



Control of the Invasive Yellow Crazy Ant (*Anoplolepis gracilipes*) on Christmas Island, Indian Ocean.

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The exotic invasive yellow crazy ant *Anoplolepis gracilipes*, listed by the IUCN as one of the world's worst 100 invasive species, arrived on Christmas Island some 70 years ago. In 1995, it commenced a population explosion, forming 'supercolonies' which in a few years spread to 2800 ha (27%) of the island's rainforest.

Christmas Island supports a wide range of unique and unusual species and habitats, including at least 119 species found nowhere else. It supports the largest and most diverse land crab community in the world.

The rapid spread of supercolonies on Christmas Island led to catastrophic impacts, including the killing of ~20 million red crabs (~30% of the entire population). By eliminating red crabs, crazy ants altered the recruitment dynamics of rainforest vegetation, decreased litter decomposition rates and quickly changed the forest structure and composition. Mutualism between crazy ants and scale insects also caused scale insect outbreaks and dieback of the forest canopy. Many endemic land crabs, mammals, birds and reptiles suffered increased predation, habitat alteration and resource depletion. These included species already listed as vulnerable and endangered and others recommended for listing under the EPBC Act. Prior to the aerial baiting program, two Ramsar wetland sites were located within crazy ant supercolonies. Decimation of crab populations also facilitated the invasion of rainforest by the giant African land snail and weeds.

In 1999, Parks Australia and Monash University initiated a collaborative research and control program to combat the crazy ant invasion. In the early stages of the partnership, a steering committee was established that provides strategic oversight of the program. They worked closely with the Island Community, WA Department of Agriculture, Animal Control Technologies (a leading Australian environmental pest management company) and Bayer Crop Science, to develop an effective method of baiting ants. The initial challenge was to find a bait attractive to the ants but not harmful to other animals such as birds, reptiles or humans.

Key outcomes of this cooperative effort up until early 2002 included refinement of an effective bait and delivery system, a better understanding of the dynamics of the crazy ant and its relationship with scale, an understanding of the seriousness of the impacts and threats of the crazy ant, the successful hand treatment of 370 ha of ant-invaded forest, and an understanding of potential non-target impacts of baiting.

The next step was to modify the bait to suit aerial spreading technology. Trial helicopter aerial dispersal was undertaken to establish any disturbance to birds, penetration of the tree canopy and the concentration required (targeting was extremely accurate using GPS and CI GIS).

The aerial baiting program was carried out in September 2002, dropping some 11 tones of bait over 2,153 ha. To mitigate the potential impacts of bait on robber (coconut) crabs, food-lures were helicopter dropped, and effectively drew the robber crabs away from baited areas (the crazy ants consumed most of the bait in a very short period of time).

Studies across 44 ant-infested sites showed that aerial baiting was highly successful. Within weeks, crazy ant activity declined by an average of 99% across all sites, and the area of ant-infested forest was reduced by 95%. A few small infestations, located after the aerial baiting campaign, have now been treated.

Monitoring of crazy ant populations and supercolony formation will continue, with hand baiting as required.

