Tadehagi ademae, a New Species Instead of T. auriculatum with a Revised Circumscription of T. triquetrum (Leguminosae Tribe Desmodieae)

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Desmodium auriculatum DC. described from Timor has been recorded also from the Seychelles, Mascarene Islands, Andaman Islands, S. India (Bengal), Bangladesh, and Myanmar. The type of the species is referable to Tadehagi triquetrum (L.) H. Ohashi subsp. triquetrum, but specimens from the added localities are different from the type and no names are available for them. They are newly named here Tadehagi ademae H. Ohashi & K. Ohashi. Desmodium auriculatum recorded from the Philippines is referable to T. triquetrum nothosubsp. philippinense H. Ohashi var. philippinense and var. palawanense H. Ohashi, but the two varieties are regarded here as T. triquetrum subsp. pseudotriquetrum (DC.) H. Ohashi and subsp. triquetrum, respectively.

**Key words:** Adema, Desmodium auriculatum, India, Tadehagi, Tadehagi ademae, Tadehagi andamanicum, Tadehagi triquetrum, Tadehagi triquetrum nothosubsp. philippinense, Timor.

During studies on the genus Tadehagi for preparation of a manuscript for Flora Malesiana, Adema and Ohashi discussed the identity of Desmodium auriculatum DC. described from Timor. Meeuwen (1962) and Ohashi (2003) considered the species as erroneously recorded from Timor, but that was not correct. The types of the species from Timor in the herbaria G, L, and P were examined, and they are referable to T. triquetrum (L.) H. Ohashi subsp. triquetrum as was done by Ohashi (2003). Desmodium auriculatum has been recorded also from the Seychelles, Mascarene Islands, Andaman Islands, S. India (Bengal), Bangladesh, and Myanmar as D. triquetrum (L.) DC. subsp. auriculatum (DC.) Prain, Tadehagi auriculatum (DC.) H. Ohashi or T. triquetrum (L.) H. Ohashi subsp. auriculatum (DC.) H. Ohashi (Prain 1897, Meeuwen 1962, Ohashi 1973, Polhill 1990, Sanjappa 1992, Kumar and Sane 2003, Lock and Ford 2004). However, the plants from these additional localities are different from the type collected in Timor.

Desmodium auriculatum DC. was published in *Prodromus* 2: 326 (1825). The protologue runs as follows: ‘caulis erectis glabris triquetris, foliolis ovatis acutis glabris petiolo alato quadruplo longioribus, leguminibus glabressimis subcoriaceis’ based on the specimen collected ‘in Timor: Pteroloma auriculatum Desv! in herb. Mus. Par. Articuli leguminis 4–5 maturi facilê secedentes. (v. s. sine flor)’. The holotype is
Fig. 1. Holotype of *Desmodium auriculatum* DC. (HERB.PRODR.(G-DC) G00479673). Courtesy of Head Curator of Phanerogames, Conservatoire et Jardin botaniques de la Ville de Genève (G).
HERB.PRODR.(G-DC) G00479673 (Fig. 1), and is available also in ‘Candolle: Prodromi Herbarium in G (IDC micro-edition, sheet no. 381). Candolle received the specimen, which was collected by Guichenot who visited Timor in 1818–1819, from the Paris Herbarium in the collections of Desvaux. The original Desvaux’s collection in P is designated as ‘Desmodium triquetrum (L.) DC. Types: Desmodium auriculatum DC. (MNHN-P-P02761544. Herbier de A.N.Desvaux. Heteroloma auriculata Desv.)’ in MNHN/ Vascular plants (P) (accessed on 23 June 2017). ‘MNHN-P-P00293925 is also collected by Guichenot in Timor’ in MNHN/ Vascular plants (P) (accessed on 23 June 2017). This must be a duplicate of the type of D. auriculatum DC. These specimens are isotype of D. auriculatum DC. and another isotype is in L (L0018954; Ohashi 2003, fig. 8).

All these types are characterized in having oblong acute leaflets with a winged petiole, long racemes, and sessile loments which are thinly strigose on both lateral surfaces, although the hairiness is not clear on the images but we confirmed it on the isotype in L. Candolle (1825) described the legumes of the type as glabrous in the protologue, but this was a mistake.

Prain (1897) treated Desmodium auriculatum as a subspecies of D. triquetrum, subsp. auriculatum (DC.) Prain, and characterized it as having firmly cartilaginous glabrous pods. He recorded the subspecies from ‘Silhet, coasts of Tenasserim and Andamans, plentiful. Distrib. Malay Archipelago and Mascarene islands’. Following Prain’s circumscription (1897), Meeuwen (1962) excluded D. triquetrum subsp. auriculatum from ‘Flora Malesiana area’, and she considered that the type locality of D. auriculatum was thought to be erroneously recorded. Ohashi (2003) identified the isotype of D. auriculatum in L (L0018954) as Tadehagi triquetrum subsp. triquetrum. He followed Meeuwen (1962) on the type of D. auriculatum and cited it as ‘Type: Unknown locality but erroneously located as “Timor”, with a note as “Pteroloma auriculatum Desv!” Unknown collector (P–holo., n.v.’). He proposed Tadehagi auriculatum (DC.) H. Ohashi as a new combination based on D. auriculatum DC. without exclusion of its type.

Tadehagi triquetrum subsp. andamanicum Balakr. & N. G. Nair was described from North Andaman in 1983 (Fig. 2). Sanjappa (1992) and Kumar and Sane (2003) regarded this subspecies as identical with Desmodium triquetrum subsp. auriculatum. Subsp. andamanicum is, however, different from subsp. auriculatum in having stipitate loments with elliptic-oblong articles and oblong leaflets. Therefore, T. triquetrum subsp. andamanicum does not apply to D. triquetrum subsp. auriculatum (DC.) Prain. Ohashi (2003) accepted T. andamanicum (Balakr. & N. G. Nair) S. P. Mathew as a distinct species.

No other names have been applied to the plants known previously as D. triquetrum subsp. auriculatum (DC.) Prain or Tadehagi auriculatum (DC.) H. Ohashi in Andaman Islands, Bangladesh, Bengal (S. Indiá), Mascarene Islands, Myanmar, and Seychelles. Hence, we describe the plants as a new species.

Tadehagi ademae H. Ohashi & K. Ohashi, sp. nov. [Fig. 3]

Type: Myanmar. Tenasserim and Andamans. Helfer 1648 (Distributed at Royal Botanic Gardens, Kew. 1862-3). (L1955911–holotype; K, GH (right hand specimen)–isotypes).

The epithet of the new species is dedicated to Dr. Frits A. C. B. Adema of Naturalis Biodiversity Center in The Netherlands in respect for his great contributions to Leguminosae in southeastern Asia.

Tadehagi ademae was fully described by Ohashi (1973, 2003) as T. triquetrum subsp. auriculatum and T. auriculatum, respectively. The new species has distinct loment-stipes exerted from the calyx, narrowly oblong loments of which the pericarp is glabrous, corky and reticulate on lateral surfaces, quadrangular articles 5–7 × 5–7 mm in size, and narrowly
Fig. 2. Isotype of *Tadehagi triquetrum* subsp. *andamanicum* Balakr. & N. G. Nair (PBL). Courtesy of Dr. Paramjit Singh, Director, Botanical Survey of India.
ovate to ovate, acute leaflets with glabrous adaxial surface and lateral nerves 10–13 pairs.

The species is most closely allied to *T. alatum* (DC.) H. Ohashi, but is distinguished from the latter by loments (thinly chartaceous, puberulent, broadly oblong articles in *T. alatum*) and leaflets (narrowly ovate-oblong, acuminate leaflets with puberulent surfaces and 14–18 pairs of lateral nerves in *T. alatum*).

Specimens examined are listed in Ohashi (1973, 2003).

Distribution: Seychelles, Mascarene Islands, Andaman Islands, S. India (Bengal), Bangladesh, and Myanmar.

Merrill (1923) recorded *Desmodium auriculatum* DC. in the Philippines with citation of three specimens: ‘Luzon (Rizal), B.S. 1036, 22685 Ramos, and Merrill 7394. He noted that ‘[the species is] often confused with *D. triquetrum* DC., but easily distinguished by glabrous, not strigose pods. Andaman and Great Coco Islands, Indo-China, and Malaya. (on page 284).’ Judging from his note, he determined the three specimens cited above as *D. auriculatum* based on their glabrous pods and ‘Malaya’ as a place of distribution may include Timor. Later, Merrill (1926) added ‘*Pteroloma pseudotriquetrum* DC. × *Tadehagi triquetrum* DC.’ as a synonym of *D. auriculatum*. Of the three specimens cited by Merrill (1923) ‘B.S. 1036’ was cited by Ohashi (2003) as ‘M. Ramos Bur. Sci. no. 1036 (GH)’ with its picture in fig. 11 (on page 290) and ‘Ramos 22685’ as ‘Prov. Rizal. Ramos Bur. Sci. 22685 (GH)’.

Tadehagi triquetrum is extremely variable and shows remarkable polymorphic variation in the Philippines. Schindler (1924) recorded a hybrid *Pteroloma pseudotriquetrum × Tadehagi alatum* from tropical Bengal, India, but we could not examine the specimens he cited. Ohashi (2003) recorded *Tadehagi triquetrum* nothosubsp. *philippinense* as the hybrids between *T. triquetrum* subsp. *pseudotriquetrum* and subsp. *triquetrum*. This hybrid includes two forms: var. *philippinense* and var. *palawanense* H. Ohashi (a key to both varieties was misprinted in Ohashi (2003 on page 293). Var. *philippinense* has loments glabrous on the lateral surfaces but ciliate (as subsp. *pseudotriquetrum*) and leaflets usually more than three times as long as wide (as subsp. *triquetrum*), whereas var. *palawanense* has loments pubescent on the lateral surfaces and margin (as subsp. *triquetrum*) and leaflets usually less than three times as long as wide (as subsp. *pseudotriquetrum*). However, *T. triquetrum* nothosubsp. *philippinense* var. *philippinense* is regarded here as *T. triquetrum* subsp. *pseudotriquetrum* and var. *palawanense* as *T. triquetrum* subsp *triquetrum*, because the leaflets are less valuable as a diagnostic character between both subspecies.

*Tadehagi triquetrum* is newly circumscribed as follows:


Fig. 3. Holotype of *Tadehagi ademae* H. Ohashi & K. Ohashi (L1955911). Courtesy of Dr. Frits A. C. B. Adema.
The lectotype (BM000628081) is referable to Tadehagi triquetrum (L.) H. Ohashi subsp. triquetrum.

Desmodium triquetrum (L.) DC., Prodr. 2: 326 (Nov. 1825).

Desmodium auriculatum DC., Prodr. 2: 326 (Nov. 1825) [Type: Timor. Guichenot s.n. (HERB.PRODR.(G-DC) G00479673–holotype; MNHN-P-P02761544, MNHN-P-P00293925, L0018954–isotypes)], syn. nov.


Tadehagi auriculatum (DC.) H. Ohashi in J. Jpn. Bot. 78: 281, fig. 7 (2003), incl. syn. D. auriculatum DC.


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References
大橋広*a，大橋一晶b：マメ科ヌスピトハギ連タデハギ属の1新種

タデハギ属 Tadehagi H. Ohashi は6種よりなり、インド洋モーリシャスから南アジア、東南アジア、中国、オーストラリア北部、太平洋諸島、台湾、石垣島（絶滅危惧IA類）に分布する（Ohashi 2003）。その中の1種 Tadehagi auriculatum (DC.) H. Ohashi はTimorから記載され、Seychelles、Mascarene Islands、Andaman Islands、S. India（Bengal）、Bangladesh、Myanmarに分布するとされていた（Ohashi 2003）。ところが、Desmodium auriculatum DC. のタイプはスリランカ・インド・東南アジア・中国・台湾（稀）に広く分布する T. triquetrum (L.) H. Ohashi subsp. triquetrum であることが判明した。さらにタイプ産地以外の T. auriculatum とされていた植物は D. auriculatum とは別種であることが分かり、この植物には学名がないこととなった。このためにその植物を新種として T. adema H. Ohashi & K. Ohashi と命名した。また、D. auriculatum は新たに T. triquetrum subsp. triquetrum の異名とした。さらに、フィリピンから D. auriculatum として記録され、後にそれらは subsp. triquetrum と subsp. pseudotriquetrum の雑種と見なされて T. triquetrum nothosubsp. philippinense H. Ohashi と命名されていたが、T. triquetrum の変異の範囲内にあるものでありことが分かり、var. philippinense は T. triquetrum subsp. pseudotriquetrum の異名に、var. palawanense H. Ohashi は subsp. triquetrum の異名とした。

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