

Name of Species:	Carp <i>Cyprinus Carpio</i>	Mosquito Fish (Plague Minnow) <i>Gambusia Holbrooki</i>	Salvinia <i>Salvinia molesta</i>
How, when and why introduced?	Introduced into dams as an ornamental fish and for sport in the 1850's. They had little environmental impact until the 1960's when the Boolarra strain was released from a fish farm into the Murray river.	First introduced into Australia as a mosquito agent in 1905. Use was further extended as a mosquito agent during the 1920's and 1940's by military and civilian authorities world wide.	Native to Brazil. The plant has been used to decorate aquariums and ponds. First recorded in QLD 1953. Salvinia is mainly spread by people who carelessly empty aquariums into waterways or ponds which overflow into catchments.
Features of the species and factors encouraging success.	Female carp can lay over a million eggs a year. (great fecundity) Ecological flexibility - They can live anywhere in NSW except freely flowing coastal rivers and high mountain streams. They tolerate high salinity levels and low oxygen levels which native fish cannot survive.	Tolerates a large range of salinities from freshwater to full seawater. Tolerates a range of water temperatures from 0.5 to 38 C. Tolerates water acidity and pollution levels that would kill native fish. Upward facing mouth for utilising the higher oxygen surface layer. Reproduces live young (20-200) and on average reproduce every 8 weeks.	In warmer temperatures they can double their volume every two to three days. eg 1 plant to 8,000 plants after 1 month, 67,000,000 after 2 months, 4,500,000,000,000,000 The plant reproduces as portions break off. It grows in thick mats - one mat was recorded over 100 square km in area and up to one metre deep.
Effects on the local environment (biotic and abiotic)	1.They increase turbidity due to their manner of feeding. 2,Reduce submerged vegetation by uprooting aquatic plants . Both impacts lowers oxygen levels Influence the frequency of algal booms by increasing nutrients loads They can collapse river banks. Feeding at low levels of the food chain preventing flow of energy to native fish	Stop the recruitment of native fishes by occupying habitats and consuming resources. They also may consume larval fishes. (competitive exclusion). Eat a large range of invertebrates including frog spawn and tadpoles. Adult native fishes may be excluded as aggressive Gambusia nip or eat their fins.	Mats block sunlight which eliminate native submerged plants. Less plants means less oxygen. As plants die and decay they can cause a decrease in oxygen levels. The actions of reduced plant life and oxygen severely reduce habitat for fish Loss of water through transpiration.
Management or control methods	Daughterless carp technology (long term) At Penrith Lakes have used in the past 1. Netting. 2. Electro fishing 3. Sonar trapping However main method is biological ie bass stocking to eat young carp.	Some native fish eg the Flathead Gudgeon and Bass will eat young Gambusia. Note Bass have been introduced as fingerlings in there thousands to Penrith Lakes.	Biological - Salvinia weevil (<i>Cyrtobagous salviniae</i>) only in high temperatures and nitrogen levels. At Penrith Lakes Mechanical - vacuuming water body (small areas are practical only) Herbicide - Cannot be used for potable water . Frequent use needed.

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