

# A Stewardship Moment

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# What is “stewardship”?

- A pair of frameworks:
  - Science/ logic (represented by logical fallacies)
  - “Two Eyed” seeing (Framework by native peoples)
- Steward – Someone in charge of managing that which belongs to someone else

# Framework 1:

## Learning to think and discuss

- *Ad hominem*
- *Argumentum ad Populum*
- Appeal to Tradition
- Appeal to (the Wrong) Authority
- Appeal to Emotion
- Argument from Personal Incredulity
- False Cause
- Red Herring
- Straw Man
- Slippery Slope
- Appeal to ignorance
- Hasty Generalization / cherry picking
- Loaded Questions

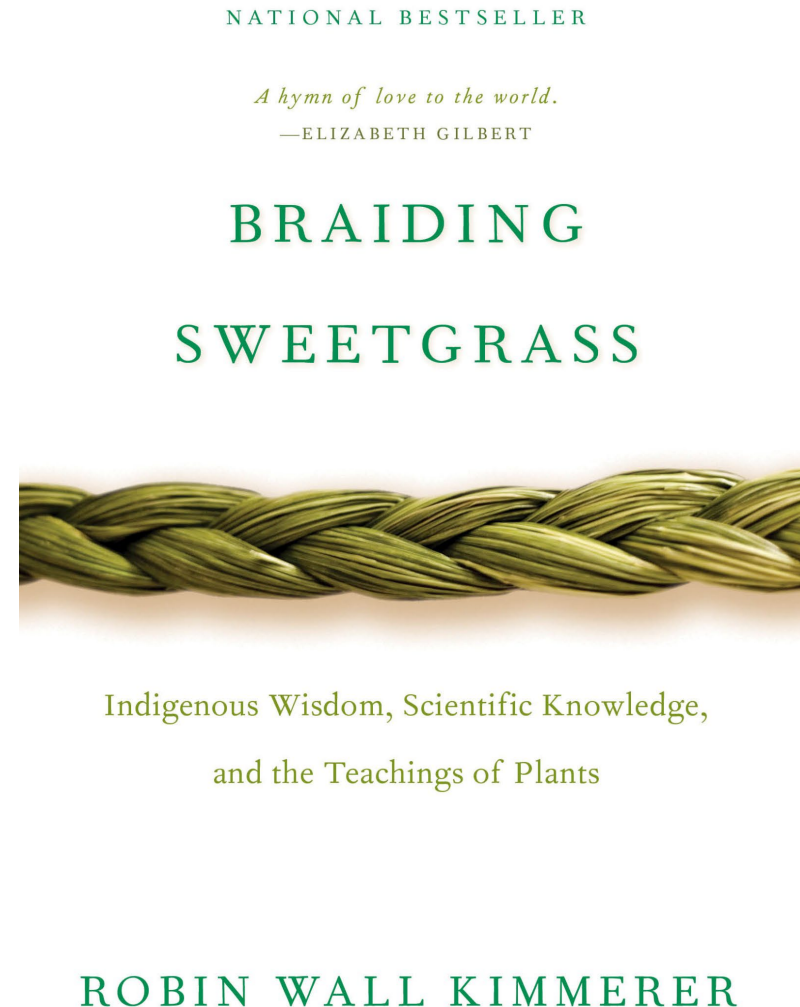
# Framework 2:

## (Etuaptmumk) Two Eyed Seeing

- Emphasizes the integration of different worldviews, specifically the strengths of both Indigenous knowledge systems and Western science.
- Encourages seeing the world through two perspectives:
  - One eye uses Indigenous ways of knowing (holistic, relational, and deeply connected to land, community, and traditional knowledge)
  - **The other eye** uses Western science, with its analytical, evidence-based methods and technological advancements.
- <https://www.youtube.com/watch?v=bA9EwcFbVfg>
- What is Peoplehood?
  - Language
  - Sacred History
  - Territory or place
  - Ceremonial Cycles

# Side note: A good read

- Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants
- Robin Wall Kimmerer
- 978-0141991955



# Key Topic #1: Climate Change Projections

- Describe the causes of climate change, including the greenhouse effect.
- Explain the impacts of climate change on the environment, as well as social and economic impacts both locally and globally.
- Explain the concept of Canada's Representative Concentration Pathway models and what they imply for the future climate.
- Differentiate types of climate models and the various components that enable models to project future conditions.

# Key Topic #2: Forest Health in a Changing Climate

- Explain how globalization has enabled the spread of invasive insect species and impacted the world's forests.
  - See next slide
- Describe how wildfire impacts the hydrology, wildlife, and soils of forest communities.
  - I will focus on prescribed burning in SC
- Describe the conditions of drought as it relates to forest ecosystems, and identify how increasing drought severity and frequency impacts global forests.
- Explain the biology and impacts of typical forest insect pests such as ~~Mountain pine beetle, Spruce beetle, Spruce budworm, Forest tent caterpillar,~~ Emerald ash borer, and Asian longhorn beetle.
- Describe biology and impacts of typical forest diseases such as Western gall rust, Armillaria root rot, needle casts and needle rusts.
- Describe how the prevalence and spread of forest pests and diseases are expected to shift with climate change.



| Invasive Insect Species   | Affected Plant Species  | Origin                             | Likely Pathway of Introduction                                   |
|---|---|------------------------------------|--|
| Emerald Ash Borer ( <i>Agrilus planipennis</i> )                | Ash trees ( <i>Fraxinus</i> spp.)   | Asia (China, Japan, Korea, Russia) | Imported wood packaging materials and untreated timber           |
| Asian Longhorned Beetle ( <i>Anoplophora glabripennis</i> )     | Hardwood trees, including maple ( <i>Acer</i> spp.), elm ( <i>Ulmus</i> spp.), and willow ( <i>Salix</i> spp.)  | Asia (China, Korea)                | Wooden shipping pallets, crates, and dunnage                     |
| Hemlock Woolly Adelgid ( <i>Adelges tsugae</i> )                | Eastern hemlock ( <i>Tsuga canadensis</i> ), Carolina hemlock ( <i>Tsuga caroliniana</i> )  | Asia (Japan)                       | Imported ornamental plants and accidental transport              |
| Spotted Lanternfly ( <i>Lycorma delicatula</i> )                | Grapevines ( <i>Vitis</i> spp.), hops ( <i>Humulus lupulus</i> ), and numerous trees including maples ( <i>Acer</i> spp.) and black walnut ( <i>Juglans nigra</i> ) | Asia (China, India, Vietnam)       | Egg masses transported on vehicles, shipping materials, or goods |
| Red Imported Fire Ant ( <i>Solenopsis invicta</i> )             | Agricultural crops, ground-nesting plants, and ecosystems in general  | South America (Brazil, Argentina)  | Soil in potted plants, ballast soil on ships                     |
| Kudzu Bug ( <i>Megacopta cribraria</i> )                        | Kudzu ( <i>Pueraria montana</i> ), soybean ( <i>Glycine max</i> ), and other legume plants  | Asia (India, China)                | Hitchhiking on cargo ships, containers, or vehicles              |
| Gypsy/ Spongy Moth ( <i>Lymantria dispar</i> )                  | Over 500 species of trees and shrubs, including oak ( <i>Quercus</i> spp.), aspen ( <i>Populus</i> spp.), and birch ( <i>Betula</i> spp.)                           | Europe, Asia                       | Egg masses transported on ships, cargo, and vehicles             |
| Brown Marmorated Stink Bug ( <i>Halyomorpha halys</i> )         | Fruits, vegetables, and ornamental plants, including apples ( <i>Malus domestica</i> ), peaches ( <i>Prunus persica</i> ), and beans ( <i>Phaseolus</i> spp.)       | Asia (China, Japan, Korea)         | Hitchhiking in shipping containers, vehicles, or luggage         |
| Formosan Subterranean Termite ( <i>Coptotermes formosanus</i> ) | Structural wood, live trees, and wooden artifacts   | Asia (China, Taiwan)               | Transported with infested wood and plants                        |
| Asian Citrus Psyllid ( <i>Diaphorina citri</i> )                | Citrus trees ( <i>Citrus</i> spp.), causing damage and spreading citrus greening disease (Huanglongbing)  | Asia (India, Pakistan)             | Imported citrus plants and other host plants                     |
| Redbay Ambrosia Beetle ( <i>Xyleborus glabratus</i> )           | Bay family Lauraceae (particularly red bay). Symbiotic fungus killed 75-80% on Hilton Head in 2003  | Asia (India, Japan)                | Imported wood packaging materials and untreated timber           |



# Key Topic #3: Inherent Rights of Indigenous Peoples to Land Stewardship

- Identify differences between Indigenous worldviews and Western worldviews regarding land stewardship.
- Identify and summarize the core themes within the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).
- Explain why some countries did not sign on to the original adoption of UNDRIP in 2007 and why some of those countries joined UNDRIP later.
- Describe how land-based learning and Traditional Knowledge systems can contribute to improved land use, forest management, and mitigation strategies.
- Describe how Indigenous stewardship and traditional ecological knowledge could help meet global conservation goals.

# Key Topic #4: Vulnerability Assessments and Adaptation Strategies

- Describe a forest vulnerability assessment, including its purpose and steps.
- Assess forest conditions and apply climate change adaptation strategies to support sustainable forest management.
- Analyze the benefits and drawbacks of various climate change adaptation strategies for forests, including assisted species migration, selective breeding, and /or afforestation.
- Define adaptive capacity in relation to vulnerable flora and fauna of forest communities.
- Distinguish how various ecozones face differing levels of vulnerability and explain which ecological factors drive this vulnerability.

# Questions

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