



Fraser Island Dingo Conservation and Risk Management Strategy

July 2013

Prepared by: **Ecosystem Services, Department of Environment and Heritage Protection**

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June 2013

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#30338

A Fraser Island Dingo, a medium-sized dog with a tan coat and pointed ears, stands alert in a natural, grassy environment. The background is slightly blurred, showing tall grasses and a sandy ground. The overall image has a soft, naturalistic feel.

Fraser Island Dingo Conservation and Risk Management Strategy

July 2013

Image courtesy EHP





Foreword

Fraser Island is a popular international tourist destination with large numbers of visitors choosing to spend time enjoying the many experiences available at this World Heritage site. It is also home to the dingo, an iconic species and top predator that helps balance the island's natural food chain. Managing the conservation and welfare of wild dingoes on Fraser Island, in combination with the divergent expectations of the community regarding their interactions with these animals, is a complex and challenging job.

Conserving and ensuring the welfare of wild dingoes on Fraser Island, coupled with safeguarding people, is of the utmost importance to the Queensland Government. This agenda will be delivered through the Fraser Island Dingo Conservation and Risk Management Strategy (the strategy).

The strategy provides an overarching framework for wild dingo management on the island, drawing on the positive achievements of the past and the considerations of a major peer review carried out by independent experts. Central to the strategy is an emphasis on continuing the important day-to-day management by the Department of National Parks, Recreation, Sport and Racing, and an ongoing commitment from other relevant government agencies in leading and supporting important elements of the strategy, including community engagement and education, compliance, research, monitoring and reporting.

In addition, the strategy addresses key concerns raised in the review regarding the conservation and welfare of dingoes and human safety, adopting many of its recommendations in improving outcomes associated with these issues. Further, the effective dissemination of new and existing knowledge has been considered a priority in recognition that increased visitor awareness and optimised delivery of the dingo-safe message are vital to success.

A focus area of the strategy is the establishment of an integrated research program to address gaps in knowledge in conjunction with an evaluation program to promote continuous improvement through adaptive management. Both these programs play an essential role in evidence-based decision making and enable flexibility in changing circumstances.

The conservation and management of wild dingoes on Fraser Island seeks to embrace the views of the Butchulla Traditional Owners, community, government, tourism operators, residents and visitors. The success of this strategy ultimately relies on a commitment by all parties to deliver a future where wild dingoes and humans can coexist in harmony on Fraser Island.



Andrew Powell MP
Minister for Environment and Heritage Protection



Steve Dickson MP
Minister for National Parks, Recreation, Sport and Racing



Image courtesy EHP

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Executive summary

Fraser Island (K'gari)—located off the south-east coast of Queensland, Australia—is a section of the Great Sandy National Park as well as a World Heritage area. The island's outstanding natural and cultural heritage attracts around 400,000 visitors a year.

The dingo is a key part of this unique ecosystem, functioning as a top (apex) predator that keeps the natural system in balance. Due to having rarely interbred with domestic or feral dogs, Fraser Island dingoes also have significant conservation value.

Sightings of wild dingoes can greatly enrich the visitor experience. However, managing the complex issues surrounding human interactions with these wild animals is challenging due to differing expectations and knowledge of wildlife.

The Fraser Island Dingo Conservation and Risk Management Strategy sets out an overarching framework for the management of Fraser Island's dingoes and their interaction with people who live on and visit the island. The strategy builds on the positive achievements of the past and has been informed by the recommendations of an independent peer review of the 2006 Fraser Island Dingo Management Strategy by environmental consultancy Ecosure Pty Ltd (Ecosure) and an external expert Review Steering Committee.

The findings of the review determined that the objectives and strategies of the 2006 strategy were largely appropriate, with an opportunity to improve outcomes through more attention to dingo welfare and building community understanding and acceptance. The use of fencing to separate humans from dingoes and the ongoing education program were highlighted as effectively achieving sound outcomes. Further, there was strong public support for increased enforcement to maximise compliance with laws against feeding or interfering with dingoes.

The review examined concerns about human safety and recommended that additional measures be taken to foster dingo-safe behaviour. Suggested measures were increased signage and visitor briefings around hot spots to ensure extra vigilance, along with the temporary closures of camp grounds assessed to be experiencing a level of dingo habituation that could risk human safety. The use of a range of media at all stages of visitation—from trip planning to completion—was considered important for raising awareness and encouraging dingo-safe behaviour. The adoption of social media and greater use of the government website were proposed as ways of increasing awareness and optimising the success of the dingo-safe message.

In addition to human safety, dingo welfare was similarly a primary consideration when forming recommendations. This has led to the recommendation that certain management practices be officially stopped or modified. Some of this advice has already been adopted, such as formally halting the use of slingshots for hazing (pending further research advances to be authorised by management) and the modification of dingo tagging practices so that animals that weigh less than approximately 10 kilograms (kg) are no longer targeted for ear-tagging. Appropriate training of rangers in dingo behaviour and the subsequent reporting of the different behavioural types that feed into the management of problem individuals was also considered important in addressing dingo welfare issues.

Analysis of some community concerns regarding the welfare of dingoes was found to be unsubstantiated. This included concerns about the health of naturally thin dingoes and the protocols and practices associated with dealing with problem animals. The review highlighted that euthanasia protocols and practices were appropriate and followed best practice. The review recommended against any supplementary feeding, unless the viability of the dingo population could be scientifically demonstrated to be compromised.

Advances in knowledge and the effective dissemination and use of an extensive body of existing information were seen as areas in need of improvement to enhance short and long-term review and evaluation processes. The development of a strategic research plan was recommended to begin the process of addressing this issue.

An audit of the 91 actions under the 2006 strategy showed that most had either been completed or were ongoing, while a number required further progression or were recommended for exclusion. The review noted that any future strategies should be measurable and prioritised to ensure clear direction and effective implementation.

The Fraser Island Dingo Conservation and Risk Management Strategy features four programs—risk intervention, communication and education, research, and evaluation and review—to provide strong direction for effective action under an implementation plan. There are clear objectives and measurable targets to track progress and evaluate performance. The strategy draws on the strengths of the previous strategy, coupled with additional initiatives to address the concerns, knowledge gaps and information flows raised in the review, in order to deliver a future where dingoes and humans can coexist safely.

1. Introduction

1.1 Background

Fraser Island, traditionally known as K'gari (meaning paradise) by the Butchulla people, is located off the south-east coast of Queensland, Australia. As the world's largest sand island, it is a designated World Heritage area and more than 99 per cent of its land mass contributes to Queensland's Great Sandy National Park.

Fraser Island has many unique natural values, including a wide variety of native flora and fauna. The dingo is a key part of this unique ecosystem that contributes to Fraser Island being an international tourist destination attracting approximately 400,000 visitors a year.

The dingoes of Fraser Island have significant conservation value due to their iconic status and because they have rarely interbred with domestic or feral dogs. Additionally, dingoes are an apex predator, with their role at the top of the island's food chain helping to keep a healthy balance in the natural environment.

Within national parks—and therefore across the vast majority of Fraser Island—dingoes are managed as protected wildlife under the *Nature Conservation Act 1992*. This document focuses on the management of dingoes in the Great Sandy National Park on Fraser Island only.

Management of interactions between humans and the wild dingoes of Fraser Island has been challenging due to divergent community expectations, varying levels of understanding of wild animal behaviour and biology, and the ability to effectively implement management protocols. Some types of human behaviour have unfortunately resulted in poor outcomes for both humans and dingoes.

Historical overview of wild dingo management

Development of the strategy has been informed by the 2012 independent scientific review of the 2006 Fraser Island Dingo Management Strategy by environmental consultancy Ecosure Pty Ltd (Ecosure) and a subsequent peer-review of Ecosure’s findings by an external expert Review Steering Committee comprised of:

- **Professor Hugh Possingham**, University of Queensland ecologist and director of the Australian Research Council Centre of Excellence for Environmental Decisions and the National Environment Research Program Hub for Environmental Decisions
- **Ms Sue Sargent**, Conservation Partnerships Manager with Fauna and Flora International and the Burnett Mary Regional Group for Natural Resource Management
- **Professor Chris Johnson**, a wildlife conservation biologist at University of Tasmania with expertise in the ecological role of predators such as the dingo; and
- **Professor Clive Phillips**, Australian Chair in Animal Welfare responsible for establishing and overseeing the University of Queensland Centre for Animal Welfare and Ethics.

Development of the original Fraser Island Dingo Management Strategy commenced as a dingo risk assessment in 1998, and was expedited following a fatal incident in 2001. The 2006 Fraser Island Dingo Management Strategy was the result of a major review completed the same year.

Various audits and education-based reviews have also been conducted over time (see Table 1 below). These activities sought to track progress of program implementation and ensure currency and effectiveness of communication and education.

Table 1: The history of the development of the management of dingoes on Fraser Island.

2001	Risk Assessment: Risk to humans posed by the dingo population on Fraser Island (QPWS 2001a)
	Fraser Island dingo management strategy (QPWS 2001b)
2003	Audit of Fraser Island Dingo Management Strategy (Corbett 2003)
	Evaluation of Dingo Education Strategy and Programs for Fraser Island and Literature Review: Communicating to the public about potentially dangerous wildlife in natural settings (Environmentrics 2003)
2006	Fraser Island dingo management strategy – review (QPWS 2006) ¹
2009	Audit (2009) of Fraser Island Dingo Management Strategy (Corbett 2009)
2012	Fraser Island Visitor Survey: Feedback on Communication about Dingoes on Fraser Island (Deborah Wilson Consulting Services 2012)
	Fraser Island Dingo Management Strategy Review (Ecosure 2012)
	Review Steering Committee Report on the Ecosure Pty Ltd Review of the Fraser Island Dingo Management Strategy (December 2012) (Review Steering Committee 2012)
2013	Fraser Island Dingo Conservation and Risk Management Strategy (this strategy)

Source: Modified from Ecosure 2012.

¹ This document contains both the review of the 2001 Fraser Island Dingo Management Strategy and the 2006 Fraser Island Dingo Management Strategy.

1.2 Purpose

The role of the Fraser Island Dingo Conservation and Risk Management Strategy (the strategy) is to provide a range of management strategies to promote the best outcomes for both human safety and dingo welfare on Fraser Island.

The strategy builds on the positive achievements of the past to advocate a new, flexible and comprehensive approach to adaptive management of wild dingoes on Fraser Island. The strategy focuses on effectively building and disseminating knowledge; adopting the highest standards of animal welfare practices; engaging local communities and tourist operators to support and incorporate best practice in their businesses and day-to-day lives; and fostering safe wildlife experiences for all. The ultimate aim is to ensure the conservation of a sustainable wild dingo population whilst minimising the risks to human safety and dingo welfare and ensuring that the wildlife experience of visitors is maintained.

The strategy sets out an overarching framework for the management of Fraser Island's dingoes, to be supported by the subsequent development of an underlying implementation plan. The implementation plan will contain detailed actions to meet the objectives outlined in the strategy.

1.3 Challenges

The recommendations of Ecosure and the Review Steering Committee focus on addressing the management challenges associated with maintaining a sustainable population of wild dingoes on Fraser Island while also optimising the safety of the large numbers of people that frequent the island.

Ecosure and the Review Steering Committee highlighted that the dingo conservation and risk management on Fraser Island is complex in character and challenged by the following key issues:

- Fraser Island is a popular international tourist destination and as visitor numbers increase, the risk to human safety resulting from human–dingo interactions also increases.
- Supplementary feeding by people artificially increases the carrying capacity and risks habituation of the wild dingo population. This includes intentional feeding (e.g. due to a misunderstanding of the naturally 'lean' condition of wild coastal dingoes) or unintentional feeding through the poor storage or disposal of food.
- Dingo welfare issues can arise from human–dingo interactions and the techniques used to manage problem dingo behaviour or collect research data.
- Laws regarding dingoes differ across land tenures on Fraser Island, challenging the consistency of management. The level of compliance and enforcement of dingo protection laws could be improved, applied equally across all of Fraser Island's land tenures.
- Advances in research knowledge and better dissemination and uptake of findings are pivotal to informing management and decision making.
- Enhancement of productive partnerships across sectors with differing perspectives, concerns and ambitions is sought to achieve better outcomes.

1.4 Main findings of the review

Ecosure and the Review Steering Committee found that the objectives and strategies of the 2006 Fraser Island Dingo Management Strategy were largely appropriate, with an opportunity to improve outcomes through more attention to dingo welfare and building community understanding and acceptance. Analysis of some of the concerns raised by the community were found to be unsubstantiated while other concerns have led to recommendations that certain management practices be immediately stopped (pending further investigation of value) or modified. The main findings of the review are summarised below.

The analysis of dingo incidents and humane destructions (euthanasia) showed that:

- decision making, methods of euthanasia and staff training (including the correct labelling and reporting of incidents) are appropriate
- the current level of euthanasia would be highly unlikely to impact on sustaining a viable wild dingo population
- further awareness and education is required to improve understanding about wild dingo behaviour and how human interactions—however mild or even unintended—can modify this behaviour.

Fencing is considered the most effective of all engineering solutions as it physically separates humans from dingoes. The use of hazing or aversive conditioning (affecting animals with unpleasant stimuli in an effort to deter them from approaching humans or a certain location) produced such variable results that the review recommended that hazing be officially suspended (pending further research advances to be authorised by management) due to its potential negative effects on the welfare and behaviour of dingoes.

The review found that some improvement could be made to the ongoing trapping and ear-tagging of habituated dingoes to improve dingo welfare. It is recommended that ear-tagging be targeted at individuals with a minimum weight of approximately 10kg, of reasonable body condition and that exhibit, or are anticipated to exhibit, problematic behaviour. Suggested improvements to trapping that facilitate better welfare outcomes and increase the success of the program include the use of more specific dingo lures, a reduction in the number of traps per individual dingo, the introduction of a trap-alert system, and a reassessment of the use of drugs to sedate dingoes for standard handling and minor procedures. The review recommended against any supplementary feeding unless the viability of the dingo population could be scientifically demonstrated to be compromised.

Ecosure found that there was strong public support for increased enforcement to maximise compliance with laws against feeding or interfering with dingoes, coupled with the continuance of an ongoing education program. The delivery of high quality information through a range of media (e.g. online, face-to-face and fact sheets) was considered important for raising awareness and encouraging dingo-safe behaviour. Maintaining and enhancing transparency of information to the public was a key recommendation in this area.

A number of additional measures were recommended for optimising the success of risk interventions, such as improved signage and visitor briefings around hot spots, to ensure extra vigilance, and temporary closures of camp grounds assessed to be experiencing a level of dingo habituation that could risk human safety.

The review also recommended that further research should inform decision making, policy development and communication, and it supported the continuation of a strategically planned dingo research program. It noted that data dissemination and improved transparency were key to building community understanding and acceptance of the strategy. Building on the existing system some further actions are worthy of consideration. In particular, the development of a strategic research and monitoring program to provide a more integrated approach for the collection and sharing of information and the setting and delivery of research priorities was emphasised.

The establishment and maintenance of productive partnerships across a variety of stakeholders including the three levels of government, Traditional Owners, local community, business operators, non-government organisations, research agencies and universities to facilitate existing and new initiatives was considered very important to the success of all aspects of the strategy. The review recommended leveraging the support of volunteers to enhance visitor experience and building collaborative long-term partnerships to promote innovation in management.

The review also carried out an audit of the 91 actions in the 2006 Fraser Island Dingo Management Strategy. It determined that of the 91 actions, most had either been completed or were ongoing while a number required further progression or were recommended for exclusion.

Key strategic directions, objectives and programs embedded in the strategy have been heavily informed by the review, with consideration of many of the review's recommendations to be more fully explored through the subsequent implementation plan.

However, the Queensland Government has been proactive in immediately adopting some of the review's recommendations. The use of physical hazing as a practice to deter dingoes has been formally suspended (pending further research advances to be authorised by management) and dingo tagging practices modified so that animals with a minimum weight of approximately 10kg are no longer targeted for ear-tagging. Further, longer term measures, such as potential visits by vets to check dingoes on the island and the possibility of establishing a wildlife care facility, are being investigated.

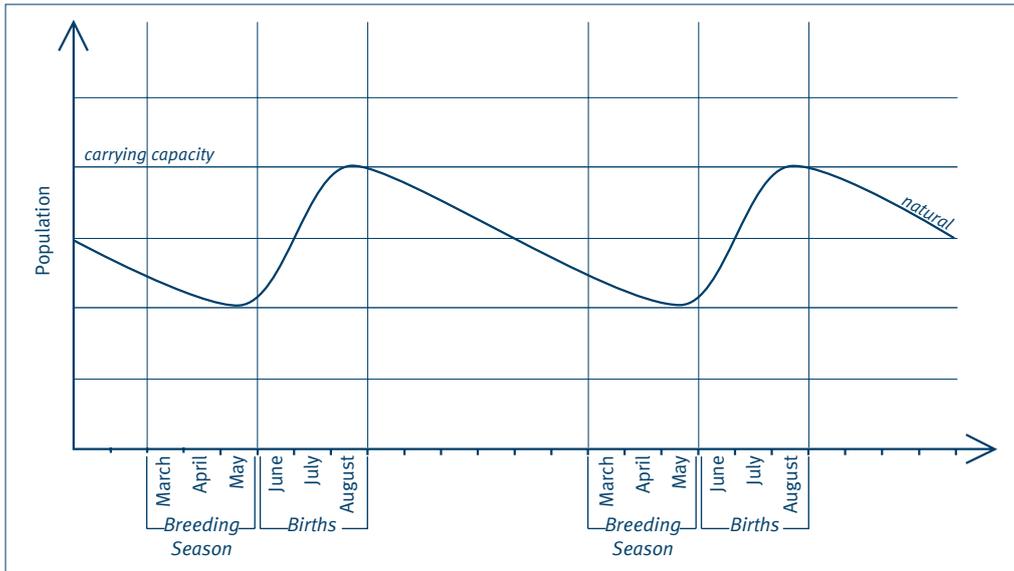
Several recommendations made by the review are not supported, such as the introduction of a new fee for visitors to Fraser Island and changing laws regarding child safety around Fraser Island dingoes. These changes were regarded as having the potential to unnecessarily increase red tape rather than directly benefit dingo conservation and risk management.

1.5 Science behind dingo management²

The dingo population on Fraser Island is restricted by the natural availability of resources, including food, water and habitat. This natural population limit is referred to as carrying capacity.

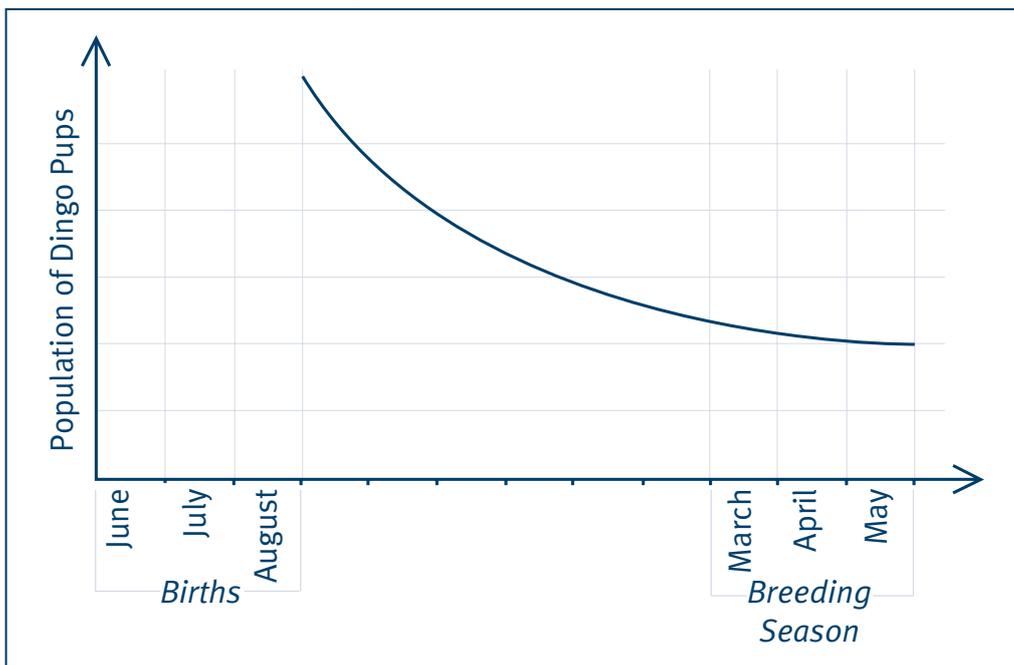
The numbers of dingoes making up the population on Fraser Island fluctuates throughout the year. High numbers are associated with dingo pup births that occur from June to August. This peak is followed by a drop in numbers due to natural attrition (see Box 1).

Box 1. Indicative natural population trends of the dingo population on Fraser Island



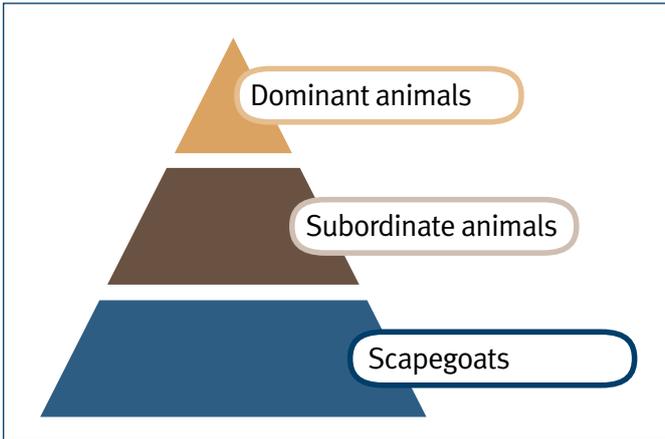
Unlike female domestic dogs that can have multiple litters each year, female dingoes only have pups once a year with litter size ranging from 1 to 10 pups. This key breeding characteristic of dingoes is shared by the coyote, jackal and wolf (Purcell 2010). The social system within dingo packs means that not all dingo pups survive the first 9 months to adulthood (see Box 2).

Box 2. Indicative natural population decline in dingo pup population in the nine months following



² Unless otherwise specified, the information contained within this section represents knowledge contained with Queensland Government products, including websites and published and unpublished reports.

Box 3. Social structure of dingo packs



On Fraser Island there are an estimated 25 to 30 stable dingo packs occupying a defined territory, each pack containing between three and 12 individuals. Dingo packs have a distinct male dominance hierarchy throughout the year and a secondary female hierarchy during the breeding season (see Box 3). These hierarchies are largely determined by dominant aggressive behaviour and consequently not all dingoes have equal access to resources (e.g. food) regardless of its availability.

Fraser Island dingoes are very active, travelling up to 40km per day, and hence are naturally lean.

Adult dingoes on Fraser Island have a higher average body weight (18kg) than mainland dingoes from Kakadu (16kg), Victorian Highlands (15kg) and Central Australia (13kg) (Corbett 1995). The social structure of dingo packs results in some individual dingoes being denied food regardless of availability and they can therefore appear particularly lean. The breeding (alpha) male and female of a pack dominate the other dingoes and the subordinate animals compete for their place in the pack structure. The lowest ranking dingo pack members are termed scapegoats and receive few privileges, and they can be persecuted by other pack members.

Juvenile dingoes (six months to two years) lose weight after leaving the pack as they learn hunting skills. On Fraser Island these dingoes are more commonly seen from late summer to early autumn. Those juveniles that become successful hunters regain weight and may join a pack within months. This is the process of natural selection (survival of the fittest) throughout the animal kingdom.

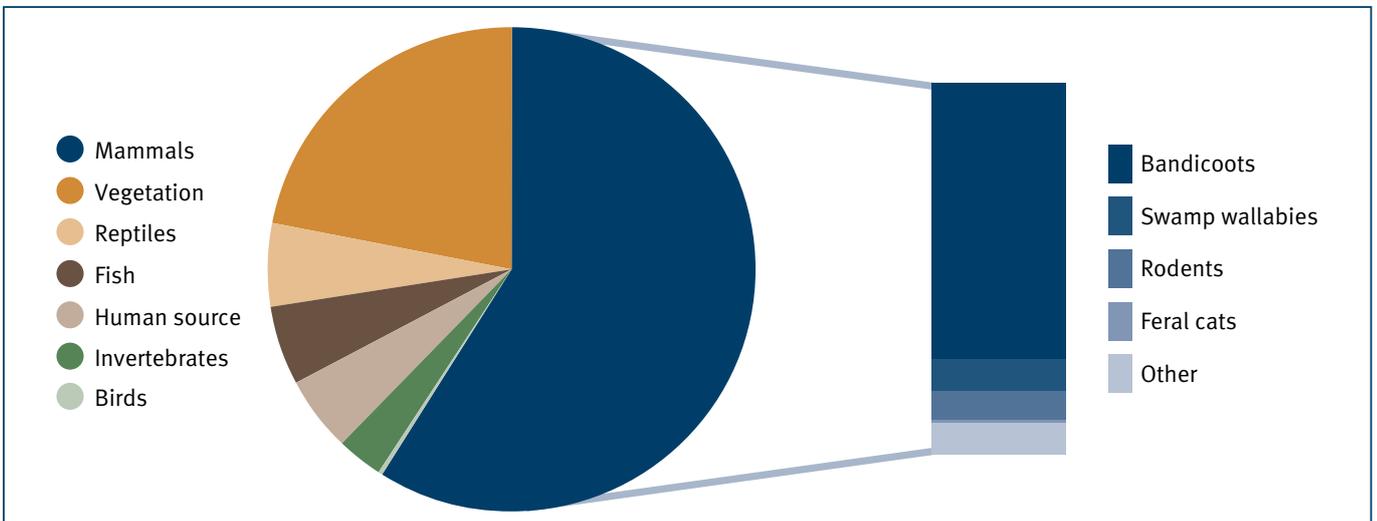
Feeding dingoes, whether intentional (e.g. feeding stations) or inadvertent (e.g. through the improper disposal of rubbish) is problematic as it disturbs the natural ecological balance by increasing the breeding capacity of dingoes and inflating the population above the carrying capacity of Fraser Island, resulting in negative effects on greater numbers of dingoes and prey animal populations (Ecosure 2012).

Supplementary feeding may result in dingoes losing their natural fear of humans and their hunting skills, becoming dependent on scraps and hand-outs from humans. Feeding stations may also impact dingo pack territories, pack structure and natural population cycles.

Feeding stations also convey mixed messages and compromise key educational themes in regard to the negative effects of artificial food sources. This may lead to habituation and potentially negative human interactions which may ultimately compromise the dingoes' long-term survival chances.

Research has found that the diet of dingoes is variable and may consist of birds, reptiles, fish, invertebrates, vegetation and mammals, amongst other species (see Box 4). Mammals, such as bandicoots and rodents, made up the largest percentage of the diet (Angel-E 2006).

Box 4. Average diet of Fraser Island dingoes (modified from Angel-E 2006)



2. Strategic plan

Vision

A future where Fraser Island (K'gari) supports a sustainable and healthy wild dingo population that is safely appreciated by Butchulla Traditional Owners, residents, tourism operators and visitors alike.

Strategic directions

critical components of change required to achieve desired outcomes



Priority objectives and desired outcomes

provides focus for efforts and outlines intended achievements

Objective	Ensure the conservation and preservation of a sustainable wild dingo population on Fraser Island	
Desired outcome	A viable population of wild dingoes is maintained on Fraser Island	
Objective	Minimise adverse animal welfare impacts caused by people to dingoes on Fraser Island	
Desired outcome	Human behaviour promotes improved outcomes for the welfare of wild dingoes	
Objective	Minimise the risk posed to people by dingoes on Fraser Island	
Desired outcome	People are empowered to practice responsible, dingo-safe behaviour	
Objective	Provide people on Fraser Island with a safe, enjoyable opportunity to see dingoes in an environment as near as possible to their natural state	
Desired outcome	Fraser Island provides a safe environment for visitors to see wild dingoes in their natural setting	

Programs

strategic pathways to achieve desired outcomes

Risk intervention

Communication and education

Research

Evaluation and review

Targets and performance indicators

measuring progress towards desired outcomes

2.1 Overview

This strategy provides the framework for managing the issues surrounding Fraser Island's wild dingo population. It sets a vision for future dingo conservation and risk management with strategic directions needed to achieve this future. Four priority objectives and associated desired outcomes highlight the core challenges to be addressed and the result being sought.

There are four programs that will address the critical components required to achieve the desired outcomes. They are risk intervention, communication and education, research, and evaluation and review. Under each program, a target and series of performance measures have been developed to enable progress to be tracked, evaluated and reviewed.

The programs necessarily overlap. For example, research findings feed into communication strategies, risk interventions and evaluation. Similarly, community feedback informs research, conservation management and evaluation processes.

2.2 Vision

The vision of the strategy will foster a culture on Fraser Island where:

- Traditional Owners, visitors and residents enjoy safe, enjoyable opportunities to see wild dingoes in their natural environment
- people have opportunities to understand, appreciate and respect dingoes, and act appropriately to reduce negative impacts on human safety and dingo welfare
- data collected from multiple sources is integrated electronically using available technology and research results are disseminated to a broad audience for their use and education
- management and decision making processes are informed by research discoveries and evolve in line with the growth of the knowledge base
- policies are evaluated and renewed regularly to remain contemporary, and flexible to changing circumstances

2.3 Strategic directions

The three strategic directions are minimising risk to humans and dingoes, building and applying knowledge, and engaging the public. These themes are the mechanisms to drive positive change in addressing the issues surrounding the conservation and risk management of dingoes on Fraser Island. They reflect the key recommendations of the review by Ecosure and the peer review report by the Review Steering Committee to deal with the challenges associated with managing wildlife–human interactions.

Each strategic direction is informed and influenced by the other strategic directions. This integration and connectedness provides a holistic approach to solving the complex challenges that have arisen on Fraser Island. It also makes the strategy flexible to changing circumstances and able to take advantage of new opportunities as they arise (e.g. new knowledge, technological advances in research methods and impacts of natural disasters).

2.4 Priority objectives and desired outcomes

The strategy adopts the four priority objectives recommended by the Review Steering Committee, based on Ecosure's recommendation:

- ensure the conservation and preservation of a sustainable wild dingo population on Fraser Island
- minimise adverse animal welfare impacts caused by humans to dingoes
- minimise the risk posed to humans by dingoes on Fraser Island
- provide people on Fraser Island with a safe, enjoyable opportunity to see dingoes in an environment as near as possible to their natural state.

The priority objectives will drive the outcomes on which the success of the strategy will be ultimately evaluated. The desired outcomes provided under each priority objective articulate the expected results of this strategy and form the benchmarks for measuring success. Best available knowledge will be used to quantify benchmarks.

2.5 Programs

The review highlights that there are four key areas that will bring about the desired outcomes being sought in the conservation and risk management of dingoes on Fraser Island. These areas form the programs for this strategy: risk intervention; communication and education; research; and evaluation and review.

Each program consists of two elements, the approach being taken to achieve desired outcomes and the corresponding performance measures designed to track progress and gauge success. The approach can either articulate actions that:

- (1) directly relate to the delivery of desired outcomes; or
- (2) actions that enable the objective to be achieved.

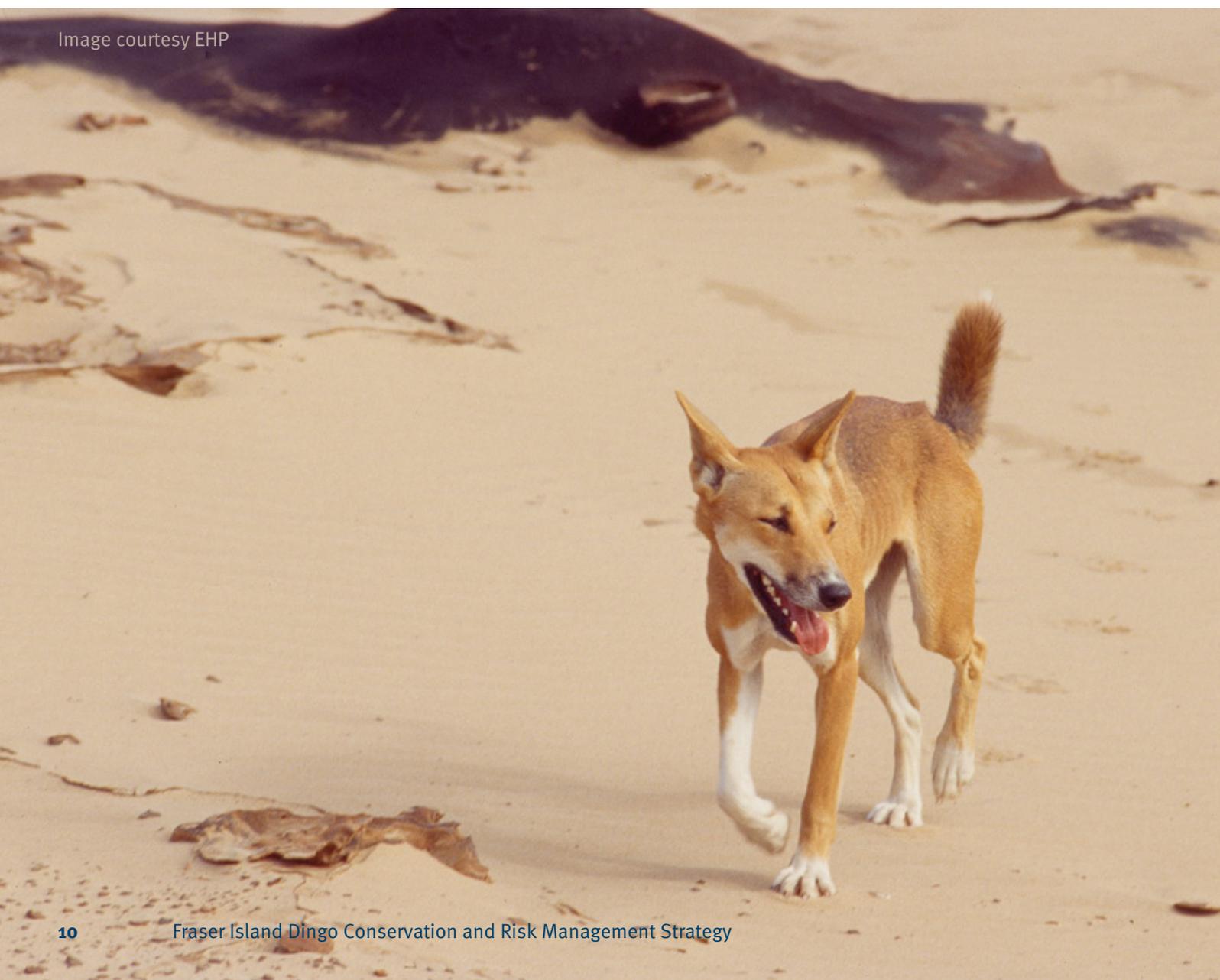
Examples of approaches that enable the delivery of desired outcomes include legislative amendments, changes to handling practices, delivery of training and fostering of productive partnerships. Those approaches that directly relate to the delivery of desired outcomes are cross-referenced (via the use of symbols) to the relevant overarching priority objective.

2.5.1 Risk intervention program

Target: Both the number of adverse human–dingo interactions and the number of dingoes euthanised has been reduced through the employment of a range of effective risk interventions.

The day-to-day management of dingoes on Fraser Island is carried out by the Department of National Parks, Recreation, Sport and Racing (NPRSR) Queensland Parks and Wildlife Service (QPWS). QPWS rangers employ an array of actions that enhances the conservation of dingoes on Fraser Island. These include measures that discourage humans from interacting with wild dingoes in ways that may affect dingo behaviour, behavioural modification of dingoes identified as at risk and adoption of best practice for euthanasia and handling. Additional actions, contingent on budget, were recommended by the review including veterinary care for impacted animals and capacity building for businesses to instil a dingo-safe operation culture. Reducing risk to human safety and boosting dingo welfare through compliance, public relations, training for and adoption of best practice in handling and dealing with dangerous animals are critical components of this program.

Image courtesy EHP



Approach	Relevant objective(s)	Performance measure
Review infrastructure, facilities and services including temporary camp ground closures to discourage dingoes from interacting with people and obtaining food.		Human–dingo interactions are reduced through effective infrastructure, facilities and services and temporary closures of campgrounds.
Implement measures to modify the behaviour of dingoes identified to be at risk of threatening human safety.		Management techniques are successfully employed to promote desirable, low-risk behaviours in dingoes previously identified to potentially be at risk of threatening human safety.
Provide appropriate veterinary and/or animal husbandry treatment to dingoes adversely impacted by human interference.		All dingoes identified to have been adversely impacted by human causes are provided with appropriate timely veterinary and/or animal husbandry treatment.
Ensure euthanasia of dingoes is limited to animals assessed as posing an unacceptable risk to human safety based on the history of behaviour against standardised risk criteria, and severely injured dingoes (e.g. vehicle-strike).		Dingoes requiring humane destruction are limited to those that can be confidently identified to be posing an unacceptable and unavoidable risk to human safety.
Use humane methods by trained rangers where interaction with dingoes is required under management protocols.		Ranger interactions required with dingoes are conducted as immediately and painlessly as possible with minimal likelihood of the dingo experiencing distress.
Suspend hazing of dingoes pending scientific evidence demonstrating its efficiency in reducing habituation and considering its animal welfare and behaviour impacts.		Physical hazing of dingoes is no longer practiced as a management intervention unless under an authorised program with the primary purpose of evaluating appropriateness in minimising the need for euthanasia of animals that otherwise may become habituated.
Review trapping and ear tagging practices to enhance efficiency and animal welfare.		Carefully conducted trapping and ear tagging of dingoes benefits strategic management objectives while having minimal animal welfare impacts.
Examine legislative anomalies with regard to the status of dingoes across the various tenures on Fraser Island.		Dingoes are protected and managed consistently across all land tenures on Fraser Island.
Integrate mechanisms into permit approvals to ensure all business operators on the Island receive up-to-date information regarding dingo-safe requirements for them and their clients.		Business operators and other permit holders are well-informed and responsible with regard to promoting legal and dingo-safe behaviour amongst their clients.
Manage actions that risk increasing habituation of dingoes or influencing their natural behaviour, including avoiding intentional or inadvertent feeding.		Dingoes exhibit wild behaviour and rely on hunting and scavenging food from the natural environment.

Legend

			
Ensure the conservation and preservation of a sustainable wild dingo population on Fraser Island.	Minimise adverse animal welfare impacts caused by humans to dingoes on Fraser Island.	Minimise the risk posed to humans by dingoes on Fraser Island.	Provide people on Fraser Island with a safe, enjoyable opportunity to see dingoes in an environment as near as possible to their natural state.

2.5.2 Communication and education program

Target: Dingo-safe behaviour is accepted and practiced on Fraser Island by the Butchulla Traditional Owners, business operators, residents and visitors.

The decisions and actions of governments, Traditional Owners, individuals, businesses and authorities are crucial for conserving wild dingoes on Fraser Island. The review highlights that some attitudes and behaviours need to change to ensure human safety and the welfare and conservation of dingoes. Mechanisms to achieve this range from face-to-face briefings, use of signage, distribution of factual information via brochures and the website, and the use of other social media. It is also vital to reflect current knowledge through the continual revision of material and keeping abreast of national and international advancements in human–wildlife interactions.

The communication and education program will facilitate this by continuing to educate and inform visitors, residents and business operators about how to behave appropriately around wild dingoes. Diverse approaches will be adopted, actively encouraging dialogue with stakeholders regarding wildlife management and incorporating research findings into messages. Further, new technologies for collecting data from communication and educational activities will be explored to facilitate the flow of best available information into research and decision making.

Image courtesy EHP



Approach	Relevant objective(s)	Performance measure
<p>Focused public contact by rangers to inform the public about risk and responsibilities regarding their safety around dingoes.</p>		
<p>Distribute education and interpretative material to inform the public about risk and responsibilities regarding their safe behaviour around dingoes.</p>		<p>Fraser Island visitors, residents and business owners have an appreciation for dingoes as a wild animal and are well informed regarding their responsibility to practice dingo-safe behaviour.</p>
<p>Review signage regarding responsible human behaviour and use of fencing to maximise safety.</p>		
<p>Review enforcement activities to encourage public compliance with legislation relevant to dingo safety and to discourage prohibited behaviour, such as intentional or inadvertent feeding.</p>		<p>Both the frequency and public awareness of proactive enforcement activities are maintained and improved.</p>
<p>Strengthen transparency and communication with stakeholders regarding dingo management on Fraser Island.</p>		<p>Government departments and stakeholders enjoy an improved, cooperative relationship embodying respectful communication and information sharing.</p>
<p>Explore new technologies and avenues for the delivery of key messages and collection of information that assists evidence-based decision making.</p>		<p>New message delivery mechanisms including social media are employed to broaden the audience coverage, including maximisation of pre-visit coverage. Rangers and business operators to deliver consistent dingo safety message to visitors.</p>
<p>Revise and update dingo education messaging in communication materials in a timely manner to accommodate new information and contemporary issues.</p>		<p>Dingo education messages in communication materials are up-to-date and relevant, addressing new research findings and contemporary issues.</p>

Legend

 <p>Ensure the conservation and preservation of a sustainable wild dingo population on Fraser Island.</p>	 <p>Minimise adverse animal welfare impacts caused by humans to dingoes on Fraser Island.</p>	 <p>Minimise the risk posed to humans by dingoes on Fraser Island.</p>	 <p>Provide people on Fraser Island with a safe, enjoyable opportunity to see dingoes in an environment as near as possible to their natural state.</p>
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2.5.3 Research program

Target: A comprehensive research program is operational and delivering transparent and relevant research findings in a timely manner to inform management and assist decision making.

Research into the ecology and behaviour (ethology) of dingoes in concert with social and psychological studies of human-wildlife interactions and associated behavioural changes of humans towards wildlife have greatly improved human safety and the conservation and welfare prospects of dingoes. Nonetheless, improvements in knowledge are continually being sought. In particular, an improved understanding of the distribution and abundance of Fraser Island dingoes and how numbers may fluctuate seasonally will better inform management programs into the future. Further, continuous improvements in knowledge of how to bring about changes in the attitudes and behaviours of all those seeking a wildlife experience involving wild dingoes will add significantly to the success of the Fraser Island dingo management programs. Of equal importance is the transition from research techniques that require the handling of dingoes to ones that minimise contact and reduce the risk of habituation. The research programs will strategically prioritise projects to deliver information that facilitates evidence-based decision making, disseminates research findings to a broad audience and encourages the adoption of techniques that improve human safety and minimises adverse conservation and welfare impacts on the animals.

Image courtesy EHP



Approach	Relevant objective(s)	Performance measure
Develop a strategic program that maintains and encourages research studies into: <ul style="list-style-type: none"> management techniques that maximise both human safety as well as dingo conservation and welfare the biology and ecology of dingoes on Fraser Island; and the sociological behaviour of human/dingo interactions. 		The status of knowledge for the management of dingo conservation and human safety is greatly improved.
Identify information gaps and management questions requiring investigation.		Research conducted addresses management needs and guides management actions.
Encourage research methods that minimise the need to handle dingoes (e.g. photographic identification, camera trapping to monitor behaviour, roll stations, lick blocks, etc).		The majority of research techniques employed do not require the direct handling of dingoes.
Develop and continuously refine tools/models to allow the timely identification of concerning trends regarding impacts to dingo conservation and human safety.		Tools/models are established to identify concerning trends regarding impacts to dingo conservation and human safety, enabling early and effective management intervention.
Explore innovative partnerships and funding arrangements to deliver research programs	A range of partnerships have been formed to deliver research outcomes, especially those projects that address information gaps.	
Adopt an international perspective regarding best practice management of mitigating adverse interactions between humans and potentially dangerous wildlife.	Dingo management on Fraser Island provides an internationally-informed, world-class example of mitigating adverse interactions between humans and potentially dangerous wildlife.	
Explore technological options for the collection of data (historic and new information) to expedite analysis, interpretation and reporting to inform management, decision making, communication and education.	Technologies have been investigated for adoption in regards to the collection, analysis, interpretation and reporting of data and research findings.	
Publication of research findings in a timely manner to reach a broad audience (e.g. academic literature, government publications, magazines, communication material), and encourage external scientific research to evaluate changes in dingo management activities.	Knowledge generated from research activities is accessible for inclusion in decision making and development of initiatives for management.	

Legend

 <p>Ensure the conservation and preservation of a sustainable wild dingo population on Fraser Island.</p>	 <p>Minimise adverse animal welfare impacts caused by humans to dingoes on Fraser Island.</p>	 <p>Minimise the risk posed to humans by dingoes on Fraser Island.</p>	 <p>Provide people on Fraser Island with a safe, enjoyable opportunity to see dingoes in an environment as near as possible to their natural state.</p>
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2.5.4 Evaluation and review program

Target: A meaningful adaptive management system of monitoring, reporting, evaluation and review is facilitating continuous improvement of outcomes for both dingo conservation and human safety on Fraser Island.

Tracking the progress of actions in meeting the objectives of this strategy, reviewing approaches and subsequently revising those that are not working, as well as maintaining currency are vital to success and require constant attention through regular analysis and reporting. A longer term evaluation of progress is also needed to monitor change (both positive and negative) and identify (and subsequently address) new and emerging issues. Critical to this process is the identification of benchmarks to measure impact and suitable indicators to track change along with the use of available technologies and productive partnerships to share and assess information. These elements form the basis of the evaluation and review program.

Approach	Relevant objective(s)	Performance measure
Undertake regular assessments of risk levels and factors relevant to dingo management on Fraser Island including the implementation of operational dingo management activities and interventions.	 	Regular reports are produced on the risks associated with dingo management on Fraser Island and the implementation of operational dingo management actions.
Undertake periodic scientific reviews of the Fraser Island Dingo Conservation and Risk Management Strategy, including a survey of visitors, as well as the consideration of relevant research findings and contemporary issues.	   	Periodic reports are produced on the effectiveness of the Fraser Island Dingo Conservation and Risk Management Strategy for inclusion in updates to the strategy.
Maintain all dingo management data (including reported human-dingo interaction, dingo identification information, humane destruction records, etc) on an electronic database.		All data relating to dingo management is actively managed in electronic form to enable increased efficiency in data reporting and analysis.
Institute efficient data collection methods to enable monitoring of information valuable to management of dingo conservation and human safety.		Efficient, and where possible electronic, data sources and collection methods are identified and established to enable consistent and reliable monitoring.
Develop benchmarks for determining the effectiveness of initiatives, both individually and collectively.		Benchmark data is established from which to measure change through monitoring and inform evaluation and review.
Explore partnership arrangements for the collection, analysis, interpretation and reporting of information that informs decision making.		Productive partnerships established to contribute to the effective monitoring, reporting, evaluation and review of dingo management on Fraser Island.

Legend

			
Ensure the conservation and preservation of a sustainable wild dingo population on Fraser Island.	Minimise adverse animal welfare impacts caused by humans to dingoes on Fraser Island.	Minimise the risk posed to humans by dingoes on Fraser Island.	Provide people on Fraser Island with a safe, enjoyable opportunity to see dingoes in an environment as near as possible to their natural state.

3. Governance

Ecosure's review concludes by noting:

Management of Fraser Island dingoes is a complex issue involving numerous and diverse stakeholders. It requires a multi-faceted approach, with a strong focus on education, animal welfare and managing people and an ongoing commitment to conservation.

The review also observes that achieving positive outcomes requires ownership and coordinated action by interested stakeholders.

A large number of existing government and non-government departments, groups and organisations already have an interest or involvement in the management of dingoes on Fraser Island. These include:

- Butchulla people (Traditional Owners of K'gari)
- Department of Agriculture, Fisheries and Forestry
- Department of Environment and Heritage Protection
- Department of National Parks, Recreation, Sport and Racing (specifically Queensland Parks and Wildlife Service)
- Department of Science, Information Technology, Innovation and the Arts
- Department of Tourism, Regional Development and Industry
- Fraser Island Dingo Working Group
- Fraser Island World Heritage Area Advisory Committees (Indigenous, Community and Scientific)
- Government Service Providers for Information Technology and Communication
- Local Government
- RSPCA Queensland.

However, none of these parties specifically focuses on dingo management in a holistic way inclusive of government, Traditional Owner, scientific, tourism and community interests. To address this issue, an annual collaborative meeting through one of the already established advisory networks will aim to foster productive relationships, strengthen partnerships and progress the approach outlined in this strategy. The main role envisioned is a commitment to drive effective communication amongst parties, and this will also be achieved through the further expansion of cooperative partnerships.

4. Next steps

The implementation of this strategy will be achieved through an implementation plan. This plan will be informed by the findings of the audit on specific objectives that formed part of Ecosure's review. It will revolve around the four programs articulated in this strategy and be delivered by the Queensland Government in partnership with interested parties.

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