

## The Discovery of a Second Locality in Peru for *Pleuridium andinum* Herz. (Ditrichaceae, Musci)

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**Abstract.** *Pleuridium andinum* Herz., a rare moss previously known from only 3 sites in South America, is here reported from a second locality in Peru. The new locality is near Aguas Caliente, Peru, ca. 5720 m a.s.l. This discovery is only one of three collections made since this species was first collected at the "locus classicus" in Bolivia in 1911. The holotype was examined and the original Latin diagnosis is amended in English as a result of examination of both the holotype and the newly discovered specimens. Previously unknown taxonomic features are figured.

*Pleuridium andinum* Herz. was first discovered in May 1911 by Herzog (1916). He found it at the altitude of ca. 4200 m in the Llavetal Mountains, north of the town of Turnari in Cordillera Oriental, Prov. Cochabamba, central Bolivia. Until recently this has been the only known collection from South America. Then, in 1973 E. & P. Hegewald made a large collection of bryophytes from 13 departments in Peru. Of the 2750 bryophytes collected only 20% were determined (Hegewald & Hegewald 1977). Amongst the unknowns was a *Pleuridium* sp. collected from Dept. La Libertad, Prov. Otuzco, Cerro Alto del Toro, between Agalipampa and Quiruvilca at an altitude of 3400 m. The exact determination of this specimen was reported in Hegewald & Hegewald (1985). Even more recently a collection by W.R. Buck has

widened the range of *P. andinum* to include NW Argentina (Tucumán, Buck 26100, 10 Oct. 1994; Buck pers. comm.). This species however remains very rare. Therefore, this paper is reporting on another locality for this species within Peru and provides an amended diagnosis with additional illustrations.

*P. andinum* was found by the author Feb. 19, 1981 on the watershed divide of the Río Pucara (also called Río Ayaviri) and the Río Vilcanota, just at the border between the provinces Cusco and Puno, ca. 20 km NW of Santa Rosa and 15 km S of Langui, altitude ca. 5720 m, about several hundred steps E of the building of the railway station called Aguas Caliente. The specimens were growing on dark, heavy, moist, bare clay at the borders of reed

**Figure 1.** *Pleurodium andinum* Herz. A - typical fertile plant. B - two year old plant. C - mature sterile plant. D - immature plants. E - dwarf fertile plant without perichaetial leaves. F - lower leaf from a sterile stem. G - leaf from midsection of stem. H - leaf from upper portion of a sterile stem. I - lower perichaetial leaf. J - middle perichaetial leaf. K - uppermost perichaetial leaf. L - calyptra and its border cells. M - foot of sporophyte dissected from gametophyte. N - foot of detached sporophyte. O - tip of subula. P-Q - dentitions of margin, locations as shown by dotted lines. R-U - portions of areolation, their positions as indicated. V - fertile plant, front leaves removed and squashed under a cover slip, showing sporophyte.

swamps, minor moss-bogs, in the vicinity of calcareous rock outcrops, rivulets, pools, hot springs and geysers. The immediate area is very diversified floristically and ecologically. Its bryoflora is rich, consisting of at least 52 species (still not elaborated).

The original diagnosis of *P. andinum* is unillustrated. Upon examination, the newly discovered specimens fully agree with the description of the holotype (JE, #4846, with J.A. Snider's note dated 23.2.1985). Translated into English and modified by the results of the scrutiny of both the holotype and the newly discovered specimens, the diagnosis now reads:

Plants minute, cleistocarpous, erect or slightly curved, simple, sometimes forked, (0.3)0.5(0.8) cm high, light green to yellowish, brown with age, densely tufted. Sterile stems imbricate-julaceous, 0.3-0.6 cm high. Fertile stems below as sterile ones above, erecto-patent, 0.5-0.8 cm. Lower leaves broadly ovate, strongly concave, obtuse, cucullate, (0.38)0.42(0.44) mm. Medial leaves gradually narrowing to an obtuse point, concave, less cucullate, 0.45-0.48 mm. Upper leaves slightly concave, narrowing into a triangular apex. Subula triangular, serrate, straight, curved or slightly waved. Margin entire below, erose to denticulate above. Teeth variable, irregular, single or double, sharp to blunt, appressed to recurved, cells 5.7 x 5.0 μm - 20.6 x 7.0 μm. Costa of lower leaves ending distantly below apex, sometimes very short, weak and divided; in medial leaves straight, strong, usually widest in middle of blade, reaching subula; and in upper leaves vanishing in the subula, straight or slightly waved, strongest in upper part of leaf, at base often weak and transparent. Areolation very variable. Upper leaf cells short-rhomboidal; averaging 22 x 7 μm, median leaf cells rhomboidal, averaging 42 x 14 μm, cells at margin and those at costa elongated to rectangular; basal cells long-rectangular to long-rhomboidal (up to 60 μm, usually 40-50 μm), narrowing towards margin. Alar cells not differentiated. Perichaetial leaves up to 1.8 mm long, gradually narrowing or suddenly contracted into a long, straight or wavy subula, distantly denticulate or irregularly serrate, much less concave than vegetative leaves, with a few long plicae, widest above middle, narrowing

towards base. Sporophyte immersed, ca. 1.2 mm long. Seta shorter (0.46 mm without foot) than theca. Capsule regularly wide-ovate, 0.56 mm long and 0.32 mm wide. Operculum widely conical (0.56 x 0.40 mm), straight or slightly curved. Calyptra mitriform, conical, papillose above. Spores coarsely papillose, yellow, 20-22 μm in diameter. Fig. 1.

Specimens: A - JE, s.n.; B & C - KRAM-B, #113846 (C - reserved for a Peruvian herbarium, as requested).

On Feb. 20, 1981 the sporophytes were nearly fully mature, with capsules light brown below the middle and yellow above it. Some dark brown or darkish sporogones of the previous year were preserved on the tallest stems. It was observed in the field that sporophytes easily fell off the gametophytes. Laboratory examination (including microtome sectioning) of specimens showed this to be the phenomenon (recsochaetia) typical of this species, i.e., the separation of a whole sporogone, including the foot, from a gametophyte by means of changes within specialized cells of the foot (Fig. 1; M, N).

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