

**Pest Risk Assessment for the State of Oregon**  
***Solenopsis invicta* – Red Imported Fire Ant**

**Pest Identity**

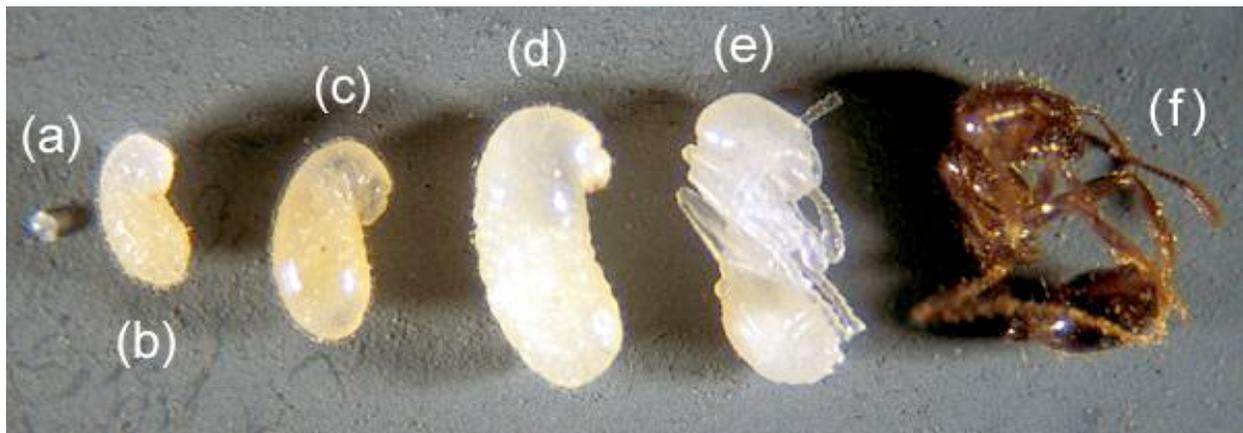
**Scientific Name:** *Solenopsis invicta* Buren 1972  
**Order:** Hymenoptera  
**Family:** Formicidae  
**Common Name:** Red Imported Fire Ant (RIFA)

**Risk Rating Summary**

**Relative Risk Rating: High**  
**Numerical Score: 14 (maximum 20)**  
**Uncertainty: Medium**

**Pest Background**

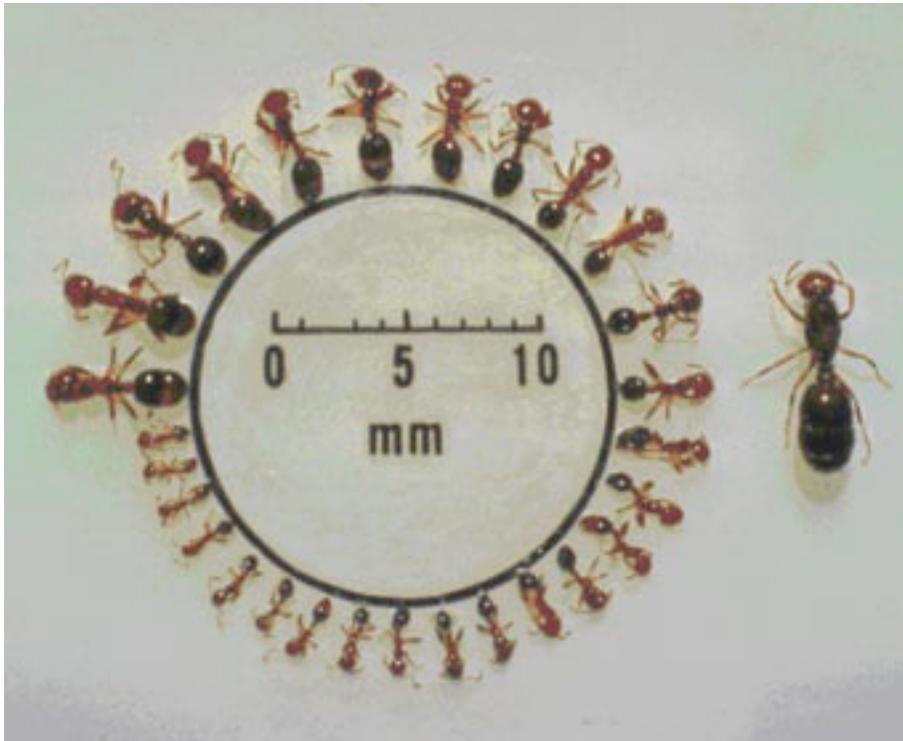
The Red Imported Fire Ant (RIFA), *Solenopsis invicta* (Hymenoptera, Formicidae) is a native South American ant species, which was accidentally introduced into the US in the 1930s at the Port of Mobile, Alabama. RIFA is considered one of the 100 world's worst invasive species and it can easily be transported throughout the world. In suitable habitats, RIFA can become the dominant species due to its aggressive foraging behavior and high reproductive rate with adverse impacts on the native fauna and ecosystems. Its sting can be very painful and may cause an anaphylactic reaction in some people.



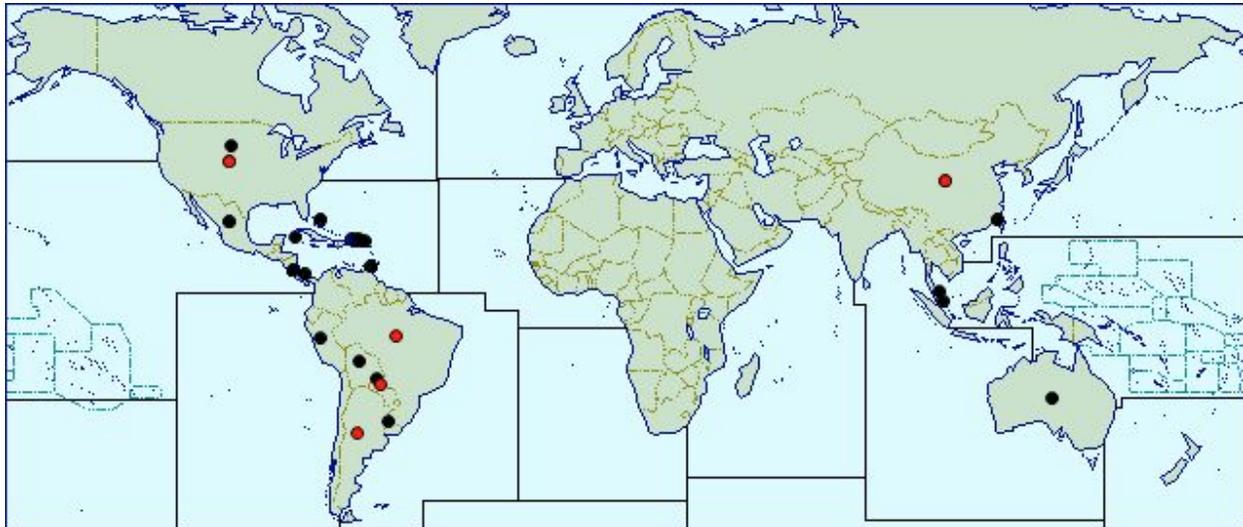
**Fig. 1:** *Solenopsis invicta*, Red Imported Fire Ant : development of worker ant from egg (a), larval stages (b-d), pupa (e), and adult (f) (Taken from Bastiaan M. Drees, Texas A&M University)

Outside its native range RIFA is widely distributed in the southeastern US, with limited infestations in Arizona, Oklahoma, Tennessee, New Mexico and California, in several Caribbean island countries, Australia, New Zealand, Philippines, Taiwan, Hong Kong, and southern China.

RIFA has polymorphic wingless workers that are dark reddish-brown with black abdomens and range from 1.5 to 5mm in length. The worker ants build up the colony, care for the queen and brood, and provide food and defend the colony. The sexual females are reddish-brown, and the sexual males are shiny and black with a smaller head. The sexuals or winged reproductive ants stay in the colony until the correct conditions exist for their nuptial flight. The queen ants are mated female reproductives. The nests can be polygynous, having more than one reproductive queen.



**Fig. 2:** Red Imported Fire Ant size range – queen far right (photo: University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS)).



**Fig. 3:** Distribution of *Solenopsis invicta*, Red Imported Fire Ant, (Taken from CABI, 2011)

- = Present, no further details
- = Widespread
- = Localized
- = Confined and subject to quarantine
- = Occasional or few reports
- = Evidence of pathogen
- = Last reported...
- = Presence unconfirmed

**Spread Potential to Oregon: High (numerical score 4 out of 5)**

**Justification**

RIFA is currently widespread in the following southeastern states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, and

Texas and has limited infestations in Arizona, California, New Mexico, Oklahoma, Tennessee, and Virginia.

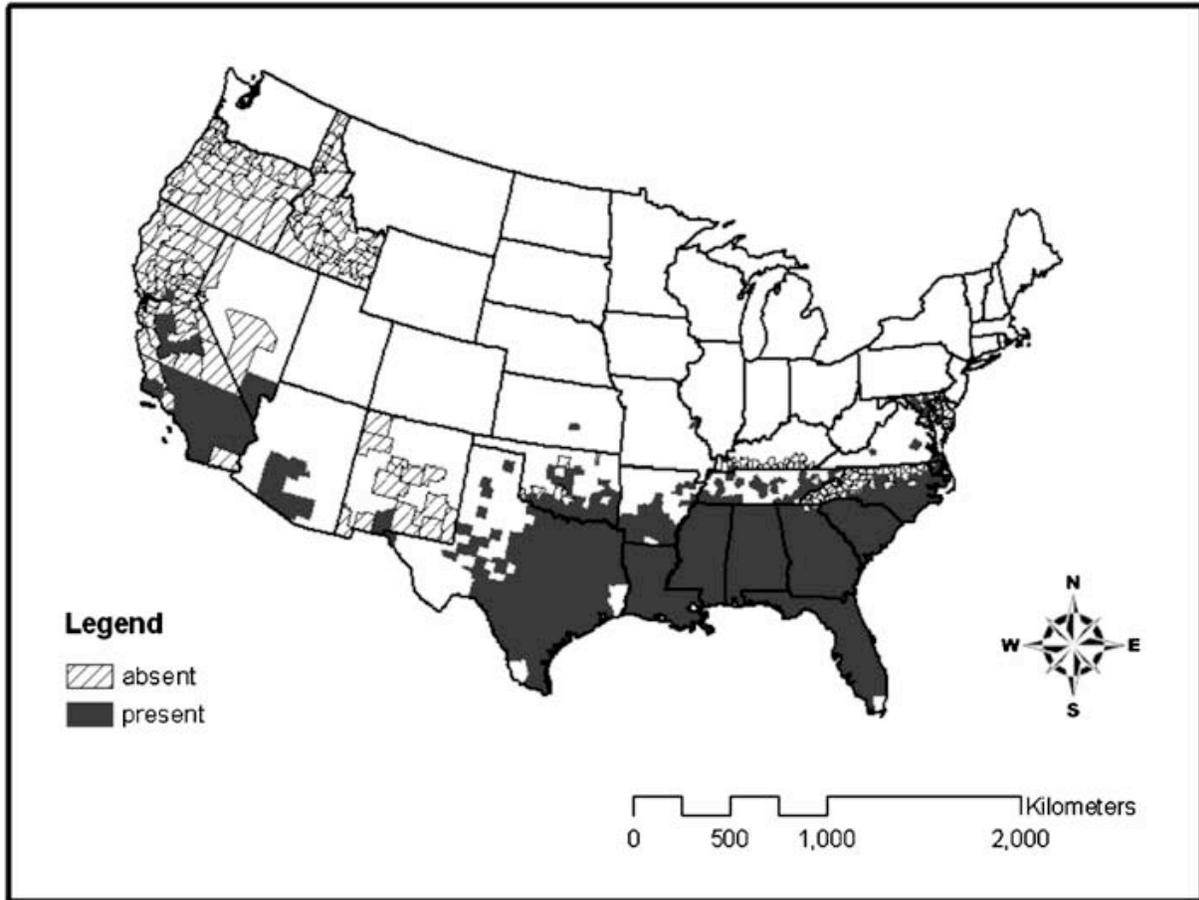
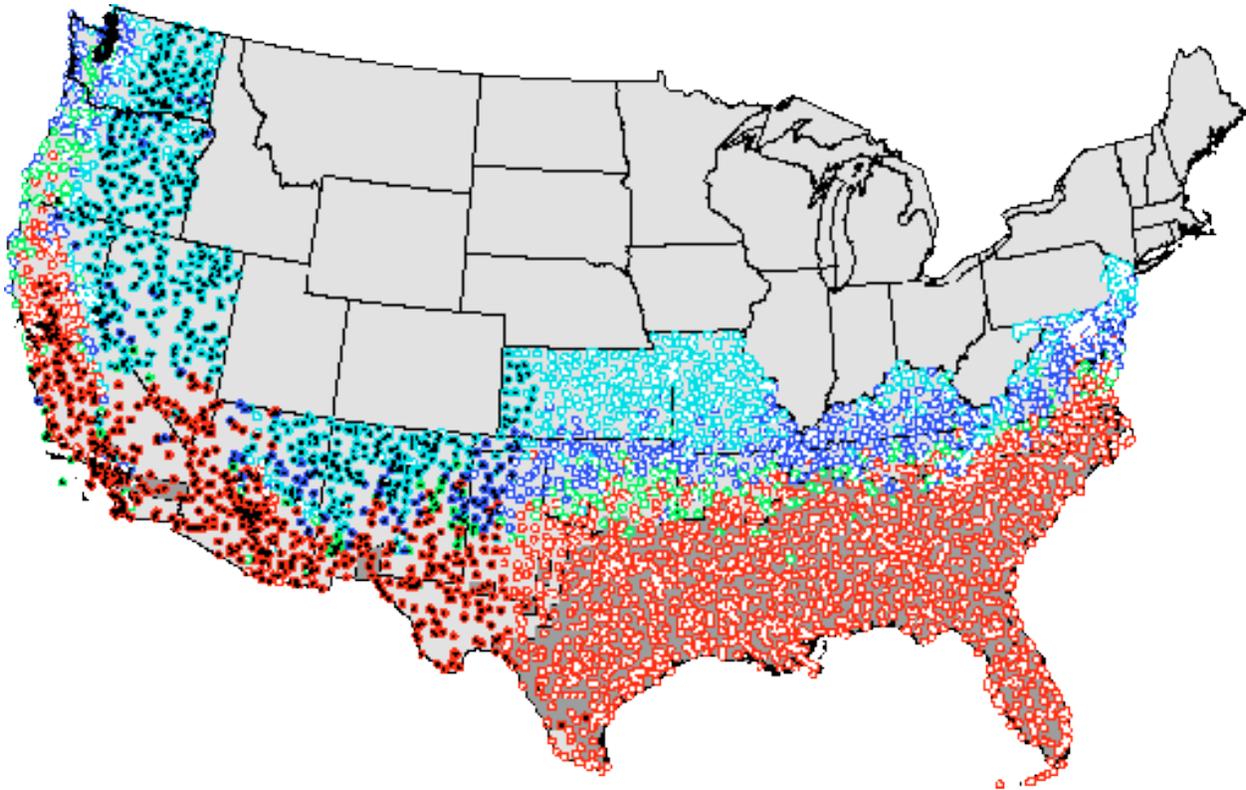


Fig. 4: *Solenopsis invicta* distribution within the contiguous United States from 1960 to 2001 (Christian Ulrichs & Keith R. Hopper, 2007)

It is likely that RIFA can be introduced into Oregon through human activities, such as shipment of infested articles such as nursery material (potting media), agricultural material (plants, crops, soils, equipment from infested areas), aqua cultural material, forestry material (machinery, soil, or plant material), and apicultural material (bee hives). In 1992, a railroad boxcar was intercepted in Salem, which contained RIFA. The car was treated and the ants were eradicated.



**Fig. 5:** Potential United States range expansion of the invasive fire ant (USDA ARS and University of Arkansas, 2008)

### **Establishment Potential in Oregon: Medium (numerical score 3 out of 5)**

#### **Justification**

Although RIFA is considered a “hot climate specialist” that mainly inhabits hot arid areas, it may easily survive inside buildings, greenhouses, power stations, zoos, and other structures offering warmer conditions. The USDA Agricultural Research Service (ARS) established a potential distribution map based on climate data and current northernmost distribution of RIFA indicating that RIFA can establish in western Oregon. Increasing global temperatures will likely allow RIFA to extend its potential area of distribution further to the north. The current distribution of RIFA is a good indication of the potential range of RIFA, however, RIFA is still spreading rapidly and its spread seems to have sped up in the last decade. In addition, RIFA has been shown to survive cold winter temperatures in northern mountainous areas in Georgia by hunkering deep in the ground to escape freezing temperatures.

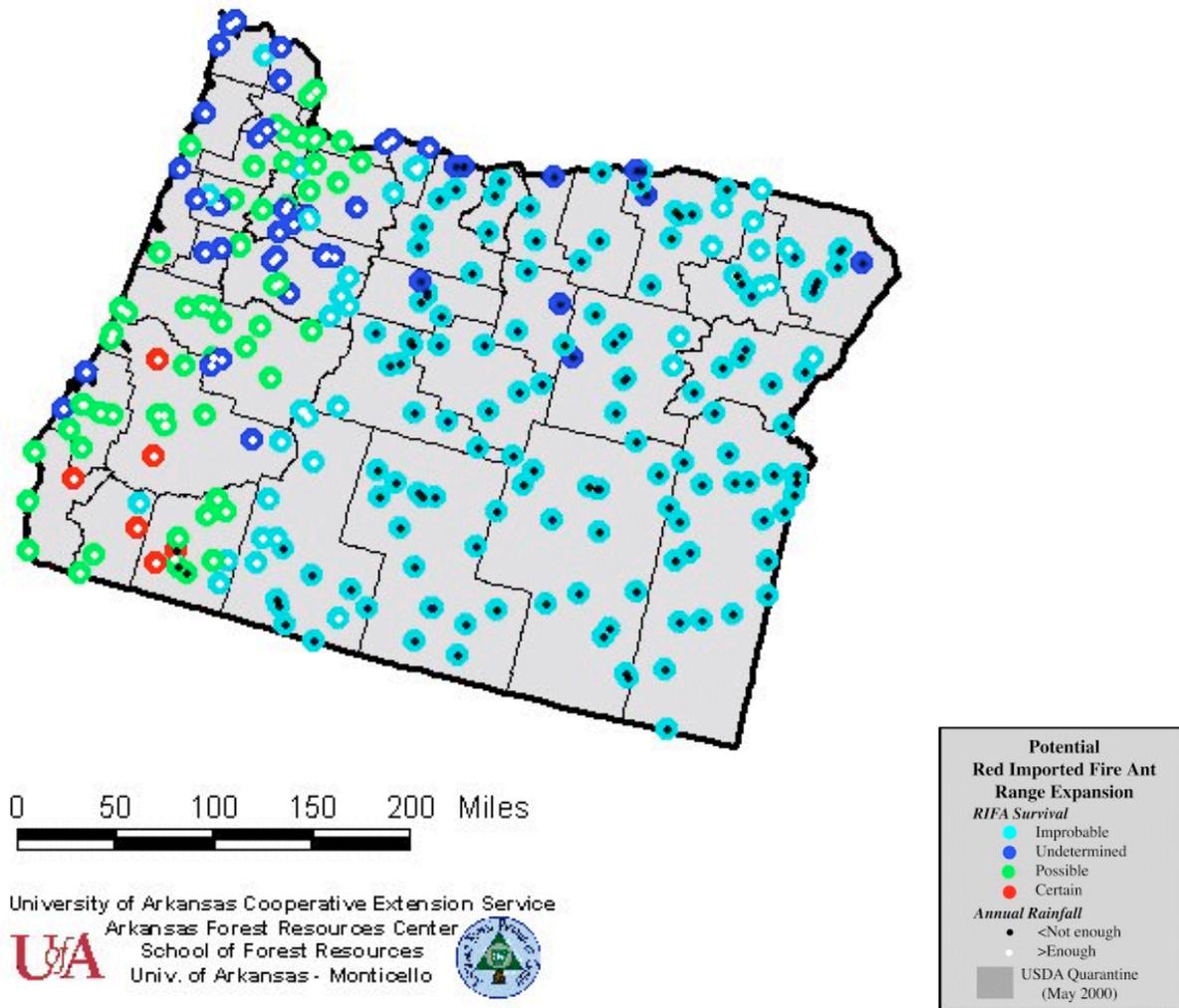


Fig. 6: Predicted distribution of RIFA in Oregon (USDA ARS and University of Arkansas, 2008).

**Environmental Impact Potential to Oregon: Medium (numerical score 3 out of 5)**

**Justification**

RIFA is omnivorous and will feed on a wide range of plant and animal material. It is also an aggressive predator with major adverse impacts on ground active and nesting animals, including native bees, amphibians, reptiles, birds, and small mammals. RIFA’s aggressive foraging behavior may make it the dominant species in open and disturbed ecosystems potentially reducing the biodiversity among other invertebrates. Its aggressive predation may enhance or decrease plant survival by reducing plant pest species and reducing beneficial insects, respectively. RIFA is also known to interfere with seed dispersal of plants, feeding on seeds and leaving them exposed on the soil surface.

**Economic Impact Potential to Oregon: High (numerical score 4 out of 5)**

**Justification**

Red imported fire ants are reported to directly damage various crops, such as tomato, potato, corn, and sunflowers by feeding on the seeds, seedlings and developing fruit. RIFA can increase the presence of plant sucking pests, such as aphids, scale insects, and mealybugs by protecting them and feeding on the sugary honeydew produced by these Homopteran pests.

RIFA can also cause losses for the livestock industry and field crop production (through damage to mechanized cutting and harvesting equipment and irrigation systems). In addition, they can cause damage to electrical equipment (air conditioners, traffic box switching mechanisms, power transfer stations). RIFA is reported to attack livestock, such as horses, cattle, sheep, and poultry.



**Fig. 7:** Pustule formation as a result of Red Imported Fire Ant stings (photo by Murray S. Blum, University of Georgia, Bugwood.org).

However, probably the most serious impact from RIFA is on human health. An estimated 40,000 people seek medical attention every year for RIFA stings. In some severe cases hospitalization is required and allergic reactions (anaphylaxis) may result in death. Permanent scarring can result from RIFA stings.

The economic impact of RIFA on humans, agriculture, and wildlife in the US is estimated to amount to several billion dollars per year.

### **Conclusion**

Considering the widespread distribution in the US, its presence in California, its easy spread through human activities, and its high potential of establishment in western Oregon, RIFA is considered a high-risk invasive pest species for Oregon.

### **Literature consulted**

**Crop Protection Compendium. 2011.** CAB International 2011. Internet search: <http://www.cabi.org/cpc/?compid=1&dsid=50569&loadmodule=datasheet&page=868&site=161>

- Ulrichs C. & K. R. Hopper. 2007.** Predicting insect distributions from climate and habitat data. BioControl.
- Noordik J. 2010.** A risk analysis for fire ants in The Netherlands. European Invertebrate Survey, Nederland. November 2010.
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