Ripples on the Web: Spreading Lake Information via Wikipedia

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Benefits of lake information on the web

People increasingly use the internet to learn about specific natural areas, including lakes, whether it is for an upcoming vacation, fishing trip, classroom activity, or research. However, basic information about these areas is often only available to non-professional scientists via scattered state-based web portals. Although these web portals are immensely valuable, inconsistencies among agencies and lack of search engine optimization means that lake information can be difficult to discover. For example, the searchable databases made available by the Wisconsin[1] and Minnesota[2] Departments of Natural Resources contain a wealth of information and are easy to find via a search engine query, but similar information for other areas is inconsistent at best. In this article, we argue that Wikipedia is an ideal venue for centralizing and improving the availability of facts about lakes. We give a brief overview of lake information on Wikipedia, how to contribute to it, and our vision for the broader dissemination of lake information.

Why Wikipedia?

As one of the most visited websites worldwide, Wikipedia is an extremely influential source of information. Both laypersons and experts alike rely on Wikipedia as an introductory source to a variety of topics (Shafee et al. 2017; Dowell and Bridges 2019). This is especially true for information about natural resources, as pageview analyses show that there is a seasonality to how people interact with plant and animal information online that mirrors plant phenology and animal migration patterns (Mittermeier et al. 2019). Additionally, efforts to increase access to Wikipedia via translation and distribution initiatives (e.g., data fee waivers for free mobile apps), especially in places without reliable internet (Shafee et al. 2017), mean that Wikipedia transcends political boundaries, language barriers, and financial constraints.

Wikipedia is an ideal venue for hosting lake information in particular because its wide readership and diversity of topics allow people to learn more about these important aquatic systems and contemporary water quality issues affecting lakes. Furthermore, Wikipedia is well suited to enable place-based learning because its content linking leverages deep connections between lake information and other subject matter areas such as geography, social sciences, and ecology.

Another benefit of Wikipedia is that basic lake information is included in most lake pages and often (but not exclusively) follows specific standardized guidelines. For example, most lake pages contain metadata
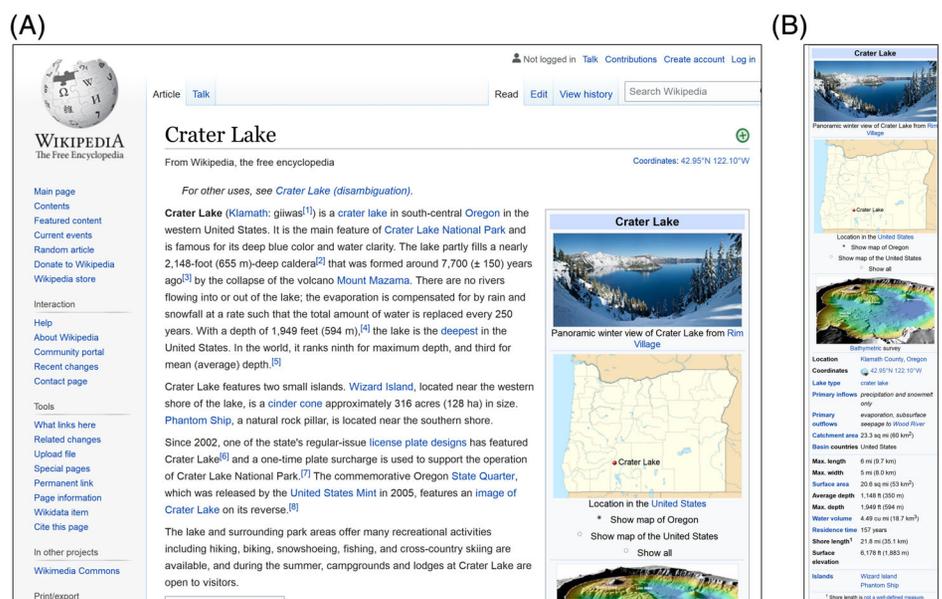
[1]https://dnr.wi.gov/lakes/
[2]https://www.dnr.state.mn.us/lakefind/index.html

FIG 1 Example Wikipedia **(A)** article and **(B)** infobox for Crater Lake (https://en.wikipedia.org/wiki/Crater_Lake).
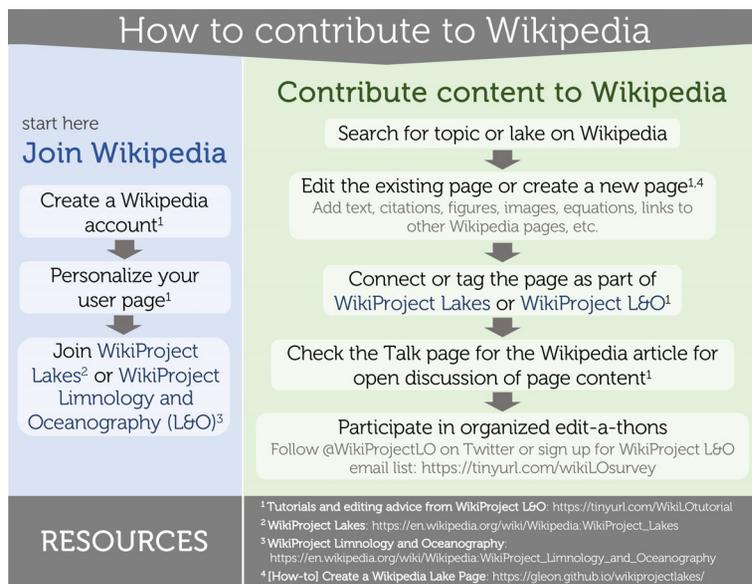
FIG 2 Infographic on how to contribute lake information to Wikipedia.

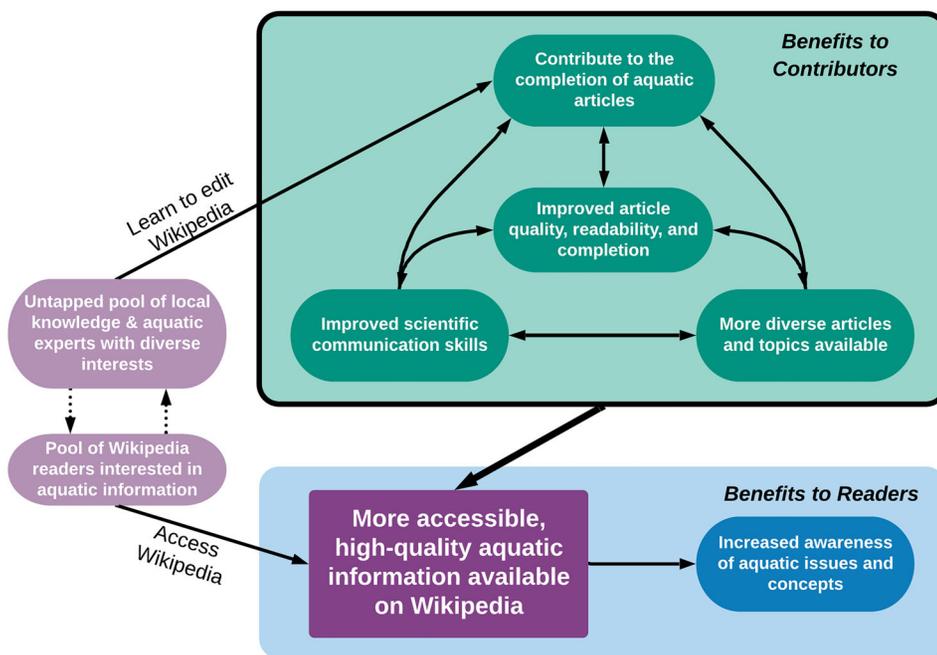**FIG 3** Contributing to lake information on Wikipedia benefits both contributors and readers of the added content.

the lake infobox, the Wikipedia article itself can be standardized following recommended guidelines for the structure of lake page content.[4] A final benefit of Wikipedia is that lake information is likely to remain permanently accessible given the long-term archival commitments of Wikimedia Foundation, and because Wikipedia has become integrated into many aspects of everyday life worldwide. The hosting of Wikipedia itself is not subject to broken hyperlinks, personnel changes, or funding lapses in the same way as personal or institutional webpages.

Existing lake information on Wikipedia

Over 18,000 English Wikipedia articles exist for lakes and over 700 English Wikipedia articles exist describing aquatic processes in lakes. These articles reach a wide audience as they collectively have over 200,000 views per day. Although this seems like a lot of pages dedicated to lakes, this constitutes only a small fraction of lakes in the world given estimates of upward of 150,000 moderate to large sized lakes worldwide (Lehner and Döll 2004). Furthermore, many (> 60%) Wikipedia articles on specific aquatic processes lack substantive text, citations, diagrams, or information boxes. Fortunately, you can help improve lake information content on Wikipedia using your local and/or expert knowledge.

How to contribute to Wikipedia

Take a minute to look for a Wikipedia page for your favorite lake

+ Can you find it on Wikipedia?
+ Does it say how your lake was named?
+ Does it explain how the lake was formed, either by natural or man-made processes?
+ Does it describe any unique characteristics of your lake or species present?

(i.e., an "infobox") with standardized field types and often unit conversions as specified by an available template.[3] We show some typical infobox fields in Fig. 1 including lake location, lake dimensions, and catchment characteristics. This information is used as

an authoritative source by web search engines such as Google's Knowledge Graph that populates information directly on search result pages.

Note that this information is sometimes linked to a data source by superscripted reference links. Other items are often included in lake infoboxes but not shown in Fig. 1 include things like major river inflows or outflows to or from the lake. In addition to

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[3]https://en.wikipedia.org/wiki/Template:Infobox_body_of_water

[4]https://en.wikipedia.org/wiki/Wikipedia:WikiProject_Lakes#Article_structure
[5]https://tinyurl.com/WikiLOtutorial

Contributing lake information on Wikipedia is as easy as editing a Word document, and anyone with internet access can easily contribute[5]. We provide a brief introduction on how to contribute lake information to the world's largest open access project (Fig. 2). We recommend creating a Wikipedia account because this allows you to keep track of your contributions and receive notifications when major changes are made by other editors to articles you are interested in. Wikipedia continues to reduce barriers to editing, such as creating a visual editor which allows editors to contribute to Wikipedia without needing to learn wikitext markup, and providing many resources for general editing advice.[5] Since all the content on Wikipedia is distributed under an open license, contributions made to Wikipedia must hold a similar licensing. In general, you may contribute content (e.g., text, photographs) to Wikipedia if you created the content entirely yourself.

We also encourage potential aquatic contributors to take a look at two separate initiatives (called WikiProjects) that have the goal of improving lake and aquatic information on Wikipedia: WikiProject Lakes (WP Lakes) and WikiProject Limnology and Oceanography (WP L&O). These WikiProjects are groups of contributors organized around a certain topic with the goal of improving Wikipedia content on that topic. Both the WP Lakes and WP L&O homepages include a list of contributors, callouts to specific pages that need improvement, and guides on project-specific editing advice.

Benefits to contributors and readers

The express goal of both WikiProjects is to provide resources and encouragement for those with strong interest in aquatic topics, unique local knowledge, or specific expertise to contribute to aquatic pages on Wikipedia. Although the ultimate goal is to improve public knowledge about aquatic topics and concepts on the web, we see broader benefits to interacting with Wikipedia for both contributors and users of Wikipedia (Fig. 3). For example, to edit Wikipedia pages, contributors must assess what information is missing, and evaluate the extent to which the article is documented with reliable references. Thus, by contributing their knowledge to Wikipedia pages, contributors can improve critical thinking and research skills throughout the process of researching new content, fact-checking articles, and reviewing existing content. Additionally, contributing to Wikipedia is a useful tool for developing writing skills: contributors must write for a diverse and general audience, work collaboratively, and use "fact-based" rather than persuasive writing. Ultimately, increased contributor skill leads to further benefits for readers, who gain access to higher quality, thorough information as pages are improved or added.

Through workshops, edit-a-thons, and social media engagement, both WikiProjects have generated momentum toward improving aquatic Wikipedia pages. So, take a minute to explore your favorite lakes on Wikipedia. We need your help and any contribution, no matter how big or small. It makes a real difference!

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