In our media-infused, gadget-crazed, eternally wired world, could it be that games played on the very same electronic devices that keep us indoors and locked away from nature will entice us to step into the light, inhale the fresh air, and take the time to smell the roses?

- Bill Chameides

Photo by Dinuraj K

From https://www.childrenandnature.org/2014/12/04/connecting_with_nature_theres_an_app_for_that/
To turn on the magnifying glass:

1. Open settings
2. Tap “General” then Accessibility”
3. Tap “Magnifier,” then turn on
4. Follow directions given

(Need iOS 10)
How many apps are there?

In 2018:
Android users — 2.1 million
Apple store — 2 million
Google "Nature apps"

10 Android Apps Every Nature Lover Should Install Today

- PlantNet Plant Identification.
- Smart Tools.
- National Parks.
- WildTime.
- Tree ID – British Trees.
- Nature's Notebook.

More items... • Mar 27, 2018
Our focus today: to look at some of the apps that are fun to use in Boulder County — and that will lighten our packs — and that will enable us to help out with various citizen science projects.
http://bcna.org
Before we start . . .

♦ First, go to [http://bcna.org](http://bcna.org)

♦ Tap on “Resources”, then “Nature apps”

♦ This is your resource to find then apps we will talk about today

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**Taking all your field guides in one pocket: There’s an app for that!**

BCNA is compiling a list of apps that will help people identify and learn about what they see along the Colorado Front Range. Our goal is to make it easy and fun for all of us to learn more about what we see as we hike, bike and explore our natural world.

In general, the links are to a general information site about the app. Only apps for general daytime use are included here. We have not included apps for professional level use, for photography, for the night sky, for geology or for gardening or urban forestry.

For a general introduction and overview of nature apps, see [this pdf](http://bcna.org/birds.pdf), a class presentation.

For local naturalist information on the web, please check the links at [http://bcna.org/birds](http://bcna.org/birds). Abbreviations used: iOS for Apple operating systems; Android for android devices; $ for apps that must be purchased and are not free; N/A for apps where No Data Access is Needed to use the app or if N/A for apps where Data Access is Needed. All apps do require data access to download and install.

**Birds**

For detailed reviews of current birding apps, check out [Bourchier’s Birding Blog or Best Birding Apps for iPhone, iPod Touch, iPad and Android Review](http://bcna.org/birds). Each of the major bird books now has an excellent and detailed app. All are available on both iOS and Android. Maps are free, and none require a data connection to use the app; otherwise it is downloaded. **Bird Pro, Audubon Birds Field Guide App, Sibley Guide to Birds of North America, Peterson’s Guide to Birds of North America**, and [National Geographic Birds are all available](http://bcna.org/birds).

<table>
<thead>
<tr>
<th>App Name</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bird Pro</td>
<td>Excellent app for backyard birders (it has only the most common birds) and takes you through a series of simple steps to help you identify the bird. It is very easy for children to use. The newer version also includes pictures, which does require data access. iOS, Android. Free. N/A for others.</td>
<td></td>
</tr>
<tr>
<td>Audubon Birds Field Guide App</td>
<td>Advanced birding app that includes a full range of bird species. The app includes full-color images and detailed information on each species. iOS, Android. $ N/A.</td>
<td></td>
</tr>
<tr>
<td>National Geographic Birds</td>
<td>Excellent reference guide to North American birds. iOS, Android. Free. N/A.</td>
<td></td>
</tr>
</tbody>
</table>

**Appletip** was developed by HawkWatch International and the Cornell Lab of Ornithology. It has information, lots of pictures, videos, range maps and weatherization for the North American raptors. iOS, Android. Free: N/A.

**The Warbler Guide** by Princeton University Press is a companion to Princeton’s book, The Warbler Guide, by Tom Stahman and Scott Whibley. It had added 3D to its drawings, enabling you to touch the drawings and turn them. It is a great tool to see what the bird looks like from the side, top, etc. iOS, Android. $ N/A.

**Kantorio** is an app that allows birders to create their own drawings and share them with others. You can save your drawings and share them with others. iOS, Android. Free: N/A.

**eBird** is an app that allows birders to share their sightings with others and see the birding activity in their area. iOS, Android. Free: N/A.

**Birding Map** is an app that allows birders to see where birds are being observed. It is a great tool for planning trips and understanding birding activity in different areas. iOS, Android. $ N/A.

**eBird Mobile** is an app that allows birders to save their sightings and share them with others. iOS, Android. $ N/A.

**Flora** is an app that allows birders to learn more about plants and flowers. It includes information on over 1000 species, including their habitat, blooming season, and more. iOS, Android. $ N/A.

**Plants and wildflowers:**

<table>
<thead>
<tr>
<th>App Name</th>
<th>Description</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado Rocky Mountain Wildflowers</td>
<td>High Country app includes 520 Colorado wildflowers. You can browse the pictures or search by characteristics. iOS, Android. $</td>
<td>N/A.</td>
</tr>
<tr>
<td>Rockies AlpineFlower Finder</td>
<td>Identifies alpine flowers by color or characteristics. It also has games to help you learn from the flower names and you can keep a flower list. iOS, Android. $</td>
<td>N/A.</td>
</tr>
<tr>
<td>What apps do you already use?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Birds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Plants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Mammals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Butterflies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Insects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Tracking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Amphibians or reptiles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Phytoplankton</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• iNaturalist</td>
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</tr>
</tbody>
</table>
How do you plan to use the app?

- Quick ID only?
- Introductory information or lots of details?
- Only local species? Only common species? Almost all species?
- Track your observations?
- Personal only or sharing with others?
Categories of apps

- **Simple to use**: limited data base; good for children, beginner naturalists, or quick ID of common organisms
- **Games that teach**
- **Comprehensive**: lots of information plus searching, sounds, filters, listing options; often based on books
- **AI apps**: use camera to get an ID; amount of other information varies; improving as the databases grow
- **Citizen science apps**: contribute observations to worldwide, national or local projects
Simple to use, smaller data base

- Merlin Bird ID
- Colorado Wildflowers
- iTrack Wildlife basic
Games that teach

- Larkwire
- Rockies Alpine Flower Finder
- Seek by iNaturalist
Comprehensive

- **Birds**: iBird Pro, Audubon, Sibley, Peterson, National Geographic, Raptor ID, Warbler Guide and others

- **Plants**: Flora ID apps such as 2,250 Colorado Wildflowers

- **Fieldstone Guides**: mammals, amphibians, birds, butterflies, mammals, insects, mushrooms, reptiles

- **Others**: Mammals of North America, iTrack Wildlife, Dragonfly ID, Butterfly Species of North America, Phytoplankton
AI for identification

- **Birds:** Merlin, iBird Pro
- **iNaturalist and Seek**
- **Many new apps are starting to take this approach**
Citizen science plus

- eBird
- iNaturalist
- Many others that are not included on the BCNA website list
Let’s get started!

- See if the app meets your wants: look online for general information, costs, reviews, youtube videos - [http://bcna.org](http://bcna.org) is a good starting site.

- Most apps work in a pretty similar way. What you learn with one app likely applies to others.

- Organize your apps so you can quickly find them. Use folders if needed.
Let’s get started!

- Apps take up storage space on your phone. Do you have enough? Do you need to remove some photos or other apps first? Will your data plan allow you to use the app in the field?

- Download instructions on the web for your system — search for “How to download an app iOS or Android”
Know the connection needs

- It works best to download the apps when the phone is connected to wireless.
- Cell signals vary in the field.
- Sometimes apps require a cell signal to work.
- Check your data limits for your plan. Don’t be surprised when you get your bill!
Privacy / sharing is your choice

- Location settings: You have three choices - “Always on”, “On when using the app” or “Never on”
- Pay attention to options when sharing photos or sighting
- iNaturalist: Hide locations for sensitive species
Hints on using cell phones in the field

- Have a fully charged phone — it’s bright out there!
- Use your phone with intention - take selfies, record grandchild, observe nature, find out the name of that bug, look more closely at what is around you
- Phones fit in your pocket and can be silenced.
Games are always fun!
Birding apps come in lots of flavors

Let’s take a look at some of the major birding apps to see the differences.
Audubon

Ovenbird
Seiurus aurocapilla

Description
Recent Sightings
Similar Birds

Adult

Add a Sighting

0 Sightings
In 0 Custom Lists

Family
Wood Warblers
iBird Pro

FIELD MARKS

- Black-bordered orange crown stripe
- White eye ring
- Olive-brown upperparts
- Heavily-spotted white underparts
- Cinnamon-brown upperparts
- Less distinct spotting

Louisiana and Northern waterthrushes lack eye ring and black border on crown and have white-to-yellow stripe behind eye.

Tap Illustration for Full Screen

General (4) Range Photos (5)
Sounds Similar Feeders
Merlin
Bird ID
1st winter (Aug-Mar)

- orange crown-patch (difficult to see)
- bordered by dark crown-stripes
- bold white eye-ring
- black spots on white auriculurs
- alert posture and jerky walking gait

Adult

Sibley
Next let’s take a closer look at three birding apps.
A quick look at Audubon’s bird app

https://vimeo.com/292345523
A quick look at iBird Pro
You can quickly narrow the number of choices by typing the name of the bird you want.
You can also narrow the choices by using “Search”
If you are birding in one place, you can narrow the options by selecting just state and habitat.
Black-billed Magpie

FIELD MARKS

Yellow-billed Magpie is smaller with yellow bill and patch of bare yellow skin around or below eye.

primaries have large white patches

thick black bill

white shoulders

glossy blue and green-black wings and tail

long tail

Close
Black-billed Magpie C1

Nasal “shek” calls.

Black-billed Magpie A1

Whisper song during nest building activity.

Black-billed Magpie C2

Territorial yelping call.

Phonetic Text

‘mag-mag-mag’, “yak-yak-yak”
Black-billed Magpie

Black-billed Magpie Adult 3

Copyright © Jeff Wendorff

General  Range  Photos (7)
Sounds  Similar  Feeders
Body

Length: 44.5-55.9 cm (17.5-22 in)
Weight: 187 g (6.6 oz)
Color Primary: White, Black, Sheen or Iridescence
Size: Large (16 - 32 in)
Underparts: Black breast with white belly and sides
Upperparts: Black with iridescent blue sheen
Back Pattern: Solid
Belly Pattern: Solid
The Black-billed Magpie is part of the crow family, and inhabits much of western Canada and the United States, and southern Alaska. This species is one of the few in which mates stay together for life. They nest at the tops of evergreens and deciduous trees, and occur in a variety of open and forest habitats. They rarely migrate but, at times, the Black-billed Magpie will travel south or east during winter months. They typically form colonies and roost together during this time of year. The Black-billed Magpie is omnivorous, dining on berries, insects, carrion, eggs and rodents. Although this species has declined in prairie ecosystems, the population is estimated around 5.4 million individuals and is large and stable enough to warrant a conservation status of Least Concern.
Facts

In the past, they have been considered vermin (due to their feeding on poultry eggs and orchard crops) and farmers have placed bounties on them. They are now protected in the U.S.

The Black-billed Magpie spends up to 40 hours building nests with domes on top.

Unlike most birds, they can use scent to locate food.

A group of magpies has many collective nouns, including a "charm", "gulp", "mischief", "tittering", and "tribe" of magpies.
Similar Species

- American Crow  
  *Corvus brachyrhynchos*
- Brown Jay  
  *Psilorhinus morio*
- Clark's Nutcracker  
  *Nucifraga columbiana*
- Green Jay  
  *Cyanocorax yncas*
- Yellow-billed Magpie  
  *Pica nuttalli*
Black-billed Magpie

Behavior

General
Black-billed Magpie: Large, noisy, black and white jay with very long tail and dark, stout bill. Wings and tail are iridescent blue and green-black. Sexes are similar.

Range and Habitat
Black-billed Magpie: Resident from southern Alaska to western and central Canada south to northern California and west through the Great Plains. In winter months, it may travel as far east as Ontario and Minnesota. Its preferred habitats include open woodlands, savannas, brush-covered country, and stream sides.

Breeding and Nesting
Black-billed Magpie: Seven to thirteen brown marked, green gray eggs are laid in a neat cup nest within a large, bulky, domed structure of strong, often thorny twigs, with a double entrance, in a tree or bush. Incubation ranges from 16 to 21 days and is carried out by the female.
Merlin has grown to four continents and 3,000 bird species!

Merlin asks 5 questions, then uses eBird to identify likely choices.

Simple, quick, and surprisingly accurate!
Where did you see the bird?

Search Place or Postal Code

Current Location

Map

Boulder, CO

Boulder, CO

Cambria, CA

Boulder, CO

Paraiso, Cartago

Longmont, CO
### When did you see the bird?

<table>
<thead>
<tr>
<th>Month</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>7</td>
</tr>
<tr>
<td>February</td>
<td>8</td>
</tr>
<tr>
<td>March</td>
<td>9</td>
</tr>
<tr>
<td>April</td>
<td>10</td>
</tr>
<tr>
<td>May</td>
<td>11</td>
</tr>
<tr>
<td>June</td>
<td>12</td>
</tr>
<tr>
<td>July</td>
<td>13</td>
</tr>
</tbody>
</table>

**Reset to Today**
What size was the bird?

- between sparrow and robin
What were the main colors?

Select from 1 to 3

Black
Gray
White
Buff/Brown
Red/Rufous
Yellow
Olive/Green
Blue
Orange
Was the bird...? 

- Eating at a feeder
- Swimming or wading
- On the ground
- In trees or bushes
- On a fence or wire
- Soaring or flying
House Sparrow
Chipping Sparrow
Red-breasted Nuthatch
Spotted Towhee
Red-winged Blackbird
House Finch
Cassin’s Finch
Dark-eyed Junco
Plants and Wildflowers
Note: This download is quite large and could take 20 minutes to 2-3 hours depending on your wifi speed. Be sure it is fully downloaded before trying to open the app. If you run into any problems, please contact us at flora.id@wtechlink.us

All net proceeds from the sale of this app goes to support botanical education, research, and development of plant identification tools.
Rash Plants
Naturedigger, LLC
4.6, 10 Ratings
Free

Colorado Wetlands Mobile App
Colorado State University
5.0, 1 Rating
Free
National Audubon Society and National Wildlife Federation Field Guides have developed six apps with:

* 7,000 photographs
* 2,200 bird songs and call
* 100 plus mammal and frog sounds
* range maps

They included the entire text of each National Audubon Society Field Guide

iOS only
Sample search from iTrack Pro App
Page from Phytoplankton App
Aphanizomenon spp.

Type: Cyanobacteria

Size: 2-3 μm wide

Toxin: anatoxins, cylindrospermopsin, saxitoxins.

Notes:
Toxins: anatoxins, cylindrospermopsin, saxitoxins. Terminal cells usually narrower and longer than the intercalary cells, sometimes much longer; terminal
iNaturalist

https://www.inaturalist.org/

How It Works

1. Record your observations
2. Share with fellow naturalists
3. Discuss your findings

iNaturalist
An online social network
Sharing biodiversity information
To learn about nature
iNaturalist

A Crowd-sourced Species Identification Tool

An Organism Occurrence Recording Tool

Primary Goal: Connect People With Nature

Secondary Goal: Generate Scientifically Valuable Biodiversity Data
New updates in the last 24 hours from iNaturalist.org

larryhalverson added an identification to an observation by ccv-co
larryhalverson's ID: Gyrfalcon (Falco rusticolus)
Posted by larryhalverson about 8 hours ago
View Observation

jwidness added an identification to an observation by ccv-co
jwidness's ID: Arctic Ground Squirrel (Urocitellus parryii)
Posted by jwidness about 11 hours ago
View Observation

View your dashboard for more updates
http://bcna.org has links to directions for downloading and starting to use iNaturalist

From https://www.inaturalist.org/pages/getting+started
YOUR TURN TO INVESTIGATE AND DOWNLOAD

iNaturalist
Bird apps
Plant apps
Mammal Apps
Tracks apps
Butterfly apps
Reptile and amphibian apps
Insect apps
Mushroom apps
Phytoplankton apps