Volunteer Water Monitoring Survey

2024 Northwest Montana Lakes Network Report

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1. Introduction

Volunteer monitoring is widely recognized as a tool for engaging the public in science and enhancing stewardship outcomes across resource types and scientific disciplines. Volunteer water monitoring programs (VWMP) have been active in Montana for at least 20 years, and there are more than 30 active programs across the state. The State of Montana relies on volunteer collected water quality data for many aspects of water management. Because of this reliance, VWMP managers need to understand what motivates their volunteers to participate in VWMPs and the efficacy of their monitoring trainings. Information on volunteers has traditionally been collected through exit surveys. Our team partnered with VWMPs in Montana to develop a standardized statewide online volunteer monitor survey, designed to be administered by Montana VWMPs repeatedly over time. Our initial survey, which was developed and implemented in 2021, includes questions to understand the following: motivations for volunteering; program-specific training efficacy; learning outcomes; general perceptions of watershed knowledge; whether and with whom respondents talk with about volunteering; and trust in scientists. The survey was re-administered in 2022 and 2024 using the same questions. This report summarizes the findings of the 2024 survey.

2. Data collection and analysis

We developed this survey in collaboration with three Montana volunteer water monitoring program managers. We adapted many volunteer-specific questions from Church et al. (2019), the trust in scientists questions from Funk et al. (2019), and developed our own questions as a team. The volunteer water monitoring program managers informed the questions related to monitoring training. The survey discussed in this report was deployed for the 2024 volunteer year and administered in October 2024 through February 2025. We generated an anonymous survey link, which was distributed to volunteers through each volunteer water monitoring program manager.

This survey received approval from Montana State University's Institutional Review Board (SC033122-EX). Survey data was analyzed using R statistical software. In the following sections, we use descriptive statistics to report survey data.

3. Results

Volunteer water monitoring program managers distributed the anonymous survey link, thus we do not know the total number of volunteers who received the survey, but the program coordinator estimated 30. Overall, we received 9 responses from Northwest Montana Lakes Network program volunteers and estimate a response rate of 30%. In the following pages, the number of responses are question-specific; thus, although we received 9 survey responses total, each question response rate varies.

3.1. Northwest Montana Lakes Network results

3.1.1. Program information and demographics

Age

- **Total count (n):** 8
- **Mean:** 70
- **Median:** 70
- **Standard Deviation:** 3.3

Race

100% of participants are white (n=9).

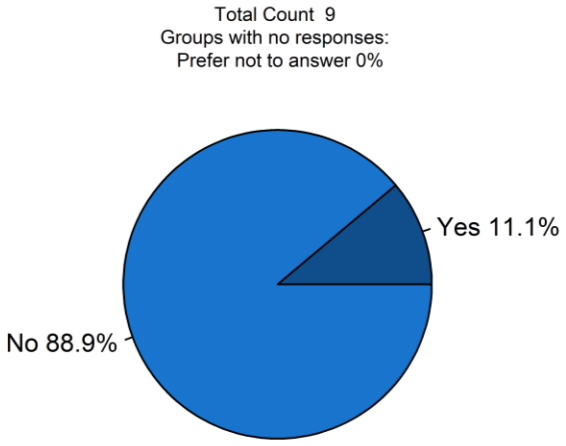

FIGURE 1. RESPONDENT VETERAN STATUS.

Answer choices that received no responses are listed at the top of the figure under the "Groups with no responses" text.

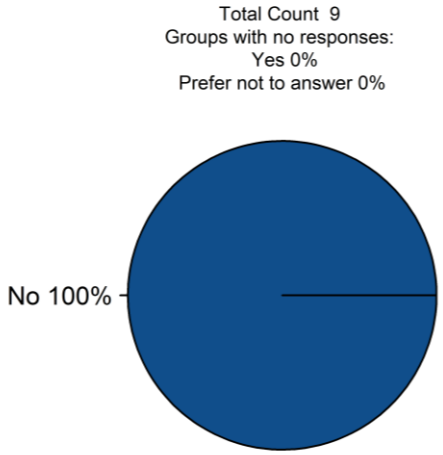

FIGURE 2. RESPONDENT ACTIVE DUTY STATUS

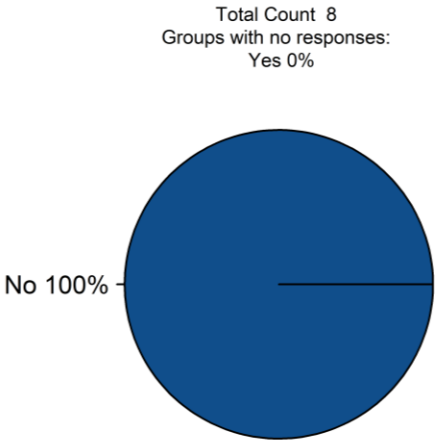

FIGURE 3. RESPONDENT STUDENT STATUS

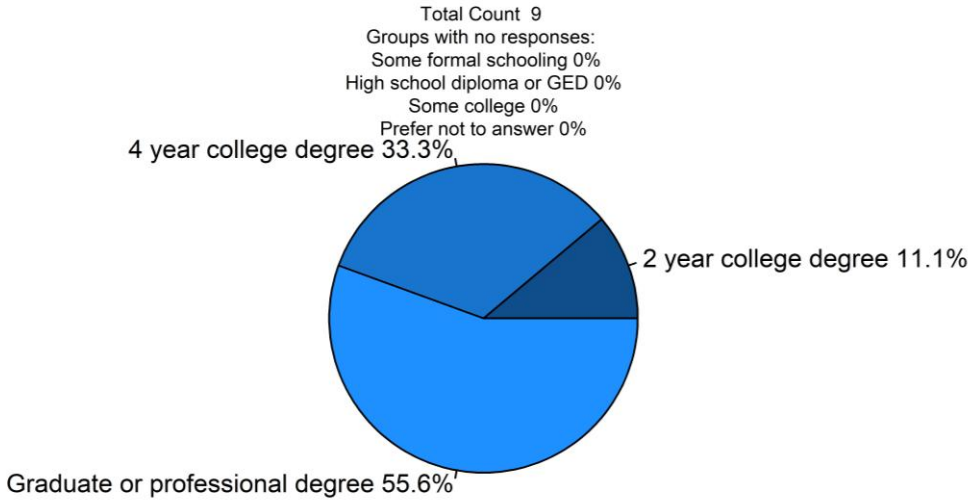

FIGURE 4. RESPONDENT EDUCATION STATUS

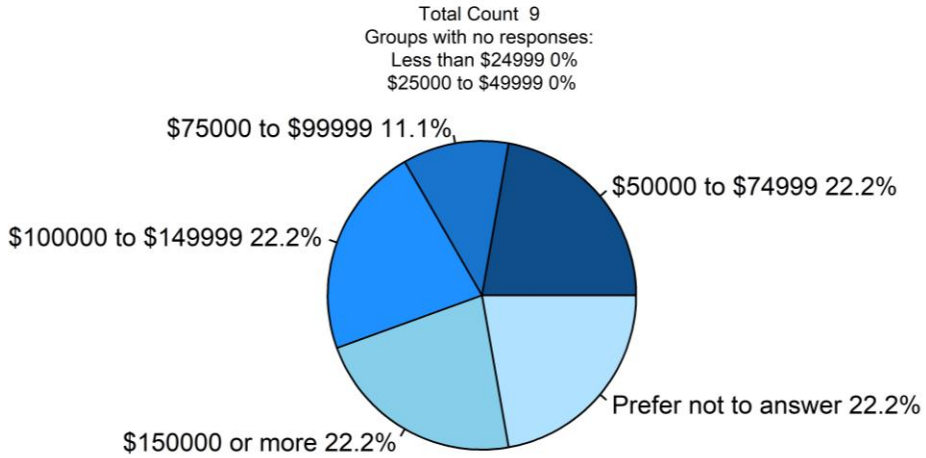

FIGURE 5. RESPONDENT HOUSEHOLD INCOME

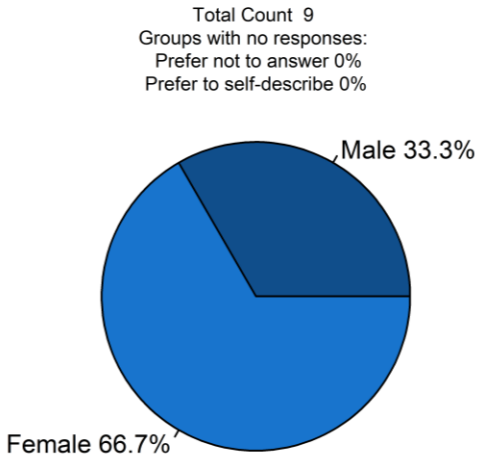

FIGURE 6. RESPONDENT GENDER

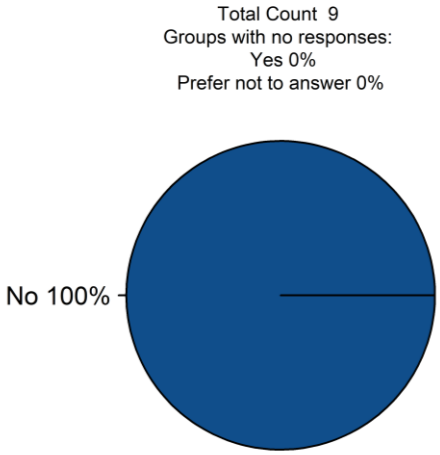

FIGURE 7. RESPONDENT HISPANIC ETHNICITY

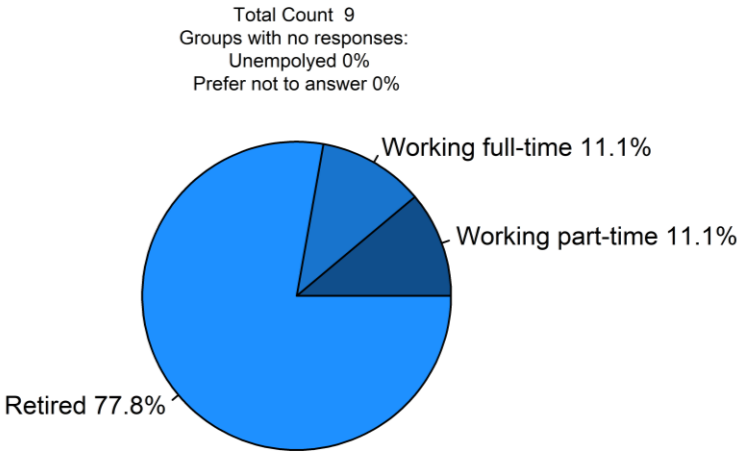

FIGURE 8. RESPONDENT EMPLOYMENT STATUS

3.1.2. Overall results

1. **"How many seasons have you volunteered with the Northwest Montana Lakes Network?** (please enter a number rounded to the nearest year)"
   - **Total count (n):** 8
   - **Mean:** 7.75
   - **Median:** 4
   - **Standard Deviation:** 10.3

2. **"Are you planning to volunteer with the Northwest Montana Lakes Network in the future?"**

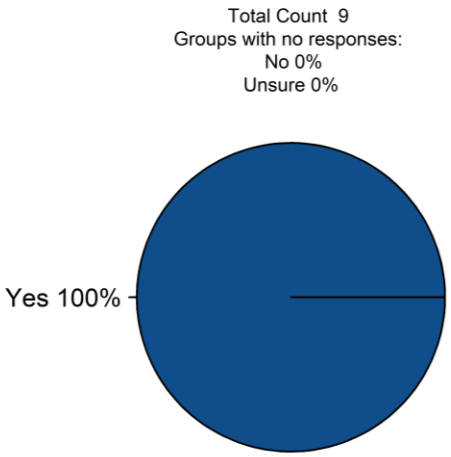

FIGURE 9. FUTURE VOLUNTEER PLANS

3. **"Please indicate if you recruited someone from the following categories to volunteer with the Northwest Montana Lakes Network in 2024."**

TABLE 1.WHO VOLUNTEERS RECRUITED

Recruitment Category	Total Count (n)	Yes (%)	No (%)	Unsure (%)
Friend(s)	6	33.3	66.7	0.0
Coworkers/Classmates	5	0.0	100.0	0.0
Spouse/significant other	5	40.0	60.0	0.0
Children	5	0.0	100.0	0.0
Other	4	0.0	100.0	0.0

4. **"How did you hear about opportunities to volunteer with the Northwest Montana Lakes Network? (select all that apply)"** (includes all volunteers regardless of how many seasons they had volunteered)

TABLE 2. HOW VOLUNTEERS HEARD ABOUT VOLUNTEERING FOR THEIR VWMP

	Total count (n)	Count	%
Meeting	8	0	0.0
Tabling or other outreach event	8	0	0.0
Word of mouth	8	2	25.0
E-mail campaign	8	0	0.0
News broadcasting	8	0	0.0
Print news media	8	4	50.0
Social media	8	0	0.0
Other (please specify):	8	2	25.0

5. **"Please indicate how much each of the following statements motivated you to volunteer with the Northwest Montana Lakes Network in 2024:"** (includes all volunteers regardless of how many seasons they had volunteered)

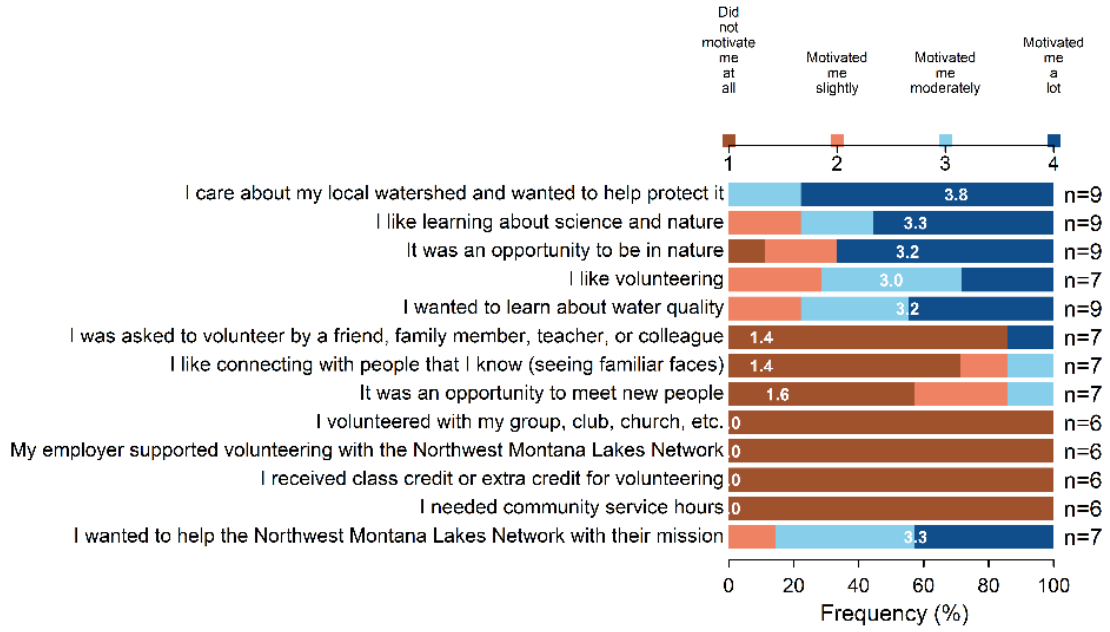

FIGURE 10. MOTIVATIONS TO VOLUNTEER

1=did not motivate me at all; 2= motivated me slightly, 3= motivated me moderately, 4 motivated me a lot

6. **"Do you have any suggestions to improve the volunteer experience with the Northwest Montana Lakes Network?"** *Answers below are verbatim (names have been removed).*
   - None so far; I'm a newbee.
   - No
   - Summary the health of our respective lake; what do the annual sampling results indicate?
   - Add more training about AIS [aquatic invasive species].
   - No

7. **"Have you ever participated in a training related to the Northwest Montana Lakes Network?"**

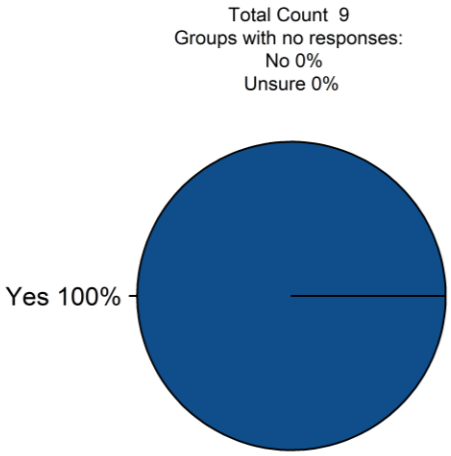

FIGURE 11. PARTICIPATION IN PAST TRAINING

8. **"Did you participate in a training related to the Northwest Montana Lakes Network in 2024?"**

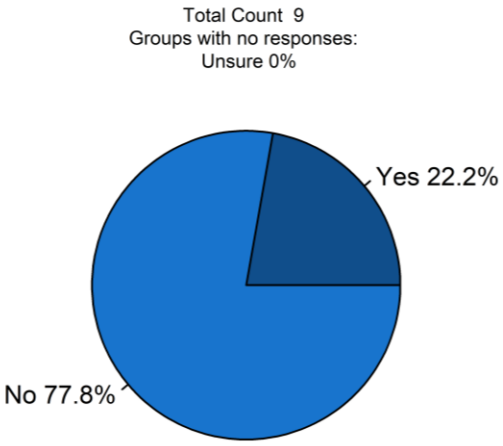

FIGURE 12. PARTICIPATION IN 2024 TRAINING

TABLE 3. WATER MONITORING TASKS COMPLETED IN 2024

Task	Total count (n)	Yes (%)	No (%)	DK (%)
Filling out datasheets	9	100.0	0.0	0.0
Conducting a visual assessment for algae	9	100.0	0.0	0.0
Aquatic invasive species identification	9	88.9	11.1	0.0
Lake turbidity measurement with a secchi disk	9	100.0	0.0	0.0
Lake water temperature measurement	9	100.0	0.0	0.0
Other (please specify):	1	100.0	0.0	0.0

TABLE 4. CONFIDENCE PERFORMING WATER MONITORING TASKS IN 2024

Task	Total count (n)	I felt confident performing this task (yes; %)	I have received formal training on this task (yes; %)	I feel that I need more training on this task (yes; %)
Filling out datasheets	9	88.9	11.1	0.0
Conducting a visual assessment for algae	9	66.6	22.2	22.2
Aquatic invasive species identification	8	37.5	37.5	50.0
Lake turbidity measurement with a secchi disk	9	88.9	22.2	0.0
Lake water temperature measurement	9	88. 9	22.2	0.0
Other (please specify):	1	100.0	0.0	0.0

9. **"How much do you disagree or agree with the following statements about the training(s) you had with the Northwest Montana Lakes Network in 2024?"** (includes only volunteers who participated in a training in 2024)

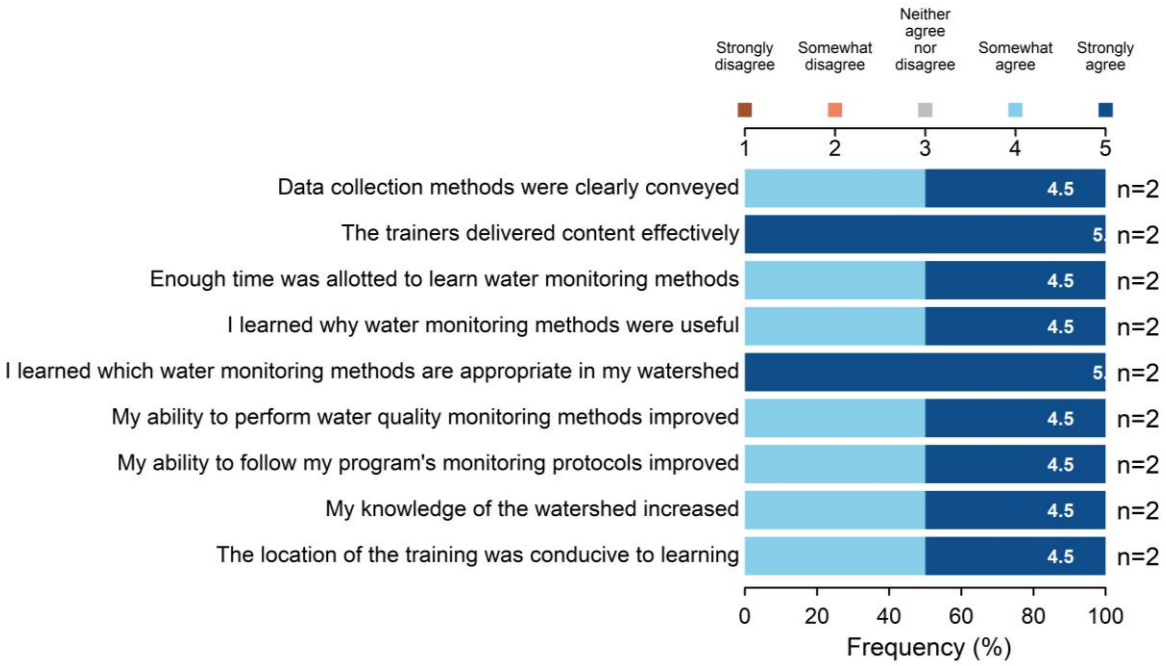

FIGURE 13. EFFICACY OF TRAINING

1=strongly disagree, 2=somewhat disagree, 3=neither agree nor disagree, 4=somewhat agree, 5=strongly agree

10. **"Do you have any suggestions to make the Northwest Montana Lakes Network trainings better?"** *Answers below are verbatim (names have been removed).*
    - I liked the hands-on and getting to see different plants & critters in real life. That's always helpful.

11. "Please indicate how much you disagree or agree with the following statements. Because of participating in Northwest Montana Lakes Network, I have a better understanding of the following:"

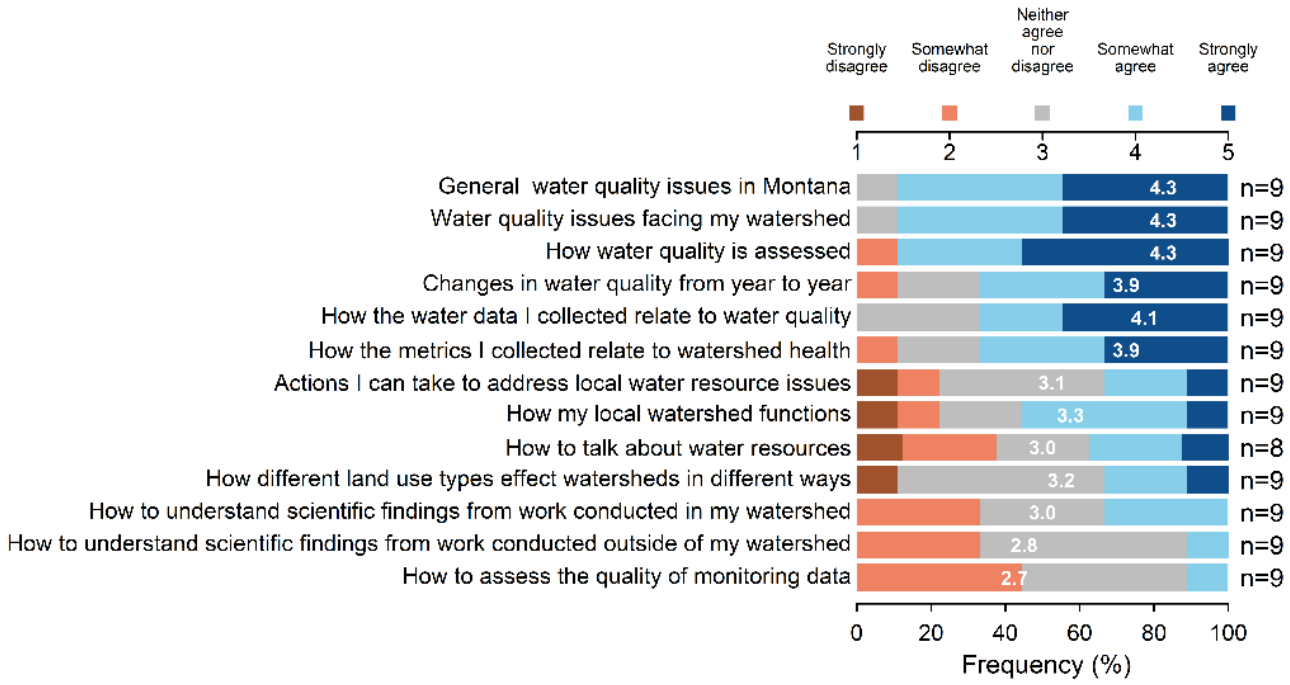

FIGURE 14. INFLUENCE OF VOLUNTEERING ON INCREASED UNDERSTANDING

1=strongly disagree, 2=somewhat disagree, 3=neither agree nor disagree, 4=somewhat agree, 5=strongly agree

12. "Did you talk with anyone about your participation with the Northwest Montana Lakes Network in 2024?

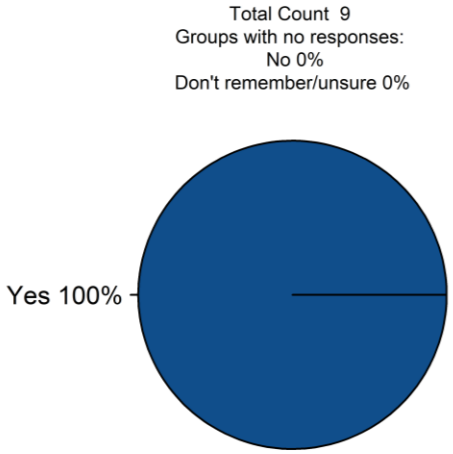

FIGURE 15. DISCUSSION OF VWMP PARTICIPATION

13. With whom did you talk about volunteering? (select all that apply)" (includes respondents who selected "yes" for "Did you talk with anyone about your participation with the Northwest Montana Lakes Network")

TABLE 5. WHO VOLUNTEERS TALKED WITH ABOUT VOLUNTEERING

	Total count (n)	Count	%
Friends	9	7	77.8
Coworkers/Classmates	9	0	0.0
Neighbors	9	7	77.8
Family	9	4	44.4
Other	9	0	0.0

14. "When discussing the Northwest Montana Lakes Network, what topics did you talk about? (select all that apply)" (includes respondents who selected "yes" for "Did you talk with anyone about your participation with the Northwest Montana Lakes Network")

TABLE 6. TOPICS SPOKEN ABOUT RELATED TO THEIR VWMP

	Total count (n)	Count	%
Your experiences related to collecting the water samples	9	9	100.0
The sites where you collected samples	9	8	88.9
What you learned about the quality of water in the samples you collected	9	5	55.6
Your experiences related to testing the water samples	9	4	44.4
What you learned about water quality throughout the entire watershed	9	1	11.1
The conversations that you had with others participating in VWMP	9	1	11.1
What you learned about how your own activities and choices can affect water quality	9	1	11.1
Other	9	0	0.0

15. "Does anyone you spoke with about the Northwest Montana Lakes Network generally have different opinions than yourself about environmental issues?"

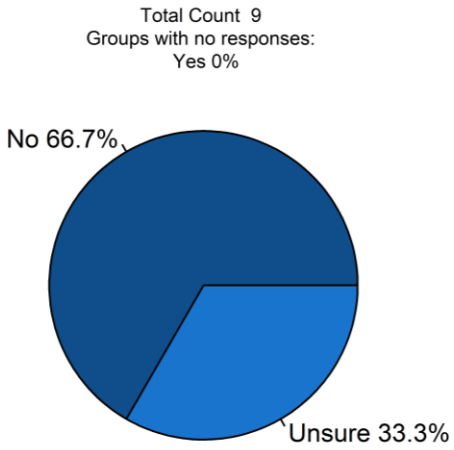

FIGURE 16. OPINIONS OF THOSE SPOKEN TO ABOUT VWMP PARTICIPATION

16. "Please indicate how much you disagree or agree with the following <u>broad statements about scientists</u>:"

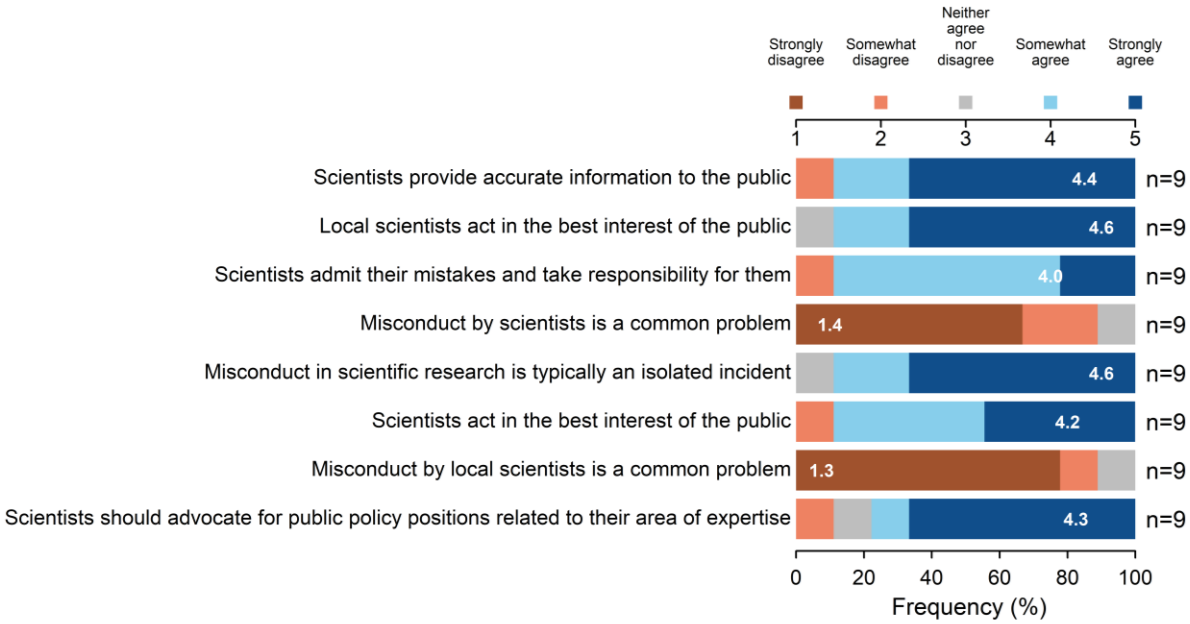

FIGURE 17. PERCEPTIONS OF SCIENTISTS

1=strongly disagree, 2=somewhat disagree, 3=neither agree nor disagree, 4=somewhat agree, 5=strongly agree

17. "In 2024, how frequently did you use the following sources to learn about issues impacting your local watershed?"

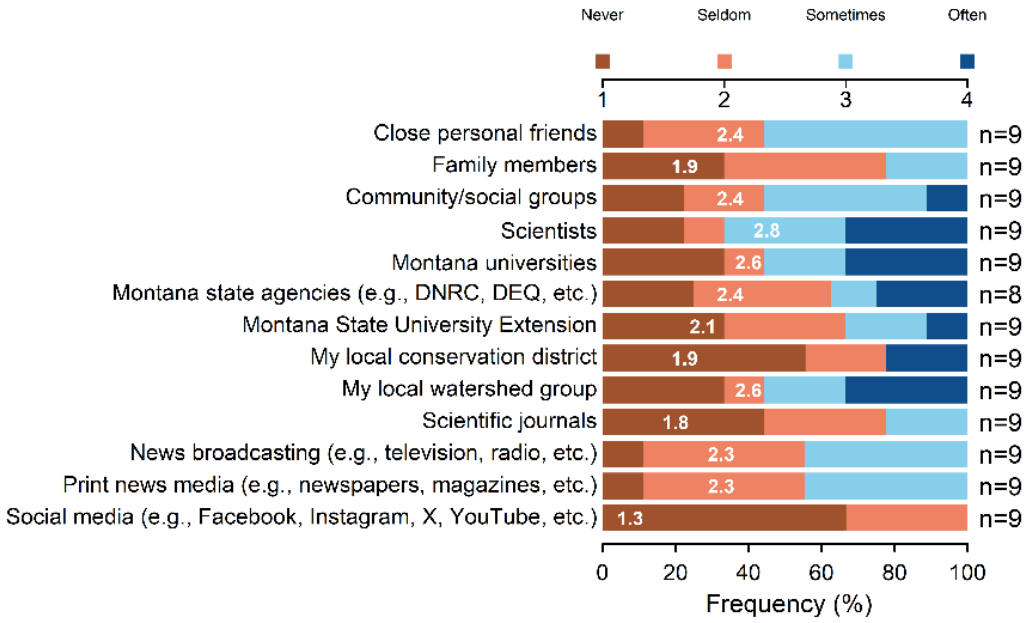

FIGURE 18. FREQUENCY OF INFORMATION USED

1=never, 2=seldom, 3=sometimes, 4=often

18. "Please indicate how much you trust the following sources to accurately communicate scientific information in general."

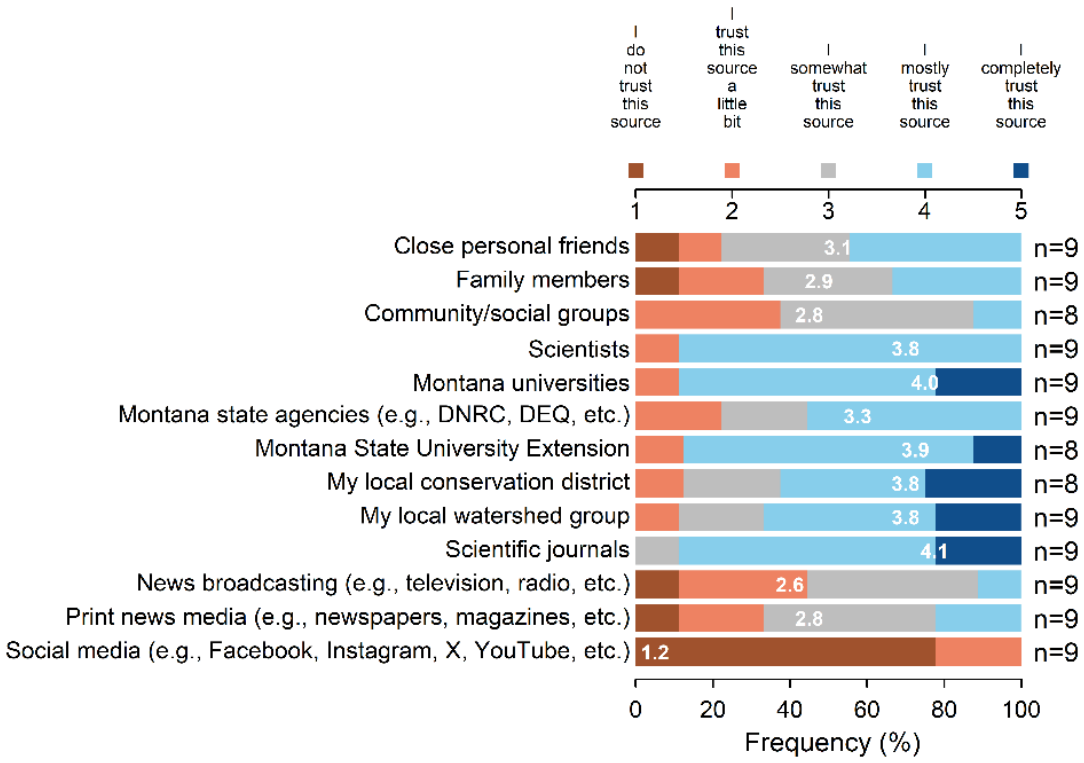

FIGURE 19. TRUST IN INFORMATION

1=I do not trust this source at all, 2=I trust this source a little bit, 3=I somewhat trust this source, 4=I mostly trust this source, 5=I completely trust this source

19. **"In 2-3 sentences, please summarize the largest water quality issue facing your local watershed."** *Answers below are verbatim (names have been removed).*
    - 1 population growth 2 AIS [aquatic invasive species].
    - I really don't know.
    - Old septic systems.
    - Too many people.
    - Increase in users: over-development, over-sized boats, shoreline erosion, increased risk of AIS [aquatic invasive species].
    - Overuse by people, resulting in garbage, shore erosion, turbidity increase, risk of AIS [aquatic invasive species] introduction.
    - Rising water temperatures due to global warming, and excessive weed growth.
    - Warming temperatures are producing more algae growth. Nearby extensive logging is producing more run-off into the lake and the population growth in our valley brings more users whose ethics on use of natural lakes produced more litter, fishing lines caught in trees, cut down trees and sins and poop and toilet paper. This is new, just since COVID.
    - Septic pollution, runoff from fire impacted forests and runoff from lawns and agriculture are the biggest issue, along with lakeside disturbances for construction of homes.

20. "The following are examples of changes you could make at home, in your daily routines, or at work to try to help improve water quality in your community. Please indicate whether you have made any of the following changes (select all that apply)."

TABLE 7. ACTIONS TAKEN TO PROTECT WATER QUALITY

	Total count (n)	Not applicable to my household (%)	I have not made this change (%)	I had already made this change (%)	I made this change as a result of volunteering (%)
Implemented integrated pest management practices to reduce pesticide use	9	11.1	33.3	55.6	0.0
Reduced fertilizer use	9	11.1	33.3	44.4	11.1
Properly disposed of household waste (e.g. batteries, light bulbs, hazardous chemicals, oils and fats, etc.)	9	0.0	11.1	77.8	11.1
Attended a public meeting related to natural resource planning/management	8	0.0	50.0	37.5	12.5
Submitted a public comment related to natural resource planning/management	8	0.0	37.5	50	12.5
Properly disposed of pet waste	9	44.4	0.0	55.6	0.0
Properly disposed of used motor oil and antifreeze	9	33.3	0.0	66.7	0.0
Directed downspouts away from a paved surface	9	44.4	22.2	33.3	0.0
Decreased the amount of chemical products used in my house that go down the drain	9	0.0	22.2	77.8	0.0
Reduced storm water runoff from my property	9	44.4	22.2	33.3	0.0
Reduced runoff of other contaminants in storm water from my property (e.g., sediment, de-icer, etc.)	9	44.4	33.3	22.2	0.0
Volunteered for another water quality related project	8	12.5	62.5	0.0	25
Tested my well water	9	11.1	22.2	66.7	0.0

4. Citations

Church, S.P., Payne, L.B., Peel, S. and Prokopy, L.S., 2019. Beyond water data: benefits to volunteers and to local water from a citizen science program. *Journal of Environmental Planning and Management*, *62*(2), pp.306-326.

Funk, C., Hefferon, M., Kennedy, B. and Johnson, C., 2019. Trust and mistrust in Americans' views of scientific experts. *Pew Research Center*, *2*, pp.1-96.