



# A study of *Jungermannia (Solenostoma) atrorevoluta* Grolle- New to India

**By: Dr. Panzy Singh**

*Jungermannia (Solenostoma) atrorevoluta* is being reported for the very first time from India. The Specimen were collected from valley of flowers at the altitude of 4000 ft. near glaciers, earlier record of the species is found from Nepal only. The species belongs to section *Desmorhiza* of subgenus *Solenostoma*. A detailed study of vegetative and reproductive structure are given in the current account.

Plants small brown- dark brown. Rhizoids decurrent along the stem forming a distinct fascicle. Leaves sinuately inserted, leaf margins narrowly revolute. Plants dioecious, male inflorescence intercalary, perianth terminal, long-clavate, tetra-plicate.

## ***Jungermannia (Solenostoma) atrorevoluta* Grolle**

*Jungermannia (Solenostoma) atrorevoluta* Grolle, Amakawa, Journ. Hatt. Bot. Lab. 29: 255 (1966).

(Plate- 1, Figs. 1-25)

Plants in tufts or patches, 7.5-10 mm long, 0.8-1.0 cm wide, brown. Stem erect branched, branching lateral intercalary, 0.2 mm or 12-13 cells across diameter, two-three layers of cortical cells thick walled, cortical cells 10-25 x 15-25  $\mu\text{m}$ , medullary cells thin walled, 15-20 x 15-30  $\mu\text{m}$ . Subfloral innovation present, decurrent along the stem forming a distinct fascicle, brown.

Leaves succubous, contiguous to slightly imbricate, sinuately inserted, decurrent on both the sides, slightly appressed to the stem, canalicularly concave, margins narrowly revolute, orbicular, 0.5-0.7 mm long, 0.7-0.8 mm wide, cells 6.8-17.0 x 6.8-13.6  $\mu\text{m}$  along the leaf margin, 13.6-23.8 x 10.2-17.0  $\mu\text{m}$  in the middle and 27.2-40.8 x 13.6-20.4  $\mu\text{m}$  at the base, walls equally thickened, trigones indistinct, cuticle smooth.

Dioecious. Male inflorescence intercalary, bracts in 6-8 pairs, ventricose, 0.56-1.1 mm long, 0.79-1.4 mm wide. Perianth long clavate, 1.6-1.8 mm long, 0.6 - 0.7 mm wide, tetra-plicate, 2/3 exserted, mouth crenulate, beak present, perigynium undeveloped. Apical cells of perianth 10.2-17.0 x 6.8-17.0  $\mu\text{m}$ , cells in the middle 10.2-23.8 x 10.2-20.4  $\mu\text{m}$ , basal cells 34.0-51.0 x 10.2-17.0  $\mu\text{m}$ . Female bracts one pair, similar to cauline leaves, 0.6-0.7 mm long, 0.8-0.9 mm wide. Sporophyte With foot, seta and capsule. Capsule wall bistratose, outer layer cells much broader than long with nodular thickenings on radial end walls. Cells of the inner layer much longer than broad with semiannular thickening bands. Spores 13.6-15.3  $\mu\text{m}$  in diameter, brown. Elaters bispirate, brown, 74-85  $\mu\text{m}$  long and 8.5-10.2  $\mu\text{m}$  wide.

**Habitat:** Terricolous.

**Type Locality:** Nepal,

**Distribution in India:** Western Himalayas: Valley of flowers.

**Range:** Nepal (Amak., 1966), New to India.

**Characteristics of the species:**

1. Plants small 7.5-10 mm long, brown-dark brown.
2. Rhizoids decurrent along the stem forming a distinct fascicle.
3. Leaves orbicular, sinuately inserted, leaf margins narrowly revolute, trigones indistinct, walls thickened.
4. Dioecious, Male inflorescence intercalary.
5. Perianth long-clavate, tetra -plicate, perigynium undeveloped.

**Following specimen has been examined:**

LWU 4193/80, Bryophytes from Western Himalayas, *Jungermannia* (*Solenostoma*) *atrorevoluta* Grolle, Loc. Valley of flowers (Near glaciers), alt. ca 4000 ft., Habitat: on soil in association with *Jungermannia* (*Jungermannia*) *Lanceolata* L. and *J. (Solenostoma) kanaii* Amak., Leg.: S.C. Srivastava, D. Kumar and D.K. Singh, Date: 22.5.1980, Det.: S.C. Srivastava & P.Singh.

*Jungermannia* (*Solenostoma*) *atrorevoluta* Grolle is somewhat similar to *J. appressifolia* Mitt. as both the species have orbicular reniform leaves appressed to the stem and clavate perianth with prominent beak. *J. appressifolia* however differs from *J. atrorevoluta* in having larger plants (upto 3 cm long and 2.8 mm wide) and leaves without revolute margin. As opposed to this *J. atrorevoluta* has very narrow and small plants (upto only 1 cm long and 0.8-1.0 mm wide) and leaves with revolute margins.

*Jungermannia atrorevoluta*, earlier reported from Nepal is being recorded for the first time from India from the valley of flowers (Western Himalayas).

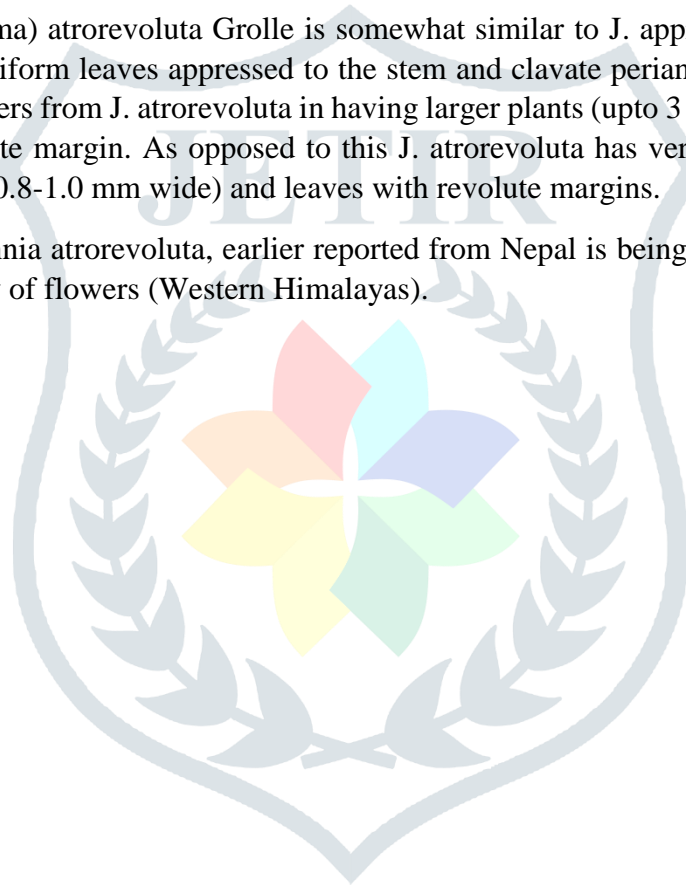
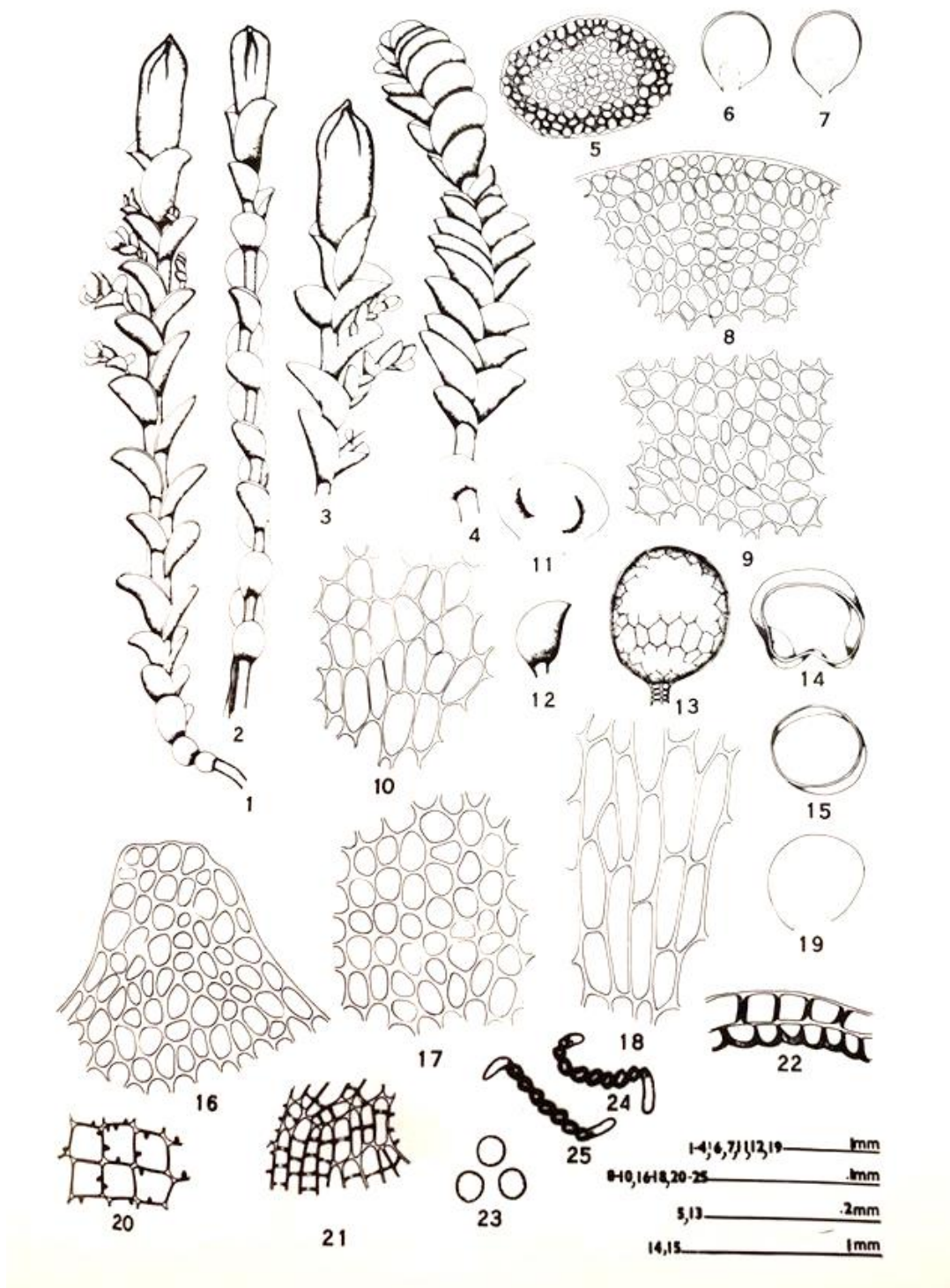


PLATE-1

*Jungermannia (Solenostoma) atrovoluta* Grolle

(Figs. 1-25)



- Fig. 1. Female plant (dorsal view).
- Fig. 2. Female plant (lateral view).
- Fig. 3. A portion of female plant.
- Fig. 4. A male plant.
- Fig. 5. Cross Section of stem.
- Figs. 6, 7. Leaves.
- Fig. 8. Marginal cells of leaf.

Fig. 9. Median cells of leaf.

Fig. 10. Basal cells of leaf.

Figs.11,12. Male bracts.

Fig. 13. A mature antheridium.

Fig. 14, 15. T.S. perianth.

Fig. 16. Apical cells of perianth.

Fig. 17. Median cells of perianth.

Fig. 18. Basal cells of perianth.

Fig. 19. Female bract.

Fig. 20. Cells of outer layer of capsule wall.

Fig. 21. Cells of inner layer of capsule wall.

Fig. 22. T.S. capsule wall.

Fig. 23. Spores.

Figs. 24, 25. Elaters.

All the figures drawn from specimen LWU 4193/80.

## References:

Amakawa, T. (1966). New or little known Asiatic species of the family Jungermanniaceae II. Journ. Hattori Bot. Lab. 29: 253-266.

Grolle, R. 1966b. Die Lebermoose Nepals. *Ergebn. Forsch. unternehm. Nepal Himalaya*, Berlin 1 (4) : 262-298.

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