Fraser Island — A Personal Discovery

Reflections by John Sinclair, AO on his love of Fraser Island (K'Gari)

There are the qualities of ocean-side wilderness - which Fraser Island does so particularly represent and the water, the lakes and the rain forest. They give a sense of awe, I think, of sensitivity towards the landscape and I feel that sense of awe. I know very few children who have been able to experience, as people of my age did, the loneliness on a coastline, the beauty experienced without human interference.

Judith Wright (From evidence to 1975 Fraser Island Environmental Inquiry)

Fraser Island has played such a large part in my life I should describe some of its special features that I have come to appreciate and love. As long as I can remember Fraser Island has always been part of my life. At first it sat in the background. It was the backdrop I could see across the waters of Hervey Bay. It was the place of fascinating and colourful stories discussed by my parents, their friends and my peers. It seemed like a lifetime before, as a teenager, I was able to first experience it for myself; see those legendary crystal clear lakes; feel the surge of the surf on that vast straight beach; be impressed by the spectacle of the coloured sands and the shifting landscapes of the sandblows. Above all, when I finally got there as a teenager, I was awed by the grandeur of the forests like no other forests I had ever seen. I wondered how it could grow in nothing more than sand. I was thrilled by the adventure of getting there and the challenges of travelling around on rough sand tracks just wide enough for a small vehicle to drive through while passengers ducked to avoid some of the branches. It was a place of wonder and excitement that surpassed all my expectations.

As I grew to know the island more intimately I came to appreciate that it was one of the great natural wonders of the world. That realisation dawned only slowly. I wasn't aware when I first fell in love with it or that there weren't any other places quite like it on Earth. I wasn't even initially aware of the scale and dimensions. I was surprised to discover that the largest sandmass in the world turns out to be not in a desert but a subtropical island covered in forest and it was right on the doorstep of my home town. Fraser Island is a surprise in so many ways. It is elongated, stretching 126 kilometres from north to south with a variable width reaching to 22 kilometres at it widest point and covering 184,000 hectares. The tallest dunes rise to 240 metres.

I inherited a love of the island through the stories of my parents' experiences on their 1935 honeymoon in a cottage at the Happy Valley Resort. With my siblings I had rummaged through their honeymoon photo album effectively destroying it until only a couple of photographs survived. As I grew up I learnt only little about the island's rich history. Families of forest workers had once lived there. There were even two schools. The Great Depression of the 1930s had forced the closure of the fledgling tourist resort Mum and Dad had honeymooned at and caused a dramatic down-sizing of the timber industry workforce as the demand for building material collapsed. During World War II all women and children were withdrawn when the island became a commando training centre. After the War it remained an almost exclusive male domain until 1968 when Gordon Elmer's vehicular ferry service from Inskip Point allowed women and family groups easier access to the eastern surfing beach, a territory so long denied to them.

Over time my love for Fraser Island's beautiful and wondrous landscape grew as did my knowledge of its natural and human history. I was unaware that this amazing island would affect the course of my life so profoundly. At the beginning I could never have imagined that I would devote so much energy towards protecting it. Even when I began to confront the threat of sandmining scarring forever its fragile beauty, I didn't anticipate that almost half a century later it would still be so dominant in my life and that my passion would continue growing.

Great Sandy Strait: Great Sandy Strait separates the island from the mainland. I had to cross that narrow shallow waterway to have my first encounter with the island. As a boy I recall that, even in an open dinghy, Dad had to thread his way through a maze of channels meandering between the mud flats and mangrove islands that lay between Maaroom, a small fishing village on the mainland, and Garry's Anchorage. This is the middle of the length of the Strait where the tide travelling down from Hervey Bay carrying with it most of the silt from the Mary River meets the tide moving in from the south east. Where the tides meet, the Mary River's silt load drops out resulting in a tidal delta some distance from the river mouth. The resulting nutrient-rich mud flats support seagrass meadows and support an enormous array of marine life from dugongs and turtles to prawns, crabs, molluscs and worms. These in turn help support an amazing variety and populations of shorebirds.

Great Sandy Strait is about 70 kilometres long varying in width from its narrowest of just over a

kilometre where the ferries cross between Inskip Point and Hook point in the south to about 14 kilometres east of Urangan. It is difficult to gauge the width though because it is difficult to define the shores that are obscured by mangrove-clad mud flats and islands. At the top of the Strait there are some rocky island outcrops that Matthew Flinders described as "woody" and that became their name.

Whenever I have flown across the Strait I am reminded of Patrick White's eloquent description of his first experience, *On one side was the strait flat and listless through the fringe of mean looking mangroves; on the other, beyond the pickets of eucalypts rose the dark mass of the more obscure esoteric rainforest which obscured, presumably, the ocean.*

I have crossed Great Sandy Strait countless times in an assortment of boats. I have also sailed its length stopping to camp at Buff Creek landing or Stewart Island on the way. Some of the most dramatic times have been entering some small tidal creeks. The boat seemed to approach an impenetrable green wall of mangroves that seemed to mysteriously part like a theatrical curtain as we reached them and then close again behind us as though we had entered a backstage area. Sometimes though I landed on a western beach or at the old Ungowa wharf but every time, there was an air of anticipation and I often felt I should fall on my knees like a Pope and kiss the ground on my arrival.

Each hectare of mangroves drops hundreds of tonnes of leaves and propagules annually. This detritus becomes the start of a food chain that means each hectare of mangrove forest produces much more food than the most productive terrestrial irrigated croplands. Countless crabs quickly digest the detritus from the mangroves. Those small fecund crabs digest the vegetable matter enabling 80 percent of the vegetable matter to be converted into eggs that are released into the estuarine ecosystem. Shrimps and juvenile fish devour the crab eggs. Thus the mangrove ecosystem products move along the food chain onto our seafood menus.

There are few estuaries in Australia with greater biological richness or diversity than Great Sandy Strait and from my perspective, if one dismisses the biting and stinging insects that abound in the strait, it is a very attractive place. I find the displays of those bizarre mangrove roots that enable these forests to thrive in an environment suited only to specially adapted plants most attractive despite the biting insects and squelchy mud one has to endure to appreciate them.

I earlier described how in 1958 I accompanied a boat-load of building material destined to become a holiday house a mate of Dad's was constructing on what we then knew only as " "The Back Beach" and the lasting impression on me of the huge flock of black swans we encountered. The disappearance of the huge flocks of swans, like the arrival of cane-toads on Fraser Island (probably carried there on debri from a Mary River flood) weren't noted nor recorded during the 1960s as these most significant changes occurred.

When the tide is full, Great Sandy Strait seems to be a wide waterway. It is only as the tide falls that one appreciates how shallow it is in parts with a large proportion of its area consisting of exposed mud and sand banks. Apart from providing sea-grass meadows that dugong and turtles feed on, this ephemeral land that is submersed for half the time contains a wide variety of sea foods that constitute the diet for countless thousands of migratory shorebirds that annually travel thousands of kilometres from as far as Siberia and Alaska just to dine out there. The Great Sandy Strait tidal wetlands are recognized for their international significance, a Ramsar site. Throughout the summer months the Strait is the habitat for more than a dozen species of these trans-equatorial waders. They usually arrive in vast flocks at the end of each September. As the tide recedes the shorebirds disperse across the tidal flats to feed in their rich, freshly exposed feeding ground only to be pushed back to their roosting sites when the tide rises. At the end of March and in early April they go into a feeding frenzy as they prepare themselves to make these marathon annual flights so as to return to the Artic tundras to raise another generation of chicks.

Apart from the muddy Mary River, many magically clear freshwaters streams flow into Great Sandy Strait from the Fraser Island side. It has caused many people to proclaim that this abundant and ever reliable supply of fresh waster was going to waste, little appreciating the benefits it was providing by improving the productivity of the marine environment. The marine life that fishers seek, all rely on the nutrients discharged into the sea by these and similar streams.

Great Sandy Strait has played a significant part in the history of Queensland settlement. If Lieutenant Edwardson had not been frightened off by the number of Aborigines he saw on Fraser Island in 1824 and had proceeded to explore the Mary River as instructed, Queensland's first settlement may have been in the Hervey Bay area rather than on the shores of Moreton Bay.

The lee shore of Fraser Island provided a great harbour for shipping in the times of sail. For a while international sailing vessels would call into Great Sandy Strait and unload their cargoes into coastal ships that took some of it back to Brisbane. There was a time in the era of the Gympie Gold Rush when large sea-going vessels would call into South White Cliffs to replenish their water supplies at a small stream named Waterspout Creek. They could moor their vessels in deep water and capture and store the clear fresh water flowing over the cliff. Unfortunately the sailors took leave from their water replenishment tasks to leave

behind a legacy of venereal diseases and opium addiction amongst the Aborigines.

North White Cliffs directly opposite the mouth of the Mary River overlooks Great Sandy Strait from a place the Aborigines called Ballargan. It was the site of a Mission conducted by Reverend Fuller in 1870 but he and the Aborigines were evicted so that the mission could be converted to a Quarantine Station for the diggers on their way to the Gympie gold field. Later it was the site of an Aboriginal demonstration against white intrusion and still later the base for the McKenzie timber operations on Fraser Island. During World War II the area was base camp for the Fraser Commando School. Then in the 1990s the Kingfisher Resort was located in this area.

The Fens: Behind the mangroves of Great Sandy Strait lie some boggy pock-marked peaty swampy areas that I knew I was wise to avoid. Every carefully camouflaged hole was a potential pit-trap filled with water waiting to catch any unwary intruder. However in 1996 my view of these treacherous treeless areas mainly located behind the mangroves abruptly changed. I had organized a post-conference trip for international scientists who had attended the huge Ramsar (Wetlands of International Significance) Convention that had been held in Brisbane. Part of that trip included a flight for a day trip to the nearest part of the Great Barrier Reef. I organized the flights to let them see almost the length of Fraser Island with the sun behind them to let them appreciate the splendour of the island. On their return from Lady Elliot Island they flew down the western shores. The excited peat-land specialists alighted from the planes raving about these same peat-lands I had previously tried to avoid. They recognized them as fens. Previously fens had only been associated with tundra and alpine areas. They have turned out to be very significant features of Fraser Island. The fens are now addressed with respect although they are still hazardous and provide many hidden traps for those who dare venture into them but they attract increasing scientific attention.

I have been privileged since to return to the fens with scientists and work with them as they unlock the secrets preserved in the peat to explain how they developed and how old they are. Charcoal remains date back 35,000 years, suggest a long Aboriginal occupation

Hervey Bay: Moon Point marks both the northern most point of Great Sandy Strait and westernmost point of the island. North of Moon Point, Fraser Island is lapped by the calm, clear, azure waters of a magnificent bay named by Captain Cook after Augustus Hervey, 3rd Earl of Bristol known in his time as the English Casanova. Hervey Bay wouldn't exist without Fraser Island, and without Fraser Island, Hervey Bay wouldn't exist either. Each owes its existence to the other and each protects the other. Fraser Island and Breaksea Spit form the eastern edge of Hervey Bay and protect it from the prevailing southeast winds. As a result the calm waters inside the bay are a haven attracting small boating enthusiasts.

I am ever mindful that less than 10,000 years ago, during the last ice-age, great forests would have grown in what is now Hervey Bay. Along the western shores weathered stumps of once grand Satinay rainforest trees protrude out of parts of this beach as evidence of how past climate change so dramatically transformed the landscape here.

Although it is protected from south-easterly winds, Hervey Bay is exposed to the occasional winds from the north-west. These have helped shape the easily erodible shoreline into Zeta Curve, a form like a fishhook, with Rooneys Point being its sharp tip with sand moving towards Moon Point, the fishhook eye. Those same winds have created small sandblows in an opposite direction to those on the other side of Fraser Island.

A clean soft beach free of any mangroves curves gently around from Moon Point to Rooneys Point. If it wasn't for Wathumba Creek's width and unpredictability, it would be possible at dead low tide to drive 60 kilometres all the way, from Moon Point around Rooney's Point and on to Sandy Cape. These days few people are tempted to allow their vehicles on this western beach because it is a trap for all but the most experienced drivers. Another impediment is that the beach north of Wathumba Creek has been declared a vehicle free zone. This then provides a habitat for the shyest and the most vulnerable bird that lives on Fraser Island, the Beach stone-curlew, to survive unfazed by the attention of tourists.

The part of Hervey Bay between Arch Cliffs and Rooneys Point is known as Platypus Bay. Each year between July and October, thousands of the playful humpback whales swim into Hervey Bay and spend a few days as they migrate southwards to feed on Antarctic krill during each summer. Platypus Bay is the epicentre of great aggregations of humpback whales to be found swimming and frolicking there during the spring months. Because the waters of Hervey Bay are usually calm, these great mammals can be comfortably observed from the deck of many vessels that now make up a formidable whale watching fleet based in the City of Hervey Bay. It is one of the great whale watching places on the globe and the industry now generates about $100 million for the regional economy annually.

I was privileged to work for a while with Dr Bob Morris who was a cetacean specialist who lectured at the University of Queensland. He led special tours and helped laypeople like me better understand the characteristics and behaviour of humpback whales and dolphins. It was one of the many privileges to

compensate for some of the rougher parts of my Fraser Island campaigns.

That greatest mariner of the Australian coast, Matthew Flinders came twice to Hervey Bay and on his third visit to the island spent a night ashore near Indian Head. He explored Fraser Island's western shores until the tricky mud banks of Great Sandy Strait made it risky to venture any further. That prevented him from proving that the sandmass on the east was separate from the mainland. Flinders described the Aborigines he met in 1798 as *resembling the inhabitants of Port Jackson in personal appearance, but they were much more fleshy, perhaps from being able to obtain a better supply of food with scoop-nets which are now known on the southern parts of the coast.*

The Western Shore: Most of my favourite campsites on Fraser Island have been along its western shore between Moon Point and Sandy Cape. The ambience of the soft background music of the lapping waves and the sheer tranquillity has been its main attraction for me. Possibly I receive some subliminal messages from the whales and dolphins that are often seen close to the shore. I just love watching the sun sinking into the sea ever hopeful of seeing another "green flash". There are not many places in eastern Australia where that is possible. For whatever reason, Fraser Island's western shore provides an ambience and appeal unlike anywhere else I have camped.

I must admit I am also in awe that this is the oldest part of Fraser Island. Ancient winds more than 800,000 years ago began forming high sand dunes that then slowly weathered away. As the nutrients were leached ever deeper into the subsoil, so the dominant trees forming these great forests shrank in stature. The rainforest species were progressively replaced first by eucalypts. Eventually these were reduced and replaced by ever smaller plants and now with mallee dwarfs and heathlands. These ancient leached soils may well be the deepest podsols on the face of the Earth. With so little nutrient the heathland plant community flowers profusely to set seeds for succession and so produces a colourful display reaching a peak at the end of July and early August.

The Forests: During my first crossing of Fraser Island in 1958, the forests made an indelible impression on me. I can well imagine the impression they made on one of the earliest timber-getters there, Ned (Skipper) Armitage who described them this way. *The traveller strikes a "living wall of giant timber trees up to 150-(one hundred and fifty) feet high, buried in jungle - scrubs so thickly growing that roads or tracks must be cut to enable one to get through. Great piles, 100 to 120 feet clear to the first limb, are there in thousands, straight as an arrow but by far the greater number are much too big for piles, and can only be used as saw-mill logs up to about four or five feet in diameter, containing from five to six thousand feet in each tree. Then beyond that limit again come the super-giants, so big that no saw-mills at present in use in Queensland have any machinery capable of handling them.*

Even after so many giants have been removed this forest still retains its grandeur. Just as enthralling as the scale of the trees are the dramatic transformations from one plant community to a very different ecotype. The vegetation seems to change as abruptly as sets in a stage play. The impression is of a great patchwork of different vegetation types spread across this landscape.

While my passion has been for all aspects of Fraser Island, other people are equally passionate about all Australian forests and they are determined to protect them. I discovered just how passionate they were in their desire to save the grand old Australian forests when an entourage descended on Fraser Island in 1990 to mount a blockade in an attempt to bring all Fraser Island logging to a halt. Their direct, non-violent action included attaching themselves to the blades of bulldozers with super-glue, sleeping in a cradle atop a very high tripod straddling roads to stop machinery moving or logging trucks entering the forests. That brought a sharp public focus on the impact that 123 years of logging had had on the island's forest ecology. Certainly it made more people appreciative of just how special the forests of Fraser Island are.

The Soils: I gained a lot of my knowledge and understanding of the island ecosystems from a soil scientist, Cliff Thompson. Cliff led a CSIRO team that started in the 1970s to unravel the reasons behind the amazing and quite sudden changes in vegetation patterns on Fraser Island and Cooloola. Cliff was a Gatton old boy, a connoisseur of red wine and a good friend. Having identified the podzol soils, the CSIRO team wanted to understand just how seemingly infertile sand could sustain such grand and luxuriant forests.

Cliff and his team discovered that the nutrients were associated with the colour of the sand and that the quantity of nutrients increased as the subsoil became an increasingly deeper colour of yellow. This was because the yellowish colour of beach sand owes its colour to a film of Iron oxide. However when sand is left undisturbed for a while, weak organic acids are formed as rainwater interacts with the surface vegetation and litter. This strips the iron oxides off the surface layers and deposits it deep in the soil profile, leaving a surface of plain white and inert silica and the subsoil layer a little darker in colour than beach sand. The process continues and as more iron is relocated from the top layer (A horizon) the white layer gets progressively thicker and the subsoil (B horizon) sinks deeper into the soil profile, becoming a richer colour in the process.

Cliff's team noted that from the eastern ocean shore, the forest developed in stature and composition from the banksia and casuarinas on the foreshore into ever

taller eucalypt forests. They established the correlation between the soil profile and forest that grew above it. The B horizon became ever richer in nutrients as it accumulated them deeper in the profile. The vegetation advanced in biomass, reaching a peak with the rainforest, the tallest rainforest in the world to grow on dunes. In the plant succession though, although the B horizon continued getting richer, after the rainforest the trees dwindled in size. This mystery was explained when it was discovered that beyond a certain stage the B horizon became too deep for even the forest giants to access resulting in the trees becoming smaller and sparser. The recognition of retrogressive plant succession from rainforest to heathland caused quite a stir amongst soil scientists and added more credentials for the World Heritage values of Fraser Island and Cooloola.

One of Cliff's many other contributions to my understanding of Fraser Island was the symbiotic process by which the critical plant nutrients especially phosphate and potash, that are in very short supply on Fraser Island, are made available to plants. Fungal mycorrhizae neutralize the electronic charges that the iron oxides have used to hold the phosphate and potash ions as captives and allow them to be released to the plant roots. The plants respond by releasing glucose to the fungi that allows it to continue to live underground without any photosynthesis. Cliff loved demonstrating this process and whetted my interest in soils so that I was much more observant and more appreciative of the reasons for the different vegetation types. With a better understanding of the evolution of soils and the nexus between different soils and different vegetation patterns, I could better appreciate the complexities of this most remarkable island.

Most of the older soils are located on the western side of the island. The whiteness of the soil surface and the absence of steep slopes indicate the greater age of the dunes. Over the millennia the topography has been subdued and smoothed out while the active sand dunes on the eastern side are much steeper. There have been many eras of climate change that have resulted in new layers of sand being successively blown in from the ocean side of the island to bury pre-existing layers. It is these younger sands that sustain the taller forests.

While the rainforest is most impressive of the forest types, people often feel there is something mysterious even spooky about it. I came to appreciate this after one night when I camped with a large group in the middle of rainforest near Lake Allom. I didn't understand the skittish behaviour of the group that night. I only realized the cause when we made camp in a small but open sand blow beside Ocean Lake the following afternoon. There were gasps of joy as their feelings of apprehension and claustrophobia engendered by the rainforest brushing up against the tents dispersed. They could again see the stars above them at night and felt more comfortable.

The "Back Beach": Whenever I cross the island from west to east, my level of excitement rises as I get close to the ocean beach. One suddenly bursts out of the forest into this vast openness of the grandest beach I have seen. It is pounded into a hard flat pavement by the constant hammering of the surf. The sound effects of the surf are like a dramatic drum roll coming to the climax of a symphony in a concert hall.

For most Fraser Island visitors the beach becomes their main focus on Fraser Island. Here there is fabled fishing if one is lucky. It is free of almost all nasty insects except in summer when March flies can be very pesky.

During late winter and early spring hundreds of fishers, mostly male, camp along the length of its eastern beaches from Eurong to Sandy Cape and between drinks, they turn their backs to Fraser Island. Instead they meditate and stare at the rolling waves and the end of their fishing rods. For a while they revert to the hunter role that remains in their DNA, a relic of the primitive hunter-gatherer tradition. Dangling a line in the water with little more than optimistic hope and an opportunity for quiet meditation is no longer for me. Like my father, I had once been an eager fisher, but I haven't wasted my time on such usually unrewarding pursuits since I became enmeshed in the campaign to protect Fraser Island's unique values.

The migration of sand: It has now been established by tracing the zircon component of Fraser's vast volume of sand, that much of it was eroded from the Sydney sandstones. It is a curious coincidence that sand eroded away to form the deep canyons of the Blue Mountains World Heritage area should end up contributing to the creation of the Fraser Island World Heritage area, over a thousand kilometres away.

Once the sandstone has been broken back into single grains those fine grains have been sluiced down the Hawkesbury and Hunter Rivers to the coast. Once discharged into the sea the sand is at the mercy of wave action. Because the waves in eastern Australia are driven by a south-easterly wind, the sand is tossed around in the waves and churned ever northwards in the surf zone. This inshore littoral system has created other sand masses such as Stradbroke and Moreton Islands as it shifts vast volumes of individual sand grains. Fraser Island, at the northern end of this river of sand has accumulated more sand than any other sandmass. Sand not deposited on the Fraser Island's ocean beach and blown up into the dunes, ends up being carried on to Breaksea Spit from where it slides over the edge of the continental shelf in thirteen huge submarine canyons.

Only relatively recently scientists, whilst exploring the underwater topography at the northern end of Fraser

Island, discovered that it is as interesting and unique as the island's complex above ground topography. Using the most sophisticated sonar imaging, they were able to identify thirteen canyons where the sand not blown ashore on Fraser Island slid to the floor of the Tasman sea like giant slow moving slippery slides. Now there are moves to enlarge the Fraser Island World Heritage area to include these and other dramatic features of this river of sand that lie deep offshore.

Coloured Sands: Sections of the ocean beach between Eli Creek and Indian Head have a spectacular backdrop of the coloured sand cliffs. While coloured sands underlie many of the dunes, it is only where the sea has eroded the high dunes that the array of colours from cream to yellow and deep orange are exposed. The Aborigines have their creation stories on the source of the colour but we know that the colour is derived from iron oxides. The mystery though is how the iron became so concentrated.

For decades I had been pondering the process of the coloured sand formation when one day in 2004 I noticed some coloured sand on the surface of Hammerstone Sandblow in a spot I had regularly passed for years. When I first knew this site, it was just loose normal windblown (aeolian) sand. In just a few years the colour of beach sand had been transformed to a bright, fiery orange. Looking more closely I was amazed to discover that there were ironstone pebbles with this coloured sand. Having experienced the cryptobiotic crusts both in semi arid parts of Australia and America I recognized that the ironstone pebbles and the newly coloured sand were associated with a similar layer on Fraser Island. I was aware of the significance and wrote up my observations and had it placed on the FIDO web site.

By chance a Queensland soil scientist, Wendy Williams who was studying cyanobacteria, discovered my article on the internet. She wanted to see the phenomenon I had reported. In 2009 I took her and her microscope to my observation site where she was able to clearly identify many of the cyanobacteria in the cryptobiotic crust. Later she was able to present a paper to a Fraser Island conference I organised describing how the living cyanobacteria used iron in their cell membranes to exclude ultra violet light that could be lethal to them. When the cyanobacteria cells died, the iron from the cell membrane was released. This was the source of the colour as the iron oxides stained the sand with a rusty colour. Some of this iron also forms iron nodules while some of it also combines with the sand to form laterite capping.

While I am not a scientist, I found it absolutely fascinating that this discovery (of how microscopic organisms create coloured sand) was made in just a few years while I had passed this site many times over fifty years. It has led me to take a new and much greater interest in cyanobacteria and I have made many more observations on the impact of this primitive form of life since. I have found them associated with laterite capping that has formed on top of some soft coffee coloured "rocks" in the sandblow. Evidence also now suggests that cyanobacteria are responsible for most of the carbon in the humus layers of sand throughout the island.

A vast reservoir: While over 80 mega-litres of water gushes out Eli Creek daily, countless more freshwater streams trickle out of the foredunes across the ocean beach. On the western side of the island, Bogimbah Creek and a number of other streams each pour even more water than Eli Creek into Hervey Bay and Great Sandy Strait. Remarkably though, the flow of these streams remains constant so that they never break their banks even in the heaviest downpours and continue their constant flow even in times of critical drought. This is testimony to Fraser Island being a vast reservoir of water.

The sand grains sit like miniature balls leaving much space between them. Fraser Island's abundant rainfall squeezes through those spaces as it percolates downward through the dunes and eventually settles in the water table. The water table is slightly raised in the middle of the island and at its lowest level at the coastline. That means that once the water reaches the water table it slowly works its way laterally along the gradient to the nearest exit point be it a stream or the coast.

Atmospheric nuclear testing ceased in Australia in 1963 but not before some of the nuclear fallout was spread over the Australian environment. Scientists have been able to use some of that radioactive fallout, caesium, to measure the rate of water movement through the dunes. In Cooloola they discovered that the mean residence time of water within the dune was 80 years. By extrapolating that data to the much larger sandmass of Fraser Island it is calculated that the mean residence time is over 100 years. That means raindrops that came down in the last shower might flow out of the dunes almost instantly if it fell on the stream but other water may have resided in the dunes for at least 200 years before making their exit from the dunes.

Scientists have also used the caesium to establish that at least at Hidden Lake decades after nuclear testing ceased there was still as much caesium present as when the water was first tested. This indicates that this perched lake is a closed system and that whatever pollutants enter the lake could remain for almost an eternity. Since the water level in Hidden Lake varies little, it is also evidence that there is equilibrium between precipitation and evaporation.

As well as picking up traces of caesium the raindrops percolating downwards through the soil profile undergo some significant chemical changes. As

surface water comes into contact with organic material on the surface, organic colloids they collect produce a tea-like colour. As water though enters the soil profile and passes through the B horizon a more profound chemical change occurs. Slight traces of aluminium precipitate the discolouration in the water enriching the B horizon's colour and clearing the water in the process. Apart from being crystal clear, water that has passed through the B horizon is slightly enriched with a little precious phosphate.

The net result of all of this chemistry is that any water that flows out of the water table has a remarkable clarity. That clarity is very evident when one peers into Eli Creek. The fact that it is slightly richer in nutrients allows some algae to grow and helps nurture a healthier fish population than exists in the very nutrient poor lakes.

There are some remarkable native fish populations that survive in the small Fraser Island streams that have been extirpated from many mainland streams where the predatory exotic Gambusia have decimated populations of native fish such as the Honey Blue-eye and many Rainbow fish. During World War II the Americans were so paranoid about mosquitos they deliberately introduced Gambusia into larger Queensland catchments. However Fraser Island escaped that damage.

Having led hundreds of camping safaris and explorations of Fraser Island over more than forty years I have camped beside most of its major creeks and lakes. I have watched them in all of their moods and I have observed the environmental changes. Govi Creek was a favourite safari campsite in the early 1970s. Then the ever-changing Gerrawea Creek fascinated me. It has had three outlets across the beach since I first began observing it. Such naturally occurring changes sustain my curiosity and interest in this wonder island.

There have been some unnatural changes though. During the 1970s I observed the environs around Eli Creek become ever more degraded as thousand of human feet were trampling it to some kind of ugly death. I resolved that it needed to be saved before it was too late. This led to the establishment of a boardwalk to carry visitors along the creek to save its banks. Over eighteen weekend working bees my sons and I with lots of other volunteers built the first ever boardwalk on the island to better manage visitation and protect the very fragile creek environs. The creek recovered much of its former charm as a result. Now the changes that occur along the course of Eli Creek are a result of natural processes. Our efforts also helped to change the course of Fraser Island management.

Black and white waters: The water just gently percolating out of the dunes into creeks at the level of the regional water table is clear and the flow increases in volume as the creeks wind towards the sea. Scientists refer to water without any discolouration as "white". Where water flows over the land surface or a stream passes through peaty areas, it collects up tannins from decaying organic matter. Whether it is like weak tea or strong tea depends on the amount of tannin infusion it receives. The scientists call this "black" water. Thus Eli and Wanggoolba Creeks flow with white water while Bogimbah and several other creeks have a blend of "black" and "white" water.

Some lakes Lake Boomanjin and Lake Coomboo have "black" water, while others especially Lake McKenzie and Lake Birrabeen are renowned for their clear "white" water. Traces of aluminium in the lake bed acts as the catalyst to precipitate the fine tannin colloids out of the water and over long periods, clear the water of any discolouration. It is a similar process to adding aluminium powder to clear up muddy water. The tannin falls to the floor of the lake and accretes to the impervious layer holding water in the lake. What is precipitated is exactly the same as the tannins that stain the inside of a teapot. In the case of those "black" water lakes there isn't enough aluminium or there hasn't yet been enough time to clear the water.

Green canyons: The sides of creek banks in the dunes are invariably steep and form moist protected areas out of the wind with their own microclimate and the water in the stream has a slightly elevated level of nutrients. This provides the conditions for richer and more luxuriant plant growth particularly in the rainforest. It is in this environment that the ancient

King ferns (*Angiopteris evecta*) grow in Wanggoolba Creek at Central Station. Fossils of these ancient ferns can be found in coal measures and I like to imagine that in one eran dinosaurs might have dined on them. As I walk beside Wanggoolba Creek in the sandy silence without a stone to turn or clatter, I am inclined to muse about the Aborigines of the past harvesting the fruit and edible parts of the Piccabeen palms crowded together in this sheltered sanctuary.

Indian Head and Waddy Point: The rocky outcrops of Indian Head andWaddy Point cover only about 10 hectares of Fraser Island and present the only surface rock. The remainder of the island is pure sand with bedrock buried about 80 metres below sea level. Both headlands are composed of rhyolite and were originally created by volcanic activity several kilometres to the east about 50 to 80 million years ago. The rest of the caldera has eroded away by the sea and these prominent landmarks now rise vertically from the water.

Indian Head is the island's most prominent landmark and most easterly point. This popular tourist destination affords stunning 360-degree views from a vantage point 70 metres above the surrounding swirling sea. On one October day during the forty minutes I spent on this headland peering into the sea below, I

observe a dugong and calf, sharks, schools of tailor, turtles and dolphins as well as humpback whales further out to sea. To add to the experience a pair of Ospreys were nesting in a Pandanus tree nearby and constantly returning to feed their chicks.

The first time I stood on Indian Head was on New Year's Day 1963. Helen and I had spent the night before sheltering from a small but intense cyclone raged around the primitive and quivering fibro shack in Poyungan Valley. We felt the eye of the storm pass over us at dawn. There was then an unforgettable eeriness. The shattered scene about us was bathed in indescribable soft green sunlight. After the storm passed we drove north to Indian Head. That same storm had caused Indian Head to temporarily become an island as the wild sea surged behind the headland. When we arrived later in the day the bare and still wet sand behind the headland felt like hard jelly to walk on.

I clearly remember the grass that had been clipped to a lawn by brumbies. The lawn extended right to the summit. As I approached the summit I had no idea that the lawn would end so abruptly or that I would find myself atop a cliff staring into an abyss below. Sadly, since then thousands of human feet have ascended the headland since to progressively wear away much of the grass and the thin skin of soil that had once covered the rock.

Indian Head stands at the head of the misnamed 75 Mile Beach. This magnificent beach needs no exaggerated claims or names. It stretches 95 kilometres from Hook Point. The beach though is contiguous with Rainbow Beach on the Cooloola side of Great Sandy Strait stretching right to Double Island Point. Double Island Point and Indian Head are pivotal points in shaping the deposition of this beach shaped like a very long fishhook with Double Island Point being the sharp tip and Indian Head the eye. Scientists describe this as a Zeta curve.

Waddy Point is the base point of another Zeta curve extending another beach northwards to Sandy Cape. Both Indian Head and Waddy Point obstruct the northwards movement of sand that piles up on the southern side of the headlands faster than the sea can move it around the headlands through the deeper water. The result is that in the past sand accumulated on the southern side of the headlands faster than the vegetation could colonize it. This resulted in sandblows where the wind swept the surplus behind the headland.

Rich aboriginal legacy: Along Corroboree Beach just south of Indian Head, the middens and the sheer volume of residue of the feasts that still remains suggest countless nights Aborigines must have camped near here. Out from Indian Head is still one of the most productive places off Fraser Island for seafood. Modern fishers using rods or nets harvest the waters and are less interested in the abundant bivalve molluscs that the Butchulla called *ah-wongs.* The middens of vast heaps of shells occur along both coasts of Fraser Island.

It is sad to think that during the 1960s and 1970s, archaeologists were banned from going to Fraser Island to assess its rich Aboriginal cultural legacy. The Queensland Government didn't want Aboriginal sites or artefacts formally identified because that could create impediments to the progress of the sandmining dredges scheduled to churn through the dunes. Those responsible for the protection of heritage were happier if they were never told what Queenslanders were losing as they reached for the immediate financial gains.

James Bracefell escaped from the penal servitude of the Moreton Bay convict settlement twice while he was serving out his 14-year sentence there, once in 1829 and again in 1836. He lived with the Aborigines in the Hervey Bay and Fraser Island area where he was known as *Wandi*, meaning the "great talker". He was accidentally killed soon after returning to Brisbane in 1842 but not before he described some his impressions of Fraser Island to Dr Simpson who noted: *The tribes here, who go by the general appellation of the (Baltelus), are very numerous, thousands he thinks, for he states at their great fights he has seen them covering the Beach for four miles in length.*

Many of those Aborigines had followed Captain Cook's "Endeavour" as it sailed north in May 1770 and had gathered on Indian Head that they knew as *Tuckee* to get a better view of this mysterious sight. Captain Cook happened to be looking at this impressive landmark at that very time and noting this assembly named the headland after the universal term for indigenous people of that era "Indians".

The Butchulla composed a corroboree to celebrate the passage of the "Endeavour" which has since been recorded and translated. The Butchulla though weren't to know just over half a century later Indian Head would become the site of a massacre. Over the Christmas –New Year holiday break in 1851 a posse of 24 Native Police and local mounted squatters and sailors sworn in as "special constables", set out from Maryborough to arrest some Aborigines for which there were warrants. They spent eight days on Fraser Island carrying out what was euphemistically described as "examinations" of Aborigines. Descriptions are sparse but suggest that the mounted party went on a holiday shooting spree. The *"Moreton Bay Courier"* subsequently described this as a "jaunt" covered with "extraordinary secrecy" and said *"rumours are afloat that natives were driven in to the sea, and there kept as long as daylight or life lasted…"* Other reports suggest that the sea around Indian Head was red at that time.

Sandy Cape: The greatest challenge to four-wheel drivers on Fraser Island is to reach the very top of the island, Sandy Cape. It is only possible to drive to

Sandy Cape at low tide and that means that mesmerizing patterns are exposed in the newly exposed beach as one stands beside the huge flocks of terns assembled there. Any journey to Sandy Cape by obstruct the beach midway between Waddy Point and the Cape are a most formidable barrier across the beach. Those who bypass this obstacle and reach Sandy Cape are well rewarded for overcoming the challenges. A mesmerizing view of endless waves rolling in and crashing on to Breaksea Spit always holds me spellbound.

I had always appreciated that Breaksea Spit was part of Fraser Island, but it wasn't until Prof Ron Boyd presented a paper to the first Fraser Island conferences in 2004 that I came to appreciate its significance even though the dramatic features all lie well offshore below the water line.

Captain Cook very appropriately named Sandy Cape. As one approaches the most northern point where the ocean beach and the Hervey Bay beach meet, for the last six kilometres the bare sand dunes stretch as far inland as one can see. Oddly enough the Sandy Cape lighthouse is seven kilometres southwest of the actual cape. The 27-metre tower atop a 100 metre high sand ridge allows the light to beam 24 kms out to sea. The light is a critical warning to navigators of the proximity of the treacherous Breaksea Spit. The advent of GPS navigation has reduced dependence on lighthouses. As a result, the light is now automated and now doesn't need to beam as brightly as it once did but it continues to operate as it has done since 1870 but without light keepers.

Wilderness: The view from the vantage point of the lighthouse tower is truly awesome. There is a feeling of isolation and challenge knowing that the nearest human residence is over 30 kilometres to the south at Orchid Beach. Very few venture into the interior of Fraser Island's Top End but from the lighthouse it can be seen if not experienced. I have been privileges to walk through and camp in that wilderness. It is the most challenging part of Fraser Island to explore but people don't have to physically visit this wilderness to benefit from it.

Wilderness is vital to the human soul. That became evident when public surveys showed that 93% of Australians wanted Antarctica retained as a wilderness even though most had no intention of ever going there. Fraser Island's Top End represents the only true wilderness in South East Queensland and as long as I can, I will forever try to keep it that way.

Top End lakes: All but one of the numerous Top End Lakes are deemed to be window lakes because they represent windows in the water table. The best example of those window lakes is Ocean Lake but that is much closer to Orchid Beach. I have frequently swum in the tea coloured deep waters of Ocean Lake and experienced the depth of Lake Wanhar, a huge barrage lake. I discovered to my embarrassment that even when the water in these lakes was glistening like mirrors in the sunlight the water was only the thinnest veneer covering a bed of black oozy sludge. In the 1970s I once relied on drawing water from one of the lakes to augment the water supply for a large safari group I taken to camp there. I wad seen the water in the lakes from the air and assumed that they could satisfy the demands of a safari group on an overnight camp. I discovered to my embarrassment that I could get no useable water from them try as we might. The layer of clean water was thinner than a coat of paint. Below it lay inky black sludge that invaded whatever water was extracted. It was undrinkable and useless for washing anything other than a blackboard.

The fate of the Top End's abundant rainfall remains a mystery because only three freshwater creeks occur there. Orange Creek sometimes carries the overflow from Ocean Lake across the eastern beach. The huge Wathumba Creek estuary flows into Hervey Bay. Bool Creek not far south of the lighthouse enabled Flinders was able to replenish his ship's water supply in 1799, but even this stream gathers so little water that it rarely flows across the beach to flow into the sea. On one most memorable night however, I saw the sea flow into Bool Creek.

Sandblows: Adjacent to the Sandy Cape lighthouse, one of Fraser Island's most spectacular sandblows spills onto the beach that separates it from Hervey Bay. This sandblow originated thousands of years ago when the sea levels were much lower and the coast was many kilometres to the east of the present coastline. As sea levels rose over the last 10,000 years, the omnipresent southeast winds have progressively swept these millions of tonnes of sand ever northwest. Now this mountain of sand is confronted by the waters of Hervey Bay lapping away at the base of its dramatic slip face.

The dynamic nature of Fraser Island's sandblows has always intrigued me at least as much as the lakes. It didn't take me long to realize that the whole topography of Fraser Island has been shaped by a succession of sandblows cutting swathes through the forests in their paths only to be overtaken later by younger forests surrounding them. Over the millennia most previous sandblows have been colonized by the invading vegetation around them and stabilized. The long steep sand ridges running from south east to north west offers clear evidence of the path of the sandblows even though they may now be covered in tall forests.

I liken the progress of the sandblows with the progress of a glacier except a glacier moves downstream driven by gravity and the face of the sandblow advances ever so slowly driven by the prevailing wind in defiance of gravity. The only contestant against the force of the wind is the vegetation

colonizing the fringes of each sandblow and advancing forward in its wake. For eons the advance of the vegetation has kept pace with the advance of the sandblows. Climate change has recently altered this rough equilibrium. I decided to measure the rate of sandblow advance and using a crude methodology I was able to establish that in 1975 the Hammerstone Sandblow advanced approximately half a metre. For many years I relied on that measure but in the 1990s I noted that the sandblows had ceased moving forward much at all. My hunches were confirmed when an Israeli geomorphologist, Naom Levin, studied the rate of the sandblow movements on Fraser Island more accurately. He has concluded that at the current rate of colonization of the sandblows by vegetation they will cease to exist on Fraser Island by the end of the 21st Century.

The half-metre annual advance remains a useful tool by which to appreciate the rate of plant succession following the colonization. Whenever I walk into Wabby Lakes I follow an old path through the forest that Hammerstone Sandblow had passed over. Realizing that near the beach the forest would have had over 2000 years to establish itself and that every step I take heading to the lake there would have been one year less for the forest to establish itself. It is a remarkable experience especially as I approach the frontline plants of Jacksonias and casuarinas tentative pioneering the way for a more substantial forest to become established in their wake.

I always regard the walk into Wabby Lakes on the northern track (that the Parks Service decided for inexplicable reasons to close to the public). I think that this is the most interesting short walk on the whole of Fraser Island. I especially like doing the walk in winter months to observe the delicate ground orchids especially the mosquito orchids that look like and apparently smell like female mosquitos. Male mosquitos try to mate with them and in the process pollinate these diminutive flowers. It makes me wonder whether plants have senses we do not appreciate. Apart from revealing plant succession and the advancing sandblow's impact on the topography, this walk shows a remarkable evidence of the sandblow's advance in the form of trees that had once been almost buried by the advancing sandblow but managed to just keep their heads above the piles of sand rising up around them.

Ancient Melaleucas: Most of the forest trees succumb as the sandblow advances and suffocate because their roots are unable to breathe. The Melaleucas though had a survival method of growing adventitious roots along their trunks to stop them from suffocating and they became the great survivors. Then as the sandblow slowly swept forward it slowly exhumed these melaleucas and revealed these long strings of adventitious roots descending from near their canopy. I estimate that if the sandblow had advanced at half a metre each year some of these trees would have been growing before the sandblow engulfed them at least 1500 years ago.

In 1974 I saw some melaleucas germinates on the edge of Wabby Lakes when the exceptionally heavy rainfall caused the lakes to rise to a record height. Since then I have watched the sand build up around those once tiny plants. Their trunks are now buried in metres of sand but their heads are well clear. My favourite melaleucas though are adjacent to Little Wabby. These must have similarly germinated at or near water level at some time past. However here there is now 80 metres of sand above the water level of the lake and the tree tops still protrude three metres from the sand. I like to claim that these are the tallest melaleucas in the world, although we will never be able to confirm that without a lot of digging.

Driftwood: The other trees that were growing in the face of the advancing sandblows succumbed and were entombed as the sand blow advanced. Then as the advance continued the sweeping action of the wind gradually exposed the skeletons and eventually exhumed them. Thus as one walks in sandblows one sees half-buried trees. The first person to note these was Joseph Banks who sailed with Captain Cook in 1770. He took particular note of the Cooloola Sandpatch: *We could see through our glasses that the sands which lay in great patches of many acres, each were movable. Some of them had been lately moved, for trees which stood up in the middle of them were quite green; others of a longer standing had many stumps sticking out of them which had been trees killed by the sand heaping about their roots. ...*

Banks would have been fascinated if he had been given the chance to study those dead tree stumps. The wind not only swept the sand away from the stumps but it also sand blasted them into fascinating sculptures. It is hard for people seeing these artefacts of Nature to appreciate that the wood may be the remnant of a tree that was growing before Christ walked on the earth.

In 1968, one of the best naturalists I have known, Eric Zillman took me bird watching along the edge of a sandblow. I found that we could silently approach birds and see them much closer and more easily because the tree canopy beside us could be at eye level depending on how far up the sandblow we had advanced. I have been fascinated by the sandblows themselves ever since not just for the opportunities they presented to sneak up on wildlife.

My fascination with sandblows reached a new level when I observed the formation of coloured sands occurring in Hammerstone sandblow. It made me much more aware of the significance of cryptobiotic crusts in general and of cyanobacteria in particular. I had observed these crusts in semi-arid areas of Australia

and America that where trampling grazing animals and humans had been excluded and they had been allowed to develop. Now when I enter the sandblows I am aware of just how the huge aggregations of very primitive organisms are transforming the landscape and establishing the foundations for other higher forms of life to build on.

Lakes: Fraser Island has endless fascinating features but for me the jewels in the crown are the lakes, particularly the perched dune lakes. Fraser Island is Queensland's only true lakes district. There are three types of lakes on Fraser Island: barrage lakes, window lakes as mainly found in the north of the island and perched dune lakes. I have never counted the perched lakes. The claim that there are more than forty seems a slight exaggeration unless some very small and very ephemeral water bodies are included. I have swum in some that are permanent water bodies and camped adjacent to almost as many. Each lake though is so different in character, that it is difficult for me to say which is my favourite.

Perched dune lakes: Perched lakes are elevated above the regional water table that may be many metres below. They are unconnected to the water table and with a notable exception of Lake Boomanjin, the only water in them is from rainfall within this elevated catchment. It surprises people that such porous sand can contain such large bodies of water. This has led to many fantasies as to the origins of the lakes with one fantasy suggesting underground connections to subterranean water bodies. It was only in the late 1960s that a limnologist, Ian Bayly recognized that they were so different to any other lakes known to geographers until then that he described them as perched dune lakes. They are so rare that Fraser Island has more than half of the known perched dune lakes in the world.

Over hundreds and thousands of years dune depressions develop impervious bases enabling them to eventually hold water within the saucer where the sand is sealed. Over further eons through currents created by the waves and ripples on the lake, they develop a large range of secondary features including beaches with lunettes behind them and sand spits. Lunettes are restricted to the lee (north-western) shores where the sand swept off the beaches is trapped in the vegetation immediately behind the beach. Gradually this sand accumulates into a crescent shaped dune called a lunette. Like all dunes, the higher it becomes, the more vulnerable it is to erosion. Sandblows have developed within the lunettes of Lake Boomanjin and Lake Birrabeen with some embryonic ones at Boorangoora.

Lake McKenzie, (*Boorangoora* to the Butchullas) is certainly the most iconic lake on Fraser Island attracting more than 200,000 visitors annually. It has the whitest of white beaches and the clearest and freshest water anyone will find in any natural lake on the face of the earth. Lake McKenzie (Boorangoora) is the most posted photographic subject on the internet of any part of Fraser Island but the sheer volume of visitors pushes me to more secret lakes. Lake Birrabeen has the same clear water and white beaches and only half the number of visitors. Like most of the larger lakes Birrabeen also has an interesting lunette. It also has a lot of fascinating trees that have been twisted and contorted by the wind into most interesting shapes.

Lake Allom is the only accessible lake set in rainforest. It is much smaller and provides a sense of intimacy with the backdrop of elegant hoop pine trees reflecting in its waters. I still hold the images of being there at dawn and watching the mauve light play on the water. The most beautiful picture that has pride of place in my home is of Lake Allom.

Although Lake Boomanjin doesn't boast such a rich and prominent surrounding forest as Lake Allom, it more than compensates with the intricate features and patterns of its wide beach and the contrast of its burgundy coloured waters with its purest white sand. Not only is Lake Boomanjin the largest perched dune lake in the world with a surface area of 200 hectares, but the three small streams draining a peaty swamp behind the lunette discharge small flows of richly coloured water into it. I am captivated by the patterns created by the water of those ever changing streams as they meander across Boomanjin's beach. A fascinating feature of the beach is the growth of sundews and bladderworts that add more colour and patterns to the beach. The roots of the carnivorous bladderworts are teased into the most striking designs. Along the shore, the soft lapping water the colour of port wine is continually creating chaotic and ever changing patterns. Most people go to Lake Boomanjin to swim. I rarely swim there now. I prefer to spend my time prowling around the lunette and beach along the western shore and being challenged to capture these remarkable images on camera. As a result I have more photographs of Lake Boomanjin that any other single feature of Fraser Island.

It surprises most people to see this 'lakes district' so bereft of bird life particularly ducks and other waterbirds. That is because the water is so pure and free if impurities it cant sustain much life. Because the water lacks nutrients no perched lakes supports more than three species of fish and these are small fish in low numbers. It would take hundreds to make a meal. The scientists describe the lake with low levels of nutrient "oligotrophic" or 'depauperate'. With such a low volume of fish there is little to support bird life except for the few strange looking musk ducks, some grebes but rarely and cormorants that may occasionally be seen the cavorting in the water.

With such a dearth of aquatic foods it is surprising that there should be an amazing density of turtles in the perched dune lakes. Arthur Georges was a young student who thought that Fraser Island lakes would be the most idyllic place in the world to spend a few years carrying out research for his doctorate. He chose to study turtles in Lake Coomboo never dreaming that the lake had a population of turtles in the hundreds for its few hectares of water surface. He set out to tag and measure each one and had his work cut out for him. It established that these turtles can survive on very little and they have to be very flexible in their diet. The study led Arthur to go on to become a renowned expert on freshwater turtles and reptiles generally

Wabby Lakes: Wabby Lakes are unlike any other lakes on the island. They are not perched dune lakes and they don't strictly fit into the window lake category and have a category of their own —barrage lakes. Further they are richer in fish species fish sizes and fish populations. The huge walls of naked sand flowing down from Hammerstone Sandblow on the eastern shores distinguish the Wabby Lakes. The water of Wabby Lakes is neither totally transparent nor tea coloured. It has a slightly emerald tint from the algae the groundwater has helped grow.

Not only are Wabby Lakes the deepest lakes on Fraser Island, but they are also biologically more productive that much larger lakes on the island. Squadrons of large catfish can be seen patrolling the shores. They and the other fish are sustained because of the slightly higher nutrient level in the water and the higher pH. Large catfish patrol the larger lake but there are no resident ducks. Other birds are drawn to it.

Brahminy kites and cormorants nest above it. White-bellied sea-eagles and Whistling kites regularly check it out.

The sandblow that now forms the barrage blocking off some small stream, once afforded the Butchulla protection from the wind. Many artefacts they left behind and that were once buried by sand now lie exposed providing evidence of the great population that once used it. Ike Owens, an Aboriginal friend told me that he had seen a bora ring near the lake but he died before he was able to show anyone the exact location that is now believed to have been engulfed by an advancing sandblow. I remember seeing the remnants of a gunyah tree near here. It was dead and decaying but the template where the huge slab of bark had been cut off to form the roof of a semi-cone shaped shelter was clearly visible. Sadly nobody in authority did anything to preserve it or even to identify it to passers by. The greatest testimony to the number of Aborigines who must have frequented Wabby Lakes comes from the name. *Wahba* means "place of crows".

Eternity: Their visit to Wabby Lakes was one of my parents' most enduring memories of their 1935 honeymoon. At their request when they died, I placed their ashes on Nulwarr Hill overlooking Wabby Lakes and Hammerstone Sandblow and the forest that seeks to colonize it and the surging ocean in the background. I plan that my mortal remains will one day blend with theirs and that for the rest of eternity my spirit will overlook this vista that epitomizes so much of Fraser Island, the sand, the sea and its rolling surf, the lakes and forest. It is an ever-changing scene and I expect to keep changing to eternity.

It is more than 50 years since I first set foot on Fraser Island. Since then I have walked over it from end to end, flown over it, driven to every corner I could penetrate and probed where vehicles can't go. I have discovered much yet each time I set foot on it I continue to discover more. I could never have appreciated that I would come to know Fraser Island more than any person alive, or that my life would become so much richer through the experience.

Since I first discovered the appeal of Fraser Island, I have also been privileged to explore more of the Australian continent than 99 percent of living Australians and to visit and appreciate more than a hundred World Heritage sites on six continents. I have experienced so many of the wonders of the world. Yet through all of my travels I find that my deepest affection remains forever with Fraser Island.