Teacher(s): Kristin Wilson
Grade(s): Reg Bio/Hon Bio 9th 9th AP Bio 10th 11th 12th
Subject(s): This lesson might be best for Honors Bio; but fits in well w/ Animal & Plant Behavior or Evolutionary Adaptations
Title of Lesson:
Mangroves: Adaptations & Impacts
Learning Objectives:
1. understand evolutionary adaptations of mangroves
2. discuss mangrove "migration" due to changing climates
3. ecological & political impact of mangrove migration
Standards Addressed: *Sorry - I teach private school & don't understand or know standards

Lesson Outline:
- Adaptations of Mangroves
  ⇒ black, red, white to dealing w/ - O2 exchange  
  - Na+ exchange  
  field work
- Climate Change & Mangrove Adaptation
  ⇒ Karen Veverberg graphs <temp & flooding>
  ⇒ mangrove "migration"
- Ecological & Political Impact of Migration
  ⇒ landowner effect - Q&A?
  ⇒ laws affecting mangrove preservation
  ⇒ local newspaper research

- over -
Systems thinking connection (learning habits and/or tools used):

Some type of "in-flux" concept map/thought diagram which allows students to unify not only the science data, but the economic, political & human components maybe a policy structure diagram to understand if/how science plays into the laws re: mangroves

Learning Strategies:
- Research by students
- Interviews of coastal land owners? Active research
- Using digital newspapers

Science Concept(s):
- Evolution - adaptations
- Water level rise - how to deal with climate change & adaptations
- Plant - Form & Function - how to manage H2O vs. NaCl

Humanities Concept(s):
- Economic - is there a cost to mangrove "migration" to landowners/business owners?
- Political - what are the laws affecting mangroves why are they in place

Student Assessment Strategies:
- Review of systems thinking tool @ end
  - critique
- Next steps assessment - now that you know more about mangroves from a science/humanities perspective, what's a next step?

Benefit to my students:
Often we teach science & data, but not it's human impact - or how this all affects a bigger picture. This lesson/project is a step to a bigger picture.

Resources and Materials (supplies needed for activities):
- Background science info
- Field trip to mangroves
- Info on mangrove law
- Data on mangrove "migration"