Biological Control of Parasites

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Things to look forward to

• What is Biological Control?
• Kinds of Biological Control
  – With Examples!
• The “Gray Areas”
• Words of Caution
What is Biological Control

• Generally Biological Control of parasites is a human interaction that causes a halt to a stage or stages in a parasitic lifecycle.
Predator vs. Prey

• The introduction of a predatory species that will affect intermediate hosts or parasites.
Predator vs. Prey

• Crayfish
  – Used in several Kenya pools the crayfish eat schistosome ridden snails.
  – Also used in aquatic stages of Anopheles mosquito.
Predator vs. Prey

• Fish
  – Very common with Malaria control
  – Eat the Anopheles mosquitoes
    • Ethiopia and Kenya
Predator Prey Interactions

http://www.dpd.cdc.gov/dpdx
Competition Based Parasites

• Adding parasites to a reservoir to outcompete the other parasites.
Competition Based Parasites

• Trematode social organization
  – Two morphs; reproductive and soldier.
  – The soldiers will attack parasites that are non-related.
  – The idea is to release these non-reproductive soldier morphs into infective area. They can then eat the reproductive non-familial competition.
Environmental Changes

• Cause the parasite to halt out without an additive interference.
  – Directly or indirectly cause a halt in the life cycle
Environmental Changes

• Mosquito nets that block the blood meal.
Environmental Changes

• Guinea Worms
  – There have been numerous steps taken to control the spread of Guinea Worm.
  – This includes changes in awareness and hygiene.

• From stanford.edu
“Gray Areas”

• These are things that do not quite fit in any group.
  – Could be a hybrid of groupings or a lack of grouping.
“Gray Areas”

• The addition of an entomopathogenic fungus, which is highly virulent to the Anopheles mosquito.
“Gray Areas”

• Precocious Mother Redia
  – Non-human interaction caused by the development of this specialized mother redia.
  – She defends her host from incoming and potential threats.
Words of Caution

• Change to any ecosystem cause reactions.
  – These can be unpredictable.
Questions??
Works Referenced

- Howard, Annabel FV. Et al. Malaria mosquito control using edible fish in western Kenya: preliminary findings of a controlled study. BMC public health. 2007. Vol 7 pa 119,