Invasive Species

Role of Conservation Districts

MAE NAKAHATA
CENTRAL MAUI SOIL AND WATER CONSERVATION DISTRICTS
Conservation Plans

- Natural Resources
- Special Environmental Concerns
- Economic and social considerations
- NEPA policy issues
Cover Crops

- Soil Health
- Beneficial Insects
- Erosion Control
Angiostrongylus cantonensis
The Semi-slug
WATERTOWN (WCCO) — People travel to Hawaii to relax and get some sun and surf, but a Minnesota man’s trip to paradise turned into a nightmare after he contracted a paralyzing disease.

Eric Reinert is 22 years old and learning to walk all over again.

He’s taking baby steps and it can be hard to keep his balance, but they are a long way from where he was just a month ago.

He was stuck in a wheelchair in a Hawaiian hospital all because of a microscopic parasite.
Rat Lungworm Life Cycle

Humans are incidental hosts. Passage of larvae in humans has never been documented, and humans do not transmit either A. cantonensis or A. costaricensis.

- Causes eosinophilic meningitis, a meningoencephalitis characterized by eosinophils in the cerebrospinal fluid (CSF). Common in parts of Southeast Asia and Pacific islands, Africa and the Caribbean.
- Causes eosinophilic enteritis, an eosinophilic inflammation of the mesenteric arteries of the ileocecal region of the gastrointestinal tract that mimics appendicitis. Common in parts of Central and South America.

Eggs hatch in the lungs, and first-stage larvae are passed in rodent feces (A. cantonensis).

- Eggs hatch in the ileum and larvae are passed in the feces (A. costaricensis).

Third-stage larvae are ingested by rats.

- First-stage larvae infect snails and slugs.

Humans become infected through food containing third-stage (infective) larvae. Food items may include uncooked snails or slugs, vegetables contaminated with snails, slugs, or molted secretions (i.e., crabs, freshwater shrimp).

Slugs and snails are intermediate hosts, and after 2 motes, the larvae reach the infective (third) stage.
Sixteen patients (median age, 20 years; 10 men) from eight states in the continental U.S. (California, Texas, Utah, Colorado, Arizona, Alabama, Tennessee and New York)
"When researchers experimented with various sacrificial methods to lure pests away from valuable plants, red clover proved best.

Slugs love red clover. Ornamental gardeners regard it as weed and try and eradicate it from their lawns!

Farmers and veggie growers recognise its nitrogen fixing properties as a legume and grow it as a cover or fallow crop.

Easy to grow, red clover is a hardy, but short-lived perennial which often propagates itself by seeds. Plant a strip of beautiful red clover near your garden to lure the slugs away. Makes great nitrogen-rich organic matter as it fades, and you can let another fresh crop grow nearby."
Slugs and snails ..no longer a nuisance but a health threat

- No tolerance slug/snails for food crops
- Food vendors demand evidence of management
Unintended Consequences
Glycine – NRCS introduction to replace massive pasture grass dieback
Ungulates – A gift to the King

released on Maui after studies indicated that it would not impact native forests
Axis Deer populations Out of control
Pre-entry Precautions

- Regulated “pests”
- Unique environs
Managing Invasive Species is Everybody’s business

Mahalo