What Is in a "Lake" Name? That Which We Call a Lake by Any Other Name

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Abstract

Given how important lakes are to people, it might seem safe to assume that careful thought has been put into the naming of lakes, and that lake names reflect the high societal value people place on lakes. We examined these assumptions by analyzing the official names in the U.S. Geographic Names Information System for the 479,950 lakes ≥ 1 ha in the conterminous U.S. We found that 83% of lakes were unnamed and most of these were small lakes with 80% of unnamed lakes being smaller than 4 ha. Based on the 83,115 named lakes, we found that lake names reflect peoples' everyday lives, that lakes can inspire creativity (although the most common lake name is "Mud"), that Native American and indigenous languages have played a role in lake naming, and that there are regional differences in lake names. Unfortunately, we also found that derogatory terms were part of some lake names. We advocate for thoughtful and inclusive official naming of the 400,000 unnamed lakes in the U.S., as well as renaming of the lakes with derogatory terms to help focus attention on the importance of lakes to local communities and nations.

What do we know about lake names and how do we know it?

"What's in a name? That which we call a rose, by any other name would smell as sweet."

— William Shakespeare

Few will argue that people are drawn to bodies of water, often relying on them for fresh drinking water and food, and seeking them out for relaxation and fun. In fact, research shows that our brains may be hardwired to react positively to water and that when we are near water, it can help calm us and increase our insight (Nichols 2014). Case in point—how many people spent part of their summer holiday this past year on a lake? Given this importance of water to people, one may think that careful thought has been put into the names of waterbodies, and that those names reflect societal values.

But, does this assumption hold water? In this article, we examine what people choose to call individual lakes to examine the relationships between people and water. We analyzed the official names of lakes in the conterminous United States as part of a broader initiative, called LAGOS-US, to study lakes within the 48 conterminous states. Here, we describe the terms people use to refer to "lakes," the names they attach to individual lakes, and what appears to motivate their lake naming. We define lakes following Soranno et al. (2015) as: "A perennial body of relatively still water. We include lakes and reservoirs that range from being completely natural to highly modified… we exclude sewage treatment ponds, aquaculture ponds, or other such detention ponds that are known to contain basins that are entirely artificial and were built for high-intensity human use." We accessed the official lake names of the 479,950 inland lakes ≥1 ha in the conterminous U.S. from the National Hydrography Dataset that is publicly available (U.S. Geological Survey 2018). Within this data set are the official lake names from the U.S. Geographic Names Information System (hereafter referred to as GNIS) that is maintained by the U.S. Board on Geographic Names (BGN) Domestic Names Committee (U.S. Board on Geographic Names Domestic Names Committee 2016). The naming of all natural geographic features in the U.S. is maintained by this committee, and the resulting database includes all official names in current use.

How many lakes are named in the conterminous U.S.?

A remarkable result from our analysis of almost a half a million lakes is that 83% of them have no officially recognized name (Fig. 1). The 83,115 lakes with names are more likely to be larger than small (Fig. 1); by lake area size class, lakes ≥50 ha in surface area are much more likely to be named (78%) than those <4 ha in surface area (8%). There are also strong regional patterns in the probability of lakes being named. For example, the lake-rich Northeast and Midwestern states along with those in the Western U.S. have a high probability of named lakes (*see* Fig. 5 for region names, state composition, and borders). In contrast, the Central Plains and Southeast U.S. regions have very low proportions of named lakes. Some of these regional patterns may be linked with

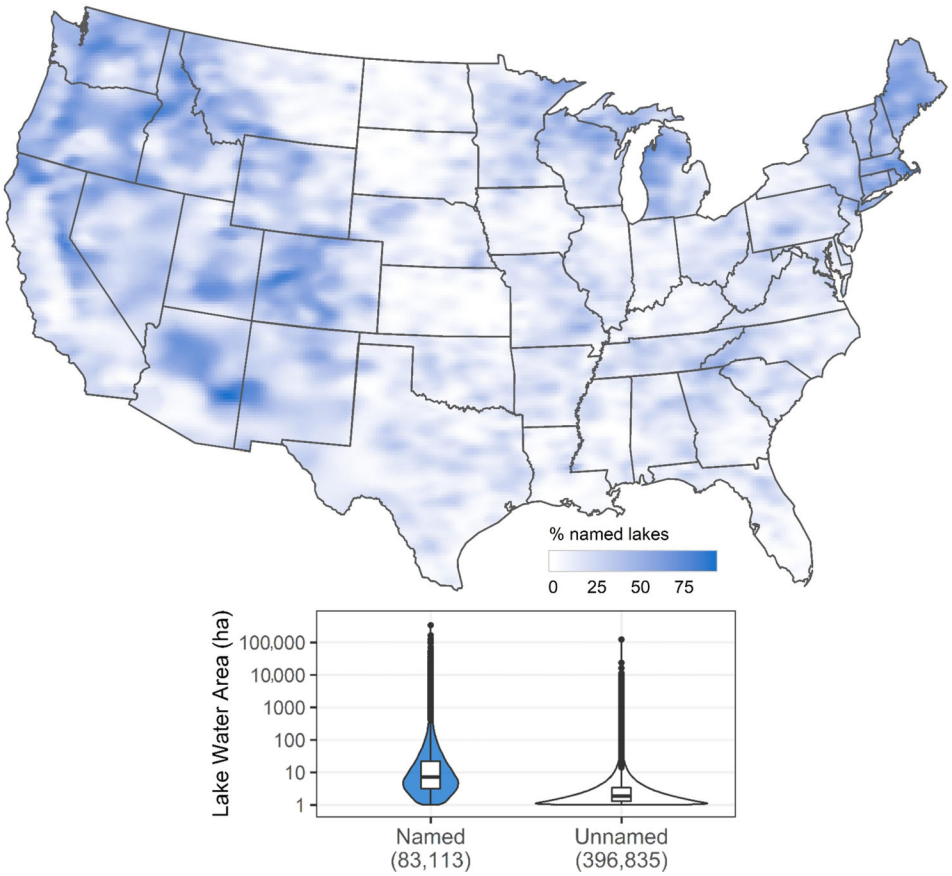

FIG. 1. A map that shows the probability of a lake being named as compared to neighboring lakes in the U.S. GNIS dataset. The inset is a violin plot showing the distribution of lake area for lakes that are named or not named. See Fig. 5 for U.S. region names, state composition, and borders.

the high frequency of small lakes in regions with a lower proportion of named lakes (Fig. 1, inset). The fact that smaller lakes were not given official GNIS names suggests that people may value or use larger lakes more than smaller lakes. However, it is also possible that many of these small unnamed lakes have a local, unregistered name, and are still highly valued and used.

What other terms are commonly used for a "lake"?

A recent study that looked at whether lake names in the U.S. began or ended with "Lake" (Beisner and Carey 2016) found regional differences in the ways lake names are constructed and suggested these differences were likely a result of settlement patterns of European colonists and their naming conventions. But, lakes are not only referred to as lakes—they are also called ponds, reservoirs, or impoundments, to name a few. For the officially named lakes, we found that 69% have "lake" in their name. However, named lakes are also referred to as "pond" (16%), "reservoir" (11%), and "tank" or "slough" or "millpond" (each at 0.5%). Larger lakes appear to be more likely to be called "lake" or "reservoir." Hereafter, we refer to all of these as lakes.

We also found strong regional differences in what people name lakes (Fig. 2). For example, a common question asked of limnologists is "What is the difference between a 'lake' and a 'pond'?" Conventional wisdom is that the term "pond" refers to smaller lakes. However, our results shed additional light on this issue. In the Northeast, a lake is termed a "pond" in much higher frequency compared to the Midwest U.S. region (Fig. 2). In fact, the term "pond" shows up as dominant in the Northeastern U.S. and commonly occurs all the way down the east coast, which was initially settled by European colonists. Ponds are generally larger in the Northeast than the Midwest (Fig. 3), suggesting that settlers in the Midwest tended to use the term "pond" for smaller lakes, whereas settlers in the Northeast did not. These regional differences in terminology help to explain why such terms often confuse the public when trying to locate lakes and understand lake names, and why there are not yet scientific criteria differentiating lakes, ponds, reservoirs, and other terms that are used to refer to lakes in the U.S. and elsewhere.

Some of the observed regional differences in lake terms may be related to colonist settler patterns as found by Beisner and Carey (2016), to Native American ties with their ancestral homelands, or may reflect the different geophysical settings and lake types across the U.S. For example, there are far fewer natural lakes west of the Mississippi River, so it is not surprising that the term "reservoir" is more common in those areas. It is also common practice in Arizona and surrounding states to put earthen dams on ephemeral streams to pool water and create an impoundment called a "tank." Some rarer terms, such as "slough" and "impoundment," are also quite localized. For example, sloughs are present in South Central U.S., but are rare elsewhere.

What are the most common lake names?

The most common full name of a U.S. lake is "Mud" (Fig. 4). In fact, there are 897 lakes named "Mud," including 677 Mud Lakes, 210 Mud Ponds, 4 Mud Reservoirs, 3 Mud Sloughs, 2 Mud Tanks, and 1 Mud Millpond. The next most common lake names are: "Long" (605 lakes), "Twin" (400), "Horseshoe" (385), and "Round" (384) (Fig. 4).

Although these most common lake names are widespread throughout the conterminous U.S., there are also notable regional differences (Fig. 5). Following the dominance of Mud in the Midwest and Northeast U.S., the most common lake names in other U.S. regions were Goose, Silver, Lost, Twin, Horseshoe, Long, and Lost. Although not always the top regional name, "Mud" was in the top 25 names for all regions with lowest ranks in the Central Plains and the Southeast compared to other regions where it was always in the top five. The most common surnames used for lakes across the entire data set were "Johnson" and "Smith," which were also very common in the Southeast and South Central U.S., respectively (Fig. 5). We also found that the names of 559 Texas

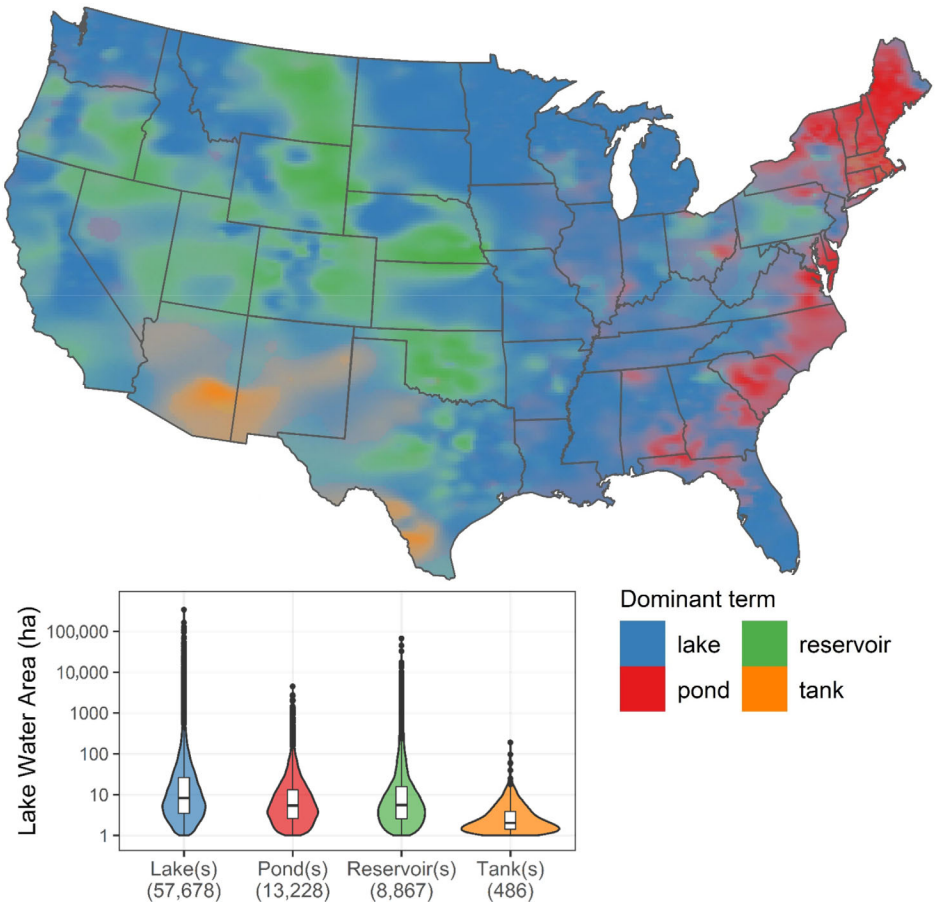

FIG. 2. A map showing the locally dominant terms that are used for "lakes" from the U.S. GNIS database. The inset is a violin plot showing the distribution of lake area for each "lake" term. See Fig. 5 for U.S. region names, state composition, and borders.

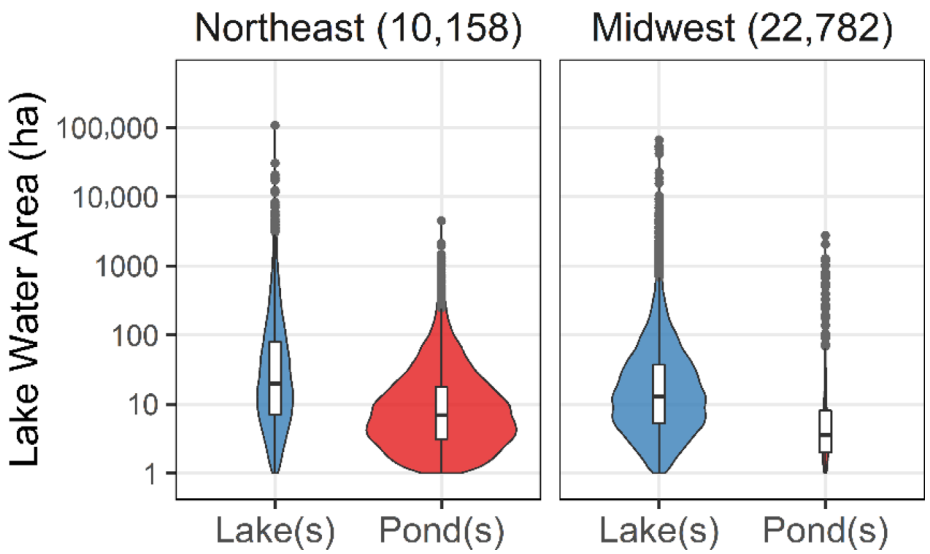

FIG. 3. A violin plot comparing the area of lakes that are called "lakes" vs. "ponds" between the Northeast and Midwest regions, scaled by the total number of lakes in each region from the U.S. GNIS database. See Fig. 5 for U.S. region names, state composition, and borders.

reservoirs started with the term "Soil Conservation Service." "Mill" lakes or ponds were found in the top 25 names only in the Northeast and Mid-Atlantic U.S., suggesting their early use for supplying water to watermills. "Rice" was found in the Midwest region, perhaps referring to the native wild rice that grows in lakes and is harvested by Native Americans of that region. "Cranberry" showed up in names of the Midwest and Northeastern states, but not other regions, perhaps signifying the harvesting of cranberries in these regions of the U.S. Words such as "Crater" and "Summit" were far more common in the Rocky Mountains/Northern Plains and Southwest regions (Fig. 5), reflecting the mountain ranges present in these regions. Finally, "Alkali" was present in the Central Plains and Rocky Mountains/Northern Plains, suggesting an influence of the more arid climate on lake names.

What do lake names reflect?

"A lake is the landscape's most beautiful and expressive feature. It is earth's eye; looking into which the beholder measures the depth for his own nature."

— Henry David Thoreau

Lakes have long been inspirations for artists and poets. Therefore, one might expect lakes to be named in ways that evoke feelings of being drawn to water and being bestilled by its beauty (Nichols 2014). We explored the range of names and namesakes, first seeking examples of lakes with unique, unusually creative, or unusually long names (Table 1). The longest lake names by characters (63) and words (9) are both in Montana and the two lakes with the single longest word are in Maine and Massachusetts, respectively (Chemquasabamticook in Maine and Chaubunagungamaug in Massachusetts). However, many lakes have simple names such as Lake A, Lake Z, or Reservoir 1 (Table 1). We also found examples of lakes named after countries and religions, as well as lake names that appear to be the result of notorious incidents or people that conjure comical imagery (e.g., Blow-me-down Pond, Whoopie Cat Lake, and Beermug Lake; Table 1).

To examine potential motivations behind lake names, we examined the proportion of lake names that included selected terms related to lake features such as shapes or colors; biota associated with lakes such as mammals and birds; the most common first names of men and women during the past

FIG. 4. A word cloud showing the top 100 lake names in the continental U.S. from the U.S. GNIS database. Text size increases with frequency. Prior to analysis with the R package wordcloud2, lake designation (i.e., lake, pond, reservoir) was removed from the name. Note that for Texas (TX in Fig. 5), lake names beginning with "Soil Conservation Service" were not included in the analysis.

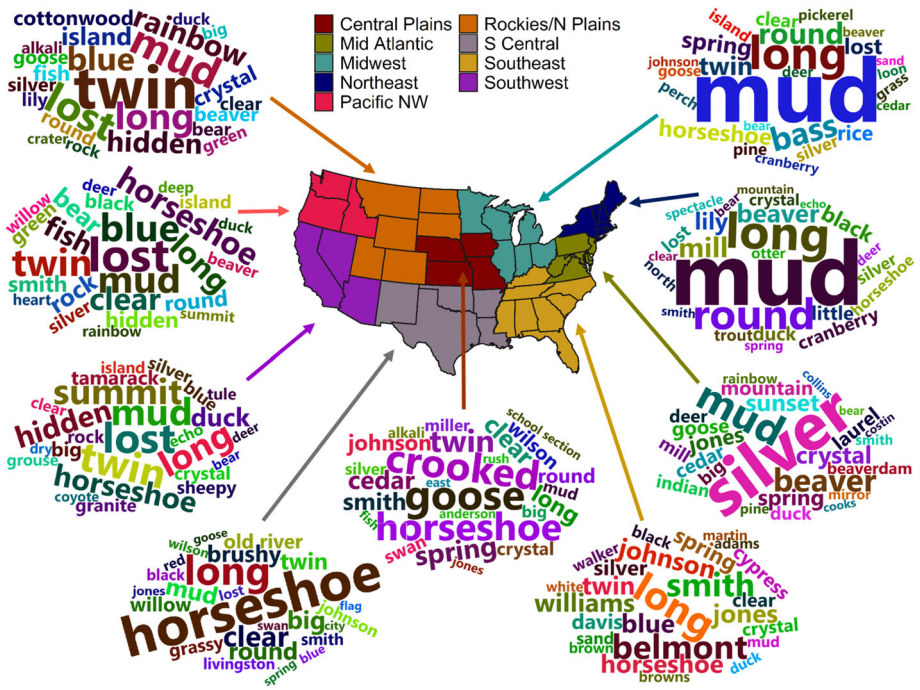

FIG. 5. A word cloud showing the top 25 lake names in each region of the continental U.S. from the U.S. GNIS database. Text size increases with frequency. Prior to analysis with the R package wordcloud2, lake designation (i.e., lake, pond, reservoir) was removed from the name. Note that for Texas (TX), lake names beginning with "Soil Conservation Service" were not included in the analysis.

century; names connected to indigenous languages; and miscellaneous words reflecting emotions, drinks, the afterlife, and derogatory terms (Fig. 6). After Mud (omitted from this analysis), lake names are most likely to contain words descriptive of lake features such as shapes (4133), colors (1483), and appearance (1351) followed by lake-associated biota grouped into mammals (1236), trees (967), birds (917), and fish (742). The most common words in lake names in these descriptive categories were: Little (1673), Bear (438), Clear (378), Black (374), and Pine (346) (Fig. 6).

Although the remaining lake name categories were less common, we highlight some naming patterns related to human-related aspects of lakes. Lake names were commonly based on men's and women's first names (e.g., Thomas/Tom and Mary), emotions such as hope and surprise, references to the afterlife (e.g., Sainte/Saint and Paradise), and drinks such as coffee, milk, and whisk(e)y (Fig. 6). We found over 1100 lakes with names that have some connection to Native American languages (Fig. 7). The most common indigenous term is Tamarack (Algonquin; Fig. 7); many state names of indigenous origin (e.g., Connecticut, Oregon) and tribe names are also recognized in lake names. Unfortunately, derogatory terms were also represented in U.S. lake names, with the words Squaw, Injun, or Redskin in the GNIS database a total of 44 times (Table 1 and Fig. 6; see next section for details).

We cannot truly know the reasons behind any given lake name. However, studying the 83,115 named lakes in the conterminous U.S. gives us a window into people's relationships with lakes. The names suggest that lakes are part of peoples' everyday lives, that they can inspire creativity (although not always, since there are 897 Mud lakes), that there are regional differences in lake names, that they are associated with Native Americans and indigenous languages, and that the smallest lakes are less likely to be named. However, official names of lakes (and any geographic feature) should be held to standards that reflect society's values and that are inclusive of all people.

How do societal norms influence lake names?

"I read in a book once that a rose by any other name would smell as sweet, but I've never been able to believe it. I don't believe a rose WOULD be as nice if it was called a thistle or a skunk cabbage."

— L.M. Montgomery

Who has the right to name a lake, and what are acceptable lake names? Because societal norms change through time, what once was thought to be appropriate for a

TABLE 1. Examples of lake names by category from the U.S. GNIS database with the state that they are located within in parentheses. When a state is not indicated, the name is found in multiple states

Lake name category	Lake name(s)
Longest by total characters	Clarence Cannon Memorial Watershed Structure Number 1 Reservoir (MT)
Longest by single word	Chemquasabamticook (ME); Chaubunagungamaug (MA)
Longest by words	Little Siri-A-Bar Watershed Structure Number 1–5 Dam (MT)
Most words without hyphens	Sandy Creek O Trail Creek Reservoir Number Two (GA)
Examples with 1-letter (or number)	Lake T; A, B, C, D, G, H, J, L, S, T, U, V, Y, and Z Lakes; Reservoir 1; Pond L*
Examples with complicated numbers	0.985 Reservoir (WI); 88A Tank (AZ); 6 Lakes Estates Lake Number 5 (TX)
Examples of religions	Catholic; Baptist; Mormon
Examples of connections with Native Americans	Kiowa; Cherokee; Moccasin; Texas; Winona; Nokomis
Examples of countries	French; German; Spain; Denmark; Sweden
Examples of derogatory words	Gypsy; Jew; Negro; Jig; Squaw; Injun; Redskin; Chinaman; Okie; Dago
Examples of notorious events, people, places, or incidents	Nast E Lake (CO); Nasty Pond (GA, OR); Stingy Lake (MN); Stinking Water Pond (OR); Stinking Lake (MN, NM, OR, WA); Greasy Jim Lake (MI); Hell for Sure Lake (CA); Hell Roaring Lake (ID, MT); Hell Hole Lake (or Reservoir) (UT, CA, NM); Joe Phegleg (MO); Mistake Lake (WY); Devils Washdish (NY); King and Queen Courthouse Pond (VA); Drunken Charlie Lake (WA); Froze-to-Death Lake (MT); Big Bad Luck Pond (NH); Hole in the Wall Lake (AR)
Examples that elicit a smile	Blow-me-down Pond (NH); Too Lazy to Farm Lake (TN); Lake Run-A-Muck (TX); Ace-in-the-Hole Lake (WI); Little Last Chance Lake (CA); Little Too Much Lake (MN); Good Luck Lake (NY); Whoopie Cat Lake (IL); The Angels Bathing Pool (MT); Bigfoot Lake (ID); Lake Kittyprince (WA); Lake of the Fallen Moon (CA); Coffee Creek Cow Camp Lake (TX); Lake Full of Fish (MN); Beermug Lake (SD)

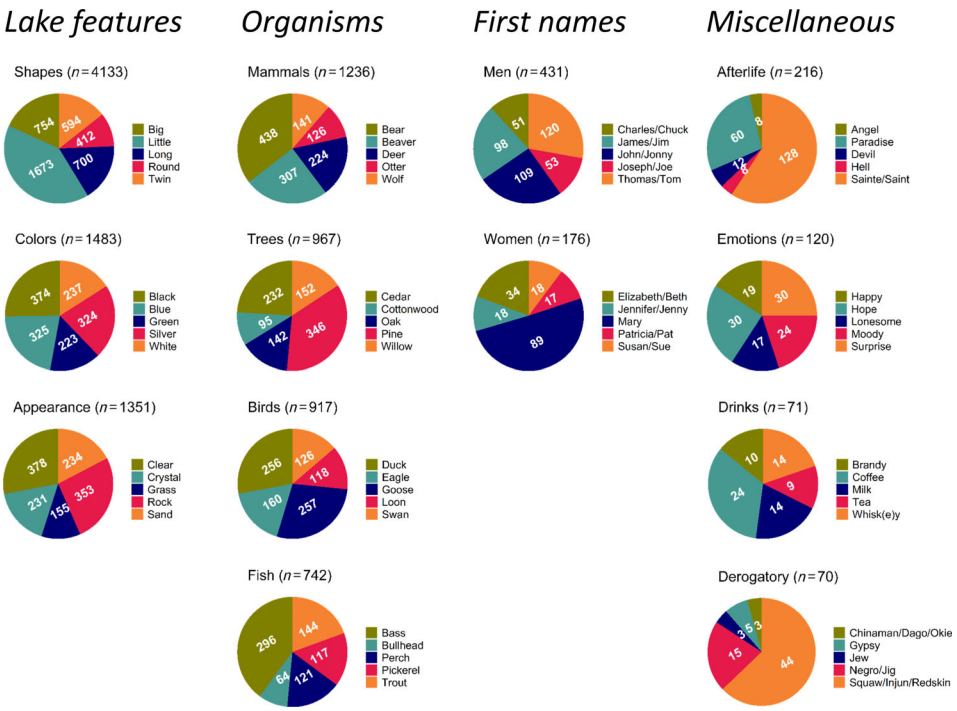

FIG. 6. Pie charts showing the proportion of key words included in lakes names according to four categories: lake features, organisms, first names, and miscellaneous. Numbers within pie slices are the total number of lakes containing that key word in the U.S. GNIS database. Prior to analysis, the lake designation (i.e., lake, pond, reservoir) was removed from the name and "Mud" was excluded as a keyword.

lake name may be inappropriate, offensive, or derogatory today. In fact, some lake names provide evidence of the U.S. history of unjust and exclusionary practices and policies on the basis of individual or group identity (Brown et al. 2015). Lake names that contain derogatory terms, reference injustices, or honor those who committed injustices suggest that people of certain identities are unwelcome or that the actions taken against them were justified. The USGS BGN has provisions for these situations and requires that lake names not be offensive to a particular racial or ethnic group, gender, or religious group. In fact, there are two reasons for established names to be changed: to bring into agreement with well-established local usage and to eliminate problems involving names asserted to be offensive, duplicate, or those established on the basis of incorrect information (U.S. Board on Geographic Names Domestic Names Committee 2016).

Despite these provisions, there are a concerning number of U.S. lake names that include derogatory words (Table 1 and Fig. 6) such as "squaw," a term considered

FIG. 7. A word cloud constructed using the R package wordcloud2, of the 52 names representing at least five lakes (text size increases with frequency) that demonstrate a connection with indigenous languages in the continental U.S. These names are only estimates of the full extent of indigenous influence because there are hundreds of languages to account for, many lake names are English translations of indigenous names that are untraceable, and there are variable transliterated spellings. We matched lake names from the U.S. GNIS database to a list of U.S. toponyms with recognized indigenous language origins scraped from Wikipedia. Prior to analysis, lake designation (i.e., lake, pond, reservoir) was removed from the name.

offensive to women, especially Native American women. However, some of these situations are being rectified. For example, a bay within Lake Monona, Wisconsin that is part of occupied Native American ancestral land has been recently renamed from "Squaw Bay" to "Wicawak Bay" (Vinick 2019). This change both removed an offensive lake name and reaffirmed the lake's importance for the ancestral lands of the Ho-Chunk Nation by using the word for muskrat in the Ho-Chunk language.

Another renaming event demonstrates the significance of lake names as a venue for reflecting cultural power, leveraging the relationships between people and places to enshrine societal values embodied by the namesake. The Minnesota Department of Natural Resources recently approved the restoration of the indigenous (Dakota) name, Bde Maka Ska, to Minneapolis' largest and most popular lake, previously named Lake Calhoun. At present, the agency's legal authority to do so is being challenged in state courts (Otárola 2019). This conflict is invigorated not by Minnesotans' love of law, but by their love of lakes. Opponents feel protective of their own connection to a lake and the name they grew up with, while renaming proponents want to use that affinity as a catalyst of cultural healing, by acknowledging peoples historically displaced from the region (in no small part due to policies constructed by U.S. Vice President John Calhoun who was also a defender of slavery in the U.S.).

Lakes are not alone in their naming troubles. Racial slurs, for example, are included in the official names of over 1000 federally recognized geographic features (Brown et al., 2015). Denali, the tallest peak in North America, provides an example of the power of thoughtful and forceful renaming to reflect respect for local, often indigenous names. This mountain was previously officially named "Mount McKinley" after President McKinley, who had no direct connection to the mountain or Alaska. The mountain's name was officially changed in 2015 by President Obama to reflect its long-held indigenous (Koyukon) name (Korte 2015). There is also an ongoing debate about the name of Mount Evans, Colorado. This feature is named for John Evans, Governor of the Territory of Colorado, who appointed John Chivington in 1864 to lead a local militia that massacred >200 Cheyenne and Arapaho people in the event now known as the Sand Creek Massacre. People who support the name change argue that Evans and that atrocity should no longer be honored, while those who oppose the change argue it will create confusion and be logistically challenging (Kailus 2018). The prevalence of such naming issues across a range of geographic features calls for systematic processes to document and rectify the problems. For lakes, we recommend thoughtful formal naming of currently unnamed lakes, further reflection of how existing names of lakes may offend Native Americans and other marginalized groups, and renaming lakes with offensive, inappropriate, and derogatory names in a way that is inclusive of these groups.

How do you name (or rename) a lake?

We were surprised and disappointed to discover that 83% of lakes in the conterminous U.S. have no official name. From our research perspective of developing the LAGOS-US database, having lakes assigned an official name allows better tracking of continental-scale water quality because it provides useful information for confirming the identity of target lakes on digital maps. Given the increase in digital mapping technologies and apps for individuals to submit georeferenced lake data such as the presence of algal blooms or invasive species, we hope that the proportion of officially named lakes will soon double (or more!). In fact, we urge individuals, communities, municipalities, and other local entities to consider naming nearby lakes that are not officially named.

If you are interested in suggesting a name for an unnamed lake, or suggesting a new name for an existing named lake, submit a formal application to the BGN Domestic Names Committee (the online application is available at https://geonames.usgs.gov/docs/pubs/DGNR_form.pdf). The naming of lakes in the U.S. is maintained by this committee, which has clear guidelines about how they can be named. For example, lakes cannot be named for a person or animal who is alive or who has been deceased for <5 yr; they cannot include a commercial name, be "overly" long, or duplicate a nearby feature; and they cannot include unusual characters or be offensive to a particular racial/ethnic group, gender, or religion. Individuals and groups wishing to name a lake (or rename one) must submit an application and justification for the name. Requested information includes a proposed name, the exact location of the lake, a description of the lake, a list of

local names currently in use for the lake, the origin of the name including historical significance, biographical data (if it is commemorative of a person), the nature of the usage, whether there is local opposition to the name, and evidence that the feature is unnamed.

We end with a challenge and a question to consider. We challenge each person reading this article to propose to do one of the following actions: name a currently unnamed lake; nominate an existing, but unregistered lake name; or submit an application for renaming a lake that has a derogatory name. In addition, we suggest that you consider other ways to help lakes get official names. Perhaps local communities could hold competitions or lotteries to name unnamed lakes. Just as with human names, lake names can signify a variety of things, including cultural and societal norms and values. So, we ask: Are there lake names that might better reflect today's values? If you had the opportunity, what would you name a lake, and why?

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Author contributions

The idea for this paper came during the June 2019 Continental Limnology research group annual workshop. K.S.C. and P.A.S. helped to define the research question, coordinated the writing of the paper, and drafted many sections of the paper. K.E.W. helped to define the research question, analyzed the lake names database and created figures, contributed to and reviewed the text. J.D.V. contributed to discussions and writing about the societal norms surrounding lake names and processes for renaming lakes. N.J.S. analyzed and mapped spatial patterns of lakes, defined and completed the indigenous words/names analysis, helped draft the societal norms section, and reviewed the text.

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