

Aquatic Weeds

Water net: a recent algal invader of New Zealand

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NIWA research on water net, an introduced aquatic "weed", aims to provide guidelines for the management of infested water bodies.

WATER NET (*Hydrodictyon reticulatum*) is a free floating filamentous green algae with a unique growth form. The individual cells are joined together to form a cylindrical net-like structure which ranges in size from 1-2 mm long when first released from the parent net, to typically 20-30 cm long at maturity, as shown in the photograph. Water net has a unique method of vegetative reproduction. Each net contains 1000-2000 cells, each cell containing many nuclei. When the cells reach maturity the nuclei within each cell join together and form a new net. These "daughter" nets are then released from each cell of the mature net. This very fast and effective method of reproduction allows water net populations to develop very rapidly when conditions for growth are suitable.

Water net is spread from one water body to another primarily by movements of boats and water fowl. It is readily entangled in boating equipment such as ropes and outboard motors, and will stick to both rough and smooth surfaces of boats and trailers. It is also transported on the feathers, legs and feet of waterfowl and is reasonably resistant to desiccation. The transfer of a single cell may be sufficient to establish water net in a previously uninfested water body.

Mature water net.



First record

Water net was first reported in New Zealand in 1986, in an ornamental pond at Welcome Bay in Tauranga. It is thought that it was introduced unintentionally with imports of fish or aquatic plants to a nearby fish hatchery. Since then, water net has spread throughout the eastern Bay of Plenty and Rotorua Lakes, and subsequently into the Waikato River system, having recently been reported in the lower Waikato region near Port Waikato. This suggests that water net is now distributed along the length of the Waikato River. The map shows the sites where water net has been reported since 1986.

Nuisance growths

In some areas, such as Lakes Rotorua, Rotoiti and Aniwhenua, water net has become a nuisance alga. Large floating mats have occurred regularly each summer for a number of years. Not only do these mats reduce the aesthetic values of waters, but they can also seriously interfere with recreational use by clogging water intakes of boat engines, fouling fishing lines and making swimming very unpleasant. The mats can also create major problems through clogging of drainage ditches, stock watering ponds, pump filters and outlet structures such as weirs. Their accumulation and subsequent decay along river banks and lake edges can lead to odour problems. The smothering growth habit and depletion of oxygen levels in infested waters due to respiration and decay of water net can result in loss of habitat for desirable aquatic plants, invertebrates, fish and water fowl.

Growth requirements studied

Nuisance growths of water net have had a serious economic impact in lakes such as Rotorua. This has stimulated a series of studies aimed at better understanding the growth requirements of water net. Initial studies carried out by Ian Hawes and Rob Smith of NIWA, Christchurch, involved growing water net under controlled conditions in the laboratory. These studies established that the

