Changes in Fraser Island Ecology

The environment is constantly under change. Ecological changes result from climatic variation, changes in the fire regime, human intervention and the impact of alien plant and animals. What is extremely important is that these changes be monitored and if they result from unnatural causes these impacts are actively addressed. That is the role of natural Resources management.

Since becoming established in January 1971, FIDO has keenly observed and monitored changes to Fraser Island. Many of the changes FIDO has observed over the past 32 years seem to have escaped the attention of those responsible for the management of the island and the protection of the island's World Heritage values. Luckily FIDO relies not only on its corporate memory but also the great numbers of photos we took during the early 1970s while we were campaigning to stop sandmining on the island. Those photos are now invaluable, as we can plot the changes and the rate of change to the physical environment on Fraser Island.

In the early 1970s when John Sinclair lived in Maryborough, FIDO regularly flew over Fraser Island to monitor developments. Although there were few flights after the mid-1980s, FIDO has resumed aerial surveys to better monitor changes and to make a more informed assessment of the island's management.

This Backgrounder addresses some of the natural changes in the area close to the eastern beach between Hook Point and Sandy Cape.

Changes to Fraser Island Sandblows

Rate of Sandblow Colonization: In Hammerstone Sandblow vegetation is intruding at an accelerating rate. Pioneer species, particularly Dogwood *(Jacksonia scoparia)*, are spreading into the sandblow from almost every direction at a very rapid rate. For many years FIDO has maintained an observation point adjacent to Wabby Lakes. It is from here that we were able to calculate in 1975 that the sandblow was moving forward (in 1972-1974) at the rate of approximately 0.5 metre per annum. Now our observation point has been engulfed and is impossible to exhume. However, from other indicators the rate of advance of the sandblow has slowed most significantly. This is most apparent both from the little encroachment on the lake where the southern access track reaches the lake and where the melaleucas are growing just to the east of Big Wabby.

Following the abnormally wet year in 1974, water levels in Wabby Lakes rose most significantly to flood a small right angular shaped embayment. It was around the edge of that bay that FIDO observed a fringing line of melaleucas germinate. Our 1974 aerial photos show the lake water spilling into this embayment. During 1975, when the Fraser Island Environmental Inquiry was held, FIDO undertook many aerial surveys and photos of Wabby Lakes. These show the water level to have receded but the line of seedling melaleucas around the edge of what was the bay to be well established, almost along the right angle of a 60° triangle with the water's edge being the hypotenuse. In the almost 30 years since, these melaleucas have become well-established. We have seen the sandblow slowly building up around them and the most southern of these melaleucas succumb to the sand. However, in the corner of the right angle, the trees were able to keep their heads above the encroaching sandblow. Thus, while the trees, which are now regularly used as changing spots and occasionally as toilets, appear to be not so big, FIDO can attest that most of the trees are buried by sand and that we are only seeing the tops of those trees which began as small seedlings in the Big Wet of 1974. If the sandblow was still filling the lake at 0.5 metres per annum, there would now be an extra 14 metres of sand between the trees and the lake. This doesn't appear to be the case, but we have no more than photos and observations to confirm this.

The Tallest Melaleuca: One of our other observation points is a cluster of melaleuca branches emerging from the sand above Little Wabby. Based on the afore-mentioned observations, FIDO is convinced that this is the crown of what may prove to be the tallest melaleuca in the world. Indeed, it may actually challenge Tasmania's *Eucalyptus regnans* for the title of the world's tallest flowering plant, even though more than 60 metres of the tree is buried in the sandblow. Unfortunately, we have not yet been able to get a surveyor to establish its exact height and the QPWS thinks such matters are too trivial to follow up, although we have been drawing their attention to it for more than 20 years.

Anyhow, whereas only a decade or so ago this tree stood on the edge of the open sandblow, we now have to push through a thicket of dogwoods to reach it and the dogwoods are rapidly moving further out into the blow. Once we could see Little Wabby from the top of the blow. This view is now obscured with a dense screen of vegetation.

Hammerstone & Dulingbara Sandblows - 71
While the vegetation is encroaching on all sandblows it is proportionately faster on the smaller ones and those closer to the beach especially near Indian Head.

The Trailing Arms: One of the features of the sandblows are the two trailing arms reaching back from the blow towards the south-east, the direction from which the sandblow came. Having observed the invasion on the south-western corner of the sandblow above Little Wabby Lake, we took more notice of the invasion of the trailing arms and, sure enough, the vegetation is rapidly encroaching there also.

Smaller Sandblows: In 1993 John Sinclair was threatened with prosecution for removing casuarinas which had been ill-advisedly planted in a sandblow between the Eurong township and the Visitor Centre. We can now report that

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natural colonization has now almost removed this sandblow. Likewise, many other smaller sandblows near Eurong are being overtaken by vegetation. One sandblow has moved so far west that it has caused the Eurong to Central Station track to be relocated more than once since 1971. That sandblow is now almost stationary. Others nearby have almost disappeared.

"The Desert" South of Indian Head: This area was bare sand from the beach for up to a kilometre inland. It was bare of virtually any vegetation. In a New Year's Eve cyclone in 1963, the sea swept right around Indian Head and on New Year's Day the area which is now used as a campground was both treeless and wobbled like quicksand when walked on. Following the start of QTM's sandmining operation in 1971, beach spinifex began to invade the edge of the "Desert". At first it was hardly noticeable but within a decade there was a strong sward of spinifex which was clearly evident in aerial photos. FIDO can't swear that spinifex wasn't present before the advent of sandmining on Fraser Island, but we can't recall seeing it previously and the sudden takeover by spinifex was remarked on at the time. In 1992, to preserve the rapidly deteriorating Aboriginal middens south of Indian Head and to stop people driving and walking over these important archaeological repositories, the QPWS planted some casuarinas there. Now the area has a significant forest.

Spinifex was non-existent in the early 1970s. It only began to appear slowly from the late 1960s after sandmining began at Inskip Point. It is now strongly established along other beaches where, including the long sandblow between Brown's Rocks and Sandy Cape and the sandblow immediately south of Waddy Point which has been misnamed because of a bungle by the Queensland Place Names Board.

Looking south from Indian Head 1980
Note the virtual absence of vegetation in :"The Desert" but even by 1980 spinifex had begun invading but casuarinas hadn't.

Loss of Natural Grasses: Other changes we have observed include the transformation of the more open forest into a shrubby woodland. Once we saw kangaroo grass *(Themeda australis)* growing in healthy stands in the area between the firebreaks along the eastern side of the island. To see kangaroo grass in these areas now is remarkable. What was once a scribbly gum forest with a grassy understorey has seen the grass replaced by woody shrubs. However, it is not only in the scribbly gum forests that grasses have disappeared. In an area south of Eurong known as "The Horse Paddock" which once pastured Harry Alridge's horses (and which even in the 1970s still had some of the fence posts standing), the natural expansive areas of couch grass have been largely replaced by a forest of coast banksia *(Banksia integrifolia)*. Other large areas of couch grass along the east coast have similarly seen the grass being displaced by banksias and casuarinas. On Indian Head and Middle Rock, a similar dense sward of couch grass is being progressively replaced by a dense forest of horse-tail oaks *(Casuarina equusitrifolia)*. In the latter instances the invasion of trees into grassland may be a result of the grazing patterns of the brumbies, which favours the establishment of woody species because the grass is weakened by their grazing. In the former case the kangaroo grass may have lost out, due to total absence of fire since the late 1970s.

Pandanus Comeback: Pandanus suffered extremely from the grazing pressure of brumbies. The brumbies regarded the lush growing shoots of the small pandanus as delicacies and there were few pandanus which survived to become mature plants, usually only if they were inaccessible to the brumbies. This phenomenon was first reported on by the then Officer in Charge of Fraser Island, Walter Petrie, in his report to the Forestry Department in 1918. Following the removal of almost all of the brumbies, there has been a remarkable regeneration of pandanus along the east coast.

These are just a few of the natural changes FIDO has observed over 32 years. In future MOONBIs we plan to provide more insights into the changes we have observed since 1971. This time we have mainly focussed on natural changes and only those along the eastern seaboard. In future issues we will deal with the changes to the interior of the island and look also at the human induced changes.

It is important to record the natural changes we have observed on Fraser Island over the past three decades. This is important as almost no QPWS decision-maker responsible for Fraser Island can recall what Fraser Island was like even ten years ago. FIDO welcomes other observations and contributions on the subject of changes to the ecology observed on Fraser Island over the decades.

The Foredune at Eurong in 1968
Like most of the Fraser Island foredunes, this area is now supports many more casuarinas & more grass.

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