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Three new Solomon's Seals (*Polygonatum*: Asparagaceae) from the Eastern Himalaya

AARON J. FLODEN
TENN Herbarium, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, TN 37996, USA; e-mail: afloden@utk.edu

Abstract

Three new *Polygonatum* (Asparagaceae) are described and illustrated from the Eastern Himalaya. These species, *Polygonatum autumnal*e, *P. angelicum*, and *P. luteoverrucosum*, have opposite leaves and are evergreen. The foremost is the first autumn-flowering species in the genus and is known from a single locality in Arunachal Pradesh, India. *Polygonatum angelicum* and *P. luteoverrucosum* are the first species in the genus to be reported with distinctly verrucose perigone surfaces. These two are sympatric in Arunachal Pradesh, India, and Xizang, China, but occur at different elevations. Their relationships to other opposite-leaved species are discussed and a key is provided to these and related species.

Keywords: endemic, Himalaya, Mishmi Hills, *P. oppositifolium*

Introduction

Recent collections of *Polygonatum* Miller (1754, without pagination) from east of the Siang River in Arunachal Pradesh, India, in the Mishmi Hills confirm the status of several new *Polygonatum*. Initial observations of two of the species from herbarium specimens (KUN, PE) were unclear and difficult to place in any known species using available keys (Chen & Tamura 2000, Noltie 1994, Jeffrey 1980), though their relationships to one another and to *P. oppositifolium* (Wallich 1820: 380) Royle (1839: 380) are apparent in that they have opposite leaves and grow as epiphytes. These species described here, *Polygonatum angelicum* and *P. luteoverrucosum,* were observed at different elevations in the East Siang District where they are sympatric with several other species of *Polygonatum* that grow terrestrially. Additionally, in September, 2013, I received photographs (Fig. 1) of a *Polygonatum* that was in flower which is the first report of an autumn-flowering species in the genus. Dissections of the perigone reveal spurred filaments unlike any known species from the area, but they are similar to the recently described *Polygonatum gongshanense* Zhao & Xe (2014: 333) from the Sino-Himalaya in northwestern Yunnan, China. This novel autumn-flowering species and *P. gongshanense* also share opposite leaves that are heavily glaucous abaxially. After consulting all type specimens from the Himalaya and relevant literature (Gogoi 2010, Chen & Tamura 2000, Noltie 1994, Jeffrey 1980) these collections were determined to be species new to science which are also confirmed by molecular analyses (A. Floden, in preparation).

Description of the new species

Polygonatum autumnale Floden, *sp. nov*. (Fig. 1)

Similar to *Polygonatum gongshanense* L.H.Zhao & X.J.Xe. in that the filaments have a retrorse spur, also similar to *P. cathcartii* Baker (1875: 559) in having opposite leaves, but differs from both in the obtuse leaf apices, the pink-maculate perigone, the distinctly distally-inflated perigone tube, and by its autumnal flowering period.

Type:—INDIA. Arunachal Pradesh, Lower Dibang District, Mayodia Pass, 28.238727, 95.939444, 2700 meters, growing on tree trunks and rocks with *Pleione hookeriana*, pressed from a cultivated specimen, 18 September 2014, *P. Bruggeman s.n* (holotype, CAL!).

Epiphytic herb. Plant perennial, evergreen. Rhizomes moniliform, segments spherical, 0.5–2 cm diameter, roots thick,

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