

**Mariko NUNO* : Four new species of *Cladonia*
from south-eastern Asia****

布 万里子* : 東南アジア産のクラドニア属の4新種**

The genus *Cladonia* of Japan has been well studied by Asahina since 1936. Furthermore, the genus from south-eastern Asia was also studied by various lichenologists such as Vainio (Philippines), Zhalbruckner (China, Formosa), des Abbayes (East Nepal, Vietnam, Thailand), Asahina (Formosa, East Nepal), etc. However, some more new taxa of the genus will be found from the present area in the future. In this paper, four species of *Cladonia* collected in south-eastern Asia are described as new species based on both morphological and chemical characters.

1) ***Cladonia calyciformis*** Nuno, sp. nov.

Thallus primarius plus minusve persistens vel mox evanescens, superne griseo-viridescens, inferne albescens, squamis parvis, 1-2.5 mm longis, 0.5-1.5 mm latis, margine parce incis. Podetia cinereoalbida, cinereoviridescentia vel cinereofuscescentia, 2.5-3.5-(4) cm alta, 0.5-1-(1.5) mm crassa, scyphifera, scyphis vulgo planiusculis non profundisque, 1.5-2-(3) mm latis, limbo scyphorum dentato, e centro scyphorum vel partim e latere podetiorum repetite prolifera, 4-7 tabulatis, apicibus scyphiferis, internodiis usque ad 4-10 mm longis. Superficies podetiorum fere toto corticata, cortice subcontinuo vel subcontigue areolato, inter areolas chondroidea, semipellucida, basin versus nigrescens, interdum fissuris longitudinalibus, esquamulosa, sed saepe circum marginem scyphorum vel prope basin podetiorum squamulosa, squamulis pauce incis, ca. 1-1.5 mm longis. Apothecia stipitibus brevibus circum marginem scyphorum sita, parva, subglobosa conglomerataque, pallidula, fulvescentia vel fuscata. Pycnidia sessilia, circum marginem scyphorum sita, parva, globosa fuscaque.

Podetia K-, C-, P+rubescencia; thallus acidum homosekikaicum et acidum fumarprotocetraricum continens.

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Type specimen. Thailand: Phu Kradung. On soil, elevation 1200-1300 m, February 25, 1964, S. Kurokawa no. 1855—holotype in TNS.

Additional specimen examined. Thailand: Same data as the holotype, S. Kurokawa no. 1853 (TNS).

This new species is known only from Thailand at the present time. It resembles *C. calycantha* Del. ex Nyl. However, it produces homosekikaic acid associated with fumarprotocetraric acid, whereas *C. calycantha* contains only fumarprotocetraric acid. It is also apparently related to *C. dissimilis* Asah. Although these two species produce homosekikaic acid, the present new species lacks atranorin. Furthermore, they can be also distinguished from each other by morphological characters. The new species has shallow and dentate cups, while *C. dissimilis* has deep and entire cups. It has shorter podetia, smaller primary squamules, and more than four tiers of cups developping from the centers or less commonly from the lateral side of the successive tiers.

2) *Cladonia melaleuca* Nuno, sp. nov.

Thallus primarius vulgo evanescens. Podetia cinerea vel glaucescentia, mediocria vel aliquam elongate, 3-4.5 cm alta, (0.7)-1-(1.5) mm crassa, sub-

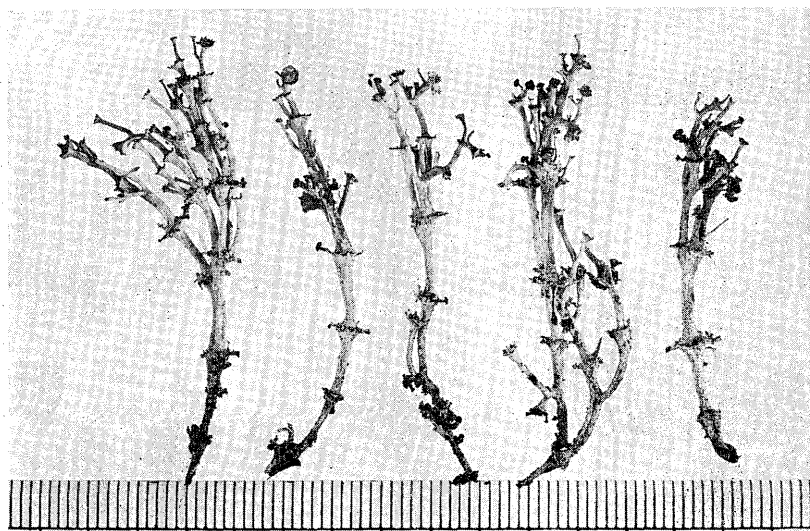


Fig. 1. *Cladonia calyciformis* Nuno.

cylindrica, apicem versus plus minusve incrassata, inaequaliter ramosa furcatave, lateribus vulgo longitudinaliter rimosis, ascypha, sed saepe indistincte scyphifera, scyphis angustis cristatellisque, e margine scyphorum bene prolifera, axillis scyphisque perforatis, apotheciis et pycnidiis terminatis. Superficies podetiorum corticata, cortice nunquam continuo, distincte areolato, partim verruculoso vel partim granuloso squamuloso, areolis minus quam 0.3 mm latis, sparsis vel in parte contiguis, inter areolas sat late decorticata, subtomentosa et nigrescens, sorediis destitutis, increbre squamulosa, squamis minoribus, sublinearibus laciniatisve, ca. 0.2-1.5 mm longis. Apothecia parva, 0.3-0.8 mm lata, solitaria vel aggregata, fusciscentia vel testacea. Pycnidia in margine scyphorum, in apicibus ramulorum vel in superficie squamarum sita, subcylindrica vel ovoidea, fusciscentia vel fusconigra.

Podetia K+ mox intense lutescentia, C-, P+ mox aurantiaco-rubescens; thallus acidum thamnolicum et acidum barbaticum continens.

Type specimen. Malaysia. Malaya: Gunong Bringchang, Cameron Highlands, Pahang. On soil, elevation about 2000 m, March 5, 1970, M. Togashi no. 70305—holotype in TNS.

This new species has distinctly areolate and/or spotted cortex on the surface of its podetia and conspicuously black-colored medullary layer under

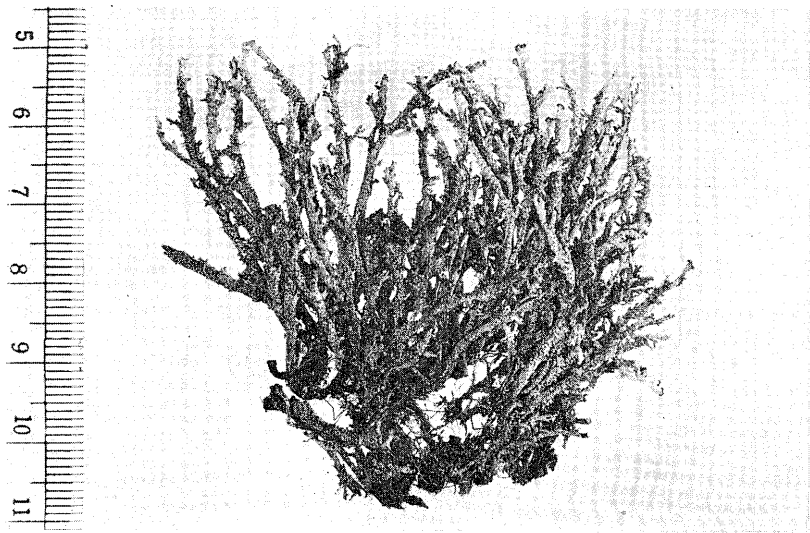


Fig. 2. *Cladonia melaleuca* Nuno.

the areoles through podetia, excepting very small parts of the apices. In addition, the areoles often form verruculae and finally squamules splitting off the cortex. At present the new species is known only from Malaya.

3) **Cladonia perfossa** Nuno, sp. nov.

Thallus primarius parum persistens vel fere evanescens, ascendens et involutus, superne cinereo-viridescens, inferne albescens, squamis parvis vel mediocribus, 3-4 mm longis, 1-1.5 mm latis, margine parce incis. Podetia cinereo-albescentia vel parce obscurata, 2-2.5-(4) cm alta, 0.8-1.5-(2) mm crassa, opaca, subcylindrica turgescentiave, sed apicem versus compressa, increbre furcato-ramosa, in summo ramos corymbosos formantia, lateribus vulgo fissis perfossisque, ascypha vel saepe indistincte scyphifera, e margine scyphorum radiatim prolifera, proliferationibus tabulatis 1-3, apotheciis semper terminatis, axillis scyphisque irregulariter perforatis. Superficies podetiorum corticata, cortice subcontinuo, areolato vel verruculoso, inter areolas stratum medullare exterium denudata, esorediata, raro squamulosa, squamulis parvis, ca. 0.5-0.8 mm longis. Apothecia pallide fuscescentia, parva subglobosaque, solitaria vel raro conglomerata. Pycnidia pallida, ovoidea, basi leviter constricta.

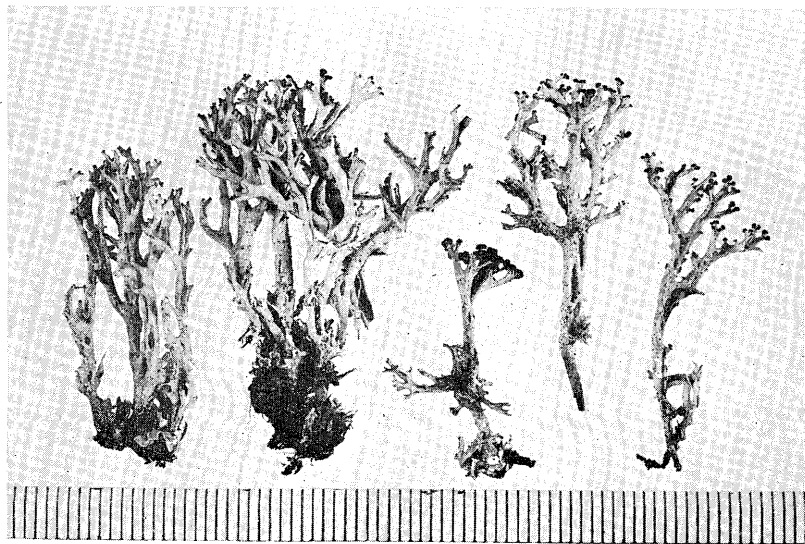


Fig. 3. *Cladonia perfossa* Nuno.

Podetia K+flavescentia, C—, P+rubescencia; thallus atranorinum et acidum fumarprotocetraricum continens.

Type specimen. Formosa. Prov. Chiayi: Mt. Shi-San, Mt. Shin-Kao-San. On soil, elevation 3300–3600 m, January 3, 1964, S. Kurokawa no. 440—holotype in TNS.

Additional specimens examined. Formosa. Prov. Ilan: Mt. Nanfutasan, elevation 2400–2600 m, January 20, 1964, S. Kurokawa no. 1009 (TNS); Prov. Taitung: Bayu Lake, elevation about 2200 m, S. Kurokawa no. 2372 (TNS).

This new species is probably very close to one form of *C. multiformis* Merr. in having remarkable perforations and fissures on the lateral side of podetia. However, it produces atranorin together with fumarprotocetraric acid and seems to be restricted to eastern Asia while *C. multiformis* contains only fumarprotocetraric acid and may be considered as a more northern element, especially in North America. It is also related to *C. submultiformis* Asah., which has perforated podetia as in the new species and is distributed also in Formosa. However, the new one has no homosekikaic acid that is characteristically produced in the other one.



Fig. 4. *Cladonia tenuicaulis* Nuno.

4) *Cladonia tenuicaulis* Nuno, sp. nov.

Thallus primarius plus minusve persistens, demum evanescens, supra stramineo-flavescens, subtus decorticatus albusque, sed basin versus fuscescens, squamis parvis vel mediocribus, 1-2 mm latis, 3-4 mm longis, margine incis, sorediis granulosis dispersis. Podetia straminea vel flavoviridescens, sed basin versus fuscescentia, 2.5-4-(6) cm longa, basi 0.8-1.5 mm crassa, irregulariter ramosa, apicem versus tenuiora, vulgo ascypha, sed saepe scyphos indistinctos formata, e margine scyphorum radiatim prolifera. Superficies podetiorum corticata, cortice subcontinuo, areolate vel verruculoso, partim granulata decorticatave, inter areolas chondroidea, fere concolor, opaca, sorediis parce dispersis, raro squamulosa, squamulis incis, ca. 1-1.5 mm longis. Apothecia non visa. Pycnidia ad apices ramulorum sita, parva subglobosaque, fuscescentia vel coccinea.

Podetia K+ mox intense lutescentia, C-, P+ mox aurantiaco-rubescens; thallus acidum thamnolicum, acidum usnicum, et nonnunquam bellidiflorinum continens.

Type specimen. Malaysia. Malaya: Gunong Bringchang, Cameron Highlands, Pahang. On soil, in tropical mossy forest, elevation about 6600 ft, September 3, 1965, H. Inoue no. 12221—holotype in TNS.

This species is clearly characterized by having very slender podetia tapering to the apex and the presence of thamnolic acid. Since this new one has red-colored pycnidia, it seems to belong to section Cocciferae, though no apothecium is found in the type and there are no close relatives in the section. It is known only from the type locality in Malaya.

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東南アジア産のクラドニアの四新種を記載した。

1) *C. caliciformis* は形態的には *C. calycantha* (フマルプロトセトラール酸含有) に最も近く、又、*C. dissimilis* (ホモ石花酸、フマルプロトセトラール酸、及びアトラノリン含有) にも似るが、アトラノリンを含まないので両者とは区別出来る。

2) *C. melaleuca* の子柄は、僅かに先端を残して全体黒色の髓を有するのが特徴で、その上に、皮層は恰も黒地に白の斑紋状に観察される。又、茶色の子器を有し、盃底や分枝点のみならず、子柄の随所に穿孔や、亀裂を有し、更にタムノール酸を含む。従って、Sect. *Cladonia* (= *Chasmariae*) に属するが、形態的に類似した種は、現在他に認め難い。

3) *C. perfossa* は北米特産の *C. multiformis* (フマルプロトセトラール酸含有) の様に子柄に多くの穿孔を有するが、より灰白色を呈し、更にアトラノリンを明かに含有する。又、同じく台湾産の *C. submultiformis* にも関連があるが、これはホモ石花酸を常成分として含有するので、本酸を欠く新種とは、明らかに区別される。

4) *C. tenuicaulis* は無子器であるが、赤色の粉子器が確認され、更にウスニン酸及びタムノール酸を含有するので、Sect. *Cocciferae* に属する。子柄は先細りで、しかも全体細手に伸長した特徴的な形状を示す。

○シロリュウキュウ・オオリュウキュウ系ツツジの園芸品 (山崎 敬・山崎 富佐子) Takasi YAMAZAKI and Fusako YAMAZAKI: The cultivars belonging to *Rhododendron mucronatum* and *R. hortense* (Plates VI-VII)

シロリュウキュウツツジ *Rhododendron mucronatum* (Bl.) G. Don とムラサキリュウキュウツツジ *R. hortense* Nakai の系統のものには多くの園芸品があるが、ともにモチツツジ *R. macrosepalum* とキシツツジ *R. ripense* との交配種で、シロリュウキュウ系のもはキシツツジに近い形態をもち、ムラサキリュウキュウ系(まぎらわしい名なのでオオリュウキュウ系と呼ぶ)のもはモチツツジに近い形態である。同じ両親をもとにしていても、両者は一応形態的に区別できるので、別個の交配種としてあつかってよいと思う。

シロリュウキュウ系のもは花梗に白ときに褐色の長毛が密生し、腺毛はないか、あってもめだたない。子房には長い白毛が密生している。花や葉はオオリュウキュウ