

# CASE STUDY: RED IMPORTED FIRE ANT

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**A case study of Australia's largest eradication program that has been put at risk by failures to prevent and detect new incursions.**

## Species

Red imported fire ant  
(*Solenopsis invicta*).

## Origin

South America.

## Australian occurrence

An accidental introduction on goods transported on ships. Genetic studies show that fire ants have arrived on several separate occasions, for example in Gladstone<sup>1</sup>, in Port Botany Sydney, and in Brisbane including as recently as 2016. They have established in southeast Queensland and central Queensland (Gladstone).

## Environmental impacts

The red imported fire ant is one of the worst invasive species in the world, having spread to the United States, China, Taiwan, Japan, and the Philippines.<sup>2</sup> The species has been listed nationally as a key threatening process on the basis of harm caused to a wide range of ground-dwelling and egg-hatching wildlife in the United States<sup>3</sup>. For example, more than two-thirds of Florida red-bellied turtle hatchlings die in fire-ant invaded sites.

In Australia there are concerns for many native species that are declining already from other impacts, including threatened turtles (green turtle, leathery turtle, Pacific Ridley turtle, Bell's turtle, Mary River tortoise, hawksbill turtle and the Bellinger River Emydura), crocodiles, lizards, frogs, and ground-dwelling birds such as the malleefowl, black-breasted button-quail and plains wanderer, among many others.<sup>4</sup> An assessment of their likely impact on 123 animals in southeast Queensland predicted population declines in about 45% of birds, 38% of mammals, 69% of reptiles and 95% of frogs.



Photo: Alex Wild

## BIOSECURITY ISSUES

Year detected	Location	Response
2001	Wacol, Brisbane, now spread >450,000 ha	Eradication ongoing
2001	Port of Brisbane	Eradicated 2005
2006	Yarwun, Gladstone	Eradicated 2007
2013	Port of Gladstone	Eradicated 2016
2014	Port Botany, Sydney	Eradicated 2016
2015	Brisbane Airport	Eradication ongoing
2016	Port of Brisbane	Eradication ongoing

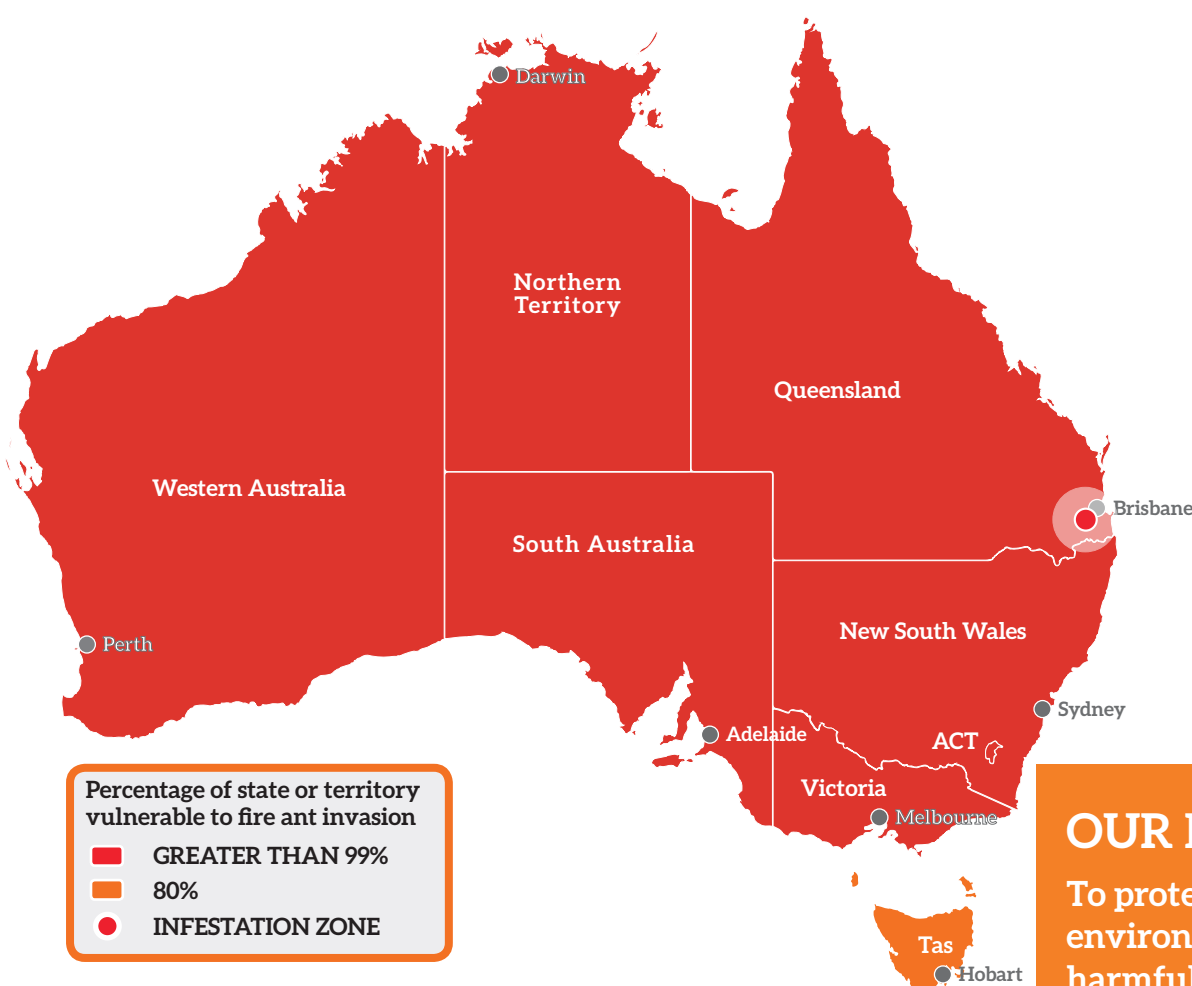
Fire ants have greater ecological impacts than most ants because they are highly aggressive and numerous. Super-colonies (with multiple queens) can reach extremely high densities of up to 2600 mounds per hectare with millions of individuals.<sup>5</sup> They are omnivores, preying on invertebrates and vertebrates and eating plants and honeydew. Although they are tiny (2-6mm), their sting and high numbers enable them to overwhelm and kill prey much larger than themselves. They swarm in large numbers to attack any animal disturbing their nest.

## Social and economic impacts

When a fire ant mound is disturbed, masses of ants swarm to the surface and repeatedly sting the intruder. In the US, 30 to 60% of people in infested areas are

stung each year. The stings are painful – the alkaloid venom causes pustules and, in some people, allergic reactions. More than 85 people in the US have died of anaphylactic shock. If not controlled in Australia fire ants could cause an extra 140,000 medical consultations and 3000 anaphylactic reactions a year.

By mid-2016, federal, state and territory governments had spent \$330 million attempting to eradicate the fire ant<sup>6</sup>. A commitment was made in 2017 to spend an additional \$380 million over the next 10 years to eradicate the species from South East Queensland. Although expensive, this is far less than the costs of failing. Modelling by the Queensland government indicates that in South East



Queensland alone fire ants would impose costs of about \$45 billion over 30 years<sup>7</sup>. In the US the ant costs \$7 billion a year in damage and control<sup>8</sup>. Among the costs are damage to infrastructure (roads, footpaths and electrical equipment) and lost agricultural production. The ants damage crops, rob beehives and kill newborn livestock. During dry times they dominate the margins of dams, making it impossible for livestock to reach water without being seriously stung.

### Pathways

Fire ants travel with cargo.

## BIOSECURITY ISSUES

### Summary

Of all the invasive species that should be kept out of Australia, the red imported fire ant is one of the worst. It is also one of the most costly, and any flaws in biosecurity that result in new incursions put at risk the >\$330 million already spent trying to eradicate them. Australian governments are showing an admirable commitment to the future with the decision to spend an additional \$400 million on eradication, but they need to ensure that program is well governed and stop the flow of new incursions

### Quarantine and surveillance

The multiple incursions of red imported fire ants, including four detected in the past five years, highlight serious gaps in quarantine. That fact that most incursions are discovered by chance and often not for several years – eg. three years for the most recent incursion at Gladstone – highlight the need for more systematic surveillance.

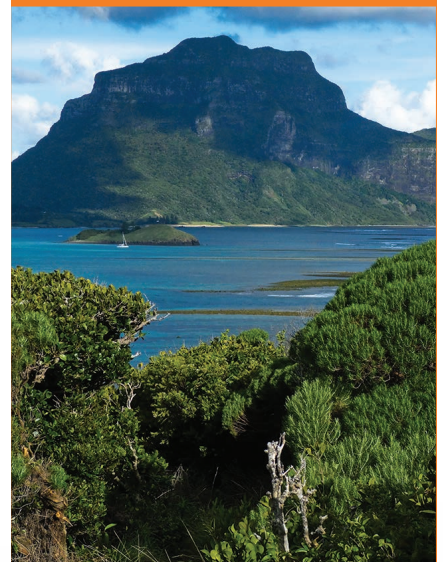
### Emergency response

In 2001, fire ants were found in two locations in Brisbane – at the Port of Brisbane, and in the suburbs of Wacol and Richlands. They were found later to be genetically distinct populations. The Queensland government mounted an emergency response to delineate the invasion and, if possible, eradicate the fire ant, something no other country has been able to achieve.<sup>9</sup> Soon after, the National Red Imported Fire Ant Eradication Program was established with cost sharing by the federal, state and territory governments.

Considerable success has been achieved, with fire ants eradicated from four locations, involving the treatment of about 20,000 hectares. However, the largest infestation, in South East Queensland, is much more difficult, as it is spread over more than 450,000 hectares. An analysis of this program shows that it came very close to eradication in 2003,

## OUR MISSION

To protect the environment from harmful new invasive species through prevention and early action.



Lord Howe Island, Robert Whyte

but a failure to fully define the invaded area meant part of it remained outside the treatment zone.<sup>10</sup> Because of this missed opportunity, the invaded area doubled between 2004 and 2010.<sup>11</sup> This demonstrates the importance of committing sufficient long-term funding to optimise the chances of success. Eradications don't succeed if they are half-hearted.

The commitment by some governments to the program has been tenuous at times, and the program has suffered from too little and short-term funding. Because national cost-sharing arrangements depend on consensus from all federal, state and territory governments, one wavering government or attempts to cut costs can put at risk the entire program.<sup>12</sup> The National Biosecurity Management Group that decides on national responses to species invasions is not required to consult the public nor to publish reasons for its decisions, so decisions can be made for reasons that have nothing to do with the public interest.

In July 2017, Australia's agriculture ministers backed the findings of an independent review of the South East Queensland eradication program that confirmed eradication is still possible and in the national interest. All governments have committed to a 10 year, \$380 million eradication program.

## Governance

The eradication of red imported fire ants from four Australian locations demonstrates a technical capacity to achieve success. However, eradicating the ants is also a major governance challenge. There are many stakeholders, including multiple funders, and there are likely to be many technical, political, social and economic challenges. Despite eradication being technically feasible, the program could fail and hundreds of millions of dollars be wasted unless the structures and processes to manage it are optimal. ISC has identified seven elements of effective governance – principles and broad approaches – needed to optimise success.<sup>13</sup>



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## CHANGES NEEDED

### Quarantine, surveillance

- Pre-border and at-border biosecurity needs to be strengthened to prevent any more incursions of red imported fire ants, which would put at risk the hundreds of millions of dollars spent on eradication.
- There needs to be systematic surveillance for red imported fire ants and other invasive ants in the areas of highest risk. There should be extensive community education to optimise the detection and reporting of incursions.

### Emergency responses

- Decisions on eradications should not rely on consensus decision-making, allowing a single government to stymie a national response to a serious environmental invasion.
- Eradications should be optimally funded over a sufficiently long period to optimise the chances of success.

### Governance of the eradication program

ISC has proposed these seven essential elements of effective governance for eradicating red imported fire ants:<sup>2</sup>

1. Design an effective governance approach, including by consulting stakeholders and seeking the advice of experts.

2. Ensure that the structures and processes provide robust oversight and accountability to funders, industry and the community.

3. Make sure decision-making is transparent so that stakeholders understand the rationale for decisions and can have confidence in the program.

4. Develop a comprehensive eradication plan that includes techniques, costings, assumptions, roles and responsibilities, milestones.

5. Create an independent body to ensure the program is managed effectively.

6. Involve experts from relevant fields for program design, advice and review.

7. Make sure the community and industry is meaningfully engaged in the program.

## ABOUT OUR CASE STUDIES

Our case studies illustrate the need for changes in how Australia prevents the establishment of new invasive species. They were compiled using publicly available information at the time of the last update. We would welcome new information or updates to biosecurity response for inclusion in future updates.



## CONTACT US

- Visit [invasives.org.au](http://invasives.org.au) for more information about the Invasive Species Council and to get in touch.

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## ENDNOTES

- 1 <http://www.ccfqld.com/News-page/update-from-biosecurity-qld-fire-ants-in-the-gladstone-area/>
- 2 Lowe et al. (2000)
- 3 Lowe et al. (2000)
- 4 Moloney & Vanderwoude (2002), Department of the Environment
- 5 Department of the Environment
- 6 Avant (2014), Lard et al. (2006)
- 7 Antony et al. 2009
- 8 Avant (2014), Lard et al. (2006)
- 9 Keith and Spring (2013)
- 10 Keith and Spring (2013)
- 11 Keith and Spring (2013b)
- 12 SCoPI (2013)
- 13 Invasive Species Council. 2017. Seven Essentials: Governance recommendations for the national red imported fire ant eradication program (<https://invasives.org.au/wp-content/uploads/2017/06/Seven-essentials-governance-recs-for-national-RIFA-eradication-Jun-2017.pdf>)