

A NEW SPECIES OF *PYLAIISIA* (HYPNACEAE) FROM PERU

НОВЫЙ ВИД *PYLAIISIA* (HYPNACEAE) ИЗ ПЕРУ

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Abstract

*Pylaisia afoninae* is described from Peru. It is the first known dioicous species in the genus. Additional noteworthy features of the species are its strongly concave, long-acuminate leaves and extensively developed, opaque alar region.

Резюме

*Pylaisia afoninae* описана из Перу. Это первый двудомный вид в роде *Pylaisia*. Диагностическими признаками вида являются также сильно вогнутые листья с длинно оттянутой верхушкой и многочисленные квадратные клетки в углах основания листа, образующие непрозрачную ушковую зону.

KEYWORDS: Hypnaceae, new species, Peru, *Pylaisia*

*Pylaisia* is genus of 15 species (Arikawa, 2004) nearly restricted to the temperate and boreal regions of the Northern Hemisphere. There are 14 species of *Pylaisia* in Asia; the single species not occurring in Asia (*Pylaisia intricata*) is endemic to North America. Only one species (*P. falcata* Schimp.) is found in the Southern Hemisphere. Throughout its range *Pylaisia* nearly always grows in corticolous habitats, such as tree trunks and branches, and on rotting logs. However, at least in the New World the genus occasionally occurs on rocks and wet banks. *Pylaisia* is a small to large-sized moss that often grows in compact, yellowish green mats with prostrate stems and prostrate/ascending branches. Its stems have an outer sclerodermatal layer; frequently weak central strand; and complex pseudoparaphyllia that often have deeply and broadly incised margins. Its leaves are symmetric or asymmetric; often falcate; variously acuminate; concave with mostly plane, entire to weakly serrulate margins; and weakly decurrent by a 1–2 enlarged hyaline cell(s). The costae in *Pylaisia* are short and double or absent; often the costae forks are unequal with one fork extending to 1/3 the leaf length. Most species have well-differentiated alar regions with many rows of oblate, quadrate, or subrectangular, firm- to thick-walled alar cells, but the alar cells on stem and branch leaves or even on leaves from single stems vary considerably in form and development. All previously described species are autoicous and collections nearly always have sporophytes. Its sporophytes have long, smooth setae; erect (occasionally suberect), oblong-ovoid to cylindrical capsules; conic, obliquely long-apiculate to short-rostrate opercula; and well-developed thick-walled annuli that are persistent on

the capsule mouth. The exostome teeth in *Pylaisia* differ from most other members of the Hypnaceae in being smooth on the dorsal surface, and at times the dorsal trabeculae and median lines are considerably thickened. As in nearly all members of the Hypnaceae, the *Pylaisia* exostome has laterally projecting trabeculae united at the tips to a thin, fragile, hyaline, longitudinal line. However, this feature is exceptionally well developed in some *Pylaisia* species. Many species of *Pylaisia* have reduced endostomes with fragmentary basal membranes and segments that are mostly or entirely split along the keel lines. In such cases the split segments diverge toward the cilia and are either entirely or partially fused to the ventral (inner) surface of the exostome teeth. The cucullate, mostly naked calyptrae are noteworthy because they are often split 3/4 or more their length. Relatively large spores occur in some *Pylaisia* species; this feature appears to be correlated with reduced endostomes.

In South America there is one previously described species of *Pylaisia* (*P. falcata*), that ranges from Mexico to Peru and is disjunct in Nepal and southwestern China (Arikawa, 2004). Therefore it was somewhat of a surprise to come across a collection that represents a new species of *Pylaisia*. We welcome the opportunity to name this new species for Olga Afonina on the occasion of her 70<sup>th</sup> birthday.

***Pylaisia afoninae* B. H. Allen & W. R. Buck, sp. nov.**

Fig. 1: A–J

Plants medium sized in reddish-tinged to golden mats. Stems creeping, to ca. 2 cm long, irregularly branched, the branches to 6 mm long; cross-section with 3–6 rows of small, thick-walled cells surrounding abruptly larger,

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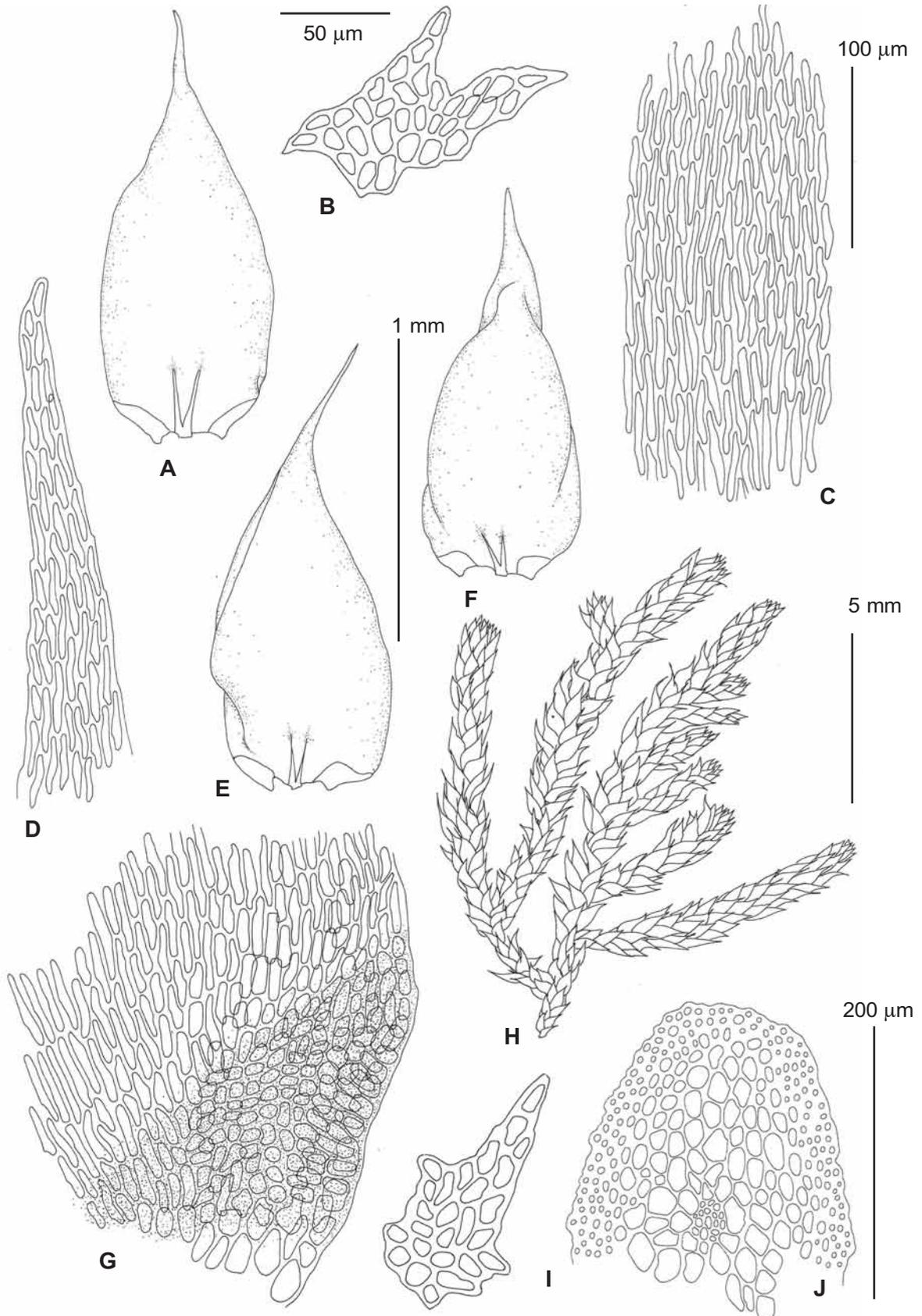


Fig. 1. *Pylaisia afoninae*. (from *Sagástegui 12148A*, MO): A, E & F. Leaves. B & I. Foliose-incised pseudoparaphyllia. C. Median leaf cells. D. Leaf apex. G. Leaf alar region. H. Habit. J. Stem in cross section. Scale bars: 5 mm for H, 1 mm for A, E, F; 200  $\mu\text{m}$  for J; 100  $\mu\text{m}$  for C, D, G; and 50  $\mu\text{m}$  for B, I.

thin-walled cells, central strand weakly developed; axillary hairs with all cells pale yellow, with a single, short, basal cell and (2–)4–6 rectangular apical cells; pseudoparaphyllia complex, subfilamentous to the outside, foliose with deeply and broadly incised margins to the inside; rhizoidal initials abaxial to leaf insertions; rhizoids slender, smooth, red, not or sparsely and irregularly branched. Branch and stem leaves similar, densely foliate, wrinkled, appressed-imbricate when dry, erect when moist, oblong-ovate, short-decurrent, rounded to the insertion,  $1.47\text{--}1.75 \times 0.75\text{--}0.86$  mm,  $\pm$  abruptly long-acuminate, the acumen ca.  $1/4\text{--}1/5$  the leaf length, concave, somewhat plicate; margins subentire throughout, plane throughout or occasionally erect on one side below; costa short and double; laminal cells linear-fusiform,  $33\text{--}55 \times 5.5\text{--}8.0$   $\mu\text{m}$ , thin-walled, not significantly shorter toward apex or insertion but thick-walled and porose at insertion; alar region opaque, well developed, restricted to basal corners and not reaching costa, cells quadrate to oblate, ca. 12–15 cells across insertion and 10–15 cells up the margins, decurrent by 1–2(–3) enlarged cells in extreme corners, often remaining on stems upon dissection. Asexual propagula not seen. Dioicous (?). Perigonia bud-like, sessile along main stems, 0.6–0.8 mm high; leaves ovate, 0.6 mm long, acute; margins plane, subentire; costa absent; paraphyses numerous. Perichaetia not seen.

**TYPE.** PERU. Cajamarca: Celendin, La Tranca-Gelig (Celendin),  $6^{\circ}35'28''\text{S}$ ,  $79^{\circ}03'46''\text{W}$ , 2800 m; sobre rocas; 18 Aug 1984, *A. Sagástegui 12148A* (with J. Mostacero L. & S. Leiva G.) (holotype MO; isotypes MHA, NY).

*Pylaisia afoninae* is a high elevation moss with medium-sized, reddish to golden plants that grow in dense mats with irregularly to subpinnately branched stems and prostrate or ascending branches. Its stems have complex, subfilamentous to foliose pseudoparaphyllia with deeply and broadly incised margins; very thick-walled epidermal cells and weakly developed central strands. The gametophytes of *P. afoninae* are odd for *Pylaisia* because their leaves are wrinkled, appressed-imbricate when dry; this gives the plants a somewhat turgid aspect. *Pylaisia afoninae* has stem leaves that are strongly concave and typically rounded at base. The leaves have plane, subentire margins; smooth, linear-fusiform cells; short, but distinct double costae; weak leaf decurrencies; and re-

markably well-developed, opaque alar regions with quadrate to oblate cells that extend 10–15 cells up the basal margins. An interesting feature of *P. afoninae* is the presence below the alar cells of 1–2(–3) enlarged, hyaline cell(s) that are very similar to the inflated basal cells encountered in *Ectropothecium leptochaeton* (Schwägr.) W.R. Buck. All species presently placed in *Pylaisia* are autoicous, but *P. afoninae* appears to be dioicous: only perigonia have been observed. Another of the odd features of *P. afoninae* is its occurrence on rocks in an overwhelmingly corticolous genus.

*Pylaisia falcata* is comparable in size to *P. afoninae* and sometimes grows on rocks. Furthermore, both species have similarly shaped leaves with long-acuminate apices. However, it differs from *P. afoninae* in its autoicous sexual condition and in having silky plants with typically falcate-secund to circinate, almost flat leaves. In addition, the leaves of *P. falcata* have poorly developed alar regions with only 2–6 oblate, quadrate, or subrectangular, hyaline, thick-walled alar cells at the basal margins. *Hypnum vaucheri* Lesq. is remarkably similar to *P. afoninae* in size, leaf shape, alar cell development, and in having linear-fusiform leaf cells. In addition, *H. vaucheri* often grows on rocks or soil, is dioicous, and has broadly foliose pseudoparaphyllia with dentate or ciliate margins. However, the typical form of *H. vaucheri* differs from *P. afoninae* in having smoothly falcate-secund leaves and its pseudoparaphyllia are never as broadly and deeply incised as those of *P. afoninae*. Although there is an arctic-alpine, julaceous form of *H. vaucheri* with compactly appressed, straight leaves (*H. vaucheri* fo. *tereticaulis* Ando), this form differs from *P. afoninae* in having small plants with broadly ovate leaves and very short, broad leaf cells. Nevertheless, *H. vaucheri* is a widespread, exceedingly variable species and it is possible that *P. afoninae* represents a previously unrecognized form of the species. The strongest evidence for a placement of this taxon in *Pylaisia* is the presence of its deeply and broadly incised pseudoparaphyllia (see, Arikawa, 2004, Figs. 6G, 6I, 6N). Whether the taxon belongs in *Pylaisia* or *Hypnum* can only be definitively determined by the discovery of its sporophytes.

#### LITERATURE CITED.

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