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WESTERN AUSTRALIAN DEPARTMENT OF AGRICULTURE

POISON PLANTS OF WESTERN AUSTRALIA

HEART-LEAF POISON

RIVER POISON

STIRLING RANGE POISON



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## POISON PLANTS OF WESTERN AUSTRALIA

The toxic species of the genera  
*Gastrolobium* and *Oxylobium*

HEART-LEAF POISON (*Gastrolobium bilobum* R.Br.).

RIVER POISON (*Gastrolobium forrestii* A. J. Ewart.).

STIRLING RANGE POISON (*Gastrolobium velutinum* Lindl.).

By T. E. H. APLIN, B.Sc., Botanist

THIS article deals with heart-leaf poison, river poison and Stirling Range poison, all more or less restricted to the lower South-Western Region of Western Australia.

### HEART-LEAF POISON

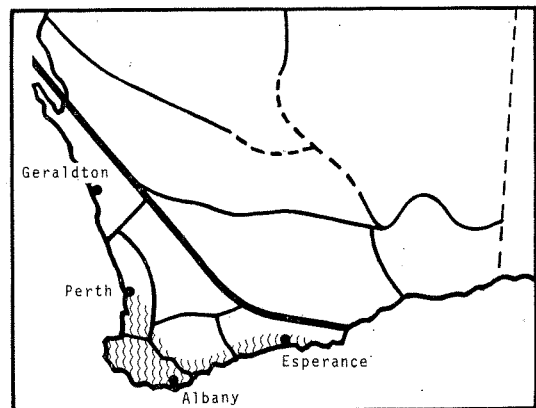
HEART-LEAF POISON, found in the lower south-west region from the Helena River near Perth, eastwards to Wagin, and southwards along the coast to as far east as Cape Le Grand near Esperance, occurs typically in association with granite rocks or on the banks of water-courses.

Heart-leaf poison is a shrub or small tree, according to locality. The smaller forms are more commonly seen on granite hills, while the larger forms, which may grow up to 20 ft. high, usually occur along the banks of water courses.

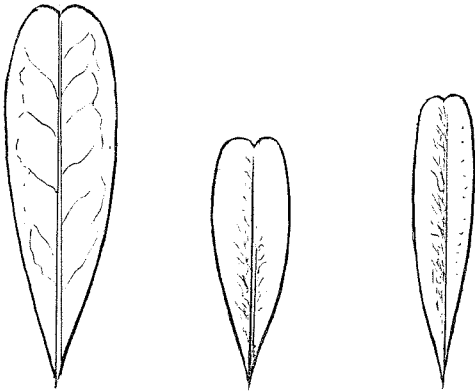
The branches and branchlets of heart-leaf poison are angled, with the ribs proceeding from the leaf stalks.

The leaves, arranged in whorls of three or four, are oblong in shape, notched at the apex, and gradually tapering into a narrow base. They are dark green and shiny above, and pale and finely hairy underneath, with a prominent midrib. The fine, erect, slender stipules are longer than the short leaf-stalks.

The botanical name of heart-leaf poison is derived from the Latin, *bilobus*, having two lobes, and alludes to the two-lobed leaf apex, which is shaped more or less like a heart. The common name, also in reference to the apex of the leaf, has been in use for more than 100 years.



Distribution of heart-leaf poison.



Leaves of heart-leaf poison

The inflorescence (the arrangement of the flowers on the flowering stalk), in heart-leaf poison, unlike that in most of the other toxic species of the genus *Gastrolobium*, is a condensed raceme, with each individual flower-stalk or pedicel longer than the calyx. The racemes are borne at the ends of the branchlets.

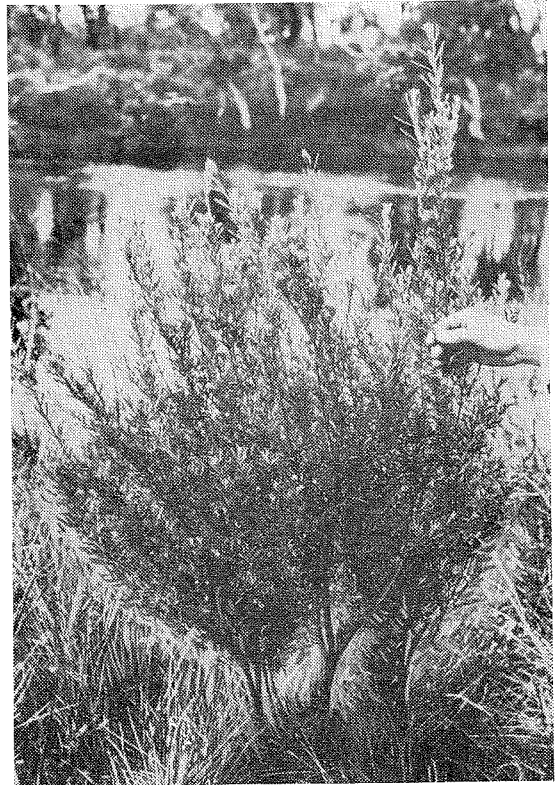
The flowers are yellow, coloured with red. The calyx-lobes are acute, with the two lobes behind the standard (the large petal) broader, and more united than the lower three lobes. The seed pods are egg-shaped, pointed at the top, and borne on stalks.

## RIVER POISON

RIVER POISON, as its name implies, is usually found on the banks of rivers or streams, or in low-lying areas close to watercourses. It occurs from the Preston River near Bunbury, to the Hay River near Albany, and inland almost to Mt. Barker.

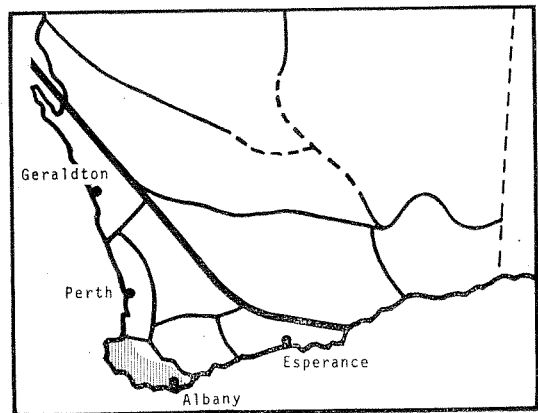
River poison is a shrub from 4 to 5 feet high, but sometimes growing up to 12 feet high. It has erect, slender, angled (usually four-ribbed) branchlets.

The leaves are arranged in whorls of four, or rarely five, with each whorl fairly widely spaced one from the other along the stem. They are deep green above and somewhat paler underneath, very narrow to almost linear in shape, 1 to 2 in. long, and borne on a short stalk. The bases of the leaves are rounded, while the apices are usually notched with a long slender point in the notch. The mid-rib is prominent on the undersurface while the margins



## RIVER POISON

River poison (*Gastrolobium forrestii* A. J. Ewart) is as its common name implies a species inhabiting the banks of rivers or low-lying spots close to water courses. It is found from the Preston River southwards to the Hay River near Denmark. It is a shrub which sometimes attains a height of about 12 feet.



Distribution of river poison.





### HEART-LEAF POISON

Heart-leaf poison (*Gastrolobium bilobum* R. Br.) is a shrub or small tree usually associated with granite rocks or the banks of rivers. It is found along the Helena River, eastwards to Wagin, and southwards to Albany and along the south coast to Cape Le Grand near Esperance. Heart-leaf poison was early recognised as a toxic species and is one of the most poisonous of plants found in Western Australia.



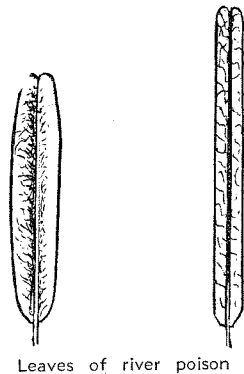


### STIRLING RANGE POISON

Stirling Range poison (*Gastrolobium velutinum* Lindl.) derives its common name from its association with the Stirling Range. It is found in the Mt. Barker district and extends eastwards to near Lake King. The Lake King form has narrow revolute leaves, while the Mt. Barker form has broad, almost flat leaves.

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Leaves of river poison

are slightly rolled-in underneath. The stipules are slender and longer than the leaf-stalks.

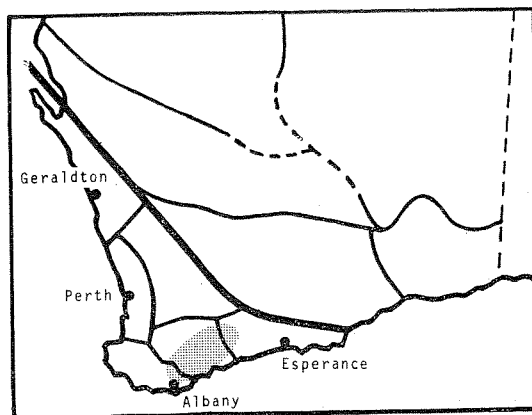
The flowers are borne on erect, elongated racemes 5 to 6 in. long, in distant whorls of about four flowers. The individual flower-stalks or pedicels are about as long as the calyx. Both the pedicels and the calyces are hairy with close, scarcely spreading hairs. The two upper lobes of the calyx are united almost to the top while the three lower lobes are acute, with slender points. The corolla is yellow, coloured with purple. The black seed pods are much longer than the calyx and borne on distinct stalks.

River poison bears a superficial resemblance to heart-leaf poison. It may be distinguished from heart-leaf poison by its narrower leaves which do not taper towards the base, its elongated racemes, and its relatively short pedicels. The botanical name of river poison commemorates Lord John Forrest, who first collected the species on the Blackwood River.

## STIRLING RANGE POISON

STIRLING RANGE POISON, found from Tenterden and Mt. Barker eastwards to the Phillips River and to near Lake King, derives its common name from its association with the Stirling Range.

Stirling Range poison is a shrub 2 to 4 ft. high. In its typical form the leaves are somewhat wedge-shaped, with the margins slightly in-rolled underneath. Broader-leaved forms, found in the Mt. Barker district, have leaves that are

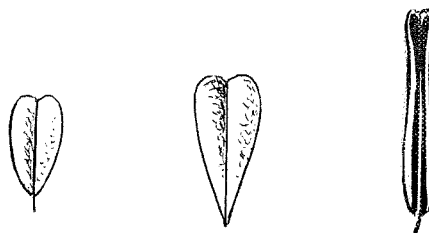


Distribution of Stirling Range poison.

relatively flat and hairless beneath. The extremely narrow-leaved form, found at Burkett Rocks in the Lake King district, possess in-rolled margins similar to the variety *revolutum* of box poison, and with densely velvety hairs on the undersurface.

The racemes of Stirling Range poison are borne at the ends of the branchlets, and are much longer than the leaves. The axis of the raceme and the flower stalks or pedicels are downy-hairy. The calyx varies from downy-hairy to almost hairless. The two upper lobes of the calyx are united almost to the top.

The botanical name is derived from the Latin *velutinus*, meaning velvety, and refers to the downy hairs found on some forms of this species.



Leaves of Stirling Range poison

## TOXICITY OF THESE POISONS

HEART-LEAF POISON was first discovered to be toxic to goats and other animals at King George Sound in the early days of settlement. Bentham (1864) reported it as being "the worst of the poison plants".

Herbert (1921) first reported STIRLING RANGE POISON as being a toxic species.

Carne, Gardner and Bennetts (1926), included RIVER POISON in their list of suspected toxic species, while Gardner (1937) first reported that this species definitely was toxic to sheep, cattle and horses.

The toxic principle, mono-fluoroacetic acid, first characterised in wall-flower poison by McEwan (1964) and almost simultaneously and independently in rock poison and box poison by Cannon, has been reported by Aplin (1967) in heart-leaf poison, river poison and Stirling Range poison. This substance, better known by its sodium salt "1080" the well known rabbit poison, is highly lethal to all domestic stock.

Heart-leaf poison has been shown to contain up to 2,650 parts per million of "1080" equivalent, on an air dry basis. At this level of toxicity less than 1 oz. of fresh green leaves would be sufficient to kill a 110 lb. sheep.

The one sample of river poison and the one sample of Stirling Range poison analysed to date have been shown to contain 1,200 and 300 parts per million of "1080" equivalent respectively.

It is evident from field reports and from chemical analyses of the toxic principle that all three species are extremely dangerous to stock.

These plants, like other plants containing mono-fluoroacetic acid, become acutely toxic when growth activity is taking place within the plant. They are therefore most hazardous with the appearance of new growth or when the plants are at the flowering or fruiting stage.

Other factors, such as the fluorine availability in soils and the acidity or alkalinity of soils which also determine the toxicity

of these plants, could account for variations in toxicity from one locality to the next.

All three species do not normally sucker when cut at ground level. However, under exceptional conditions, Stirling Range poison does sucker from the roots, so that it is advisable to grub this species, rather than cut the plant at ground level, to ensure its destruction. All bushes that have been killed should be heaped and burnt rather than left for stock to consume as the leaves of these plants are known to retain their toxicity when dry.

*There is no effective remedial treatment for stock poisoned by these toxic species.*

Farmers and graziers should learn to recognise all toxic plants, particularly those likely to occur in the district. Stock should not be exposed to the hazards presented by them. Eradication of all poison plants from land to be used for stock-raising activities is the only means of protecting stock from this danger.

If in doubt as to the identity of any poisonous plant, specimens of suspected plants may be submitted for identification and comment to the Officer in Charge, Botany Branch, Department of Agriculture, South Perth.

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