BIOLOGICAL CONTROL OF WATER LETTUCE: EARLY OBSERVATIONS

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INTRODUCTION

Water lettuce, *Pistia stratiotes*, probably originated from South America. It has been spread throughout the tropical and subtropical countries as an aquarium or ornamental plant. It is not as serious a weed as *Salvinia molesta* or water hyacinth, *Eichhornia crassipes*, but it could become a nuisance on fresh water rivers and lakes in Papua New Guinea.

DESCRIPTION

Water lettuce plants float on top of the water. They are rosettes of pale, yellow-green fan-shaped leaves up to 16 cm long. The leaves are deeply ribbed and covered with soft fine hair. The hair is thickest on the underside of the leaves. The flowers are small and green and are not easily noticed. They grow in the centre of the plant amongst the leaf bases. The roots of water lettuce are fibrous (many thin roots). The most important method of reproduction is vegetative. The plant produces stolons - i.e. leaf stalks which grow out from the side of the rosette, and put down roots.

DISTRIBUTION

Water lettuce is widespread throughout the tropics. It is not known when it was introduced to Papua New Guinea. The first record was over 100 years ago and since then it has spread to all major rivers in this country. However it does not reproduce rapidly.

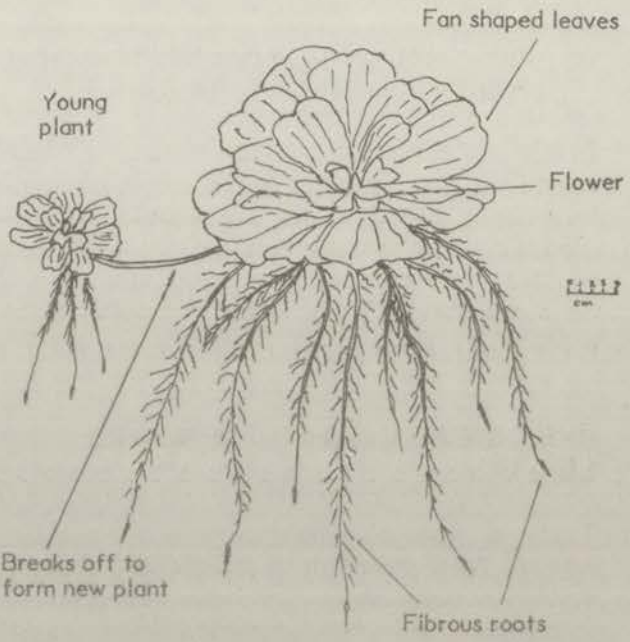


Diagram of the parts of a water lettuce plant

A patch of water lettuce growing together with salvinia and water lilies

Snails and a variety of insects such as grasshoppers feed on water lettuce. Damage to the plants can lead to fungus infections. The most important organism feeding on the plant seems to be the larva (caterpillar) of a moth, *Athetis pectinicornis*.

Following the eradication of the water weed salvinia, water lettuce has become a problem in some areas. The reasons why this has happened are probably:

1. The decaying salvinia released a lot of nutrients (plant foods) into the water, and this encouraged water lettuce to grow better.

2. Water lettuce no longer had to compete with salvinia for space to grow.

Large 'blooms' of water lettuce have appeared in some lagoons, and channels have been blocked. In areas only recently cleared of salvinia, the problem is very frustrating. However these blooms seem to be short lived. They usually last only a few months.

BIOLOGICAL CONTROL OF WATER LETTUCE

Tests in Australia have shown that a tiny weevil, *Neohydronomus pulchellus*, lives on water lettuce only. In June 1985, 500 of these weevils were imported into Papua New Guinea from CSIRO in Australia, to see if they would control water lettuce, both in the Sepik river and elsewhere in the country.

Releases

The weevil was released in two places on 10 June 1985. The release sites were in Wewak town, and at a lagoon in Magendo village, about 2 km up the Sepik river from Angoram.

Damage to water lettuce

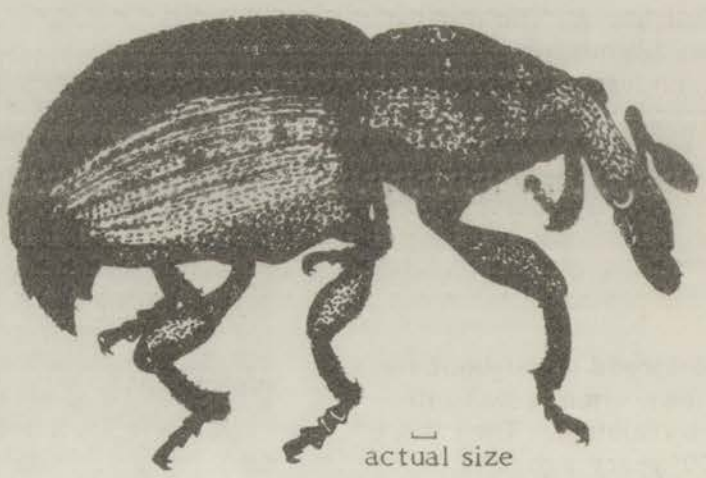
The adults of *N. pulchellus* damage water lettuce by feeding either on the leaf surface or on tissues inside the leaf. This results in scars or holes 3-5 cm across. The larvae tunnel through the leaves. The tissues around the feeding areas die, and eventually the whole plant dies.

Life cycle

The life cycle of *N. pulchellus* from egg to adult lasts 19-24 days altogether. The egg stage lasts for 4-5 days, the larval stage for 11-14 days, and the pupal (resting) stage for 4-5 days, before the adult emerges. Adults can survive for up to 4 weeks.

Release of insects in other areas

The insect populations at the two original release sites have increased, and insects have now been taken from these sites and



The weevil Neohydronomus pulchellus, *about 50 times natural size*
(Illustration: Jackson Kaumana)

released elsewhere in the Sepik River system.

The insects have become established at these sites, but so far no obvious control effect has occurred. The insects are continually monitored by the Aquatic Weed Control Unit.

FURTHER ADVICE AND INFORMATION

If you find water lettuce growing on waterways in your area, you should immediately contact the Aquatic Weed Control Unit at the following address with details about the size of the infestation, and whether it is causing any problems. The Unit will give advice about the best way to remove this weed.

For the latest information about the spread of water lettuce and its biological control, write to:

The Officer-in-Charge
Aquatic Weed Control Unit
Saramandi Research Station
P.O. Box 433
WEWAK
East Sepik Province

Telephone: 883083