

# Preserving the Natural Integrity of Fraser Island

*The Fraser Island Defenders Organisation is most vitally concerned with preserving the World Heritage values of Fraser Island and Cooloola. All four World Heritage criteria for which the region has been recognized relate to the NATURAL values and FIDO's is most concerned with the threats to the identified World Heritage values.*

*This Backgrounder focuses on the three most potent threats to the long-term natural integrity of Fraser Island — Invading species, the unsatisfactory fire regime and climate change.*

## Invading Species

Fraser Island has already suffered significantly from invading species, although being an island, it has been hitherto fortunate to have escaped many invading species of feral animals that have degraded other parts of Australia. While to some extent it has been isolated from many invasive weed species, the list of invaders continues to grow as does their distribution on the island. Less known and appreciated are the pathogens that can heavily impact on both the flora and fauna. These include organisms such as root rot fungus and viruses such as Parvo virus that affects dingoes.

**Feral Fauna:** While Fraser Island is surprisingly free from some feral fauna that have devastated other natural sites such as pigs, foxes, rabbits and goats, it has been affected by others. Luckily some ferals such as horses have been eliminated and although taking cats and dogs and other domestic pets to Fraser Island has been flouted by a couple of Fraser Island landholders, the policy of banning them has generally worked. FIDO believes that the presence of a strong wild dingo population has mercifully kept foxes off the island and kept the feral cat population extraordinarily low. This has resulted in a healthy and natural bird population relatively free from invaders such as sparrows, Indian Mynas and starlings. However some unwanted invaders have arrived with alarming impacts. Cane toads have decimated most frog eating mammal and reptile populations on the island. Quolls are now probably extinct on Fraser Island. Death Adders and other snake species are extremely rare but there has been little monitoring of cane toads, their distribution and impacts. Because feral invaders are likely to be amongst the winners of climate change, examining their impacts should be one of the topics to be explored should Fraser Island become a national centre for research on the impacts of climate change.

**Weeds:** Seeds travel. They can travel on the wind and water, but mostly they are carried by means provided by humans. Some are carried deliberately in the form of garden or house plants. By escaping into the natural environment, many of these have become major weeds at the major centres of weed infestations on Fraser Island, the urban hubs. Other weeds have hitchhiked to Fraser Island on vehicles, tyres, in freight and on our boots. The reality is that weeds are now a major threat to Fraser Island's integrity and they can be

expected to become an even greater threat as a result of climate change.

**Adaptability:** The truth is that whereas our native plants on Fraser Island are adapted to a narrow range of very specific conditions of climate, soil structure and fertility and rainfall, feral plants are far more flexible and adaptable and adjust to change and disturbance much more readily than natives. Thus lantana can out-compete and smother native plants and create its own niche in the environment. Since so many of our natives are so restricted, we need to be apprehensive about what will happen if or when so many natives succumb to changing climates. What will replace them in the Fraser Island environment of the 22<sup>nd</sup> Century?

**Pathogens:** One of the other potent threats to the integrity of Fraser Island is the prospect of alien diseases invading and upsetting the existing ecology. There are a plethora of diseases that have had a more dramatic impact on the ecology of American national parks than hunting or forest harvesting could ever have had. The tragic introduction of some pathogens has devastated some forests. It took only 40 years for the American chestnut to be nearly wiped out on the East Coast. Only about one to three percent of beech trees are immune to beech bark disease and Dutch elm disease killed about 90 percent of the American elm population. The Asian Longhorned beetle does not discriminate and attacks many American hardwood species including maple, birch, horse chestnut, poplar, willow, elm and ash. National Park status couldn't save forests in American national parks and World Heritage sites from such impacts. In Australia we are aware of some of the pathogens that can have devastating impacts including Phytophthora. We know that all sorts of pests and diseases can be transmitted from domestic pets to wildlife population. However the potential of pathogens remains a most potent threat to the natural integrity of Fraser Island.

**Quarantine:** Keeping pathogens and pests out of any National Park is difficult but it should be somewhat easier to exclude them from Australia's largest island National Park, surrounded as it is by water. However it requires a much more vigorous effort to enforce quarantine measures. It requires as much public education as the QPWS gives to outlining its Dingo Safe program. It requires signage at the points of embarkation. It requires more rigorous policing including some random vehicle inspections to assess the potential for unwanted introductions.

# The Biggest Long-term Threats to the integrity of Fraser Island and Cooloola

## Getting the Fire Regime Right

Fire has been integral to the Australian environment for at least 40,000 years and, as long as there are humans interacting with the environment, it is inconceivable the ecology could ever return to the balance that existed before humans arrived in Australia. Many components of the pre-existing ecology have been lost, become extinct or irrevocably transformed in the millennia since the arrival of humans. Therefore the most biodiversity that can be expected to be sustained is what existed before Europeans began to transform Australian environments.

**Aboriginal burning:** Fire ecologists acknowledge that Aborigines used fire extensively. Apart from its use in cooking and heating, it was one of their main tools for environmental management. Aborigines' use of fire included the following purposes:

- creating habitats suitable for the preferred species they hunted and gathered;
- driving or luring animals into ambushes when hunting; and
- reducing risk and improving their personal safety by reducing the risk from wild fires;
- to allow freer movement when travelling through the countryside.

Traditional Aborigines were called "firestick farmers". It was part of their life from birth, when babies were submitted to smoking ceremonies as newborns, to death. As such they became masters of fire and they used it masterly to their advantage and the ecology adapted to it. Therefore the maximum biodiversity that can now be expected in Australia is what was here when European settlement began. We can't reinstate species that have already been lost but we may lose more species if the habitat departs too significantly from what it developed into under the Aboriginal fire regime. Some would argue that this is already occurring or may have already occurred on Fraser Island with the departure from the burning regime that existed there for at least 5,500 years.

Aborigines constantly burnt the Australian bush without creating firestorms and without the use of any modern fire-fighting equipment and without tragic loss of life. They achieved this outcome by multiple small low intensity burns that created a mosaic of small burnt patches across the landscape. They applied their intimate understanding of the weather and the environment to achieve this outcome.

**The Optimum Fire Regime:** It is difficult to be prescriptive about the fire regime that needs to be re-established on Fraser Island because decades of ignoring proper fire management or applying too few resources to this issue have created a time-bomb that authorities are now reluctant to approach. Unless it is approached and dealt with adequately sooner rather than later, Fraser Island's ecology will suffer.

## Climate Change

There is increasing evidence that the impact of climate change on the Fraser Island World Heritage area will be at least as devastating as the impacts on the more celebrated Great Barrier Reef. The loss of World Heritage values will be just as much. The impacts will come through dramatic coastal erosion, loss of many very significant plant species, and more ferocious wildfires while the impact on fauna and other organisms is imponderable.

Just as Fraser Island ecosystems are being significantly affected by the changes in the fire regime over the past two centuries, the impacts of climate change with a hotter, drier and more violent climate will affect the ecology. Conditions will become intolerable for some creatures and plants and they won't survive in the new climate regime. The loss of species will depend on the degree of climate change that occurs.

**Geomorphic changes:** There is already evidence that some geomorphic changes are occurring such as the disappearance of sandblows. Climate change will also result in increased coastal erosion and rising sea levels. These are already evident in a small way but can be expected to accelerate as the consequences of climate change kick in. They will cause Fraser Island to physically shrink in size by about 5% based on former shorelines.

**Impacts on Flora:** In a separate backgrounder, FIDO has pointed out the vulnerability of the Fraser Island forests with the majority of the trees belonging to species that are already at the warmest end of their distributional range. If global warming progresses and these species, including scribbly gums, blackbutt, syncarpia and tallowwoods do not survive, Fraser Island will have a vastly different plant community, probably based on alien species.

The predicted drier conditions and more extreme weather will result in more frequent wild fires. That could have a catastrophic effect on the flora. In September 2009 one wild fire devastated 22,000 ha (about 13% of the island) in a single ferocious event that will take decades to recover from. At the same time more than 25% of Cooloola was burnt out.

**Impacts on Fauna:** Even if the fauna were tolerant to the new climate, the changing plant communities will result in a loss of suitable habitat. Even the fisheries are not immune. Tailor, a favourite target species for anglers already reach the warmest limit of their range at Fraser Island. However warmer conditions will provide more suitable habitat for crocodiles and other more tropical species that may migrate southwards.

**Whatever way one views the impact of climate change, the result will be a Fraser Island vastly different physically and ecologically to the island it is now.**

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