# *Stellaria pallida* (Dumort.) Crép. (Caryophyllaceae): A New Record of a Herb Species for the Flora of Nepal

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**Abstract**

*Stellaria pallida* (Dumort.) Crép., a herb species from Kathmandu valley is reported as a new record for the flora of Nepal. This species is found growing in the cultivated fields, lawns, roadsides, and sidewalk cracks. The species is a small herb with flowers without petals, and smaller, light brown seeds with short conic tubercles.

**Keywords:** Bifid petal, Cleistogamous, Tubercles, Reflexed stigmas

## Introduction

Genus *Stellaria* L. species are commonly called as Chickweeds or Starworts and belongs to Subfamily Alsinoideae and Tribe Alsineae in Caryophyllaceae, (Harbaugh et al., 2010). *Stellaria* is cosmopolitan and characterized by annual or perennial herbs; leaves sessile or petiolate; petals bifid up to base with 2 or 3 styles; capsule valves 6; and seeds many. The species are autogamous and are isolated due to sterility barriers.

Based on the phylogenetic analysis Sharples (2019) and Sharples & Tripp (2019) have circumscribed Core *Stellaria* L. that consist approximately 112 species. Within the core *Stellaria, Stellaria media* group have been identified which is represented by annual herbs with terete stem, upper leaves sessile, lower leaves distinctly petiolate, leaves and bracts ovate or elliptical with round bases, usually with a single line of hairs along each internode, rarely with two lines or glabrous (Lepší et al., 2019; Sharples 2019). The group comprises three distinguished species: *S. media* (L.) Vill., *S. neglecta* Weihe. and *Stellaria pallida* (Dumort.) Crép however a recent biosystematic revision in *S. media* group by Lepší et al., 2019, added a new species *S. ruderalis* M. Lepší, P. Lepší, Z. Kaplan & P. Koutecký to this group and also considered *Stellaria pallida* (Dumort.) Crép as a distinct species.

The species is not included in the checklist by Hara et al. (1979) and Press et al. (2000) as well as in recent publications (Rajbhandari et al., 2017). According to Press et al. (2000), there are 18 species, 11 varieties and 2 forma of *Stellaria* L. in Nepal. The species are distributed from tropical to alpine region of Nepal. *S. wallichiana* Haines has been reported from Jhapa (105-110m) the tropical region and *Stellaria decumbens* Edgew. from Makalu (6135m) the alpine region (MOFSC, 2002) of Nepal.

## Materials and Methods

This study is based on the field studies conducted in Budhanilkantha as well as in other areas of Kathmandu Valley from December 2019 to March 2021. A distinct population of *Stellaria media* group was found in the cultivated and paddy fields as well as in lawns and roadsides. Herbarium was prepared according to Bridson & Forman (1989) and photographs were taken. The detailed taxonomic study of the of the collected plant specimens was done and herbarium specimens of related taxa was observed and compared at National Herbarium and Plant Laboratories (KATH) and Tribhuvan University Central Herbarium (TUCH). The online type specimens and other related images were studied from Royal Botanic Gardens, Kew, Tropicos, and IPNI. The collected herbarium specimens were compared and checked with all relevant literatures (Don, 1825; Hara et al., 1979; Malla et al., 1986; Press et al., 2000; Rajbhandari, 2004; Rajbhandari et al., 2017) as well as databases such as Flora of Nepal Database and KATH online herbarium catalogue. All

the specimens collected during the field work were deposited at TUCH and KATH herbarium.

## Results and Discussion

*Stellaria pallida* (Dumort.) Crép., Man. Fl. Belgique, ed. 2: 19 (1866); Chater and Heywood Fl. Europaea 2(1):134(1993); Miller and West Fl. Victoria 3: 233 -240 (1996); Chen and Rabeler Fl. China 6:16(2001); Morton Fl. North America 5(2): 96-114(2005).

**Synonyms**: *Alsine pallida* Dumortier, Fl. Belg., 109. 1827; *Stellaria boraeana* Jord., Pug. 1852; *S. media* (Linnaeus) Villars subsp. *pallida* (Dumort.) Aschersonv & Graebner; *S. pallida* (Dumort) Pire, Bull. Soc. Roy. Bot. Belgique 2: 49(1863), nom. Inval.

**Type**: Poland. Siles: 120m, 1893-5-14, Friedrich-Schiller-UniversitÓt Jena (JE), JE0001147; Collector: Baenitz, SC.G, Herbarium Europaeum (C. Baenitz) s.n. (Isotype).

**English name:** Lesser Chickweed

### *Description*

Plant annual, herbaceous, yellowish green or pale green. Root simple taproot. Stem decumbent rarely ascending, very much reduced (2.5-) to 15(-25) cm long, branched, 4-sided, purplish green/pale green with a line of fine hairs in internodes and pedicels. Leaves opposite, exstipulate, simple, petiolate long proximally and sessile distally, fine hairs at leaf base and petiole; leaf blade broad elliptic to ovate, 3-12 ×1-8mm, glabrous, mid vein distinct with sparse hairs, closed venation, base cuneate to round, margin entire sometimes undulate (dry state), apex acute to shortly acuminate. Inflorescence axillary and terminal dichasial cymes, condensed, 3-many flowered. Flower bisexual, actinomorphic, hypogynous, 3-3.5mm diameter; bracts leafy, herbaceous, lanceolate, 2-8×1-5mm, sessile, base narrowly cuneate with fine hairs, veins inconspicuous, glabrous, margin entire, acute at apex with purple mark. Pedicel 1-15mm long, diffuse, deflexed in fruit, densely hairy. Sepals 5, lanceolate to ovate-lanceolate, 3-4 ×1.2-1.4mm, mid rib distinct, veins obscure, abaxially hairy, adaxially glabrous, margin narrowly scarious, acute at apex. Petals absent or rarely very much reduced. Stamens 1-3, staminodes absent -2; filament 1-1.5mm , free, long and slender, dilated at base, white; anther ca.0.2mm, dithecous, introrose, grey-violet (young) and black (mature), subbasifixed. Ovary one loculed with many ovules, globose, 1.5-2.5mm, yellowish green; style 3, 0.3-0.5mm, ascending. Capsule pale yellowish green, ovoid to ellipsoid, 3-4(-5) mm, membranous, beak obtuse sometimes with persistent styles, apex recurved, 6-valved. Seeds numerous (8-16), reniform-flattened ellipsoid, yellowish brown-light brown, 0.5-0.8(-1) mm diam., tuberculated, short, round to obtuse apex, smooth.

**Flowering Season**: December-March

**Ecology:** Usually grown on sandy loam soil. Found as weeds in cultivated fields, lawns, roadsides, and sidewalk cracks.

**Distribution:** The species is native to Europe and distributed in the countries of America, Asia and Australia (Chen & Rabeler 2001; Morton, 2005; Miller & West, 2012).

**Specimens Examined:** Central Nepal. Kathmandu District: Kathmandu-13, Chhauni, Simana Marga, 27.70556°N, 85.29528°E, 1259.0m, 30 Dec 2019, R. Kafle RK001(TUCH, KATH); Kathmandu-32, Jeevan Smriti Marga, 27.70611°N, 85.29778°E, 1230.0m, 16 Jan 2019, R. Kafle RK002(TUCH, KATH); Budhanilkantha-5, In front of Budhanilkantha School, 27.77861°N, 85.35944°E, 1420.0m, 22 Jan 2020, R. Kafle, B. Shrestha, G. Lama, P. Dhungana & S. Limbu RK 003((TUCH, KATH); Budhanilkantha-3, ISKCON, 27.78350°N, 85.35627°E, 1421.0 m, 22 Jan 2020, R. Kafle, B. Shrestha, G. Lama, P. Dhungana & S. Limbu RK004(TUCH, KATH); Budhanikantha-3, 27.78504°N, 85.35933°E, 1428.0m, 27 Jan 2020, R. Kafle & Shrestha, B. RK005 (TUCH, KATH); Budhanilkantha-3, Chisenigaon 27.78223°N, 85.369296°E, 1430.0m, 27 Jan 2020; R. Kafle & B. Shrestha, RK 006 (Figure 1), (TUCH, KATH); Budhanilkantha-8, Chapali Substation, 27.76438°N, 85.35772°E, 1390.0m, 2 Jan 2021, Kafle, R. RK007 (TUCH, KATH). Budhanilkantha-3, 27.78519°N,

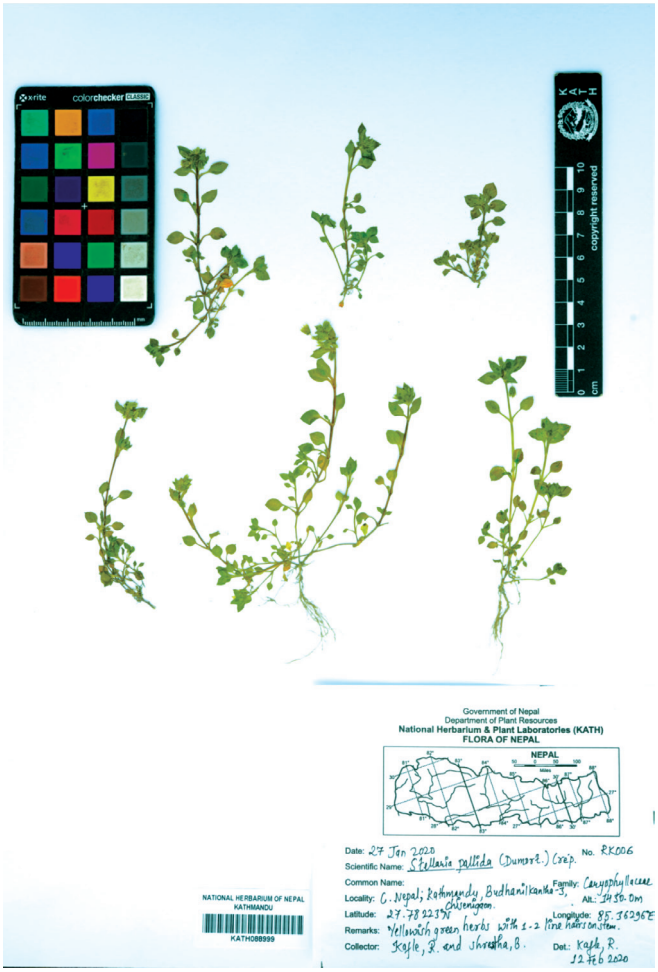


**Figure 1:** A Sample of voucher specimen of *S. pallida* (Dumort.) Crép. deposited at KATH.

85.35939°E, 1427.0 m, 11 Mar 2021, R. Kafle, RK008 (TUCH, KATH); Budhanilkantha-3, 27.78487°N, 85.35965°E, 1409.0 m, 11 Mar 2021, R. Kafle, RK009 (TUCH, KATH); Budhanilkantha-3, 27.78238°N, 85.36291°E, 1422.0 m, 11 Mar 2021, R. Kafle, RK010 (TUCH, KATH).

Keys to the Nepalese *Stellaria media* group:

1a. Inflorescence solitary, Flower tetramerous..... .....*S. wallichiana*.

1b. Inflorescence dichasial cyme, Flower pentamerous .....2.

2a. Petal absent or reduced; stamen or staminodes 1-3 or absent; seeds size less than 1 mm in diam. ..... *S. pallida.*

2b. Petal present; stamen 3-10; seeds size equal to 1mm or more in diam. .....3.

3a. Plant size 5-30cm long; Flower 2.5-6 mm diam.; stamen 3-5;seeds 0.8-1.2mm diam. including semiglobose to round tubercles with obtuse apex .....*S. media.*

3b. Plant size (10- ) 30-60cm; flower 5-8mm diam.; stamen 8-10; seeds 1-1.5mm diam. Including highly conic tubercles with acute apex ..... .....*S. neglecta.*

*Stellaria pallida* (Dumort.) Crép. is taxonomically distinct species in *Stellaria media* group, but due to overlapping of characters with *S. media*, there is a confusion in identification. After a close observation it has been clear that the main characters such as yellowish green appearance of the herbs, small size (2.5-25cm) of the plant, smaller sepals, as well as reproductive characters like absence of petals or very much reduced petals in flower; less number of stamens/staminodes (1-3-(-4)); small sized seeds less than 1mm diam.(0.7-0.9(-1))mm, light brown seeds with short conical tubercles makes the plant distinct from *S. media* which shows similar results in various literatures (Whitehead & Sinha, 1967; Chater & Heywood, 1993; Chen & Rabeler, 2001; Morton, 2005; Miller & West, 2012). The cleistogamous flower is characteristic in *S. pallida* but observed rarely in case of *S. media* (Whitehead & Sinha, 1967; Chen & Rabeler, 2001; Atha et al., 2018). The species can be ecologically distinguished with their rudimentary habitat and distribution in sandy dune soil at roadside or in cultivated fields. In addition to these characters yellowish-green appearance of plant, condensed inflorescence with ascending and reflexed stigmas as well as the length of stigma and style less than 5mm in *S. pallida* which is completely different in *S. media* where length of stigma and style is 5mm or more and light brown seeds having short acute tubercles, which has also been mentioned in different literatures (Miller & West, 2012; Lepší et al., 2019). All these character discussed here shows the distinct characteristic feature of *S. pallid* from *S. media,* therefore, *Stellaria pallida* (Dumort.) Crép. is considered as a new record for Nepal.

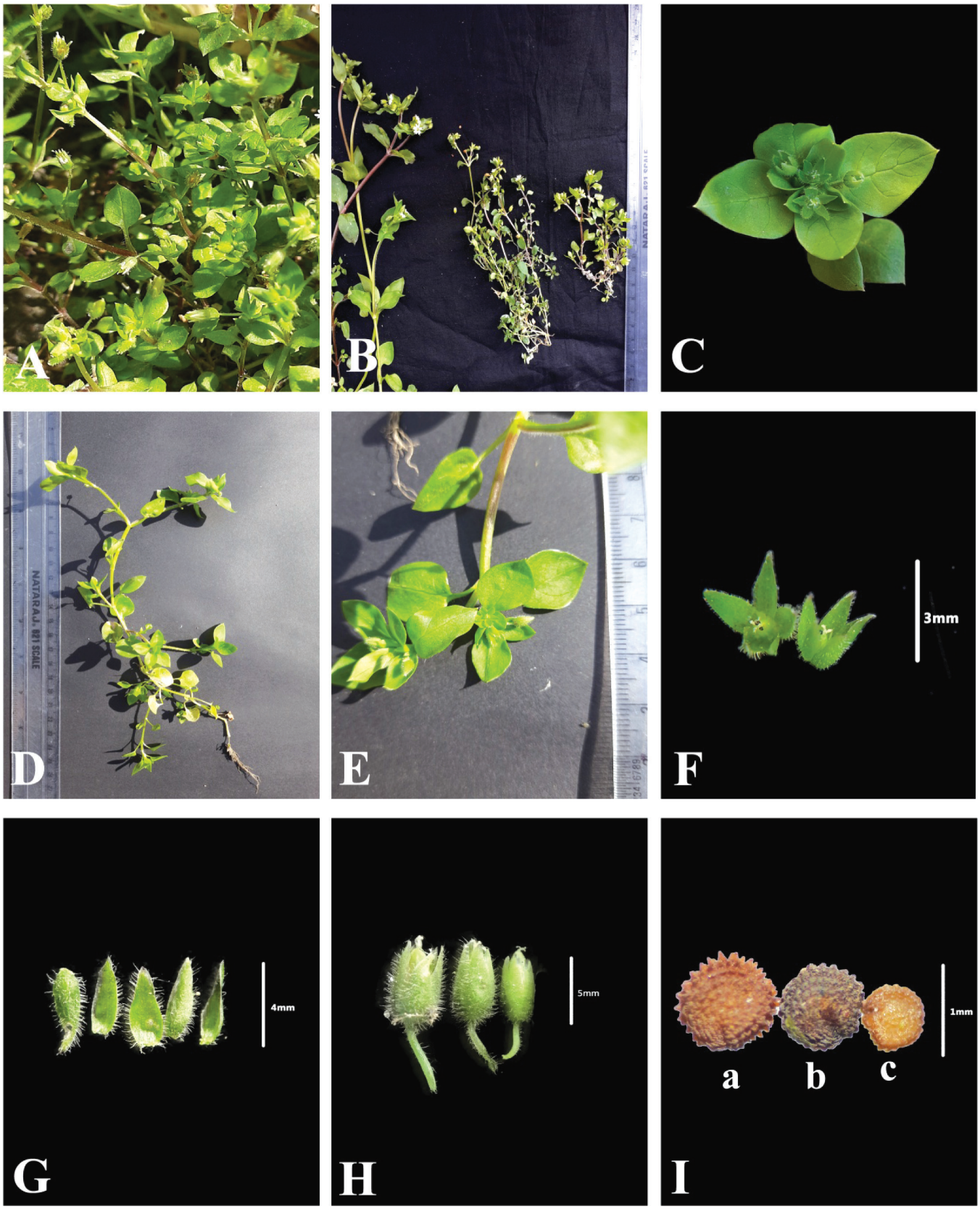


**Figure 2:** A. Habitat of plant; B. Comparison of habit with *S. neglecta* - left, *S. media*-middle & *S. pallida*-right; C. *S. pallida* in flower; D. Plant measurement; E. Leafy cyme with apetalous flower; F. Cleistogamous flower; G. Sepal; H**.** Flower; I. Seeds in 25X magnification of Streomicroscope (*S. neglecta* (a), *S. media* seed (b) & *S. pallida* seed (c).

## Conclusion

*Stellaria pallida* (Dumort.) Crép. is considered as a new record of Nepal.

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