

FIRST AND SUCCESSFUL RELEASE OF A BIO-CONTROL PATHOGEN AGENT TO COMBAT THE INVASIVE ALIEN TREE *MICONIA CALVESENS* (MELASTOMATACEAE) IN TAHITI

The tropical high volcanic islands of Polynesia in the Pacific Ocean are famous for their unique biodiversity, but also for their vulnerability to biological invasion by alien species. In particular, the native wet forests of Hawai'i and French Polynesia are threatened by a common invasive alien tree, *Miconia calvenscens* DC. (Melastomataceae). Because conventional manual and chemical control methods have shown their limits in heavily invaded islands, such as in Tahiti and Moorea (more than 80,000 and 2,000ha respectively) where *M. calvenscens* is forming dense mono-specific stands on steep, mountainous slopes (up to 1,300m elevation), biological control is viewed as the only alternative.

For more than a century, the State of Hawai'i Department of Agriculture (HDOA) has utilised classical biological control against harmful alien insects and weeds. Since 1991, the HDOA has operated a pathogen containment facility, one of only two high risk quarantine facilities in the United States that are permitted to do research on non-indigenous plant pathogens or diseases. In 1997, a three-year collaborative agreement was signed between HDOA and the Government of French Polynesia for a common bio-control programme against the invasive weed *M. calvenscens*. The main stages of this research program were:

- propagating *M. calvenscens* in controlled conditions (temperature, humidity) in a greenhouse;
- searching for *M. calvenscens*' natural enemies (diseases, leaf-feeding and stem-boring insects) in its native range of Central and South America, in collaboration with the University of Hawai'i and the Universidade de Viscosa, Brazil;
- conducting efficiency tests to insure that they are able to kill *M. calvenscens*;
- conducting host-specificity tests to insure that they have an impact on *M. calvenscens* only.

A plant pathogen discovered in Brazil, *Colletotrichum gloeosporioides* f. sp. *miconiae* has successfully met all these requirements (Killgore *et al.* 1999). This fungus causes anthracnosis and defoliation of seedlings and young plants of *M. calvenscens* in the laboratory. Host-specificity tests were conducted on 28 different plant species in the botanical order Myrtales (species from the families Combretaceae, Lythraceae, Melastomataceae, Myrtaceae, and Thymelaceae) including French Polynesian endemic plant species. Repeated tests confirmed that the plant pathogen attacks *M. calvenscens* only. In June 1997, the U.S. Department of Agriculture and the U.S. Dept. of Interior, Fish and Wildlife Service gave

their approval to release the plant pathogen in two test-zones in Maui and Hawai'i (Hawai'ian Islands). Two years after its introduction, all the inoculated *M. calvenscens* plants were defoliated and the pathogen has spread on surrounding plants without human intervention. In April 2000, following the approval of the Advisory Plant Protection Committee and the Ministers Council of the French Polynesian Government, the bio-control pathogen agent was released on a test-zone in Tahiti. Three weeks after release on the Taravao plateau, 97% of the inoculated *M. calvenscens* plants developed leafspots. Post-release monitoring is underway to measure the impact and dispersal rate of this plant pathogen. This fungal pathogen will be effective in areas of high rainfall. Although *C. g. miconiae* can kill young *M. calvenscens* plants and seedlings, its impact on mature trees is not known. This biological control agent, however, represents the only hope to control *M. calvenscens* in heavily populated areas in French Polynesia.

The release of *C.g. miconiae* in French Polynesia is the first biological control fungus to be used in the war against an invasive plant species in natural ecosystems, *i.e.* to protect the native biodiversity. Between 40 and 50 endemic plant species are directly threatened by *M. calvenscens* on Tahiti, some of which are on the verge of extinction.

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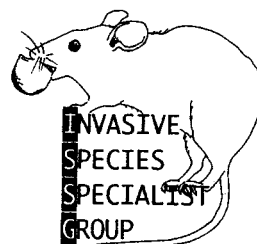
Main references:

Killgore, E. M., L. S. Sugiyama, R. W. Baretto & D. E. Gardner (1999). *Evaluation of Colletotrichum gloeosporioides* for biological control of *Miconia calvenscens* in Hawai'i. *Plant Disease* 83(10) : 964.

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MESSAGE FROM THE ISSG CHAIR

The ISSG continues to grow and flourish, thanks to the work of many of its members and of our core staff at the ISSG office in Auckland. Here I would especially like to acknowledge the work of Sarah Lowe, who left us recently. She worked for ISSG for over 5 years and saw it grow from an embryonic organisation to its current state. Sarah was the first coordinator of the ISSG network and was instrumental in its growth and development. Among many other things, she ran the membership network, edited the first copies of *Aliens*, and helped to draft the first version of the IUCN Invasives Guidelines. More recently she successfully managed the production of the prototype global database of invasive species for the Global Invasive Species Programme (GISP), still based in the ISSG office. Sarah is a multi-skilled person and we are lucky to have held onto her for so long! She is now embarking on a course of postgraduate study in marine biology at the University of North Queensland. She will remain in close contact with ISSG, but we will miss her greatly and wish her all the best for her future as a marine biologist.

Following Sarah's departure, Michael Browne has stepped in as our database manager and has hit the ground running, with recent trips to Cape Town (South Africa) to help report on database developments (see below) and Europe to liaise with the Species Information Service of the SSC.

Other recent changes within ISSG are the formal appointment of three Regional Section Leaders. These are Dr Faith Campbell (North America), Dr Piero Genovesi (Europe) and Dr Nirmalie Pallewatta (South Asia). These people will provide focus and leadership for ISSG activities in their region. As we progress and expand our membership in other regions, I hope to appoint more regional leaders.

The ISSG was well-represented at the Global Invasive Species Programme (GISP) meeting in Cape Town in September 2000. Maj De Poorter, Sarah Lowe, Michael Browne and I were all there, along with several ISSG members. The outputs of the meeting will be a published synthesis of the first phase of GISP and our prototype global invasive species database, which is already available online at www.issg.org/database. Several documents will be presented at the next meeting of the CBD's Subsidiary Body (SBSTTA) in March 2001, and the next issue of *Aliens* will provide substantial coverage of these.

I also attended the World Conservation Congress (WCC) in Amman, Jordan in October 2000 and presented a report on the work of ISSG, focusing on our database work for GISP. The Resolution and Recommendation that were agreed by the WCC are reproduced in this issue.

At the end of 2000, ISSG produced a publicity booklet on "100 of the World's Worst Invasive Alien Species", which was funded by the TOTAL Foundation and is intended to raise awareness of the global impacts of invasive species on

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