PEST RISK ASSESSMENT

Magpie Goose

Anseranas semipalmata

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October 2011

Department of Primary Industries, Parks, Water and Environment
Resource Management and Conservation Division

Tasmania
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About this Pest Risk Assessment
This pest risk assessment is developed in accordance with the *Policy and Procedures for the Import, Movement and Keeping of Vertebrate Wildlife in Tasmania* (DPIPWE 2011). The policy and procedures set out conditions and restrictions for the importation of controlled animals pursuant to S32 of the *Nature Conservation Act 2002*. This pest risk assessment is prepared by DPIPWE for the use within the Department.

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1. Summary

The Magpie Goose (*Anseranas semipalmata*) is currently abundant throughout much of Northern Australia; with major distributions present in the northern regions of Western Australia, the Northern Territory and Queensland.

The historical distribution of this species has declined since the time of European settlement, and records show this species was once found throughout much of coastal Australia, with vagrant individuals occurring in Tasmania. The decline in range is thought to be due to the advance of settlement, hunting, draining of wetlands, poisoning and destruction of habitat due to cattle grazing.

This species is not noted for establishing feral populations outside its natural range. No environmental damage has been associated with the Magpie Goose, although there is potential for the species to cause damage to agriculture by consuming and damaging crops. If a population were to establish in Tasmania, low-lying wetlands, including Wetlands of International Importance under the RAMSAR Convention, may be impacted. There is potential for this species to consume a number of species of threatened wetland grasses. Climate modelling indicates that there is a moderate likelihood of this species establishing in Tasmania.

The Magpie Goose is not currently listed under the Convention on International Trade in Endangered Species (CITES) or the Convention on Migratory Species (Bonn Convention). The species has not been previously assessed by the Vertebrate Pests Committee (2007).

The Magpie Goose is a 'Listed Marine' species under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and is not included on the List of Specimens taken to be Suitable for Live Import under the Act. The Magpie Goose is protected in all Australian States and Territories, and is subject to an annual waterfowl hunting season in the Northern Territory.

In Tasmania, the Magpie Goose is a 'controlled animal' under the *Nature Conservation Act 2002*.

This risk assessment concludes that the Magpie Goose is a moderate threat to Tasmania and recommends that imports are restricted to those license holders approved for keeping moderate threat species.

2. Introduction

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2.1 NAME AND TAXONOMY

Kingdom: Animalia

Phylum: Chordata

Class: Aves

Order: Anseriformes

Family: Anseranatidae

Genus: *Anseranas*

Species: *A. semipalmata*

Sub-species or variety (if applicable): None.

Common names (including any industry or trade names): Magpie Goose, Pied Goose, Black-and-white Goose, Semipalmated Goose.

Known hybrids: None.

Close relatives: None. The Magpie Goose is the only species in the Anseranatidae family.

2.2 DESCRIPTION

The Magpie Goose has a distinctive pied appearance. The head, neck, upper mantle and tail are black, while the rest of the mantle and rump is white. The legs are orange. Young have downy grey plumage with a cinnamon coloured head, and juveniles appear similar to adults except the white areas are mostly brown or mottled brown (Marchant and Higgins 1990).

Males are slightly larger than females. Male body length is 75-90cm, with weight of 2.8kg and wingspan of 130-180cm. Female body length is 70-80cm, with weight of 2.0kg and wingspan of 125-165cm. Both sexes have a prominent cranial knob, however it is larger in males (Marchant and Higgins 1990).

The Magpie Goose is similar in size and appearance to the Black Swan (*Cygnus atratus*). The Black Swan has a longer neck, a completely black body with white flight feathers on the edge of the wing, and flies with slow, laboured wing beats. Black Swans also have a bright red bill with a pale bar in contrast to the pale-flesh coloured bill of the Magpie Goose; and have greyish black legs while the Magpie Goose has orange legs (Marchant and Higgins 1990).

Seasonal variations in appearance and morphs have not been noted in this species. Moulting of the primary feathers occurs in about May-June following breeding, however there is no flightless period. The Magpie Goose is not known to hybridise with other species.

2.3 CONSERVATION AND LEGAL STATUS

CONSERVATION STATUS

The Magpie Goose is listed as 'Least Concern' under the IUCN Red List. The Australian population is extremely large and the species has a very large range (BirdLife International 2009). The Northern Territory population may sometimes reach three million birds (Bayliss and Yeomans 1990) and the total Australian population is estimated to be greater than four million birds.

In Australia, the species has undergone a significant reduction in its natural range due to advance of settlement, hunting, draining of wetlands, poisoning and destruction of habitat due to cattle grazing (Campbell 1900, North 1914, Frith and Davies 1961 in Nye *et al*. 2007).

LEGAL STATUS

The Magpie Goose is not currently listed under the Convention on International Trade in Endangered Species (CITES) or the Convention on Migratory Species (Bonn Convention). The species has not been previously assessed by the Vertebrate Pests Committee (2007).

The Magpie Goose is a 'Listed Marine' species under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. It is not included on the List of Specimens taken to be Suitable for Live Import under this Act. (Delaney *et al*. 2009).

The Magpie Goose is protected in all Australian States and Territories. The species is listed as 'vulnerable' in New South Wales under the *Threatened Species Conservation Act 1995*; 'threatened' in Victoria under the *Flora and Fauna Guarantee Act 1988*; and 'endangered' in South Australia under the *National Parks and Wildlife Act 1972*. The species is a 'protected animal' under the Queensland *Nature Conservation Act 1992*.

In the Northern Territory, the Magpie Goose is classified as 'protected wildlife' under the *Territory Parks and Wildlife Conservation Act 2006*. The species is subject to an annual waterfowl hunting season under this Act. All persons hunting this species and other waterfowl must obtain a permit to take protected wildlife.

In Tasmania, the Magpie Goose is a 'controlled animal' under the *Nature Conservation Act 2002*.

3. Biology and Ecology

3.1 LIFE HISTORY

Breeding occurs between February and April in Northern Australia, while breeding in Southern Australia is thought to occur between August and October (Marchant and Higgins 1990). Breeding often depends on flooding. Once vegetation emerges from floods, Magpie Geese build nests in large rushy swamps, however if flooding does not occur or vegetation is destroyed by grazing, then breeding will not occur (Marchant and Higgins 1990).

The Magpie Goose exhibits communal nesting, and three or more females may lay eggs in a single nest. Nests contain about 17 eggs, and a female may contribute 5-11 eggs in a nest, with laying being limited by the number of eggs already present. Magpie Geese often nest in large colonies, although laying is not synchronised in the colony and may appear months apart. All members of a breeding group incubate and guard the eggs, and incubation lasts between 23-25 days in Northern Australia (longer in cooler climates) (Marchant and Higgins 1990).

Hatched young are highly developed and may leave the nest within 24 hours of hatching. Young are partially dependent on adults until the following season and are defended and provided with food by their parents until fledging. Females reach sexual maturity at two years of age and males after three to four years (Marchant and Higgins 1990).

This species does not exhibit sperm storage or hybridisation with other species.

3.2 HABITAT REQUIREMENTS AND PREFERENCES

The Magpie Goose is commonly associated with low-lying wetlands, particularly those on the floodplains of rivers, although the species may occupy large shallow wetlands formed by run-off and swamps. The species is equally at home in aquatic and terrestrial habitats, and is able to walk and run on land (Marchant and Higgins 1990).

The current distribution is limited to monsoonal regions, although historic distribution includes more temperate regions of southern Australia (Marchant and Higgins 1990).

Nests are made in tall supporting vegetation such as reeds, and are often constructed over deep water and next to grasses which provide food for young. Roosting occurs on dry water banks, in trees in wet woodlands and on water in deep wetlands (Marchant and Higgins 1990).

This species does not occupy tree hollows.

3.3 NATURAL GEOGRAPHIC RANGE

The Magpie Goose is currently abundant throughout much of Northern Australia, with major distributions present in the northern regions of Western Australia, the Northern Territory and Queensland (Figure 1).

Groups show limited movement and typically move less than 120km when resources are abundant (Traill *et al.* 2010). When resources are extremely scarce, birds may move up to 500km in one event, and have been observed flying between Australia and New Guinea (Draffan *et al.* 1983, in Traill *et al.* 2010).

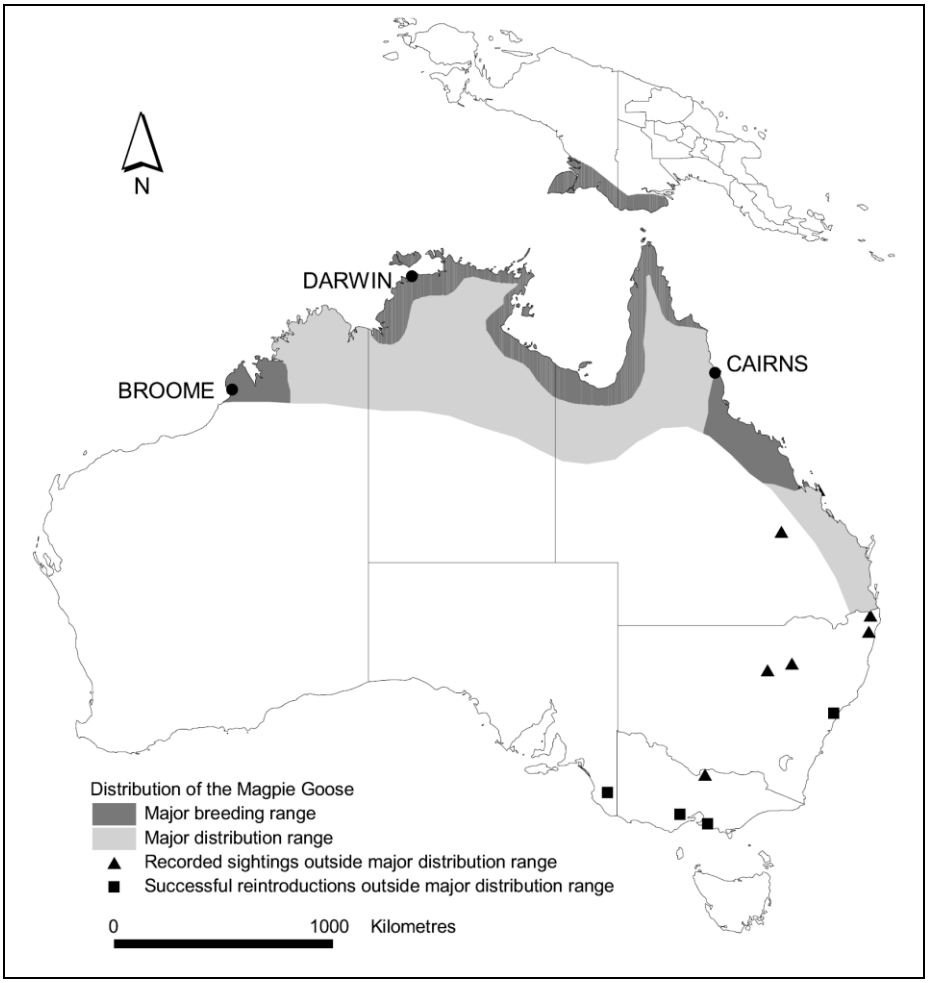

Figure 1. Current distribution of the Magpie Goose in Australia and New Guinea (Delaney *et al.* 2009).

The species historically occurred throughout much of Australia and has recently declined in range since the time of European settlement in Australia (Figure 2). Records show that, similar to current distributions, the Magpie Goose was abundant on the coastal plains of Northern Australia, the Gulf of Carpentaria and the East Coast of Australia, however populations were also present in the southern region of Western Australia and areas of New South Wales, Victoria and South Australia.

Vagrant individuals have been noted in northern Tasmania, although no breeding is known to occur within the State (Nye *et al*. 2007). The historic range for this species is approximately 236,000km^2.

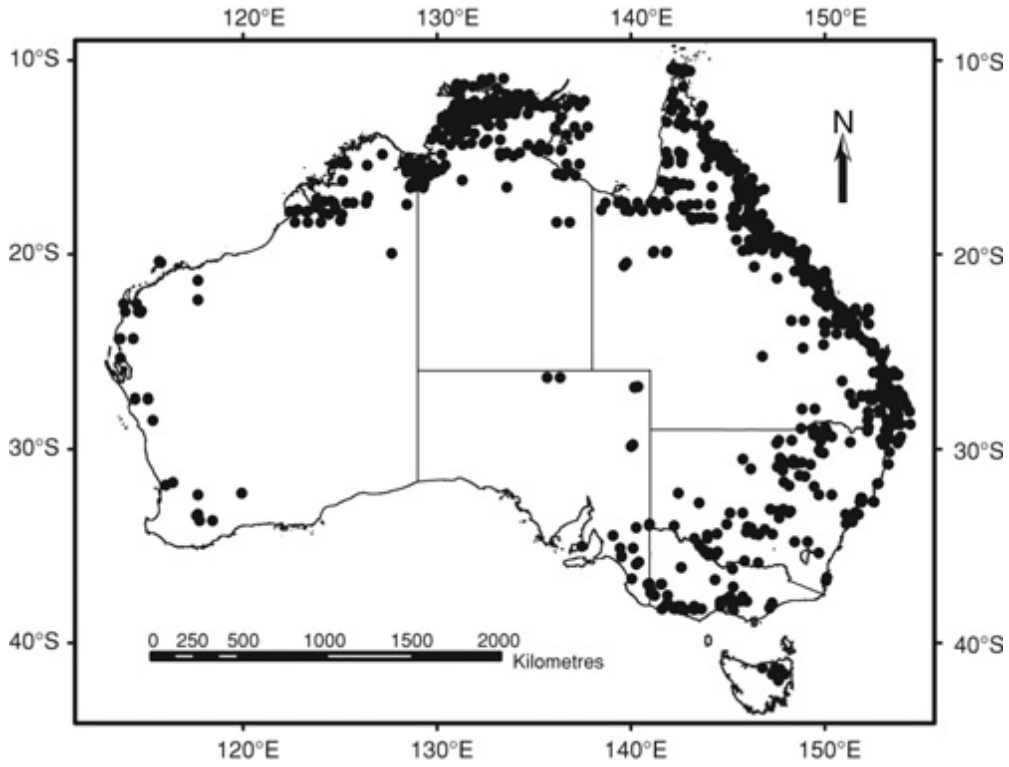

Figure 2. Historical location records for the Magpie Goose in Australia from 1788 – 2002 (Nye *et al*. 2007).

3.4 INTRODUCED GEOGRAPHIC RANGE

The Magpie Goose is not noted for establishing feral populations outside its natural range. Some successful reintroductions have occurred in New South Wales, Victoria, South Australia (Delaney *et al*. 2009). The species is not listed on the Global Invasive Species Database list of the world's worst 100 invasive species (GISD 2005).

3.5 POTENTIAL DISTRIBUTION IN TASMANIA

Using modelling applications by the Australian Bureau of Agricultural and Resource Economics and Sciences (DAFF), climate is compared between the species' current distribution in Australia and New Guinea and its potential Australian distribution (shown in Figure 3). The records of vagrant individuals in northern Tasmania were not included in the climate match.

Modelling indicates that most of the Australian mainland has areas of similar climate which may support the establishment of introduced populations. Tasmania shows a varied climate match, with

northern, north-eastern and north-western Tasmania showing a suitable match and south-western Tasmania showing a dissimilar climate.

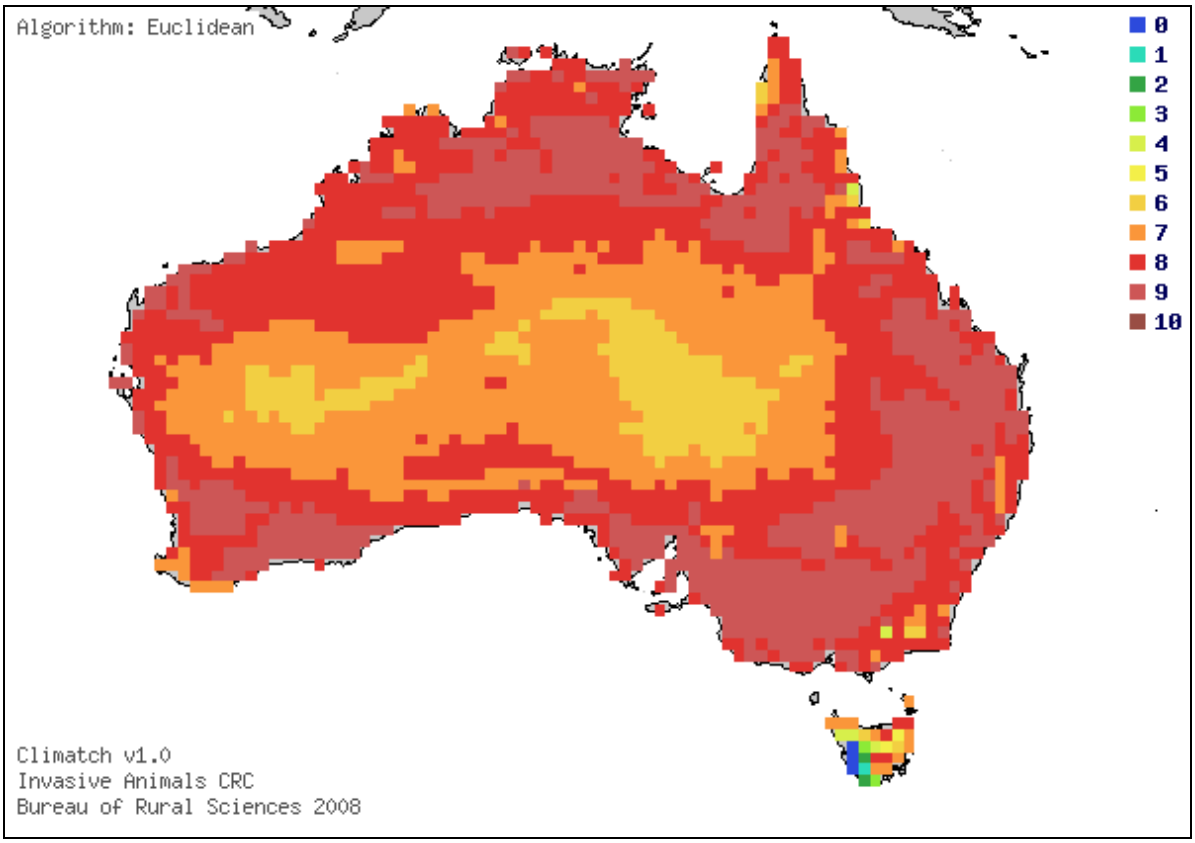

Figure 3. Climate comparison between the natural range of *A. semipalmata* and Australia, where 10 is a 'perfect' match and 0 is having a very dissimilar climate. Tasmania has a varied climate match score (highest score: 8) (Distribution source: Nye et al. 2007; Delaney *et al.* 2009).

3.6 DIET AND FEEDING BEHAVIOUR

The Magpie Goose are herbivorous; feeding on mainly on grass blades and seeds but also consuming sedge rhizomes in dry periods (Marchant and Higgins 1990). Exotic fruit and root crops may also be consumed (Whitehead and Tschirner 1991, in Traill 2009). Food is gathered by 'upending' in shallow water to about 0.7m, grazing, stripping the seed-heads of grasses and excavating bulbs and rhizomes from soft mud or soil (Marchant and Higgins 1990).

This species has potential to feed on agricultural grasses. Flocks may source food from pasture and rice fields (Marchant and Higgins 1990).

3.7 SOCIAL BEHAVIOUR AND GROUPINGS

Magpie Geese tend to form groups consisting of a dominant couple, supporting males and females and the offspring from the last breeding season (Marchant and Higgins 1990). Trios are often observed and birds may remain with their family group during the breeding season, however outside the breeding season large flocks containing 100 to 5,000 and sometimes up 80,000 birds may be seen (Marchant and Higgins 1990).

This species is not noted for being territorial.

3.8 NATURAL PREDATORS AND DISEASE

Natural predators of the Magpie Goose in northern Australia include pythons (Boidae family), Whistling Kites (*Haliastur sphenurus*), White-Bellied Sea-eagles (*Haliaeetus leucogaster*), crocodiles, Torresian Crows (*Corvus orru*), Dingos (*Canis familiaris dingo*), water rats and large lizards (Marchant and Higgins 1990).

In Tasmania, potential predators include the Tasmanian Devil (*Sarcophilus harrisii*), Spotted-tailed Quoll (*Dasyurus maculatus*), large raptors such as the Wedge-tailed Eagle (*Aquila audax fleayi*) and White-Bellied Sea-eagles (*Haliaeetus leucogaster*) and, should it become established, the introduced European Red Fox (*Vulpes vulpes*).

Diseases which may cause morbidity or mass mortality include bacterial diseases such as avian cholera, botulism and pathogenic avian influenza viruses (Traill 2009). Captive animals may also be vulnerable to the worm *Streptocara* which causes death (Cowling and Davies 1983, in Marchant and Higgins 1990).

3.9 THREAT TO HUMAN SAFETY

The Magpie Goose is not a significant threat to human safety, and any attacks on humans are likely to be associated with the breeding season. Adults may defend their young against perceived threats by beating 'invaders' with their wings, pecking them and slashing with their clawed feet (Marchant and Higgins 1990). Unprovoked attacks have not been noted and injuries may require medical attention, however hospitalisation is unlikely.

There is potential for this species to carry and transmit diseases, such as avian influenza, which may be hazardous to human health, although impact is unlikely to be serious. Avian influenza does not easily cause disease in humans and there is little risk of people in Australia being affected by avian influenza through normal contact with birds (DAFF 2011). Appropriate hygiene practices mitigate the spread of the disease.

3.10 HISTORY AS A PEST

The Magpie Goose is not noted for causing environmental damage but may damage agriculture in the Northern Territory by feeding on crops and damaging crops while taking other foods. In this region, crop netting is sometimes used to protect crops and occasionally permits to take birds are issued. The number of birds taken under permits is considered negligible (Delaney *et al*. 2009).

This species is not noted for establishing feral populations outside its natural range. Some successful reintroductions have occurred in New South Wales, Victoria and South Australia (Delaney *et al*. 2009).

3.11 POTENTIAL IMPACT IN TASMANIA

The Magpie Geese shows a preference for low-lying wetlands and records indicate that vagrant individuals historically occurred in northern Tasmania. If a population of Magpie Geese were to establish in the State, the species is likely to impact on native wetlands and associated communities, including Wetlands of International Importance under the RAMSAR Convention.

Magpie Geese have the potential to impact on a number of threatened plant species that occur in and around herbaceous wetlands in the midlands, and the eastern and northern coastal regions of Tasmania. Threatened species that may be impacted include, among others, three species of swamp wallaby grass (*Amphibromus neesii*, *A. macrorhinus*, *A. fluitans*), three species of annual triggerplant (*Stylidium perpusilla*, *S. beaugleholei*, *S. despectum*) and two species of waterpepper (*Persicaria subsessilis*, *P. decipiens*). Impacts would be primarily through added grazing pressure (M. Visoiu DPIPWE, pers. comm.).

Some competition with wetland bird species, such the Black Swan, could potentially occur should a population establish.

Agriculture in Tasmania may also be impacted. The Magpie Goose is noted for causing damage to agriculture through consuming and damaging crops and Tasmania's grazing industry has the potential to be impacted should a population establish..

4. Risk Assessment

4.1 PREVIOUS RISK ASSESSMENTS

No previous risk assessments have been noted for the Magpie Goose.

4.2 RISK ASSESSMENT

The following risk assessment determines the risk of the Magpie Goose (*Anseranas semipalmata*) to Tasmania using the Bomford model (2008) and proposes assigned threat categories and import classifications for the species.

Species:	**Magpie Goose (*Anseranas semipalmata*)**	
Date of Assessment:	October 2011	
Literature search type and date:	See references	
Factor	**Score**	
A1. Risk posed from individual escapees (0-2)	0	*Animal posing a low risk of harm to people (i.e. animals that will not make unprovoked attacks causing injury requiring medical attention, and which, even if cornered or handled, are unlikely to cause injury requiring hospitalisation).* No unprovoked attacks noted. Injuries are unlikely to require hospitalisation.
A2. Risk to public safety from individual captive animals (0-2)	0	*Nil or low risk (highly unlikely or not possible).* Risk arising from irresponsible use of product is low.
Stage A. Risk posed by individual animals (risk that a captive or escape animal would harm people)	**Public Safety Risk Score** = A1 + A2 = 0	**Public Safety Risk Ranking** A ≥ 2, Highly Dangerous A = 1, Moderately Dangerous A = 0, Not Dangerous = Not Dangerous
B1. Climate match score (1-6)	4	*High Climate Match Score.*
B2. Exotic population established overseas score (0-4)	0	*No exotic populations known to have established.*
B3. Overseas range size score (0-2)	0	*<1 million km².* Range size estimated at 236,000 km².
B4. Taxonomic class score (0-1)	0	*Bird.*
Stage B. Likelihood of establishment (risk that a particular species will establish a wild	**Establishment Risk Score**	**Establishment Risk Ranking** B = 11-13, Extreme

population in Tasmania)	= B1 + B2 + B3 + B4 = 4	B = 9-10, High B = 6-8, Moderate B ≤ 5, Low = Low
C1. Taxonomic group (0-4)	0	*Other group.*
C2. Overseas range size (0-2)	0	*Range <10 million km².*
C3. Diet and feeding (0-3)	0	*Not a mammal.*
C4. Competition for native fauna for tree hollows (0-2)	0	*Does not use tree hollows.*
C5. Overseas environmental pest status (0-3)	0	*Never reported as an environmental pest in any country or region.*
C6. Climate match to areas with susceptible native species or communities (0-5)	5	*75% of the geographic range of one or more susceptible native species that are listed as threatened under Tasmanian legislation lie within the mapped area of the six climate match classes (10, 9, 8, 7, 6 and 5).* Threatened species that may be impacted include three species of swamp wallaby grass, three species of annual triggerplant and two species of waterpepper.
C7. Overseas primary production (0-3)	1	*Minor pest of primary production in any country or region.* Species noted for damaging agriculture in the Northern Territory by consuming and damaging crops.
C8. Climate match to susceptible primary production (0-5)	3	*Commodity Damage Score: 72.5.*
C9. Spread disease (1-2)	2	*Bird.*
C10. Harm to property (0-3)	0	*<$100,000 damage per year.*
C11. Harm to people (0-5)	1	*Low risk of harm to people.*
Stage C. Consequence of Establishment (risk that an established population would cause harm)	**Consequence Risk Score** = sum of C1 to C11 = 12	**Consequence Risk Ranking** C > 19, Extreme C = 15-19, High C = 9-14, Moderate C < 9, Low = Moderate
ASSIGNED THREAT CATEGORY:	**MODERATE**	
PROPOSED IMPORT CLASSIFICATION:	**IMPORT RESTRICTED TO THOSE LICENSE HOLDERS APPROVED FOR KEEPING MODERATE THREAT SPECIES**	

5. Risk Management

This risk assessment concludes that the Magpie Goose (*Anseranas semipalmata*) is a moderate threat to Tasmania and that imports be restricted to those license holders approved for keeping moderate threat species. On the basis of this risk assessment, it is recommended that the Magpie Goose be placed on the list of imports permitted with conditions.

As defined under the *Policy and Procedures for the Import, Movement and Keeping of Vertebrate Wildlife in Tasmania* (DPIPWE 2011), the following mandatory conditions will apply to the import and keeping of this species. Additional conditions may be required.

1. The animal must not be released, or be allowed to escape from effective control.
2. Specimens seized or forfeited as a result of illegal or accidental introductions, where rehousing is not available, will be humanely euthanized.
3. Animal welfare requirements under the *Animal Welfare Act 1993* and any approved Code of Practice or Management Plan must be met.
4. Import only permitted by holders approved to keep the species under a wildlife exhibition licence. The licence will specify a number of conditions.
5. Individuals to be micro-chipped or otherwise identified, or treated to allow identification.
6. Facility must meet minimum standards for welfare and security.
7. Facility must be available for inspection at any reasonable time.
8. Audits of facilities and collections.
9. The maximum number of individuals of a species held at the facility to be stipulated on the licence, taking into account relevant factors. Gender may also be stipulated.
10. Written approval prior to movement of animals between facilities and trade of species under licence.
11. Record keeping and reporting to DPIPWE as required by DPIPWE.
12. Collections containing species subject to approval by DPIPWE as meeting best practice for keeping the species concerned.

6. References

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7. Appendices

APPENDIX A: CALCULATING TOTAL COMMODITY DAMAGE SCORE

Column 1	Column 2	Column 3	Column 4	Column 5
Industry	**Commodity Value Index (CVI)**	**Potential Commodity Impact Score (PCIS, 0-3)**	**Climate Match to Commodity Score (CMCS, 0-5)**	**Commodity Damage Score (CDS columns 2 x 3 x 4)**
Cattle (includes dairy and beef)	**11**	1	4	44
Timber (includes native and plantation forests)	**10**	N/A		
Aquaculture	**6**	N/A		
Sheep (includes wool and meat)	**5**	1	4	20
Vegetables	**5**	N/A		
Fruit (includes wine grapes)	**5**	N/A		
Poultry (including eggs)	**1.5**	N/A		
Cereal grain (includes wheat, barley, sorghum etc)	**1**	1	4	4
Other crops and horticulture (includes nuts and flowers)	**1**	1	4	4
Pigs	**1**	N/A		
Bees (includes honey, beeswax, and pollination)	**0.5**	N/A		
Oilseeds (includes canola, sunflower etc)	**0.5**	1	1	0.5
Grain legumes (includes soybeans)	**0.3**	N/A		
Other livestock (includes goats and deer)	**0.3**	N/A		
Total Commodity Damage Score (TCDS)				72.5

APPENDIX B: ASSIGNING SPECIES TO THREAT CATEGORIES

A: Danger posed by individual animals (risk a captive or escaped individual would harm people)	**B: Likelihood of establishment** (risk that a particular species will establish a wild population in Tasmania)	**C: Consequence of establishment** (risk that an established population would cause harm)	**Threat category**	**Implications for any proposed import into Tasmania**
Highly, Moderately or Not Dangerous	Extreme	Extreme	Extreme	Prohibited
Highly, Moderately or Not Dangerous	Extreme	High		
Highly, Moderately or Not Dangerous	Extreme	Moderate		
Highly, Moderately or Not Dangerous	Extreme	Low		
Highly, Moderately or Not Dangerous	High	Extreme		
Highly, Moderately or Not Dangerous	High	High		
Highly, Moderately or Not Dangerous	Moderate	Extreme		
Highly, Moderately or Not Dangerous	High	Moderate	Serious	Import restricted to those license holders approved for keeping serious threat species
Highly, Moderately or Not Dangerous	High	Low		
Highly, Moderately or Not Dangerous	Moderate	High		
Highly Dangerous	Moderate	Moderate		
Highly Dangerous	Moderate	Low		
Highly, Moderately or Not Dangerous	Low	Extreme		
Highly, Moderately or Not Dangerous	Low	High		
Highly Dangerous	Low	Moderate		
Highly Dangerous	Low	Low		
Moderately or Not Dangerous	Moderate	Moderate	Moderate	Import restricted to those license holders approved for keeping moderate threat species
Moderately or Not Dangerous	Moderate	Low		
Moderately or Not Dangerous	Low	Moderate		
Moderately Dangerous	Low	Low		
Not Dangerous	Low	Low	Low	Import permitted
Unknown	Any value	Any value	Extreme until proven otherwise	Prohibited
Any Value	Unknown	Any value		
Any Value	Any value	Unknown		
Unassessed	Unassessed	Unassessed		

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