

New or Noteworthy Species of *Xanthoparmelia* (Parmeliaceae)

By

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黒川 造*: キクバゴケ属 (ウメノキゴケ科) の珍種および新種

In the course of my studies on the genus *Xanthoparmelia*, I found five interesting species of the genus. Of these species, four, *X. bartlettii*, *X. formosana*, *X. mongolica* and *X. nigrocephala*, are new to science, and the other, *X. durietzii*, which has been recorded from only two localities in northern China, is reported from two other localities.

Xanthoparmelia bartlettii Kurok., sp. nov. (Fig. 1)

Thallus ut in *Xanthoparmelia cordillerana*, sed superficiei inferiore nigro-brunnescenti differt. Thallus acidum usnicum, acidum salacinicum, acidum gyrophoricum et acidum congyrophoricum continens.

Thallus foliose, adnate to loosely adnate on rocks, pale yellow-green, blackening on older lobes; lobes subirregular, often imbricate, with \pm round apices, 2-3 mm wide; upper surface more or less shiny but soon appearing subgranulate, emaculate, often black-margined, developing numerous wart-like isidia, isidia short, subglobose, soon becoming granular at the apices but very rarely bursting open apically; medulla white; lower surface brown to dark brown, sparsely rhizinate, rhizines simple, coarse, of the same colour as the lower surface. Thallus 140-220 μ m thick; upper cortex about 12 μ m thick; gonidial layer subcontinuous, about 30 μ m thick; medulla 75-150 μ m thick; lower cortex 15-25 μ m thick. Apothecia non visa.

Chemistry. Thallus K-; medulla K+ yellow turning red, C-, KC+ pale reddish yellow, P+ intense yellow; containing usnic acid, salacinic acid, gyrophoric acid, consalacinic acid (trace) and congyrophoric acid (trace).

Type. New Zealand, Nelson, South Island, on ultra basic rock near Dunn Saddle, alt. ca. 4800 ft., J.K. Bartlett 26201—holotype in TNS.

This new species is easily confused with *X. cordillerana* (Gyeln.) Hale, which is distributed in south-eastern Australia, Tasmania and New Zealand, including South Island. In addition, these species seem to grow on exposed rocks in alpine and sub-alpine zones and contain usnic, salacinic and consalacinic acids in common. Although isidia are bursting open apically in mature stages in both species, however, they are granular at the tips even in juvenile stages in *X. bartlettii*, whereas isidia are subglobose

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and are smooth at the tips in juvenile stages in *X. cordillerana*. Chemically *X. bartlettii* is more easily distinguished from *X. cordillerana* by the production of gyrophoric acid.

At present, this species is known only from South Island of New Zealand.

Other specimen examined. New Zealand, Lookout Range, Tasman Mts., N.W. Nelson, South Island, on alpine rock, alt. 4000 ft., J.B. Bartlett 21889 (TNS).

***Xanthoparmelia durietzii* Hale**

This species was recently described by Hale (1986) and was recorded from only two localities in northern China. Two specimens preserved at TNS are identical with this species. This species seems to be rather common in arid areas in northern China as well as in Inner Mongolia.

Specimens examined. Inner Mongolia, en route from Pairinmiao to Hohö, Uransapu, F. Fujikawa & T. Watanabe 4 (TNS, HMAS). China. Prov. Shanshi: Chuntai, Mt. Utaishan, M. Sato 140 (TNS).

***Xanthoparmelia formosana* Kurok., sp. nov. (Fig. 2)**

Thallus ut in *Xanthoparmelia tinctina*, sed isidiis simplicibus vel coralloideo-ramosis, cylindricibus differt.

Thallus foliose, adnate on rocks, pale yellow-green; lobes subirregular, more or less imbricate, 0.8-2.0 mm wide; upper surface dull, emaculate, densely isidiate, isidia simple or coralloid-branched, 0.05-0.1 mm in diameter, often more than 0.5 mm in height; medulla white; lower surface black, moderately rhizinate, rhizines not coarse. Thallus 130-145 μm thick, upper cortex about 12 μm thick, gonidial layer subcontinuous, about 18 μm thick, medulla 90-110 μm thick, lower cortex brown in the outer half, about 12 μm thick. Apothecia non visa.

Chemistry. Thallus K-; medulla K+ yellow turning red, C-, KC-, P+ intense yellow; containing usnic acid, norstictic acid, salacinic acid and consalacinic acid (minor).

This species resembles *X. tinctina* (Mah. et Gill.) Hale in habit. However, isidia are cylindrical and often coralloid-branched in this species, whereas they are mostly simple and subglobose and distinctly constricted at the base. Salacinic acid rarely accompanies a trace amount of norstictic acid in *X. tinctina*, while norstictic acid seems to be a constant component accompanying salacinic and usnic acids in *X. formosana*.

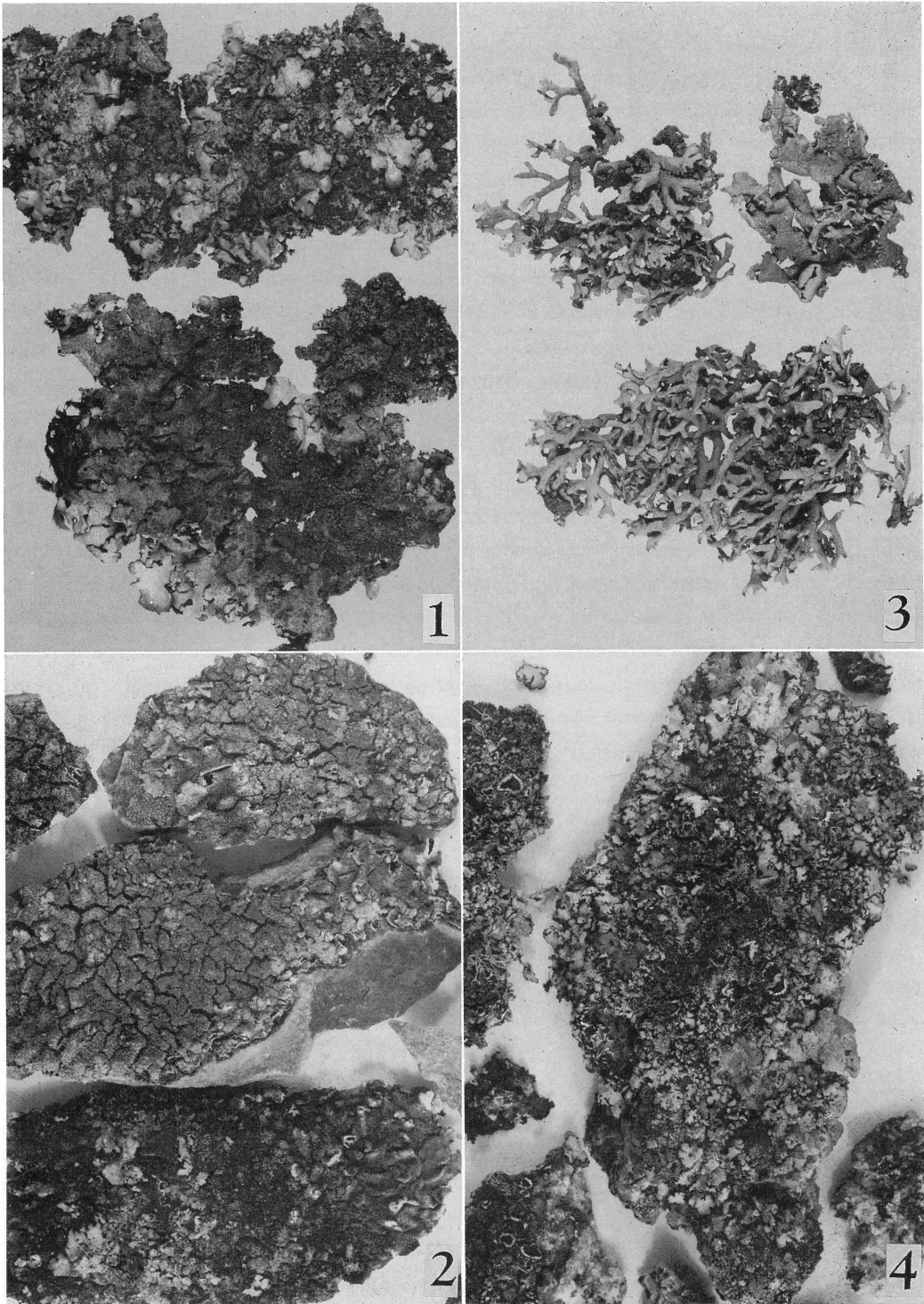
The present new species may be confused with *X. orientalis* Kurok., which was recently described from Japan (Kurokawa 1989). However, isidia of *X. formosana* are far slenderer than those of *X. orientalis* (0.1-0.2 mm in diameter in simple isidia and 0.15-0.3 mm in diameter in branched ones according to Kurokawa 1989).

At present, this species is known only from the type locality in Taiwan.

***Xanthoparmelia mongolica* Kurok., sp. nov. (Fig. 3)**

Xanthoparmelia terrestri primo ad aspectu maxime simile, sed thallo acidum fumarprotocetraricum, acidum succinprotocetraricum et acidum protocetraricum continenti.

Thallus foliose, pale yellow-green, adnate to rocks, forming loosely disjointed patches 3-5 cm in diameter; lobes irregular, rather flat, 2-4 mm wide, secondary lobes narrower, 0.8-1.5 mm wide, sublinear, subdichotomously divided, canaliculate below and occasionally becoming subterete toward the apices, growing over primary lobes or developing



Figs. 1-4. Type specimens of *Xanthoparmelia* spp. 1: holotype of *X. bartlettii* Kurok. ($\times 1.2$).
2: holotype of *X. formosana* Kurok. ($\times 1.1$). 3: holotype of *X. mongolica* Kurok. ($\times 1.1$).
4: holotype of *X. nigrocephala* Kurok. ($\times 1.1$).

as revolute lobulae in center of thallus and along margin of older lobes; upper surface dull, faintly white-maculate, more or less convex in secondary lobes, lacking soredia and isidia; medulla white; lower surface blackish brown or nearly black near the center of the thallus, pale brown to brown on secondary lobes, rhizines short and slender, sparse but often grouped especially near the apices of secondary lobes, concolorous with lower surface. Thallus 290–340 μm thick; upper cortex a little variable in thickness, 48–70 μm thick; gonidial layer subcontinuous, about 50 μm thick; medullary layer 180–240 μm thick; lower cortex dark brown, about 10 μm thick. Apothecia about 5 mm in diameter, disc dark brown, concave, margin undulate, amphithecium smooth; hymenium about 50 μm high; spores simple, colourless, $4 \times 8\text{--}10 \mu\text{m}$.

Chemistry. Thallus K–; medulla K–, C–, KC–, P+ orange red; containing usnic acid, succinprotocetraric acid (major), fumarprotocetraric acid (minor) and protocetraric acid (trace).

Type. Mongolia, Yetsumiao, Apashya, Shirinkwarömung, F. Fujikawa & T. Watanabe 10—holotype in TNS and isotype in HMAS.

Xanthoparmelia mongolica is characterized by the thallus composed of rather flat primary lobes and convex narrower secondary lobes, which are more or less canaliculate below. Secondary lobes often become subterete toward the apices. With these respect, the present species may be confused with *X. terrestris* (Kurok. et Filson) Elix et Johnston, an endemic species in Australia. However, *X. mongolica* is clearly separated from the latter species by the saxicolous habit and the production of succinprotocetraric and fumarprotocetraric acids with a trace amount of protocetraric acid rather than salacinic and norstictic acids in the medulla.

This new species is known only from the type locality in Mongolia at present.

Xanthoparmelia nigrocephala Kurok., sp. nov. (Fig. 4)

Xanthoparmelia australasica primo ad aspectu maxime simile, sed superficie inferiore pallido brunnescenti et isidiis ad apiceibus nigris differt.

Thallus foliose, adnate on rocks, pale yellow-green, more or less blackening on older lobes; lobes subirregular, more or less imbricate, 1–2.5 mm wide; upper surface more or less shiny, dull and blackening on older lobes, emaculate, distinctly black-margined, densely isidiate, simple isidia subglobose, constricted near the base, often black-tipped, 0.05–0.12 mm in diameter, branched isidia subcoralloid or subbotryose, 0.25–0.4 mm in height, 0.12–0.18 mm in diameter, usually black-tipped on terminal branchlets; medulla white; lower surface pale brown, blackened only near the lobe apices, rhizines rather sparse, of the same colour as the lower surface, simple, short, 0.3–0.5 mm long. Thallus 240–330 μm thick; upper cortex about 35 μm thick; gonidial layer continuous, about 60 μm thick; medulla 110–200 μm thick; lower cortex very pale brown in the outer half, about 35 μm thick. Apothecia sessile, 2–4.5 mm in diameter, disc blackish brown, more or less concave, margin undulate, amphithecium densely isidiate; hymenium about 45 μm high, spores simple, hyaline, $4.5\text{--}5 \times 6\text{--}7.5 \mu\text{m}$.

Chemistry. Thallus K–; medulla K+ yellow turning red, C–, KC–, P+ intense yellow; containing usnic acid, salacinic acid (major) and consalacinic acid (minor) or

trace).

Type. Australia, New South Wales, Charlottes Pass, Mt. Kosciusko, elevation about 6039 ft., S. Kurokawa 6480—holotype in TNS.

This new species is easily confused with *X. australasica* Gall., which is widespread and common in Australia and New Zealand. Although these two species produce usnic, salacinic and consalacinic acids in common, it is clearly distinguished from the latter species by the pale brown lower surface of the thallus and by the black-tipped isidia. Spores of the present species are unusually small and $4.5\text{-}5\times 6\text{-}7.5\ \mu\text{m}$, whereas they are $4\text{-}6\times 8\text{-}11\ \mu\text{m}$ in *X. australasica*.

Mainly because of the production of usnic, salacinic and consalacinic acids and of the presence of isidia and brown lower surface, the present new species may be confused with *X. bartlettii*. However, isidia are never granular at the apices and gyrophoric acid is not demonstrated in *X. nigrocephala*.

This new species is known only from the alpine zone of Mt. Kosciusko in eastern Australia at present.

Other specimen examined. Australia, New South Wales, Rawson Pass, Mt. Kosciusko, elevation about 7000 ft., S. Kurokawa 6510 (TNS).

摘 要

キクバゴケ属はオーストラリアとアフリカでとくに種分化が進み、また北半球の温帯地域にも特徴のある種が認められている。筆者はオーストラリアと東アジアの種について研究を進めており、その間すでにいくつかの種について報告した。本報告では、4新種および1稀産種について報告した。4新種のうち2種 (*X. bartlettii* と *X. nigrocephala*) は、それぞれオーストラリアおよびニュージーランドに分布するものであり、他の2種 (*X. formosana* と *X. mongolica*) もそれぞれ台湾および内蒙古からのものである。また、最近中国北部の2地点から報告された *X. durietzii* は、中国北部だけでなく内蒙古にも産することを報告した。

Literature cited

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