

# NEWS RELEASE

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from New Zealand Forest Service

## FORESTS HALTED DRIFTING SAND DUNES THAT THREATENED FARMLANDS

Few people speeding along State Highway 1 between Wellington and Auckland realise that an area they pass through could easily have been more desert-like than the Desert Road. It is the section from Paekakariki to north of Bulls. Only the observant will notice the dune like nature of the country and the exposed patches of sand where pastures have been overgrazed, but from the air tongues of sand show up clearly as they lick inland towards Hongoatea, some ten miles from the coast.

The sandy beaches of the west coast have become an increasingly popular holiday area. Yet these beaches, which now entice thousands of visitors, once threatened the livelihood of farmers on the valuable pastoral hinterland. Sand dunes, which extend from Paekakariki in a semi-circle for 110 miles to Patea, cover an area estimated at some 270,000 acres. They form an appreciable part of the lowlands of the Horowhenua, Manawatu, and Rangitikei counties.

The problem of drifting sand, borne inland by the prevailing winds, existed even in the early days of settlement. In 1850 Lieutenant C.H. Smith and C. Hutchinson, while travelling in the Wanganui area, wrote of the sand blowing in their faces and of the numerous sandhills along the coast, which were very deep and "being drifted by the heavy gales". However, not until the early part of this century was the problem officially recognised, in the passing of the Sand Drift Act 1908. Little was known of the dune regions, and to rectify this Dr Leonard Cockayne the renowned botanist, was asked to survey the areas. His report, published 60 years ago, is still regarded as the standard work on the subject.

Cockayne's answer to the problem of arresting the drifting dunes was afforestation. Four years later the Forestry Branch of the Lands Department, subsequently expanded into the Forest Service, began stabilisation work at Tangimoana. Today forests at Tangimoana, Waiterere, and Santoft are helping to control drifting sands along the west coast.

### Planting Techniques:

Before any trees are planted the dunes must be stabilised. This is usually done by fencing off an area to form the foredune, planting sand-binding marram grass, and then sowing lupin.

Two parallel fences about 9 ft apart and 4 ft high are erected along the beach to trap the sand. In the past brush fences of manuka were used to build

up the foredune, but have recently been superseded by palisade board fences. Slabs of wood about 6 in wide are fixed to 2-wire fences and are spaced so as to allow sand to filter through without eddying. Experiments have also been carried out with plastic-coated wire fences and these have proved most effective.

Once the first fences become covered with sand, two more are built on top of the small foredune until it reaches the required height. Then marram grass, which has proved the most effective of sand-binding plants, is planted along the foredune. Large areas of foredune are planted using a crawler tractor to which a marram planter is attached. Two men sit side by side with their backs to the tractor with bins in front of them containing the marram grass. The tractor draws a pointed, finned blade which cuts a deep furrow in the sand. Into this the men push bunches of marram grass, which is firmed by an attachment under the fins.

Smaller, awkward areas are planted by hand by men working in pairs. One man makes the v-shaped hole while the other plants the marram grass.

As the marram becomes established, lupin seed is sown to build up a protective cover from sun and wind for the young trees. Lupin (the yellow bushy type, not the sort dug in by home gardeners) grows very vigorously and produces nitrogen in the soil, an element that is usually deficient in sand country. As well as helping to further consolidate the sand it provides a considerable amount of humus from leaves and twigs.

Trees are planted about four years after the initial marram planting. The lupin, which by this time has reached a height of about 4 ft, is crushed by tractor and lines for planting are cut 6 ft apart.

Salt-laden winds and low fertility limit the species which can be expected to succeed on sand country. *Cupressus macrocarpa*, a hardy species, is planted in the lee of the foredune to bear the brunt of the wind and protect the production forests further inland. At Santoft Forest *Acacia sophorae* has been planted on the tops of the dunes, where it tolerates the dry sand much better than does *macrocarpa*. About five chains from the *macrocarpa* protection belt, radiata pine is planted. At about 15 chains from the foredune it grows sufficiently straight to produce sawlogs.

At Waitarere the reclamation programme has been completed and the forest is now entering its second rotation. The foredunes have been stabilised from the Manawatu River to just north of Hokio using brushwood fences.

Native silvery sand grass (*Spinifex hirsutus*) has become established on the dunes in front of the marram grass at Waitarere and a remarkable sight between December and February each year are the ripe spherical seed heads being rolled out to sea by the easterly wind. The seed heads soak up sea water and are then blown back on to the sand dunes when the wind changes direction.

Sand blown by the prevailing wind is no longer a severe problem to farmers inland. Instead the sand builds up in front of the existing foredune. Ivan Johns, Forest Service ranger at Waitarere, recalls that when he first moved to the district the Surf Club's building was on the edge of the foredune. Now the dune extends way out in front of the building and is moving eastwards at the rate of about 6 ft a year.

Although it will be several years before sand dune reclamation work is completed at Santoft, local inhabitants already notice the difference that forestry has brought to the region. Mr and Mrs J.S. Irving, whose 650-acre farm is adjacent to Santoft Forest, recall that when they moved to the area from Wanganui 17 years ago there was nothing but sand; not a tree in sight. With the slightest wind the sand shifted, obscuring everything. When they drove towards Santoft it was often impossible to see their house from half a mile away, says Mr Irving, nor could they see their neighbour's house. Since the Forest Service began its programme of sand dune reclamation the air is much clearer.

Housework is now much easier. At one time Mrs Irving found window sills always covered with a film of sandy dust. As soon as she wiped it off another covering of sand settled on the surface.

One farmer whose land adjoins Santoft Forest has found that since the radiata pine trees have grown, mists and fogs lie over his paddocks early in the morning. Before the forest was established the onslaught of the north-west wind soon dispersed any mists.

About 4,800 acres of the 12,000 acre forest at Santoft have been planted with trees, mostly radiata pine. As well as sawlogs from the felling of the older plantations about 800 posts per acre are taken out from thinnings from the younger plantations.

Nearly 60 years ago, Dr Cockayne speculated: "Could this barren land be turned into forest, even were the cost greater than that of afforestation generally, the work would cry aloud for its accomplishment." That counsel has long since been amply confirmed by developments along the North Island's windswept west coast.

PANEL:

Easy access and popularity with holiday-makers, combined with high winds make the sand-dune forests of the North Island's west coast particularly susceptible to fire.

During summer the influx of visitors swells Waitarere's normal population of 500 to 2,000. This means a constant vigil against fire for men like Ivan Johns, Forest Service Ranger at Waitarere Forest.

The beaches are favourite picnic spots and during the holiday season, night patrols are necessary to ensure that no-one has left a picnic site with the fire still smouldering. "Fortunately, most people are aware of the hazard and now come complete with spade to extinguish their fire before they go home", says Mr Johns. However, he warned that in this area the sand soon dries out; a day of heavy rain can easily be followed by a forest fire and one careless match could undo many years of patient work.

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