

**RISK ASSESSMENTS FOR ESTABLISHMENT OF REPTILES AND AMPHIBIANS
INTRODUCED TO AUSTRALIA – Asian Painted Frog (*Kaloula pulchra*) (Gray, 1831)**



Class - *Amphibia*, Order - Anura, Family - Microhylidae (Gunther, 1831), Genus - *Kaloula* (Gray, 1831);
(ITIS Integrated Taxonomic Information System 2007, Catalogue of Life 2008)

Score Sheet

<p>SPECIES: Asian Painted Frog (<i>Kaloula pulchra</i>)</p> <p>Other common names include: Chubby Frog, Malaysian Narrowmouth Toad, Banded Bullfrog</p> <p>Synonyms:</p> <p><i>Callula pulchra</i></p> <p>Subspecies:</p> <p><i>K. p. hainana</i></p> <p><i>K. p. pulchra</i></p>	<p>Species Description – Small burrowing frog, with a squat round body, smallish head and short snout. Body length 54-75 mm, female larger than the male. Short, thick hind legs and feet, with feet have two broad sharp spades used for digging, these are characteristic of the genus. Fingers are rather slender with well-developed disks on the tips, without webbing. First finger is shorter than the second. The skin is smooth, or with a few light coloured bumps widely dispersed over the back. Body colour is dark grey, light brown or pinkish colour, with a large dark brown spot covering nearly the whole of the back. Two wide, irregular tan- or cream-coloured bands, edged in black run from the eye to the groin. The snout is tan in colour; underside of the head is brown; chest, belly and under surface of the legs are whitish and have dispersed brown spots, occasionally creating a network pattern. The male has a subgular vocal sac, which opens by a pair of slits on the middle of the side of the tongue (ASEAN Centre for Biodiversity, Gunther 1864, Boring 1934, Berry 1975, Mattison 1982, Lim and Lim 1992, Iskandar 1998, Vyas and Parasharya 2004).</p> <p>Longevity – Maximum recorded longevity is 11 years (HAGR Human Ageing Genomic Resources 2006).</p> <p>Status –</p> <ol style="list-style-type: none"> 1. Red List Category – Least Concern (LC) <p>Rationale: The species is generally quite common throughout most of its range. It is collected for consumption in many places, but this does not appear to have a significant impact on its populations. It is sometimes found in the international pet trade, but at levels that do not currently constitute a major threat. Its range overlaps with numerous protected areas (Kuangyang et al 2004).</p> <ol style="list-style-type: none"> 2. CITES listed Protection Status – Not listed (CITES 2007).
<p>DATE OF ASSESSMENT: 28/03/2008</p> <p>Bird and Mammal Model Used: (Bomford 2008) using PC CLIMATE (Brown et al 2006, Bureau of Rural Sciences 2006)</p>	<p>The Risk Assessment Model</p> <p>Models for assessing the risk that exotic vertebrates could establish in Australia have been developed for mammals, birds (Bomford 2003, Bomford 2006, 2008), reptiles and amphibians (Bomford et al 2005, Bomford 2006, 2008). Developed by Dr Mary Bomford of the Bureau of Rural Sciences (BRS), the model uses criteria that have been demonstrated to have significant correlation between a risk factor and the establishment of populations of exotic species and the pest potential of those species that do establish. For example, a risk factor for establishment is similarity in climate (temperature and rainfall) within the species' distribution overseas and Australia. For pest potential, the species' overseas pest status is a risk factor. The model was originally published in 'Risk Assessment for the Import and Keeping of Exotic Vertebrates in Australia' (Bomford 2003) available online http://www.daff.gov.au/brs/land/feral-animals/management/risk . This model used the Apple Mac application CLIMATE (Pheloung 1996) for climate matching.</p> <p>The risk assessment model was revised and recalibrated 'Risk Assessment for the Establishment of Exotic Vertebrates in Australia: Recalibrated and Refinement of Models'(Bomford 2006) and the climate application changed to PC CLIMATE software (Bureau of Rural Sciences 2006), available online at http://affashop.gov.au/product.asp?prodid=13506. The most recent publication (Bomford 2008) includes updated instructions for using the exotic vertebrate risk assessment models and an additional model for freshwater fish. A bird and mammal model for New Zealand has also been included.</p> <p>Which models are being used for the assessments:</p> <p>Birds and mammals have been assessed using the Australian Bird and Mammal Model (Bomford 2008), pp 16-28,</p>

		<p>including both versions of stage B, models 1 (4 factors) and 2 (7 factors). All reptiles and amphibians were assessed using three models; the Australian Bird and Mammal Model (Bomford 2008), including Model A, using 3 factors from stage B (pp 54-55), and Model B, using 7 factors from stage B (pp 20), and the Australian Reptile and Amphibian Model (Bomford 2008), p 51-53. The rationale for using additional models for reptiles and amphibians is to compare establishment risk ranks of the three models for a precautionary approach. If the models produce different outcomes for the establishment potential of any reptile or amphibian, the highest ranked outcome should be used (Bomford 2008).</p> <p>Climate Matching Using PC CLIMATE</p> <p>Sixteen climate parameters (variables) of temperature and rainfall are used to estimate the extent of similarity between data from meteorological stations located in the species' world distribution and in Australia. Worldwide, data (source; worlddata_all.txt CLIMATE database) from approximately 8000 locations are available for analysis. The number of locations used in an analysis will vary according to the size of the species' distribution. Data from approximately 762 Australian locations is used for analysis.</p> <p>To represent the climate match visually, the map of Australia has been divided into 2875 grid squares, each measured in 0.5 degrees in both longitude and latitude.</p> <p>CLIMATE calculates a match for each Australian grid by comparing it with all of the meteorological stations within the species' distribution (excluding any populations in Australia) and allocating a score ranging from ten for the highest level match to zero for the poorest match. These levels of climate match are used in the risk assessment for questions B1 (scores are summed to give a cumulative score), C6, and C8. For a grid square on the Australian map to score highly, it must match closely all 16 climatic variables of at least one meteorological station in the species' distribution for each level of climate match. [The score for each grid is based on the minimum Euclidian distance in the 16- dimensional variable space between it and all stations in the species' distribution. Each variable is normalized by dividing it by its worldwide standard deviation.]</p>
LITERATURE SEARCH TYPE AND DATE: NCBI, CAB Direct, MEDLINE, Science Direct, Web of Knowledge (Zoological Records, Biological Abstracts), SCIRUS, Google Search and Google Scholar 13/02/2008		
FACTOR	SCORE	
PROBABILITY ESCAPED OR RELEASED INDIVIDUALS WILL ESTABLISH FREE-LIVING POPULATION		
Model A: Using the first three factors/questions from stage B of the Australian Bird and Mammal Model (Bomford 2008) pp 54-55)		
<i>B1. Degree of climate match between species overseas range and Australia (1-6)</i>	4	<p><i>Climate Match Score = 915 High climate match with Australia [See above for information on climate matching.]</i></p> <p>Climate data from 545 locations (see species' worldwide distribution map) were used to calculate the CMS. Overseas distribution south and south-east Asia (Lever 2006) (see B2 and B3 for details).</p>
<i>B2. Exotic population established overseas (0-4)</i>	4	<p><i>Exotic population established on an island larger than 50 000 km² or anywhere on a continent</i></p> <p>The Asian Painted Frog has been introduced to Borneo and Sulawesi, Indonesia. Unknown when the frog was introduced to, but it is thought to be a relatively recent introduction; probably by accident rather than from deliberate release (Zhao and Adler 1993, Inger and Lian 1996, Iskandar 1998, Tyler and Chapman 2005, Lever 2006).</p> <p>The frog has also established in Singapore. It is thought the species may have 'immigrated' with man from northern west Malaysia, perhaps sometime during the 1880s. It now occurs almost island-wide, and is considered to be a very successful, introduced species (Lim and Lim 1992, Tyler and Chapman 2005, Lever 2006, Baker 2008).</p> <p>The species has also established populations in Taiwan, probably assisted by the pet trade (Daly et al 2004, Kuangyang et al 2004, Hou et al 2006, IUCN et al 2006).</p>

		<p>One specimen arrived in Guam as a stowaway on cargo. The frog was found on military cargo on an Air Force cargo plane that arrived on Guam travelling directly from Thailand in 2003. The cargo consisted of military vehicles, munitions, and palletised general cargo, all of which had been used in field activities in Thailand. The species is not establish (Christy et al 2007a, Christy et al 2007b).</p> <p>A live specimen was found by cargo handlers at Perth International Airport. It has not been previously recorded in Australia, but has been accidentally imported into New Zealand (Tyler and Chapman 2005).</p>
<p>B3. Overseas range size (0–2) < 1 = 0; 1 – 70 = 1; >70 = 2</p>	1	<p><i>Overseas range size between 1-70 million km² estimated at 3.94 million km². Includes current and past 1000 years, natural and introduced range.</i></p> <p>The species is widespread through much of southern and southeast Asia. It occurs in Southern China (including Yunnan, Fujian, Guangdong, Guangxi and Hainan Provinces, as well as Hong Kong and Macau), Vietnam, Cambodia, Lao People's Democratic Republic, Myanmar (Burma), Thailand (including Phuket, where it is very common), and Peninsular Malaysia.</p> <p>It has fragmented populations in India (including Assam, Bihar, West Bengal, Orissa, Madhya Pradesh, Karnataka and Tamil Nadu) and Sri Lanka, were it is said to be widely distributed. Also populations in Nepal and Bangladesh (Boring 1934, Frith 1977, Zhao and Adler 1993, Kuangyang et al 2004, Vyas and Parasharya 2004, IUCN et al 2006, Lever 2006, Baker 2008, Wai-Neng Lau et al 2008).</p> <p>It also occurs on the islands of Sumatra, Indonesia, and Langkawi, Malaysia (Ibrahim et al 2006, Baker 2008).</p> <p>Introduced populations occur on Borneo, Sulawesi, Singapore, and Taiwan (see Score B).</p> <p>It is found from sea level up to 750 m (Kuangyang et al 2004, IUCN et al 2006).</p>
<p>ESTABLISHMENT RISK SCORE SUM OF SCORE A (B1) + SCORE B (B2) + SCORE C (B3) (1-12)</p>	9	
<p>Model B: Using the seven factors/questions from stage B of the Australian Bird and Mammal Model (Bomford 2008) pp 20)</p>		
<p>B4. Taxonomic Class (0–1)</p>	1	<p><i>Amphibian (ITIS Integrated Taxonomic Information System 2007, Catalogue of Life 2008).</i></p>
<p>B5. Diet score (0–1)</p>	1	<p><i>Generalist with a broad diet of many food types</i></p> <p>Diet is predominantly ants, but the species will also take other invertebrates including beetles and other crawling insects (ASEAN Centre for Biodiversity, Lim and Lim 1992, Inger and Stuebing 2005).</p>
<p>B6. Habitat score - undisturbed or disturbed habitat (0–1)</p>	1	<p><i>Can live in disturbed habitats</i></p> <p>A highly adaptable species, found in most habitats. Natural habitat is presumably wetlands, riverbanks and the forest edge. It is often found in human settlements, and is said to be locally very abundant in towns, cities and villages. During the day and in dry weather, it remains in hiding under stones, flowerpots, under leaf litter, in the crevices of walls or buildings, or in burrows. After every heavy rainfall, large numbers can be collected from drains and puddles of water; any temporary pool may be utilised by the species. It has been observed in rubbish heaps and drainage ditches. It has also adapted successfully to agricultural landscapes and residential areas, and may also be found in disturbed forest areas (ASEAN Centre for Biodiversity, Finn 1929, Berry 1975, Lim and Lim 1992, Stuart 1999, Kuangyang et al 2004, Vyas and Parasharya 2004, IUCN et al 2006, Baker 2008).</p> <p>In Peninsular Malaysia, the species is unknown from natural, undisturbed forests (Berry 1975).</p>
<p>B7. Non-migratory behaviour (0–1)</p>	1	<p><i>Non-migratory or facultative migrant in its native range OR unknown</i></p> <p>No information found; probably non-migratory.</p>

ESTABLISHMENT RISK SCORE SUM OF B1-7 (1-16)	13	
Australian Reptile and Amphibian Model (Bomford 2008, pp 51-53)		
Score A. Climate Match Risk Score Degree (Sum of species' 4 scores for Euclidian match classes 7 – 10)	19	CMRS = 100(538/2785) Distribution southeast Asia (see B2 and B3 for details).
Score B. Has the species established an exotic population in another country? (0-30)	30	<i>The species has established a breeding self-sustaining exotic population in another country</i> The species has established self-sustaining exotic populations in Borneo and Sulawesi, Indonesia, and Malaysia and Tiawan (Zhao and Adler 1993, Inger and Lian 1996, Iskandar 1998, Tyler and Chapman 2005, Lever 2006).
Score C. Taxonomic Family risk score (0-30)	20	<i>Very high risk family (Bomford 2006)</i> Family - Microhylidae (Gunther, 1831) (The Reptile Database 2007).
ESTABLISHMENT RISK SCORE SUM OF SCORE A + SCORE B + SCORE C (0 – ≥116)	69	
PUBLIC SAFETY RISK RANK		
Risks to public safety posed by captive or released individuals (using the questions from stage A of the Australian Bird and Mammal Model (Bomford 2008, pp 17)		
A1. Risk to people from individual escapees (0-2) <i>Assess the risk that individuals of the species could harm people. (NB, this question only relates to aggressive behaviour shown by escaped or released individual animals. Question C11 addresses the risk of harm from aggressive behaviour if the species establishes a wild population).</i> <i>Aggressive behaviour, size, plus the possession of organs capable of inflicting harm, such as sharp teeth, claws, spines, a sharp bill, or toxin-delivering apparatus may enable individual animals to harm people. Any known history of the species attacking, injuring or killing people should also be taken into account. Assume the individual is not protecting nest or young.</i>	0	<i>All other animals posing a lower 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</i> Small amphibian. It is one of the easiest tropical frogs to keep in captivity, and is placid in disposition (Mattison 1982). When threatened, the frog can inflate its body considerably (Obst et al 1988).
A2. Risk to public safety from individual captive animals (0-2) <i>Assess the risk that irresponsible use of products obtained from captive individuals of the species (such as toxins) pose a public safety risk (excluding the safety of anyone entering the animals' cage/enclosure or otherwise coming within reach of the captive animals)</i>	0	<i>Nil or low risk (highly unlikely or not possible)</i> An investigation of the skin of 21 genera of anurans from Thailand were investigated for noxious secretions, toxic substances, and alkaloids. The Asian Painted Frog was found to be noxious but not toxic. The secretions produced by the frog have an unpleasant taste, usually accompanied by either a burning or numbing sensation (Daly et al 2004). The species is collected for consumption in many places (Kuangyang et al 2004).
PUBLIC SAFETY RISK SCORE SUM OF A1 + A2 (0-4)	0	
OTHER INFORMATION TO ASSESS PEST RISKS		
Checklist of factors associated with increased risks of adverse impacts of established species (Bomford 2008, pp 90-91)		
NB – an asterisk (*) denotes factors that have not been researched to the same degree as other factors, and were generally addressed using standard textbooks only		
FACTOR	TICK IF YES	

<p>1. <i>Has adverse impacts elsewhere</i> Impacts can be economic, environmental or social; impacts can be significant or subtle.</p>		<p><i>Never reported as an environmental pest in any country or region</i> No reports found (Lever 2006).</p> <p><i>Does not use tree hollows [score = 0, using scoring from Australian Bird and Mammal Model Q C4 (0, 2)].</i> The Asian Painted Frog is a burrowing species (Lim and Lim 1992, Iskandar 1998, Lau 1998). Breeding sites are mainly seasonal rain pools, or ponds. The eggs are small and float as a thin layer on the surface of these temporary pools. Only 15 days pass from spawning to metamorphosis, an adaptation to the temporary nature of the spawning pool (ASEAN Centre for Biodiversity, Obst et al 1988, Lau 1998).</p> <p><i>No reports of damage to crops or other primary production in any country or region [score = 0 using scoring from Australian Bird and Mammal Model Q C7 (0-3)].</i> No reports found.</p> <p><i>Nil risk [score = 0, using scoring from Australian Bird and Mammal Model Q C11 (0-5)].</i> Small amphibian; no reports of attacks on or injury caused to people.</p>
<p>2. <i>Has close relatives with similar behavioural and ecological strategies that have had adverse impacts elsewhere *</i></p>		<p>No reports found (Lever 2006).</p>
<p>3. <i>Is dietary generalist</i></p>	✓	<p>Diet is predominantly ants, but the species will also take other invertebrates including beetles and other crawling insects (ASEAN Centre for Biodiversity, Lim and Lim 1992, Inger and Stuebing 2005).</p>
<p>4. <i>Stirs up sediments to increase turbidity in aquatic habitats *</i></p>		<p>No information found (Lever 2006).</p>
<p>5. <i>Occurs in high densities in their native or introduced range *</i></p>	✓	<p>The species emerges in vast numbers after rainfall of several hours or more. It forms large, noisy breeding groups in flooded areas such as flooded drainage systems or lawns (Inger and Stuebing 2005).</p>
<p>6. <i>Harbours or transmits diseases or parasites that are present in Australia *</i></p>	✓	<p>Potential carrier of Chytridiomycosis (Schumacher 2006).</p>
<p>7. <i>Has close relatives among Australia's endemic reptiles and amphibians</i></p>	✓	<p>Australian species in the family Microhylidae but not in the genus <i>Kaloula</i> (Catalogue of Life 2008; Cogger 2000).</p>
<p>8. <i>Is known to have spread rapidly following their release into new environments *</i></p>		<p>No information found (Lever 2006).</p>
<p>9. <i>Is predatory</i></p>	✓	<p>Diet is predominantly ants, but the species will also take other invertebrates including beetles and other crawling insects (ASEAN Centre for Biodiversity, Lim and Lim 1992, Inger and Stuebing 2005).</p>
<p>Factors</p>	3,5,6,7,9	

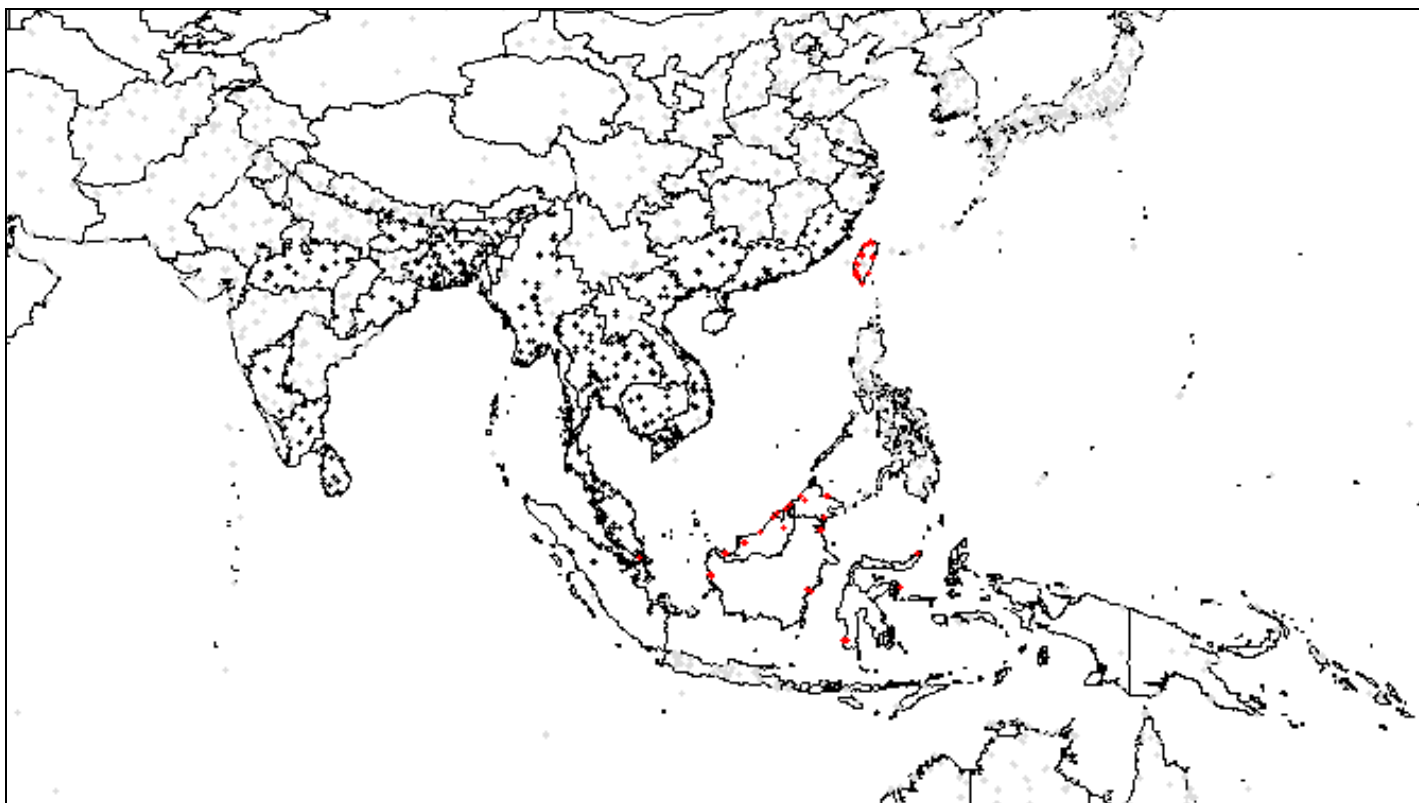
Susceptible native Australian species (using question C6 from the Australian Bird and Mammal Model, Bomford 2008, pp 22-23)		
<p>C6. Climate match to areas with susceptible native species or communities (0-5)</p> <p>Identify any native Australian animal or plant species or communities that could be susceptible to harm by the exotic species if it were to establish a wild population here.</p>	5	<p>One or more susceptible native species or ecological communities that are listed as vulnerable or endangered under the Australian Government Environment Protection and Biodiversity Conservation Act 1999 has a restricted geographical range that lies with the mapped area of the highest six climate match classes for the exotic species being assessed.</p> <p>[score = 5, using scoring from Australian Bird and Mammal Model Q C6 (0-5)].</p> <p>Reference for all vulnerable or endangered species and communities (status noted in bold) (Dept of the Environment Water Heritage and the Arts 2007, 2008). Reference for all native Australian frog species (Cogger 2000).</p> <p>Susceptible Australian native species that could be threatened include:</p> <p>Frogs: The Asian Painted Frog may compete with the following native Australian frog species:</p> <p>Vulnerable – Magnificent Brood Frog (<i>Pseudophryne covacevichae</i>), Kroombit Tinker Frog (<i>Taudactylus pleione</i>)</p> <p>Critically endangered – Armoured Mistfrog (<i>Litoria lorica</i>), Mountain Mistfrog (<i>L. nyakalensis</i>)</p> <p>AND</p> <p>The species has more than 100 grid squares within the highest four climate match classes, that overlap the distribution of any susceptible native species or ecological communities</p> <p>Frogs: Green Tree Frog (<i>Litoria caerulea</i>), Desert Tree Frog (<i>L. rubella</i>).</p>
Susceptible Australian primary production (using question C8 from the Australian Bird and Mammal model; Bomford 2008 pp 23-25)		
<p>C8. Climate match to susceptible primary production (0–5)</p> <p>Assess Potential Commodity Impact Scores for each primary production commodity listed in Table 9, based on species' attributes (diet, behaviour, ecology), excluding risk of spreading disease which is addressed elsewhere.</p>	0	<p>Score = 0</p> <p>See Commodity Scores Table – species does not have attributes making it capable of damaging any of the primary production commodities.</p>
SUMMARY OF RESULTS		
ESTABLISHMENT RISK RANKS – RISK OF ESTABLISHING A WILD POPULATION		
<p>MODEL A: USING THE FIRST THREE FACTORS/QUESTIONS FROM STAGE B OF THE AUSTRALIAN BIRD AND MAMMAL MODEL (BOMFORD 2008) PP 54-55)</p> <p>≤ 4 = LOW ESTABLISHMENT RISK; 5-7 = MODERATE ESTABLISHMENT RISK; 8-9 = SERIOUS ESTABLISHMENT RISK; 10-12 = EXTREME ESTABLISHMENT RISK</p>	9	SERIOUS
<p>MODEL B: USING THE SEVEN FACTORS/QUESTIONS FROM STAGE B OF THE AUSTRALIAN BIRD AND MAMMAL MODEL</p>	13	SERIOUS

<p>(BOMFORD 2008) PP 20) ≤ 6 = LOW ESTABLISHMENT RISK; 7-11 = MODERATE ESTABLISHMENT RISK; 12-13 = SERIOUS ESTABLISHMENT RISK; ≥ 14 = EXTREME ESTABLISHMENT RISK</p>		
<p>AUSTRALIAN REPTILE AND AMPHIBIAN MODEL (BOMFORD 2008, PP 51-53) ≤ 22 = LOW ESTABLISHMENT RISK; 23-60 = MODERATE ESTABLISHMENT RISK; 61-115 = SERIOUS ESTABLISHMENT RISK; ≥ 116 = EXTREME ESTABLISHMENT RISK</p>	<p>69</p>	<p>SERIOUS</p>
<p>HIGHEST ESTABLISHMENT RISK RANK (When establishment risk ranks differ between the models, the highest ranked outcome is used, (Bomford 2008).</p>		<p>SERIOUS – ENDORSED BY VPC</p>
<p>PUBLIC SAFETY RISK RANK AUSTRALIAN BIRD & MAMMAL MODEL, STAGE A (BOMFORD 2008, PP 17) A = 0 = NOT DANGEROUS; A = 1 = MODERATELY DANGEROUS; A ≥ 2 = HIGHLY DANGEROUS</p>	<p>0</p>	<p>NOT DANGEROUS</p>
<p>Median number of references for Establishment Risk and Public Safety Risk, for all amphibians assessed by (Massam et al 2010) (n=11)</p> <p>Total number of references for this species</p>	<p>15, 1</p> <p>24 – more than the median number of reptile references were used for this aspect of the assessment, indicating a decreased level of uncertainty.</p> <p>1 - less than the median number of reptile references were used for this aspect of the assessment, indicating an increased level of uncertainty</p>	
<p>DAFWA THREAT CATEGORY - assigned for this study (Public Safety + ERR) + use of the precautionary approach (when Prelim. Threat Ranking Low or Moderate)</p>		<p>SERIOUS – NOT ENDORSED BY VPC</p>
<p>OTHER INFORMATION TO ASSESS PEST RISKS</p>		
<p>CHECKLIST OF FACTORS ASSOCIATED WITH INCREASED RISKS OF ADVERSE IMPACTS OF ESTABLISHED SPECIES (BOMFORD 2008, PP 90-91) (0-9)</p>	<p>3,5,6,7, 9</p>	

<p>AUSTRALIAN SPECIES POTENTIALLY AT RISK</p> <p>AUSTRALIAN BIRD & MAMMAL MODEL, Q. C6 (BOMFORD 2008, PP 22-23) (0-5)</p>	<p>5</p>	
<p>AUSTRALIAN PRIMARY PRODUCTION POTENTIALLY AT RISK</p> <p>AUSTRALIAN BIRD & MAMMAL MODEL, Q. C8 (BOMFORD 2008, PP 23-25) (0-5)</p>	<p>0</p>	
<p>ALTERNATIVE THREAT CATEGORY - assigned for this study</p> <p>(Public Safety + ERR) + arbitrary increase of one rank (based on presence of adverse impact factors 1 or 5, or maximum scoring for predicted effects on Australian species or primary production)</p>		<p>EXTREME – NOT ENDORSED BY VPC</p>
<p>Median number of references for Establishment Risk, Public Safety Risk and Overseas Environmental and Agricultural Adverse Impacts, for all amphibians assessed by (Massam et al 2010) (n=11)</p> <p>Total number of references for this species</p>		<p>19</p> <p>25 – more than the median number of amphibian references were used for this assessment, indicating a decreased level of uncertainty.</p>

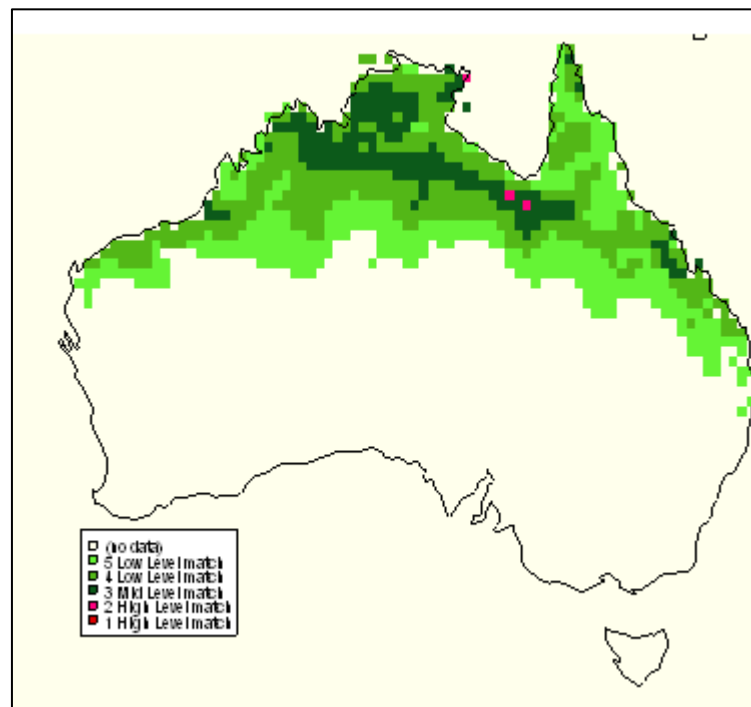
World Distribution – Asian Painted Frog (*Kaloula pulchra*), includes current and past 1000 years; including natural populations (black) and introduced populations (red).

Each black or red dot is a location where meteorological data was sourced for the climate analysis (see B1), faint grey dots are locations available for CLIMATE analysis but are not within the species' distribution therefore not used.



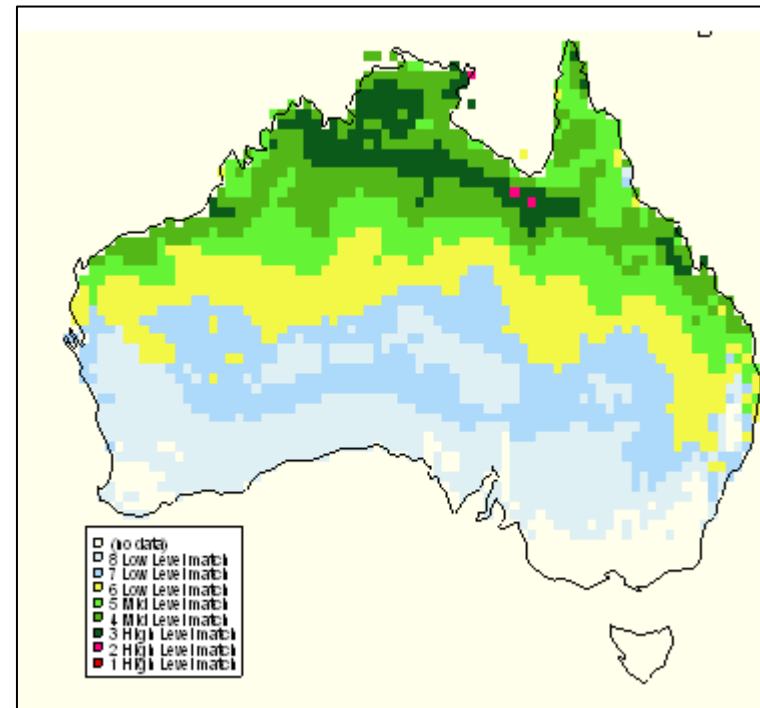
Map 1. Climate match between the world distribution of Asian Painted Frog (*Kaloula pulchra*) and Australia for five match classes.

Colour on Map	Level of Match from Highest (10) to Lowest (6)	No. Grid Squares on Map
Red	10 HIGH MATCH	0
Pink	9 HIGH MATCH	3
Dark Green	8 MOD MATCH	159
Mid Green	7 MOD MATCH	376
Lime Green	6 LOW MATCH	377
		CMS = 915



Map 2. Climate match between the world distribution of Asian Painted Frog (*Kaloula pulchra*) and Australia for eight match classes.

Colour on Map	Level of Match from Highest (10) to Lowest (3)	No. Grid Squares on Map
Red	10 HIGH MATCH	0
Pink	9 HIGH MATCH	3
Dark Green	8 HIGH MATCH	159
Mid Green	7 MOD MATCH	376
Lime Green	6 MOD MATCH	377
Yellow	5 MOD MATCH	457
Blue	4 LOW MATCH	537
Light blue	3 LOW MATCH	652



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