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Casuarina forests

Casuarina is a genus of about 60 Australian species, with related species in New Guinea, Indonesia, Malaysia and the Pacific Islands. Commonly called she-oaks or oaks, because of the similarity of their timber to European oaks, casuarina species are a distinctive part of the Australian landscape. This forest type also includes the genus *Allocasuarina*.

Only some casuarina species form forest communities, because others are too short or sparse to be classified as forest. Casuarina forests make up about 1% of Australia's total forest area.

Because their roots can produce nitrogen through nodules that contain special bacteria, casuarinas can grow on nutrient-poor soils and other marginal environments, such as granite outcrops or sandy soils. As a result, most casuarina forests tend to be low in stature – sometimes with a dense, shrubby understorey. The tallest casuarina forests occur in riverine habitats, where they may be more than 20 metres tall.

The name 'casuarina' is derived from the Malay word for cassowary, *kasuari*, which refers to the similarity of the drooping foliage to the birds' feathers. The unusual branchlets of casuarina trees look similar to pine needles, and are their most obvious characteristic. They also have woody fruits that increase their resemblance to pines. The needle-like foliage is not composed of true leaves, but rather of green, jointed branchlets that function like leaves. The true leaves are tiny, tooth-like structures protruding from the top of each joint.



Leaf detail



River she-oak (*Casuarina cunninghamiana*) coastal forest, New South Wales



Black Sheoak (*Allocasuarina littoralis*) woodland, Toohey Forest, southeast Queensland

Australian forest profile

Where are Australia's casuarina forests?

Casuarina forests occur in all States and Territories of Australia, with a total area of more than 2 million hectares (Table 1). The largest area of casuarina forest in Australia is in western New South Wales, extending as a band into semiarid zones in South Australia and Queensland (Figure 1). There are also extensive areas in coastal New South Wales. Belah (*Casuarina cristata*) forests have the widest distribution, growing in habitats ranging from stony slopes and calcrete to heavy clay soils.

Typical species of inland areas include belah and river she-oak (*C. cunninghamiana*), which often occur in association with acacias and eucalypts. Pure stands of casuarina are restricted to specific sites, such as coast she-oak (*C. equisetifolia*) on coastal foredunes of eastern Australia, and rock she-oak (*Allocasuarina huegeliana*) on granite soils and outcrops in Western Australia.

Coast she-oak also occurs in association with coastal banksias along the southeastern and eastern seaboard in less exposed sites. Drooping she-oak (*A. verticillata*) forms pure stands on the driest sites in Tasmania, because it is more drought resistant than local eucalypts.

Ownership and management

Nearly half the casuarina forests grow in New South Wales, with 37% in South Australia and 11% in Queensland (Table 2). Nationally, the majority of these forests occur on leasehold land and nature conservation reserves. The total extent on private land nationally is 7%, while less than 2% are located in multiple-use forests or other crown land.



Black Sheoak (*Allocasuarina littoralis*) woodland, Toohey Forest, southeast Queensland

Table 1: Area of casuarina forest by crown cover (hectares)

	Woodland	Open	Closed	Unknown crown cover	Total
Casuarina	359 000	871 000	0	809 000	2 039 000
Total native forest	102 526 000	45 603 000	4 644 000	9 907 000	162 680 000

Source: National Forest Inventory (2003) *Australia's State of the Forests Report*

Figure 1: Casuarina forest distribution



Source: National Forest Inventory (2003)

Note: The distribution represented on this map has been enhanced for clarity

Table 2: Tenure of casuarina forest, by State and Territory (hectares)

Tenure	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia
Leasehold land	0	877 000	0	47 000	95 000	0	0	23 000	1 043 000
Multiple-use forests	0	5 000	0	2 000	0	0	0	0	7 000
Nature conservation reserves	0	61 000	0	69 000	650 000	1 000	3 000	16 000	800 000
Other crown land	0	12 000	0	1 000	14 000	0	0	1 000	28 000
Private land	0	36 000	14 000	90 000	4 000	1 000	1 000	0	145 000
Unresolved tenure	0	8 000	0	6 000	1 000	0	0	0	15 000
Total casuarina forest	0	1 000 000	14 000	216 000	763 000	1 000	4 000	40 000	2 039 000

Source: National Forest Inventory (2003) *Australia's State of the Forests Report*

Values and uses

Wood

The wood of some casuarina species is used in flooring, cabinet-making and other ornamental woodworking. For example, Western Australian she-oak (*Allocasuarina fraseriana*) is used for furniture in Western Australia and forest oak (*A. torulosa*) is used for shingles and shakes in eastern Australia.

The quantities used are small because the resource is limited, but the products are expensive and keenly sought after. The wood of most casuarinas is hard and provides excellent fuel. Coast she-oak is used for timber, poles, pulpwood and mulch. It is reputedly the best fuel wood in the world, because it is relatively smokeless when it burns. It also produces high-quality charcoal. Belah is often used for fence posts and firewood.



Stands of Black Sheoak (*Allocasuarina littoralis*) in southeast Queensland are often associated with an open understorey



Glossy black cockatoo (*Calyptorhynchus lathami*) is one of the forest dwelling species identified as being endangered

Environmental

Casuarinas are important for biodiversity, and remnants of casuarina forests support a wide range of vertebrate and invertebrate fauna. Casuarinas provide food for native wildlife, such as the glossy black-cockatoo (*Calyptorhynchus lathami*), which depends on the seeds of forest oak (*Allocasuarina torulosa*) and black oak (*A. littoralis*) as its primary food source.

Casuarinas are often used for reforestation, because of their value as windbreaks, and in soil reclamation and erosion control.

Indigenous uses

The hard wood of she-oak was often used for making boomerangs, shields and clubs. In Wylie Swamp, South Australia, archaeologists found a 10 000 year old boomerang made from she-oak wood. Young shoots were chewed to reduce thirst, and young cones were also eaten.



Other uses

The foliage of some species, such as river she-oak and belah, is used as fodder for stock during drought. Belah is often used for reforestation, because of its effectiveness as a windbreak. The bark of some casuarinas species was used for tannin production.

River she-oak (*Casuarina cunninghamiana*) coastal forest, New South Wales



Michael E. Ryan



Casuarina

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