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First record of Callisia repens (Jacq.) L. to the flora of Himachal Pradesh from Northwestern Himalaya, India

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First record of **Callisia repens** (Jacq.) L. to the flora of Himachal Pradesh from Northwestern Himalaya, India

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Abstract: *Callisia repens* (Jacq.) L. from family Commelinaceae is reported as first record to the flora of Himachal Pradesh from Northwestern Himalaya, India. During a floristic survey conducted in the vicinity of Anu village, Solan district, Himachal Pradesh, specimens of *C. repens* were collected from rocky and gravelly habitats near a subtropical mixed forest. The identity of the species was confirmed through detailed morphological examination, comparison with relevant herbarium material, and consultation with the taxonomic literature. The voucher specimen has been deposited in the herbarium of the Botanical Survey of India, High Altitude Western Himalayan Regional Centre, Solan (BSS). A detailed taxonomic description, habitat, phenology, distribution, and specimen citations are provided. Since *C. repens* is an ornamental species with a documented capacity for vegetative propagation and invasive behaviour in some introduced regions, its occurrence in the natural habitats of Himachal Pradesh warrants further field observation and monitoring.

Keywords: *Callisia repens*, Commelinaceae, new record, Himachal Pradesh, Northwestern Himalaya, alien plant, floristic diversity.

Introduction: *Callisia* Loefl is a genus of the Commelinaceae family, which is commonly known as the spiderwort family [1]. It is native to the Western Hemisphere from the southern United States to Argentina and was introduced elsewhere as an ornamental plant [2]. The generic name is derived from the Greek word kallos, meaning “beauty”. This genus has a total of 19 accepted species worldwide [3] and only two species, *Callisia fragrans* (Lindl.) Woodson and *Callisia repens* (Jacq.) L., which are cultivated in India [4]. The species now recognized as *Callisia repens* (Jacq.) L. has undergone several taxonomic reassignments since its earliest description. It was first published as *Hapalanthus repens* Jacq. in 1760 and was later transferred by Linnaeus to *Callisia* in the species Plantarum (1762). Subsequent authors placed it under *Tradescantia*, with Vandelli (1796) using the name *Tradescantia repens* and Swartz (1797) describing *Tradescantia callisia*. During the 19th century, Roemer & Schultes (1817) recognized varietal diversity,

designating *Callisia repens* var. *ciliata*, whereas Clarke and the de Candolles (1881) described *Callisia repens* var. *mandonii*. These successive treatments reflect the historical uncertainty in delimiting genera within Commelinaceae, but modern consensus retains Linnaeus's combination, *Callisia repens*, as the accepted name, with earlier designations treated as synonyms. During a floristic field survey in the grassland areas around Anu village, Solan district, Himachal Pradesh, the authors encountered an unfamiliar herb growing on rocky and gravelly substrates in the vicinity of a subtropical mixed forest. The plants were photographed in the field, collected, processed, and preserved following standard herbarium techniques. The voucher specimen was deposited in the herbarium of the Botanical Survey of India, High Altitude Western Himalayan Regional Centre, Solan (BSS).

Detailed morphological examination, comparison with available herbarium material, and consultation with relevant taxonomic literature and regional floras [5–16] confirmed the identity of the samples as *Callisia repens* (Jacq.) L. A review of the floristic literature consulted by the authors indicates that the species has not previously been reported from Himachal Pradesh. The present collection therefore represents a new record of *C. repens* for Himachal Pradesh (Northwestern Himalaya), India.

The occurrence of this species in a seminatural habitat is noteworthy because *C. repens* is widely cultivated as an ornamental plant and can reproduce vegetatively from stem fragments and cuttings. The species is recognized as invasive in South Africa, and it is included in South Africa's national invasive alien species list. It has also been reported to be invasive in Cuba and China [17,18]. *C. repens* grows vegetatively via cuttings, plant fragments, and/or discarded plants [19], and once established, it forms dense groundcover or "beds" on the forest floor, preventing the germination and establishment of native plant species [20].

Taxonomic treatment:

Callisa repens (Jacq.) L., Sp. Pl., ed.2, 1:62.1762. *Hapalanthus repens* Jacq., *Enum. Syst. Pl.* : 12. 1760. *Tradescantia repens* (Jacq.) Vand., in J.J.Roemer, Script. Pl. Hispan. : 95 (1796); *Tradescantia callisia* Sw. Fl. Ind. Occid. 1: 603 (1797); *Callisia repens* var. *ciliata* Roem. & Schult, Syst. Veg., ed. 15[bis]. 1: 528 (1817); *Callisia repens* var. *mandonii* (Hassk.) C.B.Clarke, A.L.P.P.de Candolle & A.C.P.de Candolle, Monogr. Phan. 3: 311 (1881).

Description: Perennial herb. Stems prostrate, greenish to purplish, much branched, forming mats and rooting at the nodes. Leaves alternate, sessile; leaf blade ovate to lanceolate, 1–3 × 0.5–1.5 cm, glabrescent; base obtuse; margin entire; apex acuminate. Flowers whitish, small, arranged in pairs, sessile cymes and more or less enclosed by a green, leafy, spathe-like sheath. Sepals 3, green, ca. 4 mm long, lanceolate, pubescent. Petals 3, white, lanceolate, ca. 4–5 mm long. Stamens 3, exserted; filaments glabrous. Ovary oblong, pilose at the apex; style long; stigma penicillate. Capsule oblong, ca. 1.5 mm long. Seeds brown, ca. 1 mm long, rugose.

Flowering and fruiting: April–October.

Habitat: Rocky and gravelly substrates in the vicinity of a subtropical mixed forest.

Distribution: INDIA: Kerala, Tamil Nadu, West Bengal (cultivated), and Himachal Pradesh (present report); WORLD: Mexico, Central America, South America and West Indies.

Specimen examined: India: Himachal Pradesh, Solan district, outskirts of Anu village, near Nauni; rocky/gravelly habitat near subtropical mixed forest; altitude 1275 m a.s.l.; latitude and longitude: [31°60" N; 76°.71" E.]; Collectors: [Ritesh Kumar Singh and Kuldip Singh Dogra]; voucher specimen accessioned as BSS 971, 29.09.2025, Figures (1-4).

Critical Note: The present collection represents a significant extension of the known distribution of *Callisia repens* in the Northwestern Himalaya. The species is associated primarily with tropical and subtropical regions and is commonly cultivated as an ornamental plant. Its occurrence at approximately 1275 m in elevation in the Solan district is therefore noteworthy. The plant was observed growing outside a managed garden on rocky and gravelly ground adjacent to a subtropical mixed forest. At present, however, the available observations are insufficient to establish whether the population is naturalized or invasive in Himachal Pradesh. Repeated surveys of the locality and surrounding habitats are recommended to determine its abundance, reproductive behaviour, mode of spread, and potential ecological impact.

In view of the documented vegetative propagation and invasive behaviour of this species in some introduced regions, monitoring is particularly desirable where it occurs close to natural or seminatural vegetation. *C. repens* is officially listed as an invasive alien species in South Africa.

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Author contributions

All authors contributed equally.

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Availability of data and materials: The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

The plant material (**Callisia repens** (Jacq.) L.) was collected from the wild habitat in Himachal Pradesh. The permission was granted by **the Director, Botanical Survey of India, Hqrs. Kolkata** under the Annual

Action Research Project (**https://bsi.gov.in › file › AAP › BSI ARP**) to document the Flora of Himachal Pradesh Vol. III. The collections were made in such a way that species under consideration will grow wild and reproduce themselves without any damage to their existence. The present collection (**Callisia repens** (Jacq.) L.) is compiled with the Botanical Survey of India mandate under the guidelines of the Ministry of Environment, Forest, and Climate Change (Government of India), New Delhi.

Consent for publication

Not applicable.

Plant reproducibility

The plant material (**Callisia repens** (Jacq.) L.) was collected from the wild habitat in Himachal Pradesh. The species was identified by the authors (Kuldip Singh Dogra, Ritesh Kumar Singh, Kumar Ambrish, Puneet Kumar and Youdhveer) and processed for herbarium records in the Botanical Survey Solan (BSS) Herbarium vide accession no. 971.

Competing interests

No, I declare that the authors have no competing interests as defined by Discover Plants or other interests that might be perceived to influence the results and/or discussion reported in this paper.

References:

1. Govaerts R. (1999) *World Checklist of Seed Plants* 3(1, 2a & 2b): 1–1532. MIM, Deurne.
2. Govaerts R. (2013) *World Checklist of Commelinaceae*. Royal Botanic Gardens, Kew, Richmond, UK.
3. POWO. (2026) *Callisia repens* (Jacq.) L. *Plants of the World Online*. Royal Botanic Gardens, Kew. Plants of the World Online – *Callisia* repens, https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:171826-1.
4. Mao AA, Dash SS (2020) *Flowering Plants of India: An Annotated Checklist. Volume 3: Monocotyledons*. Botanical Survey of India, Kolkata.
5. Aswal BS, Mehrotra BN (1994) *Flora of Lahaul-Spiti (A Cold Desert in Northwest Himalaya)*. Bishen Singh Mahendra Pal Singh, Dehradun, India.
6. Chandrasekhar K, Srivastava SK (2009) *Flora of Pin Valley National Park, Himachal Pradesh*. Botanical Survey of India, Kolkata, India.
7. Chawla A, Prakash O, Sharma V, Rajkumar S, Lal B, Gopichand, Singh, RD Thukral, AK (2012) Vascular plants of Kinnaur, Himachal Pradesh, India. *Checklist* 8(3): 321–348.
8. Chowdhery HJ Wadhwa BM (1984) *Flora of Himachal Pradesh Vol. I.* Botanical Survey of India, Calcutta, India.
9. Collett H (1921) *Flora Simlensis*. Thacker, Spink & Co., London, U.K.

10. Deroliya PK, Singh SK, Patil S, Sharma S (2019) An annotated checklist of the flora of Himachal Pradesh, India. *Annals of Forestry* 27(1&2): 294.

11. Dhaliwal DS Sharma M (1999) *Flora of Kullu District, Himachal Pradesh*. Bishen Singh Mahendra Pal Singh, Dehradun, India.

12. Hooker JD (1882) *The Flora of British India*. *Vol. II. Reprint* 2000. Bishen Singh Mahendra Pal Singh, Dehradun, India.

13. Kaur H Sharma M. 2004. *Flora of Sirmaur (Himachal Pradesh)*. Bishen Singh Mahendra Pal Singh, Dehradun, India.

14. Nair NC (1977) *Flora of Bashahr Himalaya*. International Bioresource Publishers, Hissar, India.

15. Singh H Sharma M (2006) *Flora of Chamba District (Himachal Pradesh)*. Bishen Singh Mahendra Pal Singh, Dehradun, India.

16. Singh PB (2018) *Flora of Mandi District, Himachal Pradesh: North West Himalaya*. Bishen Singh Mahendra Pal Singh, Dehradun, India.

17. Foxcroft LC, Richardson DM, Wilson JRU (2007) Ornamental plants as invasive aliens: Problems and solutions in Kruger National Park, South Africa. *Environmental Management* 41(1): 32–51.

18. González-Torres LR, Rankin R, Palmarola A (2012) *Invasive Plants in Cuba (Plantas Invasoras en Cuba). Bissea: Boletín sobre Conservación de Plantas del Jardín Botánico Nacional* 6: 1-140.

19. Acevedo-Rodríguez P, Strong MT (2005) *Monocots and Gymnosperms of Puerto Rico and the Virgin Islands*. Contributions from the United States National Herbarium 52: 1-415.

20. Más EG, Lugo MLT (2013) *Common Weeds in Puerto Rico & U.S. Virgin Islands*. University of Puerto Rico, Mayagüez Campus, Puerto Rico.



Figure, 1: Showing habitat of *Callisia repens* (Jacq.) L.



Figure, 2: *Callisia repens* (Jacq.) L. plant in the field.



Figure 3: White flowers enclosed by a green leafy sheath

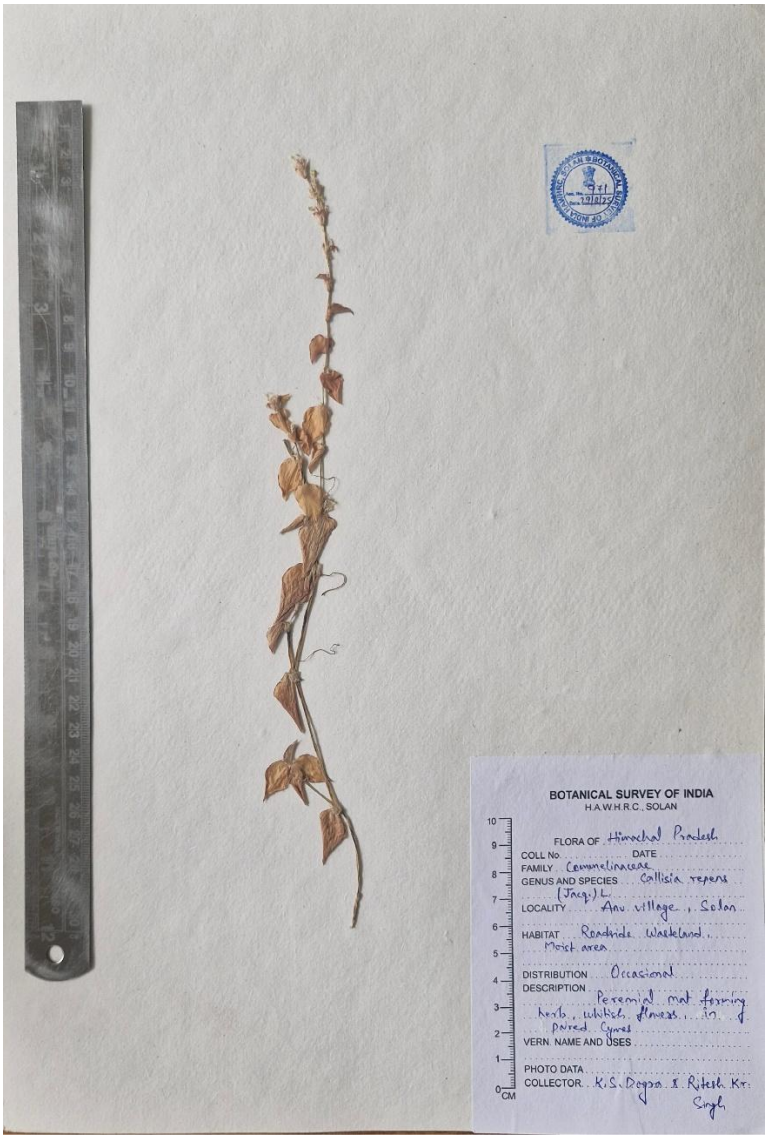


Figure 4: Herbarium specimen of *Callisia repens* (Jacq.) L.