



# **A range extension for the new plant species *Solanum sakharii* Hul, and its medicinal uses in a Bunong community in Mondulhiri Province**

François Chassagne, Sovanmoly Hul

## **► To cite this version:**

François Chassagne, Sovanmoly Hul. A range extension for the new plant species *Solanum sakharii* Hul, and its medicinal uses in a Bunong community in Mondulhiri Province. *Cambodian Journal of Natural History*, 2014, 2014 (1), pp.4-7. <hal-04674028>

**HAL Id: hal-04674028**

**<https://hal.science/hal-04674028v1>**

Submitted on 20 Aug 2024

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



HAL Authorization

## Short Communication

### A range extension for the new plant species *Solanum sakharii* Hul, and its medicinal uses in a Bunong community in Mondulhiri Province

François CHASSAGNE<sup>1,\*</sup> and Sovanmoly HUL<sup>2</sup>

<sup>1</sup> Nomad RSI Organization, Doh Kromom Village, Sokhadom Commune, Senmonorom District, Mondulhiri Province, Cambodia.

<sup>2</sup> Muséum national d'Histoire naturelle (MNHN), Département de Systématique et Évolution, UMR 7205 (ISYEB), Herbar national (P), CP 39, 57 rue Cuvier, 75231 Paris Cedex 5, France.

\*Corresponding author. Email francois.chassagne@laposte.net

*Paper submitted 4 June 2014, revised manuscript accepted 17 July 2014.*

Thanks to its wide range of ecosystems (Tan, 1952), including evergreen forests, deciduous dry forests, grasslands, mangroves, coral reefs, swamp forests, seagrass meadows, and wetlands, Cambodia harbours a rich floristic diversity. The country is home to about 2,308 known vascular plant species belonging to 852 genera in 164 families, including 214 endemic species (Dy Phon, 1982; Ministry of Environment, 2010). In the 1990s, Ashwell (1997) estimated that with a complete and systematic study, the flora would exceed 3,000 species. The total number of vascular plants remains unknown, but we now estimate that Cambodia has as many as 5,000 vascular plant species (Hul, unpublished data).

Cambodia's native flora has fascinated scientists through the ages (e.g. Loureiro, 1790; Pierre, 1879–1899; Lecomte, 1907–1951; Aubréville, 1960 onwards; Vidal *et al.*, 1969; Martin, 1971; Matras & Martin, 1972), and botanists, ethnobotanists and biologists continue to take a keen interest in it to this day. With research over the past five years, the number of plant species recorded in Cambodia has increased, and 20 new vascular plants species have been described: *Acampe hulae* Telepova (Telepova, 2009), *Aeschynanthus cambodiensis* D.J. Middleton (Middleton, 2009), *Alocasia jiewhoei* V.D. Nguyen (Nguyen *et al.*, 2010), *Amorphophallus hemicypticus* Hettterscheid (Maxwell, 2009), *Areca riparia* Heatubun

(Heatubun, 2011), *Ceratopteris oblongiloba* Masuyama & Watano (Masuyama & Watano, 2010), *Curculigo fabrei* Hul (Leti *et al.*, 2013), *Dasymaschalon acuminatum* Wang & Saunders (Wang *et al.*, 2009), *Doritis boubetii* Telepova (Telepova, 2013), *Doritis pulcherrima* f. *cinna-barina* Telepova (Telepova, 2013), *Exacum darae* Hul (Hul, 2010), *Lagerstroemia kratiensis* W.J. de Wilde & Duyfjes (de Wilde & Duyfjes, 2013), *Lespedeza cambodiana* V.D. Nguyen (de Kok & Nguyen, 2013), *Milusa cambodgensis* Chaowasku & Kessler (Chaowasku & Keßler, 2014), *Nepenthes bokorensis* Mey (Mey, 2009), *Nepenthes holdenii* Mey (Mey *et al.*, 2010), *Peliosanthes cambodiana* Aver. & N. Tanaka (Averyanov *et al.*, 2013), *Peliosanthes triandra* Aver. & N. Tanaka (Averyanov *et al.*, 2014), *Solanum sakharii* Hul (Leti *et al.*, 2013) and *Syzygium bokorensis* W.K. Soh & J. Parn. (Soh & Parnell, 2011).

These findings have contributed to a better understanding of the country's flora, but suggest that many species remain to be discovered.

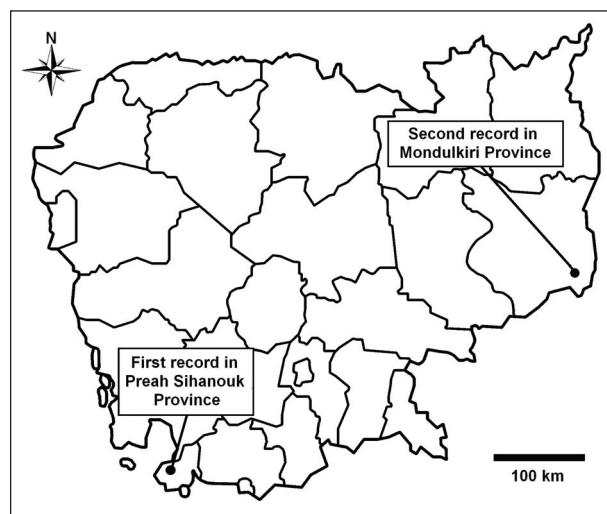
In Northeast Cambodia, near the Vietnamese border, lies the province of Mondulhiri. This province has been studied primarily by zoologists, whose research has proved that the area's wide range of habitats supports an exceptionally high diversity of fauna (Walston *et al.*, 2001; Rawson *et al.*, 2009; Phan *et al.*, 2010). Although its rich diversity of habitats also

CITATION: Chassagne, F. & Hul S. (2014) A range extension for the new plant species *Solanum sakharii* Hul, and its medicinal uses in a Bunong community in Mondulhiri Province. *Cambodian Journal of Natural History*, 2014, 4–7.

makes Mondulkiri an extremely interesting subject for botanists, only a handful of surveys have been conducted thus far (Jung *et al.*, 2014).

The province's largest ethnic group is the indigenous Bunong, one of the highland minorities who are considered to be among the first inhabitants of Cambodia. Over time, the Bunong people have developed a strong relationship with their natural environment (Bourdier, 2006). They are known for their extensive knowledge of plants, which they use for various purposes, such as medicine, food, building and hunting (Laval *et al.*, 2011). Their local knowledge has already been advantageous for ecological assessments of mammal species (Starr *et al.*, 2011) and we predicted this could also be used as a basis for botanical field studies, potentially helping to uncover new plant species.

The results of an ethnobotanical survey carried out in 2013 and 2014 with the Bunong people have enhanced our understanding of Mondulkiri's flora (Chassagne, in prep.). It is thanks to the knowledge of the Bunong that we discovered the newly described plant species *Solanum sakhanii* Hul during our investigation. The villagers of Dak Dam Commune (O'Reang District) have long known and used this plant as a traditional treatment for malaria and fevers. The plant grows on dry rice fields during the rainy season. The Bunong people collect the whole plant and cut it into small pieces, which are boiled for 15 minutes. The patient drinks this remedy four to six times per day until his condition has improved. It is also possible to make a steam bath with the boiling water.



**Fig. 1** Cambodia, showing the locations of the two records of *Solanum sakhanii* Hul.

This is the first paper to describe the plant *Solanum sakhanii* Hul as having medicinal uses, and also confirms the first record in Mondulkiri, and only the second record of this species in Cambodia and South-east Asia.

*Solanum sakhanii* Hul is a small herb that was first discovered in 2008 and published in 2013 by Leti *et al.* (Chéng, Hul & David CL 929; holotype, P00836398; isotypes, P00836399, P00836400) near Kbal Chhay in Preah Sihanouk Province (10°39'23"N, 103°36'57"E, elevation 60 m) (Figs 1 and 2). It is a creeping, stoloniferous plant, which grows in open, humid environments or in the understory of dense forests. Other characteristics are listed as follows: Leaves are solitary or unequally paired; lamina ovate-elliptic, 4–7 × 2.5–4.0 cm, margin 3–5-sinuate lobed, pubescent with stellate hairs adaxially and abaxially, prickly along main veins on both surfaces. Inflorescences extra-axillary, scorpioid-racemose, 1–4-flowered. Flowers 5-merous, 10–12 mm long; pedicel pubescent with stellate hairs, prickly. Calyx of 5 sepals, pubescent with stellate hairs, prickly abaxially. Corolla of 5 petals, pale blue or purplish, pubescent with stellate hairs abaxially. Stamens 5, filaments 1–1.5 mm long; anthers narrow. Fruits: berries globose or subglobose, 1–1.5 cm in diameter, glabrous, ± included in the accrescent calyx, greenish-white to yellow.

We collected *Solanum sakhanii* Hul (Chassagne 138, P00723707) on 27 October 2013. This species was found to be very common in an upland rice field on red clay soil, in a disturbed area near an evergreen forest, in Dak Dam Commune, O'Reang District, Mondulkiri Province (12°24'37"N, 107°19'25"E, elevation 785 m) (Fig. 1). Specimens have been deposited in the National Herbarium of Cambodia (RUPP) in the Department of Biology, Faculty of Science, Royal University of Phnom Penh, and in the Paris Herbarium in France.

This record in Mondulkiri Province, in a different habitat (with red clay soil rather than sandy soil) and at a much higher altitude (785 m) than the type locality in Preah Sihanouk Province, indicates that the species *Solanum sakhanii* could be widely distributed. Further investigations in neighbouring countries, especially Vietnam and Laos, could be helpful to assess its presence in these countries. Moreover, the discovery that this plant is considered by the Bunong as having medicinal uses could be used for future phytochemical and pharmaceutical investigations.





**Fig. 2** *Solanum sakhanii* Hul, in its type locality in Preah Sihanouk Province (© B. David).

## Acknowledgments

The authors would like to thank the Bunong villagers in Dak Dam Commune for sharing their knowledge with us, and Moeub Chamroeun for helping translate this information. We are grateful to the staff of Nomad RSI Cambodia for their participation, and Bruno David (Pierre Fabre Institute) for his photographs. We sincerely thank Edwinstaël Ramanantsoa and Élodie Lerat (Global Plants Initiative, MNHN). Finally, we would like to thank Svjetlana Bosanac for proofreading this article.

## References

- Ashwell, D.A. (1997) *Cambodia: A National Biodiversity Prospectus*. Report to United Nations Development Program and Ministry of Environment, Phnom Penh, Cambodia.
- Aubréville, A. (first editor) (1960 onwards) *Flore du Cambodge, du Laos et du Viêt Nam*. Muséum National d'Histoire Naturelle, Paris, France. In 32 volumes.
- Averyanov, L.V., Tanaka, N. & Luu H.T. (2013) New species of *Ophiopogon* and *Peliosanthes* (Asparagaceae) from Cambodia and Vietnam. *Taiwania*, **58**, 233–241.
- Averyanov, L.V., Tanaka, N. & Nguyen S.K. (2014) New species of *Peliosanthes* and *Rohdea* (Asparagaceae) from Eastern Indochina. *Taiwania*, **59**, 18–25.
- Bourdier, F. (2006) *The Mountain of Precious Stones (Ratanakiri, Cambodia)*. Center for Khmer Studies (CKS), Phnom Penh, Cambodia.
- Chaowasku, T. & Keßler, P.J.A. (2014) *Miliusa cambodgensis* sp. nov. (Annonaceae) from Cambodia and *M. astiana*, *M. ninhbinhensis* spp. nov. from Vietnam. *Nordic Journal of Botany*, **32**, 298–307.
- Dy Phon, P. (1982) Végétation du Cambodge: endémisme et affinités de sa flore avec les régions voisines. *CR, Socio Biogéographie*, **58**, 135–144.
- Heatubun, C.D. (2011) Seven new species of *Areca* (Arecaceae). *Phytotaxa*, **28**, 6–26.
- Hul, S. (2010) Two new species of Gentianaceae from Indochina. *Edinburgh Journal of Botany*, **67**, 155–160.
- Jung, J., Ryu, Y., Won, H. & Choi, H. K. (2014) Morphological and molecular characterization of a new record of *Isoetes coromandelina* subsp. *coromandelina* from Cambodia. *Plant Systematics and Evolution*, **300**, 43–50.
- de Kok, R.P.J. & Nguyen V.D. (2013) *Lespedeza cambodianum* (Leguminosae), a new species from Cambodia. *Kew Bulletin*, **68**, 361–364.
- Laval, P., Rakotoarison, H., Savajol, N. & Toun V. (2011) The contribution of wild medicinal plants towards poverty alleviation and health improvements: a case study in two villages in Mondulakiri Province, Cambodia. *Cambodian Journal of Natural History*, **2011**, 29–39.
- Lecomte, H. (first editor) (1907–1951) *Flore Générale de l'Indochine*. Masson, Paris, France. In 9 volumes + 9 supplements.
- Leti, M., Hul, S., Fouché, J.G., Cheng S.K. & David, B. (2013) *Flore Photographique du Cambodge*. Éditions Privat, Toulouse, France.
- de Loureiro, J. (1790) *Flora Cochinchinensis*. Ulyssupone Typis, et Expensis Academicis, Lisbon, Portugal.

- Masuyama, S. & Watano, Y. (2010) Cryptic species in the fern *Ceratopteris thalictroides* (L.) Brongn. (Parkeriaceae): IV. taxonomic revision. *Acta Phytotaxonomica et Geobotanica*, **61**, 75–86.
- Martin, M.A. (1971) *Introduction à l'ethnobotanique du Cambodge*. PhD thesis, Faculty of Sciences, University of Paris, France.
- Matras, J. & Martin, M.A. (1972) Contribution à l'ethnobotanique des Brou (Cambodge—Province de Ratanakiri). *Journal d'Agriculture tropicale et de Botanique appliquée*, **19**, 1–97.
- Maxwell, J.F. (2009) Vegetation and vascular flora of the Mekong River, Kratie and Steung Treng Provinces, Cambodia. *Maejo International Journal of Science and Technology*, **3**, 143–211.
- Mey, F.S. (2009) *Nepenthes bokorensis*, a new species of Nepenthaceae from Cambodia. *Carniflora Australis*, **7**, 6–15.
- Mey, F.S., Catalano, M., Clarke, C., Robinson, A., Fleischmann, A. & McPherson, S. (2010) *Nepenthes holdenii* (Nepenthaceae), a new species of pyrophytic pitcher plant from the Cardamom Mountains of Cambodia. In *Carnivorous Plants and their Habitats: Volume 2* (ed. S.R. McPherson), pp. 1306–1331. Redfern Natural History Productions, Poole, UK.
- Middleton, D.J. (2009) A revision of *Aeschynanthus* (Gesneriaceae) in Cambodia, Laos and Vietnam. *Edinburgh Journal of Botany*, **66**, 391–446.
- Ministry of Environment (2010) *Fourth National Report to the Convention of Biological Diversity*. Ministry of Environment, Phnom Penh, Cambodia.
- Nguyen V.D., Regalado, J.C. & Chinh V.T. (2010) A new species of *Alocasia* (Araceae-Colocasieae). *Gardens' Bulletin Singapore*, **62**, 121–126.
- Phan C., Prum S. & Gray, T.N. (2010) Recent camera trap records of globally threatened species from the Eastern Plains Landscape, Mondulakiri. *Cambodian Journal of Natural History*, **2010**, 89–93.
- Pierre, J.B.L. (1879–1899) *Flore Forestière de Cochinchine*. Doin, Paris, France (5 volumes, index, and 400 plates).
- Rawson, B.M., Clements, T. & Hor N.M. (2009) Status and conservation of yellow-cheeked crested gibbons (*Nomascus gabriellae*) in the Seima Biodiversity Conservation Area, Mondulakiri Province, Cambodia. In *The Gibbons: New Perspectives on Small Ape Socioecology and Population Biology* (eds S. Lappan & D.J. Whittaker), pp. 387–408. Springer New York, USA.
- Soh W. K. & Parnell, J. (2011). Three new species of *Syzygium* (Myrtaceae) from Indochina. *Kew Bulletin*, **66**, 557–564.
- Starr, C., Nekaris, K.A.I., Streicher, U. & Leung, L.K.P. (2011) Field surveys of the Vulnerable pygmy slow loris *Nycticebus pygmaeus* using local knowledge in Mondulakiri Province, Cambodia. *Oryx*, **45**, 135–142.
- Tan K.H. (1952) *Géographie du Cambodge et de l'Asie des Moussons*. Imprimerie Henry, Phnom Penh, Cambodia.
- Telepova, M. (2009) *Acampe hulae* Telepova (Orchidaceae), une nouvelle espèce du Cambodge et du Laos. *Adansonia*, **31**, 267–272.
- Telepova, M. (2013) *Doritis boulbetii* Telepova sp. nov., *Doritis pulcherrima* f. *cinnabarina* Telepova f. nov., deux nouveaux taxons lithophytes du Cambodge. *Rhône-Alpes Orchidées*, **50**, 6–15.
- Vidal, J.E., Martel, G. & Lewitz, S. (1969) Notes ethnobotaniques sur quelques plantes en usage au Cambodge. *Bulletin de l'Ecole française d'Extrême-Orient*, **55**, 171–232.
- Walston, J., Davidson, P. & Men S. (2001) *A Wildlife Survey in Southern Mondulakiri Province, Cambodia*. Wildlife Conservation Society: Cambodia Program, Phnom Penh, Cambodia.
- Wang, J., Chalermglin, P. & Saunders, R.M.K. (2009) The genus *Dasydaschalos* (Annonaceae) in Thailand. *Systematic Botany*, **34**, 252–265.
- de Wilde, W.J.J.O. & Duyfjes, B.E.E. (2013) Miscellaneous information on *Lagerstroemia* L. (Lythraceae). *Thai Forest Bulletin (Botany)*, **41**, 90–101.

## About the authors

FRANÇOIS CHASSAGNE is a pharmacist and holds a Master's degree in Biodiversity, Ecology and Evolution. He has acquired special skills in ethnopharmacology and conducted ethnobotanical surveys in Southeast Asia. He organised and led this study in Mondulakiri Province.

SOVANMOLY HUL is a professional botanist at the National Museum of Natural History in Paris. She is an associate professor, editor-in-chief of the *Flore du Cambodge, du Laos et du Viêt Nam* and curator for Gentianales and Solanales at the Paris Herbarium. She is a co-author of the *Flore Photographique du Cambodge*, published by Editions Privat in 2013.