



INFORMATION ON WATERLILIES IN THE LOWER VASSE RIVER

WHAT ARE THEY?

The Mexican waterlily (*Nymphaea Mexicana*) has become very invasive in the Lower Vasse River. The plant originates from South East USA but has spread through use as an ornamental pond plant.

Waterlily expanded rapidly in the Vasse River during the 2013 - 2014 summer and has spread gradually since then. It covers nearly 25% of the river downstream of the Busselton Bypass. It has become a major management issue.

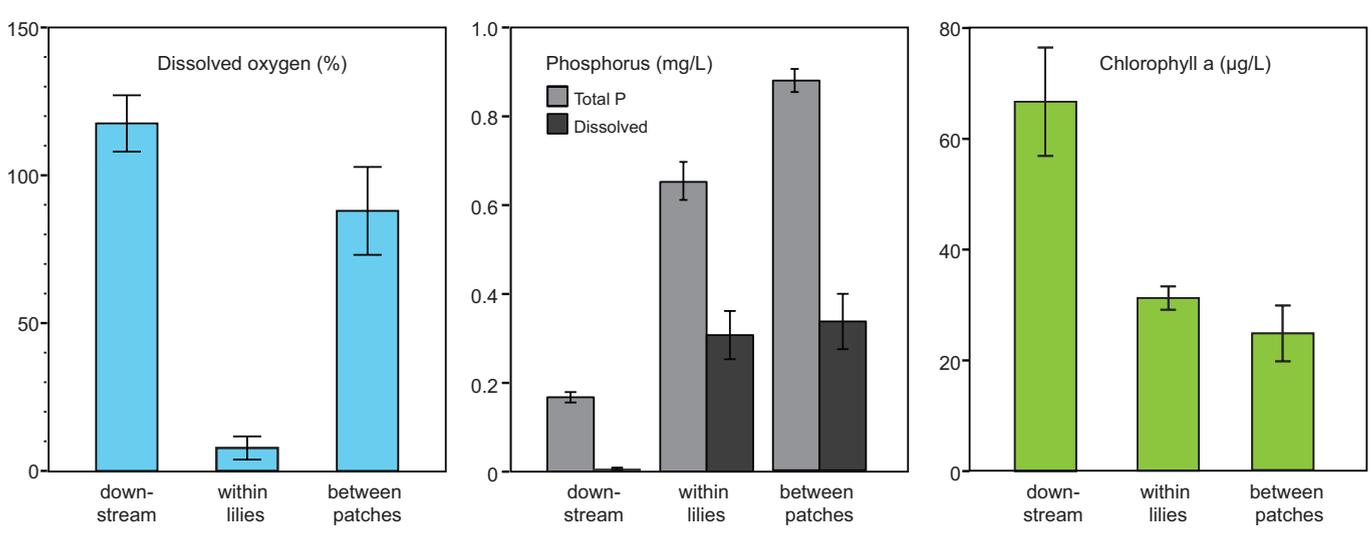
Before determining control measures, a study was commissioned to understand how the influence ecology and water quality in the river.



HOW DO WATERLILIES AFFECT WATER QUALITY IN THE LOWER VASSE RIVER?

The waterlilies cover the surface of the water and prevent exchange of oxygen. Beneath the lilies oxygen is used up by organic material. Photosynthesis by the lilies happens above the water, so oxygen is not replenished. Very low oxygen levels occur beneath the waterlilies, impacting aquatic organisms.

The Lower Vasse River experiences seasonal blue-green algal blooms. The water becomes bright green due to the high concentrations of blue-green algae cells in the water. However blue-green algal blooms were not seen in water between the patches of waterlily, even though phosphorus levels were very high. Sampling by the Department of Water has also shown much lower blue-green algae at Strelly Street since the spread of Mexican waterlily. Waterlilies may limit blue-green algal growth by light limitation or by chemical inhibition (allelopathy). More research is needed to understand these processes.



The study found extremely low oxygen in the water beneath the lilies. Phosphorus within and between patches of waterlily was significantly higher than downstream, but algal concentrations (chlorophyll a) were much lower.

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DO THE LILIES TAKE UP A SIGNIFICANT AMOUNT OF NUTRIENT LOAD COMING DOWN THE LOWER VASSE RIVER?

Despite their extensive coverage, waterlilies take up only a small fraction of the nutrients in the river (2% of the annual phosphorus load and 1 % of the annual nitrogen load). Physical removal would have little effect on nutrient levels in the river.

DO THE LILIES PROVIDE HABITAT FOR AQUATIC ANIMALS?

Despite low oxygen, sites within the waterlilies had more macroinvertebrates than other parts of the river. However, most macroinvertebrates were those that tolerate poor water quality, like midge larvae and oligochaete worms. The greatest diversity was found at the edges of waterlily patches, where oxygen levels are higher. Lilies provide more habitat and food options for a range of macroinvertebrates.



Lower Vasse River algal bloom downstream where there are no waterlilies.



Lower Vasse River no algal bloom present between patches of waterlily.

WILL THE INFESTATION STOP?

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WHY NOT JUST REMOVE THE LILIES?

Complete eradication of the waterlily is challenging and requires many years of sustained effort. Large scale removal of the lilies in a short time period presents a risk because rapid plant die-off and sediment disturbance can cause deoxygenation and nutrient release. This could harm aquatic fauna and worsen algae blooms.

We also need to consider the benefits to water quality currently provided by the waterlilies by reducing algal blooms. It may be possible to find alternative native aquatic plants that benefit the river.

WHAT IS BEING DONE?

The waterlilies need to be controlled to prevent further loss of open water. Strategic control will commence to gradually reclaim open waters between patches of waterlily. Areas of important bird habitat will be targeted first. Control will be undertaken using herbicides that are approved for use in waterways and will not persist in the ecosystem. Control activities will be undertaken in autumn when temperatures are lower and deoxygenation is less likely to occur. The effectiveness two herbicides will be assessed to inform future management. Oxygen levels and bird activity will also be carefully monitored.

The ecological study on the influence of Mexican waterlily on the lower Vasse River was funded by the Revitalising Geographie Waterways program.

For more information or a copy of the report on the 2017 study please contact the City of Busselton.

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