

## POSTERS

## POSTER 1

Environmental Changes of the Natural Habitat and Growth of  
*Aldrovanda vesiculosa* L. at Hozoji Pond, Hanyu City  
- Growth and Reproduction in *Aldrovanda vesiculosa* L.

Sadashi Komiya and Chiaki Shibata, Department of Biology, Nippon Dental University, 1-9-20 Fujimi, Chiyoda-ku, Tokyo 102-8159, Japan

Hozoji Pond in Hanyu City, approximately 50 km (30 miles) north of Tokyo in Saitama prefecture, was the last *A. vesiculosa* (waterwheel plant) habitat in Japan. In 1967, the plant vanished from the site because of serious water pollution and a flood which caused ecosystem destruction (Komiya and Shibata, 1982). Since 1964, through cooperation with local organizations, the authors have been attempting various efforts to restore the environment and to conserve the species at the site. Ecological observations on *A. vesiculosa* at Hozoji Pond, particularly plant growth and reproduction recorded both before and after the extinction, are reported. In 1964, plants were collected at Hozoji Pond, and then the plants were put into floating baskets which were placed on the surface of the pond. During the period of May to October, stem length and the number of whorls were recorded regularly. In 1980, the same study, but using cultivated plants, was repeated. Plants were replaced every 2 to 4 weeks after each growth measurement. The observations were repeated 7 times over the same period. Stem length, lateral shoot length, the number of whorls and the number of daughter plants were recorded regularly. The main stem elongation rate was approximately  $0.4 \text{ cm day}^{-1} \text{ plant}^{-1}$  in both observations. The sharp decrease in the growth rate observed in July and August 1980 was due to lower water temperature and damage caused by herbivorous fish. The mean increasing whorl-number  $\text{day}^{-1} \text{ plant}^{-1}$  was 0.65 in 1964 and 0.68 in 1980. Statistical analysis showed no significant difference on the mean whorl-number / stem-elongation ratio between the two studies,  $1.5 \text{ whorls cm}^{-1} \text{ plant}^{-1}$  in 1964 and  $1.8 \text{ whorls cm}^{-1} \text{ plant}^{-1}$  in 1980. The results showed that the plant produced a lateral shoot on the stem every 3 to 4 cm (or 5 to 7 whorls) under optimum conditions. Consequently, reproduction by lateral shoots was accelerated and up to 20 daughter plants were reproduced from one plant when the growth rate was higher. Although the plant flowers in summer, no record of seed reproduction has been reported. It is surprising that no significant difference was seen on the growth rate between the two studies. However, water pollution and eutrophication of the pond have actually become more serious. Without artificial protections, conserving the species at the site will be impossible. In 1994, as a result of reintroduction of plants to the pond, a number of turions successfully overwintered, but in the following spring all the plants were eaten by herbivorous fish and tadpoles which have increased in number in recent years (Komiya, 1996). These problems illustrate that it is difficult to restore an ecosystem which has been disturbed.

## References

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