Source: http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/weeds/a-z-of-weeds/patersons-curse Downloaded 13/11/2015

Paterson's Curse

Common name: **Paterson's curse**

Scientific name: *Echium plantagineum L.*

Other scientific name/s:

Other common name/s: Patterson's curse, salvation Jane.

Plant status

Catchment management authority boundaries

Regionally controlled in the North Central, Corangamite, Port Phillip and Western Port, Goulburn Broken, North East, West Gippsland, East Gippsland, Wimmera and Glenelg Hopkins catchments

Restricted in the Mallee catchments

Read more about the classification of invasive plants in Victoria

Plant Images

Plant biology

Appearance	Herbaceous plant – Forb (flowering herbaceous plant - not a grass)

Description	Paterson's curse is an annual, occasionally biennial, herb that grows as a rosette in autumn and winter and produces flowering stalks in spring and early summer. The rosette usually grows parallel to the ground, however the leaves may be erect in dense vegetation.
Stems	The stems of Paterson's curse are stout, erect and commonly 30-60 cm tall, but often taller (rarely to 2 m). They are light-green in colour and densely covered with coarse bristles. Stems branch mainly towards the top; often several stems emerge per plant.
Leaves	Paterson's curse leaves are green to light-green, alternate, thick and densely covered with soft or bristly hairs. Basal (rosette) leaves are up to 30 cm long, are shortly stalked, elliptical-to-oval or paddle-shaped and conspicuously veined. These leaves die off as stem growth increases. Stem leaves are smaller, strongly haired, stalkless, oblong-to-lance-shaped and heart-shaped at the base, almost clasping the stem.
Flowers	The flowers of Paterson's curse are located in curved terminal clusters and are funnel-shaped. They are usually purple but may be blue, pink or, rarely, white. The flowers have a calyx of 5 bristly, linear-to-lance-shaped sepals, are 8-11 mm long, elongating to 15 mm in the fruit. The petal tube may be 20-30 mm long with 5 stamens, 2 of which are longer than the other 3 and protrude from the petal.
Fruit	Paterson's curse plants produce four nutlets, surrounded by the persistent, stiff, bristly calyx.
Seeds	The seeds of Paterson's curse are dark brown to grey and tough, angular and beaked. They are up to 3 mm long and 2 mm wide, are three-sided, strongly wrinkled and pitted.
Roots	Paterson's curse roots consist of a stout tap-root with numerous laterals.

Growth and lifecycle

Method of reproduction and disperal

Plants can be found in all stages of growth throughout the year, however most of the population follows an annual cycle, with seeds germinating after the first autumn rains and rosettes increasing in size over winter.

Plants begin to produce flowering stalks in late winter, commence flowering in early spring and die in summer. The first mature seeds are produced four to six weeks after flowering commences.Seed can be spread by vehicles and farm implements, water, animals (livestock, birds, ants), on clothing and in hay, silage, wool, soil and commercial seed. Livestock can carry seed in their digestive tract or directly on their coats.

Seedbank propagule persistence

Soil seed banks of up to 30,000 seeds per square metre have been found in ungrazed pastures and 13,000 seeds per square metre in grazed pastures. Most seeds germinate in the autumn after they are produced, but some can remain dormant in the soil for at least five years.

Similar Species

Paterson's curse is distinguished from viper's bugloss, *Echium vulgare,* by leaf and flower characteristics. In Paterson's curse, only 2 of the 5 stamens project beyond the flower tube and the rosette leaves are paddle-shaped with conspicuous lateral veins. In viper's bugloss, 4 of the 5 stamens project beyond the flower tube and the rosette leaves are linear and lack conspicuous lateral veins. Viper's bugloss flowers are blue (not purple) and the petal tube is markedly shorter (12 mm to 15 mm) than that of Paterson's curse (20 mm to 30 mm). Italian

bugloss, *Echium italicum*, occurs in southern NSW and South Australia, near the Victorian border. It is similar to viper's bugloss but it is more densely hairy and has pale yellow or cream flowers.

Origin

Native to regions around the western Mediterranean, naturalised in Australia between 1850 and 1900.

Preferred habitat

Paterson's curse occurs mainly in degraded pastures, on roadsides and in disturbed sites, in warm temperate areas with Mediterranean-type or semi-arid winter rainfall climates. It does not grow well on alkaline or lime-rich soils.

Distribution

Paterson's curse infestations have been found in numerous locations around the state, but particularly in the north central and north eastern regions.

Growth calendar

The icons on the calendar below represent the times of year for flowering, seeding, germination.

Paterson's curse flowers from July to January and sets seed from August to March. Seeds germinate from March to May and plants die off from around December to February. As Paterson's curse is an annual, it completes its life cycle, from germination to the production of seed, in one year and then dies.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flowering	✿							✿	✿	✿	✿	✿
Seeding	●	●	●					●	●	●	●	●
Germination			●	●	●							
Dormancy												
Treatment												

Impact

Impact on ecosystems and waterways

Paterson's curse can invade areas of natural vegetation, particularly where there is frequent disturbance, and can suppress smaller plants.

Agricultural and economic impacts

Paterson's curse is poisonous to grazing animals. The plant contains pyrrolizidine alkaloids which cause cumulative chronic liver damage, loss of condition and sometimes death. The alkaloid concentration of plants in the rosette stage is twice that of flowering plants. Pigs and horses are most susceptible. Ruminants (sheep, cattle and goats) are less affected because the alkaloids are largely broken down in the rumen. The plant is nevertheless extensively grazed in mixed pastures in southern Australia by sheep and cattle without drastic harmful effects,

and is as nutritious as desirable pasture species. Mortality of sheep and cattle can be avoided by good livestock and pasture management.

The plant reduces pasture productivity by competing for light, moisture and nutrients with desired species.

When Paterson's curse displaces legumes in a pasture, nitrogen fixation is reduced and soil fertility declines unless fertiliser is applied.

In dairy areas, the stiff bristles on the plant irritate the udders of cows.In subterranean clover seed crops, Paterson's curse seeds are difficult to separate in the cleaning process, therefore reducing crop quality.

Management

Prescribed measures for the control of noxious weeds

- Application of a registered herbicide
- Physical removal

Important information about management and control of invasive plants

Other management techniques (if applicable)

Spread prevention, biological control and changes in land use practices may also support Paterson's curse managment after implementing the prescribed measures above.

Read more about management and control of invasive plants

References

Jeanes, J.A. (1999) Boraginaceae. Pp. 387-411 in N.G. Walsh & T.J. Entwisle (Eds.), *Flora of Victoria Volume 4*. *Dicotyledons Cornaceae to Asteraceae*. Melbourne, Inkata Press.

Morley, T. and Stapleton, P. (1999) The Paterson's Curse Management Handbook. East Melbourne, Department of Natural Resources and Environment.

Piggin, C.M. (1979) Control of Echium plantagineum L. with 2,4-D and grazing management. Weed Research 19, 17-23.

Piggin, C.M. and Sheppard, A.W. (1995) Echium plantagineum L. Pp. 87-110 in Groves, R.H., Shepherd,

R.C.H. and Richardson, R.G. (Eds.) The Biology of Australian Weeds Volume 1. Melbourne, R.G. and F.J. Richardson.

Smyth, M.J., Sheppard, A.W. and Swiepik, A. (1997) The effect of grazing on seed production in Echium plantagineum. Weed Research 37, 63-70.

Taylor, U. and Sindel, B. (2000) The Pasture Weed Management Kit. A Guide to Managing Weeds in Southern Australian Perennial Pastures. Adelaide, Cooperative Research Centre for Weed Management Systems.

Annabel Bowcher, and Di Holding, Weeds CRC (NSW DPI, Wagga Wagga, NSW). Ref: 25/2004/fs