# Assistant Research Professor Forest Seedling Production and Regeneration

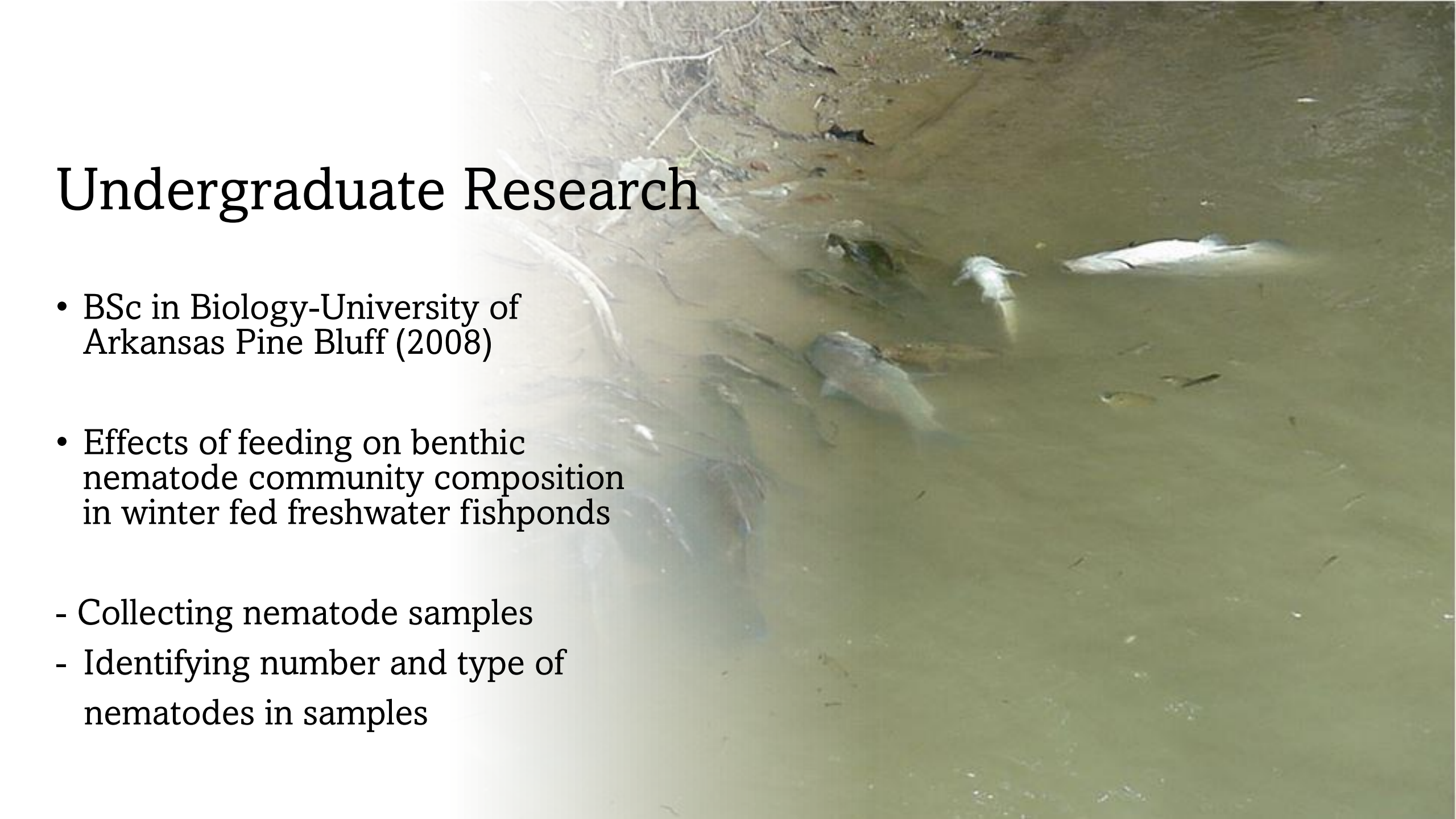
Annakay Newell

# Undergraduate Research

- BSc in Biology-University of Arkansas Pine Bluff (2008)

- Effects of feeding on benthic nematode community composition in winter fed freshwater fishponds

- Collecting nematode samples
- Identifying number and type of nematodes in samples



# Graduate Research

- MSc in Plant Pathology
  University of Arkansas (2010)

- Mating-type distribution and genetic diversity of *Cercospora sojina* populations on soybean from Arkansas

  -evidence for sexual reproduction

# Graduate Research

- PhD in Plant Pathology-University of Georgia (2021)

- Biology and genetic architecture of blueberry pathogen *Exobasidium maculosum*
  - evidence that the fungus has a vector
  - reasons for high level of genetic diversity
  - populations structured by geographic location of origin

# Forestry Department Jamaica

- Plant Health Research Officer (2011-2016)
- -managed plant health in forest seedling nurseries, plantations and forest reserves

- Nursery Operations Coordinator (2015-2016)
  -managed production, distribution and personnel in 4 nurseries islandwide

# Nursery plant health and research

- Best potting mix
- Ideal tray sizes for each species
- Seed viability
- Nutrients
- Standard operating procedures

# Nursery plant health and research

- Establish pest and disease thresholds
- Disease monitoring
- Integrated pest management program
- Certifying clean stock
- Pesticide safety training

# Nursery Operations

- Production and distribution
- Management of nursery staff
- Monthly and quarterly reporting
- Management of seedling inventory
- Procurement of nursery supplies, equipment, and pesticides
- Management of staff payroll and work schedules
- Annual individual assessments of nursery staff

# Plantation health and research

- Diagnostics and management recommendations to plantation owners upon request
- Monitor replanted sites for tree health
- Collaborate with silviculture manager to recommend plant species for specific areas

*Pinus caribaea, Swietenia mahagoni*

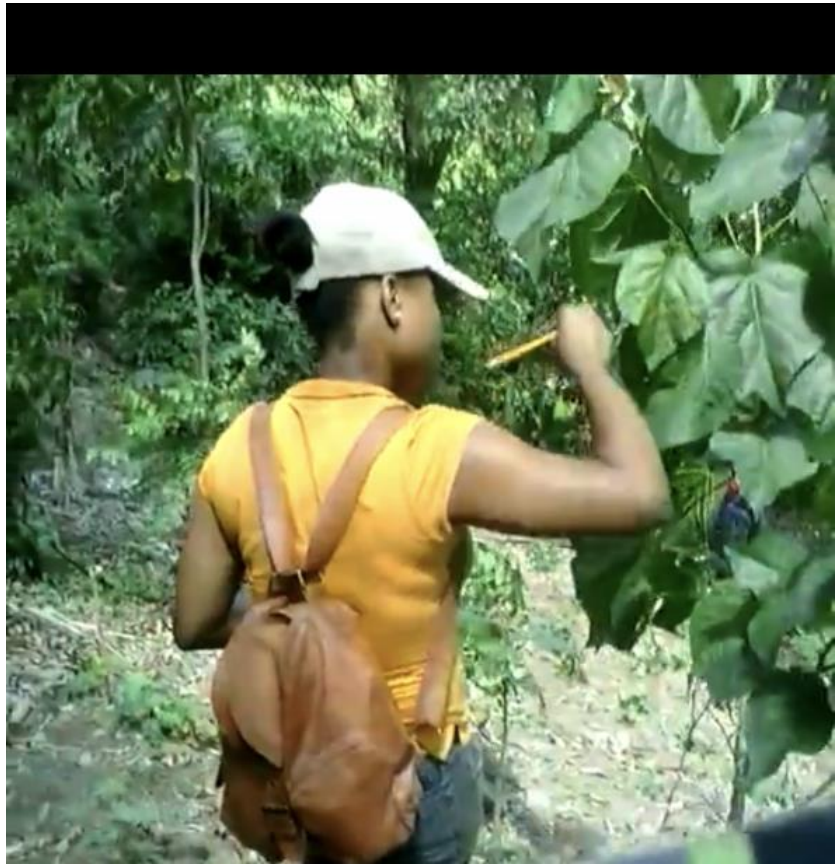
# Research in bauxite mined areas

- bauxite mining is the single largest contributor to deforestation in Jamaica
- Construction of access roads leads to illegal logging, coal burning and yam stick trading
- Research on tree survival and health in mined areas that were regenerated

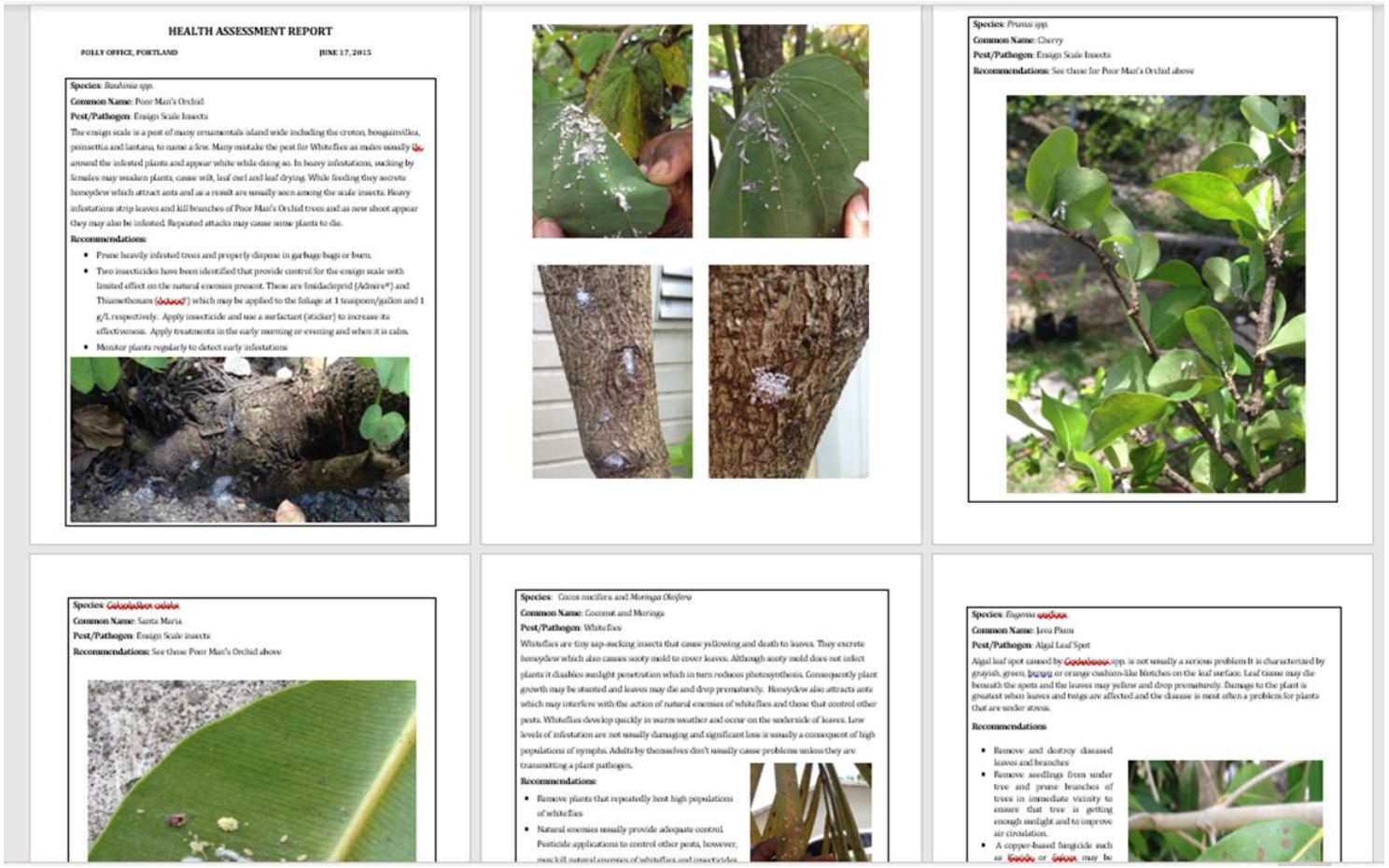
Honduras mahogany trees affected by beetles

# Plant health in forest reserves

- Collaborate with foresters and biologist to collect data on tree health, flora and fauna from 25m x 25m permanent sample plots
- Abundance of invasive species
- Weed control using plastic



# Extension services for homeowners



HEALTH ASSESSMENT REPORT

POLLY OFFICE, PORTLAND JUNE 17, 2015

**Species**: *Banksia* spp.
**Common Name**: Poor Man's Orchid
**Pest/Pathogen**: Ensign Scale Insects

The ensign scale is a pest of many ornamentals island wide including the croton, bougainvillea, poinsettia and lantana, to name a few. Many mistake the pest for Whiteflies as males usually fly around the infested plants and appear white while doing so. In heavy infestations, sucking by females may weaken plants, cause wilt, leaf curl and leaf drying. While feeding they secrete honeydew which attract ants and as a result are usually seen among the scale insects. Heavy infestations strip leaves and kill branches of Poor Man's Orchid trees and as new shoot appear they may also be infested. Repeated attacks may cause some plants to die.

**Recommendations**:

- Prune heavily infested trees and properly dispose in garbage bags or burn.
- Two insecticides have been identified that provide control for the ensign scale with limited effect on the natural enemies present. These are Imidacloprid (Admire®) and Thiamethoxam (Actara®) which may be applied to the foliage at 1 teaspoon/gallon and 1 g/L respectively. Apply insecticide and use a surfactant (sticker) to increase its effectiveness. Apply treatments in the early morning or evening and when it is calm.
- Monitor plants regularly to detect early infestations

**Species**: *Prunus* spp.
**Common Name**: Cherry
**Pest/Pathogen**: Ensign Scale Insects
**Recommendations**: See those for Poor Man's Orchid above

**Species**: *Calophyllum calaba*
**Common Name**: Santa Maria
**Pest/Pathogen**: Ensign Scale insects
**Recommendations**: See those Poor Man's Orchid above

**Species**: Cocos nucifera and *Moringa Oleifera*
**Common Name**: Coconut and Moringa
**Pest/Pathogen**: Whiteflies

Whiteflies are tiny sap-sucking insects that cause yellowing and death to leaves. They excrete honeydew which also causes sooty mold to cover leaves. Although sooty mold does not infect plants it disables sunlight penetration which in turn reduces photosynthesis. Consequently plant growth may be stunted and leaves may die and drop prematurely. Honeydew also attracts ants which may interfere with the action of natural enemies of whiteflies and those that control other pests. Whiteflies develop quickly in warm weather and occur on the underside of leaves. Low levels of infestation are not usually damaging and significant loss is usually a consequent of high populations of nymphs. Adults by themselves don't usually cause problems unless they are transmitting a plant pathogen.

**Recommendations**:

- Remove plants that repeatedly host high populations of whiteflies
- Natural enemies usually provide adequate control. Pesticide applications to control other pests, however, may kill natural enemies of whiteflies and insecticides

**Species**: *Eugenia* spp.
**Common Name**: Java Plum
**Pest/Pathogen**: Algal Leaf Spot

Algal leaf spot caused by *Cephaleuros* spp. is not usually a serious problem It is characterized by grayish, green, brown or orange cushion-like blotches on the leaf surface. Leaf tissue may die beneath the spots and the leaves may yellow and drop prematurely. Damage to the plant is greatest when leaves and twigs are affected and the disease is most often a problem for plants that are under stress.

**Recommendations**

- Remove and destroy diseased leaves and branches
- Remove seedlings from under tree and prune branches of trees in immediate vicinity to ensure that tree is getting enough sunlight and to improve air circulation.
- A copper-based fungicide such as Kocide or Cuprox may be