

## STUDY ON THE SECTION *Trifoliolata* DC. (*Jasminum* L. - Oleaceae Juss.) IN VIETNAM

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**ABSTRACT:** *Jasminum* L. comprises about 200 species in the world including 5 sections *Jasminum* Green, *Alternifolia* DC., *Trifoliolata* DC., *Primulina* Green and *Unifoliolata* DC. they distributed in tropical and subtropical in South East Asia, Europa, Australia and Africa. Section *Trifoliolata* DC. was published by De Candolle (1844) with the typus *Jasminum didymum* G. Forst. and characterized by leaves 3-foliolate, terminal leaflet slightly larger than or equal to lateral leaflets or sometimes, lateral leaflets reduced. There are about 10 species and 5 subspecies in this Section in the world. In Vietnam, there are 1 species and 2 subspecies in section *Trifoliolata* DC. recorded. In this paper we introduced *Jasminum sinense* Hemsl. in sections *Trifoliolata* DC. as a new record for flora of Vietnam. This species is found in Ha Giang (Pho Bang) and has characteristic of *Trifoliolata* DC. section such leaves 3-foliolate *Jasminum sinense* was closed to *Jasminum brevilobum* by lateral leaflets reduced, leaves and calyx pilose (different with *Jasminum lanceolaria* subsp. *lanceolaria* and *Jasminum lanceolaria* subsp. *scortechinii* by terminal leaflet slightly larger than or equal to lateral leaflets, leaves and calyx glabrous). But *Jasminum sinense* characterized by calyx lobes linear, 1-5 mm long. In this article, we introduce nomenclature, key to species, morphology and illustration, distribution and research specimen of three species of *Trifoliolata* DC. section (*Jasminum* L.) from Vietnam.

**Keywords:** Oleaceae, *Jasminum*, *Trifoliolata*, morphology, new record, Ha Giang, Vietnam

### INTRODUCTION

*Jasminum* L. Comprises about 200 species in the world including 5 sections: *Jasminum* Green, *Alternifolia* DC., *Trifoliolata* DC., *Primulina* Green and *Unifoliolata* DC. they distributed in tropical and subtropical in South East Asia, European, Australia and Africa [4, 5, 7]

Section *Trifoliolata* DC. was published by De Candolle (1844) [1] with the typus was *Jasminum didymum* G. Forst. and characterized by leaves 3-foliolate, terminal leaflet slightly larger than or equal to lateral leaflets or sometimes, lateral leaflets reduced. There are about 10 species and 5 subspecies in this Section in the world Green (2001) [5] research on this section in Australia, South East Asia and China had introduced 6 species, 2 varieties and 3 subspecies.

According to recent research, genus *Jasminum* L. in Vietnam has about 30 species [10] including 2 sections, viz: *Trifoliolata* DC. and *Unifoliolata* DC. and there are 1 species and 2 subspecies of section *Trifoliolata* DC.

recorder in Vietnam [3, 8, 9].

During studying specimens of this section in the Herbarium, we introduced *Jasminum sinense* Hemsl. with leaves 3-foliolate in sections *Trifoliolata* DC. as a new record for flora of Vietnam, this species had been recorded only in China (Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang) [2]. The voucher of this species was kept in HN Herbarium. Thus, this section in Vietnam has 2 species and 2 subspecies, viz: *Jasminum brevilobum*, *Jasminum lanceolaria* subsp. *lanceolaria* and *Jasminum lanceolaria* subsp. *scortechinii* and *Jasminum sinense*. Nomenclature, a key to species, morphology and illustration of three species was provided.

### MATERIALS AND METHODS

Materials were vouchers of all species of *Trifoliolata* DC. section from Vietnam which were kept in Herbaria of Institute of Ecology and Biological Resources (HN), Institute of Tropical Biology (VNMN), National Institute of

Medicinal Materials (HNPI), VNU University of Science (HNU), Kunming Botanical Garden (KUN), South China Botanical Garden (SCBG).

Herbarium of the Museum National d'Histoire Naturelle in Paris (P), and specimens collected from the field trips.

## RESULTS AND DISCUSSION

### Key to species of *Trifoliolata* DC. section (*Jasminum* L.) in Vietnam

1A Lateral leaflets reduced; leaves and calyx pilose.

2A. Calyx lobes linear, 1-5 mm long..... 1. *J. sinense*

2B Calyx lobes shallow, triangular, 0.5 mm long..... 2. *J. brevilobum*

1B Terminal leaflet slightly larger than or equal to lateral leaflets; leaves and calyx glabrous..... 3. *J. lanceolaria*

3A. Corolla tube 17-25 mm long, fruit 8-9 × 7 mm..... 3a. *J. lanceolaria* subsp. *lanceolaria*

3B Corolla tube 10-15 mm long, fruit 20 × 12 mm..... 3b. *J. lanceolaria* subsp. *scortechinii*

### Nomenclature and morphology of species of *Trifoliolata* DC. section (*Jasminum* L.) in Vietnam

#### 1. *Jasminum sinense* Hemsl. - Nhài hà giang (Fig. 1)

Hemsl in Forbes & Hemsl. 1889. J. Linn. Soc. Bot. 26: 80; M. Chang et al. 1996 Fl. China, 15: 316. *Jasminum bodinieri* H. Lévl. 1914. Repert. Spec. Nov. Regni Veg. 13 (355-358). 151-*Jasminum sinense* Hemsl. var *septentrionale* Hand-Mazz 1936 Symb. Sin. 7(4): 1012 - *Lonicera cavalerieri* H. Lévl. 1912 Repert. Spec. Nov. Regni Veg. 11 (271-273): 31 - *Lonicera rehderi* H. Lévl. 1911. Repert. Spec. Nov. Regni Veg. 10 (243-247): 145, not Merrill. 1904. Publ. Bur. Sci. Gov. Lab. 17: 50.

Vines twining, 1-8 m, branchlets terete, densely rusty villous. Leaves opposite, 3-foliolate, lateral leaflets reduced; petiole 0.5-3.5 cm long; terminal leaflet ovate to ovate-lanceolate, 3-12.5 × 2-8 cm, rusty pubescent and more densely so along veins abaxially, base rounded or rounded-cuneate, apex obtuse, acute, to acuminate; primary veins 3-6 on each side of midrib; lateral leaflets 1.5-6.5 × 0.8-5 cm. Cymes congested to panicles, terminal or axillary, many-flowered. Flowers fragrant, pedicel 0-5 mm long. Calyx pilose; tube 2-3 mm long; 5 lobes linear, 1-5 mm. Corolla white or yellowish, salverform; tube 1.5-4 cm, lobes 5, oblong or lanceolate, 0.6-1.4 cm. Stamen 2, filament short, attach near throat; anther 3 mm. Fl. June-October, Fr.

Septembe-May (next year).

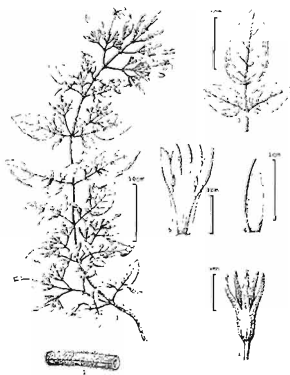


Figure 1. *Jasminum sinense* Hemslcy  
- Nhài hà giang

1. Branch with flower; 2. part of branchlet; 3. leaf;
  4. calyx; 5. corolla tube (open), 6. corolla lobe;
- (illustration drawn by Mrs Kim Chi from Bien 420-HN)

**Loc. class.:** China (Kwang tung). **Synotype:** s n. 114 (P: SCBG<sup>1</sup>).

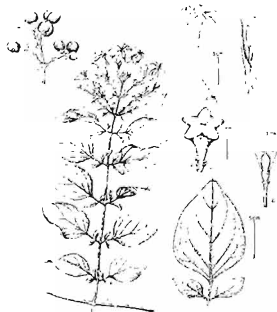
**Distribution:** Hà Giang (Pho Bang). China.

**Specimen examined:** Ha Giang, Bien 428 (HN)

**Note:** A new record for flora of Vietnam.

**2. *Jasminum brevilobum* A. DC. - Nhài thùy ngắn (Fig 2)**

A. DC. 1844. Prodr. 8: 307; Gagnep. in Lecomte, 1933. Fl. Gen. Indoch. 3: 1040; Phamh. 2000. Illustr. Fl. Vietn. 2(2): 891, fig. 7589; T. Đ. Ly, 2003. Checkl. Pl. Sp. Vietn. 2: 1163.



**Figure 2. *Jasminum brevilobum* A. DC. - Nhài thùy ngắn**

1. Branch with flower, 2. leaf, 3. calyx, 4. flower, 5. corolla tube (open), 6. pistil; 7. Fruiting branch (illustration drawn by Mrs Kim Chi from VK 4426-HN)

Shrubs scandent, 1-5 m; branchlet slender, pubescent when young. Leaves 3-foliate, lateral leaflets reduced; petiole 1-2 cm, terminal leaflet ovate or lanceolate 6-10 × 2.5-4.5 cm, base rounded or truncate; apex obtuse to caudate, adaxial sparse pilose, abaxial densely pubescent, primary vein prominent abaxial, lateral 4-5 pairs, pinnately; lateral leaflet small, 8-10 × 5-6 mm; base obtuse. Compound cymes terminal, many flowers, yellow pilose. Bract leafy, 1-2 cm long, branch bracts linear, 1 mm

long. Flower white, pedicel 2 mm long or not. Calyx tubular, funnel, 5×5 mm; 5 lobes shallow, triangular, 0.5 mm long, pilose. Corolla white, salverform, tube 1.5-2 cm; 6 lobes, oval, 5-6×3-4 mm. Stament short, filament terete, 1 mm long, anther oval, 4 mm long. Gynoecium ovoid, 1.5 mm long, pilose; style terete, 1-1.5 cm, stigma 3-5 mm, bilobes. Berry, globose, 5-6 mm in diam. Seed 1. Fl. June-July, Fr. September-October.

**Loc.class.** India, Nilgiris

**Typus.** Perrottet s n (HT: G; IT: K).

**Distribution examined:** Da Nang (Tourane), Gia Lai (MangYang), Ninh Thuan (Phan Rang). India.

**Specimen.** Gia Lai, PTV 1018 (HN), VK 4426 (HN). - Ninh Thuan, B. H. Quang 52 (HN).

**3. *Jasminum lanceolaria* Roxb. - Nhài thon, Nhài mả, Ba ro.**

Roxb [1814, nom. nud.] 1820. Fl. Ind., ed. 1820 1: 97; Phamh. 2000. Illustr. Fl. Vietn. 2(2): 891, fig 7588; P. S. Green, 2000. Fl. Thailand, 7(2): 327; T. Đ. Ly, 2003. Checkl. Pl. Sp. Vietn. 2: 1164 [“*lanceolarium*”], M. Chang et al 1996. Fl China, 15: 314

**3a. *Jasminum lanceolaria* subsp. *lanceolaria* P. S. Green. - Nhài thon (Fig. 3)**

P. S. Green, 1995. Kew Bull. 50. (3). 575; P. S. Green, 2000. Fl. Thailand, 7(2): 327

Shrubs scandent, 10-15 m; branchlets terete, glabrous or pubescent. Leaves opposite or nearly so, 3-foliate; petiole 1-4.5 cm, glabrous to puberulent; terminal leaflet with petiole 0.5-4.5 cm, leaflet blade elliptic, ovate, to lanceolate, rarely suborbicular, 3.5-16 × 1-9 cm, leathery, base rounded or cuneate, apex obtuse to caudate; primary veins obscure, lateral 5-7 on each side, very obscure. Compound cymes often paniculate, terminal or axillary, many flowered, bracts linear, 1-5 mm, branch bracts scale. Flowers fragrant, pedicel 0.5 mm long. Calyx cup, glabrous, 2 mm long; lobes deltate, 0.1-0.5 mm long. Corolla white, salverform, tube 1.7-3.5 cm; lobes 4 or 5, lanceolate to oblong, 12-14 × 3-4 mm. Stament 2, filament short, attach near

throat, anther 5.5 mm long. Gynoecium cylinder, 0.5 mm long; style terete, 4-6 mm long, stigma 3 mm. Berry black, drying orange-yellow, ellipsoid, 8-9 × 7 mm. Fl. April-August. Fr. June-March (next year).

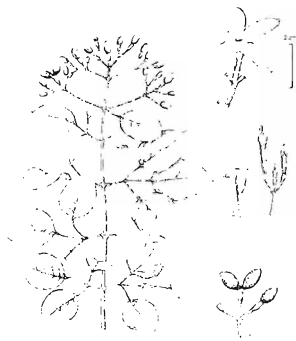


Figure 3. *Jasminum lanceolaria* subsp. *lanceolaria* P.S.Green. - Nhài Thôn

1. Branch with fruit, 2. calyx, 3. young flower; 4. flower; 5. fruit (illustration drawn by Mrs Kim Chi from Phuong 3568 (HN))

**Loc.class.:** India, Khasia.

**Typus:** Griffiths in Herb E Ind. Co. 3715 (NT K)

**Distribution:** Hoa Binh (Mai Châu), Lao Cai (Bac Ha), Cao Bang (Nguyen Binh), Ninh Binh (Cuc Phuong), Quang Tri, Da Nang (Tourane), Lam Dong (Da Lat), Dak Lak (Dak Mil, Dak Minh) India, Mianma, China.

**Specimen examined:** Hoa Binh, Phuong 1946 (HN); Phuong 3568 (HN), HNK 780 (HN); CP 1451 (HN). - Cao Bang, CBL 1246 (HN). - Dak Lak, Dung 448 (HN). - Quang Tri Petelot 10306 (VMN). - Thua Thien - Hue, Poilanc 1942 (VMN). - Bien 1251 (HN). - Dong Nai, Pierre 1942 (VMN).

**3b. *Jasminum lanceolaria* subsp. *scortechinii*** (King & Gamble) P. S Green. - Nhài lá mỏng

P. S. Green, 1995. Kew Bull, vol. 50 No 3, p. 576, P. S. Green, 2000. Fl. Thailand, 7(2): 312. - *Jasminum scortechinii* King & Gamble, 1906. J. As. Soc Beng 74 (2): 264

Different with type subspecies by leaves thin. Calyx small, calyx lobe short, 0.1 mm long or not. Corolla tube 10-15 mm long; 7 lobes, 8-12 mm long. Ather 3 mm, appendage 0.5 mm. Gynoecium small, 0.5 mm long; style 14-30 mm long. stigma 3-4 mm long. Berry ellipsoid, 20 x 12 mm. Fl. August-September, Fr. October-December.

**Loc.class.:** China. Hong Kong.

**Distribution:** Cao Bang (Nguyen Binh), Lao Cai, Thua Thien - Hue (Bach Ma), Kon Tum, Gia Lai (K' Bang), Dak Lak.

**Specimen examined:** Cao Bang, Bien - Do 43 (HN) - Lao Cai, Petelot 5886 (VMN) - Thua Thien - Hue, N. T. Nhan 750 (HN); T. D Dai 315 (HN). - Gia Lai, KNP 977 (HN), B H. Quang 50 (HN). VK 741(HN) - Kon Tum, DKH 4709 (HN) - Dak Lak, Dung 414 (HN); Bien 1038 (HN); T. D. Ly 714 (HN).

## CONCLUSION

There are 2 species and 2 subspecies of *Trifoliolata* DC. (*Jasminum* L.) in Vietnam including 1 new record for flora of Vietnam (*Jasminum sinense* Hemsl.).

The morphological characteristics such: lateral leaflets reduced or present; leaves glabrous or pilose; calyx glabrous or pilose; calyx lobes shallow, triangular or deeply, linear; length of corolla tube and side of fruit was used to identify the species.

Distribution and studied specimen of each species were cited.

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### NGHIÊN CỨU NHÁNH (Sec. *Trifoliolata* DC.)

### THUỘC CHI *Jasminum* L. (HỌ NHÀI - Oleaceae Juss.) Ở VIỆT NAM

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#### TÓM TẮT

Trên thế giới, chi *Jasminum* L. có khoảng trên 200 loài được chia thành 5 nhánh *Jasminum* Green, *Alternifolia* DC, *Trifoliolata* DC, *Primulina* Green và *Unifoliolata* DC có phân bố ở các vùng nhiệt đới và cận nhiệt đới ở Đông Nam Á, châu Âu, châu Úc và châu Mỹ. Nhánh *Trifoliolata* DC được De Candolle (1844) công bố với loài chuẩn là *Jasminum diptymum* G Forst với đặc điểm hình thái, lá kép 3 lá chét, 2 lá chét bên bằng hoặc gần bằng lá chét hay 2 lá chét bên tiêu giảm. Trên thế giới, nhánh *Trifoliolata* DC có khoảng 10 loài và 5 dưới loài. Ở Việt Nam đã ghi nhận được có 1 loài và 2 dưới loài thuộc nhánh *Trifoliolata* DC.

Trong quá trình nghiên cứu mẫu tiêu bản và tài liệu chi này ở các phòng tiêu bản Việt Nam, chúng tôi đã phát hiện loài *Jasminum sinense* Hemsl thuộc nhánh *Trifoliolata* DC. là loài mới, bổ sung cho hệ thực vật Việt Nam, loài này phân bố ở Hà Giang (Pho Bàng) có đặc điểm đặc trưng của nhánh *Trifoliolata* DC. là lá kép có 3 lá chét. Loài *Jasminum sinense* gần với loài *Jasminum brevifolium* bởi lá có lông, lá chét bên nhỏ hơn nhiều so với lá chét ở giữa, đài có lông (khác biệt với 2 dưới loài *Jasminum lanceolatum* subsp

*lanceolaria* và *Jasminum lanceolaria* subsp. *scortechinii* có lá nhẵn, lá chét bên gần bằng lá chét giữa, đài nhẵn). Tuy nhiên loài *Jasminum sinense* khác biệt bởi đài xè sâu, thùy đài hình sợi, đài 1-5 mm

Trong bài báo này, chúng tôi giới thiệu danh pháp, xây dựng khóa định loại và mô tả chi tiết, hình vẽ, trích dẫn phân bố và mẫu nghiên cứu ba loài trong nhánh *Trifoliolata* DC. thuộc chi *Jasminum* L ở Việt Nam.

*Từ khóa:* Oleaceae, *Jasminum*, *Trifoliolata*, *Jasminum sinense*, ghi nhận mới, Hà Giang, Việt Nam.

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