The Invasion of Apple Snails (Pomacea canaliculata) into Hawai'i: A Case Study in Environmental Problem Solving

Dr. Carol Ferguson’s Capstone Course
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The Problem

• Apple Snails (*Pomacea canaliculata*) introduced in 1989.

• Fast breeding and adaptability contribute to the rapid spread of apple snails.

**Primary Impacts:**
• Taro (*kalo; Colocasia esculenta*) is a culturally sacred food source.

**Secondary Impacts:**
• Aquatic ecosystems.
Methods of Snail Spread

- Snails float downstream (ditches, streams, canals)
- Muddy vehicles and equipment
- People
- Huli transfer
- Intentional dumping
Costs of Snail Impacts

Snail invasion of taro fields can:

- Lower yields of taro crops
- Result in snail management costs—labor, time, cost of control methods

Which results in:

- Loss of lifestyle and food source for farmer
- Economic problems
- Cultural loss
Eliminated Options

**Chemical control:**
- environmental impacts.

**Everglade Kite:**
- competition, interbreeding, importation.

**Fish:**
- difficult to manage, invasive.

**Water level change:**
- reduces taro yield.
Methods of Snail Control

- Biological Plants
- Biological Animals
- Natural Control
- Community Programs
Biological Plants

- Phytochemicals found in all parts of the plant are toxic to apple snail.
- Act as attractants or poisons.
- Most are not found in Hawai‘i.

Includes:
- papaya leaves (*Carica papaya* L.)
- banana leaves (*Musa x paradisiaca* L.)
- starflower (*Calatropis giganta*)
- neem tree (*Azadirachta indica*).
Biological Animals

- Cayuga ducks (*Anas rubripes*)
- Let free in the taro patch (*loʻi*) to feed on baby snails.
- Life span averages 30 years.
Natural Control Methods

• Handpicking

• Knocking off or removing eggs.

• Mesh nets/screens
Cultural/Social Methods: Community Programs

Positive Aspects

• Community/consumer involvement
• Federal grants available
• Paid program positions
• Program could be an example for other invasive species management
• Work is done within the taro ecosystem