

# ZYGNEMOPSS VERMAII—A NEW SPECIES FROM INDIA

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## ABSTRACT

A new species of the genus *Zygnemopsis*, *Z. vermaii* is being described. Besides differing in other characters, it is distinct from all known species of the genus in having three or four hump-like projections with stratifications on the mature zygospore.

## INTRODUCTION

In the course of cytotaxonomic studies on Zygnematales of Uttar Pradesh (India) several new taxa were collected. One new species belonging to the genus *Zygnemopsis* which is represented by ten species in India (RANDHAWA, 1959), is being described here.

## DESCRIPTION

### ***Zygnemopsis vermaii* sp. nov.**

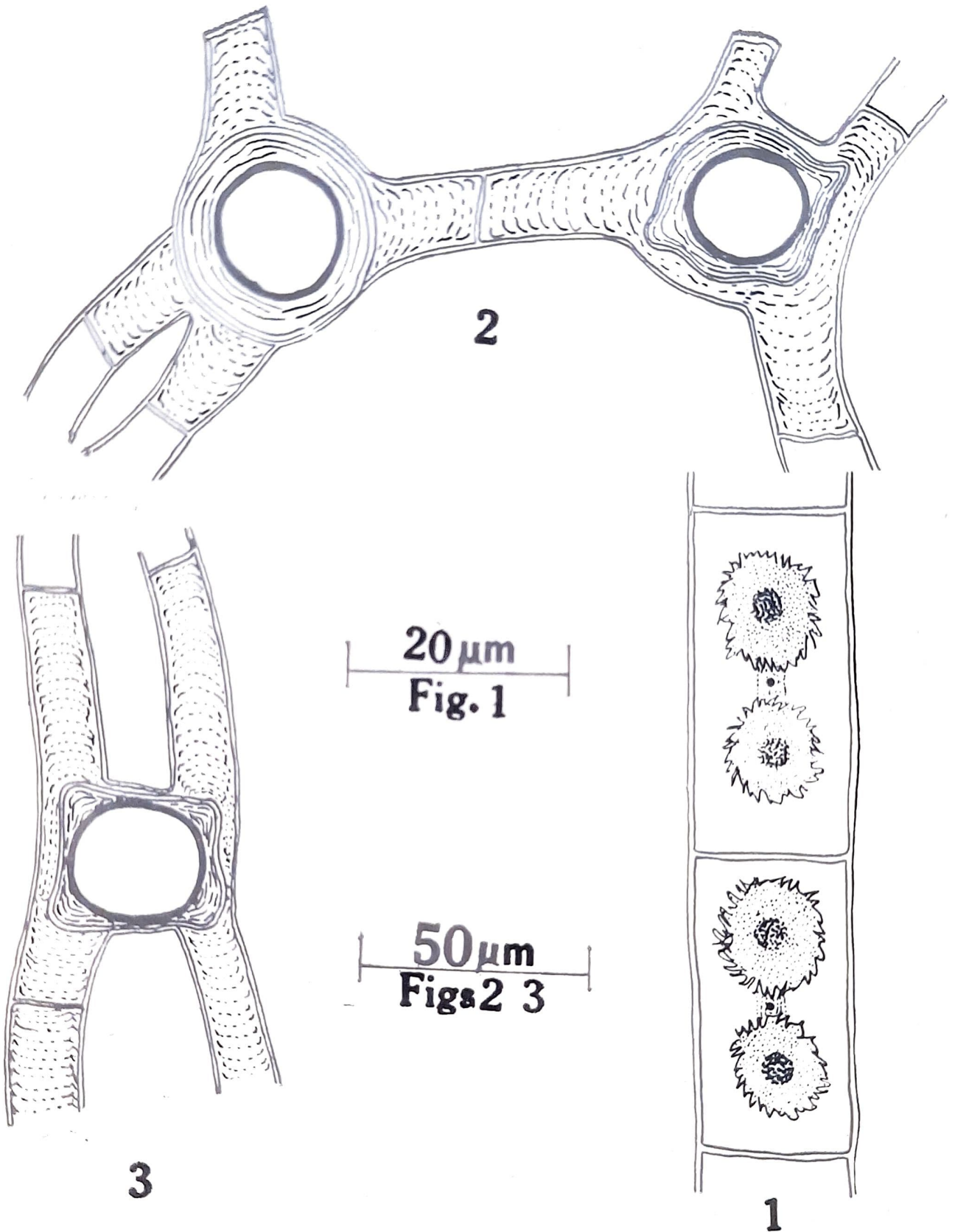
Cellulae vegetatives 12-15  $\mu\text{m}$  latae, 27-28  $\mu\text{m}$  longae, parietibus apicalibus planis, chloroplastis, 2 stellatae, conjugatis scalariformis; Zygosporae spaeicis vel subellipticae in lateralibus quadrangularae in superficialibus, 27-35  $\mu\text{m}$  latae, 27-46  $\mu\text{m}$  longae, exosporio levi, tenui, incoloro, endosporio tenui, levi, incoloro, mesosporioe anguloso incrassato lamelloso pallescentibus. Azygosporae 30-31  $\mu\text{m}$  latae, 31-35  $\mu\text{m}$  longae.

Vegetative cells 12-15  $\mu\text{m}$  broad, 27-28  $\mu\text{m}$  long with plane end-walls, each with 2 stellate chromatophores (Text-fig. 1). Conjugation scalariform. Zygospores round to sub-elliptical in side view, quadrangular in front view 27-35  $\mu\text{m} \times 27-46 \mu\text{m}$  occupying the conjugating canal almost entirely and extending partly into the two conjugating cells. Remaining part of the conjugating cells filled with glistening, sometimes visibly lamellate pectic-cellulose material. Exospores smooth, thin, colourless; endospore thin, smooth and colourless. Mesospore yellow, thickened at corners forming hump-like projections which show lamellate deposits in the region of humps (Pl. 1, Fig. 1a & 1b; Text-figs. 2, 3). Azygospores also present, 30-31  $\mu\text{m}$  broad and 31-35  $\mu\text{m}$  long (Pl. 1, Fig. 2).

*Habitat*—Free floating in ditches near 'Har-ki-Pauri' at Haridwar in May, 1975. The material is deposited under no. 287 in the Algal Collections, Lucknow University.

The species can be compared with *Zygnemopsis wuchangensis* Li, (1937, 1938) *Z. indica* Randhwa (1959) and *Z. stephensiae* Transeau (1951). It agrees with *Z. wuchangensis* Li in the width of filaments but differs from it in having smaller smooth-walled zygospores in which there are no pits. Table 1 shows a comparison with *Z. indica* and differences from it.

With *Z. stephensiae* Transeau, it resembles in the width and length of the filaments and the colour of the mesospore. But it differs from it in having a considerably wider range in zygospore dimensions. It prominently differs from all species of the genus in the possession of three or four humps on the zygospore. Therefore, it is distinctly a new



Text-figs. 1-3. *Zygnemopsis vermai* sp. nov., 1. Vegetative cells showing cell structure, 2. Conjugating cells with zygospores. One zygospore observable in face view shows the thickened regions of the mesospore forming hump-like projections. The other zygospore seen in side view appear spherical and the humps are not visible, 3. Two conjugating cells with a zygospore showing 4 hump-like projections.

Table 1—Comparison between *Z. indica* and *Z. vermaii*

Serial no.	Characters	<i>Z. indica</i> Randhawa	<i>Z. Vermaii</i> sp. nov.	Conclusion
1.	Width of filaments	10-15 $\mu\text{m}$	12-15 $\mu\text{m}$	Similar
2.	Length of cells	40-75 $\mu\text{m}$	27-28 $\mu\text{m}$	Much shorter
3.	Width of zygospore	35-46 $\mu\text{m}$	27-35 $\mu\text{m}$	Lower limit is less
4.	Length of zygospore	Not given	27-46 $\mu\text{m}$	
5.	Colour of exospore	Blue	Colourless	Very different
6.	Colour of mesospore	Chocolate brown	Yellow	Very different
7.	Colour of endospore	Yellow brown	Colourless	Very different
8.	Spore wall	Verrucose	Forming hump-like projections but smooth.	Very different
9.	Shape of azygospore	Spindle shaped (measurements not given)	Quadrangular broad and 31-35 $\mu\text{m}$ long	Different

species of the genus. It is named as *Z. vermaii* sp. nov. in honour of late Professor Girja Shanker Verma of Lucknow University.

The species is distinctive and differs from all the known species of *Zygnemopsis* in possessing a hump-like thickening in the mesospore membrane at three or four corners of the zygospore. These hump-like structures are formed by the deposition of material in a lamellated manner in these regions of the mesospore so that they often exhibit a stratified structure within the region but such lamellation is not discernible (with a light microscope) in other regions of the mesospore which are thinner. The humps are formed in approximately one plane only and hence, they are not clearly recognisable if the zygospores are viewed side ways. It may also be mentioned that the humps develop late and only in the final stages of maturation of the zygospore so that they will not be present in zygospores which are not completely mature.

#### REFERENCES

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#### EXPLANATION OF PLATES

##### PLATE I

*Zygnemopsis vermaii* sp. nov.

- 1a. Zygospores in face view showing mesospores with 4 hump-like projections  $\times 770$ .
- 1b. Zygospore in face view showing mesospore with 3 hump-like projections.  $\times 770$ .
2. An azygospore in side view.  $\times 535$ .

\*Not seen in original

