Birds Australia
CONSERVATION THROUGH KNOWLEDGE

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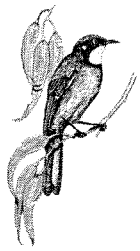

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INQUIRY INTO CLIMATE CHANGE AND ENVIRONMENTAL IMPACTS ON COASTAL COMMUNITIES

Birds Tasmania on behalf of Birds Australia provides the Standing Committee on Climate Change, Water, Environment and the Arts with a Submission on "**Australia's coastal birds and their relevance to the Terms of Reference for the Inquiry**". The Executive Summary of the Submission is at **Attachment A** and the substantive Submission is at **Attachment B**.

We have addressed each of the Terms of Reference (ToR) in our submission regarding their applicability to coastal birds and their habitat. We have also attached to this submission photographs that detail adverse impacts of vehicles, dogs, bikes, horses etc on values on Australia's coastal margins. These pictures can be considered typical of adverse impacts on coastal birds and their habitat in other areas of Australia. As shown by the photographs, the threats faced by shorebirds and coastal seabirds are ubiquitous, increasing and cumulative.

Birds have been long recognised internationally as excellent environmental monitors or bio-indicators. They provide signals of environmental changes across a wide range of impacts and now are increasingly including those from climate change. Changes in numbers, changes in distributions, changes in breeding season events and migration are all now recognised and used internationally as biological signals from birds about the state of the environment. Some of these types of signals are available in Australia as shown by long-term data sets and extensive survey data held by Birds Australia and its regional groups.

All of the species mentioned or described in the submission are listed marine and/or migratory and/or threatened species under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, with various listings under State legislation. Importantly, many species are also listed with elevated conservation status in recent IUCN Red List assessments (where elevated equates to increased vulnerability, threatened or endangered status).

Coastal birds provide valuable information on the state of health of coastal ecosystems; seabirds provide

similar information about the marine environment; and waterfowl are useful indicators of wetlands. Recent reports of massive decreases in waterfowl and shorebirds in Australia are clear signals that their numbers and their ranges are decreasing at catastrophic rates throughout much of Australia, with few exceptions (where data are available) – we are losing species, losing biodiversity and losing bird habitats. Very few long-term data sets indicate increasing numbers of marine birds, shorebirds or waterfowl.

The existing framework of legislation, policies, management strategies and recovery plans at Local, State and Federal levels of Government in Australia is demonstrably failing to protect Australia's coastal birds and their habitat.

A comprehensive strategic review of every Government Policy on all land use strategies including Recovery and Management Plans presently in effect in Australia is essential to mitigate the predicted impacts of climate change. The objective of such a review should be to produce a holistic, whole of Government approach to managing these impacts both for human populations as well as biodiversity and coastal birds in particular.

It is critical that all responses across all levels of government and society are integrated and should be adopted by both State and Local Governments in their strategic responses to climate change. Adopting a proactive, integrated response now will save the Tasmanian and Australian Governments substantial investment in funding reactive responses to mitigate climate change impacts.

The Australian Government's responses to climate change and particularly coastal issues need to acknowledge and incorporate the significant contributions birds make to Australia. Failure to do so will see some of Australia's remarkable birds follow the example of the Tasmanian Tiger – a situation that is indefensible to future generations of Australians and to the global community.

Attachment A outlines the specific actions that Birds Tasmania believes are essential to conserve our coastal birds. In particular, I would urge that serious consideration be given to formally listing the coastal shorebird and seabird community discussed in the Submission as a **threatened ecological community** under the EPBC Act. Given the wide spectrum of threats working in concert against this avian community, predicted sea level rises and further human encroachment of coastal habitats, the entire community will be under greater threat, and recognition of a threatened community status under the EPBC Act would oblige greater efforts by Local, State/Territory and Australian Governments to work for their conservation.

Thank you for considering the details identified in this submission. I would welcome the opportunity to provide additional information, scientific papers and analyses in support of statements made herein. I am also happy to discuss any aspect of this submission or to clarify any points raised.

Yours sincerely,

EJ Woehler

Dr Eric J Woehler
Chair

Attachment A

"Australia's coastal birds and their relevance to the Terms of Reference for the Inquiry"

Executive Summary

An increasing number of resident and migratory shorebird and seabird species are decreasing in their distribution and abundance, resulting in an ever-elevating conservation status. The Australian coastal margin, and the species that depend on intact, functioning coastal ecosystems are now in a worse condition than they were just a decade ago – there are fewer birds of fewer species, less suitable nesting, feeding and roosting habitats available, and a greater spectrum of threats of greater intensity and frequency operating. There has been a rapid and accelerating fragmentation of coastal ecosystems around much of Australia.

The ever-increasing proportion of Australia's human population living in close proximity to the coastal margins is the major contemporary contributor to these long-term, widespread population decreases in Australia's coastal birds. The greater number of people, resulting in more vehicles, more predatory and disruptive domestic animals (eg dogs and cats), increased clearing of native vegetation for housing, associated infrastructure and aesthetics all result in a severely impacted coastal margin, with many areas beyond rehabilitation and restoration.

The predicted impacts of climate change in particular sea level rise and resulting loss of coastal margins, especially sandy beaches, over the next 50 to 100 years, will compound existing conservation issues, and almost certainly result in the loss of numerous species of coastal shorebirds and seabirds. The predicted sea level rise will permanently flood existing nesting, roosting and foraging habitats for these species. With no alternative habitats available, these species will be rapidly extirpated and potentially pushed towards extinction.

Accordingly, Birds Tasmania on behalf of Birds Australia recommends to the Standing Committee on Climate Change, Water, Environment and the Arts that the following actions are essential to achieve conservation of coastal birds.

RECOMMENDATIONS FOR CONSIDERATION:

A. **An integrated, whole of government, whole of continent approach to land and water planning and management that incorporates and integrates biological reality is urgently needed. Future management of Australia, including the 'coastal' zone, must recognise the concept of cumulative impacts in all aspects of planning. Such a 'top-down' approach will achieve far more than the best efforts of 'bottom-up' community groups working together to undo the current bureaucratic landscape.**

B. **An integrative, whole of government approach, expanded to include the whole of the Australian community, encompassing three levels of government, the involvement of NGOs and community groups such as Coastcare (in whatever incarnation) in open, transparent partnerships will ensure tighter integration for water management, resource utilisation and coastal biodiversity conservation.**

C. **A comprehensive strategic review should be conducted of all current Government Policy on all coastal land use strategies to mitigate the predicted impacts of climate change with the aim of producing a whole of Government approach to managing these impacts both for human**

populations as well as biodiversity and coastal birds in particular. State and Local Governments should integrate their responses to climate change across all levels of policy development and implementation.

D. Planning, development and management processes for the coast must be better integrated to provide more sustainable outcomes socially, environmentally and economically. There is a clear and urgent need for an increasing focus and recognition on the economics of ecosystem services in all aspects of planning, management and policy formulation.

E. The use of fresh water should be prioritised through conduct of a water audit to assess all water needs and uses and to determine priority allocations and costs with full planning consideration for future decreases in its availability. This will place a true monetary value on water for all users, rural and municipal, recreational and industrial, to complement the natural needs and uses of water in the Australian environment.

F. With almost 90% of Australia's human population living within 100km of the coast, a suite of clear and unambiguous goals designed to achieve sustainability need to be developed for the state of the coastal environments for 2050. Benchmarks and stated outcomes to achieve sustainable use and conservation of the coast and its resources could include no net loss of biodiversity, no increase in the number of species listed on IUCN Red List, or an increased protection of coastal margins.

G. The coastal shorebird and seabird community that uses the Australian coastal zone should be formally listed as a threatened ecological community under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. Given the wide spectrum of threats working in concert against this avian community, the predicted sea level rise and further human encroachment of coastal habitats, the entire community will be under greater threat, and recognition of their conservation status under the EPBC Act would oblige greater efforts by Local, State and Federal Governments to work to their conservation.

H. Coastal buffers and coastal setbacks to protect remaining coastal habitats and species should be established to allow greater flexibility by coastal species to deal with a changing environment driven by climate warming and sea level rise.

I. Collection of existing long-term biological data sets should be maintained and enhanced through additional support and capacity. Support now needs to be given to further collection of a broad suite of environmental data, to provide the basis for the needs of future researchers, managers and governments. Decision-makers today need to understand what the Australia of tomorrow will need in 50 and 100 years time, to deal with changes to the Australian environment.

J. Water recycling must be adopted within the entire Australian community - agriculture and urban; residential and industrial. The use of treated grey water for agriculture and industry should be adopted to eliminate the use of drinking-quality freshwater for irrigation and industrial use.

K. Estuarine flows must be restored to ensure survival both of coastal and inland wetlands.

L. The collection of beach-washed seaweeds must be eliminated to maintain much needed nutrients for coastal communities – including migratory and resident shorebirds.

M. Greater community involvement and engagement including stewardship and monitoring in all aspects of future coastal management must be promoted to contribute to greater levels of awareness and an increased likelihood of community members adopting 'sustainable' practices and maintaining/improving coastal environmental health into the future.

N. It is critical and essential to adopt the use of the Precautionary Principle, and even more critical that the Principle is actively implemented and incorporated into management regimes. The lack of scientific certainty should not prevent the Australian, State and Territory Governments and Local Councils from taking preventative, pro-active measures to combat all facets of predicted impacts arising from climate change and sea level rise.

O. It is necessary to plan for 'worst-case' scenarios, as these are likely to be more realistic. People are reluctant to assume or incorporate realistic assessments of climate change impacts, such as sea level rise or the predicted increase in frequency and severity of extreme events. This is largely due to there being no terms of reference – we are all experiencing climate change for the first time and have no comparable experiences to guide our actions. Instead, we are seeing coastal Councils adopting completely inappropriate planning strategies and policies, such as encouraging coastal development on King Island.

P. A combination of Precautionary Principle and planning for 'worst-case' situations will result in pro-active strategies erring on the side of caution, but will lead to more appropriate and much more flexible responses at all levels of Government, including keeping more options open for adaptive management in the future. Adoption and planning for a 'worst-case' scenario will result in greater capacity to adapt to unexpected scenarios in the future, with lower economic, social and environmental cost to the community.

Q. Australian, State and Local Governments should adopt 'best-practice' solutions and responses adopted elsewhere in the world in their planning and responses to climate change. There is no need to 'reinvent the wheel' or to relearn what someone else has learnt somewhere else – all governments should be open to innovative solutions identified elsewhere. Innovation should not be seen as an impediment to adoption. All too often experiences learned elsewhere must be re-learned at greater cost simply to overcome local resistance.

SUBMISSION TO THE INQUIRY INTO CLIMATE CHANGE AND ENVIRONMENTAL IMPACTS ON COASTAL COMMUNITIES

Australia's coastal birds and their relevance to the Terms of Reference for the Inquiry

The terms of reference for the inquiry relate to:

- existing policies and programs related to coastal zone management, taking in the catchment-coast-ocean continuum
- the environmental impacts of coastal population growth and mechanisms to promote sustainable use of coastal resources
- the impact of climate change on coastal areas and strategies to deal with climate change adaptation, particularly in response to projected sea level rise
- mechanisms to promote sustainable coastal communities
- governance and institutional arrangements for the coastal zone.

Species of Concern

For the purposes of this submission, our comments relate to coastal birds, comprising resident and migratory species of shorebirds and some species of seabirds. The shorebirds referred to in this submission are Hooded and Red-capped Plovers, and Pied and Sooty Oystercatchers. The seabirds of particular concern are beach-nesting Little and Fairy Terns.

These birds are found on coastal areas of Australia, primarily on sandy beaches but are also found on rocky foreshore and coastal islands. The resident species nest, forage and rest on the coastal margins for each day of their lives. Individuals of some resident species live for more than 30 years. Migratory shorebirds and seabirds visit Australia from early September to late April when they return to the northern Hemisphere and face the same threats as resident coastal species, during their time in Australia.

All of the species mentioned or described in the submission are listed marine and/or migratory and/or threatened species under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, with various listings under State legislation. Importantly, many species are also listed with elevated conservation status in recent IUCN Red List assessments (where elevated equates to increased vulnerability or endangered status).

Birds as Indicators of Environmental Health

Long recognised internationally as excellent environmental monitors or bio-indicators, birds provide signals of environmental changes, including those from climate change. Changes in numbers, changes in distributions, changes in breeding season events (phenology) and migration are all now recognised and used internationally as biological signals from the environment. Some of these types of signals are available in Australia, with long-term data sets and extensive survey data held by Birds Australia and its regional groups.

Birds Tasmania has long-term data sets that span several decades for some species, such as migratory shorebirds in southeast Tasmania. In some cases, sufficient similarities exist among species' breeding habits that allow us to believe similar trends (decreases) exist in closely-related species or ecologically-similar species. No bias is introduced in the selection of these species for the inquiry.

Coastal birds provide information on the state of health of coastal ecosystems; seabirds about the marine environment; and waterfowl are useful indicators of wetlands. Recent reports of massive decreases in waterfowl and shorebirds in Australia are clear signals that their numbers and their ranges are decreasing at catastrophic rates throughout much of Australia, with few exceptions (where data are available) – losing species, losing biodiversity and losing their habitats. Very few long-term data sets indicate increasing numbers of marine birds, shorebirds or waterfowl.

Current Trends in Decreasing Numbers of Coastal Birds

An increasing number of resident and migratory shorebird and seabird species are decreasing in their distribution and abundance, resulting in an ever-elevating conservation status. The Australian coastal margin, and the species that depend on intact, functioning coastal ecosystems, are now in a worse condition than they were just a decade ago – there are fewer birds of fewer species, less suitable nesting, feeding and roosting habitats available, and a greater spectrum of threats of greater intensity and frequency operating. *In toto*, there has been a rapid and accelerating fragmentation of coastal ecosystems around much of Australia.

The ever-increasing proportion of Australia's human population living in close proximity to the coastal margins is the major contemporary contributor to these long-term, widespread population decreases in Australia's coastal birds. The greater number of people, resulting in more vehicles, more predatory and disruptive domestic animals (eg dogs and cats), increased clearing of native vegetation for housing, associated infrastructure and aesthetics result in a severely impacted coastal margin, with many areas beyond rehabilitation and restoration.

The predicted impacts of climate change in particular sea level rise and resulting loss of coastal margins, especially sandy beaches, over the next 50 to 100 years, will compound existing conservation issues, and almost certainly result in the loss of numerous species of coastal shorebirds and seabirds. The predicted sea level rise will permanently flood existing nesting, roosting and foraging habitats for these species. With no alternative habitats available, these species will be rapidly extirpated and potentially pushed towards extinction.

Strategic Review of Government Land-use Policy

The existing framework of legislation, policies, management strategies and recovery plans at Local, State and Australian levels of Government in Australia are failing to protect Australia's coastal birds.

A comprehensive strategic review of every Government Policy on all land use strategies including Recovery and Management Plans presently in effect is essential to mitigate the predicted impacts of climate change. This should aim to produce a holistic, whole of Government approach to managing these impacts both for human populations as well as biodiversity and coastal birds in particular.

Many existing policies, plans and land use strategies are becoming increasingly inappropriate and inconsistent with what we now know about the predicted changes to temperature, rainfall, wind patterns and sea level rise. Existing land management regimes and land uses must be reassessed in light of predicted changes to Australia's climate over the next 40 to 100 years.

TOR 1. Existing policies and programs related to coastal zone management, taking in the catchment-coast-ocean continuum

There are two core reasons for the current decreasing conservation status of Australia's beach-nesting shorebirds and seabirds. These are habitat loss, and current land and water management policies and

practices.

Review of land and water planning and management arrangements

1.1 Land and water across Australia are generally 'managed' by a plethora of Councils, State and Federal Governments and their agencies with little coordination and even less recognition and implementation of biological reality. The land (and its waterways, lakes, coasts and islands etc) is divided into catchment zones, coastal zones, waterways etc that have no relevance to the biological processes at work. This allows no recognition of the interconnection of different ecosystems, their communities and how they function.

1.2 In Tasmania, the three NRM regions – the South, North and Northwest – have been established on the basis of the three telephone calling regions (the 62, 63 and 64 prefixes). Despite the existence of a scientifically valid contemporaneous bio-regionalisation for Tasmania, the NRM regions were established adopting the spatial extents of existing telephone prefixes rather than an integrated biological approach.

1.3 As a consequence, to cite just one example, management of a coastal margin south of a creek differs from managing the same beach north of the creek because the NRM boundary follows the creek. It is only through the efforts of community groups and local government staff working collaboratively that this form of management complexity can be overcome.

1.4 There is an urgent need to manage Australia's biodiversity and resources on a biological basis – the arbitrary lines on maps (eg boundaries of Local Government Areas, NRMs, coastal reserves etc), where management ends at the high-water mark or the edge of river etc, lead to inefficient and unproductive management strategies, inappropriate land use, a dysfunctional and uncoordinated/non-integrated *ad hoc* approach to land management.

1.5 There is a near-complete absence of recognition of the continuity and connectivity among ecosystems – typical management regimes focus upon single species or single issues (such as recovery plans), rather than an integrated approach – a more appropriate strategy would be to have ecosystem-based management regimes that incorporate explicitly the interconnections present in the real world.

1.6 As a direct consequence of this lack of an integrated, whole of government, whole of continent management, the current management regime in Australia is *ad-hoc*, piece-meal and reactive, with minimal integration, and effectively no recognition of the fundamental linkages between processes and events that occur at the centre of Australia that eventually are manifested at the coast.

1.7 Future management of Australia, including the 'coastal' zone, must incorporate biological and biogeochemical reality – rainfall in the mountains hundreds of kilometres inland may eventually reach the coast. A better understanding of hydrological cycles is critical to water management and coastal conservation in Australia. There is an intimate connection between terrestrial and marine ecosystems. The coastal zone is the interface between them and is currently under massive threat.

1.8 The artificial partitioning of the continent for management has resulted in a massive loss of native habitats, massive decreases in Australia's remarkable flora and fauna, and left future generations little room to manoeuvre should there be a wish to restore, rehabilitate and rescue the continent.

Recommendations

A.	*An integrated, whole of government, whole of continent approach to land and water planning and management that incorporates and integrates biological reality is urgently needed. Future management of Australia, including the 'coastal' zone, must recognise the concept of cumulative impacts in all aspects of planning. Such a 'top-down' approach will achieve far more than the best efforts of 'bottom-up' community groups working together to undo the current bureaucratic landscape.*

B	*An integrative, whole of government approach, expanded to include the whole of the Australian community, encompassing three levels of government, the involvement of NGOs and community groups such as Coastcare (in whatever incarnation) in open, transparent partnerships will ensure tighter integration for water management, resource utilisation and coastal biodiversity conservation.*

Need for Integrated Planning to Manage Development Applications affecting the Coast

1.9 Presently, all development applications are considered in isolation, with no recognition that the impacts from one or more developments may compound cumulatively. These cumulative impacts may arise from synergistic interactions, and can be additive, multiplicative or negatory in their actions. There is a critical need to recognise and manage more effectively the complexity and interaction of these impacts.

1.10 Further challenging managers is that the spectrum and intensity of threats will change over time/space, requiring a proactive approach to threat management and conservation efforts in coastal zones in a timely manner. Virtually all existing threats will be 'enhanced' by climate-change related events, further stressing the coastal zone and coastal species.

1.11 Future management must not consider the 'coast' in isolation from other components of the Australian landscape. Similarly, it is not always appropriate to deal with single-species management in the coastal environment. A species does not live in isolation in its environment nor do communities or ecosystems exist in isolation in the Australian landscape.

1.12 The failure to recognise, incorporate and integrate biological and hydrological realities into planning processes will result in the emergence of poor, incorrect and inappropriate management decisions, strategies and policies. Adopting a pro-active approach to management will always have a lower economic cost than the practice of costly reactive, 'band-aid', 'undo the damage' management processes currently in place.

1.13 There is a basic lack of recognition of the importance of ecosystem services in current management practices because no economic value is given or recognised to intact functioning ecosystems in current planning or land management frameworks. Wetlands are still being drained in support of inappropriate and unsustainable land use and farming practices and coastal development is destroying fragile coastal zones for canal estates.

Recommendations

C.	*A comprehensive strategic review should be conducted of all current Government Policy on all coastal land use strategies to mitigate the predicted impacts of climate change with the aim of producing a whole of Government approach to managing these impacts both for human populations as well as biodiversity and coastal birds in particular. State and Local Governments should integrate their responses to climate change across all levels of policy development and implementation.*

D.	*Planning, development and management processes for the coast must be better integrated to provide more sustainable outcomes socially, environmentally and economically. There is a clear and urgent need for an increasing focus and recognition on the economics of ecosystem services in all aspects of planning, management and policy formulation.*

PROPER VALUE FOR ALL USES OF WATER

1.14 Australia will experience changes in rainfall patterns into the future. Impacts of these changes will include an increased frequency and severity of droughts and major changes in water flows in many major catchments across the continent. This in turn will result in further habitat loss, particularly in the more 'climatically-challenged' areas where ecosystems and environmental water flows are already under serious stress. Additional loss of habitat and water resources in these areas will, for example, have an adverse effect on wetlands and bird species.

1.15 It is critical that the water needs of natural components of the environment such as waterways, wetlands and coastal lagoons are included in water allocation and management policies. Of concern is the conspicuous absence of any consideration or acknowledgement of the needs of natural systems for fresh water including the true value of intact coastal ecosystems that depend upon environmental flows.

1.16 Each catchment in Australia must be assessed in light of predicted changes in rainfall patterns to ensure water resource use within the catchment is set within a national framework for water use that is appropriate and properly costed. Included in this must be recognition that rivers and estuaries provide a network of feeding and resting sites for birds from inland areas to the coastal margins and this network must be maintained to allow for the continued use of migratory, wetland and marine birds into the future.

1.17 Rather than supporting and maintaining existing inappropriate land-use and farming practices that deny Australia's waterways and wetlands the water that they need to survive, Australian land managers should encourage land use practices that are sympathetic to, and consistent with, long term water supplies. The construction of numerous farm dams for irrigation reduces water flows across the landscape and replenishment of river systems as well as allowing for significant evaporation, resulting in a highly inefficient use of an increasingly precious resource.

1.18 The use of fresh, drinking-quality water for water-intensive uses such as irrigation of golf-courses, public open spaces and sports fields is totally inappropriate in a looming environment of water shortage. Such areas should be irrigated with recycled grey water, as is the practice elsewhere in the world. Greater use of recycled water for irrigation should also be incorporated in water planning. Similarly, the freshwater demands of heavy industry need to be determined more in recognition of rainfall predictions into the 21st Century.

Recommendation

E.	*The use of fresh water should be prioritised through conduct of a water audit to assess all water needs and uses and to determine priority allocations and costs with full planning consideration for future decreases in its availability. This will place a true monetary value on water for all users, rural and municipal, recreational and industrial, to complement the natural needs and uses of water in the Australian environment.*

TOR 2. The environmental impacts of coastal population growth and mechanisms to promote sustainable use of coastal resources

The increasing spectrum of threats adversely affecting coastal birds arises largely from the social fabric of the Australian community. The observed long term decreases in long-lived coastal birds indicate a crisis situation in the conservation of coastal birds.

2.1 All coastal development must be considered in light of predicted climate change impacts particularly sea-level rises approaching 80cm and concomitant landward movement of the coastline, typically at rates of 10s to 100s of times the rate of sea level rise, resulting in increased rates of coastal erosion. Local Governments need to revise their Planning Schemes, incorporating 'worst-case' scenarios as an appropriate, precautionary approach to coastal planning and management to incorporate increased rates of coastal erosion.

2.2 In light of predicted sea level rise, and the ever-increasing proportion of Australia's human population living close to, and using the coastal margins for recreation, the direct and unarguable result will be a greater spectrum of threats to all species of coastal birds and increased frequency and intensity of these threats. Several species, such as Fairy Terns, already have an elevated conservation status, and their conservation under predicted sea level rise, increased storm frequency, and increased contact with human recreational activity must be managed sympathetically with all aspects of coastal management, including coastal development.

2.3 Coastal wetlands, areas of high biodiversity and high conservation status, are already threatened by drainage, reduced water flows, eutrophication, rising sea levels and inappropriate management. Coastal wetlands, including Ramsar-listed sites for which the Australian and Tasmanian governments have legal obligations for management, are particularly vulnerable. All species of birds that are dependant upon these wetlands will come under greater pressure as water is diverted for unsustainable land use practices. Continued water flow into wetlands is essential to conserve these fragile ecosystems.

2.4 As it is likely that these threats will change over time/space, it is critical that some key habitats must be protected for nesting, foraging and roosting for resident and migratory species. Mainland states allow beach closures to protect nesting sites of plovers and terns to varying degrees – but to date the Tasmanian government has not considered this option, resulting in catastrophic beach destruction by 4WDs (see attached photographs).

2.5 These destructive activities are in themselves sufficient to extirpate local and regional populations of coastal birds, but in conjunction with sea level rise and the predicted increased frequency and intensity of extreme events associated with climate change, they are likely to dramatically increase the probability of the extinction of endemic species and subspecies such

as Hooded Plovers and Fairy Terns.

2.6 Coastal communities around much of Australia's coastline make a substantial contribution to our national tourism success, and these coastal areas must be managed in a sustainable manner to conserve the values that are attracting visitors. These values include not only the birds that nest, forage and roost on Australia's coastal fringes but coastal wetland habitat including wetlands that will continue to provide a focus for national and international visitors.

Recommendations

F.	*With almost 90% of Australia's human population living within 100km of the coast, a suite of clear and unambiguous goals designed to achieve sustainability need to be developed for the state of the coastal environments for 2050. Benchmarks and stated outcomes to achieve sustainable use and conservation of the coast and its resources could include no net loss of biodiversity, no increase in the number of species listed on IUCN Red List, or an increased protection of coastal margins.*

G.	*The coastal shorebird and seabird community that uses the Australian coastal zone should be formally listed as a threatened ecological community under the* Environment Protection and Biodiversity Conservation (EPBC) Act 1999. *Given the wide spectrum of threats working in concert against this avian community, the predicted sea level rise and further human encroachment of coastal habitats, the entire community will be under greater threat, and recognition of their conservation status under the EPBC Act would oblige greater efforts by Local, State and Federal Governments to work to their conservation.*

TOR 3. The impact of climate change on coastal areas and strategies to deal with climate change adaptation, particularly in response to projected sea level rise

Monitoring of birds can provide data on broader environmental change such as climate-related changes to Australia's environment, but perhaps even more important is the potential for birds to provide data on the efficacy of strategies established as responses to climate change. This could allow useful feedback to managers responsible for delivering government policy, and allow for fine-tuning management regimes in light of the signals provided from the environment by birds.

3.1 Rising sea levels will result in inland 'migration' of Australia's coastline – where the absence of infrastructure allows. Seawalls, roads, housing and other infrastructure will serve as an impediment to beaches migrating and taking with them their flora and fauna. Governments and Councils should be promoting coastal conservation with appropriate conservation of low-lying coastal areas and incorporate coastal setbacks for all coastal developments to incorporate rising sea levels over the next century. This approach will reduce their liability in the future as it will prevent coastal developments too close to the coastline

3.2 The establishment of coastal buffer zones specifically designed to be lost over next 50 to 100 years as sea levels rise will provide a mechanism for human communities and coastal shorebirds and seabirds to adapt to a rapidly changing coastal zone. It is very likely that many islands and coastal margins presently used for nesting, feeding and roosting will simply disappear – and with the loss of these important habitats, will be the concomitant loss of many coastal species. While some species may adapt rapidly in adopting alternative nesting and feeding sites, the absence of feeding habitat will be far more critical and will contribute to the

reduction/extirpation/extinction of extant coastal species of flora and fauna.

Recommendation

H.	***Coastal buffers and coastal setbacks to protect remaining coastal habitats and species should be established to allow greater flexibility by coastal species to deal with a changing environment driven by climate warming and sea level rise.***

3.3 Fundamental to all management and conservation strategies and policies are scientifically robust long-term data sets that serve to guide the formulation and assessment of management and conservation priorities. Unfortunately, such long-term (eg decadal-scale) biological data sets in Australia are few. There is an urgent need to identify what data sets are needed over what temporal and spatial scales, in order to provide the confidence in long-term management of coastal zone values including biodiversity.

3.4 Monitoring should no longer be dismissed as second-class science. Monitoring can be achieved by members of community groups with sufficient resources and capacity. However governments need to establish and support monitoring efforts including with community groups and individuals for collection of data sets on resident and migratory shorebird numbers in Australia.

3.5 Promotion of community involvement could attain the collection of meaningful scientific data. For example, presently volunteer members of several Tasmanian coastal communities are photographing beaches with a view to establishing a data set over time of erosion and sea level rise. Under appropriate guidance and instruction, communities can contribute data useful for a number of reasons – potentially even State of the Environment reporting. Long-term biological data sets are rare in Australia, and promoting their collection by communities under appropriate direction will increase the data available in the future.

3.6 A network of volunteers throughout Australia has monitored shorebird numbers around the continent for more than 20 years. Some sites are visited bi-annually, other more frequently. This data set provides a valuable baseline for future monitoring, and provides critical data for management and policy formulation.

3.7 The promotion of long-term environmental and ecological data will allow for greater understanding of past and current responses to environmental stresses such as climate change and sea level rise, and will produce greater confidence in predicting changes into the future at decadal to century scales. Long-term data will generate new paradigms in planning and conservation for the coastal zone and more broadly the entire Australian landscape.

3.8 Current data sets are hopelessly inadequate, with too few data collected, at insufficient temporal frequency and at too coarse spatial scales. Current data sets will fail future generations of Australians unless there is a marked improvement in their collection and the value placed on these data sets. Long-term data sets spanning decades or longer provide the crucial framework for short-term studies.

3.9 There is an urgent need for a long-term commitment to identify and collect the basic data that are required to guide and inform governments and communities into the future, not just for climate change, but also for all environmental issues. Monitoring should not be seen as second-class science. The commitment for data collection must become core government

business to ensure future conservation and management policies are based on reliable science-driven information.

Recommendation

I.	***Collection of existing long-term biological data sets should be maintained and enhanced through additional support and capacity. Support now needs to be given to further collection of a broad suite of environmental data, to provide the basis for the needs of future researchers, managers and governments. Decision-makers today need to understand what the Australia of tomorrow will need in 50 and 100 years time, to deal with changes to the Australian environment.***

TOR 4. Mechanisms to promote sustainable coastal communities

It will be important to clearly define what is intended by "sustainable coastal communities" if the objective of this Term of Reference is to have meaning and credibility. This will require clear pre-defined criteria for implementation of sustainable policies and practices that are capable of assessment of effective progress over time.

4.1 Some simple concepts can be mandated in planning schemes to address the concept of sustainability. For example, closed loop water systems should be required for coastal communities. Water should be recycled at every opportunity to minimise human demand on a decreasing resource. Rising sea levels and increased coastal erosion will soon put paid to the use of septic tanks in coastal areas.

4.2 It is critical to restore estuarine flows to ensure survival both of coastal and of inland wetlands. Recent reports of massive decreases in shorebird numbers at inland wetlands (decreases of the order of 75%) were linked directly to the volume of water removed for irrigation.

4.3 The collection of beach-washed seaweeds etc. by people must be eliminated. Australia's beaches are characterised by low nutrient availability, and beach-washed seaweeds removes much needed nutrients for coastal communities – including migratory and resident shorebirds. The use of beach-washed seaweeds to mulch gardens is inappropriate and potentially contributing to a loss of coastal biodiversity through the removal of much-needed nutrients from coastal invertebrate and bird communities.

4.4 There should be promotion of community involvement in future coastal management. Involvement does not imply responsibility. Increased community involvement and engagement with all aspects of coastal management, including stewardship and monitoring, will contribute to greater levels of awareness and an increased likelihood of community members adopting 'sustainable' practices and maintaining/improving environmental health into the future.

4.5 There is a critical need to adopt a <u>proactive</u> precautionary approach to coastal management and the conservation of natural resources –current <u>reactive</u> management approaches will fail comprehensively under the rapidly changing environmental conditions likely to be experienced under predicted climate change and sea level rise scenarios. There is sufficient information available now to argue such a case – the next step is to overcome the massive inertia of current management regimes and their reluctance to accept and implement change.

Recommendations

J.	*Water recycling must be adopted within the entire Australian community - agriculture and urban; residential and industrial. The use of treated grey water for agriculture and industry should be adopted to eliminate the use of drinking-quality freshwater for irrigation and industrial use.*

K.	*Estuarine flows must be restored to ensure survival both of coastal and inland wetlands.*

L.	*The collection of beach-washed seaweeds must be eliminated to maintain much needed nutrients for coastal communities – including migratory and resident shorebirds.*

M.	*Greater community involvement and engagement including stewardship and monitoring in all aspects of future coastal management must be promoted to contribute to greater levels of awareness and an increased likelihood of community members adopting 'sustainable' practices and maintaining/improving coastal environmental health into the future.*

TOR 5. Governance and institutional arrangements for the coastal zone.

The Australian, State/Territory and Local Governments can not consider what happens in Australia in isolation – how the environment is managed in Australia is manifested elsewhere in the world – migratory birds fly in and out of Australia each year in their millions, carrying with them a signal on the state of health here in Australia to other parts of the world.

5.1 Serious conflicts of interest exist for Local Government Councils in their roles as planners, managers, rate collectors and enforcers of planning schemes and regulations. As a consequence, the environment, particularly the coastal zone has suffered drastic fragmentation and decreased quality for natural resources. The environment will always lose to development. There is an urgent need to divorce these conflicting roles.

5.2 Even if the best-intentioned Council attempts to 'balance' environmental values with development, the incremental approvals over time result in loss of natural values. For example, an approach where an attempt is made to protect 50% of the extant values or habitat is laudable, yet after just five applications of such an approach, just 3% of the original habitat remains, and rarely do we see half of any habitat, especially coastal habitats, set aside for conservation purposes. The phrase 'death by a thousand cuts' is particularly relevant to coastal management and conservation of remaining values and habitats.

5.3 Resources are critically required to enforce all conservation measures identified and established. It is all too typical for conservation measures to be identified, promulgated but never adequately resourced, resulting in 'best practice" on paper, but not on the ground where it matters. Conservation should never have to rely on volunteer efforts of locals or community groups protecting an area such as Coastcare or "Friends of" groups. By abdicating their responsibility, Australian and State/Territory governments continuously place unrealistic burdens on concerned citizens and community groups, and this burden sends a clear message to observers as to the conservation priorities (and the lack thereof) by Government.

Recommendations

N.	*It is critical and essential to adopt the use of the Precautionary Principle, and even more critical that the Principle is actively implemented and incorporated into management regimes. The lack of scientific certainty should not prevent the Australian, State and Territory Governments and Local Councils from taking preventative, pro-active measures to combat all facets of predicted impacts arising from climate change and sea level rise.*

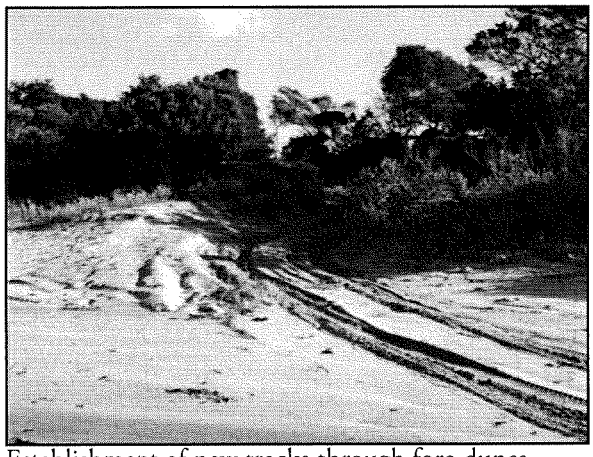
O	*It is necessary to plan for 'worst-case' scenarios, as these are likely to be more realistic. People are reluctant to assume or incorporate realistic assessments of climate change impacts, such as sea level rise or the predicted increase in frequency and severity of extreme events. This is largely due to there being no terms of reference – we are all experiencing climate change for the first time and have no comparable experiences to guide our actions. Instead, we are seeing coastal Councils adopting completely inappropriate planning strategies and policies, such as encouraging coastal development on King Island.*

P.	*A combination of Precautionary Principle and planning for 'worst-case' situations will result in pro-active strategies erring on the side of caution, but will lead to more appropriate and much more flexible responses at all levels of Government, including keeping more options open for adaptive management in the future. Adoption and planning for a 'worst-case' scenario will result in greater capacity to adapt to unexpected scenarios in the future, with lower economic, social and environmental cost to the community.*

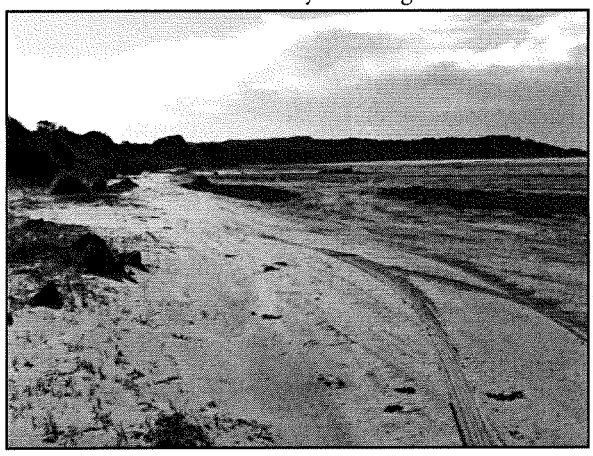
Q.	*Australian, State and Local Governments should adopt 'best-practice' solutions and responses adopted elsewhere in the world in their planning and responses to climate change. There is no need to 'reinvent the wheel' or to relearn what someone else has learnt somewhere else – all governments should be open to innovative solutions identified elsewhere. Innovation should not be seen as an impediment to adoption. All too often experiences learned elsewhere must be re-learned at greater cost simply to overcome local resistance.*

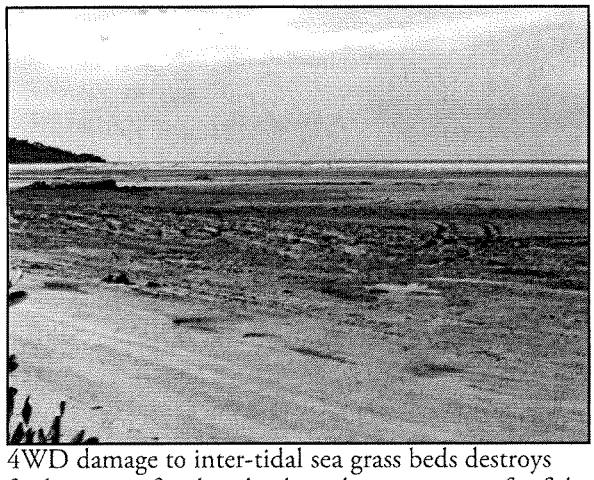
Images provided by Birds Tasmania to the Standing Committee on Climate Change, Water, Environment and the Arts Inquiry into climate change and environmental impacts on coastal communities. All images were taken by members of Birds Tasmania or made available to Birds Tasmania by members of the public who witnessed the activities shown.

4WD damage to sensitive coastal zones, including fore-dunes and nesting habitat for shorebirds and seabirds.

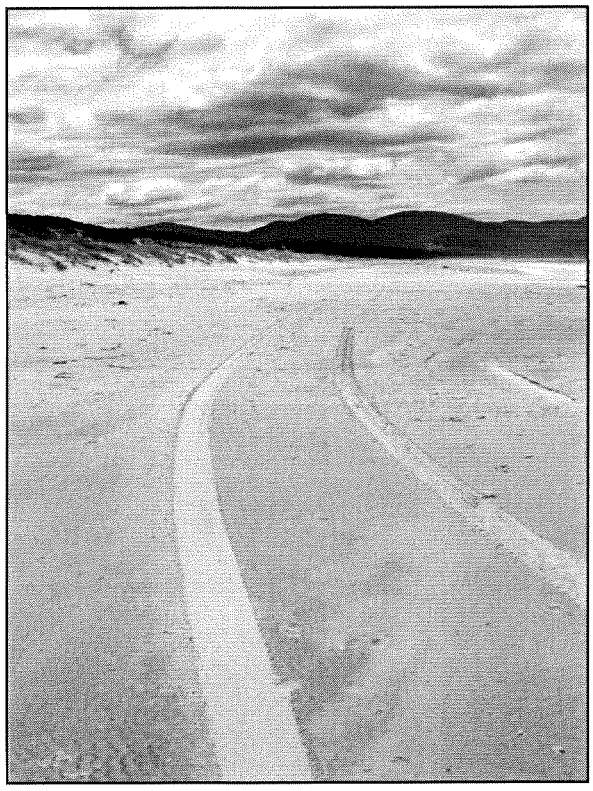


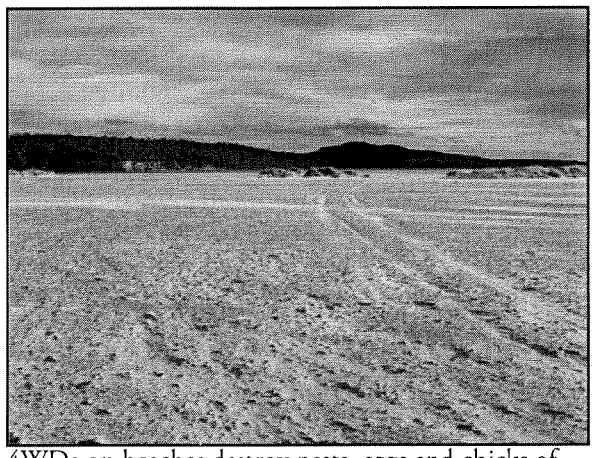
Establishment of new tracks through fore-dunes increases erosion and destroys nesting habitats.



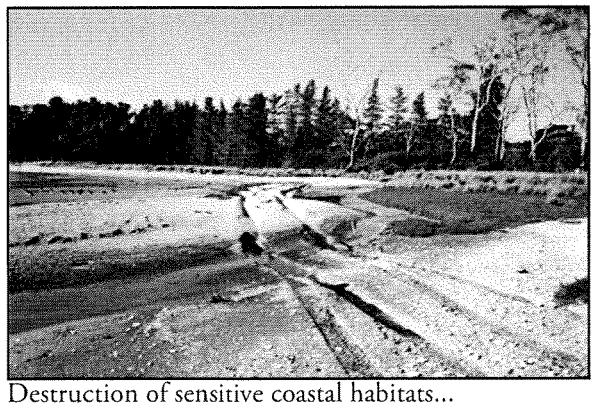


4WD damage to inter-tidal sea grass beds destroys feeding areas for shorebirds and nursery areas for fish.

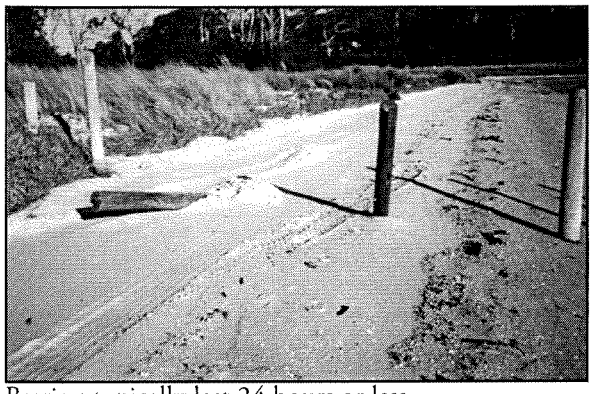




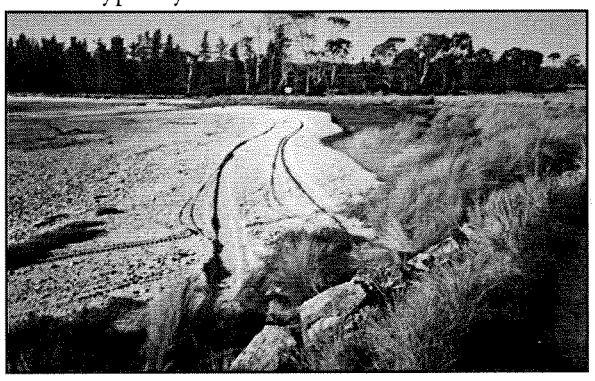
4WDs on beaches destroy nests, eggs and chicks of beach-nesting shorebirds and seabirds, and creates disturbance.

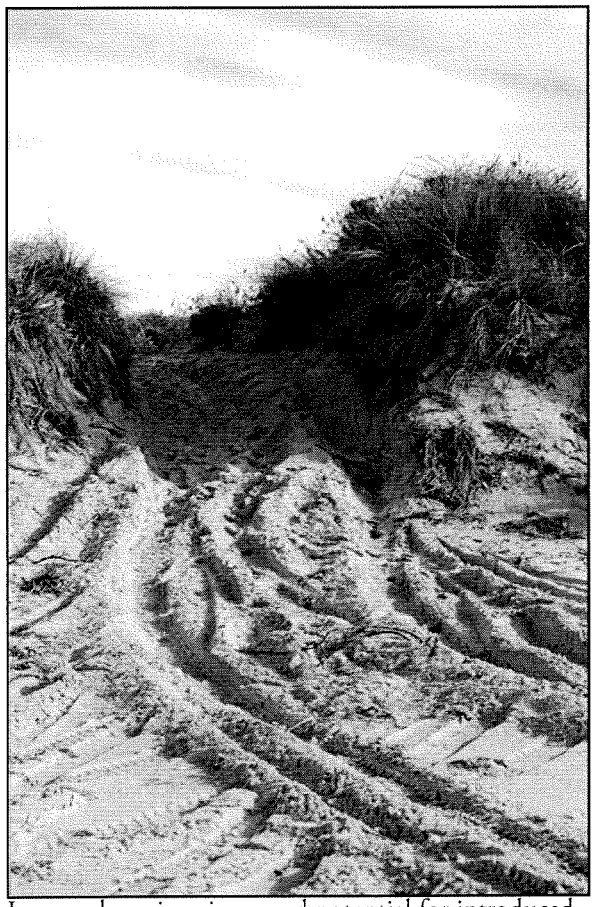


Destruction of sensitive coastal habitats...

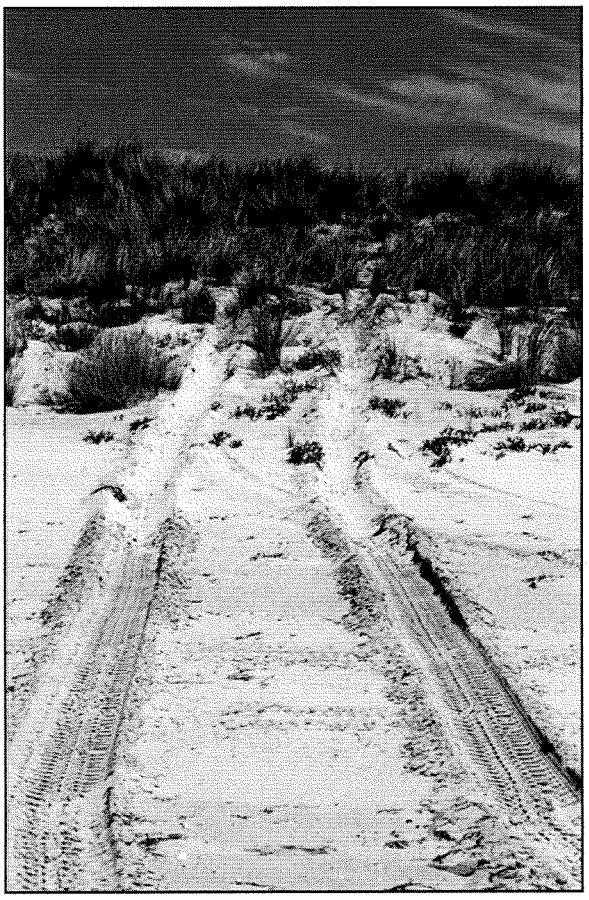


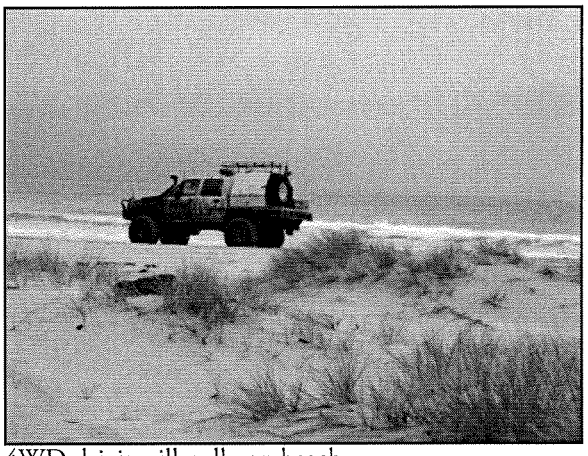
Barriers typically last 24 hours or less.



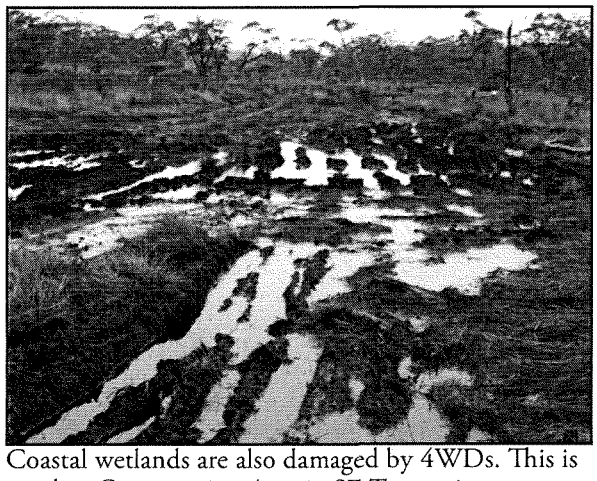


Increased erosion, increased potential for introduced species and loss of coastal habitats.

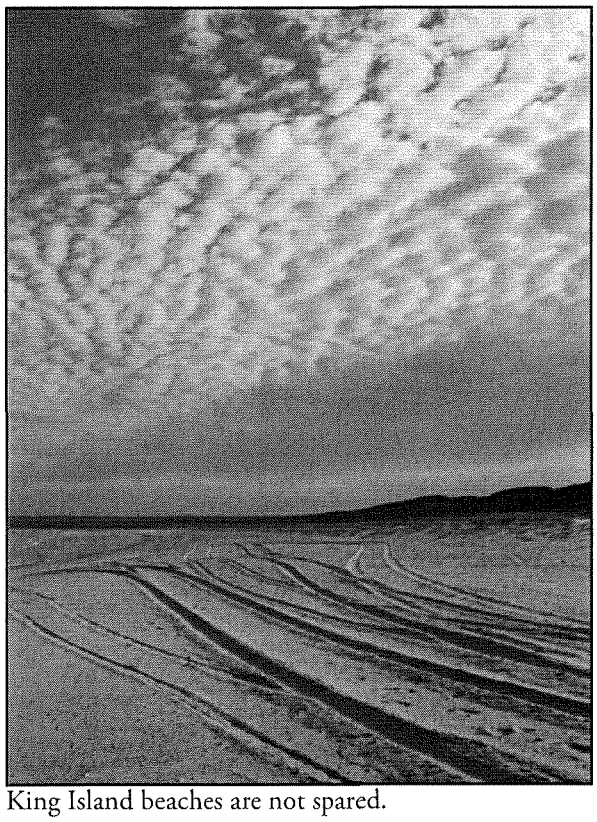




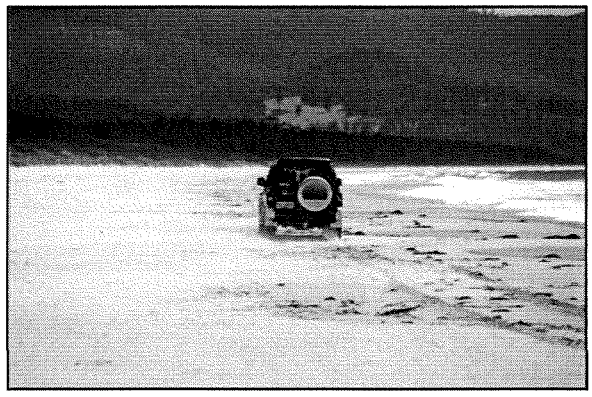
4WD driving illegally on beach.

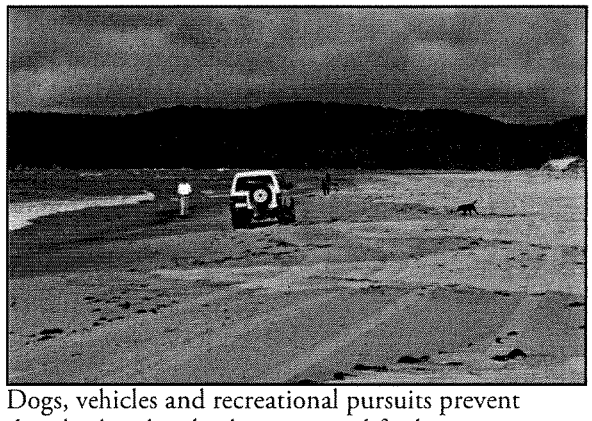


Coastal wetlands are also damaged by 4WDs. This is inside a Conservation Area in SE Tasmania.

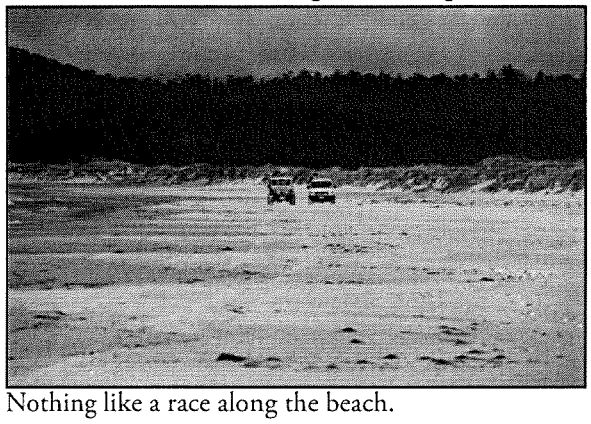


King Island beaches are not spared.

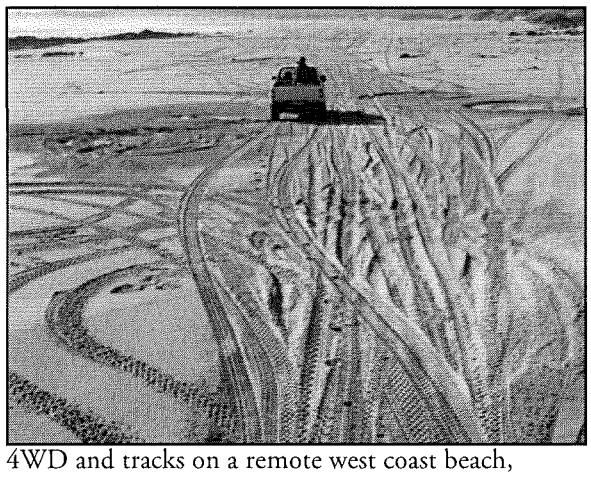




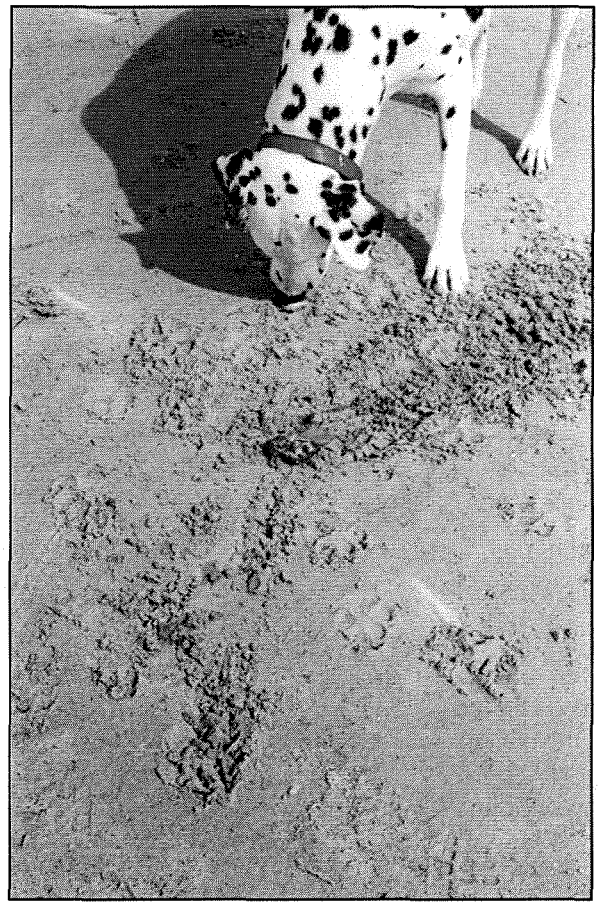
Dogs, vehicles and recreational pursuits prevent shorebird and seabird nesting and feeding.

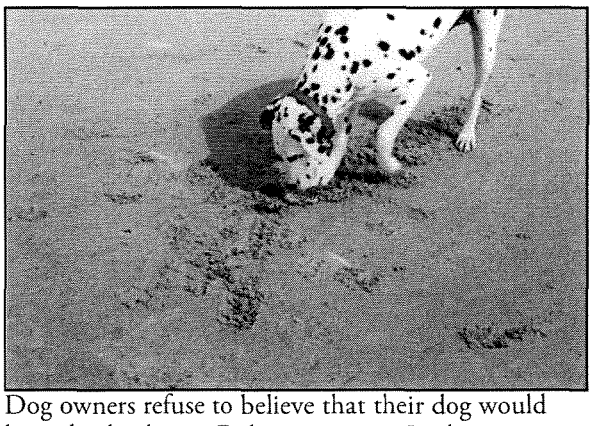


Nothing like a race along the beach.



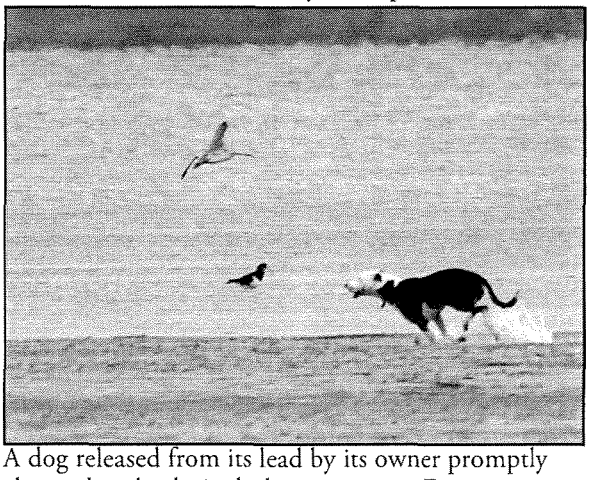
4WD and tracks on a remote west coast beach, Tasmania. All of these tracks were formed between one high tide and the next.



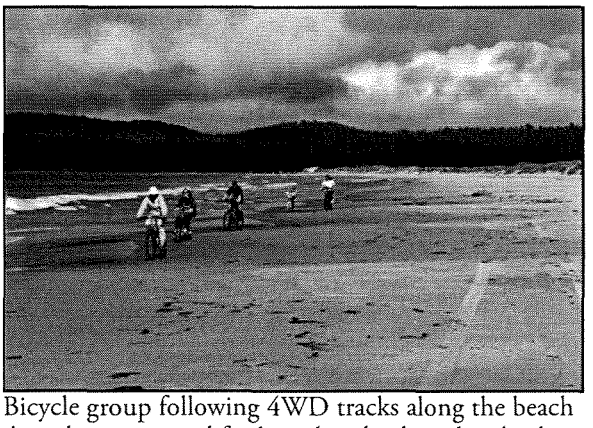


Dog owners refuse to believe that their dog would harm birds - here a Dalmatian eats a Pied Oystercatcher egg.

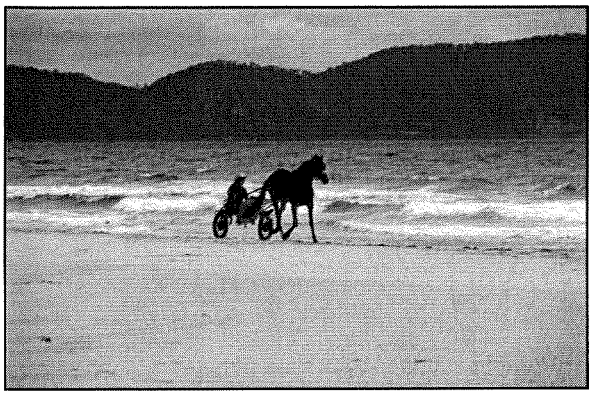
A dog investigating a nest will disturb adults and draw attention to the nest by other predators.



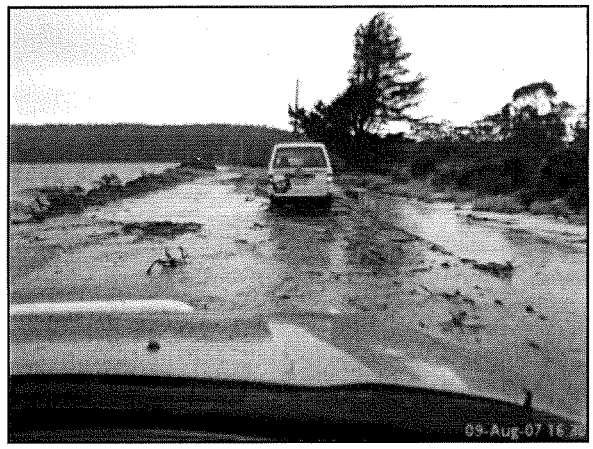
A dog released from its lead by its owner promptly chases shorebirds, including a migrant Eastern Curlew, a summer visitor to Australia from its nesting areas in Siberia.

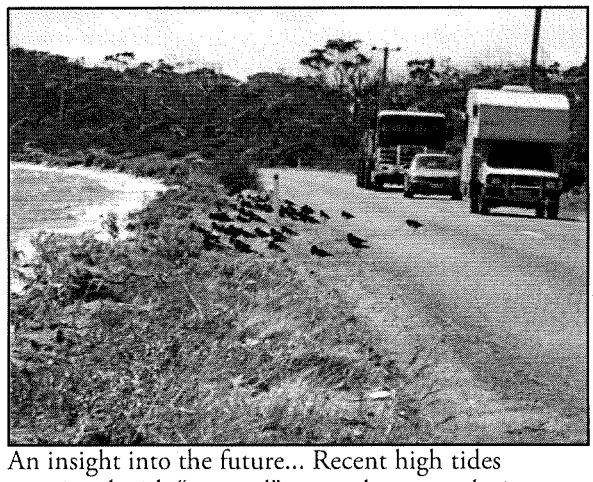


Bicycle group following 4WD tracks along the beach disturb nesting and feeding shorebirds and seabirds.



Exercising horses on beaches disturbs feeding birds and destroys nests.





An insight into the future... Recent high tides associated with "unusual" strength storms during 2007 and 2008 provide a foretaste of future sea level rises. Here a coastal road in southeast Tasmania is flooded. Roosting and feeding areas of oystercatchers adjacent to the road were flooded, forcing the birds to roost on the roadway, leading to several birds being killed by cars. Pied Oystercatchers can live for more than 30 years, so the loss of long-lived birds has the potential to significantly impact the resident breeding population.