



Sagittaria threatening irrigation channels & waterways

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in a nutshell

- Sagittaria has been present in the irrigation areas of northern Victoria and southern New South Wales since the 1960s, and has been an increasing problem since the 1980s
- In NSW, sagittaria is declared as a Class 4 and Class 5 noxious weed under the *Noxious Weeds Act 1993*
- Despite concerted efforts, sagittaria has continued to spread, blocking irrigation channels and waterways, threatening water supply and biodiversity
- It spreads rapidly, blocking irrigation channels and consequently impeding water flow, and has the potential to choke out watercourses and wetlands
- It is not easily controlled by mechanical methods or herbicides registered for use in aquatic situations

Sagittaria is a plant with an aggressive growth habit. It spreads rapidly, blocking irrigation channels and consequently impeding water flow. The plant has a detrimental impact on the environment with the potential to choke out watercourses and wetlands, adversely affecting biodiversity. It is not easily controlled by either mechanical methods or by the herbicides registered for use in aquatic situations.

Originally from North America, *Sagittaria platyphylla* (also known as *S. graminea*) is commonly known as sagittaria in New South Wales and arrowhead in Victoria. Sagittaria has been introduced to many countries as an ornamental aquatic plant and despite concerted efforts, it has continued to spread to new areas. It is now prevalent in the irrigation infrastructure and some natural waterways in northern Victoria and southern NSW. It now infests the Murray, Goulburn, Ovens, Edward and Loddon rivers and associated irrigation and drainage networks. Infested irrigation areas include Shepparton, Murray Valley, Central Goulburn, Pyramid-Boort and Torrumbarry.

It is important to prevent further spread of the species. Sagittaria was officially recorded in the Murrumbidgee Irrigation Area in 1990. It could have been introduced to the region in a number of ways, including birds transporting the seed, stock transporting vegetative fragments, or escaping from garden ponds where it is grown as an ornamental plant.

At present, the weed is not widespread in the MIA. If no action is taken, there is a possibility that the weed will spread

and become a major problem, as has occurred in the northern Victoria irrigation areas. Once in rivers, sagittaria spreads rapidly throughout irrigation areas. It further spreads when water is pumped out of the river and introduced into local farm channels. There are a number of rivers that are currently uninfested including the Murrumbidgee, Darling, Gwydir and Lachlan rivers. All of these rivers would also appear to be at high risk if isolated infestations of sagittaria are not contained.

Plant identification

Sagittaria can be found in irrigation channels and drains, creeks and rivers, lagoons, dams and wetlands. It generally favours static or slow moving, shallow water.

Sagittaria exists in three morphological forms: narrow-leaved emergent, broad-leaved emergent and submersed rosette. The emergent forms are generally found in water less than one metre in depth. The rosette form can survive in deeper water.

Sagittaria can grow up to 150 cm in height. The stems are triangular in cross-section. The flowers appear in whorls (three or more petals radiate from a single node) – the upper whorls are male and the lower whorls, with three white petals and a yellow centre, are female. The flowers are borne on separate flowering stems, below the height of the leaves.

Sagittaria can produce via several methods. It is a prolific seeder, with each plant having the ability to produce up to 20,000 seeds. Sagittaria can also reproduce vegetatively,

whether by stem or root fragments, or through underground structures such as rhizomes (horizontal stems which produce both roots and shoots) and corms (fleshy organs which form at the end of rhizomes). Its many methods of reproduction allow it to spread rapidly and survive adverse conditions and resume growth when conditions are more favourable.

Sagittaria can be confused with other similar looking species such as the NSW arrowhead (*Sagittaria montevidensis*), water plantain (*Alisma plantago-aquatica*) and alisma (*Alisma lanceolatum*).

Legislation and classification

In NSW, sagittaria is declared as a Class 4 and Class 5 noxious weed under the *Noxious Weeds Act 1993* (Table 1). The Class 4 category applies to many local control authority areas in southern NSW, which include the irrigation regions, and one in northern NSW, while the Class 5 category concurrently applies throughout NSW.

Although sagittaria is not currently declared as a noxious weed in Victoria, the species is currently under review.


Current research

The presence of sagittaria in the irrigation areas of northern Victoria and southern NSW has been known since the 1960s. Since the 1980s, it has been an increasing problem. Despite concerted efforts, sagittaria has continued to spread.

Why does sagittaria continue to spread?

Sagittaria is a problem which is present over a large geographic area. Within this geographic area, there

are many concerned stakeholders. These stakeholders include government departments and agencies, private organisations, and individual landowners. They are all directly affected by sagittaria and are the key in the effort to overcoming this weed.

Charles Sturt University is currently conducting research into identifying the social aspects of the increasing problem of sagittaria. This will include an examination of the roles different agencies play in addressing the spread of the weed, and how they interact, communicate and cooperate. The project involves a series of semi-structured, informal interviews with people concerned about sagittaria. 

Further information

Local council weeds officers, agronomists and advisors with New South Wales and Victoria Departments of Primary Industries.

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Further reading

Aquatic Plant Services. (2004). *The Biology and Control of Arrowhead*.

Ensbey, R. & Johnson, A. (2007). *Noxious and Environmental Weed Control Handbook: a guide to weed control in non-crop, aquatic and bushland situations (3rd ed.)*. NSW Department of Primary Industries.

Goulburn Murray Water. (2001). *Arrowhead Sagittaria graminea*.

Table 1: The weed type and control requirements for Class 4 and Class 5 noxious weeds declared under the Noxious Weeds Act (NSW) 1993. Source: NSW DPI.		
	Class 4 – Locally controlled weeds	Class 5 – Restricted plants
Weed Type	Plants that pose a threat to primary production, the environment or human health, are widely distributed in an area to which the order applies and are likely to spread in the area or to another area.	Plants are likely, by their sale or the sale of their seeds or movement within the State or an area of the State, to spread in the State or outside the State.
Control Requirements	The growth and spread of the plant must be controlled according to the measures specified in a management plan published by the local control authority.	The requirements in the <i>Noxious Weeds Act 1993</i> for a notifiable weed must be complied with. This includes being prohibited from sale or purchase in any area of NSW.



Figure 1: Sagittaria choking the Broken Creek at Numurkah, Victoria



Figure 2: A thick stand of sagittaria in flower. Photo: J Wilding.