

October 31, 2006

To: Ms. Lorena Wada, Fish and Wildlife Biologist
U.S. Fish & Wildlife Service
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From: Dr. M.G. Hadfield & Crew
PBRC- Kewalo Marine Lab
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Re: Survey for *Newcombia cumingi*, October 20-22, 2006.

Personnel included: Dr. Michael Hadfield, Jen Saufler, Kevin Hall, Dr. Brenden Holland (UH Manoa), Bjorn Erickson (PBRC), Dr. Steven Miller (USFWS), Vincent Costello (US Army/RCUH), Hank Oppenheimer (RCUH), Lisa Hadway (Hawaii – DLNR, Hilo), Randy Bartlett (Maui Land & Pine Co.), and Jim Kellner (formerly UH Manoa) participated for a portion of the trip.

This survey was supported by a grant from the US Fish and Wildlife Service to M. G. Hadfield at the University of Hawaii.

On August 12, 2006, M. G. Hadfield and the U.H. Manoa tree-snail research group spent a day in the field on the upper Mahinahina Ridge in the Maui Land & Pine Pu`u Kukui Reserve on West Maui in an attempt to relocate specimens of *Newcombia cumingi* in marked trees that had been followed from 1997 through 2002. We had also agreed to demonstrate mark-and-recapture study techniques for field staff of Maui Land and Pineapple Co. To our alarm, no living snails were found, and condition of the field site had deteriorated badly subsequent to our last visit in 2002. Numerous shells of the predatory snail *Euglandina rosea* were found beneath the trees formerly inhabited by *N. cumingi*, as were rat-predated shells of another endemic snail, *Partulina splendida*.

Through generous funding from the US Fish and Wildlife Service we were able to return to this West Maui field site with a larger crew of experienced snail researchers and more time to survey the site. Our goal on the October trip was to intensively search the entire habitat area found to harbor *Newcombia cumingi* in 1997 and determine the spatial boundaries of their current population, if any were found.

On Friday, October 20 our team arrived at the formerly delineated habitat of *Newcombia cumingi*. Our field crew was divided into teams to search all *Metrosideros polymorpha* ('ohi'a) trees in the meadow from top (up-slope) to bottom (down-slope). Each team was given a unique color of flagging tape and assigned a swath of the meadow with instructions to flag each tree after it had been searched. Not long after the search commenced, two *N. cumingi* were found in a sparsely foliated 'ohi'a, elevation 811 meters, near the north-east corner of the former habitat. This tree was flagged purple and orange and given a metal tag with the label 'N3' and the date (Trees N1 and N2 had been tagged previously by Maui Land and Pineapple Co.'s Chris Buddenhagen January of 2006). Tree N2 was searched and one *N. cumingi* was found (elevation 807 meters). All teams continued searching through intermittent showers until 5:00 PM. No additional *N. cumingi* were found on 10/20/06.

On Saturday (10/21/06) the teams traded areas and searched the meadow from bottom to top, again tagging all trees after searching them. Two *N. cumingi* were found in a small 'ohi'a next to N2 (with the same GPS coordinates) and flagged with purple and red. These snails were smaller than the single snail found in 'N2.' Two team members, Hank Oppenheimer and Vince Costello, hiked into Kahana Iki Gulch, below the north side of Mahinahina ridge, to search an area where Hank had seen *N. cumingi* approximately five years ago. They reported finding one *N. cumingi* on *Perrottetia sandwicensis* (olomea) in the gulch along with living *P. splendida* and specimens of two other endemic snail genus, *Auriculella sp.* and *Philonesia sp.* They also said there was "high potential" *N. cumingi* habitat in the gulch that remained to be searched.

Two additional *N. cumingi* were found on Oct. 21, one in a tree next to 'N1' (which we tagged 'N5') and another approximately 16 meters further upslope (marked 'N4'). Teams again searched through the afternoon rains with no additional sightings.

On Sunday, October 22, 2006, and prior to starting our last survey in earnest, one additional *N. cumingi* was seen on tree 'N3.' The crew then started at the top (eastern) edge of the field site and worked uphill, toward the main point of entry and the vehicles, checking all 'ohi'a. Field time was restricted to about five hours on this date. No other *N. cumingi* were found. Nine live *P. splendida* were noted in trees very near the top of this field tract.

In total: nine living *Newcombia cumingi* were found during 144 person-hours of searching.

One *P. splendida* ground shell was found on the first day. Other snail specimens of interest seen on the trip were four *Auriculella sp.*, three *Succinea sp.*, *Philonesia sp.*, a few tiny achatinellines, plus the invasive snails: many *Oxycheilus sp.* shells and several live *Euglandina rosea*.

The habitat on the ridge where eight of the living *N. cumingi* were found is badly degraded. The small 'ohi'a, which appear to be the main host tree for the snails, continue

to die. Two trees in which marked snails had been followed between 1997 and 2002 had died, as had many others. The native *Dicranopteris linearis* (uluhe) fern is being replaced by *Rubus* sp. (blackberry), *Melinis minutiflora* (molasses grass), *Tibouchina* sp., and other invasive grasses.

Despite its degraded status, the Mahinahina field site continues to be of the utmost importance for the conservation of both *N. cumingi* and *P. splendida*, especially since we were unable to maintain a successful population of *N. cumingi* in captivity.

We strongly recommend(1) that efforts begin immediately to control rats in the area harboring the remaining population of Newcambia cumingi and (2) that a predator-exclosure fence be erected to protect an area enclosing most of the 'ohi'a trees found to harbor snails. This fence should be designed similarly to two built by the Hawaii Natural Area Reserve System in the Wai'anae Mountains on O`ahu. In addition to the predator exclosure, the habitat for N. cumingi needs to be managed with improved predator control and weed management. Through these efforts remnant populations of both Newcambia cumingi and Partulina splendida might be able to regain a foothold and bolster their populations. In addition to the protective measures, regular monitoring for these snails should continue.

Recommendations

- 1. Immediate commencement of rat-control efforts in the snail habitat.**
- 2. Construction of a predator-exclosure fence around the snail habitat.**
- 3. Control of invasive plants such as blackberry and molasses grass within the exclosure.**
- 4. "Hands and knees" search of proposed predator exclosure area for *Euglandina rosea*. This should be done ASAP and at regular intervals until the fence is built and afterwards until *E. rosea* are eradicated from fenced interior.**

We appreciate the support and cooperation that the U.S. Fish & Wildlife Service and Maui Land and Pineapple Co. have provided us on this project and hope to continue our cooperative efforts in the future.

Enclosures (2)

Enclosure 1: Additional data recorded in field 10/20/06 through 10/22/06.

Additional wildlife recorded:

Invertebrates:

Order Blattoidea: Cockroaches

Family Coccinellidae: Ladybeetles and larvae

Family Papilionidae: Butterflies and caterpillars

Several representatives from the order Hymenoptera, sub-order Apocrita: Honeybees,

Yellow jackets, Carpenter bees, Ants

Rhyncogonus sp. (beetles)

Veronicella sp. (slug)

Conacephalus saltator (Katydid)

Birds:

Loxops virens (Amakihi), *Zosterops* sp. (White-eye)

GPS Coordinates:

Trees with *Newcombia cumingi*

N20.93830 W156.62030

N20.93846 W156.62039

N20.93846 W156.62039

N20.93846 W156.62039

Site near the bottom of Kahana Iki Gulch adjacent to above sites.

Four positions, taken from south to north, along the upper limit of search on days 1 and 2

N20.93872 W156.62114

N20.93855 W156.62115

N20.93825 W156.62128

N20.93809 W156.62137

Four positions, taken from south to north, along the lower limit of search on days 1 and 2

N20.93828 W156.62032

N20.93810 W156.62047

N20.93789 W156.62064

N20.93777 W156.62070