THE SECOND DETECTION OF RED IMPORTED FIRE ANTS *SOLENOPSIS INVICTA* (BUREN) (HYMENOPTERA: FORMICIDAE) IN NEW SOUTH WALES AND THE FIRST 200 DAYS OF RESPONSE

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Summary

Red imported fire ant (RIFA) is a pest of world distribution. RIFA has established in large tracks of south east Queensland. Previously, RIFA was detected in Sydney New South Wales (NSW) and eradicated. In November 2023, RIFA was detected on the north coast of NSW, not far from the southern boundary of the Queensland detections. Here, we describe the first 200 days of the NSW response. These included pesticide strategies, community awareness, regulation for movements of risk materials, vehicle inspections, and backward and forward tracing associated with detections. A map of detections is provided.

Key words: tramp ants, incursion, emergency response, eradication.

INTRODUCTION

International trade in food and other commodities continues to increase to supply an increasing world population (Bebber *et al*. 2014). Furthermore, the tourism industry is key to the economy for many countries. However, the dispersal of invasive ant species was linked to both trade and tourism (Early *et al*. 2016; Robinson and McNeill 2022). In Australia, all invasive ant species detections and possible responses are coordinated by the National Biosecurity Management Consultative Committee (NMBCC) and the Consultative Committee on Emergency Plant Pests (CCEPP) (see Anderson *et al*. 2017 for details).

Invasive ants are a major exotic threat for Australia (Holway *et al*. 2002; Xu *et al.* 2022). New South Wales (NSW), the most populous state, has a long history of responding to invasive ant biosecurity threats. Argentine ants *Linepithema humile* (Mayr) were detected in NSW during the 1950s but eradication was unsuccessful (Nikitin 1979). In 2004, yellow crazy ants (YCA) *Anoplolepis gracileps* (Smith) were detected at Yamba in northern NSW and eradicated (Dominiak *et al*. 2011). A second detection occurred at Lismore and eradication attempts seem to be successful (Henderson *et al*. 2025).

Red imported fire ants (RIFA) *Solenopsis invicta* (Buren) are one of the world's most notorious invasive ant species and the most notorious of the tramp ants (Lowe *et al*. 2000; Wylie *et al*. 2016). Long distance dispersal of RIFA frequently occurs via international movements of shipping containers (Stanaway *et al*. 2001; Wylie *et al*. 2020) and hence many detections occur near ports of entry. New Zealand detected three RIFA incursions, all in ports of entry and subsequently eradicated (Christian 2009). Similarly in Western Australia, RIFA was detected (2019) and eradicated (2023) in the Port of Fremantle (National Fire Ant Eradication Program 2026).

In Queensland, RIFA were detected in Port Brisbane during 2001 (Solley *et al*. 2002). Eradication was deemed worthwhile because of the potentially large adverse impacts on Australian wildlife, environment, agriculture, animal industries, infrastructure, human health and the Australian outdoors lifestyle (Wylie *et al*. 2016; Wylie and Janssen-May 2017). The National Fire Ant Eradication Program is funded by contributions from all States and Territories and started in September 2001 (Moloney and Vanderwoude 2002; McNaught *et al*. 2014). The RIFA control program in Queensland is a government-led initiative aimed at eradication. The program began in 2001 and involved a combination of treatment, surveillance, movement controls, community engagement, research, and mapping to detect and eliminate RIFA populations (Moloney and Vanderwoude 2002). However, these activities require considerable funding. By 2016, the program had spent A$330 million and eradication was not completed (Wylie and Janssen-May 2017).

After the Brisbane detection in 2001, all Australian jurisdictions conducted surveillance as part of the CCEPP response to ensure that RIFA was not present in other states. No invasive ant species were detected in NSW (Dominiak *et al*. 2005, 2007, 2010). Subsequently, the first detection of RIFA in NSW was a small colony of *S. invicta* and was detected in 2014 at Sydney (port of entry) and eradicated (Charlton *et al*. 2022). A second detection of RIFA occurred in northern NSW in 2023. Here, we report on the first 200 days of initial detections and

response of the second incursion of *S. invicta* in NSW.

THE QUEENSLAND SITUATION

In Queensland, there were seven known RIFA incursions. Two incursions occurred at Port Brisbane and Richlands in south-east Queensland in 2001 (Moloney and Vanderwoude 2002). Another incursion was discovered in Yarwun (central Queensland) in 2006 and another incursion on Port of Gladstone in 2013. All incursions were genetically distinct (Wylie *et al*. 2016). Additional detections occurred in the Port of Brisbane (2015 and 2021) and Brisbane airport (2015) (National Fire Ant Eradication Program 2026).

Kompas and Che (2001) conducted a cost-benefit analysis, which strongly favoured eradication. The National Red Imported Fire Ant Eradication Program started in September 2002 with a budget of A$123 million and over 400 staff (Wylie *et al*. 2016). Generally, the detection of a new nest triggered an additional surveillance activity out to a radius of 5 km. Nests were treated with six cycles of pesticide treatment over two years and treatments were applied to a radius of 500 m of the new nest (Wylie *et al*. 2020). The flight distance of RIFA queens was considered to be up to 2 km (Christian 2009). The average rate of RIFA spread in Australia was estimated to be 4.8 km per year (Wylie *et al*. 2020). Possible long-distance dispersal was curtailed by movement restrictions of products such as soil, hay, nursery stock, mulch, animal manure and turf out of quarantine zones unless the risk was mitigated (Wylie *et al*. 2020).

Community engagement was a vital tool in the RIFA campaign; ant infestations in the Port of Brisbane and Richlands were both reported by members of the public (McNaught *et al*. 2019). After 2013, the introduction of electronic submission of ant photographs to identification authorities increased ant submissions and the positive identification of RIFA samples in a timely manner (McNaught *et al*. 2019). Another component of the successes of eradication was the Queensland use of odour detection dogs and three handlers. Dogs had an almost 100% efficacy of detection (Wylie *et al*. 2016).

It was thought that RIFA had been present in Brisbane for at least 10 years before detection (Wylie *et al*. 2016). RIFA was declared eradicated at Yarwun in 2010 (Wylie *et al*. 2016). In Port of Brisbane, RIFA has established in over 8300 hectares and was eradicated in 2005; this was the largest recorded eradication of any invasive ant species (Wylie *et al*. 2016). RIFA was eradicated from Port of Gladstone in 2014 (Wylie and Janssen-May 2017).

At Richlands, eradication was progressing well until 2007 when many additional nests were detected (Wylie *et al*. 2016). By 2017, the Richlands movement controls covered 400 000 ha (Wylie and Janssen-May 2017).

By 2016, the Queensland program had spent A$330 million over 15 years (Wylie and Janssen-May 2017). The program was reviewed and an additional funding of A$411 million was approved for a new 10-year plan (Wylie *et al*. 2020). Six of the seven Queensland incursions were eradicated (National Fire Ant Eradication Program 2026). Unfortunately, new nests associated with the Richland outbreak continued to be detected further south. There was increased concern in NSW when RIFA were detected in Tallebudgera (Queensland) only 5.5 km north of the NSW border (Moriarty 2023a).

NSW Biosecurity Control Order 2023 was implemented to restrict the movement of risk materials into NSW (Moriarty 2023a). The NSW government committed A$95 million over the next four years to protect NSW from RIFA. A helpline (1800 680 244) was established to convey information to the public and to receive reports of possible RIFA detections by the public (Moriarty 2023a). Materials from Queensland quarantine areas such as soil, hay, fodder, mulch, manure, quarry products, turf and potted plants were subjected to restrictions. Unlawful movements of these products could result in fines of up to A$1.1 million. Fixed camera technology was used to monitor vehicle movements across the border (Moriarty 2023b).

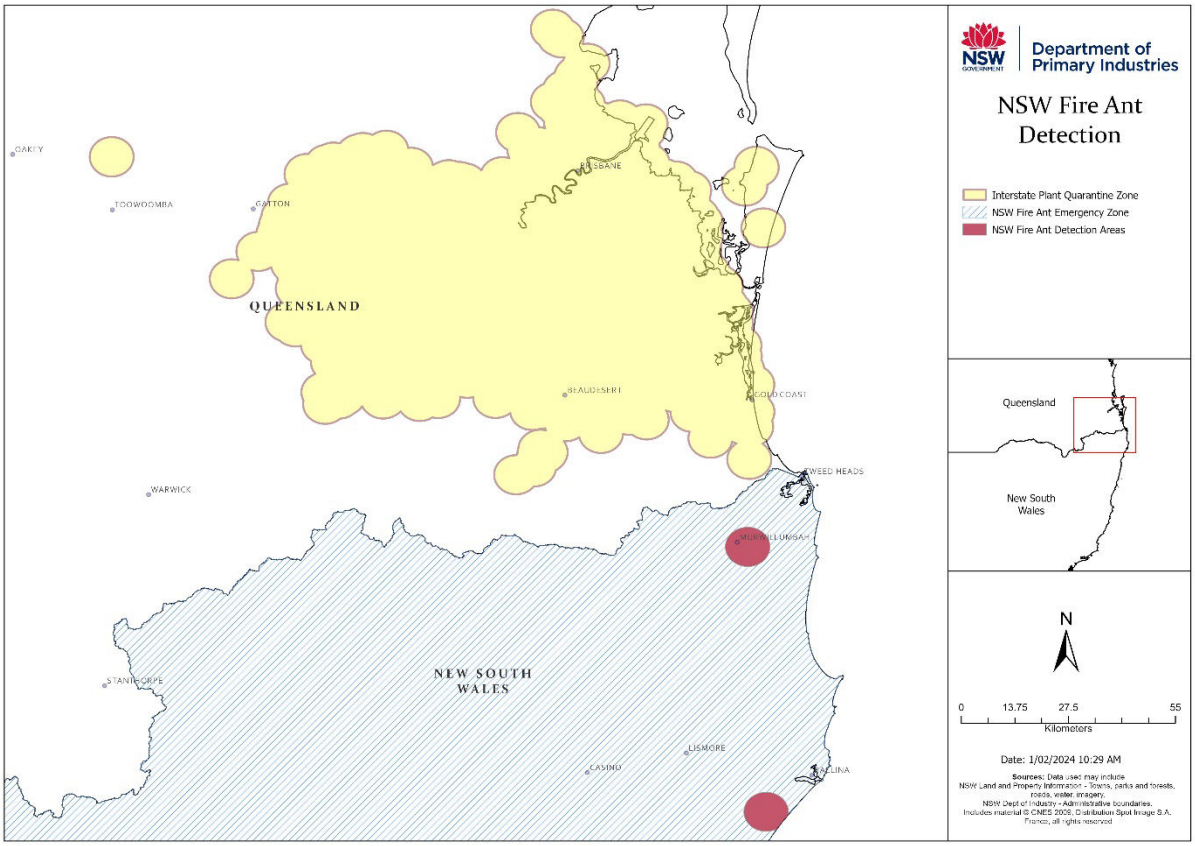
NEW SOUTH WALES DETECTION AND INITIAL RESPONSE

In November 2023, three RIFA nests were detected in Murwillumbah, 13 km south of the Queensland border (Moriety 2023c) (see Figure 1.). The ants were detected and reported by a member of the public. It is likely that ants were transported from south-east Queensland where RIFA is widespread. This was the second detection in NSW and the first in northern NSW. This detection triggered a response as part of the National Fire Ant Eradication Program, valued then at about A$600 million. The planned response had four components: eradication, control, tracing and communication (Moriarty 2023c).

A biosecurity control order was put in place with immediate effect to restrict movement of carrier materials within the surrounding 5 km. The materials that were not permitted to be moved included mulch, soil, compost, manure, growing media, hay, chaff,

silage, potted plants, turf, agricultural and earth moving equipment, grass/vegetation and clippings. Any breach of the control order carried a penalty of A$1.1 million for individuals and A$2.2 million for a corporation (Moriarty 2023c).

Figure 1. Map showing the two detections in New South Wales and the existing RIFA quarantine zones in southern Queensland, suspected of being the source of the NSW detections.



Broad-scale control of RIFA utilized insect growth regulator (IGR) baits. These baits contained pyriproxyfen or *s*-methoprene as the active ingredient, delivered in a corn grit matrix. Direct nest treatments employed fipronil, a contact insecticide. Movement control measures for RIFA carrier materials relied on bifenthrin, applied as granular or liquid formulations. A public hotline was established to facilitate community reporting of suspicious ant sightings. The five Murwillumbah nests were eradicated in late November 2023. Detection dogs were used to inspect high risk premises that were linked to materials as described in the Order.

Community engagement was a key strategy of the eradication. A community information bus was set up outside the Murwillumbah Shire Council Chamber to inform residents on how to help stop the spread of RIFA (Moriarty 2023d). Additionally, representatives of the program visited sites (3 hours per site) on 13 occasions so that the public could ask questions. Sites included hardware stores (3 occasions) and shopping centres/malls (8 occasions) with >1,500 contacts at these sites (Moriarty 2024d). The free-call hotline remained in action with over 561 calls received up to February 2024 and following investigation, none of these were determined to be RIFA (Moriarty 2024d, 2024e).

In January 2024, RIFA was detected (following a report from the general public on the hotline) in Wardell (south of Ballina), located 85 km south of the Queensland border (see figure 1) (Moriarty 2024a). Insecticides were applied to all areas within 500m of the infested site. A biosecurity control order was put in place with immediate effect to restrict the movement within the surrounding 5 km. The materials that could not be moved included mulch, soil, compost, manure, growing media, hay, chaff, silage, potted plants, turf, agricultural and earth moving equipment, grass/vegetation and clippings. Any breach of the control order carried a penalty of A$1.1 million for individuals and A$2.2 million for a corporation. The use of detection dogs continued,

and surveillance teams continued to search for other possible nests (Moriarty 2024a).

Vehicle inspections were an additional tool used to intercept high risk traffic and to educate travellers. In September 2023, NSW regulators conducted biosecurity checks on heavy vehicles crossing the border into NSW; 99 vehicles were inspected and seven were not permitted to enter NSW as they failed to comply with biosecurity requirements. In December 2023, 75 vehicles were inspected and all were compliant. In February 2024, this exercise was undertaken again with 100 vehicles being inspected with 55 vehicles originating from the RIFA infested zones in southeast Queensland. Four vehicles did not have the appropriate documentation and were not permitted to enter NSW. All vehicle operators stopped at the border were questioned about their knowledge of Biosecurity (Fire ant) Emergency Order (No 1) 2024 and most operators demonstrated their awareness and responsibilities (Moriarty 2024b). Tracing activities found that the Murwillumbah outbreak was linked to transport of turf from Queensland (Moriarty 2024c). Subsequently, any suspect imported turf had to be treated at the point of lay in NSW (Moriarty 2024b).

In May 2024, a nest was detected in Murwillumbah, where RIFA was detected in November 2023. The ants were eradicated using a direct nest injection of fipronil, followed by broadcast treatment using an insect growth regulator over 2 km to 5 km from the infested site. Two further treatments were to follow (NSWG 2024). In early March 2024, another RIFA nest was detected at Currumbin Waters in Queensland, only 1.2 km north of the border. The movement controls associated with this detection impacted a small section of NSW, particularly at Piggabeen and Cobaki (Moriarty 2024e).

DISCUSSION

Invasive ants are not new to Australia and the immediate region. On Christmas Island, YCA caused a decline in populations of the red crab (*Gecarcoidea natalis* Pocock), adversely impacting the forest ecosystem (O'Dowd *et al*. 1999; Stork *et al*. 2014). The red crabs play a pivotal role as they reside in forests eating the leaf litter on the forest floor (Baumgartner and Ryan 2020) and the declining red crab populations resulted in an accumulation of litter and adversely impacted ecosystem dynamics (Davis *et al*. 2008; Baumgartner and Ryan 2020). On the Australian mainland, YCA was first detected in northeast Arnhem Land in 1982 and spread across 2500 km^2 (Majer 1984; Young *et al*. 2001). In eastern Australia, YCA were detected at Goodwood Island, Yamba on the north coast NSW and eradicated (Dominiak *et al*. 2011). A second incursion was detected at Lismore and eradication appears to be successful (Henderson *et al*. 2025).

In Australia, RIFA was first detected in 2001 in southern Queensland. However, the area infested was relatively large and eradication would take time and considerable resources. RIFA can be eradicated if the incursion is detected early (Wylie *et al*. 2020). Three previous isolated RIFA incursions were eradicated in Queensland and one in NSW (Wylie *et al*. 2016, Charlton *et al*. 2022). Therefore, NSW responded quickly to delimit the establishment in northern NSW and develop an eradication program. Human assisted movement occurs via the movement of infested materials such as soil, mulch, hay, and machinery (Moloney and Vanderwoude 2002). Similarly, YCA was moved to Yamba, NSW, via infested timber (Dominiak *et al*. 2011).

For NSW, RIFA originated from Queensland. Possibly, infested materials such as hay, turf or mulch translocated RIFA into NSW (Moloney and Vanderwoude 2002; Scanlan and Vanderwoude 2006). Alternatively, under certain conditions, dispersal by flight and budding occurs (Scanlan and Vanderwoude 2006) although this is considered unlikely in the NSW scenario. Newly mated queens can disperse up to 5 km from the parent nest through flight (Vogt *et al*. 2000) although most queens settle within 1.6 km (Markin *et al*. 1971).

At the 200-day point (11 June 2024) after the first Murwillumbah detection, no new RIFA nests were detected. The NSW authorities remain optimistic that the NSW incursions were eradicated. However, authorities remain on alert for new detections from southeastern Queensland by natural dispersal and by human assisted means.

ACKNOWLEDGEMENTS

Many people were involved in the early detection and identification of RIFA and are thanked for their activities. The response team included Scott Charlton, Elissa van Oosterhout, Pauline Lenacker, and Ian Turnbull. Microsoft Copilot was used in the formulation of some text. This text was reviewed and amended, and appropriate references sourced from Google Scholar or from stored libraries of the authors. Aphrika Gregson and Kathy Goulding reviewed a pre-submission version of the manuscript. One anonymous journal reviewer further improved the manuscript.

Conflict of interest statement

The authors declare no conflicts of interest.

Data availability statement

The data may be made available by application to the lead author.

REFERENCES

Anderson, C., Low-Choy, S., Whittle, P., Taylor, S., Gambley, C., Smith, L., Gillespie, P., Locker, H., Davis, R. and Dominiak, B. (2017). Australian plant biosecurity surveillance systems. *Crop Protection* **100**: 8-20.

Baumgartner, N.R. and Ryan, S.D. (2020). Interaction of red crabs with yellow crazy ants during migration on Christmas Island. *Mathematical Biosciences* **330**: 108486.

Bebber, P.D., Holmes, T., Smith, D. and Gurr, S.J. (2014). Economic and physical determinants of the global distributions of crop pests and pathogens. *New Phytologist* **202**: 901-910.

Charlton, S., Henderson, R., Sergeant, E.S.G., Worsley, P. and Dominiak, B.C. (2022). Declaring Sydney free from red imported fire ants *Solenopsis invicta* Buren – a view from the branches of the scenario tree. *International Journal of Tropical Insect Science* **42**: 1205-1214.

Christian, S. (2009). Red imported fire ants eradicated from Napier. *New Zealand Biosecurity* **92**: 28-29.

Davis, N.E., O'Dowd, D.J., Green, P.T. and MacNally, R. (2008). Effects of an alien ant invasion on abundance, behaviour, and reproductive success of endemic island birds. *Conservation Biology* **22**: 1165–1176.

Dominiak, B.C., Gillespie, P.S., Kerr, M., Kelly, E.J. and Wassell, G. (2005). The search for Red Imported Fire Ants *Solenopsis invicta* Burren (Hymenoptera: Formicidae) in New South Wales. *General and Applied Entomology* **34**: 23-27.

Dominiak, B.C., Gillespie, P.S., Kerr, M., Kelly, E.J. and McLennan, R. (2007). Search for Red Imported Fire Ants *Solenopsis invicta* Burren (Hymenoptera: Formicidae) in New South Wales, Australia during 2003/2004. *Plant Protection Quarterly* **22**: 14-16.

Dominiak, B.C., Worsley, P., Gillespie, P.S., Loecker, H., Kerr, M. and Shattuck, S.O. (2010). Search for Red Imported Fire Ants *Solenopsis invicta* Burren in New South Wales from 2004-2006. *Plant Protection Quarterly* **25**: 15-18.

Dominiak, B.C., Gott, K., McIver, D., Grant, T., Gillespie, P.S., Worsley, P., Clift, A. and Sergeant, E.S.G. (2011). Scenario tree analysis of zero detections and the eradication of yellow crazy ant (*Anoplepis gracilipes* (Smith)), in New South Wales, Australia. *Plant Protection Quarterly* **26**: 124-129.

Early, R., Bradley, B., Dukes, J., Lawler, J.J., Olden, J.D., Blumenthal, D.M., Gonzalez, P., Groholz, E.D., Ibanez, I., Miller, L.P., Sorte, C.J.B. and Tatem, A.J. (2016). Global threats from invasive alien species in the twenty-first century and national response capacities. *Nature Communications* **7**: e12485.

Henderson, R., Charlton, S., Fraser, C., Moloney, B., Sergeant, E.S.G. and Dominiak, B.C. (2025). Eradication of yellow crazy ants, *Anoplolepis gracileps* Smith, from Lismore and the statistical proof of freedom using scenario tree analysis. *Insects* **16**: 117.

Holway, D., Lach, L., Suarez, A., Tsutsui, N. and Case, T. (2002). The causes and consequences of invasive ant invasions. *Annual Review of Ecology, Evolution, and Systematics* **33**: 181-233.

Kompas, T. and Che, N. (2001). An economic assessment of the costs of Red Imported Fire Ants in Australia. Consultancy Report to Queensland Department of Primary Industries, Australian Bureau of Agricultural and Resource Economics, Canberra.

Lowe, S., Browne, M., Boudjelas, S. and de Poorter, M. (2000). 100 of the World's Worst Invasive Alien Species. A selection from the Global Invasive Species Database. University of Auckland, Hollands Printing Ltd.

McNaught, M.K., Wylie, F.R., Harris, E.J., Alston, C.L., Burwell, C.J. and Jennings, C. (2014). Effect of broadcast baiting on abundance patterns of red imported fire ants (Hymenoptera: Formicidae) and key local ant genera at long-term monitoring sites in Brisbane, Australia. *Journal of Economic Entomology* **107**: 1307-1315.

McNaught, M.K., Wylie, R. and Bell, R. (2019). Join the ant hunt: how accurately can the public recognise red imported fire ant *Solenopsis Invicta* (Hymenoptera: Formicidae) in Australia? *Austral Entomology* **58**: 745-752.

Majer, J. (1984). Recolonisation by ants in rehabilitated open-cut mines in Northern Australia. *Reclamation and Revegetation Review* **2**: 279-298.

Markin, G.P., Dillier, J.H., Hill, S.O., Blum, M.S. and Hermann, H.R. (1971). Nuptial flight and flight ranges of the imported fire ant, *Solenopsis saevissima richteri* (Hymenoptera: Formicidae). *Journal of the Georgia Entomological Society* **6**: 145–156.

Moloney, S. and Vanderwoude, C. (2002). Red imported fire ants: a threat to eastern Australia's wildlife. *Ecological Management & Restoration* **3**: 167-175.

Moriarty, T. (2023a). NSW takes immediate action against fire ants. Press Release 23 July 2023.

Moriarty, T. (2023b). Fire ant biosecurity ramps up to protect NSW border. Press Release 16 August 2023.

Moriarty, T. (2023c). NSW Government responds to detection of Red Imported Fire ants in northern NSW. Press Release 25 November 2023.

Moriarty, T. (2023d). Red imported fire ants in South Murwillumbah. Press Release 28 November 2023.

Moriarty, T. (2024a). Fire ants site destroyed and biosecurity control order in place. Press Release 20 January 2024.

Moriarty, T. (2024b). NSW Government's Operation Victa stops fire ants at the border. Press Release 7 February 2024.

Moriarty, T. (2024c). Continued action on imported red fire ant's threat. Press Release 20 February 2024.

Moriarty, T. (2024d). Keeping fire ants front on mind in Northern Rivers. Press Release 27 February 2024.

Moriarty, T. (2024e). Qld Currumbin Waters fire ant detection a reminder to remain vigilant across the border. Press Release 8 March 2024.

National Fire Ant Eradication (2026). https://www.fireants.org.au/stop/how-fire-ants-arrived-in-australia. Accessed 30 May 2026.

Nikitin, M.I. (1979). Geographical distribution of three species of small ants common in New South Wales. *Australian Entomologist* **5**: 100-103.

NSWG (New South Wales Government) (2023). Red Imported Fire Ants (*Solenopsis Invicta*) https://www.dpi.nsw.gov.au/dpi/bfs/insect-pests/rifa#:~:text=Use%20the%20online%20form%20for,or%20call%201800%20680%20244. Accessed 11 March 2025.

NSWG (New South Wales Government) (2024). Update – fire ants in south Murwillumbah. Press Release 9 May 2024.

NSWG (New South Wales Government) (2025). Rules for moving products. https://www.dpi.nsw.gov.au/dpi/bfs/insect-pests/rifa/rules-for-moving-products-into-nsw (accessed 11 March 2025).

O'Dowd, D.J., Green, P.T. and Lake, P.S. (1999). Status, impact and recommendations for research and management of exotic invasive ants in Christmas Island National Park, Darwin, NT. Environ Aust 50 pp.

Robinson, A.P. and McNeill, M.R. (2022). Biosecurity and post-arrival pathways in New Zealand: relating alien organism detections to tourism indicators. *NeoBiota* **71**: 51-69.

Scanlan, J.C. and Vanderwoude, C. (2006). Modelling the potential spread of *Solenopsis Invicta* Buren (Hymenoptera: Formicidae) (red imported fire ant) in Australia. *Australian Journal of Entomology* **45**: 1-9.

Solley, G.O., Vanderwoude, C. and Knight, G. (2002). Anaphylaxis due to Red Imported Fire Ant sting. *Medical Journal of Australia* **176**: 521-523.

Stanaway, M.A., Zalucki, M., Gillespie, P.S., Rodriguez, C.M. and Maynard, G.V. (2001). Pest risk assessments of insects in sea cargo containers. *Australian Journal of Entomology* **40**: 180-192.

Stork, N.E., Kitching, R.L., Davis, N.E. and Abbott, K.L. (2014). The impact of aerial baiting for control of the yellow crazy ant, *Anoplolepis gracilipes*, on canopy-dwelling arthropods and selected vertebrates on Christmas Island (Indian Ocean). *Raffles Bulletin of Zoology* Supplement No.30, 81-92.

Vogt, J.T., Appel, A.G. and West, M.S. (2000). Flight energetics and dispersal capability of the fire ant, *Solenopsis invicta* Buren. *Journal of Insect Physiology* **46**: 697–707.

Wylie, R., Jennings, C., McNaught, M.K., Oakey, J. and Harris, E.J. (2016). Eradication of two incursions of the red imported fire ant in Queensland, Australia. *Ecological Management & Restoration* **17**: 22-32.

Wylie, F.R. and Janssen-May, S. (2017). Red imported fire ant in Australia: what if we lose the war? *Ecological Management & Restoration* **18**: 32-44.

Wylie, R., Yang, C-C. S. and Tsuji, K. (2020). Invader at the gate: the status of red imported fire ant in Australia and Asia. *Ecological Research* **35**: 6-16.

Xu, Y., Vargo, E.L., Tsuji, K. and Wylie, R. (2022). Exotic ants of the Asia-Pacific: invasion, national response, and ongoing needs. *Annual Review of Entomology* **67**:27-42.

Young, G.R., Bellis, G.A., Brown, G.R. and Smith, E.S.C. (2001). The crazy ant *Anoplolepis granilipes* (Smith) (Hymenoptera, Formicidae) in East Arnhem Land, Australia. *Australian Entomologist* **28**: 97-104.