



University of Missouri

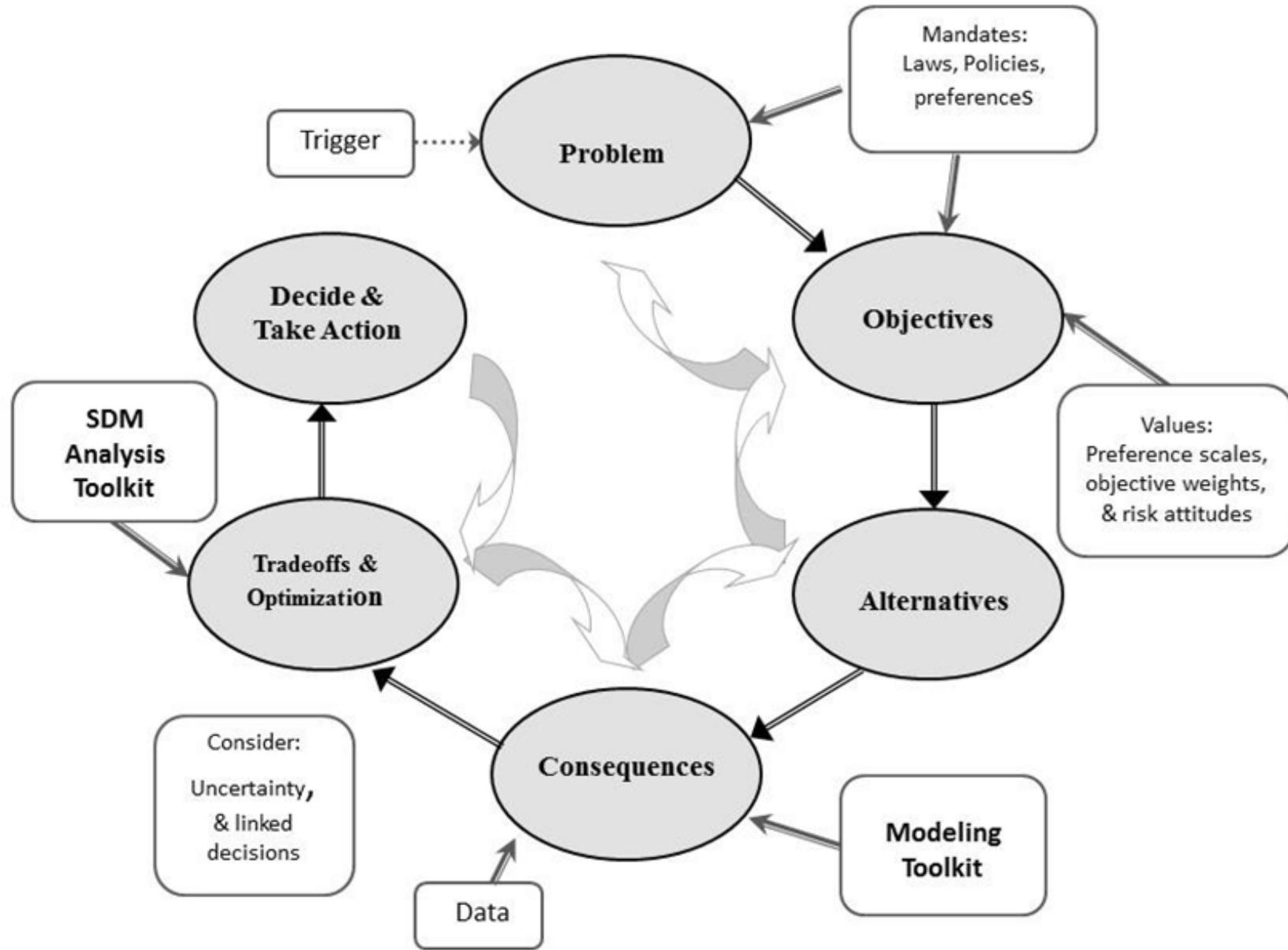
# Conclusions: summary and next steps

## **Module 7:**

Brielle K Thompson & Michael E Colvin

Workshop: An overview of Structured Decision Making for natural resources,  
Midwest Fish and Wildlife Conference 2025, St. Louis, MO

Modified from: Fundamentals of Structured Decision Making TWS Conference Workshop 2023 & an  
Overview of Structured Decision-Making Washington Department of Fish and Wildlife 2022-2023



Source: Jean Fitts Cochrane

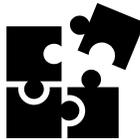
# Summary:

- Two key elements of SDM:



1. Values-focused

- Objectives are discussed first vs alternative focused methods



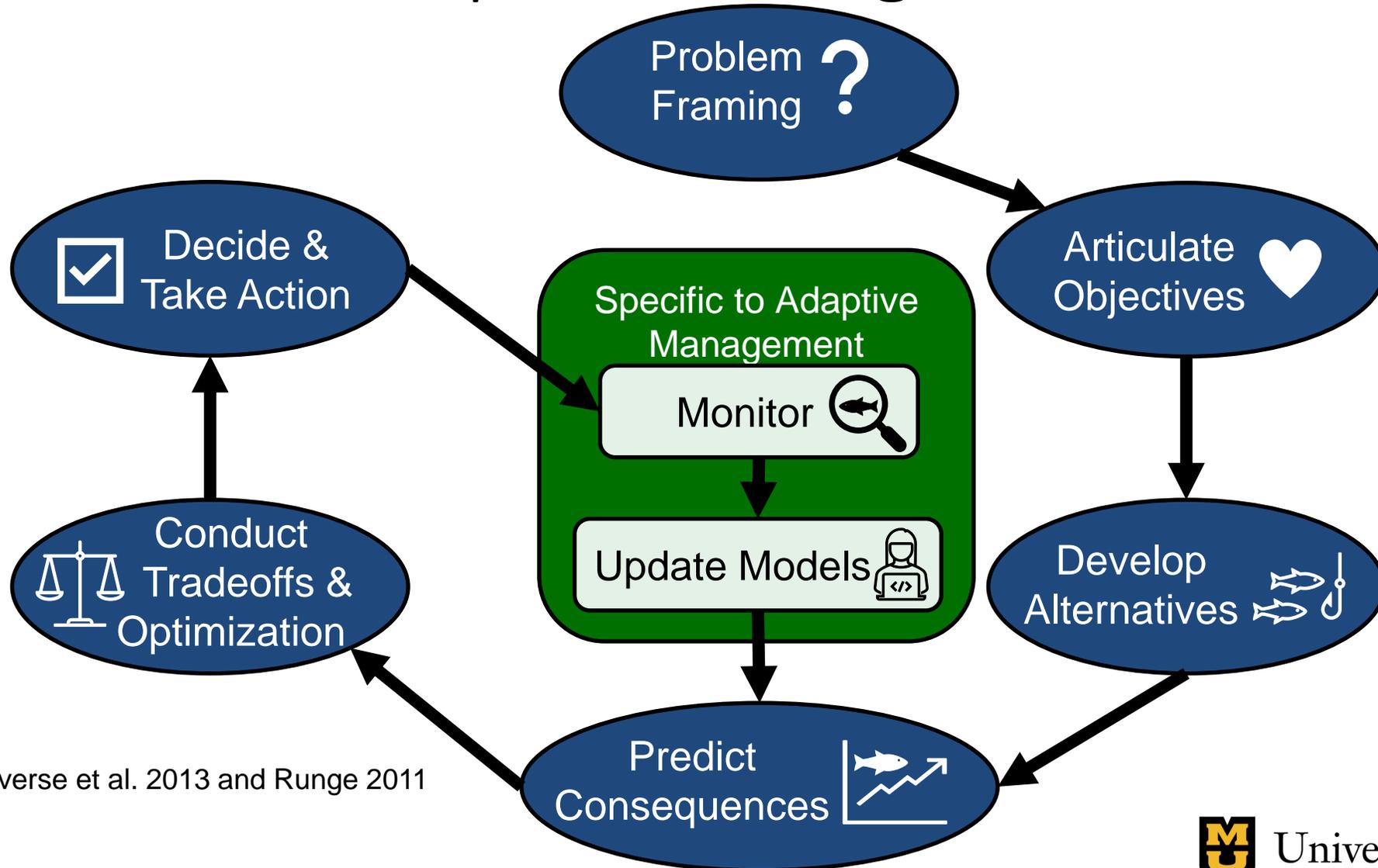
2. Problem decomposition

- Break problem into components, separating science from values
- PrOACT cycle

# What else?

- What we didn't cover:
  - **Dealing with uncertainty**
    - Simulations, sensitivity analysis
    - Risk analysis
    - Value of information analysis (methods to determine the “value” of collecting additional information)
    - Adaptive management
  - **Dealing with people**
    - Stakeholder analysis, forming a team
    - Facilitation
    - Expert elicitation

# An aside on adaptive management



Adapted from Converse et al. 2013 and Runge 2011

# An aside on adaptive management

- What it is:
  - **Iterative** decision process of “**learning by doing**” that uses **monitoring data** to **reduce uncertainty** and **adapt** management over time
- What it is not:
  - Trial by error
- We can use it when we have:
  - Repeated decisions
  - Uncertainty that is important to management
  - The ability to monitor to reduce uncertainty
- Analytical tools:
  - Management Strategy Evaluation
  - Stochastic Dynamic Programming
  - Bayesian updating

Waterfowl harvests  
(Williams and Johnson 1995)



30 years + counting!

# Leading an SDM process?

## **1. Questions to ask:**

Who is the decision maker?

What is to be decided?

What impedes the decision?

Are objectives disputed? (aka is SDM warranted?)

## **2. Identify the decision class**

Multiple objective problem? Portfolio problem? Strategy problem? Risk problem? Uncertainty? Etc.

## **3. Run a quick PrOACT analysis on your own**

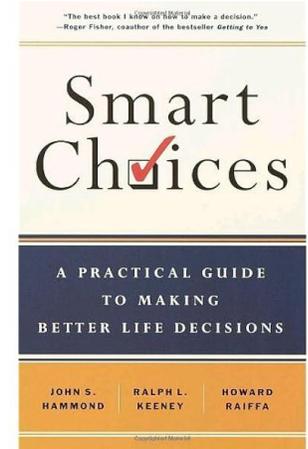
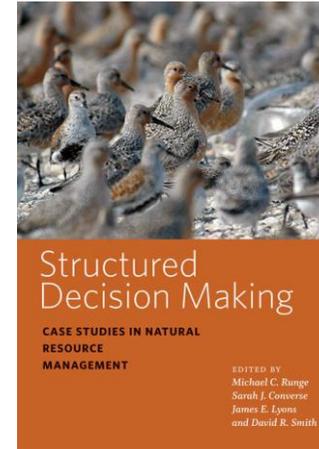
## **4. Build a team**

Nicholson et al. 2002 – “Ten Heuristics...”



# Additional Resources

- Peer reviewed journal articles/books/videos
  - Structured Decision Making Book (Runge et al. 2020)
  - Review paper: An introduction to decision science for conservation (Hemming et al. 2022)
  - Smart choices book
  - National Conservation Training Center
- [Videos](https://www.structureddecisionmaking.org/resources/)
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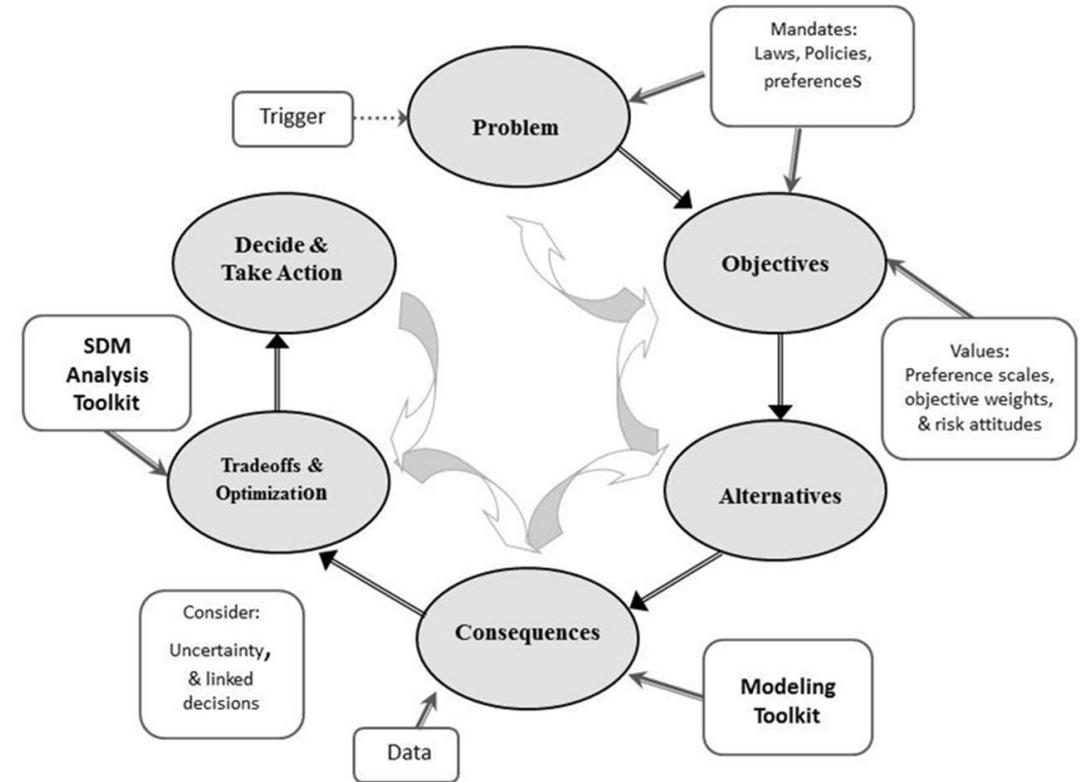


If interested in decision theory:

- *Thinking, Fast and Slow* by Daniel Kahneman
- *Nudge* by Richard Thaler and Cass Sunstein
- *Thinking in Bets & Quit* by Annie Duke

# Big takeaways

- Two components of SDM
  - Values focused
  - Problem decomposition (PrOACT)
- Rapid prototype and iterative process!



Source: Jean Fitts Cochrane

*“We just want to screw up as quickly as possible. We want to fail fast. And then we want to fix it. Together.”*

- Lee Unkrich, a Pixar director, describing the company’s grueling creative process  
*“Imagine: How creativity works”*, by Jonah Lehrer, Houghton Mifflin Harcourt

# Discussion

- How would you use SDM in your research?
  - Personal life?
- Think about a decision you recently made, which part of PrOACT do you think was the most challenging? Easiest?
- Did you learn anything today that would've helped that decision?

