Linking Community and Water Governance Through Citizen Science: A Social Network Analysis

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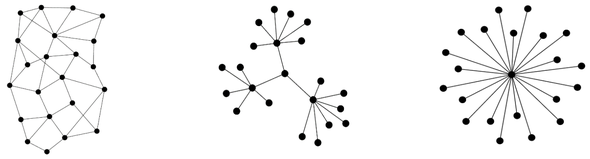
What role do social networks play in shaping citizen science practice and knowledge outcomes? How can social network analysis advance this understanding?

Background

- In natural resource management contexts, citizen science programs can involve diverse stakeholders collaborating in broad social networks.
- However, the characteristics and features of these networks are largely unknown despite there being a well-known relationship between network structure and effectiveness of collaborative environmental initiatives [1].
- This poster presentation presents a mixed methods social network analysis of two longstanding freshwater citizen science programs in Australia: Mill Stream Waterwatch and Regional Highlands Waterwatch [2].

Social network analysis provides a means to map and visualise citizen science networks to examine what enables and constrains individual experiences and program outcomes.



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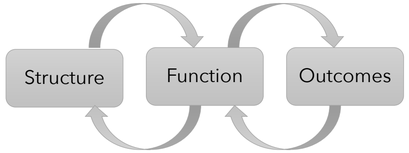
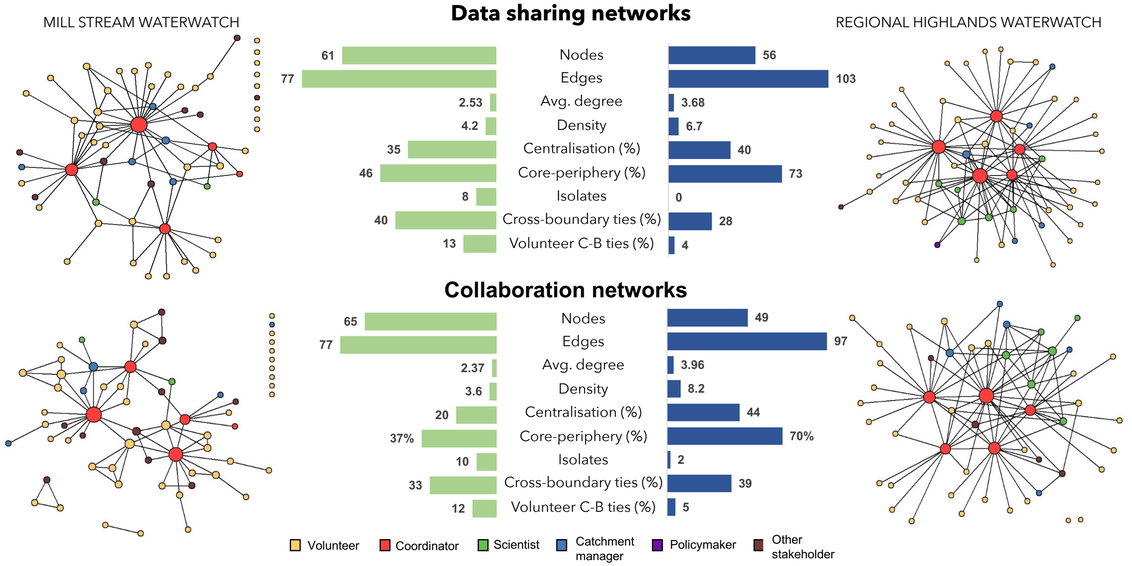


Methods

- **Network mapping survey:** Respondents were asked to recall up to ten individuals with whom they (1) shared citizen science monitoring data and (2) collaborated on monitoring activities and projects.
- **Social network analysis:** To investigate the network structure, we quantified various network-level measures relevant to collaborative environmental governance [3].
- **Network function:** To understand network function, a total of 40 in-depth interviews were conducted with a broad range of key stakeholders in each site (e.g. volunteers, coordinators, scientists, catchment managers and policymakers).
- **Network outcome data:** To investigate the relationship between network structure and outcomes, we conducted a secondary analysis of survey data from a previous study [4] to analyse uptake of citizen science data in decision-making for each case.

Network structure: Social network analysis

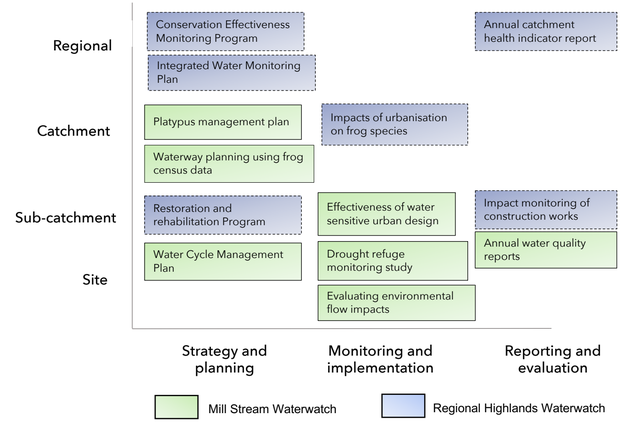


Network function: Insights from qualitative analysis

For volunteers, it's about making a connection with their waterways…That has been an aim of the program for a while now: to try and build people up in terms of their skills, in terms of their connections, so they can take a more active role in waterway management (coordinator, MSW).

I sit in the [government] but the four coordinators who work directly with the volunteers sit in the community. I feel this is a key to success as I can connect with policy makers and promote the program and its data while the coordinators can get on with their job and be more accessible to the public (program facilitator, RHW).

Program outcomes



Conclusion

- Despite both programs comprising similar actor diversity and conducting similar data collection activities (i.e. water quality monitoring), they have produced different network structures.
- Differences in network structure were related to the scale of data uptake in decision-making.
- Interview data validated the network analysis and showed how individuals navigated and experienced their relationships.
- Social network analysis has proven to be a valuable to understand citizen science programs and how they might be strengthened.
- We encourage practitioners to adopt a 'networking mindset' to realise the potential in their own networks.

Notes

[1] Bodin, Ö. & B. Crona. 2009. *Global Env. Change. 19:366-374*
[2] Programs have been anonymised
[3] Prell, C. et al.. 2009. *Society and Nat. Resources. 22:501-518*
[4] Bonney, P. et al. 2020. *Aust. J. Env. Management.* 27(2):200-223

This research was supported by the *Australian Government Research Training Program (RTP) Fee-Offset Scholarship through Federation University Australia.*

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