

PEST RISK ASSESSMENT

Quaker parrot

Myiopsitta monachus



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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*.

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I. Summary

The Quaker parrot, *Myiopsitta monachus*, is a medium-sized bird, mostly green and grey with a blue-grey forehead. It is unique among psittaciformes in that it builds a stick nest rather than breeding in a cavity. These stick nests are often communal, with multiple pairs breeding in the same large stick structure.

Quaker parrots are native to temperate and subtropical regions of South America and can be found near large water sources in the lowlands east of the Andes Mountains from Bolivia, Paraguay, Uruguay, southern Brazil south to the Patagonia region of Argentina. Self-sustaining feral populations have been recorded in several US states and various countries of Europe (namely Austria, Spain, Belgium, Italy, France, Germany, Czech Republic, Slovakia and England), as well as in Chile, the Cayman Islands, Guadeloupe, Israel, Bermuda, Bahamas, Puerto Rico and Japan. It adapts readily to urban areas.

The Quaker parrot is not globally threatened and is listed as least concern by the IUCN. The species has an extremely large range and the population trend appears to be increasing. The Quaker parrot is listed on Appendix II to the Convention on International Trade in Endangered Species of Wild Flora and Fauna and export and import of this species is therefore subject to regulation under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

In Tasmania the Quaker parrot is currently listed as a controlled animal under the *Nature Conservation Act 2002*. A permit is required to import this species but they can be held without a permit to possess wildlife.

The natural distribution of the Quaker parrot includes areas similar in climate to Tasmania and as this species is very adaptable there is potential for this species to establish in Tasmania. If the Quaker parrot established in Tasmania it is likely to compete with the green rosella (*Platycercus caledonicus*), eastern rosella (*Platycercus eximius*), galah (*Cacatua roseicapilla*), sulphur-crested cockatoo (*Cacatua galerita*) and yellow-tailed black cockatoo (*Calyptorhynchus funereus*), as well as the introduced little and long-billed corellas (*Cacatua sanguine* and *Cacatua tenuirostris*) for food. There is also some potential for competition with the blue-winged parrot (*Neophema chrystoma*) and the orange bellied parrot (*Neophema chrysogaster*) for food and other resources.

The establishment of the Quaker parrot in Tasmania also has the potential for high impact on the agricultural industries such as cereal grains, oilseeds, legumes, fruit and vegetables as the species is known to cause serious damage to these commodities. Control programs have been conducted against this species in some countries.

2. Introduction

2.1 NAME AND TAXONOMY

Kingdom:	Animalia
Phylum:	Chordata
Class:	Aves
Order:	Psittaciformes
Family:	Psittacidae
Genus:	<i>Myiopsitta</i>
Species:	<i>Myiopsitta monachus</i>
Sub-species:	



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The following subspecies are recognised:

Myiopsitta monachus monachus (Boddaert, 1783) – SE Brazil, Uruguay and NE Argentina; the largest subspecies.

Myiopsitta monachus calita (Jardine & Selby, 1830) – W Argentina. Smaller than *monachus*, wings more prominently blue, grey of head darker.

Myiopsitta monachus cotorra (Viellot, 1818) – SE Bolivia, Paraguay, S Brazil and NW Argentina. Essentially identical to *calita* but supposedly less yellow below and brighter overall.

The Quaker parrot forms a superspecies with the cliff parakeet, *Myiopsitta luchi*, with which it is commonly considered conspecific (del Hoyo 1997). *Myiopsitta luchi* – Andean valleys of central Bolivia.

Common names: Quaker parrot, Gray-breasted parakeet, Grey-breasted parakeet, monk parakeet

2.2 DESCRIPTION

Quaker parrots are small, stocky parrots, 28-29 cm long, weighing 90-140 g and with a wingspan of 53cm. The basic colours of the bird are green and grey. Adults of the nominate race, *Myiopsitta monachus*, have a light grey forehead, lores, cheeks, and throat. The rest of the head is green. Feathers on the throat and abdomen are edged in a lighter grey, giving them a scalloped, barred look. Feathers below the abdomen are olive green, becoming yellowish green on the lower abdomen, legs and under the tail. The tail is green with blue staining along the feather shafts and the wings are green with the primary and secondary feathers deep blue on the outer webs. The beak is a light pinkish-brown colour, and the legs are grey. The eyes are brown. (del Hoyo 1997, Encyclopedia of Life 2011).

Males and females are not sexually dimorphic although females tend to be 10-20% smaller than the males. Immature Quaker parrots are a brighter green with a greenish forehead (GISD).

Other colour forms have been produced through captive breeding. These include birds with white, blue, and yellow in place of green (Wikipedia 2011).

Quaker parrots are quite vocal with a wide vocabulary of screeches, squawks and chattering noises (GISD). The call is a loud and throaty *chape(-yee)* or *quak quaki quak-wi quarr*, and screeches *skveet* (Wikipedia 2011).

A similar species, the cliff parakeet, *Myiopsitta luchi*, is smaller, with clearer plumage pattern, no scalloping on the breast, underparts are a brighter yellow and the underwing is lighter. The base of the maxilla is dark (Wikipedia 2011).

2.3 CONSERVATION AND LEGAL STATUS

The Quaker parrot is not currently under threat of endangerment. They are well adapted in most environments including locations of cold weather and snow.

CONSERVATION STATUS

The Quaker parrot is not globally threatened and is listed as least concern by the IUCN. The species has an extremely large range and the population trend appears to be increasing. The species is described as 'common' and its population is suspected to be increasing due to land use change resulting in new areas of suitable habitat (Birdlife International 2011).

The Quaker parrot is listed on Appendix II to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). This species had been heavily traded. Since its listing on CITES Appendix II in 1981, 710,686 wild-caught individuals have been recorded in international trade (UNEP-WCMC CITES Trade Database, January 2005). International trade in specimens of Appendix II species may be authorized by an export permit which is only granted if the relevant authorities are satisfied that trade will not be detrimental to the survival of the species in the wild.

LEGAL STATUS

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* regulates the export and import of species included in the Appendices to CITES under Part 13A. International trade in specimens of the Quaker parrot is therefore subject to regulation under this legislation.

In Tasmania the Quaker parrot is currently listed as a controlled animal under the *Nature Conservation Act 2002*. A permit is required to import this species but they can be held without a permit to possess wildlife.

3. Biology and Ecology

3.1 LIFE HISTORY

Quaker parrots are unique among psittaciformes in that they build a stick nest rather than breeding in a cavity. These stick nests are often communal, with multiple pairs breeding in the same large stick structure. In exceptional cases, these stick nests may have more than 200 chambers and entrances, but most have only 1-20. Nest maintenance is a year-round activity and all members of the colony (including sexually immature birds) will add sticks to the nest (Butler 2003). The highest available site is preferred and hence nests are placed in the tops of trees, notably introduced eucalypts, but also on pylons and windmills (del Hoyo 1997). The largest nest that has been reported was 1235 kg (Kamuda 1998).

The Quaker parrot breeds from October to February. The clutch size is 1-11, with the fledgling success greatest with around 7 eggs. Incubation is 24 days and the nestling period in captivity is about 6 weeks. A higher productivity is noted in eucalypts than in native vegetation and productivity is generally amongst the highest in psittacids owing to relatively high clutch size (del Hoyo 1997).

The young may remain with parents until next breeding season. Some individuals first breed when two years old (Nature Server 2011, AnAge 2011). The lifespan of quaker parrots is 15–20 years; one specimen lived 22.1 years in captivity (AnAge 2011).

In Argentina it has been noted that egg laying begins in October, with replacement clutches extending into January or February. Few successful breeders attempted second clutches and breeding success was low (25%), though productivity was relatively high (compared to other psittacids) due to the large clutch size. A substantial number of adults did not breed every year and reproductive success was higher in the early clutches than in later clutches (GISD 2011).

In South America, gonadal development begins in August, peaks in November and declines rapidly thereafter. Testes enlarge to fifteen times their normal size and ovaries grow in similar proportion. This pattern supports the idea of a fixed annual cycle driven by a photoperiod. South American Quaker parrots copulate in October while North American birds copulate in the spring months as the photoperiod increases (GISD 2011).

The hatchlings are covered with yellow down and are fed by the parents via regurgitation for approximately 40 days, after which they leave the nest. Unusually for a parrot, Quaker parrot pairs occasionally have helper individuals, often a grown offspring, which assist with feeding the young (Wikipedia). The nestlings reach a weight of approximately 106 g before fledging (GISD 2011).

Quaker parrot nests can attract many other tenants including birds of prey such as the spot-winged falconet (*Spizapteryx circumcincta*), ducks such as the speckled teal (*Anas flavirostris*), and even mammals (Wikipedia 2011).

3.2 HABITAT REQUIREMENTS AND PREFERENCES

Quaker parrots inhabit open savannahs, scrub forests, woodlands and palm groves at low elevations up to 1600m above sea level and where rainfall is low. The establishment of plantations (especially *Eucalyptus*) and orchards in parts of South America has allowed these highly adaptable birds to expand their native range to include the grasslands of the Pampas that previously did not have trees for roosting or nesting (Johnson and Logue, Encyclopedia of Life 2011, GISD).

Studies of Quaker parrot populations at Arroyito and Jesus Maria, Cordoba province, Argentina, showed that Quaker parrots preferred *Eucalyptus* trees (Arroyito) and native trees (Jesus Maria) for breeding nests. In its introduced range they live almost exclusively in urban areas, preferring open habitats, including parks, planted urban areas, golf courses, farms, gardens and orchards (GISD).

In the United States, Quaker parrot populations have been documented in at least 14 states. However, populations often disappear as rapidly as they arrive, and the introduced range of this species (Fig. 5) is highly dynamic. In the United States, the greatest concentration of Quaker parrots is found in the subtropical regions of peninsular Florida and south-eastern Texas. However, persistent, thriving populations are also found in New York City, Chicago, and Connecticut. In contrast to the natural habitats used in their native range, introduced Quaker parrots are found predominantly in urban/suburban areas (Johnson and Logue 2009).

In Brazil, Rio de Janeiro, Quaker parrots can be easily seen at the Aterro do Flamengo gardens - where they nest on palm trees and feed on their fruit. These birds seem to favour nesting amid the leaves of coconut palm trees, as well as in the vicinity of the neighboring domestic flight terminal, the Santos Dumont Airport and in the gardens of Quinta da Boa Vista, where communal nests of roughly one meter in diameter have been seen (Wikipedia 2011).

Whereas many other parrot species suffer declines as a result of logging and the removal of suitable nest sites, Quaker parrots easily adapt to the changing landscape, building nests and raising young. The species uses and maintains its stick compound year-round. This habit may explain this parrot's ability to colonize areas with colder winters than in its region of origin (Spreyer and Butcher 1998).

3.3 NATURAL GEOGRAPHIC RANGE

Quaker parrots are native to temperate and subtropical regions of South America and can be found near large water sources in the lowlands east of the Andes Mountains from Bolivia, Paraguay, Uruguay, southern Brazil south to the Patagonia region of Argentina. They are also found in South American city parks, on farms, and in yards (ISSG Database, Encyclopedia of Life 2011). The overseas range of this species is 5,701,269 sq km.

3.4 INTRODUCED GEOGRAPHIC RANGE

Self-sustaining feral populations of Quaker parrots have been recorded in many US states and various countries of Europe (Austria, Spain, Belgium, Italy, France, Germany, Czech Republic, Slovakia and England), as well as in Chile, the Cayman Islands, Guadeloupe, Israel, Bermuda, Bahamas, Puerto Rico and Japan. It adapts readily to urban areas (IUCN 2011, Wikipedia 2011).

Considerable numbers of Quaker parrots were imported to the United States in the late 1960s as pets. Many escaped or were intentionally released, and populations were allowed to proliferate. By the early 1970s, Quaker parrot populations had become established in seven states, and by 1995 they had spread to eight more. There are now thought to be approximately 100,000 in Florida alone (Wikipedia 2011). Breeding colonies have established in Chicago and Miami and in the states of Alabama, Connecticut, Delaware, Louisiana, New York, Oregon, Texas, and Virginia (Encyclopedia of Life 2011). As one of the few temperate-zone parrots, the Quaker parrot is more able than most to survive cold climates, and colonies exist as far north as New York City, Chicago, Cincinnati, Louisville, northern New Jersey, coastal Rhode Island and Connecticut, and south-

western Washington (Wikipedia 2011). Quaker parrots have also been introduced in Quebec, Canada, near Montreal (Johnson and Logue 2009).

The species has in recent years expanded its range in Brazil, where there are now several self-sustaining populations well outside the species natural range. These are believed to have originated from escapees from the pet trade (Wikipedia 2011).

In Spain Quaker parrots are widespread and locally abundant in some cities (Wikipedia 2011).

This species is recorded on the Global Invasive Species Database (GISD 2011).

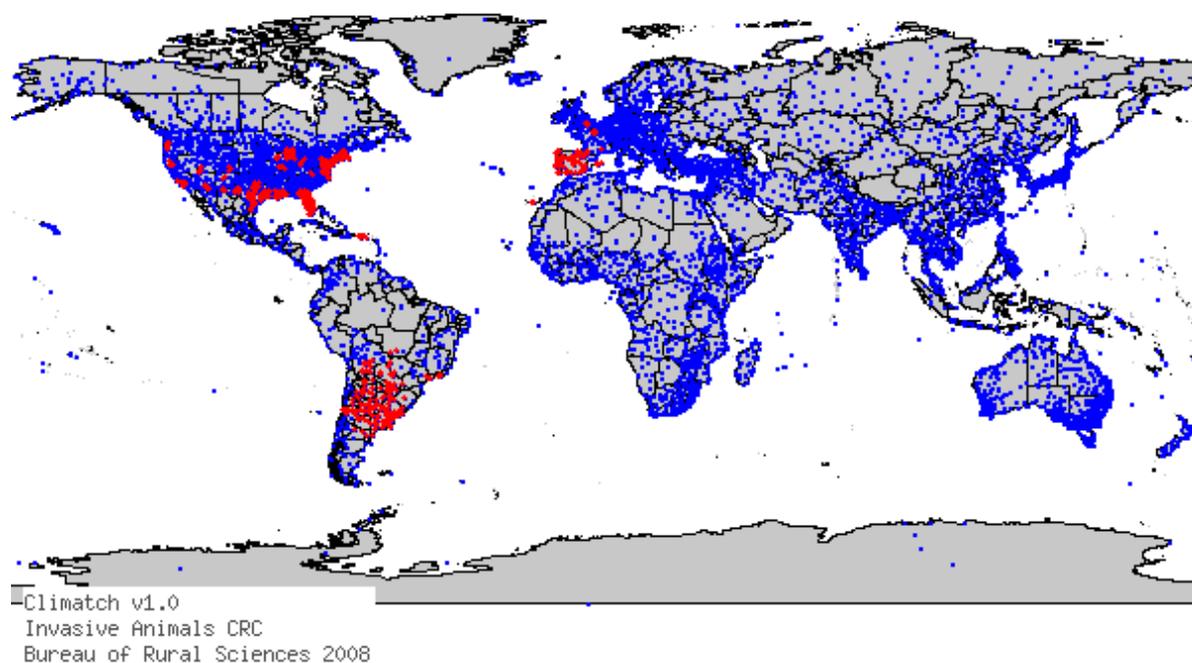


Figure 1: Global distribution of the quaker parrot (*Myiopsitta monachus*) as selected for climate matching during risk assessment process. (Source: CLIMATCH – <http://adl.brs.gov.au:8080/Climatch/>)

3.5 POTENTIAL DISTRIBUTION IN TASMANIA

Using modelling applications by the Bureau of Rural Science (DAFF), climate is compared between the species' current distribution and potential Australian distribution (shown in Figure 2). Modelling indicates that mainland Australia has highly similar climate which may support the establishment of introduced populations. Tasmania's climate is also similar (highest climate match score: 8).

The natural distribution of the Quaker parrot includes areas similar in climate to Tasmania. Quaker parrots are very adaptable and the Climate match score is high (17). There is therefore potential for this species to establish in Tasmania.

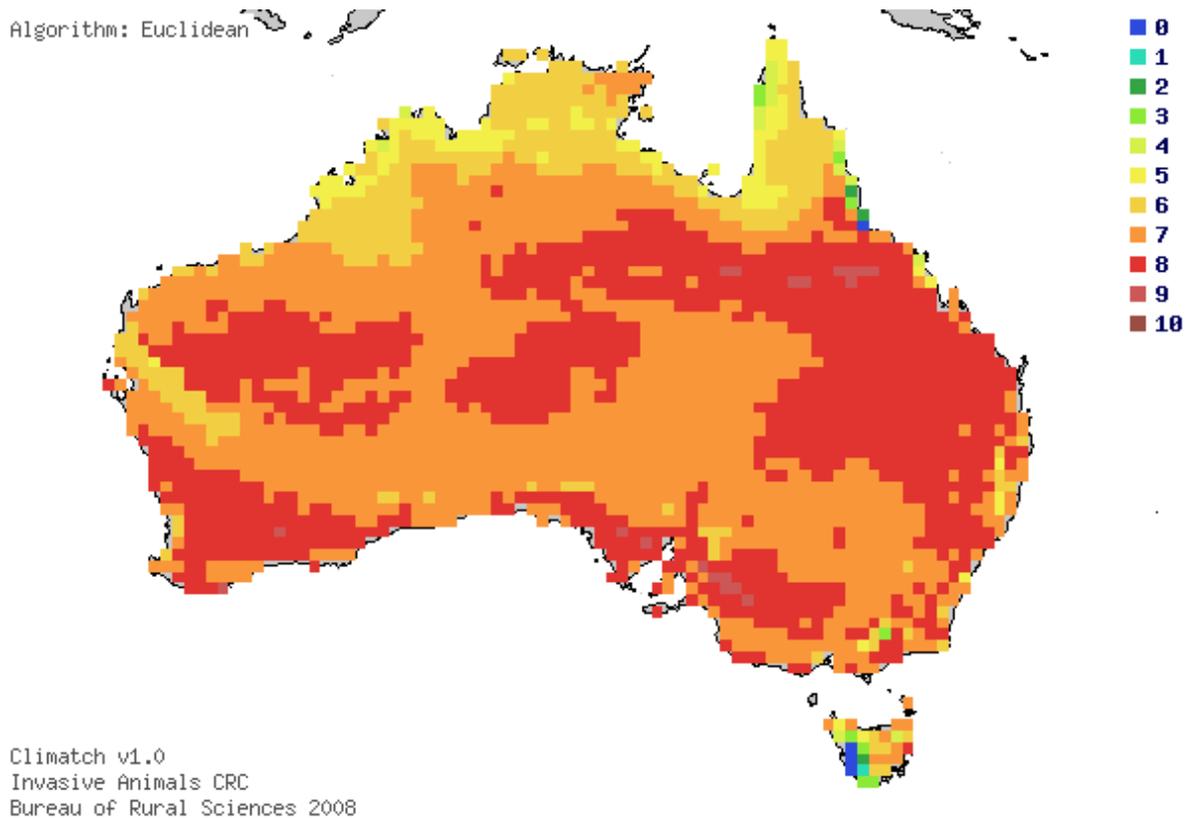


Figure 2: Climate match results showing the potential geographic distribution of the quaker parrot (*Myiopsitta monachus*) in Australia. (Source: CLIMATCH – <http://adl.brs.gov.au:8080/Climatch/>)

3.6 DIET AND FEEDING BEHAVIOUR

The diet of Quaker parrot is variable, depending on local availability of seeds, fruits, blossoms, insects, leaf buds, thistles, grasses, palm nuts and parts of trees. They consume an assortment of sunflower seeds, safflower seeds, pumpkin seeds, and other smaller seeds. Near populated areas, the birds have also been known to eat sweet potatoes, legumes, drying meat, cereal crops such as maize and sorghum, as well as citrus crops. Throughout their introduced range, Quaker parrots feed on the seeds and fruits of exotic ornamental plants and on bird seed provided year round by humans. On occasion, Quaker parrots will prey on insects and other small invertebrates (del Hoyo 1997, Johnson and Logue 2009, Encyclopedia of Life 2011).

They use their large beak to consume seeds and take bites from large pieces of fruit. They have also been seen cracking pine cones to get to the seeds and snipping the heads off dandelions and eating the seeds. In winter, Quaker parrots often feed in large flocks of several hundred while a few sentinels sit on high perches to keep a lookout for predators. During the breeding season, flocks larger than 4 birds are rare. Quaker parrots generally feed 3.2-8km from the nest site and may forage as far as 24km away during the non-breeding season (Spreyer and Bucher, 1998).

In South America, unless they live near urban or suburban areas where they can find food year-round, Quaker parrots migrate in the winter to find better food sources (Encyclopedia of Life 2011).

3.7 SOCIAL BEHAVIOUR AND GROUPINGS

Quaker parrots are usually found in loose flocks of 15-20 birds, although flocks of up to 100 are not uncommon (GISD). They are a highly sociable species and often build large communal nests made up of many individual chambers, each of which houses a pair of birds. Groups of wild Quaker parrots live together, each pair with its own residence comprising at least two chambers. As the flock grows, each pair builds its apartment onto the main nest. Quaker parrots do not avoid humans and can be found in and near both small and large towns, as well as farms and orchards if there is a reliable food source nearby (Johnson and Logue 2009, Encyclopedia of Life 2011).

Quaker parrots display several types of "helping behaviours" that may have contributed to their success as alien species. Included are communal nest building, delayed breeding, the presence of non-breeding mature adults, nest sentinel systems and reduced natal dispersal. After leaving the nest, young birds often remain close, building their own nests or adding on to an existing nest (Spreyer and Bucher, 1998).

Quaker parrots are very social birds, having eleven or more different calls that each elicit a different response from others in the colony (GISD 2011).

3.8 NATURAL PREDATORS AND DISEASE

Raptors are the most significant predators of the Quaker parrot in both its natural and introduced ranges. The red weasel (*Crassicaudata lutreolina*) is also a known predator of the Quaker parrot (Kiwikipedia 2011).

Potential predators of the Quaker parrot in Tasmania are the brown goshawk and the peregrine falcon.

It is probable that the Quaker parrot would be susceptible to a range of psittacine diseases, including psittacine circovirus which occurs naturally in the wild. The disease it causes (also known as beak and feather disease) is widespread and has been reported in more than 61 psittacine species, including Tasmanian parrots such as the orange-bellied parrot, swift parrot, and many common species such as the sulphur crested cockatoo and the galah. The virus can affect birds of all ages, but particularly juveniles or young adults. The virus kills feather and beak cells. Symptoms of the acute form of this disease include diarrhoea and feather abnormalities, and death may occur suddenly within one to two weeks of the first symptoms. The chronic form results in feather, beak and skin abnormalities, with most birds eventually dying. The virus multiplies in the liver and can be transmitted orally or in faeces or feathers. It is one of the smallest and most resistant disease-causing viruses and probably remains alive for many years in tree hollows and other nest sites. The potential effects of the disease on parrot populations range from inconsequential to devastating, depending on environmental conditions and the general health of the parrots. The disease appears to have originated in Australia and is widespread and continuously present in wild populations of Australian parrots (DEH 2011, DEH 2005, Ortiz-Catedral et al 2010).

3.9 THREAT TO HUMAN SAFETY

There have been no recorded adverse effects of Quaker parrots on humans.

3.10 HISTORY AS A PEST

The Quaker parrot is known to kill small birds including blue jays and robin in its introduced range (Long 1981).

The Quaker parrot is known to be a serious pest of maize, sorghum and other cereals, plus sunflower, peaches, pears, grapes, apples and citrus crops (Long 1981, del Hoyo 1997). It is considered a pest in its native range (Encyclopedia of Life 2001). The population explosion in South

American rural areas seems to be associated with the expansion of eucalyptus forestry for paper pulp production, which offers the bird the opportunity to build protected nests in artificial forests where there is small ecological competition from other species (Wikipedia 2011).

In north America, the Quaker parrot is listed as an agricultural pest in California, Georgia, Kansas, Kentucky, Hawaii, New Jersey, Pennsylvania, Tennessee, and Wyoming and the sale and ownership of these birds is therefore prohibited. In Connecticut, New York, Virginia and Ohio it is possible to own a Quaker parrot, but there are restrictions on keeping, selling and breeding them (Wikipedia 2011).

A major campaign to eradicate the Quaker parrot in the USA, attempted when numbers were still relatively low, was unsuccessful. It is probable that failure to prevent further releases of this species from captivity, together with the species' high dispersal powers contributed to the failure (Bomford 2003). Quaker parrots are causing widespread economic damage in the United States by nesting on utility structures, which leads to electrical fires and power outages (Pruett-Jones et al 2007).

In the USA evidence of harm caused by feral colonies is disputed, and many people oppose killing this charismatic bird, but there have been local bans and eradication programs in some areas. Outside the USA, introduced populations do not appear to raise similar controversy, presumably because of smaller numbers of birds, or because their settlement in urban areas does not pose a threat to agricultural production (Wikipedia 2011).

3.11 POTENTIAL IMPACT IN TASMANIA

If the Quaker parrot established in Tasmania it is likely to compete with the green rosella (*Platycercus caledonicus*), eastern rosella (*Platycercus eximius*), galah (*Cacatua roseicapilla*), sulphur-crested cockatoo (*Cacatua galerita*) and yellow-tailed black cockatoo (*Calyptorhynchus funereus*), as well as the introduced little and long-billed corellas (*Cacatua sanguine* and *Cacatua tenuirostris*) for food. There is also some potential for competition with the blue-winged parrot (*Neophema chrystoma*) and the orange bellied parrot (*Neophema chrysogaster*) for food and other resources.

The Quaker parrot has a high climate match with Tasmania (score of 17) and a high percentage of the range of the blue-winged parrot and green rosella overlaps with areas with which there is a high climate match with the Quaker parrot (grids with climate match scores 6, 7 & 8). Furthermore, its recorded ability to kill small birds where it has been introduced suggests it could be a considerable threat to Tasmania's large number of small bird species, including endemic species and species listed under Commonwealth and / or Tasmanian threatened species legislation.

The establishment of the Quaker parrot in Tasmania has the potential for high impact on the agricultural industries such as cereal grains, oilseeds, grain legumes, fruit and vegetable. This species is known to cause serious damage to these commodities and control programs have been conducted against this species in some countries. Agricultural areas in Tasmania overlap with areas with which there is a high climate match with the Quaker parrot (grids with climate match scores 6, 7 & 8). This means that the Quaker parrot, if established, is likely to come into contact with these commodities.

This species is a communal nester and therefore has a high potential to harbour a range of psittacine diseases and become a reservoir of infection to other species.

4. Risk Assessment

4.1 PREVIOUS RISK ASSESSMENTS

The Vertebrate Pests Committee (2007) assessed the Quaker parrot as being in the Extreme Threat Category. Species placed in the Extreme Threat Category are animals that should not be allowed to enter, nor be kept in any State or Territory, although special consideration may be given to scientific institutions on a case by case basis (Vertebrate Pests Committee 2007).

A pest risk assessment for the Quaker parrot in Oregon was carried out by the Oregon Department of Agriculture (Stafford 2003) following the format used by the Exotic Forest Pest Information System for North America (NAFC 2011) giving this species a 'moderate' risk rating, with a 'medium' establishment potential, 'medium' economic impact potential and 'low' environmental impact potential.

In Great Britain the Non-native Species Secretariat manages the risk analysis process and has developed the GB Risk Analysis Mechanism to promote the use of good quality risk assessment. Risk assessments are carried out by independent experts from a range of organisations. A risk assessment on the importation of the Quaker parrot into Great Britain has given this species a risk assessment rating of 'medium'. There is a 'likely' establishment potential, 'intermediate' spread potential and a 'moderate' impact potential (NNSS 2011).

4.2 RISK ASSESSMENT

The following risk assessment determines the risk of Quaker parrots to Tasmania using the Bomford model (2008) and proposes assigned threat categories and import classifications for the species.

Species:	Quaker Parrot <i>Myiopsitta monachus</i>	
Date of Assessment:	9 May 2011	
Literature search type and date:	See references	
Factor	Score	
A1. Risk posed from individual escapees (0-2)	0	Low risk
A2. Risk to public safety from individual captive animals (0-2)	0	Low risk
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 = 0, NOT DANGEROUS
B1. Climate match score (1-6)	4	Climatch score = 17
B2. Exotic population established overseas score (0-4)	4	Has been introduced to North America and Europe
B3. Overseas range size score (0-2)	1	Overseas range = 5,701,269 km ²
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 = B1 + B2 + B3 + B4 = 9	Establishment Risk Ranking B = 9-10, SERIOUS

population in Tasmania)		
C1. Taxonomic group (0-4)	2	Order Psittaciformes. No native species of the same genus. Unlikely to hybridise with native species.
C2. Overseas range size (0-2)	2	Overseas range = 5,701,269 km ²
C3. Diet and feeding (0-3)	0	Bird
C4. Competition for native fauna for tree hollows (0-2)	0	Builds enclosed nest of sticks
C5. Overseas environmental pest status (0-3)	3	Competition between native species and monk parakeet reported in US. Have been observed killing blue jays and robin (Long).
C6. Climate match to areas with susceptible native species or communities (0-5)	3	Blue-winged parrot and green rosella - 10 grid squares score 7 & 8, 8 grid squares score 5 & 6
C7. Overseas primary production (0-5)	3	Regarded as major environmental pest and serious crop pest (Long). Causes widespread damage to cereal crops and raid citrus orchards in S America (Long).
C8. Climate match to susceptible primary production (0-5)	4	Range of susceptible commodities covered by grid squares with climate match scores 5-7.
C9. Spread disease (1-2)	2	Bird
C10. Harm to property (0-3)	0	Low risk
C11. Harm to people (0-5)	0	Low risk
Stage C. Consequence of Establishment (risk that an established population would cause harm)	Consequence Risk Score = sum of C1 to C11 = 19	Consequence Risk Ranking C = 15-19, SERIOUS
ASSIGNED THREAT CATEGORY:	EXTREME	
PROPOSED IMPORT CLASSIFICATION:	PROHIBITED	

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6. 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	0	0	0
Timber (includes native and plantation forests)	10	0	0	0
Aquaculture	6	0	0	0
Sheep (includes wool and meat)	5	0	0	0
Vegetables	5	1	4	20
Fruit (includes wine grapes)	5	3	4	60
Poultry (including eggs)	1.5	1	4	6
Cereal grain (includes wheat, barley, sorghum etc)	1	3	4	12
Other crops and horticulture (includes nuts and flowers)	1	1	4	4
Pigs	1	0	0	0
Bees (includes honey, beeswax, and pollination)	0.5	0	0	0
Oilseeds (includes canola, sunflower etc)	0.5	3	4	6
Grain legumes (includes soybeans)	0.3	3	4	3.6
Other livestock (includes goats and deer)	0.3	0	0	0
Total Commodity Damage Score (TCDS)				111.6

C8. Climate match to susceptible primary production (on a scale of 0–5) = 4

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	Serious		
Highly, Moderately or Not Dangerous	Extreme	Moderate		
Highly, Moderately or Not Dangerous	Extreme	Low		
Highly, Moderately or Not Dangerous	Serious	Extreme		
Highly, Moderately or Not Dangerous	Serious	Serious		
Highly, Moderately or Not Dangerous	Moderate	Extreme		
Highly, Moderately or Not Dangerous	Serious	Moderate	Serious	Import restricted to those collections approved for keeping serious threat species
Highly, Moderately or Not Dangerous	Serious	Low		
Highly, Moderately or Not Dangerous	Moderate	Serious		
Highly Dangerous	Moderate	Moderate		
Highly Dangerous	Moderate	Low		
Highly, Moderately or Not Dangerous	Low	Extreme		
Highly, Moderately or Not Dangerous	Low	Serious		
Highly Dangerous	Low	Moderate		
Highly Dangerous	Low	Low		
Moderately or Not Dangerous	Moderate	Moderate		
Moderately or Not Dangerous	Moderate	Low		
Moderately or Not Dangerous	Low	Moderate		
Moderately Dangerous	Low	Low	Moderate	Import restricted to those collections approved for keeping Moderate Threat species
Not Dangerous	Low	Low		
Unknown	Any value	Any value		
Any Value	Unknown	Any value		
Any Value	Any value	Unknown	Extreme until proven otherwise	Prohibited
Unassessed	Unassessed	Unassessed		

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