

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Gambusia	Refs	Guppy	Refs	Swordtails	Refs	Platys	Refs	Tilapia mariae	Refs
1. Level of Current impact											
1.1 Distribution											
a. Distribution and abundance relative to Wet Tropics Bioregion											
Established populations about the Wet Tropics Bioregion	2										
Established populations exist	10	10	88	10	111	10	111	10	111	10	112
b. Wet Tropics Bioregion Provinces in which species is present.											
Kirrama-Hinchinbrook	4										
Paluma-Seaview	4										
Macalister	4			4	119					4	6
Bellenden Ker	4			4	119	4	119				
Atherton	4	4		4	111,3	4	119				
Herbert	4	4									
Tully	4	4						4	6		
Innisfail	4	4		4	111,3	4	119	4	128	4	112
Daintree-Bloomfield	4			4	91,3						
Total		16	88	20	91,3	12		8		8	
Present in all	40										
c. Most significant province of the Wet Tropics Bioregion where the species occurs (tick one only) (see Appendix 1 Map of Wet Tropics Bioregion) Province (#endangered regional ecosystems (x2))+(# regional ecosystems of concern (x1))											
Kirrama-Hinchinbrook (1x2)+(5x1)	7										
Paluma-Seaview (1x2)+(7x1)	9										
Macalister (4x2)+(1x1)	9										
Bellenden Ker (4x2)+(2x1)	10										
Atherton (5x2)+(3x1)	13										
Herbert (8x2)+(5x1)	21										
Tully (11x2)+(5x1)	27										
Innisfail (11x2)+(7x1)	29	29	88			29	119	29	128	29	112,118
Daintree-Bloomfield (12x2)+(6x1)	30			30	119						
d. Distribution and Abundance											
Small populations, patchy distribution	5	5	88	5	111	5	111	5	111,128	5	112,118
Small populations, continuous distribution	10										
Large populations, patchy distribution	10										
Large populations, continuous distribution	20										
Total for Section 1.1	100	60		65		56		52		52	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Gambusia	Refs	Guppy	Refs	Swordtails	Refs	Platys	Refs	Tilapia mariae	Refs
1.2 Direct effects on native species distributions and abundances											
Species has exhibited no detectable effect	1										
Minor modification to native species distributions and abundances	10										
Moderate modification to native species distributions and abundances	20										
Major modification to native species distributions and abundances	30										
Responsible for extinction of native species	50										
Impact Unknown	25	25		25		25		25		25	
1.3 Ecological interaction with vulnerable or endangered species											
Species has no or little interaction with vulnerable or endangered species	1										
Species has minor interaction with vulnerable or endangered species	20										
Species has moderate interaction with vulnerable or endangered species	30	30	88								
Species has major interaction with vulnerable or endangered species	50										
Ecological interaction unknown	25			25		25		25		25	
Total for Section 1.1	100	60		65		56		52		52	
Total for Section 1.2 - 1.3	100	55		50		50		50		50	
TOTAL FOR SECTION 1 – CURRENT LEVEL OF IMPACT	200	115		115		106		102		102	
2. Pest potential											
2.1 Known level of impact in other natural areas											
Not known to cause impacts in any other natural areas	1										
Known to cause impacts in natural areas, but in other habitats and different climates	2										
Known to cause low impact in natural areas in similar habitats and climate zones	5										
Known to cause moderate impact in natural areas in similar habitats and climates	10			10	115	10	115	10	115		
Known to cause high impact in natural areas in similar habitats and climate zones.	15	15	82,85,87							15	112
2.2 Reproductive Potential											
a. Reproductive cycles											
Reproduction reliant on specific a-seasonal environmental stimuli	1										
Seasonal	2										
Multiple reproductive events/season	4										
Continuous breeding	5			5	115	5	115	5	6	5	6
Able to reproduce from one individual	5	5	54,82								
Unknown	3										
b. Reproductive output											
Low (<3 offspring/cycle)	1										
Moderate (3 – 10 offspring/cycle)	3										
High (>10/cycle)	5	5	82	5	115	5	115	5	111	5	115
Unknown	3										

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Gambusia	Refs	Guppy	Refs	Swordtails	Refs	Platys	Refs	Tilapia mariae	Refs
c. Offspring viability											
Low	1										
Moderate	3										
High	5	5	82							5	6
Unknown	3			3		3		3			
Total for Section 2.2	15	15		13		13		13		15	
2.3 Dispersal ability											
Low potential for dispersal	5										
Moderate potential for dispersal	10										
Dispersal associated with human movement	15	15	20	15	111,118	15	115	15	111		
High potential for dispersal	20									20	115,118
Unknown potential	10										
Total for Sections 2.1 – 2.3	50	45		38		38		38		50	
2.4 Mode of Impact											
Degradation/deprivation of habitat	5			5	6			5	115		
Competition for food and reproductive resources	5			5	6			5	115		
Transmission of disease/parasites/other pest species	10										
Direct predation of native animals	15					15	115			15	6
More than one of the above modes	20	20	39,84,85								
2.5 Potential interactions with vulnerable or endangered species											
Species has little overlap with vulnerable or endangered species	2										
Species has minor overlap with vulnerable or endangered species	10										
Species has moderate overlap with vulnerable or endangered species	20	20	88								
Species has major overlap with vulnerable or endangered species	30										
Ecological overlap unknown	15			15		15		15		15	
Total for 2.4		20		10		15		10		15	
Total for Sections 2.1 – 2.3	50	45		38		38		38		50	
Total for Sections 2.4 – 2.5	50	40		25		30		25		30	
TOTAL FOR SECTION 2 – POTENTIAL IMPACT	100	85		63		68		63		80	
3. Feasibility of Control											
3.1 General susceptibility to control											
a. Dispersal/mobility											
Individuals/populations are sedentary or have established tracks/movements	5										
Adults/juveniles are seasonally dispersive	10	10	85			10	115	10	115	10	115
Adults/juveniles are continuous dispersive	15			10	115						

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Gambusia	Refs	Guppy	Refs	Swordtails	Refs	Platys	Refs	Tilapia mariae	Refs
b. Life history stage susceptible to control											
all stages	5	5	85	5	115	5	115	5	115	5	115
sub-group of stages	7										
single stage	10										
c. Temporal availability											
Continuously	5			5	115	5	115	5	115	5	115
Seasonally	7	7	85								
Restricted	10										
d. Recovery rate											
Multiple reproductive events over an extended time period	5										
Multiple reproductive events over a short time period	10	10	85	10	115	10	115	10	115	10	115
Single reproductive event	15										
Unknown	7										
Total for Section 3.1		32		30		30		30		30	
3.2. Control Measures											
a. Present control measures											
Control measures exist	2	2	85	2	117	2	117	2	117	2	117
Control measures being developed	5										
Control measures do not exist	45										
b. Effectiveness of current control measures											
Highly effective	2										
Moderately effective	5			10	117	10	117	10	117	10	117
Low effectiveness	10	10	85								
Unknown	5										
c. Logistic difficulty of implementation											
Low	2										
Moderate	5	5	85								
High	10			10	117	10	117	10	117	10	117
d. Potential to develop resistance to control measures											
Low	1										
Moderate	3	3	85								
High	5										
Unknown	3			3		3		3		3	
e. Cost											
Low	1										
Moderate	3										
High	5			5	117	5	117	5	117	5	117
Unknown	3	3									

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Gambusia	Refs	Guppy	Refs	Swordtails	Refs	Platys	Refs	Tilapia mariae	Refs
f. Level of control effort required											
One application of one control measure is successful	1										
Multiple application of single control measure	5										
One application of multiple control measures required	10										
Multiple applications of multiple control measures required	15	15	85	15	117	15	117	15	117	15	117
Total for Section 3.1	55	32		30		30		30		30	
Total for Section 3.2	45	38		45		45		45		45	
TOTAL FOR SECTION 3 – FEASIBILITY OF CONTROL	100	70		75		75		75		75	
4. Negative Impact of control/potential measures											
4.1 Habitat impacts											
Minimal physical alteration to habitat	5										
Moderate physical alterations to habitat	10	10	85	10	117	10	117	10	117	10	117
Major physical alterations to habitat	25										
Unknown	12										
4.2 Native Population Impacts											
Control measures affect few individuals of some species	5										
Control measures impact moderate numbers of individuals of several species	10	10	85								
Control measures impact large numbers of individuals of most species	25			25	117	25	117	25	117	25	117
Unknown	12										
4.3 Other pest species											
Control measures release other pest species with minor enhancement of impacts	5										
Control measures release other pest species with moderate enhancement of impacts	10										
Control measures release other pest species with major enhancement of impacts	25										
Unknown	12	12		12		12		12		12	
4.4 Length of Impact											
Short term (up to several weeks)	5										
Medium term (one season or reproductive cycle)	10			10	117	10	117	10	117	10	117
Long term (more than one year or reproductive cycle/permanent) modification of habitat	25	25	85								
Unknown	15										
TOTAL FOR SECTION 4 – NEGATIVE IMPACT OF CONTROL MEASURES		57		57		57		57		57	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Oreochromis mossambic	Refs	Cane toad	Ref	House Gecko	ref	Rock Dove	ref	Turtle Dove	ref	Nutmeg Manikin
1. Level of Current impact												
1.1 Distribution												
a. Distribution and abundance relative to Wet Tropics Bioregion												
Established populations about the Wet Tropics Bioregion	2											
Established populations exist	10	10	112	10	70,4,79	10	92	10	81	10	2	10
b. Wet Tropics Bioregion Provinces in which species is present.												
Kirrama-Hinchinbrook	4									4		
Paluma-Seaview	4									4		
Macalister	4					4	92	4		4		4
Bellenden Ker	4					4	92	4		4		4
Atherton	4	4	112			4	92	4		4		4
Herbert	4					4	92	4		4		4
Tully	4					4	92	4		4		4
Innisfail	4	4	112			4	92	4		4		4
Daintree-Bloomfield	4											
Total		8		0		24		24	81	32	2,3	24
Present in all	40			40	79							
c. Most significant province of the Wet Tropics Bioregion where the species occurs (tick one only) (see Appendix 1 Map of Wet Tropics Bioregion) Province (#endangered regional ecosystems (x2))+(# regional ecosystems of concern (x1))												
Kirrama-Hinchinbrook (1x2)+(5x1)	7											
Paluma-Seaview (1x2)+(7x1)	9											
Macalister (4x2)+(1x1)	9											
Bellenden Ker (4x2)+(2x1)	10											
Atherton (5x2)+(3x1)	13											
Herbert (8x2)+(5x1)	21											
Tully (11x2)+(5x1)	27											
Innisfail (11x2)+(7x1)	29	29	112,118			29	92	29	81	29	2,3	29
Daintree-Bloomfield (12x2)+(6x1)	30			30	79							
d. Distribution and Abundance												
Small populations, patchy distribution	5					5	92,93	5	81			5
Small populations, continuous distribution	10			10	77					10	2,3,95	
Large populations, patchy distribution	10	10	91,112									
Large populations, continuous distribution	20											
Total for Section 1.1	100	57		90		68		68		81		68

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Oreochromis mossambic	Refs	Cane toad	Ref	House Gecko	ref	Rock Dove	ref	Turtle Dove	ref	Nutmeg Manikin
1.2 Direct effects on native species distributions and abundances												
Species has exhibited no detectable effect	1							1	95			
Minor modification to native species distributions and abundances	10											10
Moderate modification to native species distributions and abundances	20									20	95	
Major modification to native species distributions and abundances	30			30	77,79							
Responsible for extinction of native species	50											
Impact Unknown	25	25				25						
1.3 Ecological interaction with vulnerable or endangered species												
Species has no or little interaction with vulnerable or endangered species	1					1	93	1	95	1	95,81	
Species has minor interaction with vulnerable or endangered species	20											
Species has moderate interaction with vulnerable or endangered species	30			30	77,79							
Species has major interaction with vulnerable or endangered species	50											
Ecological interaction unknown	25	25										25
Total for Section 1.1	100	57		90		68		68		81		68
Total for Section 1.2 - 1.3	100	50		60		26		2		21		35
TOTAL FOR SECTION 1 – CURRENT LEVEL OF IMPACT	200	107		150		94		70		102		103
2. Pest potential												
2.1 Known level of impact in other natural areas												
Not known to cause impacts in any other natural areas	1											
Known to cause impacts in natural areas, but in other habitats and different climates	2							2	95	5	95	
Known to cause low impact in natural areas in similar habitats and climate zones	5					5	35					5
Known to cause moderate impact in natural areas in similar habitats and climates	10	10	54,115									
Known to cause high impact in natural areas in similar habitats and climate zones.	15			15	94,20							
2.2 Reproductive Potential												
a. Reproductive cycles												
Reproduction reliant on specific a-seasonal environmental stimuli	1											
Seasonal	2											
Multiple reproductive events/season	4			4	92,93							
Continuous breeding	5	5	6					5	95	5	95	5
Able to reproduce from one individual	5					5	93					
Unknown	3											
b. Reproductive output												
Low (<3 offspring/cycle)	1					1	93			1	95	
Moderate (3 – 10 offspring/cycle)	3							3	95			3
High (>10/cycle)	5	5	115	5	93							
Unknown	3											

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Oreochromis mossambic	Refs	Cane toad	Ref	House Gecko	ref	Rock Dove	ref	Turtle Dove	ref	Nutmeg Manikin
c. Offspring viability												
Low	1											
Moderate	3			5	93							3
High	5	5	6,115									
Unknown	3					3		3		3		
Total for Section 2.2	15	15				9		11		9		11
2.3 Dispersal ability												
Low potential for dispersal	5											
Moderate potential for dispersal	10											
Dispersal associated with human movement	15					15	35,93	15	95	15	95	15
High potential for dispersal	20	20	112,115	20	20,92,93							
Unknown potential	10											
Total for Sections 2.1 – 2.3	50	45		47		29		28		29		31
2.4 Mode of Impact												
Degradation/deprivation of habitat	5											
Competition for food and reproductive resources	5					5	93			5	95	5
Transmission of disease/parasites/other pest species	10							10	81			
Direct predation of native animals	15	15	6	15	80							
More than one of the above modes	20											
2.5 Potential interactions with vulnerable or endangered species												
Species has little overlap with vulnerable or endangered species	2					2	92,93	2	95	2	95	
Species has minor overlap with vulnerable or endangered species	10											
Species has moderate overlap with vulnerable or endangered species	20			20	20,93							20
Species has major overlap with vulnerable or endangered species	30											
Ecological overlap unknown	15	15										
Total for 2.4		15		15		5		10		5		5
Total for Sections 2.1 – 2.3	50	45		47		29		28		29		31
Total for Sections 2.4 – 2.5	50	30		35		7		12		7		25
TOTAL FOR SECTION 2 – POTENTIAL IMPACT	100	75		82		36		40		36		56
3. Feasibility of Control												
3.1 General susceptibility to control												
a. Dispersal/mobility												
Individuals/populations are sedentary or have established tracks/movements	5							5	95			
Adults/juveniles are seasonally dispersive	10	10	115	10	92,93					10	81,95	10
Adults/juveniles are continuous dispersive	15					15	93					

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Oreochromis mossambic	Refs	Cane toad	Ref	House Gecko	ref	Rock Dove	ref	Turtle Dove	ref	Nutmeg Manikin
b. Life history stage susceptible to control												
all stages	5	5	115	5	93	5	93	5	95	5	81	5
sub-group of stages	7											
single stage	10											
c. Temporal availability												
Continuously	5	5	115			5	93	5	95	5	81,95	5
Seasonally	7			7	92,93							
Restricted	10											
d. Recovery rate												
Multiple reproductive events over an extended time period	5											
Multiple reproductive events over a short time period	10	10	115	10	92,93	10	93	10	95			
Single reproductive event	15											
Unknown	7									7		7
Total for Section 3.1		30		32		35		25		27		27
3.2. Control Measures												
a. Present control measures												
Control measures exist	2	2	117			2	128	2	108,109	2	108,109	2
Control measures being developed	5			5	78							
Control measures do not exist	45											
b. Effectiveness of current control measures												
Highly effective	2											
Moderately effective	5	10	117					5	108,109			
Low effectiveness	10					10	128					
Unknown	5			10	78					5	108,109	5
c. Logistic difficulty of implementation												
Low	2											
Moderate	5					5	128	5				
High	10	10	117	10	78					10		10
d. Potential to develop resistance to control measures												
Low	1											
Moderate	3											
High	5											
Unknown	3	3		3		3		3		3		3
e. Cost												
Low	1											
Moderate	3											
High	5	5	117									
Unknown	3			3		3		3		3		3

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Oreochromis mossambic	Refs	Cane toad	Ref	House Gecko	ref	Rock Dove	ref	Turtle Dove	ref	Nutmeg Manikin
f. Level of control effort required												
One application of one control measure is successful	1											
Multiple application of single control measure	5							5	108,109	5	108,109	
One application of multiple control measures required	10											10
Multiple applications of multiple control measures required	15	15	117	15	78,79	15	129					
Total for Section 3.1	55	30		32		35		25		27		27
Total for Section 3.2	45	45		46		38		23		28		33
TOTAL FOR SECTION 3 – FEASIBILITY OF CONTROL	100	75		78		73		48		55		60
4. Negative Impact of control/potential measures												
4.1 Habitat impacts												
Minimal physical alteration to habitat	5					5	128			5	108,109	
Moderate physical alterations to habitat	10	10	117	10	78			10	108			10
Major physical alterations to habitat	25											
Unknown	12											
4.2 Native Population Impacts												
Control measures affect few individuals of some species	5					5	128			5	108,109	5
Control measures impact moderate numbers of individuals of several species	10											
Control measures impact large numbers of individuals of most species	25	25	117									
Unknown	12			12				12				
4.3 Other pest species												
Control measures release other pest species with minor enhancement of impacts	5			5	77	5	128					
Control measures release other pest species with moderate enhancement of impacts	10											
Control measures release other pest species with major enhancement of impacts	25											
Unknown	12	12						12		12		12
4.4 Length of Impact												
Short term (up to several weeks)	5					5	129			5	108,109	5
Medium term (one season or reproductive cycle)	10	10	117					10	108			
Long term (more than one year or reproductive cycle/permanent) modification of habitat	25											
Unknown	15			15								
TOTAL FOR SECTION 4 – NEGATIVE IMPACT OF CONTROL MEASURES		57		42		20		44		27		32

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Ref
1. Level of Current impact		
1.1 Distribution		
a. Distribution and abundance relative to Wet Tropics Bioregion		
Established populations about the Wet Tropics Bioregion	2	
Established populations exist	10	81
b. Wet Tropics Bioregion Provinces in which species is present.		
Kirrama-Hinchinbrook	4	
Paluma-Seaview	4	
Macalister	4	
Bellenden Ker	4	
Atherton	4	
Herbert	4	
Tully	4	
Innisfail	4	
Daintree-Bloomfield	4	
<i>Total</i>		2,4
Present in all	40	
c. Most significant province of the Wet Tropics Bioregion where the species occurs (tick one only) (see Appendix 1 Map of Wet Tropics Bioregion) Province (#endangered regional ecosystems (x2))+(# regional ecosystems of concern (x1))		
Kirrama-Hinchinbrook (1x2)+(5x1)	7	
Paluma-Seaview (1x2)+(7x1)	9	
Macalister (4x2)+(1x1)	9	
Bellenden Ker (4x2)+(2x1)	10	
Atherton (5x2)+(3x1)	13	
Herbert (8x2)+(5x1)	21	
Tully (11x2)+(5x1)	27	
Innisfail (11x2)+(7x1)	29	20,24,2
Daintree-Bloomfield (12x2)+(6x1)	30	
d. Distribution and Abundance		
Small populations, patchy distribution	5	81,41,2
Small populations, continuous distribution	10	
Large populations, patchy distribution	10	
Large populations, continuous distribution	20	
Total for Section 1.1	100	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Ref
1.2 Direct effects on native species distributions and abundances		
Species has exhibited no detectable effect	1	
Minor modification to native species distributions and abundances	10	81
Moderate modification to native species distributions and abundances	20	
Major modification to native species distributions and abundances	30	
Responsible for extinction of native species	50	
Impact Unknown	25	
1.3 Ecological interaction with vulnerable or endangered species		
Species has no or little interaction with vulnerable or endangered species	1	
Species has minor interaction with vulnerable or endangered species	20	
Species has moderate interaction with vulnerable or endangered species	30	
Species has major interaction with vulnerable or endangered species	50	
Ecological interaction unknown	25	
Total for Section 1.1	100	
Total for Section 1.2 - 1.3	100	
TOTAL FOR SECTION 1 – CURRENT LEVEL OF IMPACT	200	
2. Pest potential		
2.1 Known level of impact in other natural areas		
Not known to cause impacts in any other natural areas	1	
Known to cause impacts in natural areas, but in other habitats and different climates	2	
Known to cause low impact in natural areas in similar habitats and climate zones	5	81
Known to cause moderate impact in natural areas in similar habitats and climates	10	
Known to cause high impact in natural areas in similar habitats and climate zones.	15	
2.2 Reproductive Potential		
a. Reproductive cycles		
Reproduction reliant on specific a-seasonal environmental stimuli	1	
Seasonal	2	
Multiple reproductive events/season	4	
Continuous breeding	5	81,95
Able to reproduce from one individual	5	
Unknown	3	
b. Reproductive output		
Low (<3 offspring/cycle)	1	
Moderate (3 – 10 offspring/cycle)	3	81,95
High (>10/cycle)	5	
Unknown	3	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Ref
c. Offspring viability		
Low	1	
Moderate	3	81
High	5	
Unknown	3	
Total for Section 2.2	15	
2.3 Dispersal ability		
Low potential for dispersal	5	
Moderate potential for dispersal	10	
Dispersal associated with human movement	15	81
High potential for dispersal	20	
Unknown potential	10	
Total for Sections 2.1 – 2.3	50	
2.4 Mode of Impact		
Degradation/deprivation of habitat	5	
Competition for food and reproductive resources	5	81
Transmission of disease/parasites/other pest species	10	
Direct predation of native animals	15	
More than one of the above modes	20	
2.5 Potential interactions with vulnerable or endangered species		
Species has little overlap with vulnerable or endangered species	2	
Species has minor overlap with vulnerable or endangered species	10	
Species has moderate overlap with vulnerable or endangered species	20	81, 88
Species has major overlap with vulnerable or endangered species	30	
Ecological overlap unknown	15	
Total for 2.4		
Total for Sections 2.1 – 2.3	50	
Total for Sections 2.4 – 2.5	50	
TOTAL FOR SECTION 2 – POTENTIAL IMPACT	100	
3. Feasibility of Control		
3.1 General susceptibility to control		
a. Dispersal/mobility		
Individuals/populations are sedentary or have established tracks/movements	5	
Adults/juveniles are seasonally dispersive	10	81
Adults/juveniles are continuous dispersive	15	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Ref
b. Life history stage susceptible to control		
all stages	5	81
sub-group of stages	7	
single stage	10	
c. Temporal availability		
Continuously	5	5
Seasonally	7	
Restricted	10	
d. Recovery rate		
Multiple reproductive events over an extended time period	5	
Multiple reproductive events over a short time period	10	
Single reproductive event	15	
Unknown	7	
Total for Section 3.1		
3.2. Control Measures		
a. Present control measures		
Control measures exist	2	108,109
Control measures being developed	5	
Control measures do not exist	45	
b. Effectiveness of current control measures		
Highly effective	2	
Moderately effective	5	
Low effectiveness	10	
Unknown	5	109
c. Logistic difficulty of implementation		
Low	2	
Moderate	5	
High	10	
d. Potential to develop resistance to control measures		
Low	1	
Moderate	3	
High	5	
Unknown	3	
e. Cost		
Low	1	
Moderate	3	
High	5	
Unknown	3	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Ref
f. Level of control effort required		
One application of one control measure is successful	1	
Multiple application of single control measure	5	
One application of multiple control measures required	10	109
Multiple applications of multiple control measures required	15	
Total for Section 3.1	55	
Total for Section 3.2	45	
TOTAL FOR SECTION 3 – FEASIBILITY OF CONTROL	100	
4. Negative Impact of control/potential measures		
4.1 Habitat impacts		
Minimal physical alteration to habitat	5	
Moderate physical alterations to habitat	10	109
Major physical alterations to habitat	25	
Unknown	12	
4.2 Native Population Impacts		
Control measures affect few individuals of some species	5	109
Control measures impact moderate numbers of individuals of several species	10	
Control measures impact large numbers of individuals of most species	25	
Unknown	12	
4.3 Other pest species		
Control measures release other pest species with minor enhancement of impacts	5	
Control measures release other pest species with moderate enhancement of impacts	10	
Control measures release other pest species with major enhancement of impacts	25	
Unknown	12	
4.4 Length of Impact		
Short term (up to several weeks)	5	109
Medium term (one season or reproductive cycle)	10	
Long term (more than one year or reproductive cycle/permanent) modification of habitat	25	
Unknown	15	
TOTAL FOR SECTION 4 – NEGATIVE IMPACT OF CONTROL MEASURES		

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Sparrow	ref	Indian Myna	ref	Bulbul	ref	Brown Rat	ref	Black Rat	ref	Dog
1. Level of Current impact												
1.1 Distribution												
a. Distribution and abundance relative to Wet Tropics Bioregion												
Established populations about the Wet Tropics Bioregion	2					2	88					
Established populations exist	10	10	2	10	2,81,95			10	92,2	10	92,2	10
b. Wet Tropics Bioregion Provinces in which species is present.												
Kirrama-Hinchinbrook	4	4		4						4		
Paluma-Seaview	4	4		4								
Macalister	4	4		4						4		
Bellenden Ker	4	4		4				4		4		
Atherton	4	4		4						4		
Herbert	4	4		4						4		
Tully	4	4		4				4		4		
Innisfail	4	4		4				4		4		
Daintree-Bloomfield	4									4		
<i>Total</i>		32	2,3	32	2,3	0		12	2,3	32	2,3	0
Present in all	40											40
c. Most significant province of the Wet Tropics Bioregion where the species occurs (tick one only) (see Appendix 1 Map of Wet Tropics Bioregion)												
Province (#endangered regional ecosystems (x2))+(# regional ecosystems of concern (x1))												
Kirrama-Hinchinbrook (1x2)+(5x1)	7											
Paluma-Seaview (1x2)+(7x1)	9											
Macalister (4x2)+(1x1)	9											
Bellenden Ker (4x2)+(2x1)	10											
Atherton (5x2)+(3x1)	13											
Herbert (8x2)+(5x1)	21											
Tully (11x2)+(5x1)	27											
Innisfail (11x2)+(7x1)	29	29	2,3	29	2,3			29	2,3,92			
Daintree-Bloomfield (12x2)+(6x1)	30									30	2,3	30
d. Distribution and Abundance												
Small populations, patchy distribution	5							5	2,3	5	2,3	
Small populations, continuous distribution	10											10
Large populations, patchy distribution	10	10	95	10	95,81							
Large populations, continuous distribution	20											
Total for Section 1.1	100	81		81		2		56		77		90

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Sparrow	ref	Indian Myna	ref	Bulbul	ref	Brown Rat	ref	Black Rat	ref	Dog
1.2 Direct effects on native species distributions and abundances												
Species has exhibited no detectable effect	1					1				1	94	
Minor modification to native species distributions and abundances	10	10	81									
Moderate modification to native species distributions and abundances	20											20
Major modification to native species distributions and abundances	30											
Responsible for extinction of native species	50											
Impact Unknown	25			25				25				
1.3 Ecological interaction with vulnerable or endangered species												
Species has no or little interaction with vulnerable or endangered species	1					1						
Species has minor interaction with vulnerable or endangered species	20											
Species has moderate interaction with vulnerable or endangered species	30											
Species has major interaction with vulnerable or endangered species	50											50
Ecological interaction unknown	25	25		25				25		25		
Total for Section 1.1	100	81		81		2		56		77		90
Total for Section 1.2 - 1.3	100	35		50		2		50		26		70
TOTAL FOR SECTION 1 – CURRENT LEVEL OF IMPACT	200	116		131		4		106		103		160
2. Pest potential												
2.1 Known level of impact in other natural areas												
Not known to cause impacts in any other natural areas	1	1	95									
Known to cause impacts in natural areas, but in other habitats and different climates	2			5	81,95			5	94	2	94	
Known to cause low impact in natural areas in similar habitats and climate zones	5											
Known to cause moderate impact in natural areas in similar habitats and climates	10					10	81					10
Known to cause high impact in natural areas in similar habitats and climate zones.	15											
2.2 Reproductive Potential												
a. Reproductive cycles												
Reproduction reliant on specific a-seasonal environmental stimuli	1											
Seasonal	2					2	41					2
Multiple reproductive events/season	4	4	95	4	95,81			4	94	4	94	
Continuous breeding	5											
Able to reproduce from one individual	5											
Unknown	3											
b. Reproductive output												
Low (<3 offspring/cycle)	1											
Moderate (3 – 10 offspring/cycle)	3	3	95	3	95,81	3	41			3	94	3
High (>10/cycle)	5							5	94			
Unknown	3											

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Sparrow	ref	Indian Myna	ref	Bulbul	ref	Brown Rat	ref	Black Rat	ref	Dog
c. Offspring viability												
Low	1											
Moderate	3											
High	5											
Unknown	3	3	95	3		3	41	3		3		3
Total for Section 2.2	15	10		10		8		12		10		8
2.3 Dispersal ability												
Low potential for dispersal	5											
Moderate potential for dispersal	10											10
Dispersal associated with human movement	15	15	95	15	95			15	94	15	94	
High potential for dispersal	20											
Unknown potential	10					10						
Total for Sections 2.1 – 2.3	50	26		30		28		32		27		28
2.4 Mode of Impact												
Degradation/deprivation of habitat	5											
Competition for food and reproductive resources	5	5	95	5	95	5	81			5	94	
Transmission of disease/parasites/other pest species	10			10	95	5	81					
Direct predation of native animals	15							15	94	15	94	
More than one of the above modes	20											20
2.5 Potential interactions with vulnerable or endangered species												
Species has little overlap with vulnerable or endangered species	2	2	95									
Species has minor overlap with vulnerable or endangered species	10							10	94			
Species has moderate overlap with vulnerable or endangered species	20											20
Species has major overlap with vulnerable or endangered species	30											
Ecological overlap unknown	15			15		15				15		
Total for 2.4		5		15		10		15		20		20
Total for Sections 2.1 – 2.3	50	26		30		28		32		27		28
Total for Sections 2.4 – 2.5	50	7		30		25		25		35		40
TOTAL FOR SECTION 2 – POTENTIAL IMPACT	100	33		60		53		57		62		68
3. Feasibility of Control												
3.1 General susceptibility to control												
a. Dispersal/mobility												
Individuals/populations are sedentary or have established tracks/movements	5											
Adults/juveniles are seasonally dispersive	10	10	81	10	81,95	10	81	10	94	10	94	
Adults/juveniles are continuous dispersive	15											15

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Sparrow	ref	Indian Myna	ref	Bulbul	ref	Brown Rat	ref	Black Rat	ref	Dog
b. Life history stage susceptible to control												
all stages	5	5	108,109	5	81	5	81	5	94	5	94	5
sub-group of stages	7											
single stage	10											
c. Temporal availability												
Continuously	5	5	108,109	5	81,95	5	81	5	94	5	94	5
Seasonally	7											
Restricted	10											
d. Recovery rate												
Multiple reproductive events over an extended time period	5											5
Multiple reproductive events over a short time period	10	10	95	10	81,95			10	94	10	94	
Single reproductive event	15											
Unknown	7					7						
Total for Section 3.1		30		30		27		30		30		30
3.2. Control Measures												
a. Present control measures												
Control measures exist	2	2	108,109	2	108,109	2	108,109	2	108,109	2	108,109	2
Control measures being developed	5											
Control measures do not exist	45											
b. Effectiveness of current control measures												
Highly effective	2											
Moderately effective	5							5	108,109	5	108,109	5
Low effectiveness	10	10	108,109									
Unknown	5			5		5						
c. Logistic difficulty of implementation												
Low	2											
Moderate	5			5	108,109	5	108	5	108,109	5	108,109	5
High	10	10	108,109									
d. Potential to develop resistance to control measures												
Low	1											
Moderate	3											
High	5											
Unknown	3	3		3		3		3		3		3
e. Cost												
Low	1											
Moderate	3											
High	5											5
Unknown	3	3		3		3		3		3		

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Sparrow	ref	Indian Myna	ref	Bulbul	ref	Brown Rat	ref	Black Rat	ref	Dog
f. Level of control effort required												
One application of one control measure is successful	1											
Multiple application of single control measure	5					5	108	5	108,109	5	108,109	
One application of multiple control measures required	10			10	108,109							
Multiple applications of multiple control measures required	15	15	108,109									15
Total for Section 3.1	55	30		30		27		30		30		30
Total for Section 3.2	45	43		28		23		23		23		35
TOTAL FOR SECTION 3 – FEASIBILITY OF CONTROL	100	73		58		50		53		53		65
4. Negative Impact of control/potential measures												
4.1 Habitat impacts												
Minimal physical alteration to habitat	5											
Moderate physical alterations to habitat	10	10	108,109	10	108,109	10	108	10	108	10	108	10
Major physical alterations to habitat	25											
Unknown	12											
4.2 Native Population Impacts												
Control measures affect few individuals of some species	5	5	108,109									
Control measures impact moderate numbers of individuals of several species	10			10	13,14,108,109							10
Control measures impact large numbers of individuals of most species	25											
Unknown	12					12		12		12		
4.3 Other pest species												
Control measures release other pest species with minor enhancement of impacts	5	5	95									
Control measures release other pest species with moderate enhancement of impacts	10											10
Control measures release other pest species with major enhancement of impacts	25											
Unknown	12			12		12		12		12		
4.4 Length of Impact												
Short term (up to several weeks)	5	5	108,109	5	108,109	5	108,109					
Medium term (one season or reproductive cycle)	10							10	108	10	108	10
Long term (more than one year or reproductive cycle/permanent) modification of habitat	25											
Unknown	15											
TOTAL FOR SECTION 4 – NEGATIVE IMPACT OF CONTROL MEASURES		25		37		39		44		44		40

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	ref
1. Level of Current impact		
1.1 Distribution		
a. Distribution and abundance relative to Wet Tropics Bioregion		
Established populations about the Wet Tropics Bioregion	2	
Established populations exist	10	2
b. Wet Tropics Bioregion Provinces in which species is present.		
Kirrama-Hinchinbrook	4	
Paluma-Seaview	4	
Macalister	4	
Bellenden Ker	4	
Atherton	4	
Herbert	4	
Tully	4	
Innisfail	4	
Daintree-Bloomfield	4	
<i>Total</i>		
Present in all	40	2
c. Most significant province of the Wet Tropics Bioregion where the species occurs (tick one only) (see Appendix 1 Map of Wet Tropics Bioregion) Province (#endangered regional ecosystems (x2))+(# regional ecosystems of concern (x1))		
Kirrama-Hinchinbrook (1x2)+(5x1)	7	
Paluma-Seaview (1x2)+(7x1)	9	
Macalister (4x2)+(1x1)	9	
Bellenden Ker (4x2)+(2x1)	10	
Atherton (5x2)+(3x1)	13	
Herbert (8x2)+(5x1)	21	
Tully (11x2)+(5x1)	27	
Innisfail (11x2)+(7x1)	29	
Daintree-Bloomfield (12x2)+(6x1)	30	2
d. Distribution and Abundance		
Small populations, patchy distribution	5	
Small populations, continuous distribution	10	2
Large populations, patchy distribution	10	
Large populations, continuous distribution	20	
Total for Section 1.1	100	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	ref
1.2 Direct effects on native species distributions and abundances		
Species has exhibited no detectable effect	1	
Minor modification to native species distributions and abundances	10	
Moderate modification to native species distributions and abundances	20	110
Major modification to native species distributions and abundances	30	
Responsible for extinction of native species	50	
Impact Unknown	25	
1.3 Ecological interaction with vulnerable or endangered species		
Species has no or little interaction with vulnerable or endangered species	1	
Species has minor interaction with vulnerable or endangered species	20	
Species has moderate interaction with vulnerable or endangered species	30	
Species has major interaction with vulnerable or endangered species	50	110
Ecological interaction unknown	25	
Total for Section 1.1	100	
Total for Section 1.2 - 1.3	100	
TOTAL FOR SECTION 1 – CURRENT LEVEL OF IMPACT	200	
2. Pest potential		
2.1 Known level of impact in other natural areas		
Not known to cause impacts in any other natural areas	1	
Known to cause impacts in natural areas, but in other habitats and different climates	2	
Known to cause low impact in natural areas in similar habitats and climate zones	5	
Known to cause moderate impact in natural areas in similar habitats and climates	10	94,40
Known to cause high impact in natural areas in similar habitats and climate zones.	15	
2.2 Reproductive Potential		
a. Reproductive cycles		
Reproduction reliant on specific a-seasonal environmental stimuli	1	
Seasonal	2	94
Multiple reproductive events/season	4	
Continuous breeding	5	
Able to reproduce from one individual	5	
Unknown	3	
b. Reproductive output		
Low (<3 offspring/cycle)	1	
Moderate (3 – 10 offspring/cycle)	3	94
High (>10/cycle)	5	
Unknown	3	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	ref
c. Offspring viability		
Low	1	
Moderate	3	
High	5	
Unknown	3	
Total for Section 2.2	15	
2.3 Dispersal ability		
Low potential for dispersal	5	
Moderate potential for dispersal	10	40
Dispersal associated with human movement	15	
High potential for dispersal	20	
Unknown potential	10	
Total for Sections 2.1 – 2.3	50	
2.4 Mode of Impact		
Degradation/deprivation of habitat	5	
Competition for food and reproductive resources	5	
Transmission of disease/parasites/other pest species	10	
Direct predation of native animals	15	
More than one of the above modes	20	20,40
2.5 Potential interactions with vulnerable or endangered species		
Species has little overlap with vulnerable or endangered species	2	
Species has minor overlap with vulnerable or endangered species	10	
Species has moderate overlap with vulnerable or endangered species	20	110
Species has major overlap with vulnerable or endangered species	30	
Ecological overlap unknown	15	
Total for 2.4		
Total for Sections 2.1 – 2.3	50	
Total for Sections 2.4 – 2.5	50	
TOTAL FOR SECTION 2 – POTENTIAL IMPACT	100	
3. Feasibility of Control		
3.1 General susceptibility to control		
a. Dispersal/mobility		
Individuals/populations are sedentary or have established tracks/movements	5	
Adults/juveniles are seasonally dispersive	10	
Adults/juveniles are continuous dispersive	15	40

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	ref
b. Life history stage susceptible to control		
all stages	5	40
sub-group of stages	7	
single stage	10	
c. Temporal availability		
Continuously	5	40
Seasonally	7	
Restricted	10	
d. Recovery rate		
Multiple reproductive events over an extended time period	5	40
Multiple reproductive events over a short time period	10	
Single reproductive event	15	
Unknown	7	
Total for Section 3.1		
3.2. Control Measures		
a. Present control measures		
Control measures exist	2	40,20
Control measures being developed	5	
Control measures do not exist	45	
b. Effectiveness of current control measures		
Highly effective	2	
Moderately effective	5	40,105
Low effectiveness	10	
Unknown	5	
c. Logistic difficulty of implementation		
Low	2	
Moderate	5	105
High	10	
d. Potential to develop resistance to control measures		
Low	1	
Moderate	3	
High	5	
Unknown	3	
e. Cost		
Low	1	
Moderate	3	
High	5	105
Unknown	3	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	ref
f. Level of control effort required		
One application of one control measure is successful	1	
Multiple application of single control measure	5	
One application of multiple control measures required	10	
Multiple applications of multiple control measures required	15	40
Total for Section 3.1	55	
Total for Section 3.2	45	
TOTAL FOR SECTION 3 – FEASIBILITY OF CONTROL	100	
4. Negative Impact of control/potential measures		
4.1 Habitat impacts		
Minimal physical alteration to habitat	5	
Moderate physical alterations to habitat	10	40,105
Major physical alterations to habitat	25	
Unknown	12	
4.2 Native Population Impacts		
Control measures affect few individuals of some species	5	
Control measures impact moderate numbers of individuals of several species	10	40,105
Control measures impact large numbers of individuals of most species	25	
Unknown	12	
4.3 Other pest species		
Control measures release other pest species with minor enhancement of impacts	5	
Control measures release other pest species with moderate enhancement of impacts	10	20,40
Control measures release other pest species with major enhancement of impacts	25	
Unknown	12	
4.4 Length of Impact		
Short term (up to several weeks)	5	
Medium term (one season or reproductive cycle)	10	40,105
Long term (more than one year or reproductive cycle/permanent) modification of habitat	25	
Unknown	15	
TOTAL FOR SECTION 4 – NEGATIVE IMPACT OF CONTROL MEASURES		

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Fox	ref	Cat	ref	Rabbit	ref	Brown Hare	ref	House Mouse	ref	Pig	Ref	Horse
1. Level of Current impact														
1.1 Distribution														
a. Distribution and abundance relative to Wet Tropics Bioregion														
Established populations about the Wet Tropics Bioregion	2													
Established populations exist	10	10	92	10	2	10	2,94,4	10	2,3	10	2,92	10	64,2,40	10
b. Wet Tropics Bioregion Provinces in which species is present.														
Kirrama-Hinchinbrook	4	4				4				4				
Paluma-Seaview	4					4								
Macalister	4	4								4				
Bellenden Ker	4					4				4				
Atherton	4	4								4				
Herbert	4					4		4		4				4
Tully	4									4				
Innisfail	4					4				4				
Daintree-Bloomfield	4									4				
Total		12	4,5,120,127	0		20	2,3	4	2,3	32	2,3	0		4
Present in all	40			40	2							40	2,4	
c. Most significant province of the Wet Tropics Bioregion where the species occurs (tick one only) (see Appendix 1 Map of Wet Tropics Bioregion)														
Province (#endangered regional ecosystems (x2))+(# regional ecosystems of concern (x1))														
Kirrama-Hinchinbrook (1x2)+(5x1)	7													
Paluma-Seaview (1x2)+(7x1)	9													
Macalister (4x2)+(1x1)	9													
Bellenden Ker (4x2)+(2x1)	10	13	92,4											
Atherton (5x2)+(3x1)	13													
Herbert (8x2)+(5x1)	21							21	2,3					21
Tully (11x2)+(5x1)	27													
Innisfail (11x2)+(7x1)	29					29	2,3			29	2,3,92			
Daintree-Bloomfield (12x2)+(6x1)	30			30	2							30	20,24,2	
d. Distribution and Abundance														
Small populations, patchy distribution	5	5	92,4	5	89	5	2	5	2,3,94	5	2			5
Small populations, continuous distribution	10													
Large populations, patchy distribution	10											10	20,8	
Large populations, continuous distribution	20													
Total for Section 1.1	100	40		85		64		40		76		90		40

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Fox	ref	Cat	ref	Rabbit	ref	Brown Hare	ref	House Mouse	ref	Pig	Ref	Horse
1.2 Direct effects on native species distributions and abundances														
Species has exhibited no detectable effect	1													1
Minor modification to native species distributions and abundances	10									10	121			
Moderate modification to native species distributions and abundances	20													
Major modification to native species distributions and abundances	30	30	4	30	89,4							30	8,40	
Responsible for extinction of native species	50													
Impact Unknown	25					25		25						
1.3 Ecological interaction with vulnerable or endangered species														
Species has no or little interaction with vulnerable or endangered species	1													
Species has minor interaction with vulnerable or endangered species	20													
Species has moderate interaction with vulnerable or endangered species	30			30	4							30	20,8	
Species has major interaction with vulnerable or endangered species	50													
Ecological interaction unknown	25	25				25		25		25				25
Total for Section 1.1	100	40		85		64		40		76		90		40
Total for Section 1.2 - 1.3	100	55		60		50		50		35		60		26
TOTAL FOR SECTION 1 – CURRENT LEVEL OF IMPACT	200	95		145		114		90		111		150		66
2. Pest potential														
2.1 Known level of impact in other natural areas														
Not known to cause impacts in any other natural areas	1													
Known to cause impacts in natural areas, but in other habitats and different climates	2	2	40,100,127			2	20,94	2	94	2	94			2
Known to cause low impact in natural areas in similar habitats and climate zones	5													
Known to cause moderate impact in natural areas in similar habitats and climates	10													
Known to cause high impact in natural areas in similar habitats and climate zones.	15			15	40,89							15	27,40	
2.2 Reproductive Potential														
a. Reproductive cycles														
Reproduction reliant on specific a-seasonal environmental stimuli	1													
Seasonal	2													2
Multiple reproductive events/season	4	4	94,100	4	89,94	4	94	4	94	4	94	4	8,20,24	
Continuous breeding	5													
Able to reproduce from one individual	5													
Unknown	3													
b. Reproductive output														
Low (<3 offspring/cycle)	1													1
Moderate (3 – 10 offspring/cycle)	3	3	94	3	94,89	3	94	3	94	3	94	3	8,24	
High (>10/cycle)	5													
Unknown	3													

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Fox	ref	Cat	ref	Rabbit	ref	Brown Hare	ref	House Mouse	ref	Pig	Ref	Horse
c. Offspring viability														
Low	1			1	89	1	89							
Moderate	3											3	8,24	
High	5	5	94,100					5	94	5	94			
Unknown	3													3
Total for Section 2.2	15	12		8		8		12		12		10		6
2.3 Dispersal ability														
Low potential for dispersal	5													
Moderate potential for dispersal	10													
Dispersal associated with human movement	15			15	89			15	94	15	94			
High potential for dispersal	20	20	94,100			20	94					20	8,26	
Unknown potential	10													10
Total for Sections 2.1 – 2.3	50	34		38		30		29		29		45		18
2.4 Mode of Impact														
Degradation/deprivation of habitat	5									5	94		8,24,40	5
Competition for food and reproductive resources	5					5	20	5	94				24,40	
Transmission of disease/parasites/other pest species	10					10	20						27,16	
Direct predation of native animals	15												40	
More than one of the above modes	20	20	20	20	40,89							20		
2.5 Potential interactions with vulnerable or endangered species														
Species has little overlap with vulnerable or endangered species	2									2	2			
Species has minor overlap with vulnerable or endangered species	10													
Species has moderate overlap with vulnerable or endangered species	20	20	4	20	89,40							20	24	
Species has major overlap with vulnerable or endangered species	30													
Ecological overlap unknown	15					15		15						15
Total for 2.4		20		20		15		5		5		20		5
Total for Sections 2.1 – 2.3	50	34		38		30		29		29		45		18
Total for Sections 2.4 – 2.5	50	40		40		30		20		7		40		20
TOTAL FOR SECTION 2 – POTENTIAL IMPACT	100	74		78		60		49		36		85		38
3. Feasibility of Control														
3.1 General susceptibility to control														
a. Dispersal/mobility														
Individuals/populations are sedentary or have established tracks/movements	5													5
Adults/juveniles are seasonally dispersive	10	10	94,100			10	94	10	94	10	94	10	8	
Adults/juveniles are continuous dispersive	15			15	40,89									

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Fox	ref	Cat	ref	Rabbit	ref	Brown Hare	ref	House Mouse	ref	Pig	Ref	Horse
b. Life history stage susceptible to control														
all stages	5	5	94,100	5	89	5	94			5	94	5	8,73,74	5
sub-group of stages	7							7	94					
single stage	10													
c. Temporal availability														
Continuously	5	5	94,100	5	89	5	94	5	94			5	8,20,73,74	5
Seasonally	7									7	94			
Restricted	10													
d. Recovery rate														
Multiple reproductive events over an extended time period	5													5
Multiple reproductive events over a short time period	10	10	94,100	10	89	10	94	10	94	10	94			
Single reproductive event	15											15	73	
Unknown	7													
Total for Section 3.1		30		35		30		32		32		35		20
3.2. Control Measures														
a. Present control measures														
Control measures exist	2	2	20,40,94,100	2	89			2	94	2	108	2	8	2
Control measures being developed	5					5	98							
Control measures do not exist	45													
b. Effectiveness of current control measures														
Highly effective	2													
Moderately effective	5									5	108	5	73,8	5
Low effectiveness	10	10	94,100	10	89	5	98	10	94					
Unknown	5													
c. Logistic difficulty of implementation														
Low	2													
Moderate	5	5	100			5	98			5	108			
High	10			10	89			10	94			10	8	10
d. Potential to develop resistance to control measures														
Low	1													
Moderate	3			3	89									
High	5					5	94	5	94			5	40	
Unknown	3	3								3				3
e. Cost														
Low	1													
Moderate	3													
High	5	5	100	5	89							5	40	
Unknown	3					3		3		3				3

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Fox	ref	Cat	ref	Rabbit	ref	Brown Hare	ref	House Mouse	ref	Pig	Ref	Horse
f. Level of control effort required														
One application of one control measure is successful	1													
Multiple application of single control measure	5							5	94	5	108			
One application of multiple control measures required	10													
Multiple applications of multiple control measures required	15	15	94	15	89	15	94					15	8,40	15
Total for Section 3.1	55	30		35		30		32		32		35		20
Total for Section 3.2	45	40		45		38		35		23		42		38
TOTAL FOR SECTION 3 – FEASIBILITY OF CONTROL	100	70		80		68		67		55		77		58
4. Negative Impact of control/potential measures														
4.1 Habitat impacts														
Minimal physical alteration to habitat	5							5	94					
Moderate physical alterations to habitat	10	10	100							10	108			10
Major physical alterations to habitat	25			25	89	25	94					25	8	
Unknown	12													
4.2 Native Population Impacts														
Control measures affect few individuals of some species	5							5	94					
Control measures impact moderate numbers of individuals of several species	10	10	40,100	10	89					10	108	10	8	
Control measures impact large numbers of individuals of most species	25													
Unknown	12					12								12
4.3 Other pest species														
Control measures release other pest species with minor enhancement of impacts	5													
Control measures release other pest species with moderate enhancement of impacts	10	10	94,100	10	89	10	94,20					10	8	
Control measures release other pest species with major enhancement of impacts	25													
Unknown	12							12		12				12
4.4 Length of Impact														
Short term (up to several weeks)	5							5	94	5	108			
Medium term (one season or reproductive cycle)	10													10
Long term (more than one year or reproductive cycle/permanent) modification of habitat	25			25	89							25	8	
Unknown	15	15				15								
TOTAL FOR SECTION 4 – NEGATIVE IMPACT OF CONTROL MEASURES		45		70		62		27		37		70		44

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	ref
1. Level of Current impact		
1.1 Distribution		
a. Distribution and abundance relative to Wet Tropics Bioregion		
Established populations about the Wet Tropics Bioregion	2	
Established populations exist	10	2,21
b. Wet Tropics Bioregion Provinces in which species is present.		
Kirrama-Hinchinbrook	4	
Paluma-Seaview	4	
Macalister	4	
Bellenden Ker	4	
Atherton	4	
Herbert	4	2,3
Tully	4	
Innisfail	4	
Daintree-Bloomfield	4	
<i>Total</i>		
Present in all	40	
c. Most significant province of the Wet Tropics Bioregion where the species occurs (tick one only) (see Appendix 1 Map of Wet Tropics Bioregion) Province (#endangered regional ecosystems (x2))+(# regional ecosystems of concern (x1))		
Kirrama-Hinchinbrook (1x2)+(5x1)	7	
Paluma-Seaview (1x2)+(7x1)	9	
Macalister (4x2)+(1x1)	9	
Bellenden Ker (4x2)+(2x1)	10	
Atherton (5x2)+(3x1)	13	
Herbert (8x2)+(5x1)	21	2,3
Tully (11x2)+(5x1)	27	
Innisfail (11x2)+(7x1)	29	
Daintree-Bloomfield (12x2)+(6x1)	30	
d. Distribution and Abundance		
Small populations, patchy distribution	5	2
Small populations, continuous distribution	10	
Large populations, patchy distribution	10	
Large populations, continuous distribution	20	
Total for Section 1.1	100	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	ref
1.2 Direct effects on native species distributions and abundances		
Species has exhibited no detectable effect	1	
Minor modification to native species distributions and abundances	10	
Moderate modification to native species distributions and abundances	20	
Major modification to native species distributions and abundances	30	
Responsible for extinction of native species	50	
Impact Unknown	25	
1.3 Ecological interaction with vulnerable or endangered species		
Species has no or little interaction with vulnerable or endangered species	1	
Species has minor interaction with vulnerable or endangered species	20	
Species has moderate interaction with vulnerable or endangered species	30	
Species has major interaction with vulnerable or endangered species	50	
Ecological interaction unknown	25	
Total for Section 1.1	100	
Total for Section 1.2 - 1.3	100	
TOTAL FOR SECTION 1 – CURRENT LEVEL OF IMPACT	200	
2. Pest potential		
2.1 Known level of impact in other natural areas		
Not known to cause impacts in any other natural areas	1	
Known to cause impacts in natural areas, but in other habitats and different climates	2	94
Known to cause low impact in natural areas in similar habitats and climate zones	5	
Known to cause moderate impact in natural areas in similar habitats and climates	10	
Known to cause high impact in natural areas in similar habitats and climate zones.	15	
2.2 Reproductive Potential		
a. Reproductive cycles		
Reproduction reliant on specific a-seasonal environmental stimuli	1	
Seasonal	2	97
Multiple reproductive events/season	4	
Continuous breeding	5	
Able to reproduce from one individual	5	
Unknown	3	
b. Reproductive output		
Low (<3 offspring/cycle)	1	97
Moderate (3 – 10 offspring/cycle)	3	
High (>10/cycle)	5	
Unknown	3	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	ref
c. Offspring viability		
Low	1	
Moderate	3	
High	5	
Unknown	3	
Total for Section 2.2	15	
2.3 Dispersal ability		
Low potential for dispersal	5	
Moderate potential for dispersal	10	
Dispersal associated with human movement	15	95
High potential for dispersal	20	
Unknown potential	10	
Total for Sections 2.1 – 2.3	50	
2.4 Mode of Impact		
Degradation/deprivation of habitat	5	40
Competition for food and reproductive resources	5	
Transmission of disease/parasites/other pest species	10	
Direct predation of native animals	15	
More than one of the above modes	20	
2.5 Potential interactions with vulnerable or endangered species		
Species has little overlap with vulnerable or endangered species	2	
Species has minor overlap with vulnerable or endangered species	10	
Species has moderate overlap with vulnerable or endangered species	20	
Species has major overlap with vulnerable or endangered species	30	
Ecological overlap unknown	15	
Total for 2.4		
Total for Sections 2.1 – 2.3	50	
Total for Sections 2.4 – 2.5	50	
TOTAL FOR SECTION 2 – POTENTIAL IMPACT	100	
3. Feasibility of Control		
3.1 General susceptibility to control		
a. Dispersal/mobility		
Individuals/populations are sedentary or have established tracks/movements	5	97
Adults/juveniles are seasonally dispersive	10	
Adults/juveniles are continuous dispersive	15	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	ref
b. Life history stage susceptible to control		
all stages	5	97
sub-group of stages	7	
single stage	10	
c. Temporal availability		
Continuously	5	97
Seasonally	7	
Restricted	10	
d. Recovery rate		
Multiple reproductive events over an extended time period	5	97
Multiple reproductive events over a short time period	10	
Single reproductive event	15	
Unknown	7	
Total for Section 3.1		
3.2. Control Measures		
a. Present control measures		
Control measures exist	2	97
Control measures being developed	5	
Control measures do not exist	45	
b. Effectiveness of current control measures		
Highly effective	2	
Moderately effective	5	97
Low effectiveness	10	
Unknown	5	
c. Logistic difficulty of implementation		
Low	2	
Moderate	5	
High	10	97
d. Potential to develop resistance to control measures		
Low	1	
Moderate	3	
High	5	
Unknown	3	
e. Cost		
Low	1	
Moderate	3	
High	5	
Unknown	3	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	ref
f. Level of control effort required		
One application of one control measure is successful	1	
Multiple application of single control measure	5	
One application of multiple control measures required	10	
Multiple applications of multiple control measures required	15	40
Total for Section 3.1	55	
Total for Section 3.2	45	
TOTAL FOR SECTION 3 – FEASIBILITY OF CONTROL	100	
4. Negative Impact of control/potential measures		
4.1 Habitat impacts		
Minimal physical alteration to habitat	5	
Moderate physical alterations to habitat	10	40
Major physical alterations to habitat	25	
Unknown	12	
4.2 Native Population Impacts		
Control measures affect few individuals of some species	5	
Control measures impact moderate numbers of individuals of several species	10	
Control measures impact large numbers of individuals of most species	25	
Unknown	12	
4.3 Other pest species		
Control measures release other pest species with minor enhancement of impacts	5	
Control measures release other pest species with moderate enhancement of impacts	10	
Control measures release other pest species with major enhancement of impacts	25	
Unknown	12	
4.4 Length of Impact		
Short term (up to several weeks)	5	
Medium term (one season or reproductive cycle)	10	40,21
Long term (more than one year or reproductive cycle/permanent) modification of habitat	25	
Unknown	15	
TOTAL FOR SECTION 4 – NEGATIVE IMPACT OF CONTROL MEASURES		

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Rusa Deer	ref	Chital Deer	ref	Fallow Deer	ref	Goat	Refs
1. Level of Current impact									
1.1 Distribution									
a. Distribution and abundance relative to Wet Tropics Bioregion									
Established populations about the Wet Tropics Bioregion	2	2	21,94	2	21,5	2	21,5	2	2,20,21
Established populations exist	10								
b. Wet Tropics Bioregion Provinces in which species is present.									
Kirrama-Hinchinbrook	4								
Paluma-Seaview	4								
Macalister	4								
Bellenden Ker	4								
Atherton	4								
Herbert	4								
Tully	4								
Innisfail	4								
Daintree-Bloomfield	4								
<i>Total</i>		0		0		0		0	
Present in all	40								
c. Most significant province of the Wet Tropics Bioregion where the species occurs (tick one only) (see Appendix 1 Map of Wet Tropics Bioregion)									
Province (#endangered regional ecosystems (x2))+(# regional ecosystems of concern (x1))									
Kirrama-Hinchinbrook (1x2)+(5x1)	7								
Paluma-Seaview (1x2)+(7x1)	9								
Macalister (4x2)+(1x1)	9								
Bellenden Ker (4x2)+(2x1)	10								
Atherton (5x2)+(3x1)	13								
Herbert (8x2)+(5x1)	21								
Tully (11x2)+(5x1)	27								
Innisfail (11x2)+(7x1)	29								
Daintree-Bloomfield (12x2)+(6x1)	30								
d. Distribution and Abundance									
Small populations, patchy distribution	5								
Small populations, continuous distribution	10								
Large populations, patchy distribution	10								
Large populations, continuous distribution	20								
Total for Section 1.1	100	2		2		2		2	

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Rusa Deer	ref	Chital Deer	ref	Fallow Deer	ref	Goat	Refs
1.2 Direct effects on native species distributions and abundances									
Species has exhibited no detectable effect	1	1	21,94	1	21,5	1	21,5	1	2,20,21
Minor modification to native species distributions and abundances	10								
Moderate modification to native species distributions and abundances	20								
Major modification to native species distributions and abundances	30								
Responsible for extinction of native species	50								
Impact Unknown	25								
1.3 Ecological interaction with vulnerable or endangered species									
Species has no or little interaction with vulnerable or endangered species	1	1	21,94	1	21,5	1	21,5	1	2,20,21
Species has minor interaction with vulnerable or endangered species	20								
Species has moderate interaction with vulnerable or endangered species	30								
Species has major interaction with vulnerable or endangered species	50								
Ecological interaction unknown	25								
Total for Section 1.1	100	2		2		2		2	
Total for Section 1.2 - 1.3	100	2		2		2		2	
TOTAL FOR SECTION 1 – CURRENT LEVEL OF IMPACT	200	4		4		4		4	
2. Pest potential									
2.1 Known level of impact in other natural areas									
Not known to cause impacts in any other natural areas	1								
Known to cause impacts in natural areas, but in other habitats and different climates	2	2	21,99	2	21	2	21	2	103
Known to cause low impact in natural areas in similar habitats and climate zones	5								
Known to cause moderate impact in natural areas in similar habitats and climates	10								
Known to cause high impact in natural areas in similar habitats and climate zones.	15								
2.2 Reproductive Potential									
a. Reproductive cycles									
Reproduction reliant on specific a-seasonal environmental stimuli	1								
Seasonal	2								
Multiple reproductive events/season	4			4	94,21	4	94,21	4	103
Continuous breeding	5	5	21						
Able to reproduce from one individual	5								
Unknown	3								
b. Reproductive output									
Low (<3 offspring/cycle)	1	1	94	1	94	1	94	1	21
Moderate (3 – 10 offspring/cycle)	3								
High (>10/cycle)	5								
Unknown	3								

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Rusa Deer	ref	Chital Deer	ref	Fallow Deer	ref	Goat	Refs
c. Offspring viability									
Low	1								
Moderate	3							3	103
High	5								
Unknown	3	3		3		3			
Total for Section 2.2	15	9		8		8		8	
2.3 Dispersal ability									
Low potential for dispersal	5								
Moderate potential for dispersal	10			10	21	10	21		
Dispersal associated with human movement	15								
High potential for dispersal	20	20	40,21					20	103
Unknown potential	10								
Total for Sections 2.1 – 2.3	50	31		20		20		30	
2.4 Mode of Impact									
Degradation/deprivation of habitat	5								
Competition for food and reproductive resources	5								
Transmission of disease/parasites/other pest species	10	10	21	10	21	10	21		
Direct predation of native animals	15								
More than one of the above modes	20							20	103
2.5 Potential interactions with vulnerable or endangered species									
Species has little overlap with vulnerable or endangered species	2								
Species has minor overlap with vulnerable or endangered species	10								
Species has moderate overlap with vulnerable or endangered species	20								
Species has major overlap with vulnerable or endangered species	30								
Ecological overlap unknown	15	15		15		15		15	
Total for 2.4		10		10		10		20	
Total for Sections 2.1 – 2.3	50	31		20		20		30	
Total for Sections 2.4 – 2.5	50	25		25		25		35	
TOTAL FOR SECTION 2 – POTENTIAL IMPACT	100	56		45		45		65	
3. Feasibility of Control									
3.1 General susceptibility to control									
a. Dispersal/mobility									
Individuals/populations are sedentary or have established tracks/movements	5			5	94	5	94		
Adults/juveniles are seasonally dispersive	10	5	21					10	103
Adults/juveniles are continuous dispersive	15								

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Rusa Deer	ref	Chital Deer	ref	Fallow Deer	ref	Goat	Refs
b. Life history stage susceptible to control									
all stages	5	5	94	5	94	5	94	5	103
sub-group of stages	7								
single stage	10								
c. Temporal availability									
Continuously	5	5	94	5	94	5	94	5	103
Seasonally	7								
Restricted	10								
d. Recovery rate									
Multiple reproductive events over an extended time period	5	5	94						
Multiple reproductive events over a short time period	10			10	94	10	94	10	103
Single reproductive event	15								
Unknown	7								
Total for Section 3.1		20		25		25		30	
3.2. Control Measures									
a. Present control measures									
Control measures exist	2	2	94	2	94	2	94	2	103
Control measures being developed	5								
Control measures do not exist	45								
b. Effectiveness of current control measures									
Highly effective	2								
Moderately effective	5	5	94,21	5	94,21	5	94,21	5	103
Low effectiveness	10								
Unknown	5								
c. Logistic difficulty of implementation									
Low	2								
Moderate	5	5	94,21	5	94,21	5	94,21		
High	10							10	103
d. Potential to develop resistance to control measures									
Low	1								
Moderate	3								
High	5								
Unknown	3	3		3		3		3	
e. Cost									
Low	1								
Moderate	3								
High	5							5	103
Unknown	3	3		3		3			

WET TROPICS VERTEBRATE PEST RISK ASSESSMENTS	Score	Rusa Deer	ref	Chital Deer	ref	Fallow Deer	ref	Goat	Refs
f. Level of control effort required									
One application of one control measure is successful	1								
Multiple application of single control measure	5	5	21	5	21	5	21		
One application of multiple control measures required	10								
Multiple applications of multiple control measures required	15							15	103
Total for Section 3.1	55	20		25		25		30	
Total for Section 3.2	45	23		20		20		37	
TOTAL FOR SECTION 3 – FEASIBILITY OF CONTROL	100	43		45		45		67	
4. Negative Impact of control/potential measures									
4.1 Habitat impacts									
Minimal physical alteration to habitat	5							5	103
Moderate physical alterations to habitat	10	10	21	10	20,21	10	20,21		
Major physical alterations to habitat	25								
Unknown	12								
4.2 Native Population Impacts									
Control measures affect few individuals of some species	5	5	20,21	5	20,21	5	20,21	5	103
Control measures impact moderate numbers of individuals of several species	10								
Control measures impact large numbers of individuals of most species	25								
Unknown	12								
4.3 Other pest species									
Control measures release other pest species with minor enhancement of impacts	5	5	20,21	5	20,21	5	20,21	5	103
Control measures release other pest species with moderate enhancement of impacts	10								
Control measures release other pest species with major enhancement of impacts	25								
Unknown	12								
4.4 Length of Impact									
Short term (up to several weeks)	5	5	20,21	5	20,21	5	20,21		
Medium term (one season or reproductive cycle)	10							10	103
Long term (more than one year or reproductive cycle/permanent) modification of habitat	25								
Unknown	15								
TOTAL FOR SECTION 4 – NEGATIVE IMPACT OF CONTROL MEASURES		25		25		25		25	