

# Bridging the management- research gap

---

Identifying key research questions and charting a path towards  
increasing collaborations

Bradley Peter<sup>1</sup>, David Barrett<sup>2</sup>

<sup>1</sup>Alberta Lake Management Society; <sup>2</sup>University of Calgary dept of Biological Sciences

September 18, 2024



**Why are research and  
academia an important  
part of lake  
management?**

**Who is familiar with  
the academic research  
process?**

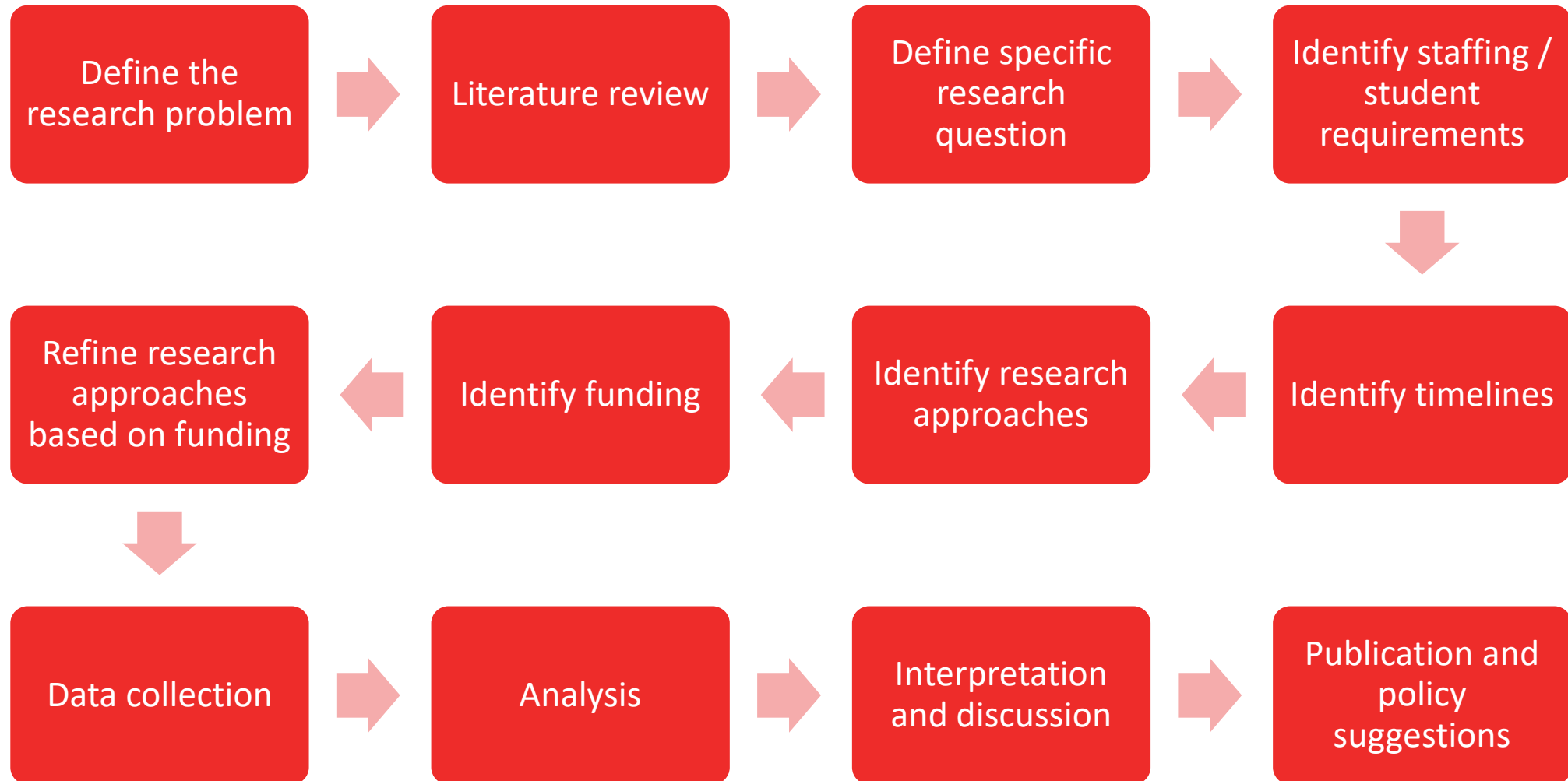
# Introduction

---

- Research shouldn't happen in isolation
- It is most effective when it is done in collaboration with local community and managers.
- This effort, to identify emerging research questions, links directly to ALMS organizational strategic objectives
- The goal of this discussion is not to provide anyone with research proposals, rather to help connect researchers and lake managers for the benefit of both



# Introduction – the research process



# Introduction – student types

---

- **Undergraduate students**

- Often 3<sup>rd</sup> or 4<sup>th</sup> year honours or directed study students
- Have 1-2 semesters (4-8 months) to complete projects
- Limited capacity to conduct fieldwork
- Cost is negligible

- **Masters students**

- Already obtained a bachelors degree
- 2-year target timeframe to complete projects
- 1 field season
- Cost is \$20-30,000 / yr

- **Doctoral student**

- Either have bachelor with honours or masters degree
- Very self-directed
- Cost is \$20-30,000 / yr
- 4-year target timeframe for completion

- **Postdoctoral researcher**

- Has a PhD
- Independent researcher
- Self-directed
- Usually 2-3 year timeframe
- Cost is 55-75,000 / yr

# Introduction – why the university

---

- Given the timeline, why partner with university researchers?
  - Ability to access students – still relatively affordable
  - Plug in to the network of academics working in the specified area
  - Access to additional funding that might not otherwise be available
- Why not?
  - Timelines don't always align
  - Capacity challenges
  - Identifying researcher(s) with appropriate expertise for the question

# Introduction – current examples

---

- ALMS and the University of Calgary have partnered and have made headway on a number of different projects
  - Undergraduate research assistant (NSERC Undergrad Student Research Award)
    - Literature review of monitoring efforts in Alberta, with a specific focus on community-based or community-informed efforts.
  - Doctoral student
    - Identifying shifts in phytoplankton communities as a result of changing winter lake conditions
  - Undergraduate research assistant (NSERC Discovery Grant funded)
    - Evaluating connections between snowfall and under-ice light and dissolved oxygen regimes using high-frequency data loggers
  - Research associate
    - Me... All kinds of things 😊



# Introduction – research project development

---

- How does a research project/program get developed?
  - At the individual researcher level
    - I want to research topic X
  - At a university of research collaborative level
    - Hey – we're submitting a grant proposal on topic X and it would be great to have your input on it
  - Collaboratively (with community partners)
    - Most impactful
    - Research questions co-created with community partners



# Introduction – drafting a research question

---

- A research question should be:
  - **Clear and focused.** The question should clearly state what the researcher needs to address
  - **Not too broad and not too narrow.** The question should have an appropriate scope. If too broad it will not be possible to complete the research, especially when thinking about available resources
  - **Not too easy to answer.** For example, the question should require more than a simple yes or no answer. (most times)
  - **Not too difficult to answer.** You must be able to answer the question thoroughly within the given timeframe and with the associated resources (intellectual and financial)
  - **Researchable.** You must have access to a suitable amount of quality research materials and associated equipment/processing/analytical tools and facilities.
- I would also add
  - Grounded in a community identified concern or emerging policy/management issue

# Introduction – unique nature of ALMS

- Often there's a disconnect between researchers and communities and management professionals.
  - This has the potential to limit applicability and/or usefulness of findings
  - Often limited to the network(ing) of the researcher and communities
- Luckily, we have the unique benefit of having ALMS in place – not everywhere has a Brad (and team!)
  - Potential to (further) bridge that divide



# Introduction

---

ALMS has updated their strategic plan (2024-2027) and highlighted academic research as a key objective:

ALMS recognizes that aquatic sciences form the basis for sound management of lakes and their watersheds... ALMS is also uniquely positioned to support collaborations between academia and members of the public.

## Key Objectives:

- ALMS programs directly support primary research through data collection and information sharing.
- ALMS is recognized as a contributor to research programs.
- ALMS expands its network by developing connections and projects with new researchers.
- ALMS offers a scholarship to support students studying aquatic sciences and related disciplines.
- ALMS develops a priorities list to help guide and encourage freshwater research in Alberta.

# Objective of this exercise:

---

- In an effort to better link researchers and lake managers, we are working to begin development of a “research questions database.”
- This exercise is meant to help you identify where you could benefit from academic/research support, and to help make those connections through ALMS.

We want to know what questions are relevant to you – and we want to help you get those questions answered!

# Who is in the room? (menti)

# Exercise – Step 1

---

*We're going to work through pitching a project to a hypothetical lakes research centre*

- Work in groups at your table (ideally groups of 5 or so)
- Find cue cards and sharpies

## Exercise – Step 2

---

- Discuss in your groups and answer:

*What questions do you have about (your) lake(s) that you want answered?*

- Think about where you may have had questions about what is causing a certain phenomenon, or how certain activities may affect lake use, etc.
- Write these questions down on cue cards, and include the name of who wrote the question on the cue card.
  
- *Time: 10 minutes*



# Exercise – Step 2 cont'd

---

- Try and remember the guidelines to creating appropriate research questions:
  - **Clear and focused.**
  - **Not too broad and not too narrow.**
  - **Not too easy to answer.**
  - **Not too difficult to answer.**
  - **Researchable.**

# Exercise – Step 3

---

- Review the questions created and try to group them into categories at your table
  - What questions are looking at similar endpoints? Processes? Use scenarios, etc.?
- Try to come up with no more than 3 or 4 themes at your table, at most.
- *Time: 5 minutes*

# Thematic areas (menti)

# Quick summaries of theme areas

---

- To add...

# Exercise – Step 4

---

- Finally - select 2 or 3 of the questions from the list at your table
- Now we're going to work through the printed forms on the table
- The outcomes from these will be summarized by ALMS.
- If you have lots of time left, work through more!
  
- *Time: 10 min*

# Conclusions and next steps

---

- Opportunity to share! Does anyone have a research question they are excited about that they would like to share?
- We will (try to) summarize for tomorrow morning.
- Develop a landing page for research to explore these questions.
- Develop an online form to submit additional questions.
- Goal: Improve connections between researchers and water managers!