



PORT JACKSON WILLOW

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Port Jackson willow [*Acacia saligna* (Labill.) Wendl.; family Fabaceae], an invader plant from Australia, is spreading rapidly and threatens to replace the natural Cape vegetation. Large areas, such as the Cape Flats, are already dominated by Port Jackson willow and rooikrans (*A. cyclops* A. Cunn. ex G. Don).

The Afrikaans common names are "Port Jackson", "bloublaarwattel" and "goudwilger". Other English common names include "Port Jackson acacia" and "golden willow", while in Australia it is known as "blue-leafed wattle", "golden wreath wattle" or "orange wattle". A former scientific name was *Acacia cyanophylla* Lindl.

MORPHOLOGY

Port Jackson willow is a thornless, evergreen shrub or small tree with an open, willowy

appearance. It usually grows in the form of a shrub, but may reach a height of 10 m where it is not in competition with other plants. It may be single or multiple stemmed. The bark of young plants or new branches is smooth and greyish, but as the plant grows older, it darkens and cracks.

The plant lacks true leaves, but has flattened, leaf-shaped leaf stalks (phyllodes). The straight, sometimes slightly curved phyllodes are borne at an angle to the branch, in contrast to the bunches of distinctly curved, pendulous phyllodes of the golden wattle (*A. pycnantha* Benth.) The phyllodes of Port Jackson willow are about 1 to 5 cm wide and up to 20 cm long, with a blue green colour and a single conspicuous midrib. The thick phyllode stalk bears a fairly large nectary on the upper side.

The phyllodes on young plants and coppice shoots are much wider and more wavy than those on older parts of the plant, and pinnate leaves may occur on their tips, resembling the feathery leaves of indigenous South African *Acacia* species. Older plants only have phyllodes.

The globose, bright-yellow inflorescences, 10 to 12 mm in diameter, are produced in bunches of 5 to 10, from August to November, with a peak during September. These give rise to long, narrow, flattened pods, 5 to 10 cm long and 5 to 6 mm wide. The pods are straight and slightly constricted between the seeds. They are borne in bunches and not singly as in some of the other *Acacia* species. The numerous ripe seeds are released in December and soon



FIG. 1 – Port Jackson usually grows in the form of a shrub, but may reach a height of 10 m where it is not in competition with other plants



FIG. 2 – The phyllodes are characterised by a single, conspicuous midrib. The inflorescences are rounded and bright yellow

afterwards the empty pods also drop and there are usually large quantities of seeds under the trees. The seeds are dark-brown or black and slightly flattened, with a short, thick, off-white seed stalk.

DISTRIBUTION

Port Jackson, the harbour area of Sydney, Australia, after which this plant has been named, is not the original home of this plant. It is actually a native of the south-western parts of Western Australia, where it is common on sandy soils in the coastal area with a high rainfall (380 mm p.a.), although it also extends along rivers, erosion furrows and along dry river beds in the drier 250 mm rainfall area. It has also become naturalized in other parts of New South Wales.

The first Port Jackson willows were planted in South Africa in 1848 to stabilize the loose sand which threatened to cover the new road from Cape Town to Bellville. This project was an immediate success: Port Jackson willows flourished and were later planted on a large scale at various other places along the Cape coast for sand binding.

It was later found that the bark of three of the introduced Australian wattle species was very rich in tannin (used in the tanning of leather), and that Port Jackson willow was the only one of the three that would thrive on the Cape Flats. Large areas were therefore planted to Port Jackson willow in state forests and on private farms, in order to establish an export industry. However, the export of Port Jackson willows soon collapsed because the black wattle (*A. mearnsii* De Wild) in Natal proved to produce tannin of superior quality. The result was that the Port Jackson willow plantations were neglected and the trees started spreading uncontrollably. At present their numbers are only reduced by collectors of firewood and incidental fires.

Port Jackson willow is wide-spread along the South African coast, from the Orange River in the north-west to at least as far eastwards as Kosi Bay. In the past the plant was mainly restricted to the coastal plain in areas with an annual rainfall of at least 250 mm, but it has since spread inland especially along river valleys of the South-Western Cape, e.g. the Breede River. Although it was initially thought that dry conditions and subtropical areas with infrequent veld fires would arrest the spread of Port Jackson willow, it has already established itself in the Transvaal and Natal. It also thrives in Zambia, especially on mine dumps.

A 1973 survey showed that in South Africa 20 000 ha were already infested by Port Jackson willow.

GROWTH AND PROPAGATION

Like all the introduced Australian *Acacia* species, Port Jackson willow produces large quantities of hard-coated seeds which remain viable

for many years. Red-winged starlings, doves and baboons are very fond of the seeds and their gastric enzymes break down the seed coat, making it more penetrable to water, leading to good germination. The seeds are thus carried to other areas in animal faeces where they readily germinate and grow.

Seeds are also distributed when sand for roads, dams, buildings and gardens is transported from quarries or river banks where these trees are numerous. Port Jackson willow seeds have even germinated in painted concrete walls!

The main growth season of Port Jackson willow is during spring and summer. Vegetative growth commences in August or September, reaches a peak in November and December, and extends to February or even April.

Regular veld fires favour the plant since fire stimulates germination, giving the seedlings an advantage over the destroyed natural vegetation. Mature plants will also coppice rapidly after a veld fire or when the aerial parts have been cut, thus resulting in dense thickets of Port Jackson willow. Especially along roads stretches sometimes occur where the trees are so dense that tourists are deprived of the view and literally have to drive between walls of Port Jackson willow and rooikrans.

Where rooikrans and Port Jackson willow grow together, rooikrans is gradually being replaced by Port Jackson willow because rooikrans is more often used as firewood, and doesn't coppice as readily as Port Jackson willow. Hardly any other vegetation occurs in a dense infestation of any *Acacia* species - presumably because *Acacia* species secrete certain substances which inhibit the growth of the natural vegetation. In this way Port Jackson ultimately causes erosion instead of preventing it.

LEGISLATION

Under the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) Port Jackson willow has been proclaimed an invader plant throughout the Republic. The plant must therefore be controlled on all farm units in the Republic where it causes the deterioration of natural agricultural resources.

CONTROL

Eradication of Port Jackson willow is a difficult process since the tree readily coppices after being cut or burnt. The large quantities of seeds in and on the soil also remain viable for years or will germinate after veld or bush fires.

To prevent coppicing the entire plant must be removed mechanically, or trees must be ring-barked immediately above ground level. Cut stems may also be treated chemically with dicamba + 2,4,5-T. Seedlings may be pulled out by hand, or be treated with tebuthiuron. Immature plants may be hoed, dug out, ringbarked, or the stem may be cut below ground level.