenchymatosum* — Shuitou, 283 m, on rock by a stream, ZH3188. Zhongkong, 500 m, on rock in forest, Z2628.
108. *Distichophyllum collenchymatosum* Card. var. *pseudosinense* Tan & Lin — Laowuchang, 355 m, on thin soil over rock in forest, Z2655 (with *Pallavicinia subciliata*).
109. *Distichophyllum maibarae* Besch. — Midway from Jinzikeng to Huangdong, 505 m, on rock in forest, Z2863; 580 m, on rock in forest, Z2859.

Shigutang, 630 m, on rock in forest, Z2753.

Hypopterygiaceae

110. *Cyathophorum adiantum* (Griff.) Mitt. (*Cyathophorella subspinosa* Chen, *C. japonic* Broth., *C. tonkinensis* (Broth. & Par.) Broth.)^[12] — Daxishan, 310 m, on branch, Z2704; 310 m, on rock in forest, Z2708. Laowuchang, 490 m, on trunk, Z2693; 635 m, on rock in forest, Z2686. Ludong, 280 m, on rock in forest, Z2578. Midway from Jinzikeng to Huangdong, 600 m, on trunk, Z2858. Shigutang, 610 m, on trunk, Z2747.

Theliaceae

111. *Fauriella tenerima* Broth. — Midway from Lianshan to Jinzikeng, 575 m, on rotten log in forest, Z2673; 455 m, on branch, Z2761.

Leskeaceae

112. *Pseudoleskeopsis zippelii* (Dozy & Molk.) Broth. — Chaitoushan, 480 m, on rock by a stream, ZH3308. Midway from Lianshan to Jinzikeng, 600 m, on rock in forest, Z2772. Shuitou, 220 m, on rock by a stream, ZH3220.

Anomodontaceae

113. *Haplohymenium pseudo-triste* (C. Muell.) Broth. — Huawu, 495 m, on trunk, Z2561.
114. *Herpetineuron toccoae* (Sull. & Lesq.) Card. — Huashuishan, X.-H. Xu 11(1). Shuitou, 280 m, on rock in sparse forest, ZH3185. Huangdong Waterpower Station, 300 m, on rotten log by a stream, ZH3238.

Thuidiaceae

115. *Claopodium aciculum* (Broth.) Broth. — Huawu, 490 m, on soil in forest, Z2565. Shuitou, 220 m, on rock by a stream, ZH3218.
116. *Claopodium assurgens* (Sull. & Lesq.) Card. — Huashuishan, 200 m, on rock, X.-H. Xu 19. Shuitou, 300 m, on rock in sparse forest, ZH3193.
117. *Haplocladium angustifolium* (Hamp. & C. Muell.) Broth. — Huangdong Waterpower Station, 300 m, on rock, ZH3237. Shakou, 36 m, on rock in grassland, ZH3274; 90 m, on rock by farmland,

ZH3285.

118. *Haplocladium microphyllum* (Hedw.) Broth. — Chaitoushan, 410 m, on rock, ZH3301. Huangdong Waterpower Station, 270 m, on concrete, ZH3245; 350 m, on rock, ZH3243. Shakou, 36 m, on rock in grassland, ZH3276, ZH3280. Shuitou, 300 m, on soil by a stream, ZH3194.
119. *Thuidium assimile* (Mitt.) Jaeg. — Huashuishan, IBSC Geo. Dept6177a; X.-H. Xu9, X.-H. Xu 21(3).
120. *Thuidium glaucinoides* Broth. — Daxishan, 305 m, on branch, Z2699; 310 m, on branch, Z2702; 375 m, on rotten log in forest, Z2726. Huangdong Waterpower Station, 270 m, on rock by a stream, ZH3246; 408 m, on rock in forest, ZH3326. Huashuishan, 274 m, on soil in forest, ZH3322. Laowuchang, 610 m, on rock in forest, Z2688. Ludong, 295 m, on rock in forest, Z2585. Midway from Jinzikeng to Huangdong, 840 m, on rock in forest, Z2853. Shuitou, 220 m, on rock by a stream, ZH3219. Zhongkong, 615 m, on rock in forest, Z2608.
121. *Thuidium pristocalyx* (C. Muell.) Jaeg. — Huangdong Waterpower Station, 388 m, on rotten log in forest, ZH3324; 388 m, on soil in forest, ZH3325. Huashuishan, IBSC Geo. Dept6174; X.-H. Xu25(a); 274 m, on rock by a stream, ZH3317. Huawu, 435 m, on tree base in forest, Z2570. Jinzikeng, 1 000 m, on soil by a path, Y.-H. Yan58. Laowuchang, 665 m, on tree base in forest, Z2663. Midway from Lianshan to Jinzikeng, 445 m, on branch, Z2759.

Brachytheciaceae

122. *Eurhynchium savatieri* Schimp. ex Besch. — Huangdong Waterpower Station, 300 m, on concrete by a stream, ZH3265.
123. **Homalothecium laevisetum* Sande Lac. — Genggu, 365 m, on crevice, Z2649.
124. *Platyhypnidium riparioides* (Hedw.) Dix. — Chaitoushan, 410 m, on rock, ZH3299. Huashuishan, 266 m, on rock by a stream, ZH3314.
125. **Rhynchostegium contractum* Card. — Huashuishan, 150 m, on soil by a path, ZH3312.

Entodontaceae

126. *Entodon macropodus* (Hedw.) C. Muell. — Genggu, 295 m, on rock in forest, Z2642. Huangdong Waterpower Station, 290 m, on rock by a stream, ZH3266. Huashuishan, 388 m, on rotten log in forest, ZH3315. Huawu, 495 m, on rotten log in forest, Z2560. Shuitou, 280 m, on concrete by a stream in sparse forest, ZH3184. Zhongkong, 500 m, on rock in forest, Z2627.
127. *Entodon viridulus* Card. — Shuitou, 300 m, on rock in sparse forest, ZH3201.
128. *Mesonodon flavescens* (Hook.) Buck — Genggu, 310 m, on tree base in forest, Z2645.

Plagiotheciaceae

129. **Plagiothecium eurphyllum* (Card. & Ther.) Iwats. — Midway from Jinzikeng to Chuandiding, 1 255 m, on rock in forest, Z2802. Midway from Jinzikeng to Huangdong, 615 m, on thin soil over rock in forest, Z2856. Midway from Lianshan to Jinzikeng, 815 m, on rotten branch, Z2776.
130. *Pseudotaxiphyllum pohliaecarpum* (Sull. & Lesq.) Iwats. — Chaitoushan, 170 m, on rock, ZH3293. Huangdong Waterpower Station, 290 m, on rock in forest, ZH3248, ZH3270; 300 m, on rock by a path, ZH3225, ZH3236. Huashuishan, 150 m, on rock in forest, ZH3310. Huawu, 525 m, on soil in forest, Z2551. Laowuchang, on rock in forest, Z2666. Shakou, 36 m, on rock, ZH3281; 90 m, on soil in bamboo forest, ZH3288. Shigutang, 545 m, on rock in forest, Z2736. Shuitou, 260 m, on soil in forest, ZH3216; 290 m, on soil in forest, ZH3191; 350 m, on soil in forest, ZH3212.

Sematophyllaceae

131. *Acroporium secundum* (Reinw. & Hornsch.) Fleisch. — Shigutang, 625 m, on branch by a stream in forest, Z2752. This species has been reported for Guangdong once by Jia et al. (2001). Unfortunately, they did not include it in their bryophyte list^[13]. Its occurrence in Guangdong is now verified.
132. *Brotherella falcata* (Dozy & Molke.) Fleisch. — Chuandiding, 1 550 m, on rock in bamboo

forest, Z2829.

133. *Brotherella fauriei* (Card.) Buck — Chuandiding, 1 360 m, on rotten branch in forest, Z2826; 1 540 m, on rock in bamboo forest, Z2828. Daxishan, 305 m, on branch, Z2698. Midway from Jinzikeng to Chuandiding, 1 165 m, on rock in forest, Z2791; 1 300 m, on rock in forest, Z2807.
134. *Brotherella henonii* (Duby) Fleisch. — Chuandiding, 1 565 m, on humus in forest, Z2834. Midway from Jinzikeng to Chuandiding, 1 330 m, on rock in forest, Z2818. Midway from Jinzikeng to Huangdong, 870 m, on rock in forest, Z2852. Midway from Lianshan to Jinzikeng, 1 020 m, on soil in sparse forest, Z2783. Shigutang, 605, on branch, Z2750. Zhongkong, 470 m, on rock in forest, Z2636.
135. *Gammiella tonkinensis* (Broth. & Par.) Tan — Huashuishan, S.-F. Shu18(2)^[6], IBSC Geo. Dept. 6182; on branch, X.-H. Xu18(2). Shigutang, 600 m, on log in forest, Z2749.
136. *Isocradiella surcularis* (Dix.) Tan & Mohamed — Daxishan, 310 m, on rotten branch in forest, Z2707; 400 m, on branch, Z2720.
137. *Palisadula chrysophylla* (Card.) Toy. — Midway from Jinzikeng to Chuandiding, 1 260 m, on branch, Z2803.
138. *Papillidiopsis macrosticta* (Broth. & Par.) Buck & Tan — Laowuchang, 410 m, on rock by a stream in forest, Z2657; 465 m, on rock in forest, Z2694. Shigutang, 640 m, on trunk, Z2754.
139. *Sematophyllum pulchellum* (Card.) Broth. — Huangdong Waterpower Station, 408 m, on rotten log in forest, ZH3327.
140. *Sematophyllum subhumile* (C. Muell.) Fleisch. — Chuandiding, 1 315 m, on rotten in forest, Z2823; 1 450 m, on leaves in bamboo forest, Z2837. Huawu, 550 m, on rock in forest, Z2550.
141. *Sematophyllum subpinnatum* (Brid.) Britt. — Huangdong Waterpower Station, 320 m, on log by a stream, ZH3240.
142. *Trichosteleum lutschianum* (Broth. & Par.) Broth. — Ludong, 280 m, on rock in forest, Z2586. Shigutang, 610 m, on branch, Z2748.

Hypnaceae

143. *Ctenidium capillifolium* (Mitt.) Broth. — Chaitoushan, 470 m, on rock, ZH3305. Shuitou, 220 m, on rock by a stream, ZH3222.
144. **Ectropothecium obtusulum* (Card.) Iwats. — Huangdong Waterpower Station, 270 m, on rock by a stream, ZH3249, ZH3250. Huashuishan, 266 m, on rock by a stream, ZH3313.
145. *Hondaella caperata* (Mitt.) Ando, Tan & Iwats. — Zhongkong, 635 m, on trunk, Z2605.
146. *Hypnum plumaeforme* Wils. — Chuandiding, 1 370 m, on rock in forest, Z2824. Huangdong Waterpower Station, 300 m, on rock, ZH3228; 320 m, on rock in forest, ZH3262. Laowuchang, 545 m, on rock in forest, Z2660; 670 m, on log in forest, Z2668. Midway from Jinzikeng to Chuandiding, 1 330 m, on rock in forest, Z2815. Shuitou, 220 m, on soil by farmland, ZH3221; 280 m, on thin soil over rock by a stream, ZH3204.
147. **Isopterygium minutirameum* (C. Muell.) Jaeg. — Laowuchang, 355 m, on tree base, Z2654.
148. ***Phyllocladon lingulatus* (Card.) Buck — Daxishan, 390 m, on rock by a stream in forest, Z2724. Previously, this genus and species was known only from Hong Kong, Taiwan, Xizang, and Yunnan in China.
149. ***Stereodontopsis pseudorevoluta* (Reim.) Ando — Midway from Jinzikeng to Chuandiding, 1 240 m, on trunk, Z2793.
150. *Taxiphyllum alternans* (Card.) Iwats. — Laowuchang, 670 m, on rock by a stream in forest, Z2673.
151. *Taxiphyllum taxirameum* (Mitt.) Fleisch. — Shakou, 36 m, on thin soil over rock, ZH3279.
152. **Vesicularia ferriei* (Card. & Ther.) Broth. — Chaitoushan, 410 m, on rock, ZH3303; 480 m, on rock by a stream, ZH3306. Huashuishan, 274 m, on rock by a stream, ZH3320.

Diphysciaceae

153. *Diphyscium fulvifolium* Mitt. — Laowuchang, 490 m, on rock in forest, Z2659.

Polytrichaceae

154. *Atrichum yakushimense* (Horik.) Mizushima — Chaitoushan, 400 m, on rock in forest, ZH3294.
155. *Pogonatum cirratum* (Sw.) Brid. ssp. *fuscatum* (Mitt.) Hyvönen — Huangdong Waterpower Station, 300 m, on rock, ZH3227. Huashuishan, X.-H. Xu3; 230 m, B.-H. Liang84010, B.-H. Liang 84011. Huawu, 490 m, on soil in forest, Z2568. Ludong, 280 m, on rock in forest, Z2580; 525 m, on rock by a stream in forest, Z2613, Z2616. Shigutang, 535 m, on rock by a waterfall, Z2734. Shuitou, 280 m, on rock by a stream, 3206.
156. *Pogonatum inflexum* (Lindb.) Sande Lac. — Huangdong Waterpower Station, 270 m, on rock by a stream, ZH3254. Huashuishan, 150 m, on soil in forest, ZH3309; 450 m, IBSC Geo. Dept. 6048; Shuitou, 220 m, on soil by a path, ZH3208. Zhongkong, 465 m, on rock in forest, Z2633.
157. **Polytrichastrum alpinum* (Hedw.) G. L. Smith. — Jinzikeng, 1 000 m, on soil, Y.-H. Yan47.
158. *Polytrichastrum formosum* (Hedw.) G. L. Smith. — Huashuishan, IBSC Geo. Dept.6097. Jinzikeng, 1 400 m, on crevice of a peak, Y.-H. Yan46. Midway from Jinzikeng to Chuandiding, 1 175 m, on rock in sparse forest, Z2786. This species had been reported from Dinghu Shan in 1982 but had no specimen citation^[14]. We treated it as a doubtful record for Guangdong in the update checklist of Guangdong bryophytes²⁾. Therefore, the occurrence of this species in Guangdong is now confirmed.

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