

Sinske HATTORI\*: **Porellaceae from New Caledonia\*\***

服部新佐\*: ニューカレドニアのクラマゴケモドキ科

The Porellaceae of New Caledonia as presently known consist of one genus and four species. However, I could find only one species, *Porella viridissima*, in the collections made by Drs. Z. Iwatsuki and N. Kitagawa in New Caledonia during July and August, 1982. A discussion of it follows:

***Porella viridissima*** (Mitt. in Seem.) Grolle in Grolle & Schultze-Motel, J. Hattori Bot. Lab. 36: 83 (1972).

Syn.: *Madotheca hirtella* Steph., Spec. Hepat. 6: 523 (1924) = *Porella hirtella* (Steph.) Hatt., J. Hattori Bot. Lab. 39: 275 (1975), syn. nov.—*Madotheca linguaefolia* Steph., Spec. Hepat. 4: 291 (1910) = *Porella linguaefolia* (Steph.) Hatt., J. Hattori Bot. Lab. 39: 275 (1975), syn. nov.—*P. novoguineensis* Hatt., J. Hattori Bot. Lab. 34: 412 (1971) = *P. viridissima* (Hatt.) Grolle var. *novoguineensis* (Hatt.) Hatt., J. Hattori Bot. Lab. 39: 275 (1975), syn. nov.

Mont Ezumac, N of Nouméa, 900 m, ZI<sup>1)</sup> 16454 (tree trunk & branches), — NK<sup>1)</sup> 22533 (tree trunk), —, 500–800 m, NK 21039 (rock). Mont Koghis, 450–550 m, dense forest, NK 21292 (tree trunk), —, 680 m, NK 21345 (rock; with *Frullania pancheri*). Mont Mou, N of Paita, 1050–1210 m, ZI 15409a (branches), —, 350 m, NK 21486 (tree trunk). Mont Mandjélia, W of Pouebo, 700 m, NK 22146, 22283 (tree trunks). Mé Ori, N of Moindou, 740–950 m, NK 22705 (tree trunk); Grottes d'Adio, 20 km NE of Poya, 200 m, limestone area, NK 22769, 22772 (tree trunks). Plateau de Dogny, NE of Sarraméa, 350–750 m, NK 23047 (tree trunk; with *Frullania cornuta*).

Distr.: Society Is. (incl. Tahiti), Samoa, New Caledonia, New Hebrides, Fiji and New Guinea.

Hattori (1975, p. 272–274) illustrated *Porella viridissima*, citing, as new synonyms, *Madotheca samoana* Steph. (ms), *M. maxima* Steph., *M. tahitensis*

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Steph., and *M. hebridensis* Steph. He also considered two *Madotheca* species, *M. hirtella* and *M. linguaefolia*, both endemic to New Caledonia, to be closely related to, or possibly conspecific with *Porella viridissima*. After a study of the many collections cited above, I consider *P. viridissima* to be a highly variable species, and that *Madotheca hirtella* and *M. linguaefolia*, together with the New Guinean variety (*P. viridissima* var. *novoguineensis*), are environmental modifications of it. Records of *P. elegantula* (Mitt.) Hodgs. from New Caledonia, Fiji and Tahiti are erroneous, and should be corrected to *P. viridissima*. *P. elegantula* is distributed in New Zealand and the neighboring islands.

Porellaceae seems to be most highly differentiated in southwestern China (including Yunnan, Szechuan and Shen-si) in the Paleotropics. The second center of differentiation is in the Neotropics (montane areas in the Amazonas). In China two monotypic genera (*Ascidiota* and *Macvicaria*) and 18 species of

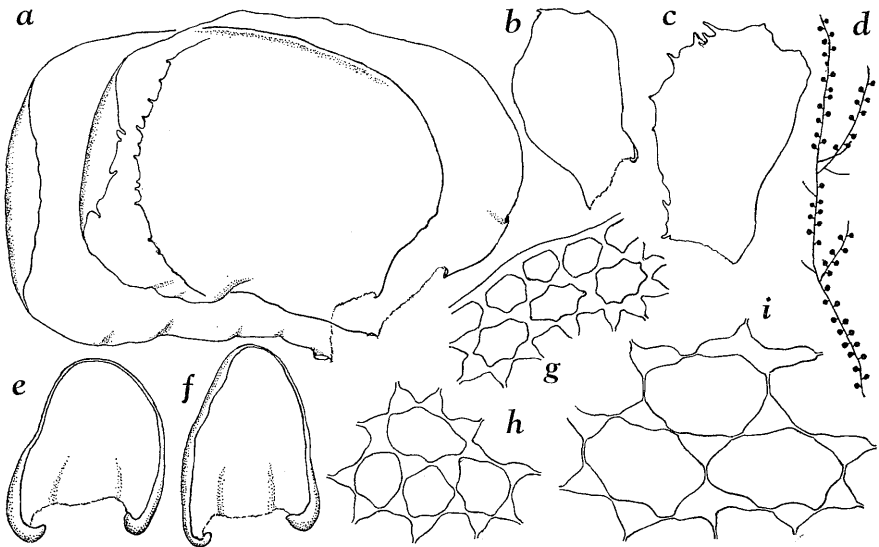


Fig. 1. *Porella viridissima* (Mitt.) Grolle. a: Two lobes of stem-leaves (inner lobe nearer to gynoecium than the outer), and apical margin of lobe of stem-leaf nearest to gynoecium,  $\times 22.5$ . b-c: Two lobules of stem-leaves, c near gynoecium,  $\times 22.5$ . d: Branching, dots showing young gynoecia,  $\times 5/3$ . e-f: Stem-underleaves,  $\times 22.5$ . g-i: Cells of lobe of stem-leaf, g from margin, h from middle, i from base, all  $\times 302$ . Drawn from lectotype of *Madotheca hirtella* (G 16787).

*Porella* have been recognized by Hattori (1978); in Japan, *Macvicaria* and 14 *Porella* species; and in India, 13 *Porella* species (lacking *Ascidiota* and *Macvicaria*), and in the Philippines and New Guinea 6 and 4 species, respectively, of *Porella* have been recognized. However, in the Pacific islands (excluding Hawaii Islands and Galapagos Islands), as in New Caledonia, only one species, *Porella viridissima* has been found.

**Review of original or authentic specimens of *Porella viridissima***

1) New Caledonia, Tao forest, 800-1000 m, Jan. 1910, *Franc* s.n. (Theriot misit), lectotype of *Madotheca hirtella* Steph. (G 16787). (Fig. 1)

Plant large, pale brown in herb.; stem 10 cm long (or more), branches few. Lobes of stem-leaves imbricate, widely spreading (at angles of more than 90° with the stem), almost flat but apices involute, when flattened oblong-subrectangular, 2.7-2.8 mm long and 1.9-2 mm wide, subtruncate at apices, the lobes near gynoecia minutely toothed; cavities of marginal cells 15-17(-25) × 12 μm, of median cells 25-50 × 25-33 μm, of basal cells 30-60 × 30-33 μm, walls with large, triangular to ± nodulos trigones, yellow to orange-brown, cavities pale yellow to yellow-ocher; lobules shortly connate, obovate-ligulate, ca. 1.2 mm long and 0.7 mm wide, almost flat, the lobules near gynoecia with 1 to several apical teeth or rarely with scattered, minute teeth along adaxial margins. Stem-underleaves somewhat imbricate, ovate, narrowly but strongly recurved along margins, saccate at bases, when flat ca. 0.9 mm long and 0.8 mm wide at middle (more than 1 mm wide at bases), marginal teeth almost none (underleaves near gynoecia with 1-2 minute teeth), insertions deeply sinuose. Dioicous (androecia not seen). Gynoecia young, numerous, short-stalked; bracts and bracteoles toothed along margins; perianth not developed.

The specific epithet "hirtella" seems to be based on the marginal teeth of female bracts and bracteoles, and also probably of leaves near gynoecia. The stem bears numerous young gynoecia, so that the stem-leaves mostly bear the marginal teeth. In this point, the stem-underleaves do not seem to be so strongly influenced as the leaves, rarely bearing 2-3 minute apical teeth.

2) New Caledonia, forêt de Tao, 800-1000 m, Jan. 1910, *Franc* s.n. (Theriot misit), syntype of *M. hirtella* Steph. (G 16786).

Similar to the above specimen (16787); lobules of stem-leaves mostly weakly saccate; stem-underleaves narrowly recurved along margins and usually weakly saccate at bases, compared with the lectotype.

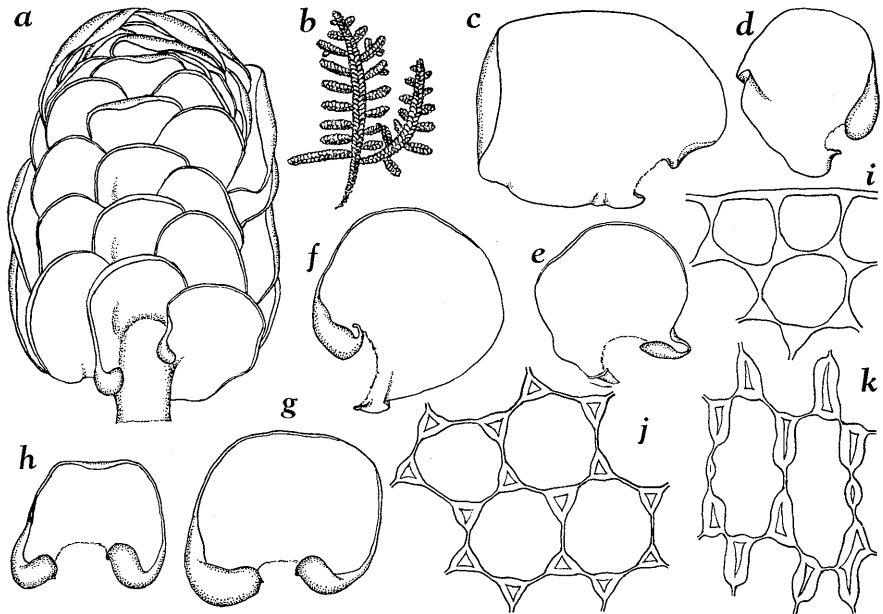


Fig. 2. *Porella viridissima* (Mitt.) Grolle. a: Shoot-apex, ventral view,  $\times 15$ . b: Plant,  $\times 1/2$ . c: Lobe of stem-leaf, flattened,  $\times 29$ . d-f: Lobules of stem-leaves, flattened,  $\times 29$ . g-h: Stem-underleaves, flattened,  $\times 29$ . i-k: Cells of lobe of stem-leaf, i from margin, j from middle, k from base, all  $\times 39$ . Drawn from specim. from Fiji Is., A. C. Smith 4221 (NICH).

3) Nova Caledonia, in monte Asto, 1879, *Savès* s. n. (hb. Bescherelle), type of *M. linguaefolia* Steph. (G 16789).

Composed of a poorly developed, fragmental shoot (less than 1 cm long); lobules of stem-leaves and stem-underleaves not saccate but with irregular teeth or angles at bases.

4) Nova Caledonia, Yeeghene, ad arbores, 9-1909, *Etesse* s. n., lectotype of *M. maxima* Steph. (G 16791).

Plants large, brownish in herb.; lobules of stem-leaves  $\pm$  inflated but not clearly saccate at bases; perianth flattened-orbicular, mouth narrow, densely spinulose. Stephani (1910, p. 292) mentioned after "Hab.": "Die Pflanze steht der *Mad. Stangeri* (Neu-Seeland) sehr nahe, hat aber ein ganz abweichendes Perianth." However, the perianth is similar to that of *Porella stangeri*, as mentioned above.

5) Nova Caledonia, Mt. Koghis, Juin 1909, *Etesse* s.n., syntype of *M. maxima* Steph. (G).

Plants large, olive-brown in herb.; leaf-lobules inflated or rarely perfectly saccate at bases.

6) New Hebrides, Futuna, Oct. 1912, leg. native, comm. Dr. Gunn, (hb. Watts 66), type of *M. hebridensis* Steph. (G 16785).

Poorly developed material but lobules of stem-leaves and stem-underleaves often saccate at bases (mostly not saccate but merely recurved); gynoecea young (perianth not developed); bracts and bracteoles with dentate margins, as drawn in *Icones Hepaticarum* (inedit.).

7) Fiji, Viti Levu, Mba, summit of Mt. Koroyanitu, high point of Mt. Evans Range, 1165-1195 m, dense ridge forest and thickets, cloaking trees, May 2, 1947, A. C. Smith 4221 as *Porella viridissima* (NICH, L.). (Fig. 2)

Plant large, in dense patches, brown (but yellowish-brown at shoot apices) in herb.; stem 5-7 cm long, 0.5 mm in diam., densely pinnately branched, branches widely (to more or less obliquely) spreading, usually 1-1.5 cm long, rarely with 1-3 branchlets. Lobes of stem-leaves densely imbricate, strongly concave with incurved distal margins, when flat elliptical, 1.5-1.6 mm long and 1.4-1.5 mm wide, apices rounded, dorsal bases extending beyond the farther edge of stem, arched and usually slightly recurved; cavities of marginal cells  $25 \times 20 \mu\text{m}$ ,  $\pm$  pale reddish-brown, walls nearly the same in color as the cavities,  $\pm$  thick, with large, triangular trigones of median cells  $30-35 \times 25-30 \mu\text{m}$ , pale reddish-brown, walls thin, with large subtriangular trigones, nearly the same in color as the cavities, cavities of basal cells to  $50 \times 25 \mu\text{m}$ ,  $\pm$  reddish-ocher, walls thin with large, subnodulose and mostly  $\pm$  trabeculate trigones (smaller, subnodulose intermediate thickenings often present), almost the same in color as the cavities; lobules large, densely imbricate, usually narrowly recurved along margins, when flat nearly orbicular, 0.7-0.9 mm long and 1.1-1.2 mm wide, dorsal bases strongly saccate. Stem-underleaves densely imbricate, nearly equal in size to the leaf-lobules, usually narrowly but strongly recurved along margins (particularly so at apices), when flat subquadrate, ca. 0.9 mm long and 1.3 mm wide, strongly saccate at bases (at both sides), insertions deeply sinuate. Branch-leaves and -underleaves  $\pm$  smaller than, but similar to, those of stem.

8) Samoa, Insel Upolu, Berg Lauutaa, 600-700 m, K. & L. Rechinger, type of *M. samoana* Steph. (G 16793).

9) Samoa, *Rechinger* 3311, isosytype of *M. viridissima* Mitt. (G 16805).

Plant olive in herb.; stem ca. 5 cm long, subpinnately branched, branches  $\pm$  obliquely spreading, 1-1.5 cm long. Lobes of stem-leaves imbricate, widely spreading, almost flat or narrowly incurved at apices, oblong-ovate, 1.7-2.1 mm long, 1-1.2 mm wide at middle, 1.3-1.4 mm wide near bases, bases not decurrent, apices rounded-truncate; cavities of marginal cells  $12-17 \times 10-12 \mu\text{m}$ , of median cells  $25-35 \times 20-25 \mu\text{m}$ , of basal cells  $35-50 \times 25-35 \mu\text{m}$ , walls of marginal cells equally thick-walled, of median cells thin, with small to medium-sized, triangular to  $\pm$  nodulose trigones, of basal cells thin, with medium-sized (to  $\pm$  large), subnodulose,  $\pm$  confluent trigones; lobules slightly oblique to nearly parallel with the stem, flat, oblong, 0.9-0.95 mm long, 0.4-0.45 mm wide, bases  $\pm$  gibbous, not saccate, but merely recurved. Stem-underleaves slightly remote, ca. 1.5 times as wide as, and appressed to, the stem, usually recurved at apices, ligulate, ca. 0.75 mm long and 0.55 mm wide at middle, 0.85 mm at bases, bases usually  $\pm$  long-decurrent and repand-lobate at one side, not decurrent but gibbous and saccate at the other side, insertions sinuate. Gynoecium young, lateral on stem, short-stalked (stalk with 1-2 pairs of deformed leaves); bracts in 1 pair, toothed along margins; perianth not developed; archegonia ca. 10 (or more) per gynoecium.

10) Samoa, c. *Archilej. falcata*, *Rechinger* 19 ex parte, isosytype of *M. viridissima* Mitt. (G. 16807).

Poorly developed material olive to yellowish-brown in herb. Leaf-lobules  $\pm$  inflated but not saccate at bases, whereas the underleaves have saccate bases.

11) Samoa, *Rechinger* 3345, isosytype of *M. viridissima* Mitt. (G 16804).

Olive-brown in herb.; lobules of stem-leaves gibbous but not saccate at bases; stem-underleaves narrowly recurved along margins except for the bases which are very narrowly saccate or merely recurved.

12) Samoa, *Rechinger* 3336, type of *M. viridissima* Mitt. (G 16808).

Poorly developed and olive-brown in herb.; with young gynoecia (perianth not developed).

13) Samoa, *Rechinger* 3293, isosytype of *M. viridissima* Mitt. (G 16806).

Plant large, olive to olive-brown in herb.; stem ca. 10 cm long, 0.55 mm in diam., orange-brown, slightly 2-pinnately branched, primary branches widely spreading, usually 1.5-2 cm long, secondary branches less than 1 cm long, 0-2 per primary branch. Lobes of stem-leaves widely spreading, nearly flat or with

narrowly incurved apices, ca. 2 mm long, dorsally covering stem fully or 2/3 the stem-width; lobules 0.8-0.75 mm long, bases gibbous but not saccate (rarely  $\pm$  recurved-saccate). Stem-underleaves ligulate with bases, ca. 0.7 mm long and wide at middle (ca. 1 mm wide at bases), bases recurved-saccate at one side. Dioicous; gynoecium young (perianth not developed).

14) Tahiti, *Nadeud* 74a, syntype of *M. tahitensis* Steph. (G 16801).

Of few, fragmental stems (ca. 1 cm long) with numerous androecia lateral on the stem; androecium short-stalked (stalk with 1-2, or rarely to 5, pairs of leaves). Lobes of stem-leaves oblong-elliptic, ca. 2 mm long and 1.5 mm wide; cavities of marginal cells  $15-20 \times 15 \mu\text{m}$ , walls equally thick, of median cells  $25-35 \times 25 \mu\text{m}$ , walls thin, with  $\pm$  large, triangular trigones, of basal cells  $40-50 \times 30 \mu\text{m}$ , walls thin, with  $\pm$  large, mostly nodulose and confluent trigones.

15) Tahiti, ♂ & ♀, *Nadeaud* s.n., syntype of *M. tahitensis* Steph. (G 16802).

Lobes of stem-leaves 1.8-2 mm long and 1.5-1.65 mm wide at middle; cavities of marginal cells ca.  $15 \times 10 \mu\text{m}$ , of median cells  $25-30 \times 20-25 \mu\text{m}$ , of basal cells ca.  $50 \times 30 \mu\text{m}$ .

16) Tahiti, *Nadeaud* 16 (hb. Bescherelle), syntype of *M. tahitensis* Steph. (G 16800).

17) Tahiti, *Nadeaud* 99 ex parte, syntype of *M. tahitensis* Steph. (G 16796).

Lobules of stem-leaves inflated but not or slightly saccate at bases.

18) Tahiti, *Nadeaud* 116, syntype of *M. tahitensis* Steph. (G 16799).

19) Tahiti, *Nadeaud* 178, syntype of *M. tahitensis* Steph. (G 16797).

Lobules of stem-leaves inflated but mostly not saccate.

20) Tahiti, *Nadeaud* 209, syntype of *M. tahitensis* Steph. (G 16798).

Male plants; androecia lateral on the stem, short-stalked (stalk with 1-2 pairs of leaves), usually spicate with ca. 10 pairs of bracts.

### References

- Hattori, S. 1975. Studies of the Asiatic species of the genus *Porella* (Hepaticae). V. J. Hattori Bot. Lab. 39: 269-276. — 1978. — VII. A synopsis of Asiatic Porellaceae. J. Hattori Bot. Lab. 44: 91-120.

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1982年7～8月に岩月善之助博士と北川尚史博士がニューカレドニアで採集された蕨苔類のうちクラマゴケモドキ13点を調べた結果、ミドリクラマゴケモドキ（新称）たゞ1種であった。ニューカレドニアから記録されていた他の2種は本種の異名となる。本種はガラパゴスやハワイを除き、太平洋諸島およびニューギニアに広く分布する。

□光田重幸：検索入門しだの図鑑 223pp. 保育社，大阪．1986．¥1,400．初心者にとってシダは取っつきにくいとよく言われる。ことに日本のように種類の多い国でははりにくい。その上わが国のシダ専門図鑑や植物図鑑のシダの部は，初めての人には難解で使い切れないことが多い。この本は北海道から九州までのシダのうち一般的な約200種と，よく見る園芸種35種を選んで解説し，似た種を極めて簡単に紹介するのに止めているので，入門書としては工合がよい。種類の並べ方は，葉の形，切れ込み方，葉脈など一目でわかる特徴でまず見分け，次に胞子嚢群，根茎，鱗片，毛といった細かい特徴を用いるようにしている。そのため普通の図鑑とちがって，分類系では遠縁とされている種類が隣り合わせになったりしているが，かえってわかりやすいこともある。本文は図版と解説が2ページごとにはいついて，各ページ3～4種類が納められている。図版はすべてカラーの生態写真で，これは色の上がりもよく一見して特徴をつかむことができる。解説は親切で，生態や栽培法までもあり，それぞれ羽片の一部，葉脈，胞子嚢群，鱗片などの略図も付いている。著者はシダ学界で最も精力的に活動している若手学者の一人なので，この内容は安心して信頼できるものである。なおこの本は，保育社発行の検索入門シリーズに属していて，長田武正氏が考案した方法による同氏著：野草図鑑全8巻と似たやり方によっている。 (伊藤 洋)

□原 襄・福田泰二・西野栄正：植物観察入門 179pp. 1986. 培風館，東京．¥1,600．植物の形態をわかりやすく書いたテキストはすくない。植物図鑑の用語解説のような便宜的なものか，いかにも「形態学」という風の堅い記述のものである。本書は大部のものではないが，植物の主要な形態について，分類学や形態学の知識の少ない人にもわかるようにていねいな解説がなされている。実物を手にして本書の記述を追いながら実習をすることもできる。とくに最近の学校教育ではこういう知識のとばしい教師が多いようだから，ぜひ利用してほしい。分類学専攻者にも有用な参考書である。精細な写真を効果的に使っているが，説明のための線画がもっとあってほしかった。 (金井弘夫)