

Research Focuses on HAVO Exotics

By C. P. Stone

The seemingly impossible task of managing for precontact Hawaiian ecosystems with the hodgepodge of introduced plants and animals (yes, even in national parks), presumes that we know what precontact systems were like. It turns out, in many cases, we do not.

What we do know is that, by definition, introduced (exotic) plants and animals were never here before man. We also know that exotic mammals, birds, invertebrates, plants, and diseases have had, are having, and probably will continue to have tremendous impacts on native species and systems.

Thus, a logical management strategy seems to be to try reducing impacts of exotics in some situations in the hope that natives eventually will benefit. Research in Hawaii Volcanoes NP is geared toward ultimately providing information about such situations and methods of putting exotics at a disadvantage.

Building upon excellent past efforts of Service scientists such as C. Van Riper on avian diseases and D. Mueller-Dombois on plant ecology, current Hawaii-based service research scientists D. Gardner, L. Loope, and I (Stone) are working on other important aspects of the exotic-native problem. All are affiliated with the CPSU at the University of Hawaii, headed by C. Smith, and are supervised by D. Fenn, WRO Chief Scientist. Gardner is stationed in Honolulu and specializes in plant diseases and exotic plant control. Loope is stationed at Haleakala and concerned primarily with native plant ecology. I am stationed at Hawaii Volcanoes and working primarily on impacts and ecology of exotic vertebrates. All three (plus Smith) are responsible for research in Haleakala and Hawaii Volcanoes, both of which recently were designated Biosphere Reserves.

As the most recent addition to the NPS research team, I will be placing my initial research emphasis on ecology and impacts of feral pigs, mongooses and rats. These vertebrates are responsible (with introduced plants, invertebrates, and diseases) for the most intensive and widespread perturbations to Hawaiian ecosystems.

The challenge is to learn enough about each in different situations to be able to recommend efficacious methods to favor native species and systems at the exotics' expense. Such methods may involve exclusion by fencing and other means; chemical repellents, attractors or toxins; hunting and trapping; biocontrol, or various combinations of these.

Research on the mongoose, thought to be a primary deterrent to reestablishment of self-sustaining Nene (Hawaiian goose) populations in

Hawaii Volcanoes, already is underway and will be reported on in a future Bulletin. Planning for establishment of vegetational transects to monitor feral pig abundance and distribution, determine effects of pig management actions in Hawaiian Volcanoes, and provide a baseline for future testing and recommendations already has begun.

Through combined efforts of researchers inside and outside the Service, better understanding of exotic organisms and their impacts on complicated and important Hawaiian ecosystems should be reached. Recommendations on how to minimize impacts of exotics should provide managers with important ways to produce less altered systems for future generations.