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If you would like to become a member, visit [http://aba.org/join](http://aba.org/join).
In the January/February 2014 *Birding* (“What’s That Bird Song? Ask the Gizmo!” pp. 58–61), I wrote about the possibility of an app that might identify a bird by sound. What about an app that can help identify a bird by sight?

The quest for a “key”—a series of questions leading to an identification—is not a contemporary, technology-driven goal. Early field guides, such as those by Coues and Chapman, largely consisted of keys. (See Steven Siegel’s article, “How Chester’s Charts Beat Coues’s Keys: Century-old Books That Set Birding Free,” *Birding*, June 2004, pp. 294–299.) Today, in digital field guides, we’re seeing a renaissance of a key-based approach to bird ID.

As an ABA member and proud binocular-toting birder, you’ve surely fielded many identification queries and been asked for recommendations to help beginners solve their own riddles. So let’s take a look at the evolution of identification keys, from print guides through the “smart searches” of field guide apps.

**Before Field Guides: Keys**

Is it a Blue-headed Vireo or a Northern Parula? Handbooks to birds from the late 19th century relied on keys for bird identification. Still used as customized worksheets by some banders for aging and sexing, the most common format is a series of descending, dichotomous, yes–no questions.

I have a copy of Thomas Rob¬erts’ two-volume classic, *Birds of Minnesota* (1932). If I start with a perching bird, then 38 if-then-go-here questions might narrow it down to a wren. Then a four-page series of plumage steps determines whether it’s a Short-billed Marsh Wren, Prairie Marsh Wren, or Long-billed Marsh Wren; or a Bewick’s Wren, Carolina Wren, Winter Wren, House Wren, or Parkman’s House Wren.

Roberts developed his key in connection with his career as a teacher, refining the key with his pupils using trays of specimens. But therein lies a problem: Roberts’ key assumes a (dead) bird in the hand. Accuracy is high because questions pivot on such characters as the length of the tarsus.

Frank Chapman’s *Handbook of Birds of Eastern North America* (1895) also included an identification key, but it emphasized colors and patterns that could be seen in the field. In fact, color became such a central criterion that his subsequent book was titled *Color Key to North American Birds* (1903). As we’ll see below, color remains a prominent—yet problematic—choice in most app-based keys.

Ralph Hoffmann’s *Guide to the Birds of New England and Eastern New York* (1904) also used color as his key’s central organizing attribute, innovating by adding habitat and season. More than 100 years later, location—with a modern GPS twist—reappears in the search engine of apps such as Mitch Waite’s *Guide to Birds of America, iBird Ultimate*, and Cornell Lab of Ornithology’s *Merlin Bird ID*.

**Now It’s Smart Search and Filter**

As paper field guides morph into field guide apps, of course they add new media with audio, photos, and even pushpins of recent sightings. Field guide apps also integrate “digital identification keys”—now labeled as search, smart search, advanced search, or filter. You get asked questions like: What state or province are you in? What is the predominant color? Is the bird the size of a sparrow or robin? Does it have wing bars? How does it fly?

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In the new language of identification keys, we talk about attributes (such as color, size, or habitat), for which we choose one or more values (gray, yellow; smaller than a sparrow; desert). If the key works correctly with these values, then Verdin, say, makes the final cut.

**TIP:** Don’t assume that the more you enter (i.e., the better you observed the bird), the better the final answer. With these digital keys, selecting values for too many attributes makes it more likely to end up with “No matches found.”

### It Was Brown

It’s easiest to illustrate these digital keys with a real-life query. You’ve probably experienced the neighborly greeting, “Hello! Are you a birder? I saw a...” In this instance, it was March in Minnesota and a “medium-sized brown bird with yellow on the tail.” The enthusiastic beginning birder would like to know what she saw. Let’s ask some of the major field guide apps, including Audubon Birds, iBird Pro, National Geographic Birds, Peterson Birds, Sibley eGuide, and Waite’s Guide to Birds of America. (For an overview of most of these apps, see my article, “eGuide Me: Birding Without Paper Field Guides,” *Birding*, September 2012, pp. 54–59.)

In Audubon Birds Advanced Search, I scroll to select the state and month, then the shape among 14 choices, such as gull-like, tree-clinging, or, for this example, perching bird. “Search” then lists 18 matching species. As it turns out, Cedar Waxwing (the mystery bird) doesn’t make the cut, although its range map shows the species as year-round in Minnesota.

**TIP:** Proceed stepwise. Every attribute eliminates many species. Advise beginners to start with one immutable attribute, then scan the short list to see if anything looks right. Then add a second attribute and re-examine the list, repeating until the key shows the likely match.

In iBird Pro’s Search, I select Minnesota and the shape as “perching-like” (141 species), then size as 5 to 9 inches (98 species). Habitat is next, with choices of coast, desert, forest, grassland, urban, and so on. I don’t see suburban yard or park as an option, so I skip this attribute—although urban likely encompasses suburban. I turn to color, opt for “prominent brown,” yielding four matched species: American Pipit, Carolina Wren, House Finch, and Veery. Oops, my mistake. Had I selected “Color Primary” as brown and “Color Secondary” as yellow, then Cedar Waxwing appears in a list of 11 matched birds.

**TIP:** Keys are very sensitive, so be sure to understand the choices. iBird Pro contains excellent pop-up screens explaining each attribute. Don’t assume that something as “simple” as color is straightforward!

National Geographic’s digital key is called *Filters*, consisting of filters by color, size, habitat, month, region, and abundance. I select brown, sized between a sparrow and robin, and urban/residential, producing a slider-bar of 84 thumbnail head shots, including Cedar Waxwing.

Similarly, Peterson’s Search-Parameter dropped me to 23 matched species, including Cedar Waxwing, when I select Minnesota, March, perching birds, and residential areas.

Sibley eGuide’s Smart Search is less structured. I start with “Show only common birds” and “Exclude saltwater birds.” I then have a single scroll wheel with a mix of attributes, including “Aerialist” or “Tree-climbing” or “Hooked bill” or “Slender bill.” What if I see a tree-climbing bird with a slender bill, such as a Black-and-White Warbler? Sorry, choose one. So I’ll punt with “All land birds” and select size instead, at 8 inches (oriole), which brings me down to 116

### Digging Deeper

Digital keys can include anything from vocalizations to color to behavioral traits such as flight style, as demonstrated here from the Audubon Birds search.

The search in Peterson Birds uniquely includes nests and eggs, shown here identifying an off-the-ground nest lined with Spanish moss.

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species. The next step is to select from 15 “Distinguishing Features,” such as tail patches, a bright rump, or a handful of colors. There are choices for Bright Red/Pink/Violet, Bright Orange, Bright Green, and other Neotropical colors. Maybe the programmers should take a look at Robert Ridgway’s Color Standards and Color Nomenclature, a timeless reference for serious analysis of color gradients in nature. I don’t even have a choice for brown.

**TIP:** Color is an alluring attribute, but is very fallible, being subjective (your indigo may be my violet), hard to quantify (what's the difference between greenish-yellow and yellowish-green?), and subject to the environment (was the bird backlit? warmed by low sunlight?). Color choice has always been a problem for keys. Chapman's Handbook described the Yellow Warbler's tail as “fuscous” and the flicker’s breast as “vinaceous”—thus requiring printed color swatches to inform the reader what those terms meant.

**What Else Did You Notice?**

Beginners tend to focus on attributes such as color or size, but many of these digital keys go much deeper.

For example, locomotion is one of Audubon Birds’ specialty search fields. Was a bird’s flight direct, hovering, undulating, erratic, or swooping? If you select hovering, the app narrows the choices to 100 species, including Belted Kingfisher, American Kestrel, Loggerhead Shrike, and of course the hummingbirds and several species of terns.

iBird Pro includes the most detail when it comes to classic, morphological field marks, with such fine-grained traits as eye or cere color and head, breast, belly, and back patterns.

And, just as the National Geographic paper guide is known for coverage of rarities, its filter has a slide button to show only accidentals. This is a nice option for advanced birders who know the regular birds, but encounter a surprise Piratic or Variegated flycatcher. But it's probably not useful for beginning birders, who have enough on their plate just figuring out the expected flycatcher species.

A hidden gem of the Peterson Birds app is its key to bird nests and eggs—integrating the Peterson guides to birds' nests. Attributes include nest location, type, and material; number of eggs in the clutch; and egg shape, markings, and color. If you find an above-ground nest lined with Spanish moss, the Peterson app suggests Great Egret or Plain Chachalaca.

**TIP:** Habitat is a common attribute in all the search engines—but beware. During migration it is not unusual for a Golden-winged Warbler or Alder Flycatcher to visit a Minneapolis city yard, a habitat entry that disqualifies these species from the match list.

**Waite’s Guide to Birds of America**

As slick as they appear, these digital search keys are actually fairly “simple-minded”—in the sense that each is only a computer look-up table. Dump in a bunch of choices, and the computer spits out any bird combination that fits. Eventually, often too soon, it returns with “No matches found.”

The new Waite’s Guide to Birds of America ($29.99, iPad only, tinyurl.com/WaitesGuide) has a unique search algorithm, now also available on the newly released iBird Ultimate. This search engine was created and produced by Mitch Waite, who also created iBird and whatbird.com; a variant of this search engine is also available online at whatbird.com (tinyurl.com/identify-whatbird).

As you proceed through Waite’s search key, each attribute you enter is context-dependent, constraining subsequent choices and reducing the no-matches-found pitfall. This patented SAVE (Smart Attribute and Value Elimination) algorithm narrows the species set by only allowing for subsequent choices that are feasible. For example, once you select Minnesota, primary color brown, and secondary color yellow, subsequent choices are constrained. You now are not offered choices that the mystery bird had a long bill, or that it flew by hovering, because there are no such species given the location and colors chosen.

The Waite key has other extras that set it apart. The list of matched species is displayed in real time as you make each choice. You can even view the matches in a slide show, hoping for a “That’s it!” moment. You can also save your search tem-

**Conservation Connection**

The Cornell Lab of Ornithology has spearheaded efforts to educate the general public on bird identification, beginning with their popular allaboutbirds.org website and of course eBird. Merlin Bird ID is distributed for free in hopes that this app will get more backyard birders excited about birds, converting them to eBird-based citizen scientists and advocates for bird conservation.

The Mitch Waite Group, creators of the general-public identification website whatbird.com, is a private company, donating free tablets and smartphones to schools and more than 10,000 apps to teaching organizations.
plates, a shortcut trick for studying similar species.

In addition, the Waite key includes an optional search filter called Birds Around Me, using a geo-aware iPad to narrow the viable species. Location is a powerful feature—especially for beginning birders—as we’ll see below with a simpler app, Merlin Bird ID.

Merlin Bird ID

The new Merlin Bird ID app, a project of Cornell Lab of Ornithology, is a simplified, streamlined app created specifically to identify birds in the field. It’s available free for iPhone and soon for Android (merlin.allaboutbirds.org).

At first glance, Merlin Bird ID seems too rudimentary to make a proper identification. It asks only for the following: location; sighting date; general size of the bird; up to three colors from a limited, but natural, palette; and a behavioral trait (such as on the ground, on a fence or wire).

The power of its search engine derives not from its simple question key, but from its access to eBird observations—more than 70 million of them, to put this in perspective! Assuming that any bird a beginner sees has likely been seen by experienced birders in the area, Merlin narrows down the choices from hundreds of possibilities to a few, based on location and date.

I tried it with several real-life “mystery bird” queries, including the Cedar Waxwing, female American Goldfinch, drab Western Palm Warbler, and Golden-crowned Kinglet. Merlin Bird ID nailed each identification as the top choice. Its simplicity is its effectiveness: leveraging the community of birding reports to produce an identification, rather than putting the burden on the beginner to notice if the bird had a supercilium or a split eye ring.

Project Manager Jessie Barry points out that Merlin is intended for beginners. The app works best with regular yard, neighborhood, park, and cabin birds. Its goal is not to identify every tricky gull, hummingbird, or hawk. In fact, it doesn’t work well on these difficult families, particularly if you have many likely species, such as gulls in Florida or hummingbirds in Arizona. And because it’s powered by a “most likely” algorithm, it certainly is not designed to help with a California Gull that shows up in an East Coast gull roost.

Give a Beginner a Key

If you’re looking for the most expansive digital key, the encyclopedia-like Waite’s Guide to Birds of America excels. It has the most sophisticated algorithm, incorporates live location, shows search results in real time (with a slide show option), and has the most fine-grained advanced key choices.

Merlin Bird ID, a simple and free app, is a slam dunk in every beginning birder’s collection. Get it onto all your neighbors’ smartphones. And start ‘em young—Merlin Bird ID is easy and game-like, so a child can discover a new hobby identifying neighborhood birds.

Finally, digital keys aren’t always only for beginners. The key in Peterson Birds is helpful if you’re intrigued by nidification or oology. And there are classes of birds, such as basic-plumage shorebirds or confusing fall warblers, for which it’s well worth your time to quickly run an app key, especially when traveling. Doing so is a quick cross-check to be sure you didn’t prematurely make an identification while overlooking something obvious—or something unusual.

References


