

USER COMMUNITY PAPER
“Amateur Naturalists: An Understudied Yet Valuable User Community”

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BACKGROUND

An amateur naturalist is a person who makes observations of the natural world in order to understand ecology. Whereas a botanist might study one species intensively, or a carnivore researcher might focus on predator-prey relationships exclusively, naturalists take a broader view of the environment. Naturalists also tend to be non-experts, that is, what they lack in experience they make up for in curiosity. As such, amateur naturalists are a unique user community with distinct information needs.

Amateur naturalists are difficult to categorize, because they share few common demographics. Their age ranges across the board, and their language skills and general education also vary greatly. And as Barton (2005) says, naturalists “study nature, not books.” So what makes this a user community, and furthermore, why should librarians and other LIS professionals care? The most relevant answer, I think, is that part of the future of science information will come from these amateur naturalists.

Citizen science is a term used to describe research projects where interested, but non-expert, citizens undertake data collection. Over the past two decades citizen science has become somewhat of a buzzword, particularly in the biological sciences, with successful examples such as eBird (from the Cornell Lab of Ornithology) and Project BudBurst (from the National Ecological Observatory Network). Citizen scientists accomplish what otherwise would require large amounts of grant money, and directing research assistants over unfeasibly expansive geographic areas.

However, the bane of citizen science is data validation. Because amateur naturalists are often drawn to citizen science projects, providing the naturalists with the best possible access to information is a way to preemptively aid data validation. For instance, a naturalist

who learns the difference between two types of trees via a successful information quest can then go forth and correctly collect data on those trees. Without access to appropriate information resources, naturalists lack the skills to be as useful to researchers. As LIS professionals, we should also care about citizen science because it creates massive amounts of raw data, which need proper handling to be of use as future information sources.

The information needs of amateur naturalists are unique, and often rely less on traditional library resources than those of other user populations. As defined by Wilson (2006):

The word “information” is used, in the context of user-studies research, to denote a physical entity or phenomenon (as in the case of questions relating to the number of books read in a period of time, the number of journals subscribed to, etc.), the channel of communication through which messages are transferred (as when we speak of the incidence of oral versus written information), or the factual data, empirically determined and presented in a document or transmitted orally.

For a naturalist, the physical entity may not actually be physical—digital options are often more updated and interactive—and the channel of communication may be more visual and/or auditory than many traditional library resources.

Finding reliable and appropriate resources is a major challenge for the amateur naturalist, and LIS professionals can help. Traditional information resources for amateur naturalists include human experiential knowledge, as well as published literature. Most libraries maintain a basic collection of field guides, which may be used to identify unknown species onsite. I used Good Reads, a popular book recommendation website, to browse common types of books recommended for naturalists with information needs; field guides, animal tracking guides, and natural history account books were the primary categories.

Other resources are maintained by advocacy organizations and/or online. For example, the *Alliance of Natural Resource Outreach and Service Programs*, which “promotes

awareness and citizen stewardship of natural resources through science-based education and service programs,” has a bibliography available through their website. This organization, and many others, also offers in-person training events, which may particularly appeal to amateur naturalists as a way to “learn by doing.”

LITERATURE REVIEW

For my search strategy of this topic I combined broad search terms with subject-specific databases. I used the LISTA database to find more information seeking relevant articles, as well as BioOne and Web of Science to search for more science relevant articles. With each of these databases, I used different combinations of the search terms “user,” “information need,” “information seeking,” “naturalist,” “botanist,” and “amateur.” After a few successful articles from the *Journal of the American Society for Information and Technology*, I went directly to the journal’s website and searched from there to find more helpful references.

Along the lines of Bates’ “berrypicking” model, Park (1994) maintains that information needs arise from a vague state of knowledge, and that information relevance emerges from sources encountered that help clarify this need. For amateur naturalists, the vague state of knowledge is ever present, and relevant information is not only important, but time sensitive because many information needs are object oriented: e.g. “What kind of flower is this?”

Print resources, such as field guides, are helpful for these sorts of information needs. However, electronic resources are burgeoning in popularity and usefulness—Fraser (2001) found that researchers in the biology field used electronic resources for information seeking 78% of the time. I suspect that amateurs in the biology field (e.g. naturalists) also

utilize electronic resources to a large extent. Aside from informational websites, electronic journals, and databases, electronic resources also include smartphone apps, which can act as interactive field guides.

Park (1994) also states that to naturalists, information resources may need to be more tangible and interrelated, as well as context-bound. Because these users are accustomed to learning through observation, they may be more willing to build on existing knowledge with new experiential findings, as opposed to with third-party literature. Thus, appropriate information resources will differ from a more traditional user need.

Wilson's (2006) research supports this idea of experiential learning. He states that "information exchange" is a crucial method of information seeking in which people acquire their knowledge directly from each other. For instance, an amateur naturalist going for a wildflower hike with a seasoned botanist will gain information via personal exchange. Although this method of delivery may be inhibited by pride or the desire to not feel intellectually inferior, Wilson maintains that it is frequent and important.

In a study conducted by Heidorn *et al.* (2002), their Biological Information Browsing Environment project tried to qualify the information seeking behavior of high school students and their teachers involved in ecological surveys. The researchers found that traditional field guides were not as useful as expert guidance (i.e. personal exchange), quality photographs, and physical samples (e.g. of leaves). Again, this supports the tenet that amateur naturalists need tangible and context-bound information resources.

LIS professionals are important because, as Wilson (2006) outlines, information systems consist of a mediator and technology, through which the information seeking process occurs. Although plenty of tangible, context-bound, appropriate resources exist for

amateur naturalists, a LIS mediator can save the user time, provide instruction on technological access, and ensure resource quality.

FINDINGS

Amateur naturalists simultaneously face both many and zero barriers to entry. They face many because the task of naming this plant or that bird is, from a novice's perspective, daunting. Yet they face no barriers to entry because the only requirement to be a naturalist is to observe—be it in a city park or a national park. Observations lead to questions, and the ability to answer those questions depends on the naturalist's information seeking behaviors.

Information is often used to identify and learn more about different observed flora and fauna. This may be used to make deeper analysis, or simply to “collect” observations. The main barrier to access for identification information resources is a lack of technical understanding of language; flora guides are especially known for using Latin names over common (English) names, and without a basic understanding of the Latin naming schema, amateur naturalists can easily be confused. LIS professionals can assist by providing basic instruction in how to read technical field guides, or by directing the more casual user to more basic resources.

Perhaps the most important way LIS professionals can assist the amateur naturalist user is by being able to highlighting different levels of information resources for different levels of information needs and user experience. A child who is intrigued by local flowers and a retired biology teacher have different capacities for understanding technical resources. LIS professionals can help by using their own experience with naturalist resources to direct users to the appropriate level of information.

Along the same lines, information needs must be categorized and prioritized. First, does the user have a specific identification question? These can be answered with the help of specific databases, which would be too broad for most other information needs. Second, is the user interested in a certain genre of nature, e.g. plants or mammals? This information need is broader and should involve a thorough reference interview to determine the scope and depth of the interest. Once determined, it can be address with a variety of print, video, and electronic resources. Third, does the user have a general interest in developing his or her skills? This information need could be addressed by redirecting the user to any of a variety of local resources, including in-person nature walks or naturalist trainings.

The library may only be a starting point for the amateur naturalist user community, because much of their information resources will be experiential rather than bound in print or accessed via library databases. However, increasing dependence on electronic resources in libraries has the potential to develop more useful in house resources for amateur naturalists, and will most definitely help information access for my user community. For instance, some (granted, very few) libraries check out digital devices such as iPads; a program where amateur naturalists could check out an iPad preloaded with interactive field guide apps would be enormously useful. In the meantime, though, libraries still maintain relevance as hubs for helpful information resource redirecting.

CONCLUSION

My recommendations for serving the amateur naturalist user community vary depending on the type of institution providing service. A central or branch public library doesn't often have the resources to invest in genre-specific resource training for their reference staff; an academic library does, but naturalist users may be overlooked by

science librarians more preoccupied with specialized biology fields. Nonetheless, I think any library can benefit from developing or borrowing a quality LibGuide or other resource directory for amateur naturalists. Even if staff are unsure of the detailed content of these directory resources, they can adequately perform a reference interview to determine the level of experience and interest (as outlined above), and then point the user towards the most appropriate information.

For non-library LIS professionals, serving amateur naturalists may be a professional or personal passion. This unique user community has the potential to have a large impact on the future of science information collection, and thus deserves an investment in the quality and availability of information resources and resource direction. To support this goal, more research should be done on the information seeking behaviors and needs of amateur naturalists.

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