The iris family (Iridaceae) in the flora of eastern Indochina

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Summary. Iris family in the countries of eastern part of Indochina Peninsula, such as Cambodia, Laos and Vietnam includes lone native genus – Iris L. with two aboriginal species – I. japonica Thunb. and I. tectorum Maxim. Iris japonica is often cultivated as an outdoor ornamental plant in mountainous regions in the northern Vietnam, where it occasionally naturalizes. Herbarium specimens of I. japonica, collected in central Laos near Nape town, probably represent southernmost locality of the Iris genus in Eurasia. Iris tectorum was discovered in native, primary plant communities of karstic highly eroded limestone in Cao Bang province (Bao Lac district) of the northern Vietnam. This species is recorded as new for the flora of the Indochina Peninsula. The report of I. collettii Hook. f. on the territory of peninsular flora does not yet confirmed by herbaria and remains doubtful. Data on taxonomy, authentic specimens, distribution, habitats, phenology, conservation status and biology are provided for all Iris species. The identification key for Iris species is compiled, as well as dotted distribution maps on the territory of countries of eastern Indochina. Other representatives of the family from such genera as Belamcanda Adans. (B. chinensis (L.) Redouté), Crocosmia Planch. (C. × crocosmiiflora (G. Nicholson) N. E. Br.), Eleutherine Herb. (E. bulbosa (Mill.) Urb.), Freesia Klatt (F. refracta (Jacq.) Klatt.), Gladiolus L. (numerous horticultural forms) и Trimezia Salisb. ex Herb. (T. martinicensis (Jacq.) Herb.) reported from Indochina are introduced cultivated ornamental plants capable to occasional naturalization as an adventive element of the Indochinese flora.
The family Iridaceae is well known for many ornamental genera like *Crocosmia* (L.) Redouté (*C.* × *crocosmiiflora* (G. Nicholson) N. E. Br.), *Eleutherine* Herb. (*E. bulbosa* (Mill.) Urb.), *Freesia* Klatt (*F. refracta* (Jacq.) Klatt.), *Gladiolus* L. (numerous horticultural forms) and *Trimezia* Salisb. (*T. martincensis* (Jacq.) Herb.) are cultivated by the horticultural and ornamental industries.


Taxonomic treatment of native iris species is presented below. One species is reported for the area at first. Brief data on taxonomy, types, distribution, habitat, phenology, conservation status, notes on biology are presented for each species, as well as key for their identification, illustration and map of distribution in eastern Indochina.

**Taxonomic treatment**


**Type** – *I. germanica* L.

200–300 species in temperate and subtropical zone of Northern Hemisphere. In Vietnam 3 species (one species is reported here at first).

**Key to species**

1. Roots clustering, more or less swollen or fusiform; plants densely tufted with many dense short erect shoots, leaves clustering into dense fascicle, less than 1 cm wide.......................... 1. *I. colletti*

   – Roots distant, thin, not tuberous; plants with creeping rhizomes or with erect stems, leaves clustered into flat terminal fan, more than 1 cm wide.......................... 2

2. Plants with semi-woody, short rigid ascending rhizome, stem erect, semi-woody, to 1(1.5) m tall; inflorescence branched, normally 20–50 cm long, with many pale blue to almost white flowers 4–5.5(6.5) cm across; sepal and petals hardly ungulate; sepals denticate along margin, apices of stile lobes long fimbriate; sepal sreest lamellate to almost flat.......................... 2. *I. japonica*

   – Plants with thick creeping plagiotropic rhizome, stem fleshy herbaceous, ascending, 1–2(3) cm tall; inflorescence simple, 10–15(20) cm long, with 1–2(3) dark blue flowers (8)10–13 cm across; sepal and petals distinctly ungulate; sepals entire along margin, apices of stile lobes bilobulate, entire or slightly denticate; sepal crest long fimbriate.......................... 3. *I. tectorum*


   Described from northern Myanmar ("Shan Hills").

**Syntypes** (“Shan Hills, Pwehla, 4000 feet, May 1888, H. Collett 765") – CAL, K [K000098494].

**Habitat, phenology and conservation status.** Terrestrial tufted herb. Open *Pinus* and *Quercus-Pinus* forests, sunny dry grasslands. (600)1700–3700 m a.s.l. Flowers in May – June. Not common. Estimated IUCN Red List status – DD.

**Distribution.** Vietnam?, NE India, SW China, Myanmar, NW Thailand.

**Notes.** This mountainous species closely related to widespread *I. decorii* Wall. (= *I. nepalensis* D. Don, nom. illeg.) was recorded for Vietnam in...
second edition of Flora of China (Zhao et al., 2000) without confirmation by voucher herbaria. We can not trace any specimens of this species originated from Vietnamese territory. Hence, occurrence of this rather highland plant in Vietnam needs confirmation. Data on ecology and phenology are reported here based on specimens collected outside Vietnam.


= *I. chinensis* Curtis, 1797, Bot. Mag. 11: tab. 373.


Fig. 1, 2.

Described from Japan (“Japonice: Saga, it. Sia-ga”).

**Type** (“E Japonia, s. d., [Thunberg] s. n.”) – UPS [UPS-THUNB 1138].


**N. Vietnam,** Ha Giang province, Hoang Su Phi district, Ho Thau municipality, around Trung Thanh village, 22°37’24”N, 104°38’00”E at elev. 900–1000 m a.s.l., remnants of heavily logged primary and secondary closed evergreen broad-leaved forest on very steep slopes of mountains composed with shale and granite with quartzite, terrestrial herb in open secondary forest with bamboo, flowers light blue to white, sepal with median yellow spot, locally common, 9 March 2005, *L. Averyanov,* *P. K. Loc,* *N. T. Vinh,* *A. Averyanova,* HAL 6622 (HN, MO).


**N. Vietnam,** Cao Bang province, Bao Lac district, Yen Lac municipality, vicinities of Yen Lac village, 22°44’N, 105°50’E, secondary open broad-leaved evergreen forest on steep slopes and bluffs of limestone remnant karst ridge at elev. 1100 m a.s.l., lithophytic herb on open wet rocks, flowers pale blue, tepals with yellowish spots, not common, 16 April 1999, *P. K. Loc,* *P. H. Hoang,* *Averyanov L.* CBL 1444 (HN, LE, MO).

**N. Vietnam,** Ha Giang province, Hoang Su Phi district, Ho Thau municipality, around Trung Thanh village, 22°37’24”N, 104°38’00”E at elev. 900–1000 m a.s.l., remnants of heavily logged primary and secondary closed evergreen broad-leaved forest on very steep slopes of mountains composed with shale and granite with quartzite, terrestrial herb in open secondary forest with bamboo, flowers light blue to white, sepal with median yellow spot, locally common, 9 March 2005, *L. Averyanov,* *P. K. Loc,* *N. T. Vinh,* *A. Averyanova,* HAL 6622 (HN, MO).

**N. Vietnam,** Cao Bang province, Nguyen Binh district, Nguyen Binh municipality, vicinities of Yen Lac village, 22°44’N, 105°50’E, secondary open broad-leaved evergreen forest on steep slopes and bluffs of limestone remnant karst ridge at elev. 1100 m a.s.l., lithophytic herb on open wet rocks, flowers pale blue, tepals with yellowish spots, not common, 16 April 1999, *P. K. Loc,* *P. H. Hoang,* *Averyanov L.* CBL 1444 (HN, LE, MO).
trict, Ca Thanh municipality, Ta Pin village, around point 22°43’56.4”N, 105°51’16.4”E, primary coniferous forest with Pseudotsuga sinensis along highly eroded rocky limestone ridge at elevation about 1400 m a.s.l., shrub to 2 m tall among secondary shrubs on steep alluvial slope of limestone ridge, flowers white with pink tint, common, 3 October 2013, L. Averyanov, N. T. Hiep, L. M. Tuan, N. S. Khang, T. Maisak, L. Osinovetz, CPC 5366a (LE – photo).

**N. Vietnam**, Cao Bang province, Bao Lac district, Hong An municipality, Mi Lung village, primary broad-leaved and mixed humid evergreen forest on very steep slopes and along rocky ridge composed with solid crystalline highly eroded limestone at elevation 1500–1550 m a.s.l. around point 22°50’01.3”N, 105°50’05.7”E, terrestrial herb to 1 m tall among rocks in rather open place, flowers light dull blue, common, 20 November 2014, L. Averyanov, N. T. Hiep, N. S. Khang, T. Maisak, L. Osinovetz, CPC 7532 ass. (LE – photo).

**Habitat, phenology and conservation status.** Terrestrial or lithophytic herb or undershrub to 1.5(2) m tall. Open primary and secondary evergreen forest margins, open secondary scrub, wet secondary grasslands on rocky mountain slopes on soils derived from any kind of rocks, commonly among rock outcrops. (500)800–2000 m a.s.l. Flowers in any time of the year with maximum in March – May.

**Fig. 2.** A, B – Typical habitat of *Iris japonica* and *I. tectorum* in northern Vietnam (Cao Bang province, primary limestone forest, 1500–1550 m a.s.l. CPC 7532). C-F – *I. japonica* in natural habitats (C – CPC 5366a; D, E – HAL 6622; F – CPC 7532 ass.). All photos by L. Averyanov and T. Maisak.
Occurs sporadically, locally sometimes common and even abundant. Estimated IUCN Red List status – LC.

Distribution. Laos: province Bolikhamxai (Ban Nape town). Vietnam: provinces Cao Bang (Bao Lac district, Hong An and Yen Lac municipalities; Nguyen Binh district, Ca Thanh and Nguyen Binh municipalities), Ha Giang (Hoang Su Phi district, Ho Thau municipality), Lai Chau (San-tan-ngai locality), Lao Cai province (Sa Pa town), Vinh Phuc

Fig. 3. A–C – *Iris tectorum* in natural habitat. D – Flower opened in cultivation. E–M – details of flower (*CPC 7532*). All photos by L. Averyanov.
province (Tam Dao town). China, Japan, N Myanmar.

Notes. This species is sometime cultivated in highland areas of northern Vietnam and probably occasionally naturalizes. Flowers in observed Vietnamese population vary from light violet or pale lilac to almost pure white. The species was casually overlooked in the latest treatise of the Laotian flora by Newman et al. (2007). Meanwhile, locality in Laos near Ban Nape town represents probably southernmost location of the Iris genus in Asia.


= I. tomioloph a Hance, 1872, J. Bot. 10: 229.

Fig. 1, 2a, b, 3.

Described from Japan (“Hab. circa Yokohamam … in vico Kamakura in hortis rusticanorum culta”).


Studied specimens. N. Vietnam, Cao Bang province, Bao Lac district, Hong An municipality, Mi Lung village, primary broad-leaved and mixed humid evergreen forest on very steep slopes and along rocky ridge composed with solid crystalline highly eroded limestone at elevation 1500–1550 m a.s.l. around point 22°50′01.3″N, 105°50′05.7″E, lithophytic acaulescent creeping herb on open mossy boulders, flowers fragrant, dark blue, rare, 20 November 2014, L. Averyanov, N. T. Hiep, N. S. Khang, T. Maisak, L. Osinovetz, CPC 7532 (CPC Herbarium, LE).


Habitat, phenology and conservation status. Lithophytic rhizomatous creeping herb on exposed mossy limestone outcrops. Primary mixed and coniferous forests (with Fokienia hodginsii, Pinus wangii and Tsuga chinensis) on karstic rocky limestone. 1500–1550 m a.s.l. Flowers in November – December (May – June). Very rare. Estimated IUCN Red List status – DD.

Notes. Habitats in China were reported as “forest margins, sunny banks, meadows, damp places, beside water; 500–3500 m.” (Zhao et al., 2000). Species is presently widely cultivated in China as ornamental plant and often naturalizes. In Vietnam it was found in primary plant community where species certainly presents aboriginal element of the flora. Collected living specimens grow well in cultivation and form distinctly larger leaves and flowers than were observed in nature in the same clone.

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REFERENCES


