

## Supplements to the Freshwater Rhodophytes in Taiwan

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**ABSTRACT:** A new species of freshwater red alga, *Batrachospermum tapirensense* Kumano & Phang, is reported as a supplement to the floristic record in Taiwan. The morphology, habitat, and the locality of this species were described. A key to the species is given. This species was found at Fusan in low abundance in a clear, cool, running stream. It can be recognized as an endangered rare species in Taiwan.

**KEY WORDS:** *Batrachospermum*, Freshwater Rhodophyta, New record, Rare species, Taiwan.

### INTRODUCTION

To my knowledge, freshwater red algae are not common in Taiwan. So far, the floristic records of rhodophytes were mostly on those of marine members (Chiang, 1962 & 1973; Wang and Chiang, 1977; Huang, 1999), with a few (Wu, 1999) about the freshwater species. Recently, a red alga was collected from an ecological study at the Fusan area. Morphological studies show that it is a species of *Batrachospermum* – *B. tapirensense* Kumano & Phang (Yamagishi and Akiyama, 1996), a new species for the recorded taxa of Taiwan. Thus this red alga is reported here.

### Description of the species

*Batrachospermum tapirensense* belongs to the family Batrachospermaceae (Batrachospermales, Florideophyceae, Rhodophyta). Together with the species reported previously (Wu, 1999), there are now three species of *Batrachospermum* in the freshwater environment of Taiwan. Morphologically, *B. tapirensense* can be easily distinguished from the other two species in its number of cell-story composing the branchlets. The species of *B. tapirensense* found in Fusan is similar to that described by Yamagishi and Akiyama (1996) for the Japanese species.

### *Batrachospermum tapirensense* Kumano & Phang

Thallus macroscopic, bluish green to brown, moderate mucilaginous, up to 6 cm in length, 200-280 µm wide; abundantly and irregularly branched, the branches in dense globose whorls, whorls subconical, compressed; primary branchlets 4 or 5 cell-storied; cells fusiform or ellipsoidal; secondary branchlets 3-5 cell storied; carpogonium-bearing branches consisting of 4 or 5 barrel-shaped cells; lateral branches forked, about equal in length, of limited growth, often terminating with hairs; carposprangia ovoid or ellipsoidal, 5-8 µm in diameter; monoecious.

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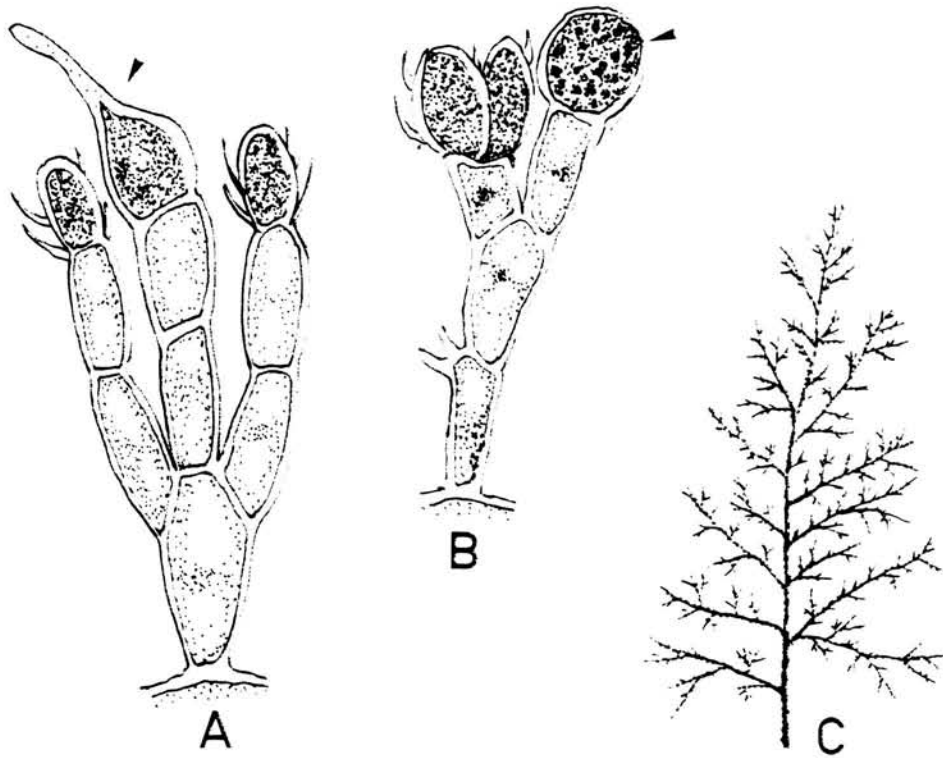


Fig. 1. *Batrachospermum tapirense* Kumano & Phang. A: portion of branchlets with trichogyne (arrow); B: portion of branchlets with carposporangium (arrow); C: thallus with branches. A & B: 230 x; C: 1 x.

Locality: Fusan, Taipei county.

Habitat: epilithic or epiphytic, in circum-neutral, running, oligosaprobic, low alkalinity, soft water. Appeared in winter and spring.

#### Key to species of *Batrachospermum*

1. Branchlets 4 or 5 cell-stories ..... *B. tapirense*
1. Branchlets more than 5 cell-stories ..... 2
  2. Thallus dioecious, lateral branches with terminal hairs ..... *B. moniliforme*
  2. Thallus monoecious, lateral branches without terminal hairs ..... *B. ectocarpum*

#### Ecological significance

Just like the other two species of *Batrachospermum* ever reported, *B. tapirense* inhabited in cool, clear, well-aerated streams with nearly saturated dissolved oxygen, low alkalinity ( $<1.0 \text{ mmol L}^{-1}$ ), low conductivity ( $<70 \text{ } \mu\text{S cm}^{-1}$ ) and circum-neutral environment, namely a typical oligosaprobic and oligotrophic environment. It has been known that freshwater rhodophytes have a strict requirements for their inhabiting conditions (Cole and Sheath, 1990). This species was only found at the Fusan area, in the northern Taiwan, and appeared in very low abundance. Near the locality where *B. tapirense* was found, there was *Hildenbrandia rivularis*, another freshwater rhodophyte, suggesting that both species have similar requirements for their growth conditions. However, *H. rivularis* is more widely distributed than *B. tapirense* in Taiwan. There may be many reasons for such a difference. Morphologically, *H. rivularis* is microscopic, palmelloid, forming a thin layer on stones, whereas *B. tapirense* is macroscopic, epilithic or epiphytic with numerous erected branches.

Therefore, the larger and profusely branched thalli of *B. tapirensis* are more easily predated by animals than those of microscopic *H. rivularis*. Moreover, the former is relatively weak against the turbulence in the streams. Certainly, the real reasons for the difference between them in geographical distribution is worthy of further study.

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## 台灣的淡水紅藻補遺

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### 摘 要

本文報導一種新近發現的台灣淡水紅藻新記錄種：串珠藻 (*Batrachospermum tapirensense* Kumano & Phang)。此種與先前發表之其他淡水紅藻一樣都是分佈於山區無或微污染的溪流，棲地之水溫低，溶氧量高，是貧腐水或貧養水級的指標藻種。此新記錄種僅在福山地區被發現，其出現數量又很低，在台灣屬於瀕危稀有種。本文除對其形態和棲地等給予描述外，並提供新的種檢索表。

關鍵詞：串珠藻、淡水紅藻、新記錄種、稀有種、台灣。

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