

Appendix B. North American Lake Management Society survey on HCB notification/outreach

ITRC, in coordination with the North American Lake Management Society (NALMS), distributed a survey using the Survey Monkey platform to gain insight into harmful cyanobacterial bloom (HCB) notification and outreach materials used to inform lake users of HCBs in different regions of the United States. The survey was distributed via NALMS to its membership and was then shared by NALMS members to different groups and individuals with interests in their local lake. There were 894 respondents from the United States and Canada, but not all respondents answered each question. A portion of the survey questions and responses provided by the 724 respondents from the United States are included here to highlight how surveys may help improve future risk communication and outreach.

Questions were included to gauge the attributes of lake users that might influence their response to outreach and communication methods. These attributes included:

- respondent's age
- the region of the country they are located
- their trusted institutions for bloom notification
- residency near or far from the lake

The survey also aimed to learn the types of outreach materials that respondents prefer and feel are most effective regarding HCBs and risk factors. This information will, hopefully, help organizations and agencies develop more effective, targeted outreach materials.

B.1 Responses by Age Group to Survey Questions

The possible effect of respondent age on responses was one factor that was explored in the survey. Over 75% of respondents were age 45 and older. In general, all age groups except for the 18-24 age group were satisfied, by large margins, with how they learned of a bloom (354 satisfied and 131 not satisfied).

Unfortunately, the low number of respondents from the 18-24 age group (five) makes it difficult to characterize this age group. One question where the group's response may be particularly beneficial to research further was: "Were you satisfied with how you received notification about the bloom?" The 18-24 age group was the only age group that was unsatisfied with how they learned of a bloom: Of the five respondents, two were satisfied, and three were not satisfied. This age group learned about blooms by signs at the lake and hazard flags, meaning they were actively using the lake when they learned about a bloom, rather than learning about a bloom by emails or text messages, the communication methods preferred by other age groups. This age group's use of the lake, potentially for contact recreation, reinforces the need to communicate risk through channels that age groups actively use.

Both the satisfied and unsatisfied respondents in the 18-24 age group indicated similar preferences in their answers to "How can notifications be improved?" They chose, as did other age groups, "better notification on signs of human and animal risks" as their top pick. Interestingly, the 18-24 age group was the only age group that preferred to receive future notifications in languages other than English. There was some agreement among age groups on the preferred means of bloom notification, based on nine choices including "other." In all age groups, over 60% of respondents were satisfied with at least one notification method, except for the 18-24 age group, which was 40% satisfied. The 65+ and 45-54 age groups had the highest satisfaction percentage with 78%.

B.2 How to Improve Means of Communication for Different Age Groups

Survey respondents were given a list of nine possible choices to improve communication methods regarding cyanobacteria blooms. A top choice to improve communication for most age groups who were satisfied with how they were notified with blooms was to improve signage around lakes. This could be done by adding risk information, particularly, information about health risks to humans and animals. The range of support went from 41% (35-44 age group) to a high of 54% (45-54 age group). The only group that did not choose this method of improvements was the 18-24 age group with 0% (3 respondents). Of interest is that the 18-24 age group that did not approve of how they learned about blooms did have improved signage in their top three communication improvements to try at 66.7% (2 of 3 respondents). Also, respondents felt that more colorful and attractive signs would draw more attention to this information. The range for this choice went from 27% for the 55-64 age group to 100% for the 18-24 age group. The younger age groups rated this option higher in their top three choices (range 100% to 54%) compared to age groups starting at 45 to 65+ years old (range 32% to 37%). Perhaps implementing

these preferences would lead to signage that reaches more people and better informs them about why advisories or warnings are issued.

B.3 Regional Differences

The number of respondents varied substantially throughout the country. U.S. Environmental Protection Agency (USEPA) regions were used to identify groups of mostly contiguous states with cultural or topographical similarities (Figure B-1). Across the United States, 442 respondents (73%) were satisfied with how they were notified of a bloom. Of those 73% of respondents, the top three notification methods were email (31%), personal observation (59%), and lake association (33%). Only two regions had all three of these methods as their first choice: the highly populated Regions 1 and 2. All but one region, Region 6, had two of these methods as their top choices.

In a break from other regions, 71% of respondents in Region 6 were not satisfied with how they were notified about a bloom. The top three ways people were notified in Region 6 were personal observation, newspapers, and social media, all at 42% with seven respondents. Only 14% of respondents received text or phone alerts, yet 90% of Region 6 respondents chose this method as the preferred method for bloom notification.

Email, an important means of bloom notification for many, had 0% of the 14 respondents in Region 8 choose it as a preferred notification, while in Region 2 it was the leading notification method (57%). Lake association, signs at lake, and "other" were all tied at 42%. The "other" option encompassed a variety of responses, including that respondents were informed by other people with knowledge of the lake, such as a volunteer for an organization or someone who works for an agency.

The highest percentage of responses of people who chose lake associations for how they found out about a bloom was from Region 1 (47%), while for five USEPA regions (4, 6, 7, 9, and 10), lake associations were not in the top three choices. This result could be an artifact of how the survey was distributed, but it could be beneficial for lake associations to know where additional effort might be useful in gaining more membership or recognition of the work they do.

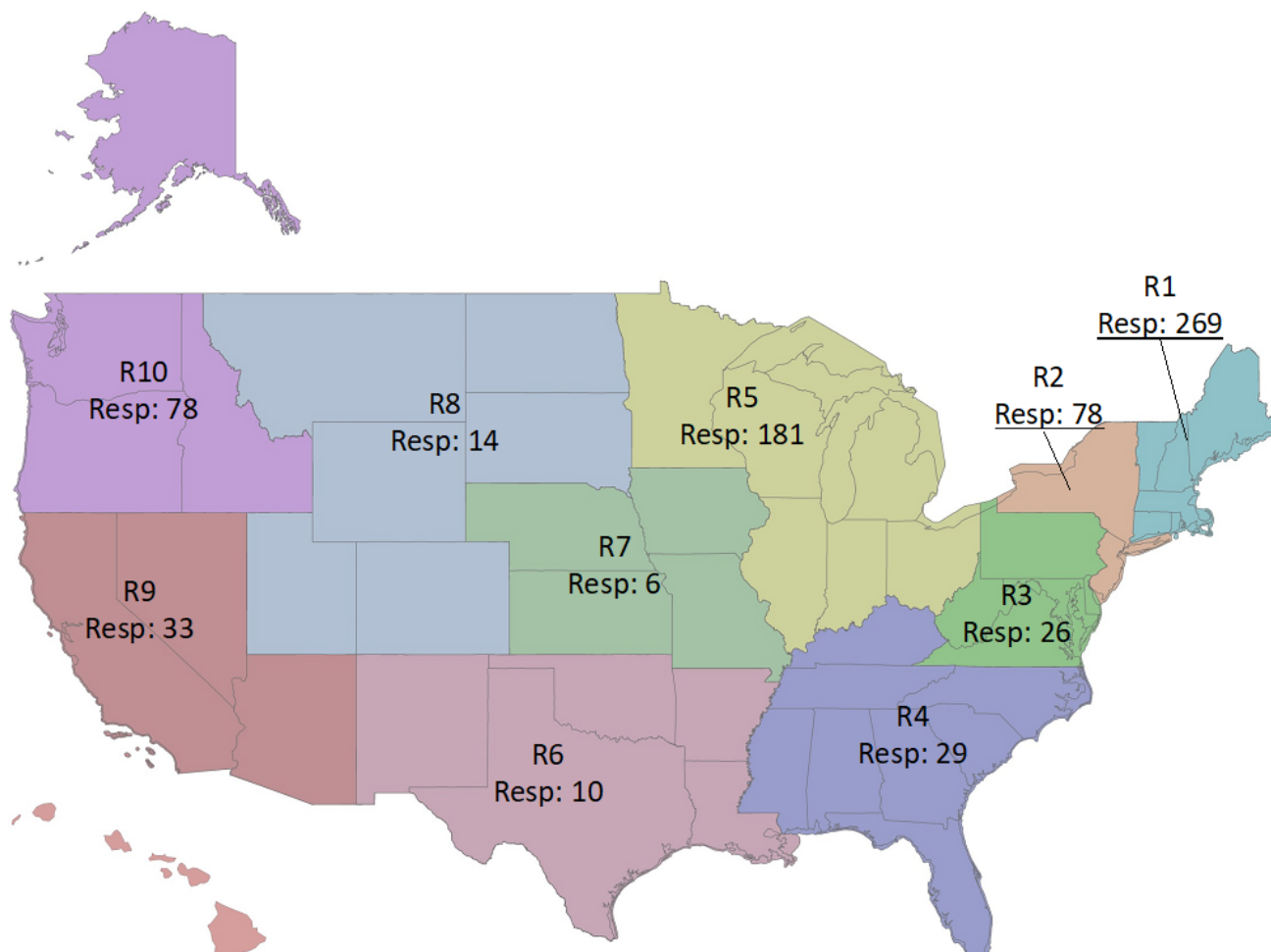


Figure B-1. Map of USEPA regions by number and number of respondents (Resp).

Source: ITRC. Used with permission.

B.4 What Entities Are Most Trusted?

A positive result of this survey was finding that there was consensus throughout the United States on what entities respondents trusted the most to provide them with bloom information.

Trusted entities were the same across age groups and notification satisfaction levels (Table B-1). The top three most-trusted groups across the categories named were federal or state agencies, local agencies, and lake associations. Lake associations have lower percentages, but they are trusted and listened to by respondents. Veterinarians and public media were also recognized.

Table B-1. Nationwide responses: Which entities would you trust notification messages from the most?

Entity	Percentage of all respondents nationwide	# Respondents nationwide
Federal or State Environmental Agencies	81.13%	602
Local Governments	67.25%	499
Lake Associations	64.02%	475
Veterinarians and Other Health Professionals	13.07%	97
Religious Organizations	0.13%	1
Other Community Groups or Associations	5.53%	41
Public Media (Newspapers or Radio and Television Stations)	24.80%	184
Social Media	5.39%	40
Other (Please Enter Specific Information Below)	6.60%	49

B.5 Knowledge About Blooms and Residency

To examine if residency on a lake (either by homeowners or renters) made someone more likely to be vested in the water quality or issues concerning the lake, the survey asked “Where do you live?” Respondents were split into two groups: residents who lived on the lake and those who did not (this group included those in the watershed, as well as those who lived much farther away).

Residency on the lake was not a significant factor in identifying cyanobacteria blooms. A majority of the 786 respondents to this question said they knew what a cyanobacteria bloom is. The location of their residence had little influence on their identification skills, with 85% of those living on lakes (331 respondents) and 94% of those living elsewhere (440 respondents) indicating they could recognize cyanobacteria.

Respondents were also knowledgeable about the toxins that cyanobacteria can produce. Lakeshore residents, though, identified their lake association as having the greatest influence on their knowledge about blooms (64%), while nonresidents identified working for state or federal agencies or nongovernmental organizations (47%) as helping to inform them. Only 13% of nonresidents were lake association members.

When asked to check all that applies out of eight choices to the question “Once you learn of a potentially toxic cyanobacteria bloom from a trusted source, what action would you take?”, both residents and nonresidents had the same top three choices:

- Keep kids out of the water.

- Keep pets out of the water.
- Try to inform neighbors and friends.

Both groups are likely vested in the issue of cyanobacteria for a variety of reasons, but the similarity in responses may show that information being distributed to interested parties is effective.

B.6 Conclusions

Survey results provide valuable insights into the preferences of respondents by geographic region and on outreach methods that have been successful in different areas of the country. Respondents indicated that text messages or flags at beaches could be useful tools for future outreach. Respondents were split on if they wanted to rely on their personal observations to learn of a bloom or rely on a lake association to notify them of a bloom. This highlights why it is important to use several bloom notification methods, as different people like to receive their information in different ways.

Respondents throughout the United States agreed on what institutions or agencies they trusted to receive notifications from regarding blooms. Even though a large number of respondents stated that they did not like to receive notifications from lake associations, it was clear from the results that lake associations are trusted sources. This is likely because people who have a local lake association trust them and like to receive information from them, while those who do not have a local lake association would have no reason to choose these groups as a preferred method for receiving information or as a trusted information source. Local and federal governments were also top choices for being trusted. Government messaging is especially important when lake associations are not present in an area. It is critical for people to have trusted sources for distributing messages associated with risk—especially since not all cyanobacteria blooms are toxic and you cannot tell if a bloom is toxic just by looking at it. Thus, lake associations and government agencies should continue to work together, when possible, to effectively distribute HCB information.

Reaching more respondents, especially those in the 18–24 age group and those from regions with low response rates, will be important for future surveys.

B.7 Acknowledgements

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