



Department of Primary Industries,
Water & Environment

FINAL REPORT FOR THE AUSTRALIAN GOVERNMENT DEPARTMENT OF
THE ENVIRONMENT AND HERITAGE

Introduced animals on Tasmanian Islands

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Executive Summary

Tasmania has over 300 offshore islands, 65 of which are 20 hectares in size or larger. Fifty-six islands were found to have introduced and/or feral animals present. Most of this information was obtained from surveys conducted since 1978. Rabbits were the most common feral animal, found on 23 islands followed by cats (17), mice (11), cattle (11) and rats (10). Twenty-five islands (> 20 ha) were found to be free of feral and/or introduced animals and the majority of these were in the south-west of the state. Islands with feral animals were more common around more populated areas, particularly in the south-east of the state. None of the islands identified were not in the Gazetteer of Australia.

Three acts regulate the introduction and movements of animals within Tasmania: 1) the Nature Conservation Act 2002, 2) the Animal Health Act 1995 and 3) the National Parks and Wildlife Act 1970. Regulations under the latter act provide the strongest protection to islands, however these regulations only apply to islands with reserve status. The URLs of eight management plans, covering 88 islands are also provided within this report.

This report does not deal in detail with native animals that have been introduced to Tasmanian islands. There is considerable uncertainty surrounding this issue, particularly regarding the Brushtail possum and Bennett's wallaby. Similarly, Tiger snakes have not been addressed in detail but there have been known introductions of this species to several Tasmanian islands.

Acknowledgements.

Most of the information contained in this report came from surveys conducted by Tasmanian Parks and Wildlife and Nature Conservation Branch staff from the late 1970s to the present day. Nigel Brothers, David Pemberton and Rosemary Gales were instrumental in organising, co-coordinating and carrying out many of these surveys. Much of the data contained here has already been published in Brothers *et al.* (2001) – *Offshore Islands of Tasmania* and this text formed the basis of this report. David Pemberton and Fiona Stewart provided useful anecdotal information on the presence or absence of introduced animals on several islands.

Background

In September 2004 DEH contracted the Marine Conservation Unit of the Tasmanian Department of Primary Industries, Water and Environment to undertake the project:

'Introduced animals on Tasmanian islands: improving Australia's ability to protect its island habitats from feral animals (Project number 49143)'

The outputs and outcomes of this project were divided into four stages:

Stage 1

For the state of Tasmania provide four lists of offshore islands as follow:

- I. List all Tasmanian islands 20 hectares or larger in size. For each island provide: (a) name, and (b) centroid co-ordinates (or if unnamed centroid coordinates only)
- II. List all Tasmanian islands of any size known to have or have had populations of introduced animals. For each island provide: (a) name, (b) centroid coordinates (or if unnamed centroid coordinates only), (c) area in hectares, (d) archipelago name if part of an archipelago (e) land tenure category (as listed by Geosciences Australia), (f) land status under Tasmanian legislation reserve number if reserved, (g) vesting (if reserve is vested), (h) ownership (if freehold), (i) introduced animal name, (j) current status of introduced animal (eg state if eradicated), (k) whether island is known to be currently or recently naturally joined to the mainland or larger island or artificially joined by construction of causeway or bridge.
- III. List all Tasmanian islands 20 hectares or larger with no known occurrences of introduced animals. This list will be a subset of the list produced from I above. For each island provide: (a) name, (b) centroid coordinates (or if unnamed centroid coordinates only), (c) area in hectares, (d) archipelago name if part of an archipelago (e) land tenure category (as listed by Geosciences Australia), (f) land status under Tasmanian legislation reserve number if reserved, (g) vesting (if reserve is vested), (h) ownership (if freehold), (i) whether island is known to be currently or recently naturally joined to the mainland or larger island or artificially joined by construction of causeway or bridge (j) whether island has been surveyed for introduced animals by the Department of Primary Industries Water and Environment.
- IV. List all Tasmanian archipelagos where an introduced animal may, once established on one island, disperse quickly to others, including small islets. This list will include sub-sets of the list produced from I above. For each archipelago provide: (a) name, (b) centroid coordinates (or if unnamed centroid coordinates only). A set of precautionary principles to be considered with list IV will also be provided in the final report.

Stage 2.

Identify any entry on Lists I-IV above that is not included in the Gazetteer of Australia.

Stage 3.

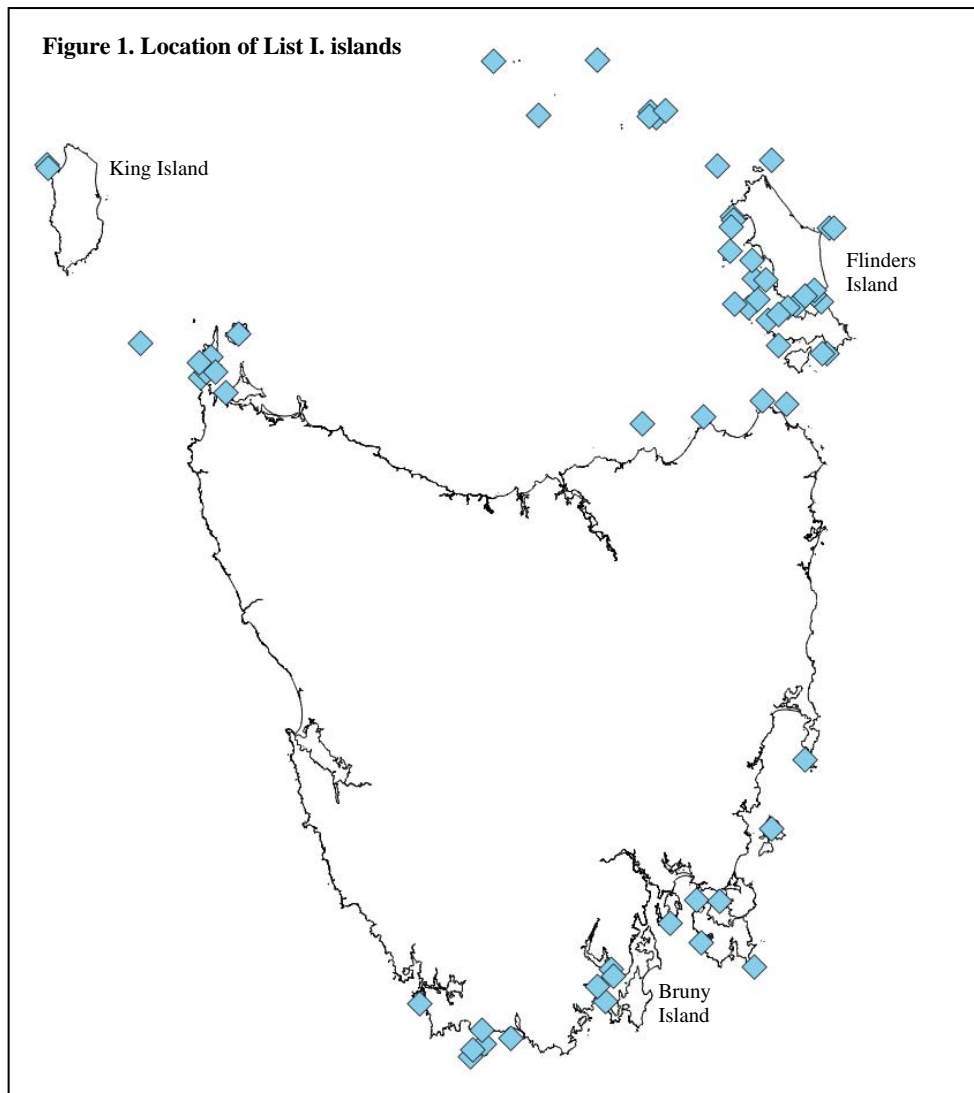
Provide information on the (a) government (local and State) legislation, if any, in place to regulate or control the introduction of feral animals (mainly rabbits, goats, pigs, foxes and cats) to each island included in List I and (b) legislation, if any, that controls the movements of introduced animals (any species) to each island or between islands included in List I.

Stage 4.

Are management plans in place that are designed to deal with any unintentional or intentional introduction to the islands, where the island has conservation status under legislation? If yes provide a copy (or internet reference) of each plan.

Stage 1 - List 1

List I. (Worksheet – St1_List I.) contains 65 islands, most of which are north-west of the state in the Furneaux Group around Flinders Island (Figure 1).



The three largest Tasmanian islands, King Island and Flinders Island in Bass Strait and Bruny Island in the east are not included in this list as they have the same characteristics as mainland Tasmania in terms of introduced and/or feral animals.

The largest island was Macquarie Island, 1500km south-east of Tasmania. The mean area of islands in List I. was 815ha and they ranged in size from 20.6 ha to 12875 ha. If Macquarie Island is excluded, the mean area was 629 ha.

The status of these islands was varied with 13 islands classified as National Parks, 10 as Nature Reserves and eight privately owned.

Land Status	#
Conservation Area	3
Crown Lease	3
Game Reserve	3
National Park	13
Nature Reserve	10
Non-allocated Crown land	9
Private property	8
Mixed	15

Stage 1 - List 2

List 2 (Worksheet St1_List II) contains 56 islands on which feral or introduced animals have been recorded. These islands ranged in size from 12785 hectares to 2.1 hectares. These animals included cats, rabbits, rats (both Norway and Black), house mouse, sheep, cattle, goats and fallow deer. Figure 2 shows the location of these islands around Tasmania.

The following list summarises the current frequency on which feral (non-native) animals are known to occur on islands around Tasmania.

Species	# islands
Cat	17
Rabbit	23
Mouse	11
Rat	10
Cattle	11
Sheep	10
Horse	2
Goat	2
Deer	2

The most common introduced animal were rabbits, which were present on 23 islands. Cats and rats were also common, found on 17 and 10 islands respectively. In many instances the species of feral rat was not established. The above list does not include islands that have in the past had feral animals, which have been eradicated. Examples of this include the cat on Macquarie Island and rabbits on Partridge Island.

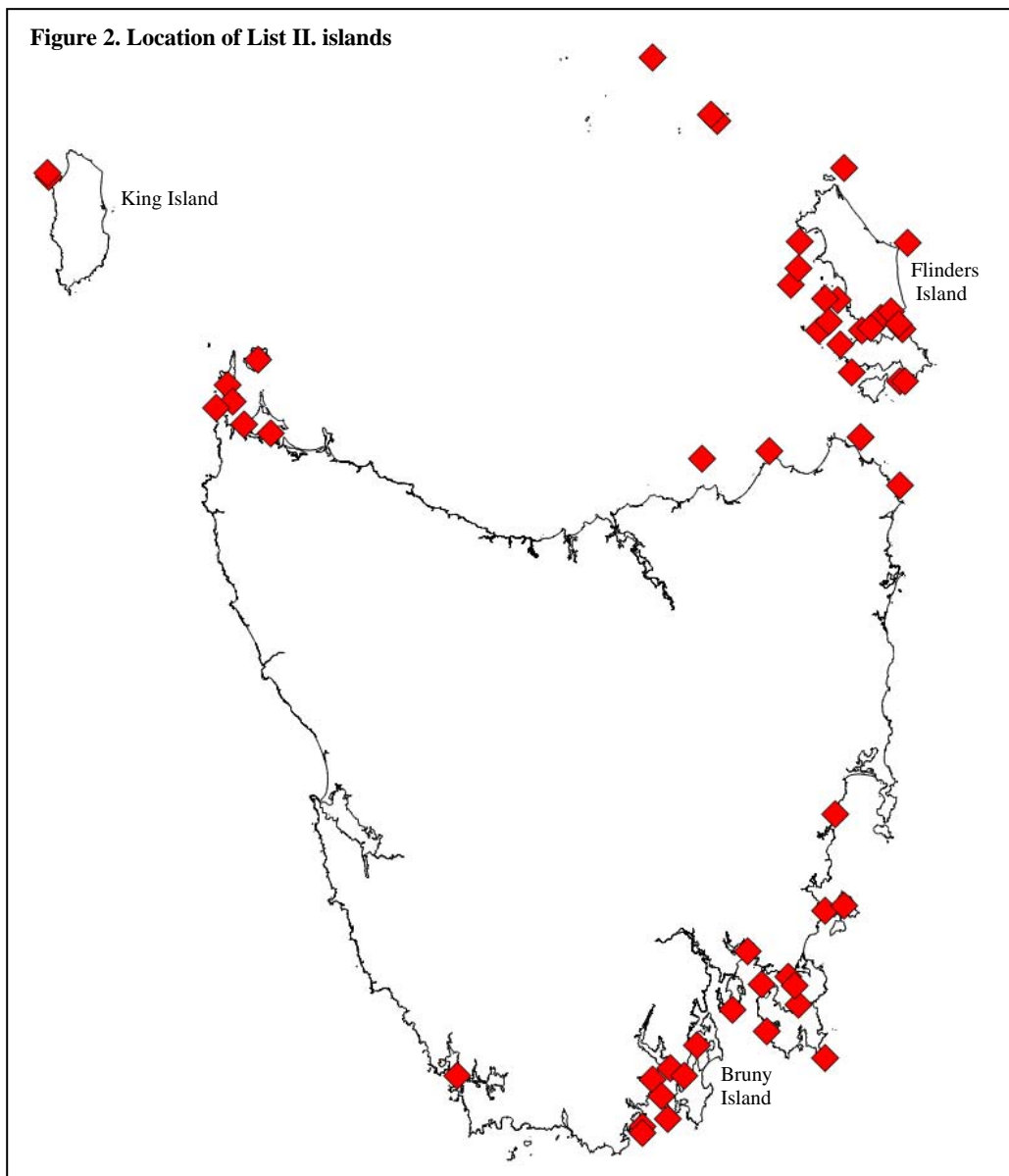
Of the most significant impacts of feral animals in recent years has been observed on Macquarie Island. Due to a series of warmer and drier winters, reduced efficacy of myxoma virus and the eradication of the cats, rabbit numbers have increased dramatically since the late 1990s. The impacts of this increase are significant and include:

- Rabbits favour the large leafy megaherbs, which are have no adaptations to cope with grazing. Macquarie I. supports the biggest most intact population of these two species (*Pleurophyllum hookeri* and *Stilbocarpa polaris*). On the few other islands where they occur they have been subject to intense grazing by sheep, goats, pigs and rabbits. They are very slowly recovering from and as a result have only small vulnerable populations.
- Rabbits not only remove and damage leaves, they destroy flowers, kill seedlings, and destroy root systems and consequently cause erosion of steep peat covered slopes.
- Rabbits disrupt the natural structure of the plant communities because they transport seeds in their fur all around the island, where no other furred animals exist.
- The world's most southern orchid *Nematoceras dienema* grows only on Macquarie I. It does not occur anywhere else in the world. Through digging, rabbits damage and remove the plants. Just how much rabbits are impacting on the orchids is unknown.
- A rare lycopod (*Lycopodium australiana*) has a restricted distribution on the island thought to be due to rabbit grazing.
- Rabbits are negatively impacting on the island's biodiversity. By removing vegetation rabbits are impacting on some of the 350 invertebrates species (insects and worms)that live in the soils and on the plants. There are several species of fungi that only occur on Macquarie I. Its not known what impacts rabbits are having on these species. The liverworts of the island are yet to be properly studied. It is possible that some of them may disappear before they have a chance to be recorded.



Rabbit damage on Macquarie Island

In addition to introduced feral animals, several islands around Tasmania have also had native animals introduced. Examples include Forester Kangaroos on Maria Island, Tasmanian Devils on Badger Island and Bennett’s Wallaby on Deal Island. Maria Island was the site of many introductions in the 1970s including the Forester Kangaroo, Eastern Barred and Brown bandicoots, Bennett’s Wallaby and Brushtail Possum. Although Bennett’s Wallaby and Brushtail Possums are present on many Tasmanian islands, it is impossible to be certain of their status, ie if they were introduced or occur there naturally. This aspect would benefit from further molecular studies that may be able to clarify this uncertainty. A similar situation is found with the Tiger snake that was artificially introduced to many Tasmanian islands in the 1960s and 1970s.



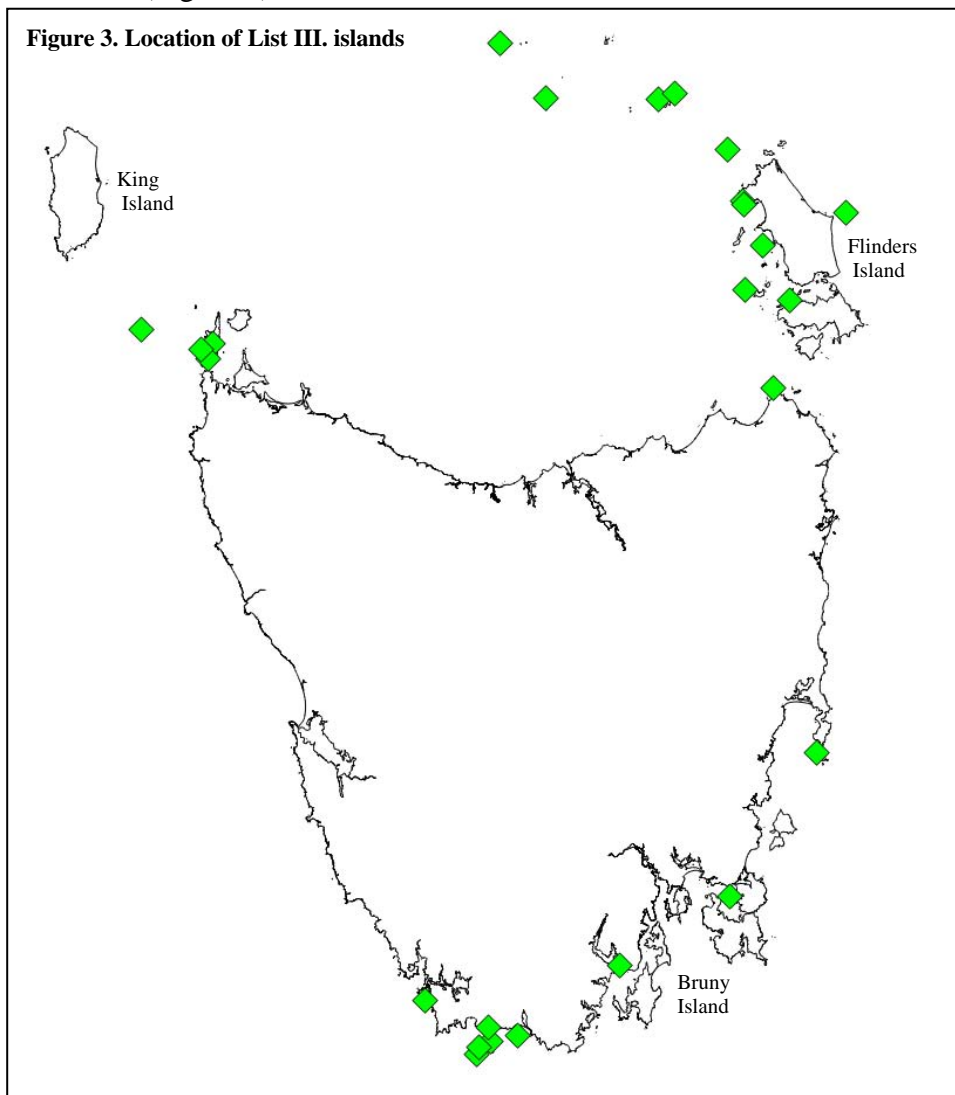
The status of the islands ranged from National Parks to Private Property. A breakdown of these areas is shown below.

Land Tenure	#
Aboriginal Land	5
Conservation Area	1
Crown Lease	2
Game Reserve	4
National Park	7
Nature Reserve	9
State Reserve	1
Non-allocated Crown Land	10
Private Property	4
Mixed Land	13

Thirteen of the islands have a combination of land tenure categories, the most common being Non-allocated Crown Land combined with Crown Leasehold (three islands) and Private Property combined with Non-allocated Crown Land (three islands).

Stage 1 - List 3

List 3 (Worksheet – St1_List III) contains 25 islands. scattered around the coast of Tasmania (Figure 3).



Clearly the location of the islands in Figure 3 and Figure 2 are heavily influenced by population density. This is particularly noticeable in the southeast of the state where there are very few islands free of introduced animals. Similarly the relatively high density of islands free of introduced animals in south-west Tasmania are likely attributable to the lack of people visiting and living near these islands.

Most of the islands in this list are National Parks or Nature Reserves and this is also likely to contribute to their feral free status. The below table summarises the breakdown of land tenure types in this list.

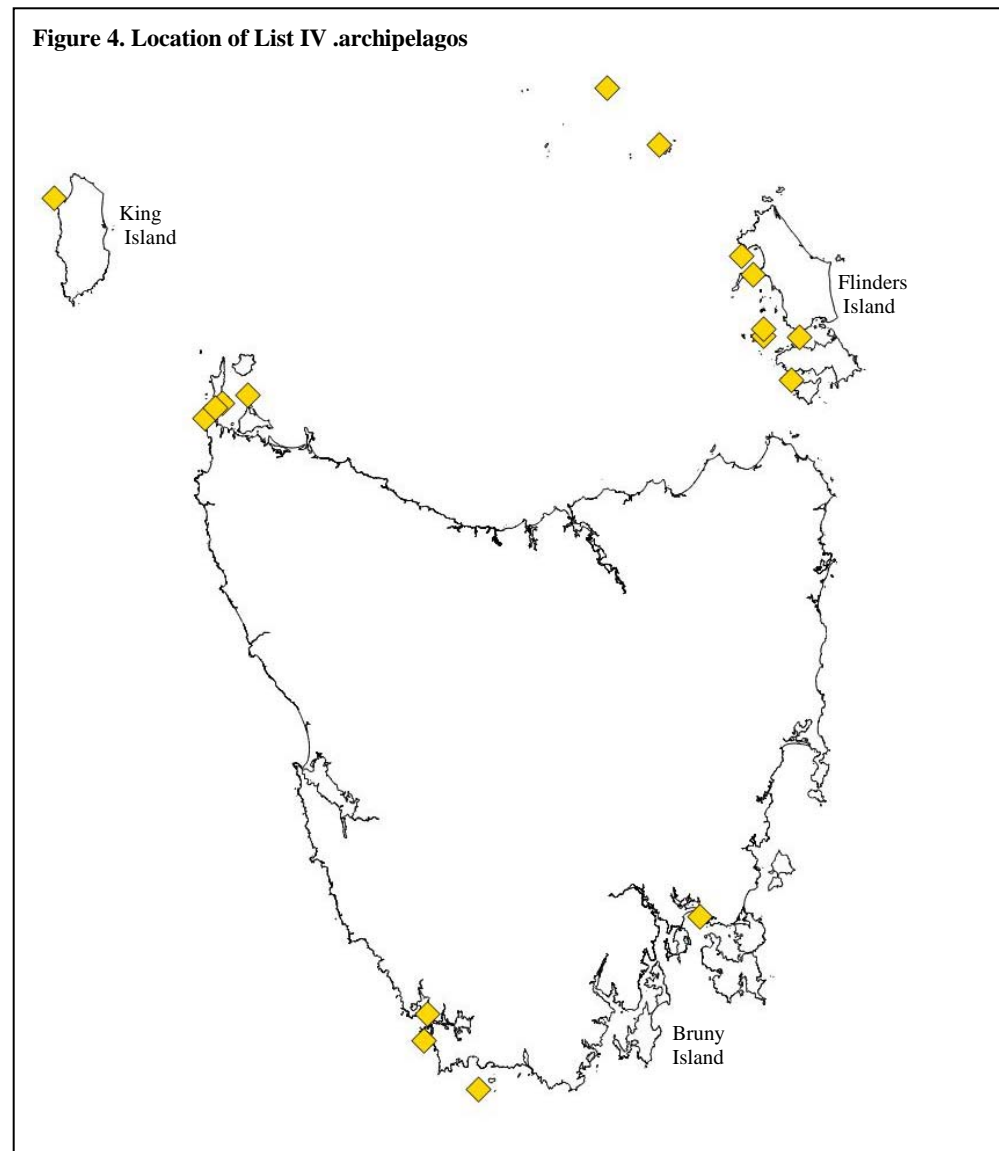
Whilst all of these islands have been surveyed (Brothers et al 2001) many have not been surveyed for over 20 years and it is possible that their status may have changed.

Land Status	#
Crown Lease	1
Private Property	3
Conservation Area	3
Game Reserve	1
National Park	9
Nature Reserve	4
Non-allocated Crown Land	2
Mixed	2

Stage 1 - List 4

List 4 (Worksheet St1_List IV) contains all island archipelagos where an introduced animal may, once established on one island, disperse quickly to others. For the purposes of this classification scheme islands (or islets), which are within one kilometre of each other are considered archipelagos. The location of these archipelagos is shown in Figure 4.

These archipelagos are not formally recognised and as such the names were chosen based on the associated islands. The one kilometre defining distance was chosen as a reasonable assessment of the distance an animal could feasibly cross. However, it is possible that some introduced animals could traverse greater distances between islands. There are many island groups that have islands close together, particularly in the Furneaux Group and potential travel between these islands by an introduced animal should be assessed on a case by case basis.



Stage 2 - Islands in Lists I-IV not in Gazeteer

No Islands in Lists I. – IV. were not listed in the Gazeteer of Australia 2002

Stage 3 – Relevant legislation

There are several Acts under Tasmanian legislation that control or regulate the movement of animals. In addition, there are regulations associated with reserved land that also have implications for the regulation or control of introduced animals to islands. The relevant Acts and regulations are identified below and the most important sections detailed.

1. The Nature Conservation Act 2002

URL:

http://www.thelaw.tas.gov.au/tocview/index.w3p;cond=;doc_id=63%2B%2B2002%2BAT%40EN%2B20050818090000;histon=;prompt=;rec=;term=

Definition - An Act to make provision with respect to the conservation and protection of the fauna, flora and geological diversity of the State, to provide for the declaration of national parks and other reserved land and for related purposes

The most relevant section of this act is Section 32: Prohibition on introduction of certain animals.

Whilst this does largely cover the introduction of animals into the state of Tasmania, Section 32 Part 3b regulates the movement of animals within the state. See below:

3) A person must not, except in accordance with the prior written permission of the Secretary –

(a) be in possession of a restricted animal; or

(b) cause or allow a restricted animal, a ferret or a controlled animal to go at large in the State.

A restricted animal in this context is also defined by the Nature Conservation Act 2002 as (a) a fox, wolf, dingo and mink; and (b) any other animal prescribed by the regulations to be a restricted animal; and (c) a hybrid of an animal referred to in (a) or (b).

A controlled animal is also defined by the Act as a) a mammal, bird, amphibian and reptile; and (b) any other animal prescribed by the regulations to be a controlled animal – but does not include any restricted animal, dog, cat or domestic stock;

2. The Animal Health Act 1995

URL:

http://www.thelaw.tas.gov.au/tocview/index.w3p;cond=;doc_id=85%2B%2B1995%2BAT%40EN%2B20050818100000;histon=;prompt=;rec=;term=

Definition - An Act to provide for the prevention, detection and control of animal diseases, to provide for the maintenance and improvement of animal health, to repeal the Stock Act 1932 and certain other enactments and for related purposes.

Whilst this Act largely deals with quarantine and animal disease, Section 17 also addresses the importation of animals which is relevant to the introduction of animals to Tasmanian islands. See below:

17) Prohibition on importation of animals, restricted materials and infected animal materials

(1) A person must not import an animal or a restricted material except where that importation –

(a) is authorised by a general or special authority; and

(b) is done in accordance with any conditions specified in the general or special authority.

3. The National Parks and Reserved Land Regulations 1999 under the National Parks and Wildlife Act 1970

URL:

http://www.thelaw.tas.gov.au/tocview/index.w3p;cond=;doc_id=%2B167%2B1999%2BAT%40EN%2B20050818100000;histon=;prompt=;rec=;term=

Definition – An Act to repeal the Scenery Preservation Act 1915 and the Animals and Birds Protection Act 1928, to make fresh provision with respect to the establishment and management of National Parks and other reserves and with respect to the conservation and protection of the fauna and flora of the State, and to make provision for incidental and consequential matters

Under the National Parks and Wildlife Act 1970, these Regulations provide the strongest legislative protection to Tasmanian islands that have reserve status, specifically , Section 7(1):

7. Prohibition of certain animals

(1) Unless authority is granted or arrangements are made under regulation 8,(relating to horse riding) any person who is the owner or keeper of any animal that is not native to any reserved land must not take that animal into, or allow that animal to be in or remain in, that reserved land.

Regulating the intentional movement or introduction of non-native animals to reserved islands in this way is probably one of the best ways of controlling feral animals on Tasmania islands through legislation.

Stage 4 – Management plans

There are no specific management plans for controlling the movement or introduction of feral or introduced animals on Tasmanian islands. However, there are several Management Plans that provide information on the management of feral animals to these islands. These plans, the islands that they cover and the URLs are listed in the table below.

Management Plan	URL	Islands covered
Maria Island National Park and Ile Des Phoques Nature Reserve Management Plan 1998	http://www.parks.tas.gov.au/publications/tech/maria_management_plan/mariaplan.pdf	Maria Island, Ile des Phoques
Freycinet National Park and Wye River State Reserve Management Plan 2000	http://www.parks.tas.gov.au/publications/tech/freycinet/freycinet.pdf	Refuge Island The Nuggets Schouten Island Taillefer Rocks
Small Bass Strait Island Reserves Draft Management Plan October 2000	http://www.parks.tas.gov.au/publications/tech/bassstrait/bassstrait.pdf	Low Islets Moriarty Rocks Foster Island Tenth Island Judgement Rocks West Moncoeur Rodondo Island Reid Rocks Black Pyramid Albatross Island Penguin Islet Cat Island
Small North-East Islands Draft Management Plan 2002	http://www.parks.tas.gov.au/publications/tech/north_east_islands/north_east_islands.pdf	Little Waterhouse Island Baynes Island Little Swan Island Bird Rock Georges Rocks St Helens Island Paddys Island Diamond Island Governor Island Little Christmas Island Lachlan Island Wedge Island Sloping Island Hog Island Isle of Caves Spectacle Island Little Spectacle Island Betsey Island Little Betsey Island Iron Pot Dart Island
South Bruny National Park, Waterfall Creek State Reserve, Green Island Nature Reserve Management Plan 2000	http://www.parks.tas.gov.au/publications/tech/south_bruny/south_bruny.pdf	Green Island Courts Island The Friars Arched Island Partridge Island Penguin Island
Tasman National Park and Reserves Management Plan 2001	http://www.parks.tas.gov.au/publications/tech/tasman/tasman_plan.pdf	Tasman Island The Hippolytes Visscher Island Kelly Island
Macquarie Island Nature Reserve and World Heritage Area Draft Management Plan 2003	http://www.parks.tas.gov.au/publications/tech/macquarie/macquarie.pdf	Macquarie Island

Management Plan	URL	Islands covered
Tasmanian Wilderness World Heritage Area Management Plan 1999	http://www.parks.tas.gov.au/publications/tech/whaplan/all.pdf	Hobbs Island Horeshoe Reef Trumpeter Islets West Pyramid Kathleen Island Breaksea Island Shanks Island Lourah Island Hay Island Swainson Island Big Caroline Rock Wendar Island East Pyramids Sugarloaf Rock Muttonbird Island Louisa Island De Witt Island Flat Witch Island Walker Island Maatsuyker Island Needle Rocks Flat Top Island Round Top Island Mewstone Pedra Branca Coffee Pot Reef Sugarmouse Island Wilson Rocks Ketchem Island The Pineapple Isle du Golfe Chicken Island Eddystone Sidmouth Rock

Metadata

Much of the information used to formulate Lists I. to IV. and the accompanying report were obtained from unpublished data held by the Tasmanian Department of Primary Industries, Water and Environment, together with the book *Offshore Islands of Tasmania – Seabirds and other Natural Features*, authored by Nigel Brothers, David Pemberton, Vanessa Halley and Helen Prior (Brothers *et al.* 2001). In addition, the *Gazeteer of Australia* (2002) was also used to cross check island centroid co-ordinates and island names.

Metadata for Brothers (2001) and the *Gazeteer of Australia* (2002) is provided in Appendix 1 and Appendix 2 respectively using the nationally accepted standard as outlined in *ANZLIC guidelines: core metadata elements* (http://www.anzlic.org.au/infrastructure_metadata.html#metadata).

Bibliography

Brothers, N., D. Pemberton, H. Pryor and V. Halley (2001). '*Tasmania's Offshore Islands: Seabirds and Other Natural Features.*' Tasmanian Museum and Art Gallery: Hobart.

Anon. (2002). '*Gazeteer of Australia 2002.*' Geoscience Australia, Department of Industry, Tourism and Resources: Canberra.

Appendix 1 Metadata for the book - Offshore Islands of Tasmania (2001)

Dataset citation

ANZLIC unique identifier:

Title: Offshore Islands of Tasmania (2001)

Custodian

Data Custodian: Tasmanian Department of Primary Industries, Water and Environment (DPIWE)

Publisher: Tasmanian Museum and Art Gallery,

Jurisdiction: Tasmania

Description

Abstract:

Contains a summary of surveys conducted on 280 Tasmanian offshore islands. Information included on location, size, wildlife and natural features.

Geographic bounding box: Tasmanian Waters

Data currency

Beginning date: 1978

Ending date: 2001

Dataset status

Progress: Complete

Access

Published work

Access constraints:

Copyright of the Nature Conservation Branch DPIWE.

Data quality

Lineage:

This book was compiled by

Positional accuracy:

Centroid coordinates are provided to the nearest minute.

Attribute accuracy:

Unknown

Logical Consistency:

Unknown

Completeness:

The data within this book is a subset of the survey data held by the Nature Conservation Branch, DPIWE.

Contact information

Contact organisation: [DPIWE](#)

Mail address: GPO Box 44

Locality: Hobart, Tas, Australia

Postcode: 7001

Telephone: 03 6233 6556

Facsimile: 03 6233 3477

Appendix 2 Metadata for Gazetteer of Australia (2002)

Dataset citation

ANZLIC unique identifier: ANZCW0702000057

Title: Gazetteer of Australia 2002

Custodian

Custodian: The respective State, Territory and Commonwealth governments and authorities are custodian of the information, which falls within each authority's jurisdiction.

Jurisdiction: Australia

Description

Abstract:

Contains the authorised geographic names covering Australia's land and offshore areas. The 2002

edition consists of 297 220 geographic names and each record includes the following fields:

- Record ID: Unique identifier for each feature;
- Authority ID: Custodian State or Territory;
- State ID: State or Territory that the feature falls in;
- Name: Name of the feature;
- Feature Code: Code indicating the type of feature;
- Status: Indicates if the name is authorised;
- Variant Name: Variant or alternative name;
- Postcode: Postcode of the locality;
- Concise Gazetteer: Indicates if the feature is included in the Concise Gazetteer;
- Longitude: Longitude in decimal degrees;
- Latitude: Latitude in decimal degrees; and
- 100K Map: 1:100 000 scale map reference.

ANZLIC search words:

- LAND Topography Mapping

Geographic extent polygon:

70.00000 -9.13333, 170.00000 -9.13333, 70.00000 -69.41700, 170.00000 -69.41700,
70.00000 -
9.13333

Geographic bounding box:

North bounding latitude: -9.13333

South bounding latitude: -69.41700

East bounding longitude: 170.00000

West bounding longitude: 70.00000

Data currency

Beginning date: Not Known

Ending date: 2002-10-01

Dataset status**Progress:** Complete**Maintenance and update frequency:** Annual**Access****Stored data format:****Digital:** Fixed width ASCII**Digital:** Database**Available format type:****Digital:** Fixed width ASCII**Access constraints:**

Copyright of the Gazetteer of Australia resides with the relevant State, Territory and Commonwealth

Governments and Australia Post. A license agreement is required and a license fee is also applicable.

Data quality**Lineage:**

The Gazetteer is compiled annually using data provided by each of the State and Territory naming authorities, the Australian Hydrographic Service and Geoscience Australia. Postcodes were matched to Gazetteer localities using Australia Post's Postcode Database.

Positional accuracy:

The coordinates are provided to five decimal places of a degree (approximately 1 metre), but this does not indicate the absolute accuracy of the location. Some features may only be recorded with the accuracy to the nearest minute of longitude and latitude (approximately 1.8 kilometres).

Attribute accuracy:

The following attribute checks have been undertaken:

- Deletion of all leading spaces and changing of multiple internal spaces to single spaces;
- Ensuring all attribute fields are present for all records;
- Ensuring all records have the same number of attribute fields present; and
- Ensuring all fields contain at least a space.

Logical Consistency:

Checking procedures were applied consistently to all supplied data to ensure they comply with the specified field lengths, correct number type, and are populated with valid attributes.

Completeness:

The Gazetteer data is a subset of the complete information sets held by each of the State and Territories, the Australian Hydrographic Service, and Geoscience Australia. All fields have been populated with the exception of 'Variant Name' which is not a mandatory field.

Contact information**Contact organisation:** [Geoscience Australia](#)**Contact position:** Data Sales**Mail address:** GPO Box 378

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