Celebrating BITS Mentors

Professor Angela Fields

Professor Angela Fields, on staff at the University of the West Indies (UWI) since 1996, is a passionate biologist. She and her graduate students study a range of curious organisms that live hidden in plant debris. Snails, slugs, centipedes… What do they eat? How do they mate? How many eggs do they lay, anyway?

Trained as a marine biologist, with expertise in marine molluscs, Prof. Fields switched her focus to the terrestrial molluscs of the Lesser Antilles just prior to the invasion of the Giant African Snail (GAS) into the English-speaking Lesser Antilles Islands. Since 2000, she has travelled to many countries in this region. Initially, with her graduate student Neerupa Ramnath, she documented the malacofauna of Dominica, St. Vincent, St. Lucia, and Grenada. Later, as technical expert for FAO (Food and Agriculture Organization of the United Nations) and IICA (Inter-American Institute for Cooperation in Agriculture) and accompanied by colleague Dr. David Robinson (USDA/APHIS), Prof. Fields surveyed other islands for the presence of GAS and gave presentations on GAS to these islanders. She and Dr. Robinson produced updates on molluscan biodiversity in the islands in the form of technical reports that were made available to Ministries of Agriculture in the islands.

Prof. Fields is an active participant, on two Barbadian governmental committees (The CITES Scientific Authority and the Working Group on Biodiversity) and is the scientific authority on the CARICOM Plant Health Directors, Technical Working Group on molluscs of pest importance.

Giant African Snails (GAS) are present in large numbers, especially in disturbed areas, and they particularly like rainy days.

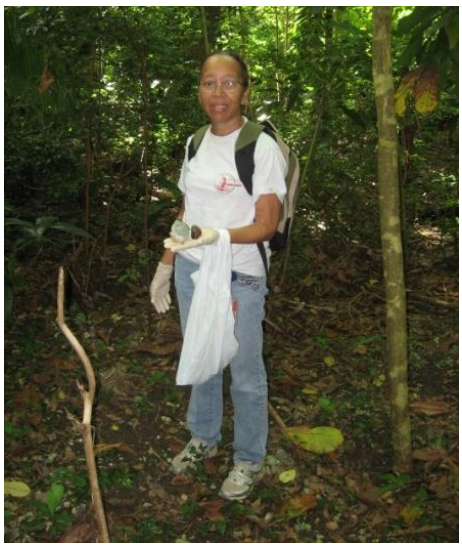
By: Danielle J. Donnelly; Layout: Vijayeta Patel

One early morning in June (2011), Prof. Fields led some of the Barbados Interdisciplinary Tropical Studies (BITS) students, Jeff Chandler (UWI BITS Co-Director) and I, into a gulley. With an infectious laugh, Prof. Fields pointed out two mating GAS. This strange copulation may last many hours! Snails are hermaphrodites, so both exchange sperm for the egg-laying that will generate up to 1,200 eggs per year by each adult snail! No wonder they are such successful invaders!

The BITS students were in Barbados to take a full summer of course work in a joint program offered by UWI (Cave Hill) and McGill University (Montreal, Canada). Three sequential, intensive courses are offered 3 days a week and an interdisciplinary group project were conducted 2 days per week over the 14-week summer semester.

Prof. Fields, Jeff Chandler (UWI BITS Co-Director), and some of the BITS students collecting GAS in Jack-In-The-Box Gulley, June 2011.

In 2011 there were three project groups, each consisting of three undergraduate students, with a small budget (thanks to IICA-Canada). Each group was focused on a different aspect of GAS control in Barbados. Prof. Fields was an active mentor to all of these students. She shared her library, her vast expertise, and her valuable time, in assisting to position these students to better understand the complexity of GAS invasion in Barbados. Thank you Prof. Fields!



Prof. Fields shows one of the big native snails, which can grow as large as GAS. Efforts to reduce GAS populations should recognize the importance of preserving native snail and slug populations.

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One project group tried to trap GAS. They constructed and tested various traps, bated with food items that GAS love to feast on. Dr. Fields stressed the importance of trying to do this in such a way that the native snails were unaffected. She is very concerned about efforts to bait and kill GAS; chemical use to combat GAS can result in indiscriminate killing of native snails and slugs, as well as small vertebrates. There are also concerns that the chemicals used in the baits could enter the waterways, polluting the aquifer. For these reasons, and others, the Ministry of Agriculture has discontinued distribution of molluscicides in Barbados.

A second project group examined the GAS Bounty system, with help from Mr. Ian Gibbs, Ministry of Agriculture, Barbados, and participated in a survey of the island for vectors of nematodes that can cause illness in humans. According to Prof. Fields, these nematodes can be carried by both slugs and snails. For this reason, she was collecting slugs while the BITS students were focused on snails at each collection site.

Prof. Fields collects slugs, another vector, along with GAS, that can spread a nematode that that can cause meningitis in humans.

Prof. Fields, working on an assay to detect nematodes in slugs and GAS in Barbados. A survey of the island for nematodes in GAS is underway.

The collection sites covered the island; each parish had one or more collection sites and some areas with heavy GAS presence were repeatedly sampled. Furthermore, areas known to harbor rats, host to rat lung worm, receive dextra attention.

A third project group investigated the use of GAS as feed for pets or domestic animals and food for humans (escargot). Dr. Fields is not a snail eater herself, but was pleased to assist this group on a collecting expedition to Jack-In-The-Box Gulley. Snails were in great abundance in this Gulley!

With the enthusiastic help of local Agricultural expert, Mr. Keith Laurie (deceased in 2014), these project students prepared samples of snails with and without shells, chopped, cooked and dried them. These potential “feed samples” were sent off to a McGill University lab for nutritional analysis. Once this was completed, a feeding trial with poultry was conducted. Dr. Fields emphasizes the importance of ensuring that any use of snails for feed or food, must not pose any risk to human health.

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