

# Using the Limited Resources of the Great Dismal Swamp National Wildlife Refuge for a Maximum Effect on Conservation: With or Without a Focus on Maintaining a Red-Cockaded Woodpecker Population

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Building Conservation Leaders



# A Desolate Place For A Defiant People

A quote from Daniel O. Sayers from his book about the Great  
Dismal Swamp National Wildlife Refuge

Image of prescribed burn at the Refuge  
headquarters via Benjamin Leonard

# About The Researcher

## Benjamin Leonard

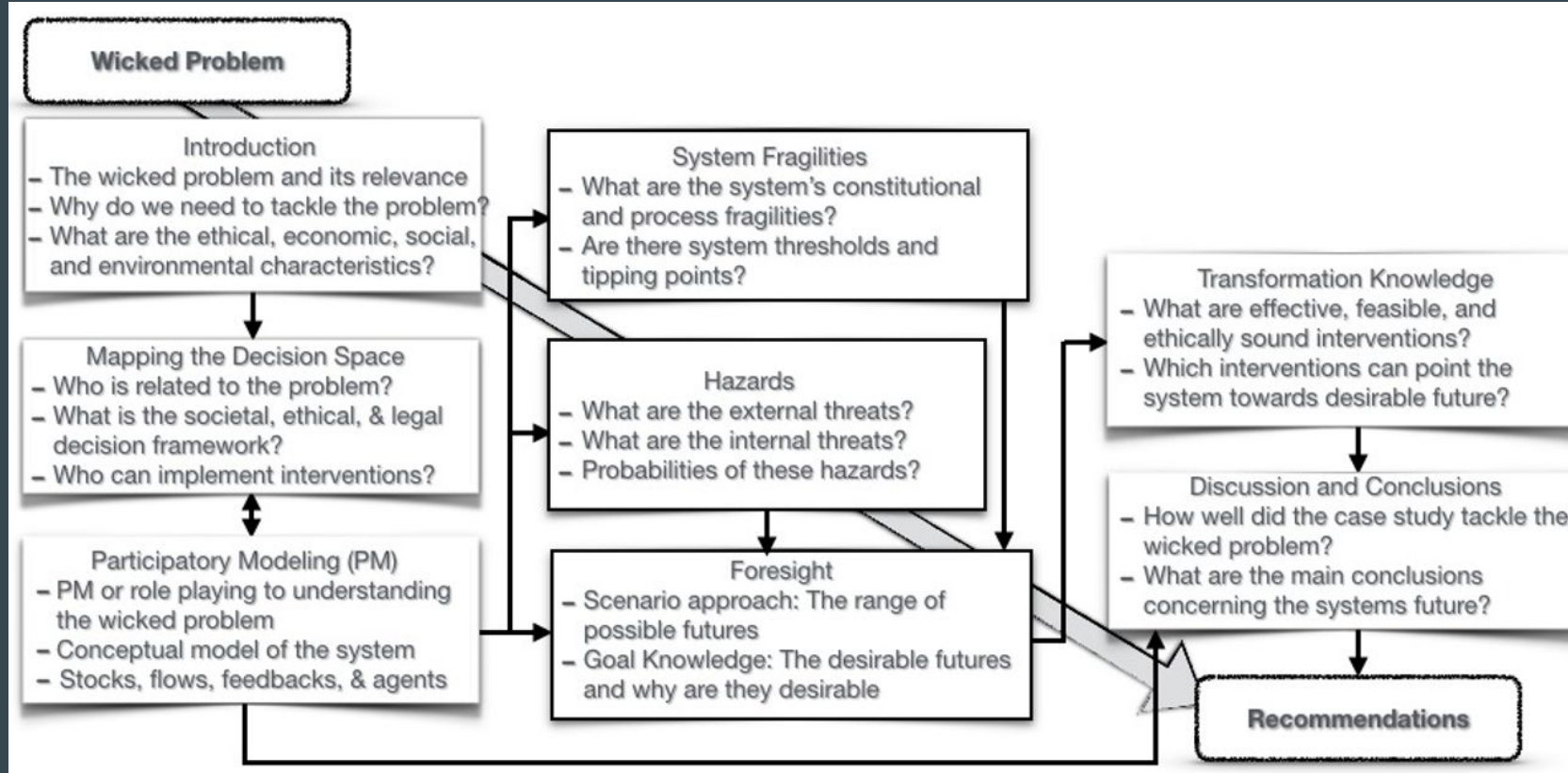
- I am a senior at Old Dominion University, Majoring in Biology with a Minor in Conservation Leadership
- A passion of mine is golf
  - I have been playing golf since I was 4 years old
- I have a new passion of conducting research related to wicked problems dealing with environmental regulation and policy
- I am giving this presentation to discuss the research conducted at the Great Dismal Swamp National Wildlife Refuge (GDSNWR) concerning the endangered Red-Cockaded Woodpecker species (RCW)



Image of a catfish that was caught at the GDSNWR via Benjamin Leonard

# The MARI Case Study Template

A template designed for tackling wicked problems related to sustainability, mitigation of threats, and adaptation to changes in Earth's systems



# Objectives Of The Study

- Mitigation and adaptation approach to the determined wicked-problem
- Sample and analyze the RCW population present at the GDSNWR
- Determine limiting factors that are coupled with the declining population
- Protect and ensure the survival of the federally endangered species
- Determine if management practices should be continued



Photo by: Joseph F. Pescatore / All About Birds

# About the Study

- The RCW is a federally listed endangered species with a population present at the GDSNWR
- The population present is in a steady decline
- There has been over 50 birds translocated to the Refuge with only 8-11 birds that are seen annually
- So what are the limiting factors affecting this population?

Map of the blocks in which the RCWs inhabit. The pink dots show the different clusters and the blue lines represent the trails leading to them

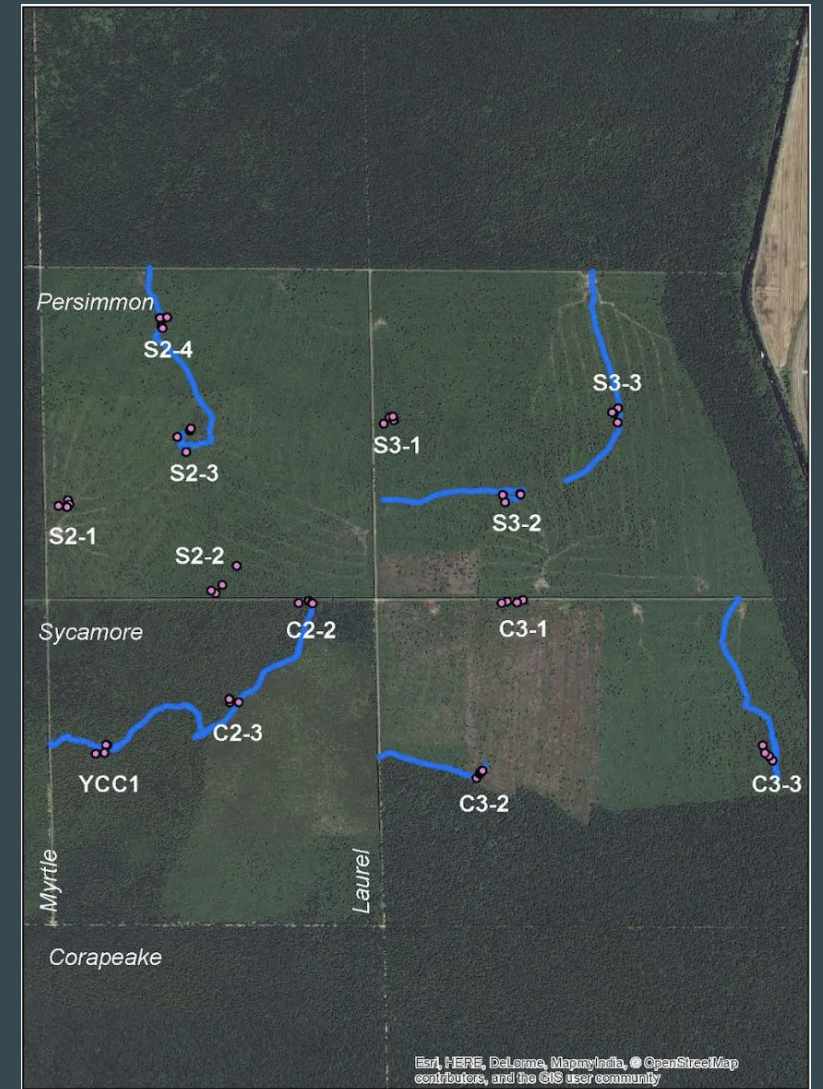


Image via The Great Dismal Swamp National Wildlife Refuge

# The Changing Ecosystem

- The peat soils present in the blocks are continuing to dry out
  - Peat soils need to have a certain amount of moisture to conduct prescribed burns (Helps, 2021)
- The midstory is growing and the blocks are beginning to become hardwood dominant
  - Limiting the survival of pine trees that could be used in the future as nesting and foraging trees (TPWD, 2021)



Image of the midstory growth in the blocks via Benjamin Leonard

# The Changing Ecosystem Continued

- Global temperatures are increasing coupled with increasing drought conditions
  - This will increase the likelihood of wildfires which can destroy old growth pines needed by Red-Cockaded Woodpeckers (Kunkel et al. 2020)
- Hurricane wind speeds are expected to exceed current design models by 2100 (Mudd et al. 2014)



Image of the the burn scar via Tom Barnes /  
United State Fish and Wildlife Service



# Research Methods

- Trees climbed by certified individuals to monitor both artificial and natural cavities
- Peeping poles to monitor cavities and check for fledglings
- Analysis of the master data provided by the GDSNWR concerning RCWs include:
  - Translocations that have occurred
  - Number of fledglings
  - Population Numbers
- Collaboration with stakeholders



Image of peeping for RCWs in the blocks using tree ladders via Benjamin Leonard

# Major Findings From The Study

- With over 50 translocations the current observable population varies from 8-11 birds annually
- RCWs are translocated from historically typical habitats to a drastically different ecosystem
- The goal of the federal government is to ensure the survival of this species
  - The goal of this study is to determine whether the GDSNWR should continue to be involved in the effort



Image of a RCW in its typical habitat of an open pine forest via Mark Bailey / Bham Now

# Primary Recommendations

- Installation of artificial cavities in areas with mineral soil present
- Translocate RCWs from similar habitats to that present at the GDSNWR
- Carry out prescribed burns in the blocks during the winter months
- Partner with the Dismal Swamp State Park to monitor birds that may have migrated to their lands
- Quit all management practices

## Challenges

- Treacherous terrain getting into the cluster sites



Image of trail leading to RCW clusters via Benjamin Leonard

## Standout Moments

- Witnessing the longleaf pine restoration taking place at Piney Grove Preserve
  - I saw my very first RCW here



Image of longleaf pine restoration via Benjamin Leonard

## Next Steps

- Prescribed burns in the blocks to minimize understory and midstory growth
- Translocate from similar habitats



Image of Prescribed burn at the Refuge headquarters via Benjamin Leonard

# The Value Of The Study

- The larger community
  - Gained valuable information on an endangered species and what the federal government does to protect similar listed species
- Personal
  - Knowledge on the federal government working environment and management practices for protected lands
- What am I most proud of?
  - Being able to make a difference and give recommendations to protect a keystone species
  - Completing research in the tough terrain of the Great Dismal Swamp
- Most valuable lesson learned
  - There are wicked problems in most systems that attempt to protect an endangered species
  - Even though a species is endangered it may not be feasible to manage for it in certain areas

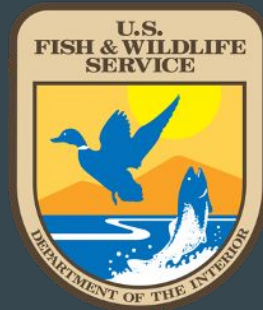
# Thank You For Your Time!

For more information on the research conducted please contact:

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Image of male RCW on a pine tree branch via Robert Royse / American Bird Conservancy



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# References

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