

海洋生物学 (1 / 2)

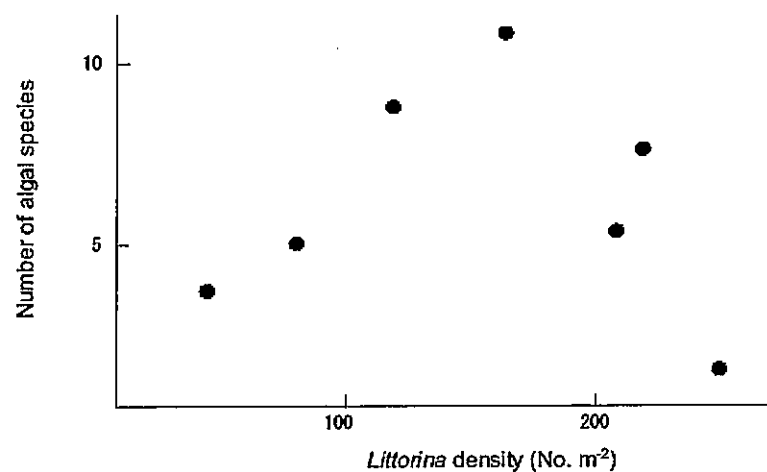
(注意) 全ての問題を 1 枚の答案用紙に解答すること。

(解答は英語・日本語のどちらでもよい [英語/ラテン語と指示してある場合以外]。文法などの間違いは採点に影響しない)

[1] Choose TWO topics from the following five and discuss. (total: 20 points)

- (1) Interspecific relations in reef systems
- (2) Ecological linkages between benthos and plankton
- (3) Habitat selection of sessile organisms in the intertidal
- (4) Species diversity in estuarine habitats
- (5) Phytoplankton production in relation to latitudes

[2] The figure below shows the relationship between the number of species of sessile algae and the density of *Littorina* found in intertidal pools of different sizes. Answer the questions that follow. (total: 50 points)

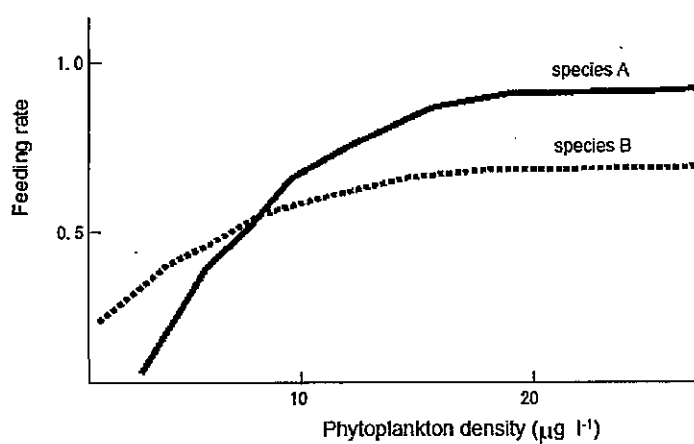


- (1) Name the phylum to which *Littorina* belongs. (in Latin, 5 points)
- (2) *Littorina* is one of the grazers in these habitats. Explain the ecological roles of 'grazers' in the context of the intertidal ecosystem (10 points)
- (3) Discuss the possible mechanism(s) generating the pattern observed in this figure. (20 points)
- (4) Based on this result, you are asked to conduct more experiment to gain further understanding of this system. Plan and explain an experiment to test a hypothesis of your choice. (15 points)

海洋生物学 (2 / 2)

(注意) 全ての問題を 1 枚の答案用紙に解答すること。

- [3] The figure shows the results of feeding experiments in which two zooplankton species A and B were kept separately in experimental aquaria at different densities of phytoplankton food. Feeding rates are expressed as proportional values in terms of weight increase per unit time. Answer the questions that follow. (total: 30 points)



- (1) Explain (and give your interpretation of) the patterns observed here. (10 points)
- (2) Consider and discuss the possible situation(s) in which these two species might coexist under natural conditions. (20 points)