

RISK ASSESSMENT SCORECARD

Assessment criteria

The assessment scored a number of general characteristics of each taxon, its distribution in relation to New Zealand, and potential impacts in New Zealand based on international studies. An ant was included for assessment if information from any source indicated it met at least one of the following criteria:

- A pest in its native range
- Commonly introduced outside its native range
- Considered a pest outside its native range (which could include having, or being thought to have, effects on native systems)
- Commonly intercepted at the New Zealand border
- Listed by Biosecurity New Zealand for specific inclusion

Grouping	Characters	Justification for inclusion	Taking account of:
Biological traits inferring invasiveness	Recruits in large numbers to food and monopolises it	Likely to displace competitors and be ecologically dominant and/or be significant pest in an urban setting	
	Reproductive queens	Multiple queened colonies often have greater potential for rapid increase	
	Supercolonies known – with reduced intraspecific aggression	Allows maintenance of elevated densities and ecological domination of an area	
Invasive history	Established outside native range	Infers some potential for spread (although plenty of historical examples of ants establishing in NZ, particularly from Australia with no invasive history)	
Pathways	Common association with anthropogenic environments	Higher likelihood of being transported to NZ through freight movement. Less likelihood of forest species being transported	
	Future interceptions	Within the next 50 years there will be more potential pathways to New Zealand increasing the risk of establishment	Global spread

	In Australia	Historical origin of many of our introduced species so elevated risk if species present there	
	In the Pacific	Container review showed this is a region with high levels of contamination of containers	
	In southern hemisphere	Greater likelihood that the seasons match and reproductive queens arrive at suitable times for nest establishment. Historically no confirmed cases of establishment of ants directly from northern hemisphere populations.	
	Intercepted at NZ border	If there is no recent history of interception of a species then there is a lower risk that it will establish here (assuming static trade partners)	
	Have nests or queens been intercepted	Workers are frequently intercepted but a colony and/or fertile queen needed to establish	
	Established at sites with direct trade pathways	If this species is present at localities where there are significant trade links to NZ the probability of establishment here is greater	
	Commodity compatibility	Are trade goods from regions with this species likely to transport queens – this is less likely to be the case for forest species.	
Establishment success	Climate match (forest)	Does information available on the taxon suggest that forest is a suitable habitat risk and the climate is likely to be suitable	Known habitat preferences
	Climate match (inside buildings)	Is there a history of association with buildings in temperate areas	Known habitat preferences
	Climate match (open non-urban)	Does information available on the taxon suggest that non-forest habitat outside urban areas is suitable habitat and the climate likely to be suitable	Known habitat preferences
	Climate match (urban outdoors)	Does information available on the taxon suggest that urban habitat outside heated	Known habitat preferences

		buildings is suitable habitat and the climate likely to be suitable
	Incursions previously (colonies detected post border clearance)	Demonstrated history of being able to survive and establish a nest (at least temporarily) in NZ
	Incursions previously produced sexual stages	Demonstrates greater likelihood of establishment
Difficulty in containment of inclusion	Small size/cryptic nature	Feature of the species that would make incursion difficult to detect and eradicate
	Flighted dispersals	If flighted dispersals, containment of an inclusion will be more difficult
Likely pest status to humans in NZ	Bites and spreads formic acid	Potential for health consequences of incursion
	Stings	Has potential to sting and this is commonly reported and has potential health implications
	Damages structures	Attracted to electrical fields (financial and potential health risks – fires been caused) or damages wood (financial implications)
	Workers enter buildings	Likely to result in greater expenditure on pest control and/or contamination of products in manufacturing
	Hygiene pest (disease spreading)	Evidence of the species being a significant contaminant in hospitals and commercial premises and associated with spreading of disease and/or direct impacts on patients
	Garden nuisance	Likely to reach significant densities in this environment to impact on enjoyment of outdoors and prompt control measures, or if a large ant or a species with a painful sting, its presence in even low numbers may be an actual or perceived threat
	Horticultural/ agricultural pest	Likely to impact on horticultural/agricultural production through impact of stock or farm scale affecting plant growth or crop value, or stinging of staff.
Impact on native environment	Competitive advantage over other ants	Impact on native ants known in literature – often this reflects impacts on other invertebrates as well as ants where such studies have been conducted

Detrimental impacts on vertebrates	Is there any literature suggesting they may impact on vertebrates through foraging traits, nesting behaviours or defence mechanisms	
Detrimental impacts on native invertebrates (other than other ants)	Given likely climate match and habitat, is this species likely to have significant and potentially quantifiable impacts on native species (it is likely most new species cause some change)	Climate match
Harms indigenous flora or disrupts through seed feeding or scale farming	Seed-feeding ants absent from native ant fauna, and species that farm exotic scales shown to have impacts on plant growth and disease transmission	

Scoring

Ant taxa that were assessed using the risk assessment scorecard. Each trait has a score between 0 (no risk or not present) and 1 (high risk or trait present).

Grouping	Characters	Scoring		
		0	0.5	1
Biological traits inferring invasiveness	Recruits in large numbers to food and monopolises it	No	?	Yes (many thousands)
	Reproductive queens	Monogyne	?	Polygyne
	Supercolonies known – with reduced intraspecific aggression	No	Polydomous	Yes
Invasive history	Established outside native range	0	1–2 times	> 2
Pathways	Common association with anthropogenic environments	No	?/some	Yes
	Future interceptions	Similar	?	Increase

	In Australia	No		Yes
	In the Pacific	No (or unknown)		Yes
	In southern hemisphere	No		Yes
	Intercepted at NZ border	No	Occasional (at least once in MAF list)	Frequently (> 5 times on MAF list)
	Have nests or queens been intercepted	No	?	Yes
	Established at sites with direct trades pathways	No	?	Yes
	Commodity compatibility	No	?	Yes
Establishment success	Climate match (forest)	Low	Limited	High
	Climate match (inside buildings)	Low	Limited	High
	Climate match (open non-urban)	Low	Limited	High
	Climate match (urban outdoors)	Low	Limited	High
	Incursions previously (colonies detected post border clearance)	No	1	>1
	Incursions previously produced sexual stages	No		Yes
Difficulty in containment of inclusion	Small size/cryptic nature	Yes	Probably	No
	Flighted dispersals	No	Probably/ some	Yes

Likely pest status to humans in NZ	Potential for health consequences of incursion	No	Unknown	Yes
	Has potential to sting and this is commonly reported, and has potential health implications	No	Stings but not severe	Yes (on mass or severe)
	Attracted to electrical fields (financial and potential health risks – fires been caused) or damages wood (financial implications)	No	?/some	Yes
	Likely to result in greater expenditure on pest control and/or contamination of products in manufacturing	No (rare)	?/occasional	Yes
	Evidence of the species being a significant contaminant in hospitals and commercial premises and associated with spreading of disease and/or direct impacts on patients	Not reported	Limited	Yes
	Likely to reach significant densities in this environment to impact on enjoyment of outdoors and prompt control measures, or if a large ant or a species with a painful sting, its presence in even low numbers may be an actual or perceived threat	No	Possibly	Yes
	Likely to impact on horticultural/agricultural production through impact of stock or farm scale affecting plant growth or crop value, or stinging of staff.	No	Unknown/possibly	Yes
Impact on native environment	Impact on native ants known in literature – often this reflects impacts on other invertebrates as well as ants where such studies have been conducted	Unlikely	Some species	Most species
	Is there any literature suggesting they may impact on vertebrates through foraging traits, nesting behaviours or defence mechanisms	Unlikely	Possibly	Yes

<p>Given likely climate match and habitat, is this species likely to have significant and potentially quantifiable impacts on native species (it is likely most new species cause some change)</p>	<p>Unlikely</p>	<p>Likely</p>	<p>Severe</p>
<p>Seed-feeding ants absent from native ant fauna and species that farm exotic scales shown to have impacts on plant growth and diseases transmission</p>	<p>No</p>	<p>Possible</p>	<p>Yes</p>