

The central American Tiger Lily, an invasive plant in and around Jalapahar-Cantonment Forest of Darjeeling Himalaya, India

Tigridia pavonia (L.f.) Redoute (Iridaceae: Tigridieae), commonly known as Tiger lily, is native to central American countries like Mexico, Guatemala, El Salvador, and Honduras. Bailey (1909) reported from southern United States. Although *T. pavonia* is distributed naturally as a wild species in much of Mexico than other central American countries, still it is naturalized in neighbouring South American Countries such as Ecuador, Peru, and Colombia as well as Madeira Islands of Portugal in Europe. So, Indian collection from Darjeeling Himalaya is an interesting one to be reported as an invasive taxon for the first time from southern Asian continent.

During field visit to Jalapahar-Cantonment Forest in late July 2015, authors collected few plant materials of a bulbous perennial herb with blood red-maroon flowers. Flowers were short-lived,



Image 1. A–F—Naturalized populations of *Tigridia pavonia* in Darjeeling: A—Senior Author & Jaikumar Thami with *T. pavonia* plants behind Jalapahar Cantonment Forest in July, 2015 | B—*T. pavonia* population 2 km down St. Paul's School, inside forest | C—valley near Alubari TN Road with *T. pavonia* | D—Full Bloom of *T. pavonia* at 12 noon | E—*T. pavonia* at 3 pm | F—*T. pavonia* at 4 pm. © Subhasis Panda & Leo Chhetri.

each bloomed for only one day for a shorter period (1000-1600 h), but often 2-4

flowers would bloom from the same stalk. After a critical study, this bulbous plant was

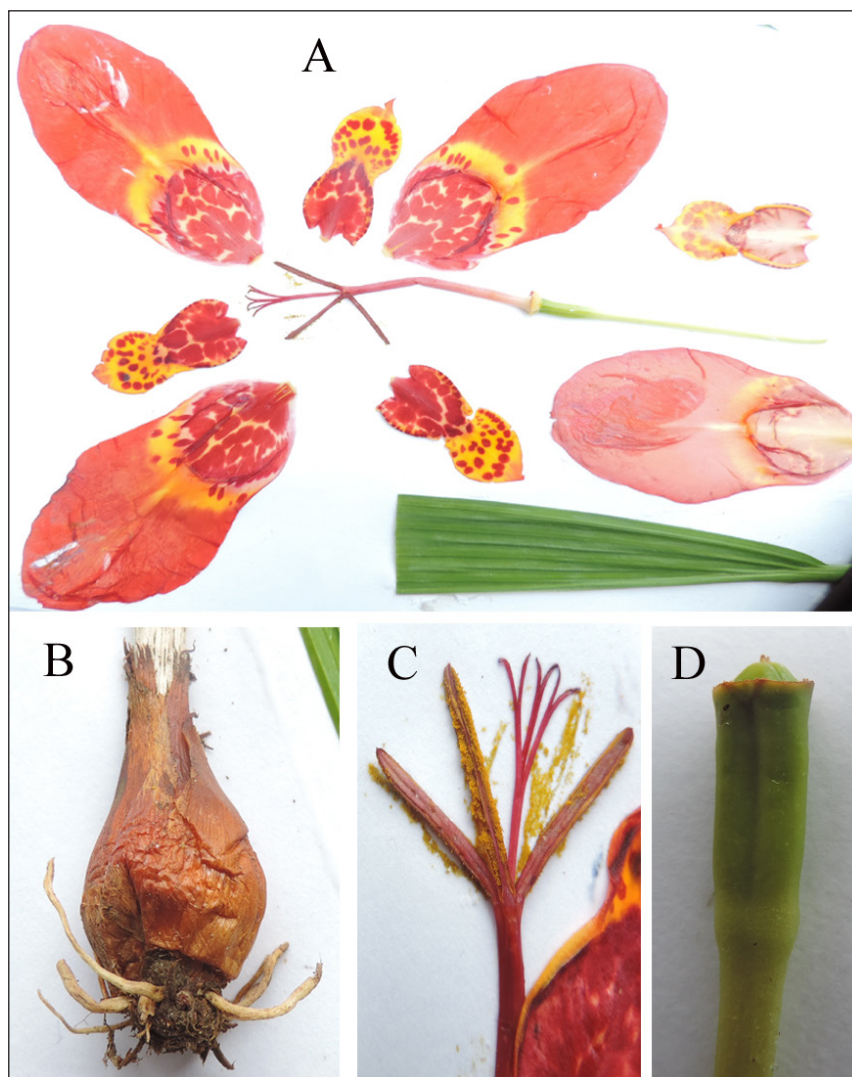


Image 2. A–D—Different parts of *Tigridia pavonia* in Darjeeling: A–Dissected flowering parts | B–Bulb | C–Stigmas with another lobes below | D–immature fruit. © Subhasis Panda & Leo Chhetri.

identified as *Tigridia pavonia* (L.f.) Redoute (Iridaceae: Tigridieae).

Populations of this species were widespread up to 4 km area in and around Jalapahar Cantonment Forest of Darjeeling Himalaya (2134–2286 m). According to the local Nepalese of Jalapahar, a Mexican teacher who came

to teach at St. Paul's School of Darjeeling at Jalapahar during 1890–1900 AD, took bulbs of *T. pavonia* from Mexico and planted in the garden of this school. This was the main reason behind the invasion of *T. pavonia* in and around Jalapahar Cantonment Forest. Field-based description of *T. pavonia* is provided here

along with live images. The present work is the result of an extensive field visit in and around Jalapahar Cantonment Forest (approximately 4km area) during last week of July to late August 2015. This work also recorded GPS (used GARMIN eTrex 10 model) data (latitude-longitude and altitudes) during field visits.

***Tigridia pavonia* (L.f.)**

Redoute, Liliac. 1: 5, t. 6, 1802. *Ferraria pavonia* L. f., Suppl. Pl.: 407-408. 1782; *Moraea pavonia* (L. f.) Thunb., *Moraea*: 14. 1787; *Vieusseuxia pavonia* (L.f.) DC., Ann. Mus. Natl. Hist. Nat.: 139. 1803. Type: Mexico, *Dr. Mutis s.n.* Vernacular Name: 'Piyaji Phool' (Nepalese of Jalapahar, Darjeeling: flower is originated from the bulb like onion plant).

Erect to suberect, bulbous perennial herb, 50-80 cm tall, glabrous; bulbs ovoid to narrowly ovoid. Flowering stem 28-38 (-48) cm tall with usually consisting of 2 to 3 branches, glabrous. Leaves: basal leaves 1-2, oblong-lanceolate to linear-lanceolate, 28-46 × 1.8-3 cm; cauline leaves 1-2, oblong-

lanceolate to linear-lanceolate, plicate, the lower 20-22 × 0.8-1 cm; the upper 6-8 × 0.4-0.6 cm.

Inflorescence in a rhipidium of 1-3-flowered with variable spathes (bracts). Flowers trimerous, 12-14 cm across, 11-16 cm long, slightly drooping, crateriform; tepals connivent at base forming a shallow cup with entire margin spreading distally (when in full bloom during 1200-1400 h), basally brilliant brown; outer tepals 3, ovate-elliptic, 7-10 × 3-4.5 cm, entire at margin, rounded with short apiculate at apex, basally white with densely maroon-spotted, middle orange-yellow and distally blood-red to pinkish red; inner tepals 3, ovate-deltoid with constricted at middle, unguiculate at base, 3.5-4.6 × 1-2.2 cm, orange-yellow spotted with dark maroon, entire at margin, acuminate at apex; nectary glands forming a yellowish-maroon band at the middle of the inner tepals, semicircular, 0.2-0.3 cm wide. Stamens 3; filaments connate, glabrous; anther lobes oblong, ascendent, granular, purple-red. Ovary narrowly to oblong-clavate, 0.9-1.1 cm long, light green;

style branches 5-6 mm long, deeply bifid into two style arms (0.3-0.4 cm long), reddish-brown to maroon; stigmas purple-red. Mature Capsule and seeds not seen, but young capsule oblong, green, 2cm long, glabrous.

Distribution: India, eastern Himalaya, Darjeeling, Jalapahar Cantonment Forest and Alubari TN Road forest between 27.029°N, 88.265°E and 27.048°N, 88.429°E (this work reports as naturalized); central America (Mexico,

Guatemala, El Salvador and Honduras as endemic); South America (Colombia, Ecuador and Peru as naturalized); Europe (Madeira Islands of Portugal as naturalized).

Phenology: Flowering in July-August. Fruiting: immature: late July-mid August; mature: late August to September (as reported by the local Nepalese).

Specimens examined: India, eastern Himalaya, Darjeeling District, 1 km down Jalapahar

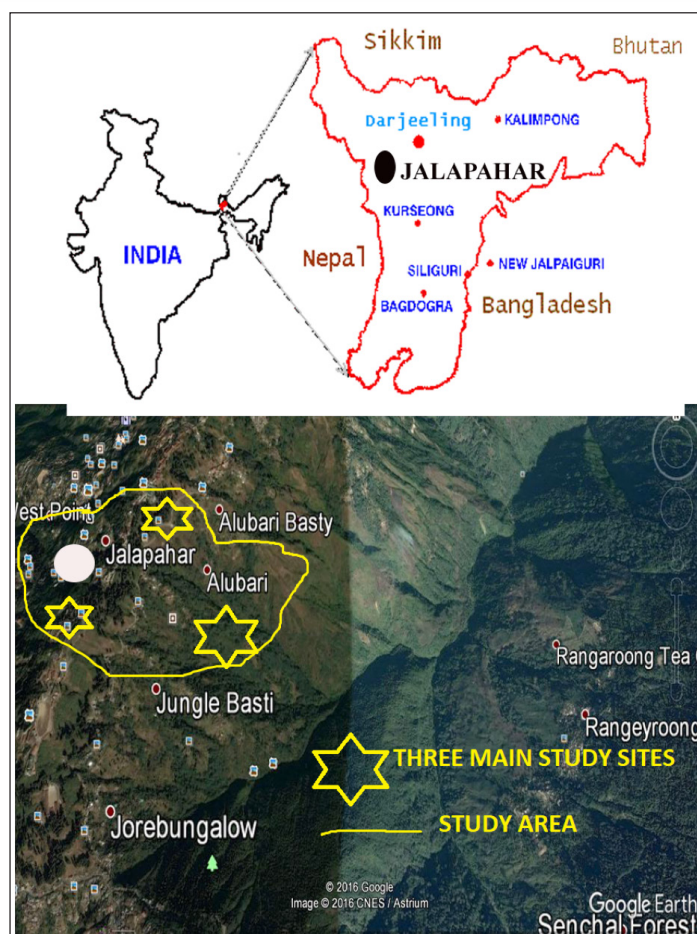


Figure 1. India and Darjeeling showing magnified satellite image of the study area.

Cantonment, inside forest, 26.vii.2015, 2195 m, Coll. S. Panda & Leo Chhetri; 182 (Darjeeling Govt College Herbarium: DGC); Darjeeling, Behind St. Paul's School, along valley, 30.vii.2015, 2286 m, S. Panda & J.K Thami; 192 (DGC), Darjeeling, behind Jalapahar Cantonment, toward Alubari TN Road down slope valley, 02.viii.2015, 2134 m, S. Panda & JK Thami; 177 (DGC).

Uses: Local Nepalese of Jalapahar use the bulb of this species as antipyretic as well as to relieve gastric problem.

Note on its abundance and density in the study area:

During field study in the study area (Figure 1) starting from Jalapahar Cantonment top to 4 km down till Alubari Valley through Jalapahar Cantonment Forest and T.N. Road as well as 2 km down toward Golden Pagoda and St. Paul's School sides, no quadrat samplings were undertaken, but based on detailed photographic images and field observations during visits, three main areas of abundance including densities of populations are described:- a. 1 km down behind Jalapahar Cantonment Forest with an approximate area of 25 m²—more than 75 individual plants were seen with 3–4 individual plants per m² area; b. 2 km down St. Paul's School inside Jalapahar Forest with an approximate area of 50 m²—more than 100 individual plants were seen with 2–3 individual plants per sq.m area; c. Valley near Alubari T.N. Road with an approximate area of 50 m²—more than 100 individual plants were seen with 2–3 individual plants per m². Besides these three sites, no trace of *T. pavonia* populations were seen in and around

4 km area of Jalapahar Cantonment Forest altitudes ranging from 2134–2286 m. No trace of *T. pavonia* populations were also seen in neighbouring areas such as Jungle Busty, Rangeroong Valley, Senchal Forest, Tiger Hill Valley, Golden Pagoda area, Ghoom, Toongsoong and other similar altitudinal areas in and around Darjeeling Town based on field visits to those areas from August 2012 to July 2016.

References

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