

# Changing ecosystems, wildlife management, and Indigenous knowledge and values: The case of *tuktuvak* (moose) and Inuit knowledge in Nunatsiavut



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## Background

- Climate change is causing the geographic ranges of many species to expand northwards around the circumpolar Arctic
- Adaptive [co-]management may be better suited to addressing the challenges of managing changing ecosystems than conventional management practices
  - Broadens the knowledges and skills used to address conservation, ensures early and continuous stakeholder involvement
- Indigenous knowledge can play an important role in management decision-making
  - Represents an accumulated body of knowledge, practices and beliefs within communities that contributes to survival and adaptation within the environment

## Research Question

**What is the potential contribution of Indigenous knowledge and values to wildlife management in changing ecosystems?**

## Case Study

- Tuktuvak* (moose) have expanded their range north to the tree line in the Labrador Inuit Settlement Area over last two decades
- The Torngat Wildlife and Plants Co-Management Board are responsible for making Total Allowable Harvest decisions in Nunatsiavut, informed by both scientific evidence and Indigenous knowledge
- With the signing of the Labrador Inuit Land Claims Agreement, co-management was introduced in the region in 2005, and specifically a moose co-management system was implemented in 2010
- The need for a moose management plan and much more knowledge has been identified by the board, including documentation of Inuit knowledge of moose

## Project Design and Methods

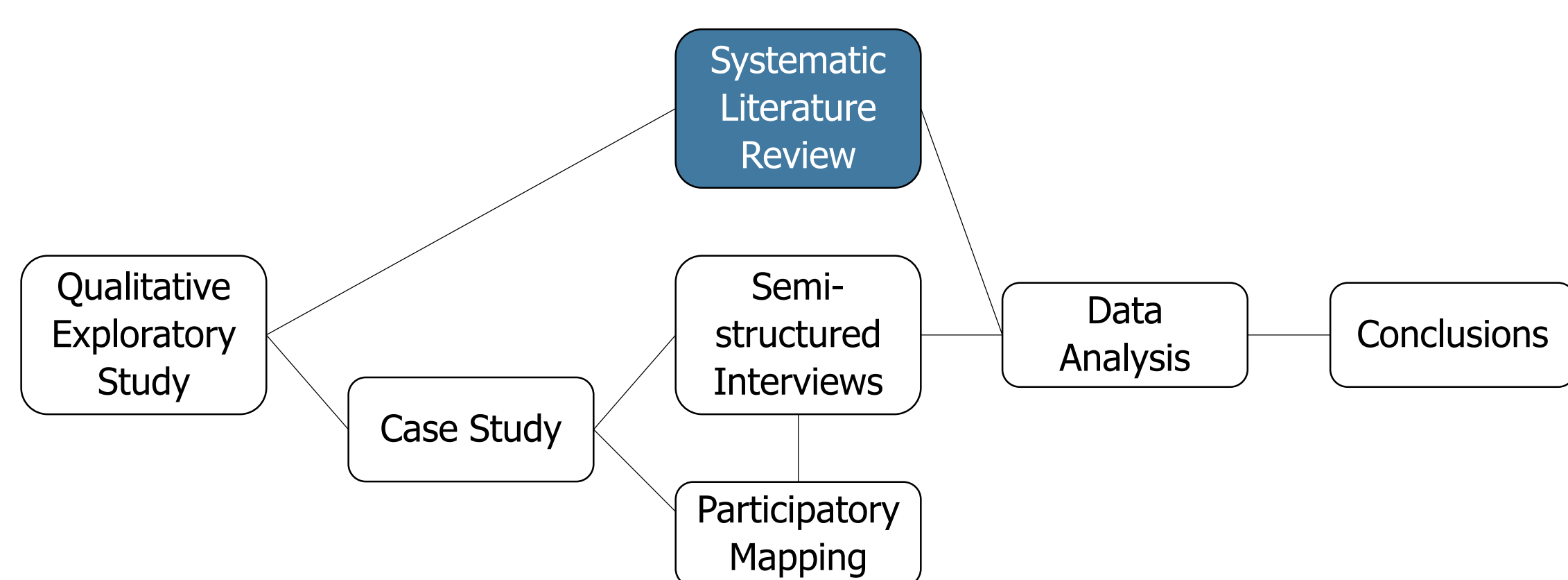


Figure 1. Design diagram of project components



Source: Hollis Yetman Jr.

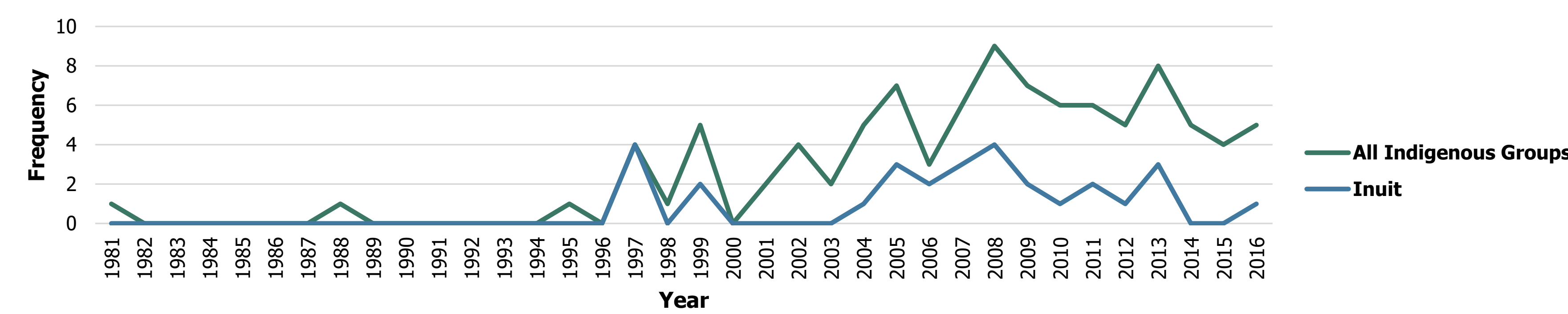


Figure 2. Number of publications per year included in this systematic review (in green); those focusing on Inuit cases presented in blue.

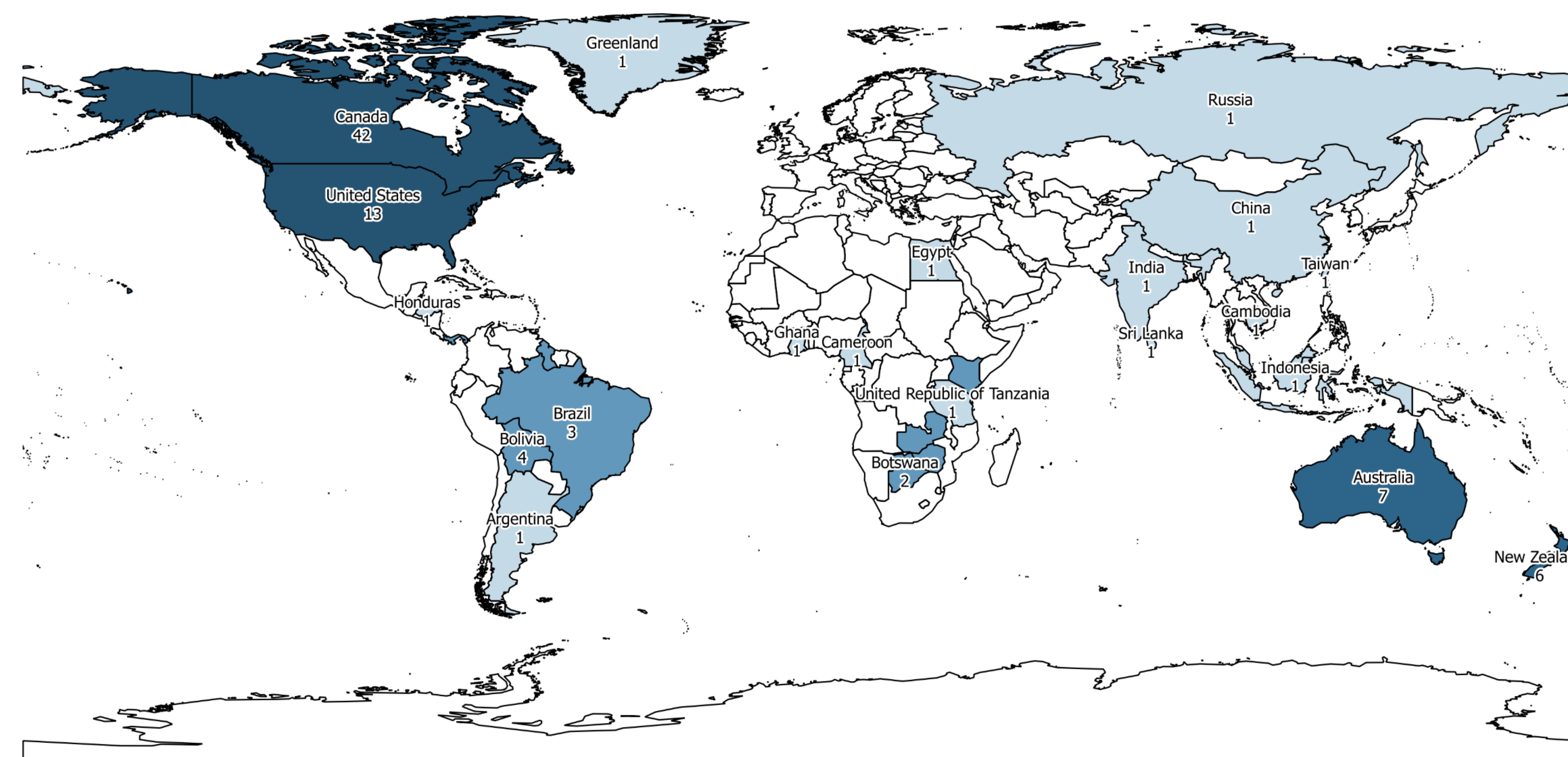


Figure 3. Map displaying the countries represented in the papers retained for analysis in the systematic review. Country and number of articles focused there are listed (n=97). Colour intensity represents the relative proportion of publications in the database from that location.

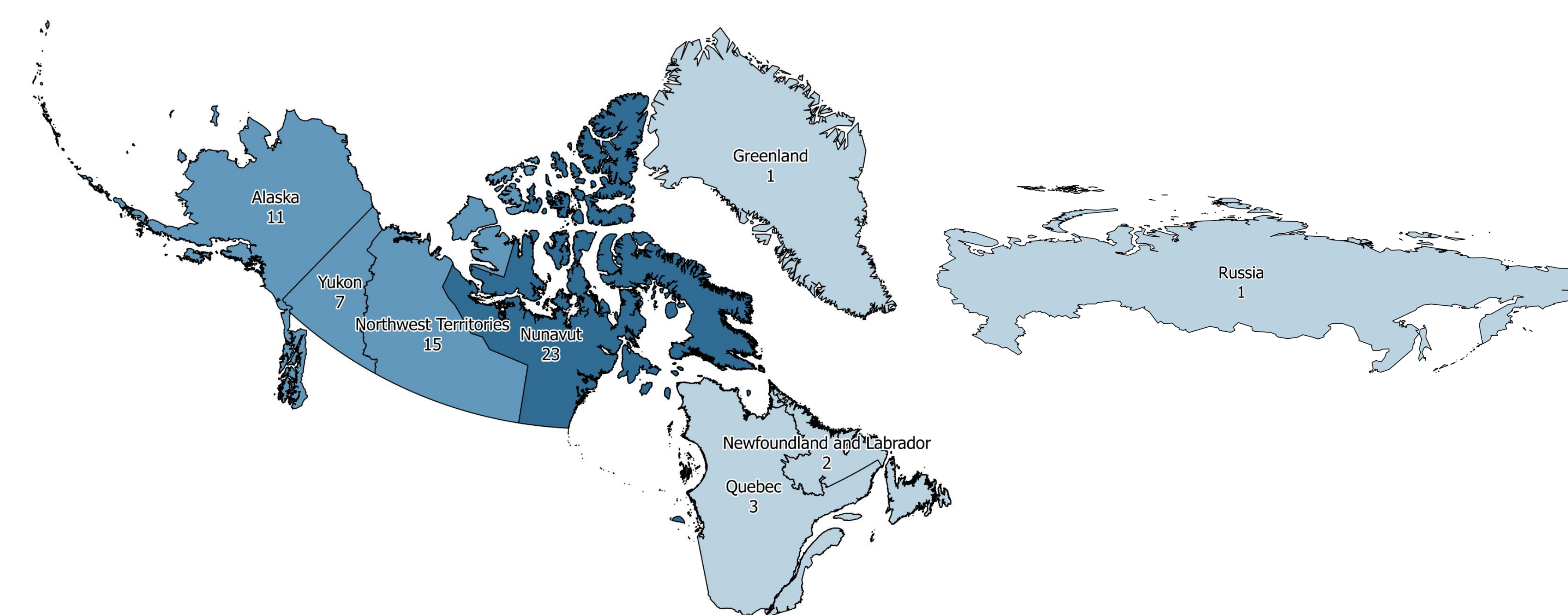


Figure 4. Map displaying Alaska, Greenland, Russia and the Canadian provinces and territories that contain Arctic regions. Region name and number of articles focused there are listed (n=97). Colour intensity represents relative proportion of publications in the database from that region.

Note: Russia is portrayed in an alternate projection and at a disproportionate size.

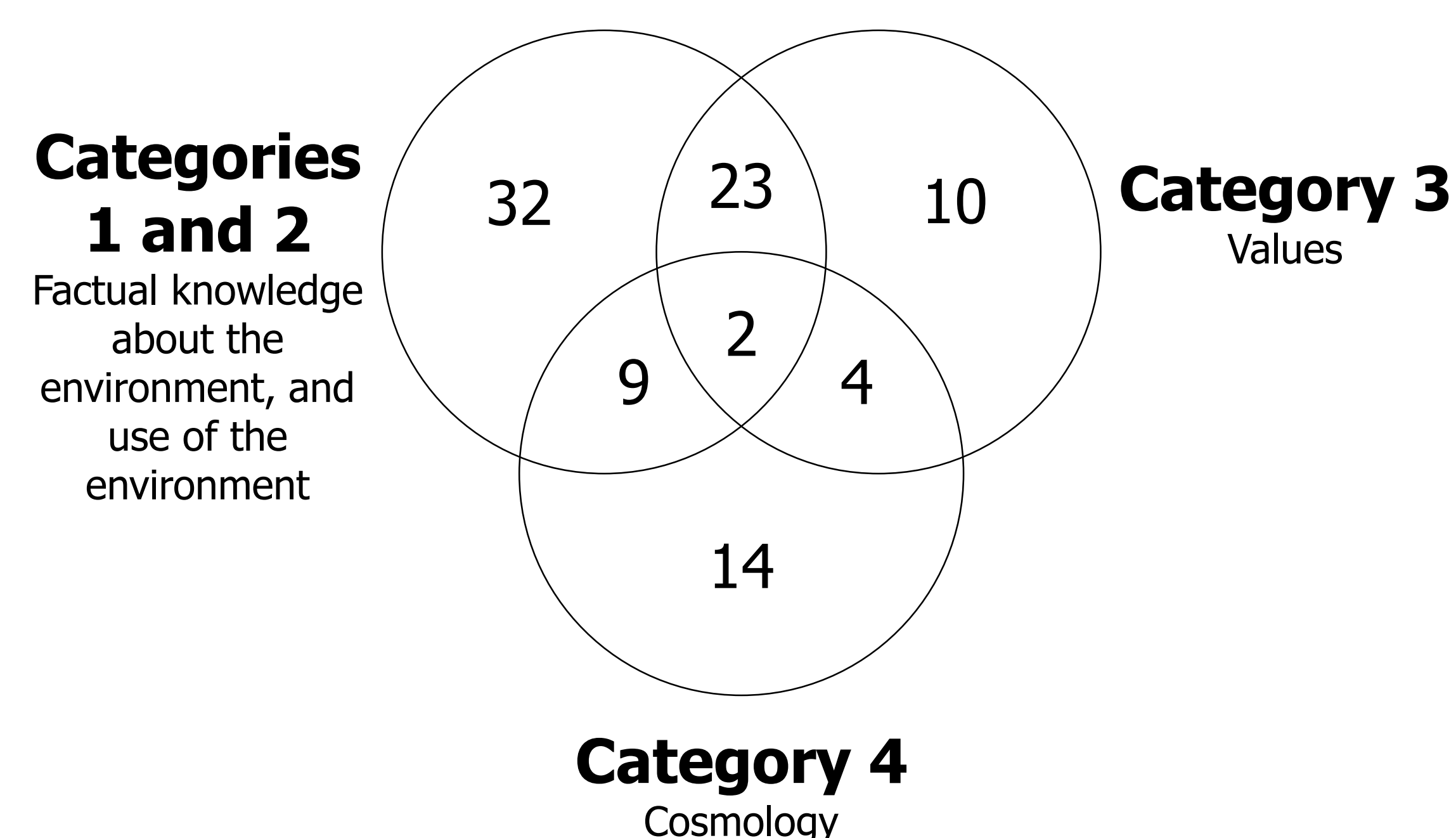


Figure 5. Number of articles in the literature database that address one, two, or all three of Berkes et al.'s (2000) and Usher's (2000) classifications of traditional ecological knowledge as they relate to wildlife management (n=97).

## Systematic Literature Review

### Methods

**What is the role of Indigenous knowledge and values in resource management?**

- Keywords and synonyms (Table 1) were used to search four cross-disciplinary databases
- Duplicate removal and article exclusion followed the PRISMA flow diagram (Moher et al., 2009)
- The full list of articles were categorized according to natural resources, but **these results concern only those about wildlife**

Table 1. **Keywords** and synonyms used in systematic literature review. Three "search strings" were used: one that included the column on 'knowledge', one that included the column on 'values', and one that used neither.

Indigenous	local	ecological	knowledge	values	resource	management
Aboriginal	traditional		observations	cultural	wildlife	co-management
Inuit				approaches	land	decision making
Alaska				practices	water	
Native					fisheries	
					fire	
					forest	

## Preliminary Results

- 97 articles on wildlife management were retained
- Number of articles focusing on these topics in Indigenous contexts has increased over time (Figure 2)
- Articles concerned co-management (35%), adaptive management (7%), and both (4%)
- Articles discussed case studies within formalized (i.e. documented and regulated) wildlife management systems (60%), case studies outside of formalized management (22%), and those that were ambiguous as to whether there was formalized management in place (18%)
- One third of articles discussed Indigenous peoples having some degree of decision-making power within a formalized (i.e. documented and regulated) wildlife management structure, usually co-management
- 40% of articles discussed Indigenous peoples having some degree of non-decision-making participation in wildlife management, not mutually exclusive of a degree of decision-making at other points of the management
- Nearly 30% of article abstracts made explicit reference to the relationship between Indigenous knowledge and science or Western knowledge.

## Next Steps

- The literature on wildlife management will continue to be categorized and analyzed to identify patterns over time and space
- The remaining literature in the systematic review, concerning the management of non-wildlife natural resources, will be analyzed in a similar manner
- Semi-structured interviews and participatory mapping with Inuit Elders and hunters in the five communities within the Labrador Inuit Settlement Area will be conducted in spring 2018
- Results from the literature review, interview and participatory mapping components of the thesis will be analyzed in an integrated manner to form final conclusions to address the research question

### References

Berkes, F., Colding, J., & Folke, C. (2000). Rediscovery of Traditional Ecological Knowledge as Adaptive Management. *Ecological Applications*, 10(5), 1251-1262.  
 Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Group, T. P. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Medicine*, 6(7), 1-6. doi:10.1371/journal.pmed.0060147  
 Usher, P. J. (2000). Traditional ecological knowledge in environmental assessment and management. *Arctic*, 53(2), 183.

