

Field Guides in Academe: A Citation Study

**Diane Schmidt
Biology Librarian,
University of Illinois at Urbana-Champaign
dcschmid@uiuc.edu**

Schmidt, Diane. 2006. Field Guides in Academe: A Citation Study. *Journal of Academic Librarianship* 32(3):274-285.

Field Guides in Academe: A Citation Study

Abstract

Field guides are common in libraries but are generally not considered scholarly. This study examines citations to fifty field guides to determine how they were used in scholarly publications, finding that field guides are frequently cited as a source of data on the ranges, habits, and descriptions of plants and animals.

Introduction

Several years ago, while visiting libraries across the country while researching the bibliographic guide *A Guide to Field Guides*¹ I was fascinated by the range of opinions expressed by librarians when they found out what I was studying. Some libraries do not collect field guides because they are often stolen and must continually be replaced; some academic librarians intimated that field guides were lowbrow fluff and only collected for undergraduate use. On the other hand, librarians who regularly dealt with amateur naturalists and/or systematic biologists were enthusiastic about field guides. Many public libraries in ecologically-aware areas hold large circulating collections of field guides of both local and international interest and the most extensive collections of field guides are often found at research-oriented natural history museums and botanical gardens.

Field guides are handy, inexpensive, portable identification guides and are commonly found in libraries, faculty offices, and homes across the world. Their primary purpose is to allow people, particularly amateurs, to identify plants, animals, and other natural objects while out in the wild. There are probably at least 3,000 English language field guides for a wide array of organisms and regions. While most field guides have been published in English or other European languages they are also available in other languages as well, from Afrikaans to Thai. Field guides are often published in series of which the Peterson, Audubon Society, and Golden series are the most popular in North America. Well-known field guide publishers include Collins and New Holland for Britain and the world, Struik for South Africa, Reed for Australia, and, increasingly, university presses in the United States. Field guides often have a complex publication history, published in multiple languages by several different publishers in different countries.

An examination of the literature on field guides displays some of the same split of opinion expressed by librarians. *Publisher's Weekly* treats field guides as part of the environmental literature and describes the category as “a hard sell,”² although noting that field guides are the backbone of the category. Initial print runs of field guides may be modest, but reprints are common and titles may stay in print for years. And there are field guide blockbusters: David Allen Sibley's much-anticipated *Sibley Guide to Birds* sold over 600,000 copies between its publication in October 2000 and early 2003.³

Ordinary people seem to have missed the idea that field guides are a “hard sell.” Once they get a field guide and start using it, they often become as passionate about the field guide as they are about the natural world the book opens to them. Page loved his Golden Guide to the birds to pieces (literally),⁴ Kappel-Smith felt the same way about her Peterson wildflower guide.⁵ Hass, in his poem “Letter,” complains that his wife's absence on a trip has taken all the fun out of life, especially since she took their flower field guide with her.⁶ Even if they are not emotionally involved with their field guides, bird watchers generally own more than one. Even casual birders

have an average of 2.0 field guides each, while skilled birders own an average of 14.3 field guides.⁷ The authors of this study do not define “field guide,” so this category probably includes finding guides rather than just identification guides. According to this same study there are about 69 million birders in the United States so it is clear that there is a thriving market for field guides.

Biologists can also have strong feelings about field guides. One author noted that in tropical plant biologists’ luggage, “anti-malarials, leech socks, and plant presses must inevitably take precedence, and field guides and identification manuals will almost certainly be next in line.”⁸ Biologists are aware of the importance of field guides not just for their own research⁹ but also for the development of an environmentally aware public.¹⁰ Many field guides are written by professional biologists such as Olivier Langrand’s *Guide to the Birds of Madagascar* or Jonathan Kingdon’s *Kingdon Field Guide to African Mammals*. Biologists are also participating in the development of electronic field guides and other identification tools aimed at a variety of audiences.¹¹

Field guides are changing. In the past most were compact paperbacks published by both large and small trade publishers. They had an emphasis on illustrations and the text was kept to a minimum to save space and weight. Recently more sophisticated bird guides have proliferated, with university presses such as Yale and Princeton publishing hefty field guides with much more detailed text. The new two-and-a-half pound *Sibley Guide to Birds* is an excellent example of this trend, contrasting with the good old one pound Peterson guide. The Sibley guide is more of a reference work than an actual field guide, and it has been split into separate lightweight eastern and western editions for field use. And, of course, true electronic field guides for PDAs or laptops are being developed. It will be interesting to see if users become as emotionally attached to their electronic field guide as they were to the print version with its scribbled notes, coffee and mud stains, and pressed flowers as bookmarks.

For all the popular interest in field guides, they have seldom been studied. There are any number of articles discussing the history of the field guide phenomenon, often centering on Roger Tory Peterson’s groundbreaking efforts,^{12, 13} but apart from historical reviews, field guides are generally only mentioned briefly as part of the spectrum of the natural history literature in scholarly works.¹⁴ One example investigated citations to books with BIRD* in the title, focusing on James Bond’s field guide *Birds of the West Indies*.¹⁵ (Yes, this James Bond is the namesake of Ian Fleming’s 007 hero.) However, the author conflated regional handbooks, taxonomic manuals, and field guides, which are three very different types of scientific literature. It is difficult to tell from his list of the top twenty-five authors which citations were to field guides, but the only one seems to be Gordon Maclean’s edition of *Roberts’ Birds of Southern Africa*, ranked twenty-third.

Given all this enthusiasm for field guides and the number of people who own them, is there a place for field guides in libraries? The answer is quite certainly yes. The field guides that are on the shelf in libraries tend to be tattered and have many date-due stamps, and yes, they may not be on the shelf because they are in use or have been stolen. Beyond the issue of circulation statistics, is there a place for field guides as research tools? Do researchers actually use and cite field guides? The present study set out to make a preliminary examination of this question.

Methods

There are a number of ways to examine how people use field guides such as surveys, focus groups, or citation studies. Surveys and focus groups suffer from the difficulty of getting a sufficiently random and statistically significant sample. Citation studies examine only one type of

use, that which results in a citation in a publication indexed by a citation index. Users may also use field guides for background reading or their official purpose, identification, without actually citing them. Citation studies also do not capture classroom use or entertainment value. However, it can be claimed that citation studies demonstrate the highest level of use of a resource, and that is particularly valuable for a category of resources with a non-scholarly reputation.

As a result of these considerations I decided to perform a study examining the citation patterns of field guides in *Web of Science* including all three citation indexes, *Arts and Humanities Citation Index*, *Science Citation Index*, and *Social Sciences Citation Index* covering twenty years, 1985 to 2004. All three indexes were used to capture the use of field guides by both scientists and non-scientists, and the twenty year period was used to examine whether the patterns of use had changed over time.

It is possible to do a cited reference search in *Web of Science* for all resources starting with the words “field guide*,” although this produces an unworkable number of citations, including many citations to geological field trip guide books and other works that are not actually field guides. It also fails to include many true field guides with titles that do not start with those words. Instead, since this is a first attempt to study the use of field guides I chose a non-random sample of 50 field guides that had been cited at least two times (see Appendix 1). These 50 field guides will be referred to as the core list throughout the article. The guides on the core list were taken from a range of publishers, publication dates, series, subjects, and geographical areas (see Table 1). The field guides were chosen from the guides listed in my bibliographic guide *A Guide to Field Guides*¹⁶ and the associated *International Field Guides* Web site,¹⁷ plus a few well-known guides that were published more recently. No attempt was made to choose the most highly cited field guides in a category but all the guides on the core list had good reputations based on author qualifications, publisher reputation, and/or reviews in the biological literature.

Two major tactics were used to select the titles. I targeted selected well-known field guides such as the four most popular North American bird field guides, the Peterson, Audubon, National Geographic, and Sibley bird guides. I also included the Peterson and Audubon mammal, tree, and wildflower guides to see if there was a consistent difference in the citation patterns between the two series, hypothesizing that the Peterson guides would be more heavily cited. Other guides that had received very positive reviews, such as the *Kingdon Field Guide to African Mammals* or the *Pizzey Field Guide to the Birds of Australia* were also hand-picked.

There are field guides for many other groups of organisms and regions, however, and it seemed very possible that the citation patterns for the other field guides might be very different than for the most popular examples so the remaining guides were chosen from a range of organisms and regions with less emphasis on fame. Only a rough attempt was made to make the selection proportional to the available field guides. Bird guides are the most common and have been created in English for almost all parts of the world so I selected bird guides for several different regions. All cited editions, title variations, and languages for each core field guide were included in the study to permit the exploration of whether variant editions were used in different ways. Since the main thrust of this study was to examine a variety of questions relating to changes in the use of field guides the potential imbalance between old and new guides was simply treated as one of the topics to explore. Most subjects included at least one older guide so the effects of the established guides were spread across the field. In the discussion below, differences in the use between established and recent field guides will be highlighted.

The citing author’s name, journal title, date, first author’s departmental affiliation, reason the field guide was cited the first time it was mentioned, and titles of other field guides cited (the

co-cited guides) were recorded in an Excel spreadsheet. The citation figures for an assortment of other field guides and handbooks were also obtained for the same twenty year period for comparison purposes, although the citing articles were not examined for these resources. Bibliographic information on these resources can be found in Appendix 2. In addition, a sample of citations to works starting with the words “field guide*” was obtained from all three citation indexes in *Web of Science* for the period of 1985-2004. This consisted of citations from every fifth screen, and all readily identifiable false hits (field trip guidebooks and non-biological subjects) were eliminated. These resulting 1,329 records were analyzed using the *Web of Science*’s Analyze Results function for subject and year as a comparison with the non-random core list generated for this study. As mentioned above, this misses many true field guides but provides a more random sample.

Results

The guides on the final core list of 50 titles are listed in Appendix 1. They were cited between two and 163 times each for a total of 1,824 citations in 1,664 articles in 480 journals, ranging from one to forty-three articles citing field guides per journal title. The most heavily cited guides included a range of organisms and regions (Table 2). The number of field guides cited per article ranged from one to thirty-two, with 77% of the articles citing one or two field guides and just over 1% citing ten or more field guides. The nineteen articles citing ten or more field guides included ten articles dealing with birds, one with mammals, one with a variety of animal taxa, one with flowers, one with trees, and five with mushrooms. All of the target field guides were published in English but many were also published and cited in other European languages, including Catalan, Danish, Dutch, Finnish, French, German, Italian, Spanish, and Swedish. Authors cited Bang’s *Collins Guide to Animal Tracks* in seven different language editions, more than any other core guide. Articles that cited these 50 core field guides also cited 403 other field guides another 1,234 times. The most popular field guide among this secondary population of co-cited guides was *Roberts Birds of Southern Africa* co-cited twenty-eight times in its various editions (Table 3).

No attempt was made to code the subject of each article but the broad subjects can be imputed in two different ways, by the author’s affiliation or by the subject of the journal itself. One flaw in relying on author affiliations is that the specificity of departmental listings varies with the size of the institution. The largest single authorial affiliation was biology, followed by zoology, conservation, and ecology (Table 4). The largest single journal subject category was zoology, closely followed by ecology, then physical sciences and plant biology.

To see if the mix of field guides chosen for this study affected the subject of the citing articles, the random sample of cited references starting with the words “field guide*” described in the Methods section was analyzed for the subject of the article. The top four subjects of the resulting 1,942 records, according to the Analyze Results feature of *Web of Science*, were, in rank order, ecology, zoology, conservation, and molecular and cellular biology (Table 4). Another 81 subject categories were not ranked by the Analyze Results feature, and some articles were given multiple subject headings. All three methods, examining author affiliations, journal subject, and article subject, use different methods for determining subjects but the results are similar. It seems clear that the majority of authors citing field guides were those who might be expected to be most familiar with field guides: organismal biologists, conservation biologists, and ecologists.

While biologists are by far the heaviest users of field guides, other scholars also cited field guides. Of the citing articles examined in this study, 2% were written by authors in arts and humanities fields (art, history, linguistics, music and so on), 7% by social scientists (especially anthropologists, archaeologists, and psychologists) and 6% by physical scientists and engineers (Table 4). The articles written by these non-biologists are a varied group. Humanities authors cited field guides for the habits, ranges, and names of birds, mammals, and plants in articles discussing topics such as the effects of a wild boar famine in Japan, comparing the growth of rock and roll music to the growth of mushrooms, linguistic patterns in Spanish-speaking countries shown by bird names, the use of bird imagery in literary works from Homer's *Odyssey* to Washington Irving's "Rip van Winkle," and the imitation of bird song in classical music. Social scientists used field guides to demonstrate how people learn to categorize items, but primarily for the same reasons that biologists did: habits, ranges, identification, and so on in articles discussing objects found at an archaeological site or ways of constructing pest-proof storage facilities at colonial New England sites. Physical scientists also used field guides in much the same way as biologists. About 60% of the physical scientists were geologists, many of them using field guides for identifying pollen or comparing modern and extinct species of plants and animals. There were even two articles published in law reviews, one citing a field guide in an article about conservation laws and another in a biographical sketch reporting a lawyer's friendship with Roger Tory Peterson.

The most frequent use of field guides by all author segments was to determine the distribution or breeding range of species of plants or animals, followed by a broad range of data on habits (diet, breeding system, migration patterns, and so on), then description, identification, and taxonomy (Table 5). Field guide illustrations were often treated as authoritative reproduction of the plant or animal. A total of thirteen articles pointed out errors in field guide range maps, illustrations, taxonomy, nomenclature, or species lists, but for the most part the field guide data was considered definitive by citing authors.

The express purpose of field guides is to identify species, and they were cited 198 times for that purpose. However, this is only about a third of the number of citations for determining ranges and is only the fourth most common reason field guides were cited. In most cases field guides were cited as identification sources by researchers outside of their field of expertise; an ornithologist would not state which field guide was used to identify birds, but a parasitologist might. The occasional exceptions to this rule are instructive. In one case ornithologists getting ready to enumerate the birds of an unfamiliar region specifically stated which standard field guides they studied to prepare them for the upcoming trip. Two other field guides were more typically cited as authorities on the distribution of bird species in the same article.¹⁸

In some cases authors wrote of field guides as equivalent with other types of scientific literature. They were included with "the existing specialist literature on these bird groups"¹⁹ and the "regional literature containing adequate illustrations or descriptions of species" of reptiles.²⁰ In other cases field guides were clearly felt to belong on the non-peer reviewed end of the scientific literature spectrum but had value in limited circumstances. See the discussion of mushroom field guides, below, for one example.

The field guide citations were generally for substantive data. One standard method for studying sexual dimorphism among bird species, for instance, involves using the illustrations in field guides as accurate representations of the actual color of the birds or degree of difference between the sexes. Researchers studying this topic are among those citing the largest number of bird field guides, often trying to include field guides for all major biogeographical regions of the

world. In other cases field guides were used to create lists of species that were found in a region or lists of species with a behavior such as migration or a particular breeding system.

On rare occasions the citations to field guides were less substantive and may be related more to their ready availability than to their appropriateness. Pizzey's *Field Guide to the Birds of Australia* was cited as the authority on the date that Australia separated from Gondwanaland in an article about the avian biogeography of the region.²¹ Likewise, Glassberg's *Butterflies Through Binoculars* was cited as the source of the range of *Brassica* species (cabbages and their relatives) in an article about the effects of cabbage butterfly herbivory.²² In both cases the field guides were at best tertiary rather than primary sources but the article authors plainly trusted them.

It is possible that researchers at small institutions with inadequate libraries would be more likely to cite field guides than researchers at large institutions since field guides are so inexpensive and readily available. While that hypothesis was not explicitly examined in this study, it was plain from scanning author affiliations that users with access to large, well-funded libraries used field guides as well as Third World researchers, independent scholars far from major cities, and authors at small liberal-arts colleges. It is certainly true that large, authoritative handbooks such as the \$2,500 *Handbook of Birds of the World* edited by Josep del Hoyo are less available than most field guides. Less than 500 libraries in WorldCat own this set compared to nearly 2,000 owning the *Sibley Guide to Birds*. However, the handbook has already been cited nearly 600 times even though only half of the volumes have been published.

Over the twenty year period included in this study, the number of articles citing the core field guides remained relatively stable throughout the late eighties and early nineties at around 90-100 citations per two year period, then increased throughout the late nineties reaching a peak of 305 citations in 2001-2002 (Figure 1). A sample of 1,424 citations to works that start with the words "field guide*" was also examined to compare this random sample to the 50 core titles in this study. The general shape of both curves are similar showing a relatively low use through the late 1990s followed by growth through the late 1990s and early 2000s, although this *Web of Science* sample peaks much earlier, in 1995-1996, and then gradually increases once more. This overall pattern is similar to that found in a study of citations to books with BIRD* in the title.²³ The citation rate for individual books increased dramatically for the first few years after the publication dates and continued to rise for at least fifteen years after publication, though at a slower rate.

Field guides were used in essentially the same manner in the first two years of the study and in the last two years. In 1985-1986, the top four types of use were range, descriptions, habits and identification. In 2003-2004, more citations were for habits than descriptions, but range remained the most common use and identification fourth most common. The pattern of use over the full twenty year period was the same as 2003-2004.

Analysis by Subject or Geographical Area

The discussion above dealt with citation of field guides as a whole, but a closer examination of field guides dealing with different regions or groups of plants and animals demonstrated considerable variation in the way they were used. Since the core list of field guides was not balanced by region or taxonomic group, the discussion below will not cover all groups in the same detail. Several field guides and handbooks that are not included in the core list are mentioned for comparison purposes. While all of the most highly cited field guides were examined closely, only the most significant results will be reported here.

Plant Field Guides

Wildflower guides formed 10% of the core list and 8.1% of the co-cited guides. The plant field guides on the core list were not heavily cited, although the article that cited the second highest number of field guides (twenty-seven), dealt with color change in flowers and cited wildflower guides. Neither the Peterson nor the Audubon North American wildflower guides were cited more than a couple of times per year, and none of the wildflower guides that were co-cited in the study received more than three citations. The other broad-based, well-established North American flower guides with a high species count were also seldom cited compared to bird or mammal guides. The *Newcomb's Wildflower Guide* was cited a total of twelve times, and the *Golden Wildflowers of North America* guide by Venning was not cited at all. On the other hand, North American plant manuals and floras are cited quite frequently: *Gray's Manual of Botany* in its various incarnations was cited at least 925 times and Gleason and Cronquist's *Manual of Vascular Plants of Northeastern United States and Adjacent Canada* in all its variations was cited at least 1,400 times. This relatively low citation rate for flower guides is probably due to at least a couple of factors including the fact that flower field guides cover a relatively low number of species compared to the big floras. The Peterson guide, for instance, covers about 1,300 species compared to 8,000 species in the latest edition of *Gray's Manual* and 7,000 species in Gleason and Cronquist. Also, plants with gaudy flowers are more interesting to amateur naturalists than to plant biologists, who might consider them a random subset of the vascular plants.

The citation situation with tree field guides is similar, though the citation rate of the tree guides on the core list is higher than that of flower guides. Van Wyk's *Field Guide to Trees of Southern Africa* was cited thirty times, for instance. Petrides' Peterson guide *Field Guide to Trees and Shrubs* was cited thirty-two times while Little's *Audubon Society Field Guide to North American Trees, Eastern Region* was cited forty-three times. The western version of both field guides were cited only four times each. Tree field guides formed 14% of the core list and 8.1% of the co-cited guides. Some tree guides for other regions were more highly cited, such as Coates Palgrave's hefty *Trees of Southern Africa*, cited 267 times. Other North American tree guides were cited more often than the wildflower guides but less than most animal guides. For instance, Brockman's *Golden Guide Trees of North America* was cited twenty-three times and Elias's *Field Guide to North American Trees* was cited 110 times. It should be noted that Elias and Coates Palgrave are more like portable manuals than the standard Peterson-type field guide.

On the other hand, mushroom field guides are cited quite frequently. Arora's *Mushrooms Demystified* was cited 95 times and Bon's *Mushrooms and Toadstools of Britain and Europe* was cited twenty-nine times. Authors citing mushroom guides cited other mushroom guides at a very high rate. Mushroom field guides formed 8% of the core field guide list but 17% of the co-cited field guides. One author complained that "Within the past 20 years the literature aimed at the amateur mycologist has overtaken the scientific literature in many respects. Field guides give information on fungal distributions and other data not documented in the scientific literature."²⁴ Given this peculiarity of the mushroom literature it is not surprising to find a high proportion of fungal taxonomists citing mushroom field guides for range, taxonomy, and illustrations; mushroom field guides are also cited as sources for information on the edibility of fungi.

Another exception to the generally low citation rate of plant field guides is Kapp's *How to Know the Pollen and Spores*, which was cited 93 times, 77% of the time as an identification source. It is one of the very few pollen identification resources so it is heavily used by ecologists, geologists, and paleobiologists. This guide is part of the Pictured Key series of advanced guides

which consist of book-length dichotomous keys that require some training to use and are aimed at advanced students and researchers. This particular guide also provides information on techniques for identifying pollen and was cited ten times as the source for that information, making it nearly unique among the core list of field guides. Another guide in the Pictured Key series, Conard and Redfean's *How to Know the Mosses*, was cited fourteen times, eight times for nomenclature or taxonomy and three times for identification or description. There are few readily available identification guides for the mosses, but it is interesting that this guide was cited more often for the names of species than for their identification.

Animal Field Guides

Bird field guides are the most numerous class of field guides and this was reflected by the range of guides selected for the core list. Many of the individual bird guides have been mentioned in the general discussion above, but they will be treated as a group here. Most of the articles citing a large number of field guides dealt with birds, and about half of both the most heavily cited core guides and co-cited guides were bird guides (Tables 2 and 3). Bird guides formed 34% of the core list of field guides, and also formed 34% of the co-cited guides. The primary use of bird field guides was to determine range, followed by habits, descriptions, and identification (Table 5). The way that the bird guides were used was close to the overall pattern although range, habits, and description comprised over three-fourths of the uses of bird guides with a steep drop-off to other forms of use. Identification was only 4% of the use of bird guides compared to 11% of use across all guides on the core list.

Four of the major North American bird guides (Peterson, Audubon, National Geographic, and Sibley), were included in the core list. The Peterson *Guide to Birds*, all editions and including the eastern and western versions, was most heavily cited at 133 citations, followed by the National Geographic guide with 122 citations. The Audubon guides were cited a combination of thirty-four times, and the Sibley guide thirty-one times since its publication in 2000 (twenty-four times in 2003-2004 alone). The remaining top-tier North American bird guide, Robbins' *Birds of North America* (not included in the core list), was co-cited twenty-seven times by core field guides and cited 87 times overall in *Web of Science*. It seems that all of the major guides are highly regarded by biologists and birders but the Sibley guide is poised to become the most cited. Since Sibley is one of the new breed of bird guides with more extensive text dealing with behavior and regional variations it may well have more of the information biologists seek in a field guide or handbook. One measure of the versatility and fame of Sibley's guide can be found in popular culture. In a recent murder mystery the fictional heroine, an agent in the U.S. Fish and Wildlife Service, turns to the Sibley guide to determine the body size of sub-species of Canada geese and thus whether they are migratory or non-migratory (and under her authority).²⁵ The author of the mystery could just as well be a conservation biologist writing in one of the scientific articles examined in this study since many biologists used the Sibley guide in very similar ways.

Mammalian field guides are similar in most respects to other vertebrate field guides. Mammal guides formed 16% of the core titles but only 8% of the co-cited titles, so it seems that most mammalian authors utilize only a few field guides to obtain their data. The use of mammalian field guides also goes slightly contrary to the basic pattern. They were used most often for range, habits, description, and taxonomy (Table 5). The majority (70%) of the use of mammal field guides for descriptions were to determine body size, which was very rarely the reason why other guides were used. Not only that, but the majority of this form of use came from

just one guide, Burt's *Field Guide to Mammals*. This data is available in most major mammalian handbooks such as Hall's *Mammals of North America* (cited 1,200 times) but evidently mammalogists like Burt's numbers.

The contrasts between the use of Burt's North American field guide (cited 147 times) and Kingdon's African guide (cited 139 times) are interesting. Burt was used 58 times to determine body size while Kingdon was used just fifteen times for that purpose; Kingdon was used thirty-seven times for taxonomy and Burt three times. No other mammal field guide in the core list was used for taxonomy. There is a good reason for this imbalance. Kingdon is a mammal taxonomist (his three volume handbook *East African Mammals* was cited 874 times) and he chose to incorporate many of his recent taxonomic decisions in his field guide which has subsequently been cited as an authority. Burt, like most other field guide authors, was dealing with a more established taxonomic system and represented a consensus rather than a revision.

Arnold and Burton's *Field Guide to Reptiles and Amphibians of Britain and Europe*, the only field guide for amphibians and reptiles in the core list, was also the most frequently cited of any of the core field guides with 163 citations. Herpetology guides formed 2% of the core list and 7% of the co-cited guides, and Arnold's heavy citation rate is not unique among herpetology guides. One North American counterpart, the Peterson guide *Field Guide to Reptiles and Amphibians of Eastern and Central North America* by Conant, was cited more than 700 times, and Cogger's *Reptiles and Amphibians of Australia* was cited at least 617 times. The way that Arnold and Burton's field guide was cited is very similar to the overall citation pattern: range, habits, description, and habitat were the chief uses of this guide (see Table 5). Most herpetological handbooks have not been updated for many years so there are few other handy resources besides field guides for herpetologists. The German *Handbuch der Reptilien und Amphibien Europas* edited by Wolfgang Böhme and cited about 200 times is one exception.

The two fish field guides in the core list were cited around twenty times each. Range, identification, taxonomy, and habitat were the most common reasons for citing fish guides (Table 5). They were also represented in the co-cited list in a slightly higher proportion, 4% core vs. 6.9% co-cited. The small numbers make it dangerous to generalize too much about this category, however. Several other fish field guides have been cited more often than the two included in the core list, including Page's Peterson *Field Guide to Freshwater Fishes* cited 140 times and Humann's *Reef Fish Identification: Florida, Caribbean, Bahamas* cited 66 times. The massive handbook *Smith's Sea Fishes* was cited nearly 300 times.

Geographical Variations

The only geographical regions that were represented by an adequate number of guides to make analysis worth performing were Africa (nine field guides), Europe (eight field guides), and North America (twenty-two field guides) (see Table 6). Due to the unequal number of field guides in the list a detailed analysis was not performed, but in all three regions the three most frequent reasons why field guides were cited were ranges, habits, and descriptions, if the unusual case of Kingdon and Burt's mammal field guides are excluded (see the discussion above). Beyond the top three categories there was general but not complete agreement, with habitat, identification, and nomenclature in the next three ranks. The unusually high number of citations for identification in North American guides is primarily due to Kapp's pollen guide, also as previously discussed. Field guides from a wide range of regions were also represented among both the top ten core and co-cited field guides (Tables 2 and 3). While there may be fine-grained differences between the

ways field guides are used from different regions, the differences between individual field guides or between different groups of organisms seems more significant than the regional differences.

Conclusion

This study has demonstrated that at least some field guides are treated as authoritative references by a wide range of authors and acquire citation rates that are as high as some highly cited articles, although generally they are still cited less often than scholarly handbooks or manuals. The heavily cited field guides tend to be those that are from major trade or university publishers, have authors who are scientists or very well-known amateurs, and have been around long enough to establish a track record. They tend to be treated as handy sources of data on the distribution, appearance, or habits of plants and animals, although there are variations within and across categories and individual guides. Authors from a range of areas are aware of and use field guides, from music faculty to mechanical engineers. In general, flower and tree field guides are not cited often although plant manuals and floras are. Mushroom field guides are more heavily cited because they often include data not found elsewhere in the scientific literature. Field guides are used to obtain descriptions and illustrations of birds more often than they are for mammals, while determining mammalian body size is a frequent use of field guides by mammalogists. Overall, among the major North American series the Peterson guides are more often cited than the Audubon guides but there is at least one exception to this rule in the case of the tree guides. However, field guides tend to be used in similar ways around the world. Authors writing about Africa use field guides the same way that they do when writing about North America or Europe, and field guides from around the world are found in the list of most heavily cited guides.

What does this mean for collection development librarians? Field guides are heavily used by researchers, and they frequently use guides from far-away places. As a result field guides are good purchases for libraries, especially since they are inexpensive and often readily available. There are probably around 3,000 field guides in print in English so one needs to be selective, especially since not all field guides are equally useful or reliable. However, citation rates for older titles or established authors should provide a good estimate of research value of a particular title. For more recent guides without a track record the usual criteria of publisher or author credentials should be utilized. Field guides are also frequently reviewed in scientific publications such as the *Quarterly Review of Biology* or journals covering specific taxonomic groups such as birds or mushrooms. Field guides are not just for birders or amateur naturalists. They are excellent resources for a variety of researchers.

References

1. Diane Schmidt, *A Guide to Field Guides: Identifying the Natural History of North America* (Englewood, CO: Libraries Unlimited, 1999).
2. Natalie Danford, "The Call of the Wild," *Publisher's Weekly* April 23, 2003, 36.
3. Ibid.
4. Jake Page, "A Golden Guide of Memories," *National Geographic Traveller* November/December 1989, 16-18.
5. Diana Kappel-Smith, "Rereading: My Life with a Field Guide," *American Scholar* 71 (2002): 136-140.
6. Robert Hass, "Letter," in *Field Guide* (New Haven, CT: Yale University Press, 1973), pp. 65-66.
7. David Scott and Jack Thigpen, "Understanding the Birder as Tourist: Segmenting Visitors to the Texas Hummer/Bird Celebration," *Human Dimensions of Wildlife* 8 (2003): 199-218.
8. Sean C. Thomas, review of *Turner's Concise Encyclopedia of Tropical Tree Biology*, by Ian M. Turner, *American Journal of Botany* 89 (2002): 546-549.
9. François Vuilleumier, "An Overview of Field Guides to Neotropical Birds with Remarks on their Role in the Development of Neotropical Ornithology," *Ornitologia Neotropical* 8 (1997): 195-236.
10. The World Bank Group, Local Language Field Guides. Online. (N.D.) Available: <http://inweb18.worldbank.org/ESSD/envext.nsf/48ByDocName/ToolsLocalLanguageFieldGuides> (September 12, 2005).
11. R. D. Stevenson, William A. Haber, and Robert A. Morris, "Electronic Field Guides and User Communities in the Eco-informatics Revolution," *Conservation Ecology*. 7(2003): article 3. Online. Available: <http://www.ecologyandsociety.org/vol7/iss1/art3/print.pdf> (September 12, 2005).
12. Roger Tory Peterson, "Books of a Feather," *National Wildlife* December 1983/January 1984, 22-28.
13. Tom Dunlap, "Tom Dunlap on Early Bird Guides," *Environmental History* 10 (2005): 110-118.
14. Thomas J. Lyon, "A Taxonomy of Nature Writing," in *This Incomparable Land: A Book of American Nature Writing*, edited by Thomas J. Lyon (Boston: Houghton Mifflin, 1989), pp. 3-7.

15. Grant Lewison, "James Bond and Citations to his Books," *Scientometrics* 59 (2004): 311-320.
16. Schmidt, *A Guide to Field Guides*.
17. Diane Schmidt, International Field Guides: A Web Supplement to A Guide to Field Guides. Online. (1998) Available: <http://www.library.uiuc.edu/bix/fieldguides/main.htm>. (May 13, 2005).
18. R. A. Zann, et al., "The Birds of the Krakatau Islands (Indonesia) 1984-86," *Philosophical Transactions of the Royal Society of London B-Biological Sciences* 328 (1990): 29-54.
19. Paolo Galeotti, Diego Rubolini, Peter O. Dunn, and Mauro Fasola, "Colour Polymorphism in Birds: Causes and Functions," *Journal of Evolutionary Biology* 16 (2003): 635-646.
20. M. Wolf and Yehudah L Werner, "The Striped Colour Pattern and Striped Non-Striped Polymorphism in Snakes (Reptilia, Ophidia)," *Biological Reviews of the Cambridge Philosophical Society* 69 (1994):599-610.
21. Hugh Dingle, "The Australo-Papuan Bird Migration System: Another Consequence of Wallace's Line," *Emu* 104 (2004): 95-108.
22. Gretchen A. Meyer, "Interactive Effects of Soil Fertility and Herbivory on *Brassica nigra*," *Oikos* 88 (2000): 433-441.
23. Lewison, "James Bond and Citations to his Books."
24. Scott A. Redhead, "A Biogeographical Overview of the Canadian Mushroom Flora," *Canadian Journal of Botany* 67 (1989): 3003-3062.
25. Christine Goff, *Death Takes a Gander* (New York: Berkley Prime Crime, 2004), p. 69.

Table 1
Core Field Guides by Subject and Region

Region	Plants					Animals				
	Fungi	Pollen	Flowers	Trees	Other	Fish	Reptiles	Birds	Mammals	Other
Africa	0	0	0	1	0	0	0	7	1	0
Australia	0	0	0	0	0	0	0	1	2	0
Central & South America	0	0	0	0	1	0	0	1	1	1
Europe	2	0	1	1	0	0	1	2	1	0
North America	2	1	4	4	1	0	0	6	3	1
Other	0	0	1	0	0	2	0	0	0	1
Total	4 (8%)	1 (2%)	6 (12%)	6 (12%)	2 (4%)	2 (4%)	1 (2%)	17 (34%)	8 (16%)	3 (6%)

Table 2**Ten Most Frequently Cited Core Field Guides, 1985-2004**

Author/Title	Times cited
Arnold/ <i>Field Guide to the Reptiles and Amphibians of Britain and Europe</i>	163
Kingdon/ <i>Kingdon Field Guide to African Mammals</i>	139
Burt/ <i>Field Guide to the Mammals</i>	134
National Geographic Society/ <i>Field Guide to the Birds of North America</i>	122
Pizzey/ <i>Field Guide to the Birds of Australia</i>	113
Langrand/ <i>Guide to the Birds of Madagascar</i>	99
Arora/ <i>Mushrooms Demystified</i>	95
Kapp/ <i>How to Know the Pollen and Spores</i>	93
Peterson/ <i>Field Guide to the Birds</i>	85
Whitaker/ <i>Audubon Society Field Guide to North American Mammals</i>	48 (tie)
Peterson/ <i>Field Guide to Mexican Birds</i>	48 (tie)

Table 3**Ten Most Frequently Co-Cited Field Guides, 1985-2004**

Author	Title	Times co-cited
MacLean, Gordon	<i>Roberts Birds of Southern Africa</i>	28
Robbins, Chandler	<i>Birds of North America</i>	27
Howell, S. N. G.	<i>Guide to the Birds of Mexico</i>	25
Estes, R	<i>Behavior Guide to African Mammals</i>	24
Simpson, Ken	<i>Birds of Australia</i>	22
Ridgely, R. S.	<i>Guide to the Birds of Panama</i>	20
Lincoff, G.	<i>Audubon Society Field Guide to North American Mushrooms</i>	19
Conant, Roger	<i>Field Guide to Reptiles and Amphibians</i>	18
Stiles, F. G.	<i>Guide to the Birds of Costa Rica</i>	17
Pyle, Porter	<i>Identification Guide to North American Birds</i>	16

Table 4**Author Affiliation and Journal Subjects**

Subject	Number of Articles per Author Department	Number of Journals	Number of Articles by Journal Subject	WoS Sample by Article Subject
Agriculture	79	20	34	34
Arts & Humanities	28	28	27	14
Biology	413	23	78	81
Conservation	216	37	150	248
Ecology	149	87	414	556
Law	2	2	2	0
Medicine	63	34	66	70
Mol & Cell Biol	37	23	42	184
Plant Biology	103	42	160	88
Physical Sciences	100	57	119	110
Social Sciences	116	34	65	53
Zoology	358	93	507	504
Total	1664	480	1664	1942

Table 5**Core Field Guide Use by Subject, 1985-2004**

Type of use	Total	Birds	Mam- mals	Rep- tiles	Fish	Flowers	Trees	Fungi	Pollen	Other
Categorization	11	10	0	0	0	0	0	0	0	1
Description	331	116	92	22	6	5	22	39	9	21
Exemplar	24	13	1	0	0	1	4	4	1	0
Habitat	124	43	26	17	5	6	10	9	0	8
Habits	359	151	93	25	3	9	12	17	0	15
History	8	7	0	0	0	0	0	1	0	0
Identification	198	27	37	5	8	5	9	22	71	14
Illustrations	54	28	5	2	1	1	1	10	2	4
Range	571	273	122	85	9	7	53	9	0	13
Taxonomy	133	30	46	6	6	4	11	19	1	10
Technique	11	0	0	0	0	0	0	1	9	1
Total	1824	700	422	162	38	38	122	131	93	87

Table 6

Core Field Guide Use by Region, 1985-2004

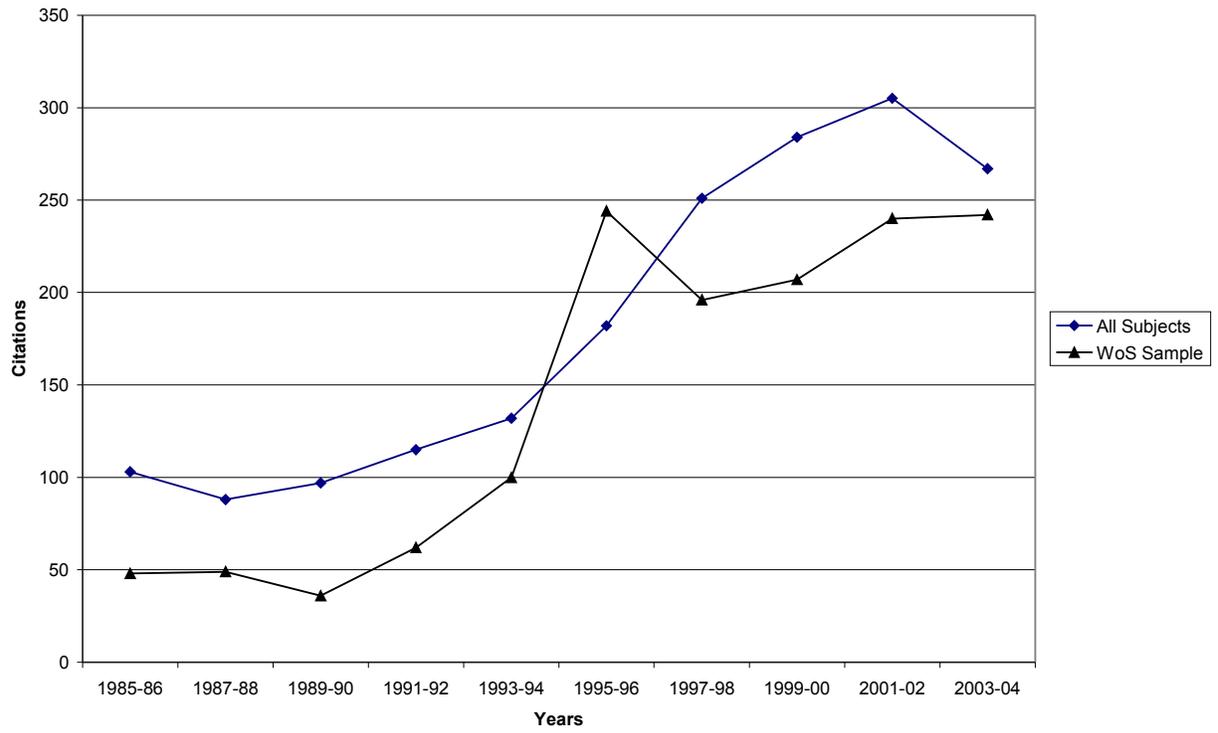
Type of use	Africa	Europe	North America	Total (3 regions only)
Categorization	0	0	11	11
Description	44	43	192**	279
Exemplar	2	3	19	24
Habitat	22	20	50	92
Habits	82	43	163	288
History	0	0	9	9
Identification	11	29	148***	188
Illustrations	2	7	37	46
Range	121	114	278	3
Taxonomy	43*	2	57	102
Technique	0	0	11	11
Total	327	261	975	1053

*37 citations are for the *Kingdon Field Guide to African Mammals*

**58 citations are for Burt's *Field Guide to the Mammals*

***71 citations are for Kapp's *How to Know the Pollen and Spores*

Figure 1. Field Guide Citations Over Time



Appendix 1. Core Field Guides

Citations may include multiple titles and publishers; publication dates include first edition through the most recent edition and were searched using these inclusive dates.

Arnold, E. N. and J. A. Burton. *Field Guide to the Reptiles and Amphibians of Britain and Europe/Reptiles and Amphibians of Europe*. Collins/Princeton University Press, 1978-2002. Cited 163 times.

Arora, David. *All That the Rain Promises and More ...: A Hip Pocket Guide to Western Mushrooms*. Ten Speed Press, 1991. Cited 5 times.

Arora, David. *Mushrooms Demystified*. Ten Speed Press, 1979-1986. Cited 95 times.

Bang, Preben. *Collins Guide to Animal Tracks and Signs/Animal Tracks and Signs*. Collins/Oxford University Press, 1972-2001. Cited 35 times.

Barlow, Clive and Tim Wacher. *Field Guide to the Birds of Gambia and Senegal*. Yale University Press, 1997. Cited 5 times.

Bon, Marcel. *Mushrooms and Toadstools of Britain and Europe/Pareys Buch der Pilze*. Hodder & Stoughton/Parey, 1987-2003. Cited 29 times.

Borrow, Nik and Ron Demey. *Guide to the Birds of Western Africa*. Princeton University Press, 2001-2002. Cited 2 times.

Buczacki, Stefan T. and John Wilkinson. *Mushrooms and Toadstools of Britain and Europe/Collins Guide: Mushrooms and Toadstools of Britain and Europe/New Generation Guide to Fungi*. Collins/University of Texas Press, 1989-1992. Cited 2 times.

Bull, John L. and John Farrand. *Audubon Society Field Guide to North American Birds: Eastern*. Knopf, 1977; *National Audubon Society Field Guide to North American Birds: Eastern*. Knopf, 1994. (Audubon Society Field Guide Series). Cited 22 times.

Burt, William Henry. *Field Guide to the Mammals*. Houghton Mifflin, 1952-1976. (Peterson Field Guide Series). Cited 147 times.

Carcasson, R. H. *Field Guide to the Coral Reef Fishes of the Indian and West Pacific Oceans*. Collins, 1977. Cited 21 times.

Conard, Henry Shoemaker and Paul L. Redfearn. *How to Know the Mosses and Liverworts*. 2nd ed. Dubuque, IA: W. C. Brown Co., 1979. (Pictured Key Series). Cited 14 times

Craighead, John J., Frank C. Craighead, Jr., and Ray J. Davis. *Field Guide to Rocky Mountain Wildflowers*. Houghton Mifflin, 1963. (Peterson Field Guide Series). Cited 7 times.

Cronin, Leonard. *Key Guide to Australian Mammals*. Reed, 1986. (Key Guide Series). Cited 4 times.

Debelius, Helmut. *Indian Ocean Tropical Fish Guide: Maldives, Sri Lanka, Mauritius, Madagascar, East Africa, Seychelles, Arabian Sea, Red Sea*. Aquaprint, 1993. Cited 16 times.

Emmons, Louise H. *Neotropical Rainforest Mammals: A Field Guide*. University of Chicago Press, 1990-1997. Cited 35 times.

Fitter, Alastair. *New Generation Guide to the Wild Flowers of Britain and Northern Europe*. Collins/University of Texas Press, 1987. Cited 2 times.

Flint, V. E. *Field Guide to Birds of the USSR*. Princeton University Press, 1984-1989. Cited 34 times.

Glassberg, Jeffrey. *Butterflies Through Binoculars: A Field Guide to Butterflies in the Boston-New York-Washington Region/Butterflies Through Binoculars: The East*. Oxford University Press, 1993-1999. Cited 17 times.

Gosliner, Terence M., David W. Behrens, and Gary C. Williams. *Coral Reef Animals of the Indo-Pacific: Animal Life From Africa to Hawaii Exclusive of the Vertebrates*. Sea Challengers, 1996. Cited 3 times.

Kapp, Ronald O. *How to Know the Pollen and Spores*. W. C. Brown, 1969. (Pictured Key Series). Cited 93 times.

Kays, Roland W. and Don E. Wilson. *Mammals of North America*. Princeton University Press, 2002. Cited 2 times.

Kingdon, Jonathan. *Kingdon Field Guide to African Mammals*. Academic, 1997-2003. Cited 139 times.

Langrand, Olivier. *Guide to the Birds of Madagascar*. Yale University Press, 1990. Cited 99 times.

Little, Elbert L. *Audubon Society Field Guide to North American Trees, Eastern Region* Knopf, 1980. (Audubon Society Field Guide Series). Cited 43 times.

Little, Elbert L. *Audubon Society Field Guide to North American Trees, Western Region* Knopf, 1980. (Audubon Society Field Guide Series). Cited 4 times.

Littler, Diane Scullion, et al. *Marine Plants of the Caribbean*. Smithsonian Institution Press, 1989. Cited 41 times.

Menkhorst, Peter. *Field Guide to the Mammals of Australia*. Oxford University Press, 2001-2004. Cited 3 times.

National Geographic Society. *Field Guide to the Birds of North America*. National Geographic Society, 1983-2002. Cited 122 times.

Newman, Kenneth. *Newman's Birds of Southern Africa*. Struik/Southern, 1980-2002. Cited 25 times.

Niering, William A. and Nancy C. Olmstead. *Audubon Society Field Guide to North American Wildflowers, Eastern Region*. Knopf, 1979; *National Audubon Society Field Guide to North American Wildflowers: Eastern Region*. Knopf, 2002. (revised by John W. Thieret). (Audubon Society Field Guide Series). Cited 11 times.

Peterson, Roger Tory and Edward L. Chalif. *Field Guide to Mexican Birds*. Houghton Mifflin, 1973. (Peterson Field Guide Series). Cited 48 times.

Peterson, Roger Tory and Margaret McKenny. *Field Guide to Wildflowers of Northeastern and North-Central North America*. Houghton Mifflin, 1968. (Peterson Field Guide Series). Cited 17 times.

Peterson, Roger Tory, Guy Mountfort, and P. A. D. Hollom. *Field Guide to Birds of Britain*. Houghton Mifflin, 1954-1993. (Peterson Field Guide Series). Cited 39 times.

Peterson, Roger Tory. *Field Guide to the Birds*. Houghton Mifflin, 1934-1980; *Field Guide to the Birds of Eastern and Central North America*. Houghton Mifflin, 2002. (Peterson Field Guide Series). Cited 85 times.

Peterson, Roger Tory. *Field Guide to Western Birds*. Houghton Mifflin, 1941-1990. (Peterson Field Guide Series). Cited 48 times.

Petrides, George A. *Field Guide to Trees and Shrubs*. Houghton Mifflin, 1958, 1972; *Field Guide to Eastern Trees*. Houghton Mifflin, 1988. (Peterson Field Guide Series). Cited 32 times.

Petrides, George A. *Field Guide to Western Trees*. Houghton Mifflin, 1992. (Peterson Field Guide Series). Cited 4 times.

Pizzey, Graham. *Field Guide to the Birds of Australia/Graham Pizzey and Frank Knight Field Guide to the Birds of Australia*. Collins/Princeton University Press, 1980-1999. Cited 115 times.

Polunin, Oleg. *Trees and Bushes of Europe*. Oxford University Press, 1976-1977. Cited 8 times.

Polunin, Oleg and Adam Stainton. *Concise flowers of the Himalaya*. Delhi: Oxford University Press, 1987. Cited 2 times.

Sefton, Nancy and Steven K. Webster. *Field Guide to Caribbean Reef Invertebrates*. Sea Challengers, 1986. Cited 6 times.

Sibley, David A. *Sibley Guide to Birds/National Audubon Society Sibley Guide to Birds*, 2000. Cited 31 times.

Sinclair, Ian. *Ian Sinclair's Field Guide to the Birds of Southern Africa*. Struik, 1984-1994. Cited 2 times.

Sinclair, J. C. *Illustrated Guide to the Birds of Southern Africa/SASOL Birds of Southern Africa/Birds of Southern Africa*. Struik/New Holland/Princeton University Press, 1993-2002. Cited 4 times.

Spellenberg, Richard. *Audubon Society Field Guide to North American Wildflowers, Western Region*. Knopf, 1979-2001. Cited 3 times.

Udvardy, M. D. F. *Audubon Society Field Guide to North American Birds: Western Region*, Knopf, 1977; *National Audubon Society Field Guide to North American Birds: Western Region*, Knopf, 1994 (revised by John Farrand). (Audubon Society Field Guide Series). Cited 11 times.

van Wyk, Braam and Piet van Wyk. *Field Guide to Trees of Southern Africa/Trees of Southern Africa*. Struik, 1997. Cited 30 times.

Whitaker, John O. *Audubon Society Field Guide to North American Mammals*. Knopf, 1980; *National Audubon Society Field Guide to North American Mammals*. Knopf, 1996. (Audubon Society Field Guide Series). Cited 48 times.

Williams, John George. *Field Guide to the Birds of East and Central Africa/Field Guide to the Birds of East Africa*. Collins/Houghton Mifflin, 1963-1995. Cited 21 times.

Appendix 2. Other Field Guides or Handbooks Mentioned in the Article

These field guides or handbooks were compared to the core field guides in the text of the article. While their citation rates were determined, the citing articles were not examined.

Böhme, Wolfgang, ed. *Handbuch der Reptilien und Amphibien Europas*. Wiesbaden: Aula-Verlag, 1981- . Cited 200 times.

Bond, James. *A Field Guide to Birds of the West Indies*. 5th ed. Boston: Houghton Mifflin, 1993. (Peterson Field Guide Series). Cited 94 times.

Brockman, C. Frank. *Trees of North America*. Rev. and updated ed. New York: St. Martin's, 2001. (Golden Field Guide Series). Cited 23 times.

Coates Palgrave, Keith. *Trees of Southern Africa*. 3rd ed. Cape Town, South Africa: Struik, 2002. Cited 267 times.

Cogger, Harold G. *Reptiles and Amphibians of Australia*. New (i.e., 6th) ed. Sydney: Reed, 2000. Cited 617 times.

Conant, Roger and Joseph T. Collins. *A Field Guide to Reptiles and Amphibians: Eastern and Central North America*. 3rd ed., expanded. Boston: Houghton Mifflin, 1998. (Peterson Field Guide Series). Cited 700 times.

Del Hoyo, Josep et al., eds. *Handbook of the Birds of the World*. Barcelona, Spain: Lynx Edicions, 1992- . Cited 600 times.

Elias, Thomas S. *Field Guide to North American Trees*. Rev. ed. Danbury, CT: Grolier, 1989. Cited 110 times.

Gleason, Henry A. and Arthur Cronquist. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*. 2nd ed. Bronx, NY: New York Botanical Garden, 1991. Cited 1,400 times.

Gray, Asa. *Gray's Manual of Botany: A Handbook of the Flowering Plants and Ferns of the Central and Northeastern United States and Adjacent Canada*. Reprint of the 8th (Centennial) ed., updated by Merritt Lyndon Fernald. Portland, OR: Dioscorides Press, 1988. Cited 925 times.

Hall, E. Raymond. *Mammals of North America*. 2nd ed. New York: Wiley, 1981. Cited 1,200 times.

Howell, Steve N. G. and Sophie Webb. *A Guide to the Birds of Mexico and Northern Central America*. New York: Oxford University Press, 1995. Cited 160 times.

Humann, Paul. *Reef Fish Identification: Florida, Caribbean, Bahamas*. 3rd ed., enl. Jacksonville, FL: New World Publications, 2002. Cited 66 times.

Kingdon, Jonathan. *East African Mammals: An Atlas of Evolution in Africa*. New York, Academic Press, 1971-89. Cited 874 times.

Maclean, Gordon Lindsay. *Roberts' Birds of Africa*. 6th ed. London: New Holland, 1993. (original author: Austin Roberts; other editions revised by G. R. McLachlan and R. Liversidge). Cited 420 times.

Newcomb, Lawrence. *Newcomb's Wildflower Guide: An Ingenious New Key System for Quick, Positive Field Identification of the Wildflowers, Flowering Shrubs and Vines of Northeastern and North Central North America*. Boston: Little, Brown, 1977. Cited 12 times.

Page, Lawrence M. and Brooks M. Burr. *A Field Guide to Freshwater Fishes: North America North of Mexico*. Boston: Houghton Mifflin, 1991. (Peterson Field Guide Series). Cited 140 times.

Robbins, Chandler S., Bertel Bruun, and Herbert S. Zim. *Birds of North America: A Guide to Field Identification*. Rev. and updated ed. New York: St. Martin's Press, 2001. (Golden Field Guide Series). Cited 87 times.

Smith, Margaret Mary and Phillip C. Heemstra, eds. *Smiths' Sea Fishes*. 6th ed. New York: Springer-Verlag, 1986. Cited 300 times.

Venning, Frank D. *Wildflowers of North America: A Guide to Field Identification*. New York: Golden Press, 1984. (Golden Field Guide Series). Cited 0 times.