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RESEARCH ARTICLE

DIVERSITY OF *RHODODENDRON THOMSONII* HOOK.F IN SIKKIM HIMALAYA

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Sikkim Himalaya.

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ABSTRACT

The different species of *Rhododendron* are naturally bestowed in the Sikkim where *Rhododendron thomsonii* Hook. f is one of these. It is a beautiful plant having blood red flowers in the corymb. The collected plant specimens were examined and studied in reference to the type habitat and adjoining areas. After more than a century, the collected species from the type habitat was studied and found some variations which are included in this writing. The paper proposed the two subspecies *Rhododendron thomsonii* Hook.f subsp *rubra* ssp. nov. and *Rhododendron thomsonii* Hook.f subsp *yumthangensis* ssp. nov. for the taxonomic usages along with new reporting of *Rhododendron thomsonii* subsp. *lopsangianum* (Cowan) D. F. Chamberlain in Sikkim Himalaya.

INTRODUCTION

Sikkim is the land of *Rhododendron* flowers which grow from the temperate belt to the alpine belt. It is represented by the different colours and statures. The different population of *Rhododendron* was studied by several authors (Hooker, 1849, Pradhan and Lachungpa, 1991) and some of the authors commented the development of the natural hybrids of *Rhododendron thomsonii* (Pradhan, 2010). During the studies of the type specimens of *Rhododendron thomsonii*, Hook.f, the comments of the hybrids was also labeled in several type specimen, collected from Sikkim and Bhutan by Long in 1984 during his floral study of Bhutan. However, there were no such critical studies on this species about the variability of *Rhododendron thomsonii*, Hook.f in Sikkim Himalaya. Thus, the study is conducted on the natural variations of *Rhododendron thomsonii*, Hook.f in the Sikkim Himalaya.

MATERIAL AND METHODS

This work is primarily based on a comprehensive study of protologue and the herbarium specimens at K, CAL and SSFH.

In selecting type, all available original material (both holotype and isotype specimens) were searched properly and isotype specimens were compared with the protologue (Hooker, 1872-1897; Hara, 1966; 1971; Singh, 2009). The type specimen was designated following the Shenzhen Code (Turland *et al.* 2018).

RESULTS AND DISCUSSION

The collected plant specimens of *Rhododendron thomsonii* Hook. f were deposited in the SSFH in Forest and Environment Department, Sikkim which were studied and examined along with the specimen collected by the Japanese expedition team in 2003. In past, Hooker (1849) studied the Sikkim Himalaya and described forty three species including the protologue of *Rhododendron thomsonii* Hook.f.

Taxonomic Treatment

Rhododendron thomsonii J. D. Hooker, *Rhododendr.* Sikkim-Himalaya. 2: t. 12. 1851. Plant 6-10 feet high, Leaves 2- 3 inches long, orbicular-ovate, petioles non glandular, flower in a corymb of 6-8, Calyx large, red in the upper half, green below, Corolla deep blood-red, glossy surface of its flowers, five lobed. Capsule short, straight, glaucous purple $\frac{3}{4}$ inch length with persistent calyx (Hooker, 1851).

The two known sub-species of *Rhododendron thomsonii* Hook.f (www.efloras.org) are :

(i) *Rhododendron thomsonii* Hook.f ssp *thomsonii*

Leaf blade orbicular to obovate; calyx 5–12 mm; ovary glabrous.

Exsiccate: SSFH SK000479. Voucher No 360240 Date of Collection: 1.8.2003. Coll. : Noshiro.

Locality: Tamrong (2920m)- Labhyak (Kharka) (3350 m)- Dikillnang (3880m)- Near Kissong Lakang (4090m)- Dikillnang (3880m).

Diagnosis: 3-4 Leaves, rounded at apex, light greenish at the adaxial and abaxial surfaces, no soft texture at abaxial surface, ca. 8 cm long, ca. 5.7 cm wide, petiole ca. 2-3 cm long, capsule ca. 2 cm, fruit stalk 1 cm.

(ii) *Rhododendron thomsonii* subsp. *lopsangianum* (Cowan) D. F. Chamberlain

Leaf blade oblong-elliptic to ovate; calyx 2–3 mm; ovary densely stipitate-glandular.

Exsiccate: SSFH SK001534. Voucher No. 365044; Date of Collection: 3.7.2003. Coll: Noshiro.

Locality: Garakhet (4000m)- Deurali (3830m)- Yambug (3610m)- Deurali (3480m)- Deurali(3250m)-Phedi (2860m).

Diagnosis: Thick Leaves ca. 5-6 cm, wide ca. 3.5 cm, petiole ca. 1.6 cm, corolla ca. 3.6 cm long, short pedicel.

Besides these two subspecies, the other types of *Rhododendron thomsonii* Hook.f also noted in Sikkim Himalaya which are described as under:

(i) *Rhododendron thomsonii* Hook.f subsp *rubra* ssp. nov

Exsiccate: SSFH SK000539. Voucher No. 365043; Date of Collection: 3.7.2003. Coll. Noshiro.

Locality: Garakhet (4000m)- Deurali (3830m)- Yambug (3610m)- Deurali (3480m)- Deurali(3250m)-Phedi (2860m).

Diagnosis: 2-3 Leaves, light reddish, 8 cm long, wide 5 cm, 1.5 cm pedicel, fruit ca. 1.5 cm long.

(ii) *Rhododendron thomsonii* Hook.f subsp *yumthangensis* ssp. nov

Exsiccate: SSFH SK000708. Field No 304, Date of Collection: 18.05.1980; Altitude: 12000ft; Coll.: Unknown.

Locality Yumthang

Diagnosis: 3-4 Leaves thick, orbicular to ovate, light deep reddish, ca. 3.4- 5 cm long, ca. 4 cm wide, soft texture at abaxial surface, petiole ca. 2 cm, 5-6 flowers, ca. 6 cm long, pedicel ca. 1.6 cm, calyx ca. 1 cm, style ca. 6 cm long.

Key to the subspecies of *Rhododendron thomsonii* Hook. f in Sikkim

- Plant 6-10 feet high, leaves 2- 3 inches long, orbicular-ovate, petioles non glandular, flower in a corymb of 6-8, Calyx large, red in the upper half, green below, Corolla deep blood-red, glossy surface of its flowers, five lobed. Capsule short, straight, glaucous purple $\frac{3}{4}$ inch length with persistent calyx

Rhododendron thomsonii Hook.f

Leathery, Light deep reddishleaves	2
Thin, light reddish leaves	3
Leaf blade orbicular to obovate, ovary glabrous	4
Leaf blade oblong-elliptic to ovate, ovary densely stipitate-glandular	5

2Leaves thick, orbicular to ovate, 3-4, light deep reddish, ca. 3.4- 5 cm long, ca. 4 cm wide, soft texture at abaxial surface, petiole ca. 2 cm, 5-6 flowers, ca. 6 cm long, pedicel ca. 1.6 cm, calyx ca. 1 cm, style ca. 6 cm long.

Rhododendron thomsonii Hook. subsp *yumthangensis* ssp. nov.

3.2-3 Leaves, not thick or leathery, light reddish, 8 cm long, wide 5 cm, 1.5 cm pedicel, fruit ca. 1.5 cm long

Rhododendron thomsonii Hook.f subsp *rubra* ssp. nov.

4. Leaves, Leaf blade orbicular to obovate, rounded at apex, light greenish at the adaxial and abaxial surfaces, no soft texture at abaxial surface, ca. 8 cm long, ca. 5.7 cm wide, petiole ca. 2-3 cm long, capsule ca. 2 cm, fruit stalk 1 cm.

Rhododendron thomsonii Hook.f ssp *thomsonii*

5. Thick Leaves ca. 5-6 cm, wide ca. 3.5 cm, petiole ca. 1.6 cm, leaf blade oblong-elliptic to ovate, corolla ca. 3.6 cm long, short pedicel.

Rhododendron thomsonii subsp. *lopsangianum* (Cowan) D. F. Chamberlain

The report of these different subspecies in Sikkim Himalaya was not reported earlier. These reported plants are different in several characters and have the characteristic features to establish as the subspecies. Hence, the paper presented and proposed with the taxonomic characters. Moreover, these plants are the interesting plants in respect of adaptability in the nature.

The availability of these subspecies noted above 3200 m to 4300m which is quite cold and harass climate. After the study of Hooker (1849), the natural hybridization of *Rhododendron thomsonii* Hook.f was thinly documented although there were comments on the natural hybridization of *Rhododendron thomsonii* Hook.f with other species but there is no as such dedicated researches on it which require further researches in detail.

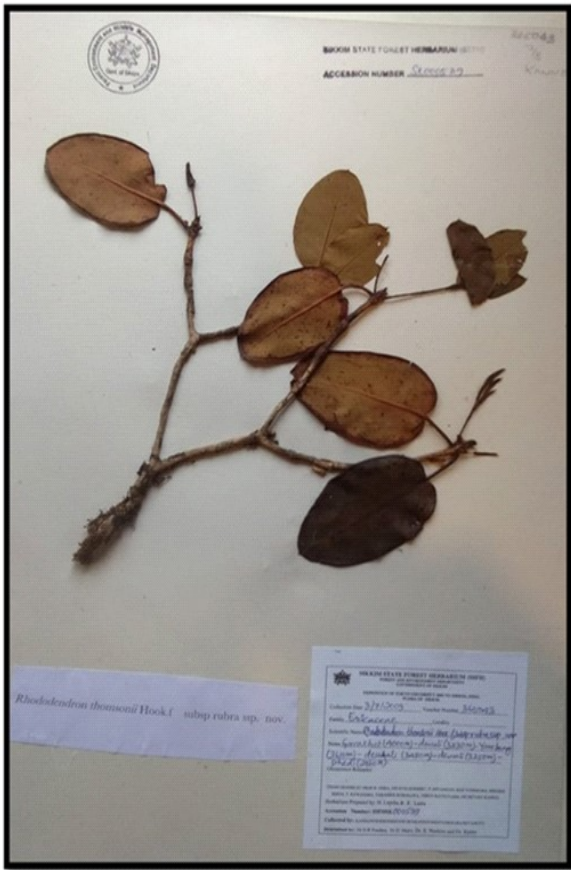


Fig 1. *Rhododendron thomsonii* Hook.f subsp. *rubra* ssp. nov.



Fig 3: *Rhododendron thomsonii* Hook.f subsp. *yumthangensis* ssp. nov.



Fig 2. *Rhododendron thomsonii* Hook.f subsp. *thomsonii*

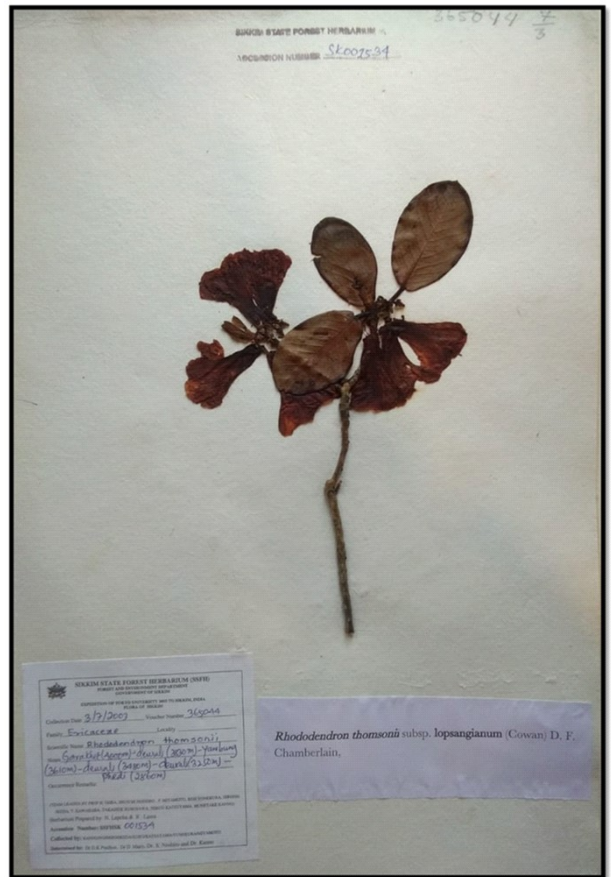


Fig 4. *Rhododendron thomsonii* subsp. *lopsangianum* (Cowan) D. F. Chamberlain

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