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POISON PLANTS OF WESTERN AUSTRALIA

PRICKLY POISON and BULLOCK POISON



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POISON PLANTS OF WESTERN AUSTRALIA

The toxic species of the genera
Gastrolobium and *Oxylobium*

PRICKLY POISON and BULLOCK POISON

(*Gastrolobium spinosum* Benth.)

(*Gastrolobium trilobum* Benth.)

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PRICKLY POISON

PRICKLY POISON is one of the most widely distributed and one of the most variable of species of the genus *Gastrolobium*.

It derives its common name from the fact that in the typical form of this species the leaves have prickles along the margins and at the apex. Its botanical name, derived from the Latin *spinosus*, means spiny.

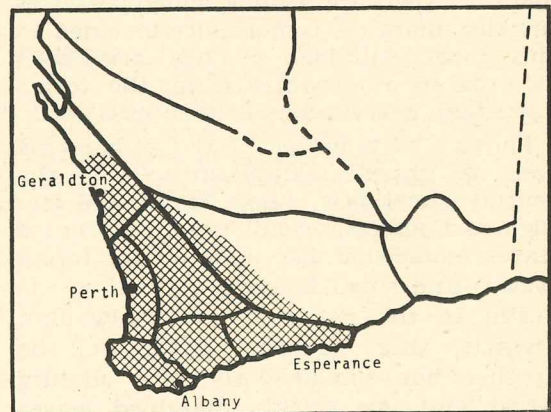
Prickly poison, found practically all through the South-Western Vegetation Province, extends partly into the Eremaean Vegetation Province.

Bentham (1864) recognised the typical prickly poison and one variety. Pritzel (1904) described a further variety, while Spencer Moore (1920) described three more varieties. Herbert (1921) and Carne, Gardner and Bennetts (1926) recognised two varieties of prickly poison and four forms including the typical form, while Gardner (1955) described yet another variety.

Gardner and Bennetts (1956) recognised four varieties of prickly poison, *spinosum*, *trilobum*, *triangulare*, and *grandiflorum*, as occurring in Western Australia. These

four varieties provide the basis for our present classification of forms within this species.

The variety *spinosum*, which is the most widely distributed and variable variety, occurs in several forms. These forms often



Distribution of prickly poison

merge one into the other so that clear-cut distinctions are often difficult to make. Four main forms of this variety are broadly recognised.

Forma *typica*, the common prickly poison or tree poison, found from Northampton southwards to Harvey and eastwards to around Kellerberrin, is probably most readily seen in the jarrah and wandoo associations of the Darling Range. This form has broad, stalkless, prickly margined leaves. The spines are more than three, or if only three, are present in the upper part of the leaf and not at right angles to the mid-rib. The stipules at the leaf-base are small. The racemes are short and are often axillary as well as terminal.

The calyx is usually hairless, while the ovary and later the seed-pod, is borne on a long stalk.

Forma *crassifolium*, found in the region between Brookton and Cranbrook, has thick, rigid, blue-grey leaves, with both prickly margined as well as entire leaves usually occurring on the same shrub. The flowers in this form are small. The corolla is yellow and purple, and the calyx is less than $\frac{1}{4}$ in. long. This form occurs on gravelly sandplain soils and is locally referred to as "bloom poison" or sometimes "bullock poison."

Forma *inermis*, the most distinct form of which is found between Narrogin and Katanning, is a shrub, 2 to 4 feet high. It has narrow, entire leaves. Further to the south and to the east the leaves possess prickles, from the base upwards. The prickly poison of the Great Southern and the Esperance regions, which possesses prickled margins, is normally included in this form, although it has also been referred to as separate form, the forma *angustum*, described by Pritzel (1904).

Forma *parviflorum*, more commonly seen on gravelly sandplain soils in the central wheat-belt region, stands 5-6 feet high, and possesses small, prickly margined leaves (somewhat like a miniature forma *typica*) and small flowers. Further to the north, in the Perenjori and Dalwallinu districts, there is what could well be another but similar form with slightly larger and less prickly margined leaves and with larger flowers.

The variety *trilobum*, found in the north central wheatbelt region from Wongan Hills eastwards, is a low spreading shrub rarely more than two feet in height and much exceeding this in breadth. It is usually confined to white clay soils associated with morrel and ribbon-barked mallee. This variety can be readily distinguished by its triangular, three-spined, grey-blue, small and rigid leaves.

The variety *triangulare*, which is restricted to the Northampton-Geraldton region and commonly seen on the hills in that area, is geographically isolated from the variety *trilobum*. This variety can be distinguished by its broadly triangular, prominently net-veined, rather thin, green leaves which are obtuse at the corners, each of which terminates in a slender but rigid spine.

The variety *grandiflorum*, which grows on open sandplain country from Mingenew south-eastwards to Beacon is a low shrub with widely spreading, almost horizontal branches, and large orange-red flowers. The leaf is almost kidney-shaped or broadly heart-shaped, deeply indented at the base, not very thick but rigid, pale green in colour and with the apex somewhat abruptly narrowed into a long, slender, rigid spine. The flowers are almost twice the size of those of the other varieties of prickly poison.

BULLOCK POISON

Bullock poison, which resembles the variety *trilobum* of prickly poison, has a specific name derived from the Greek *treis*, three, *lobos*, a division, and alludes to the shape of the leaf which is of three-cleft formation.

This species differs from prickly poison in that the bases of the leaves are wedge-shaped or rounded and are not indented or heart-shaped. The flowers of bullock poison are arranged in short racemes in the leaf axils and are never in terminal racemes as in prickly poison.

Bullock poison, which is more commonly associated with wandoo woodlands, is found in a relatively narrow belt of country from Miling southwards to Katanning.



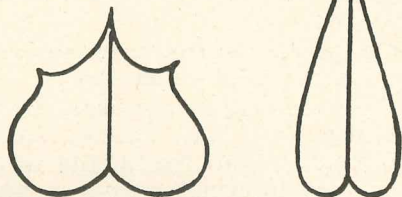
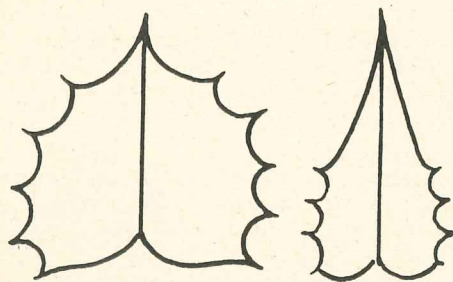
PRICKLY POISON

Prickly poison (*Gastrolobium spinosum* Benth.) exhibits considerable variation in leaf size, shape and texture, in the presence or absence of spines and in the size of its flowers. Its range extends from the Murchison River to the south coast as far east as Israelite Bay, and inland to Southern Cross. Prickly poison, while considered by some to be relatively harmless, has in recent years caused serious livestock losses and should be treated as a definite hazard.

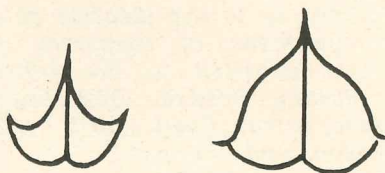


BULLOCK POISON

Bullock poison (*Gastrolobium trilobum* Benth.) is restricted to a relatively small area. It is usually associated with wandoo woodland on the eastern edge of the Darling Range. Bullock poison resembles a form of prickly poison but differs in the spines being projected forward, not laterally, and in the wedge-shape or rounded leaf-base, not indented like a heart. This species is rarely implicated in livestock losses because of its prickly nature. However, the new shoots and flowers which are palatable to stock can cause poisonings when eaten.

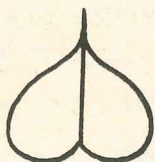


Var. *spinosum*



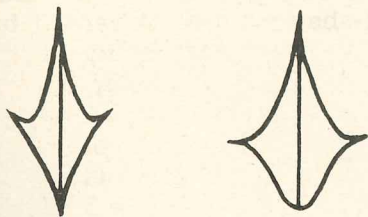
Var. *trilobum*

Var. *triangulare*

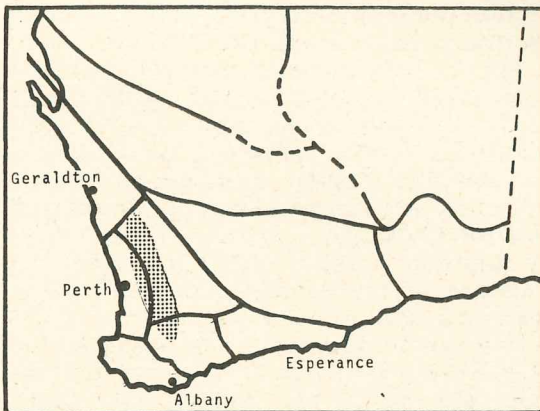


Var. *grandiflorum*

LEAVES OF PRICKLY POISON



LEAVES OF BULLOCK POISON



Distribution of bullock poison

TOXICITY OF PRICKLY POISON AND BULLOCK POISON

Prickly poison was first identified as the cause of stock losses at Katanning by Morrison (Anon. 1901). At that time there was some doubt amongst settlers as to whether the plant was toxic or not. Morrison stated that prickly poison was normally unattractive to stock, but that under certain circumstances the plant was eaten by stock with serious results.

Herbert (1921) first listed bullock poison as a toxic species. He stated that the flowers were often nipped off by stock with fatal results.

Carne, Gardner and Bennetts (1926) reported both species as being toxic, but said that in many areas prickly poison was regarded as being harmless. They reported that this species was sometimes referred to as "Grover poison," being named after a stock-owner who suffered considerable loss of stock through this plant.

Bennetts (1935) showed that prickly poison was toxic to sheep drenched with extracts of the plant. Only one out of four collections used in his experiments proved to be toxic.

Gardner and Bennetts (1956) regarded the variety *grandiflorum* of prickly poison to be the most toxic form of this species. They also regarded the variety *triangulare*, and the forms *crassifolium* and *parviflorum* of the variety *spinosum* to be highly toxic. They regarded forma *typica* of the variety *spinosum* to be the least toxic of all. Gardner and Bennetts considered

bullock poison to be a plant that was rarely incriminated in stock losses.

The toxic principle, mono-fluoroacetic acid, better known by its sodium salt "1080" the rabbit poison, was first characterised in a toxic species of *Gastrolobium* by McEwan (1964), and almost simultaneously and independently in a species of *Gastrolobium* and a species of *Oxylobium* by Cannon. Aplin (1967) reported the presence of measurable quantities of the toxic principle in prickly poison.

One sample of the variety *grandiflorum* of prickly poison has been shown to contain 400 parts per million of "1080" equivalent, on an air-dry basis. At this level of toxicity, approximately 6 oz. of fresh, green leaves would be sufficient to kill a 110 lb. sheep.

A sample of the forma *inerme* of the variety *spinosum* has been shown to contain 100 parts per million of "1080" equivalent.

Samples of the forma *typica* of the variety *spinosum* of prickly poison and samples of bullock poison have usually given negative tests for "1080". However, on one occasion, young shoots of prickly poison gave a strong positive result for "1080". This result was not measured quantitatively, but it does indicate that the time of sampling can be very important in determining the toxic levels that may be reached by a species or form of poison plant.

There have been several reports of heavy losses of stock due to the consumption of prickly poison in recent years. The forma *typica* of the variety *spinosum*, usually considered to be relatively harmless, has been incriminated in a number of these cases, and should therefore be treated as a definite hazard. In practically all the cases investigated there was a considerable amount of young, palatable growth, or flowering material, which no doubt proved to be more attractive to and were more toxic to stock than the mature, prickly leaves.

Levels of mono-fluoroacetic acid in plants depend to a large extent on the amount of growth activity taking place within the plant. It is usually considered that plants containing this toxic principle are most dangerous when young shoots are present, or when at the flowering or fruiting stage. Levels of mono-fluoroacetic acid

in plants also depend upon the levels of available fluorine in the soil, and upon the acidity or alkalinity of the soil. Variations in these factors could account for variations in the toxicity of plants from one site to the next.

All forms of prickly poison and bullock poison can be destroyed by cutting the plants at ground level as neither species normally produces root suckers. Stock-owners are advised to heap and burn all dead bushes as the dried leaves of these plants retain their toxicity and may cause stock losses.

There is no effective remedial treatment for stock poisoned by either species.

Farmers and graziers are urged to learn to recognise these two species, as they occur in their various forms, and to avoid exposing stock to either species, especially when feed is scarce and when new growth or flowering material is present on the plants.

To be absolutely certain that no stock losses occur one would be well advised to eradicate all plants of both species before utilising any particular area for stock-raising pursuits.

If in doubt as to the identity of either species, specimens of suspected plants should be submitted to the Officer in Charge Botany Branch, Department of Agriculture, Jarrah Road, South Perth, for identification and comment.

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