Importance of dune vegetation

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Forest (or heath) zone vegetation

The forest zone is usually located landward of the woodland zone on the foredune and in more sheltered hind dune areas. The forest zone represents the climax, or mature state, in the development of vegetation on coastal sand landforms but it is not always present. Excessive exposure to strong winds and salt spray and the presence of hardpans, restricted drainage and saline soils prevent the development of forest vegetation.

In south-east Queensland coastal heath has developed instead of forest in some low-lying, infertile, sandy areas landward of the foredune. Heaths have also developed on high dunes on North Stradbroke Island, Moreton Island and Fraser Island.

In less exposed coastal areas of central Queensland and in tropical areas of north Queensland, forest vegetation is often present on sandy ridges close to the beach.

Several plants which occur in the woodland zone as shrubs or stunted trees become fully developed trees under more favourable growing conditions in the forest zone. For example, paper-barked tea-tree *Melaleuca* sp. is often present as a shrub on the landward slope of the foredune but it forms well-developed forest communities in low-lying hind dune areas because of reduced exposure to strong winds and salt spray, and improved moisture and nutrient-holding capacity of the dune soil.

Forest zone vegetation close to the beach. Wave erosion has removed the foredunes and the pioneer zone vegetation.

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Some forest trees or heath plants growing near the coastline can withstand slightly saline soils and some salt spray, but most are injured or killed by these conditions. However, the forest or heath zone on dunes in south-east Queensland is usually located far enough inland to be protected from strong winds and salt spray and soil salinity is generally not a problem.

The main function of forest vegetation is to stabilise the hind dune areas by holding the sand in place. The vegetation also continues the processes of soil development started in the pioneer and woodland zone. This, coupled with improved habitat conditions, allows more diverse types of plant communities to develop.

Some coastal dune areas are stabilised mainly by the pioneer type of vegetation, particularly where the shoreline is accreting and there is considerable movement of windblown sand. In other areas, the woodland zone occurs close to the beach because wave erosion has removed the foredune and the pioneer vegetation. Severe erosion sometimes results in coastal recession to the forest zone on hind dunes, exposing less tolerant plants to strong winds, salt spray and sandblast. Forest vegetation usually dies when exposed to these conditions and the dune, without its stabilising cover of vegetation, can become susceptible to wind erosion. When this occurs, primary colonising plants of the pioneer zone are needed to stabilise the dune and initiate the redevelopment of the vegetation zonation.
If, however, the exposure of the forest zone vegetation is due to a continuing long term erosion trend, the re-introduction of pioneer plants would be only a temporary measure.

Coastal heath has developed on a low, poorly drained area landward of forest vegetation on the dunal system.