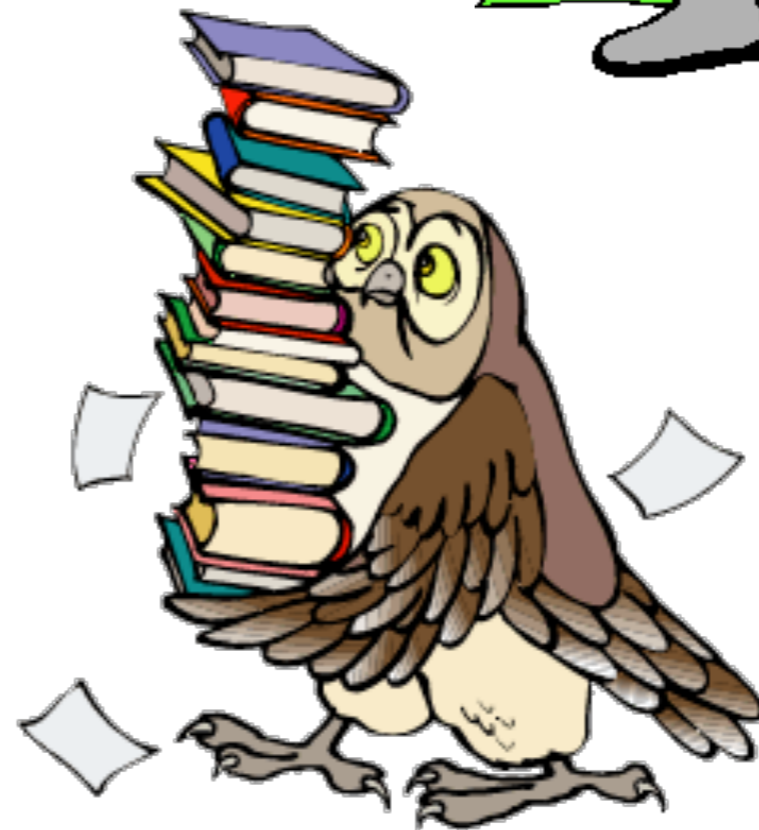




In our media-infused, gadget-crazed, eternally wired world, could it be that games played on the very same electronic devices that keep us indoors and locked away from nature will entice us to step into the light, inhale the fresh air, and take the time to smell the roses?

- Bill Chameides

Photo by Dinuraj K



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

All

Videos

Images

News

Shopping

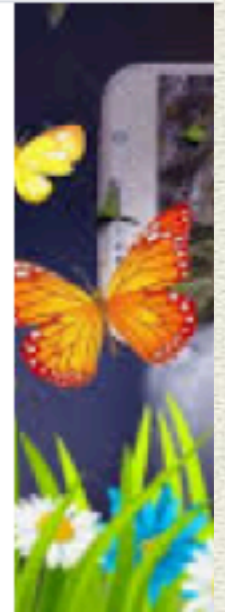
More

About 621,000,000 results (0.61 seconds)

10 Android Apps Every Nature Lover Should Install Today

- Audubon Birds of North America. Audubon Birds of North America is the premier bird catalog app for anyone living in the United States. ...
- MyNature Animal Tracks. ...
- PlantNet Plant Identification. ...
- Smart Tools. ...
- National Parks. ...
- WildTime. ...
- Tree ID – British Trees. ...
- Nature's Notebook.

[More items...](#) • Mar 27, 2018



Google
"Nature
apps"

**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>

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Boulder County Nature Association

Our mission: To educate, inform and inspire for the purpose of conserving and promoting resilient natural ecosystems in our region

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[PUBLICATIONS](#)

[ABOUT BCNA](#)

[ACTIVITIES](#)

[RESOURCES](#)



Boulder County Nature Association 2019 Annual Ecosystems

THE CHANGING BASELINE FOR FRONT RANGE ECOSYSTEMS Implications for Management and Restoration

Sponsors: CO Native Plant Society, Boulder County Parks & Open Space, Boulder Open Space & Mountain Parks, Boulder County Audubon Society, CU Albert A. Bartlett Science Communication Center, INSTAAR, Dept. of Ecology & Evolutionary Biology, and the Environmental Studies Program.

Sketch made by the artist of the US Geological Survey of Colorado and New Mexico, 1899.

Upcoming Events

May 8: BCNA board meeting at 7 PM

April 26-29 City of Boulder and Denver 2019 City Nature Challenge: Cities around the world will be competing to see who can make the most observations of nature, find the most species, and engage the most people. The 4-day bioblitz will be followed by a species identification period from May 1-5, and winners will be announced on May 6.

[KGNU/BCNA Almanacs](#)

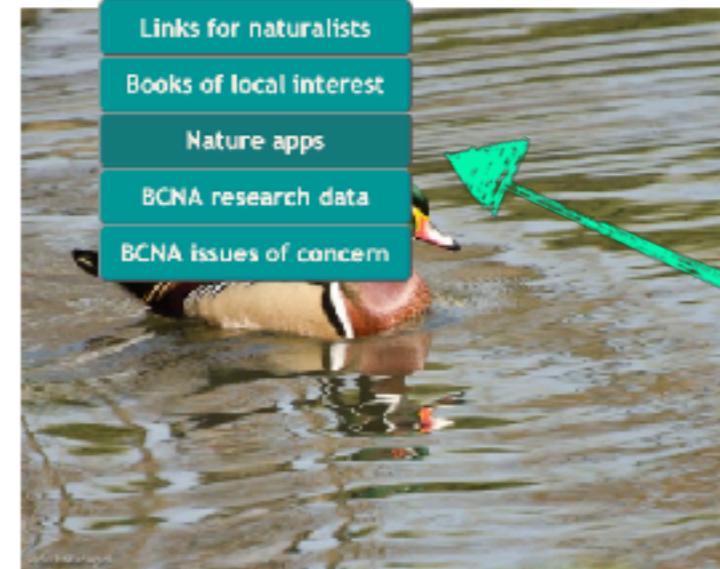
[Links for naturalists](#)

[Books of local interest](#)

[Nature apps](#)

[BCNA research data](#)

[BCNA issues of concern](#)



Before we start . . .

- ◆ First, go to <http://bcna.org>
- ◆ Tap on “Resources”, then “Nature apps”
- ◆ This is your resource to find then apps we will talk about today



This scenic shot of Henderson Lake in Boulder was taken despite poor light conditions using an iPhone 7 with the Procamera app set to HDR. It was saved as both a jpg and a tiff file. Photo by ©C. VanWie.

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 skies, for geology or for gardening or urban forestry.

For a general introduction and overview of nature apps, see [this pdf](#), a class presentation.

For local naturalist information on the web, please check the links at <http://bcna.org/links.html>.

Abbreviations used: iOS for Apple operating systems; Android for android devices; \$ for apps that must be purchased and are not free; NDAN for apps where **No Data Access is Needed** to use the app or DAN 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 [Boucher's Birding Blog](#) or [Best Birding Apps for iPhone, iPod Touch, iPad and Android Review](#).

- Each of the major bird books now has an excellent and detailed app. All are available on both iOS and Android; none are free; and none require a data connection to use the app after it is downloaded. **iBird Pro**, **Audubon Birds Field Guide App**, **Sibley eGuide to Birds of North America**, **Peterson's Guide to Birds of North America**, and **National Geographic's Birds** are all available. iBird Pro is adding packages for areas beyond North America. iOS, Android; \$; NDAN
- **Merlin Bird ID** is an excellent app for beginner birders (it has only the more 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 newest version also will match pictures, which does require data access. iOS, Android; free; NDAN for some functions, DAN for others
- **BirdsEye Bird Finding Guide -- Global Guide** allows you to search by name or location, get a list of nearby sightings, and keep a life list. iOS, Android; free for limited number of birds or \$ for an expanded list; NDAN for some functions, DAN for others
- **BirdsEye Hotspots -- Find Birding Locations Worldwide for iOS and BirdsEye for Android** gives world-wide access to eBird hotspots. iOS, Android; free; DAN
- **Raptor ID** was developed by HawkWatch International and the Cornell Lab of Ornithology. It has information, lots of pictures, videos, range maps and vocalizations for the North American raptors. iOS, Android; free; NDAN
- **The Warbler Guide** by Princeton University Press is a companion to Princeton's book, **The Warbler Guide**, by Tom Stephenson and Scott Whittle. It had added 3D to its drawing enabling you to touch the drawing and turn it to any angle to better see what the bird looks like from the side, top, etc. iOS, Android; \$; NDAN
- **Larkwine** is an app to learn bird songs through games designed for beginners to advanced birders. There are two apps, one for land birds and one for water birds. iOS or a web-based app; \$; NDAN for iOS, DAN for web-based
- **eBird Mobile** is an app where you can record your sightings while in the field and easily link them with eBird, a global online data base used by birders around the world. The data you submit is then used for scientific research, education and conservation. eBird has a [detailed guide](#) on how to use this app. iOS, Android; free; NDAN/DAN

Plants and wildflowers:

- **Colorado Rocky Mountain Wildflowers** by High Country apps includes 520 Colorado wildflowers. You can browse the pictures or search by characteristics. iOS, Android; \$; NDAN
- **Rockies Alpine Flower Finder** identifies alpine flowers by color or characteristics; it also has games to help you learn the flower names and you can keep a flower list. iOS; \$; NDAN

What apps do you already use?

- Birds
- Plants
- Mammals
- Butterflies
- Insects
- Tracking
- Amphibians or reptiles
- Phytoplankton
- iNaturalist

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 world-wide, 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> 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.



Google Cale...



Weather



Productivity



Books/movi...



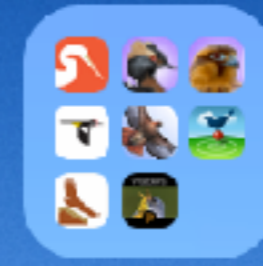
News



Maps, Travel



Naturalist



Birds



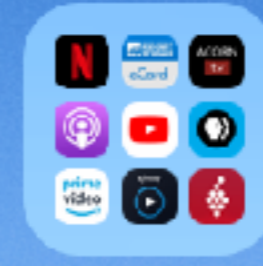
Photography



Games/Kids



Connections



Entertainment



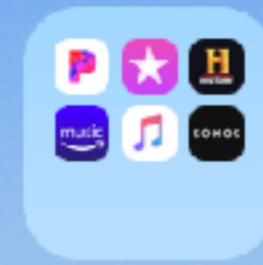
iPhone Apps



FaceTime



Home



Music|Radio



Find iPhone



Settings



Health



App Store



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!



Learn bird songs the fun way

Master birdsong and
take birding to a new level

TRY IT NOW
no signup required



Share

GROUPS

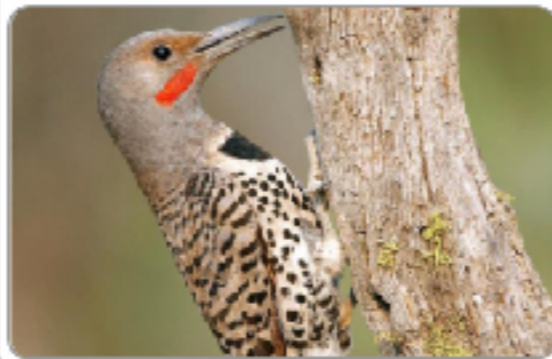
Downy Woodpecker



American Kestrel



Northern Flicker



Red-breasted Nuthatch



STOP

Birding apps come in lots of flavors

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




Audubon

Verizon 8:48 PM 22%

Ovenbird
Seiurus aurocapilla

[Description](#) Recent Sightings Similar Birds



Adult 1/2

Ovenbird
Seiurus aurocapilla

[Add a Sighting](#)

0 Sightings > In 0 Custom Lists >

Family
[Wood Warblers](#)

iBird Pro

Verizon 8:48 PM 21%

Close Ovenbird

FIELD MARKS SHARE FAVORITE

black-bordered orange crown stripe

white eye ring

olive-brown upperparts

heavily-spotted white underparts

Adult ♂

Adult ♀

duller overall

cinnamon-brown upperparts

Juvenile

less distinct spotting

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

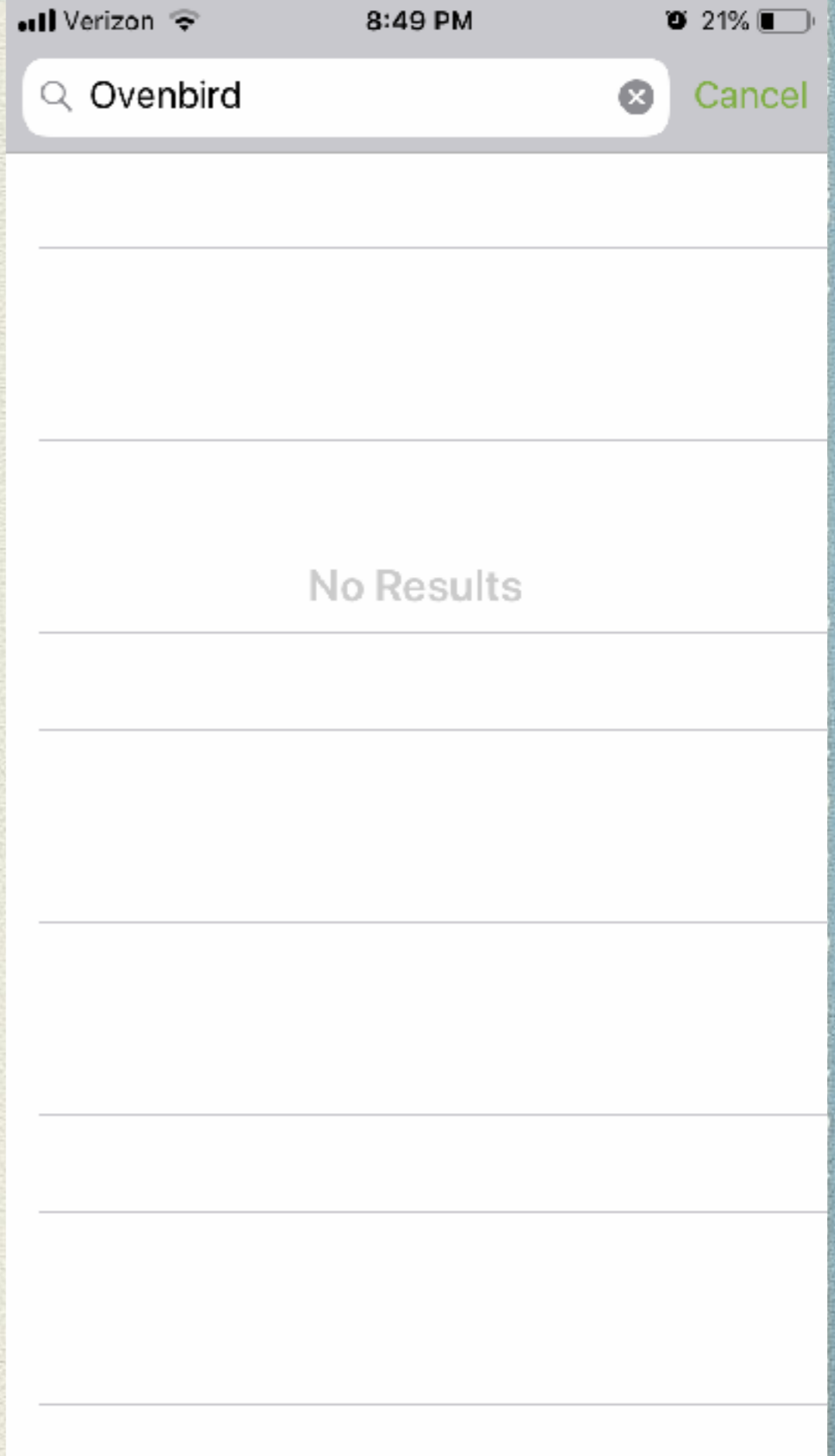
Tap Illustration for Full Screen

General (4) Range Photos (5)

Sounds Similar Feeders

iBird

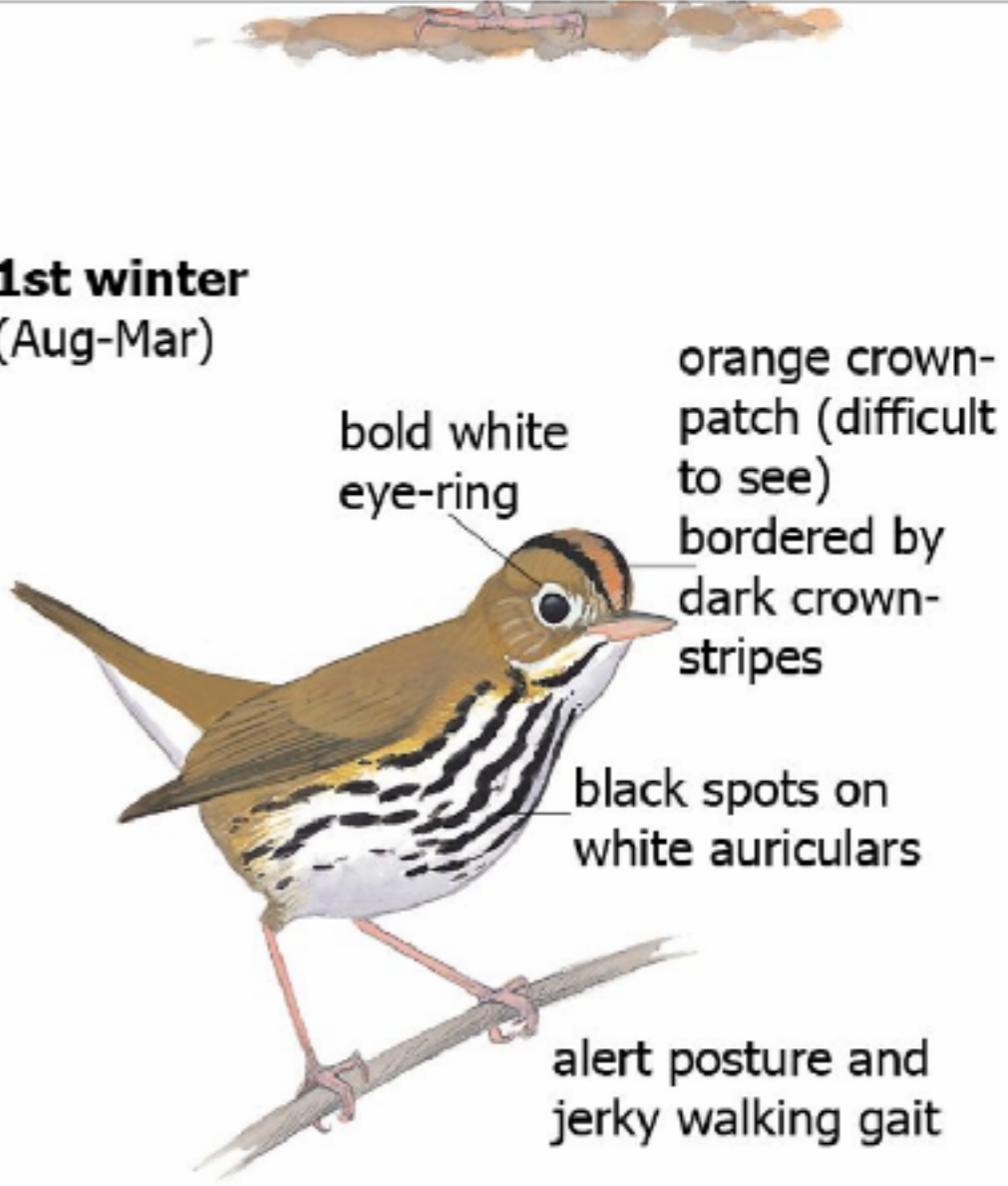
Merlin Bird ID



Sibley

Verizon 8:50 PM 21%

Ovenbird



1st winter
(Aug-Mar)


bold white eye-ring

orange crown-patch (difficult to see) bordered by dark crown-stripes

black spots on white auriculars

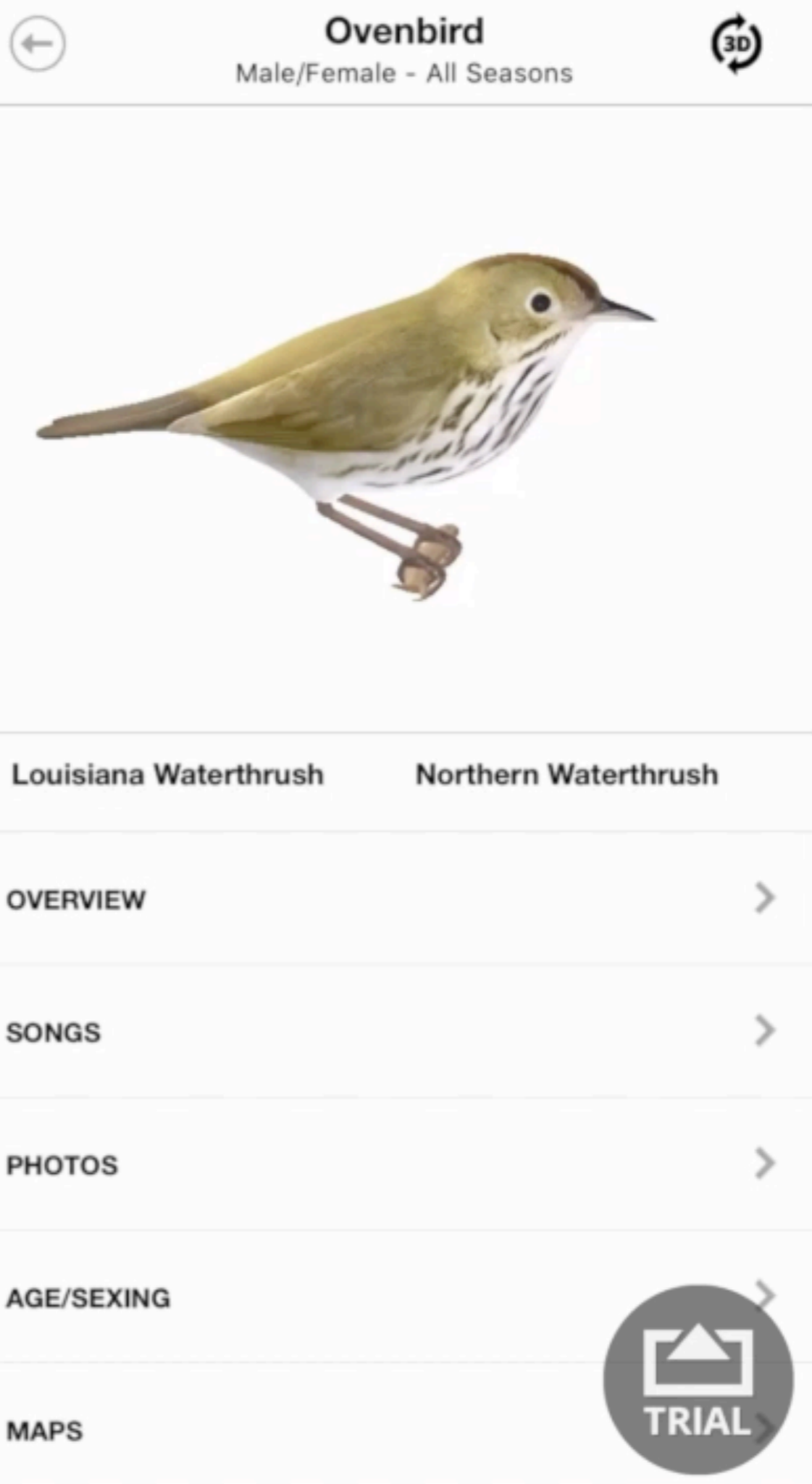
alert posture and jerky walking gait

Adult

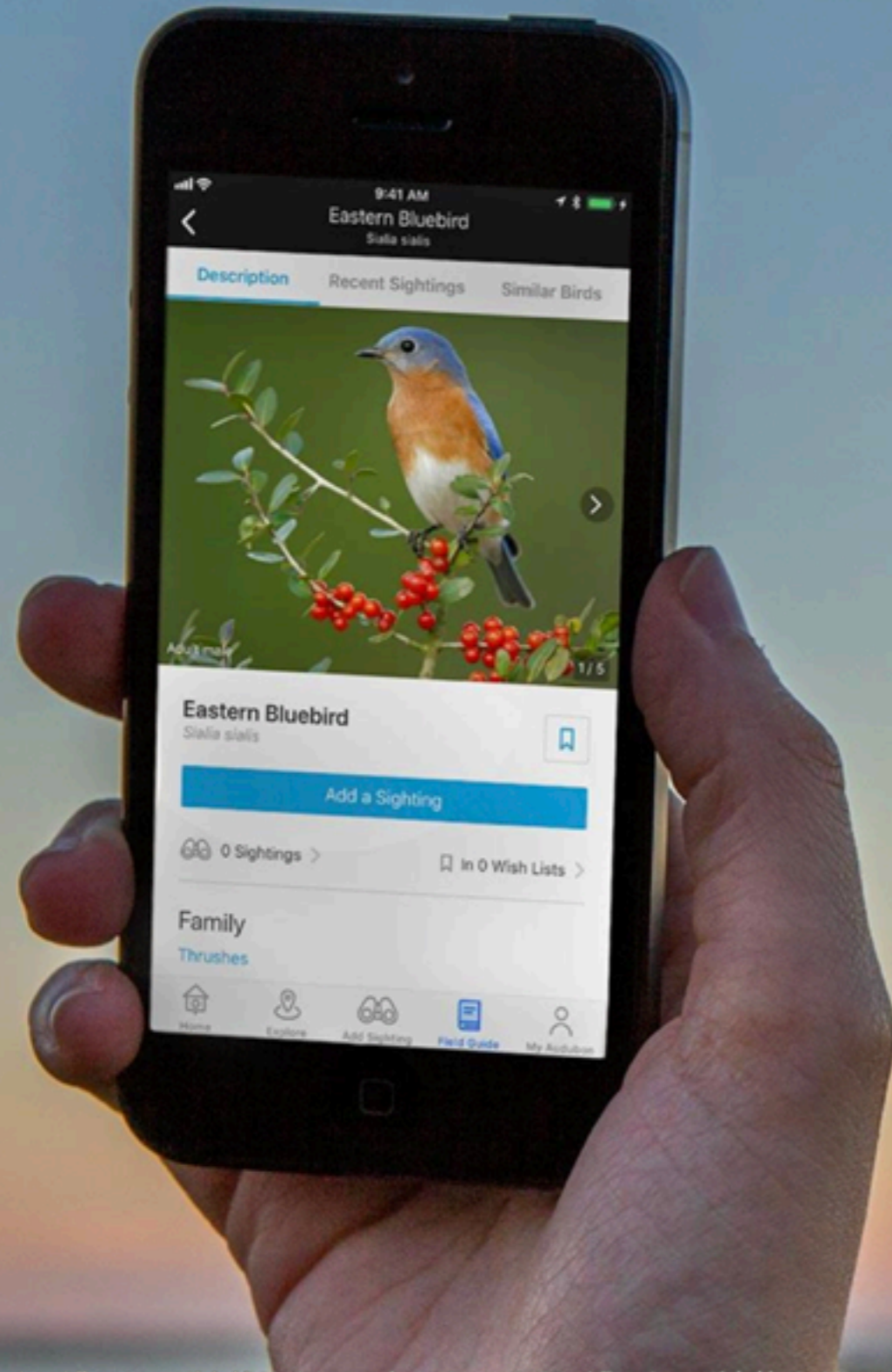


Navigation icons: photo gallery, list, globe, music.

The Warbler Guide



Audubon



iBird Pro Guide to Birds

Field Guide to North America

Mitch Waite Group

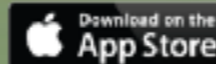
#17 in Reference

★★★★★ 4.5, 891 Ratings

\$14.99 · Offers In-App Purchases

Download the Free Merlin Bird ID App

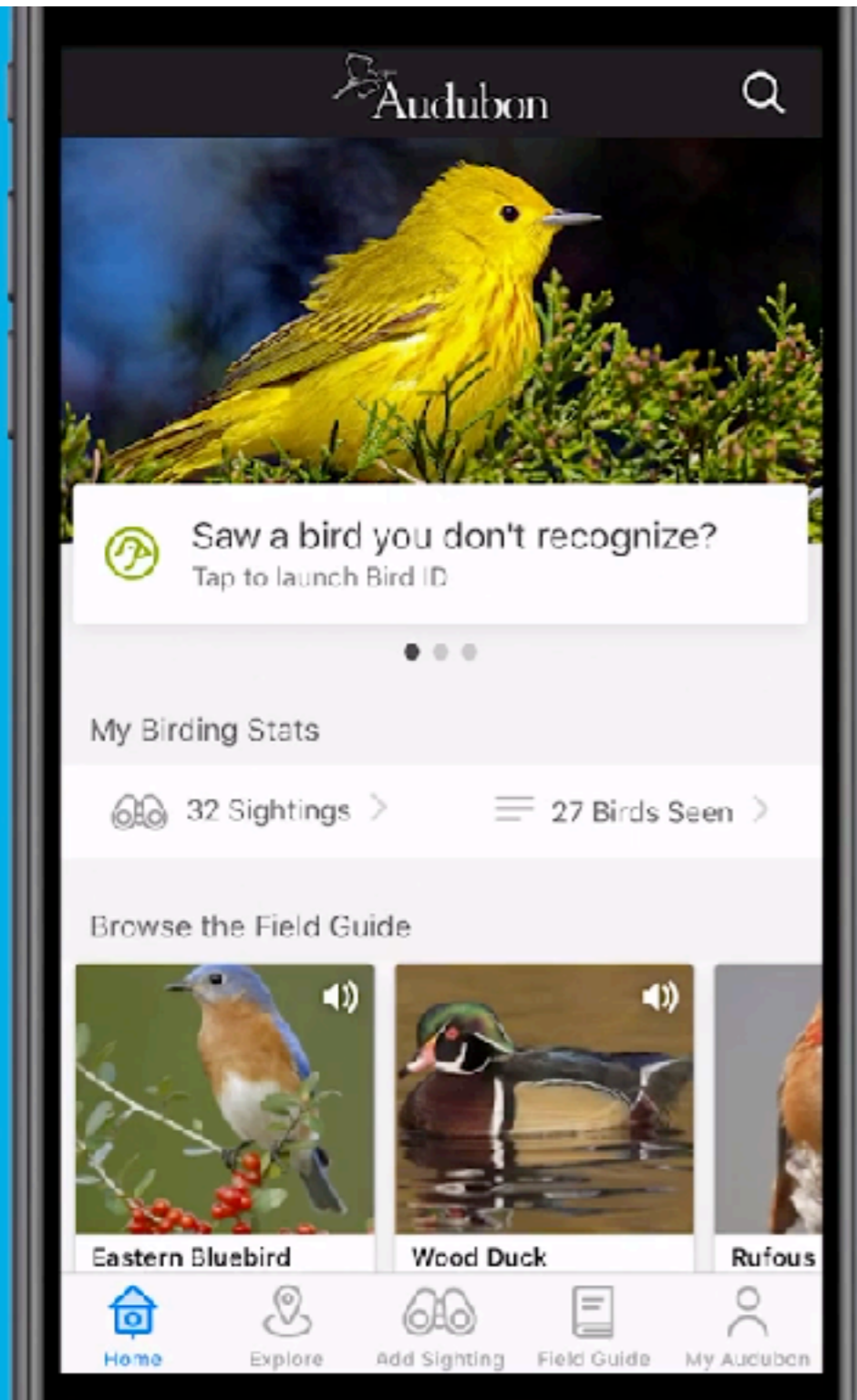
Free, instant bird ID help for
3,000+ North, Central, and
South American, and European
birds.



Proville Warbler © Gemtlyn

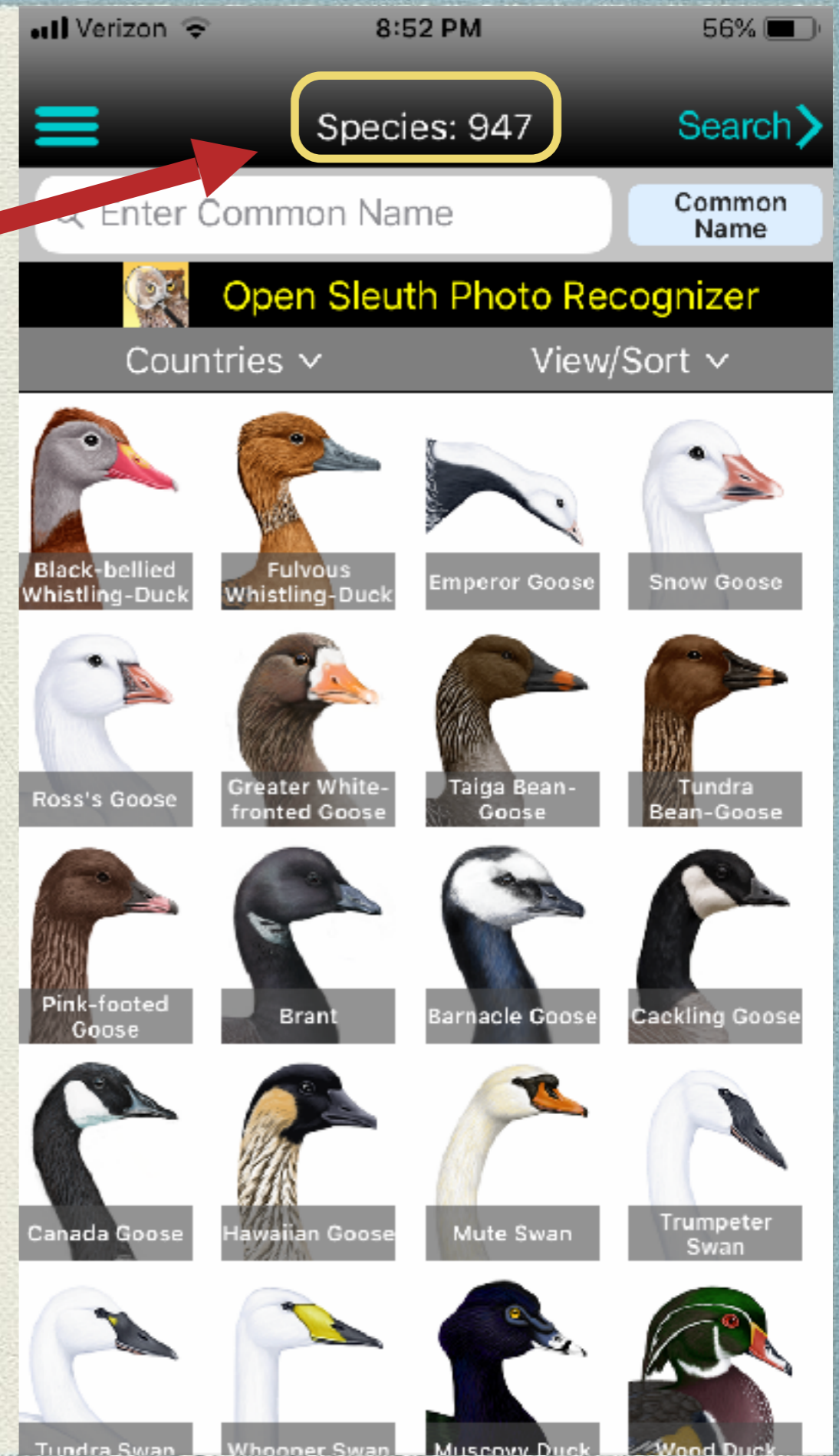
Next let's take a
closer look at three
birding apps.

A quick look at Audubon's bird app

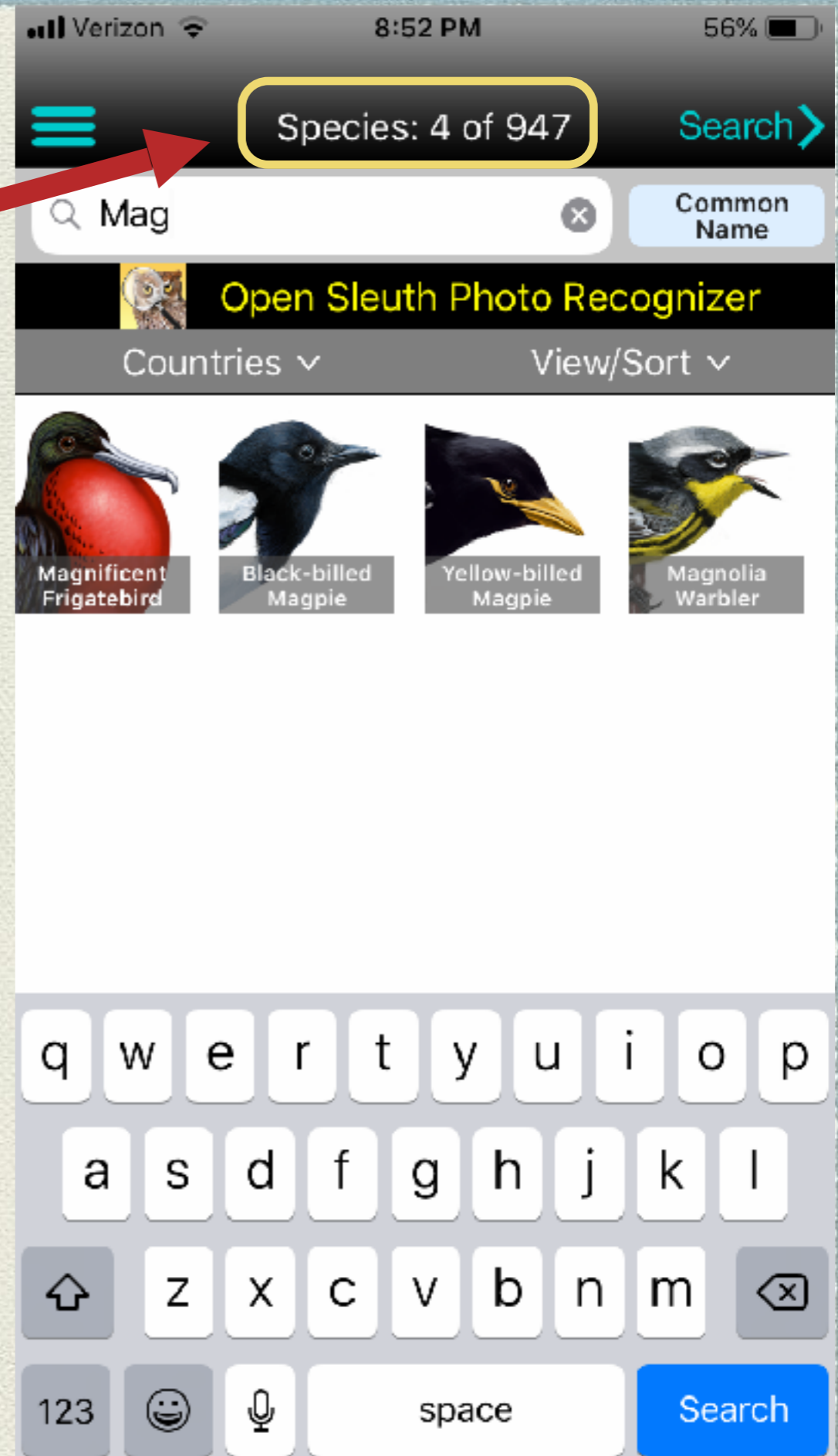


How to Use Bird ID

A quick look at iBird Pro



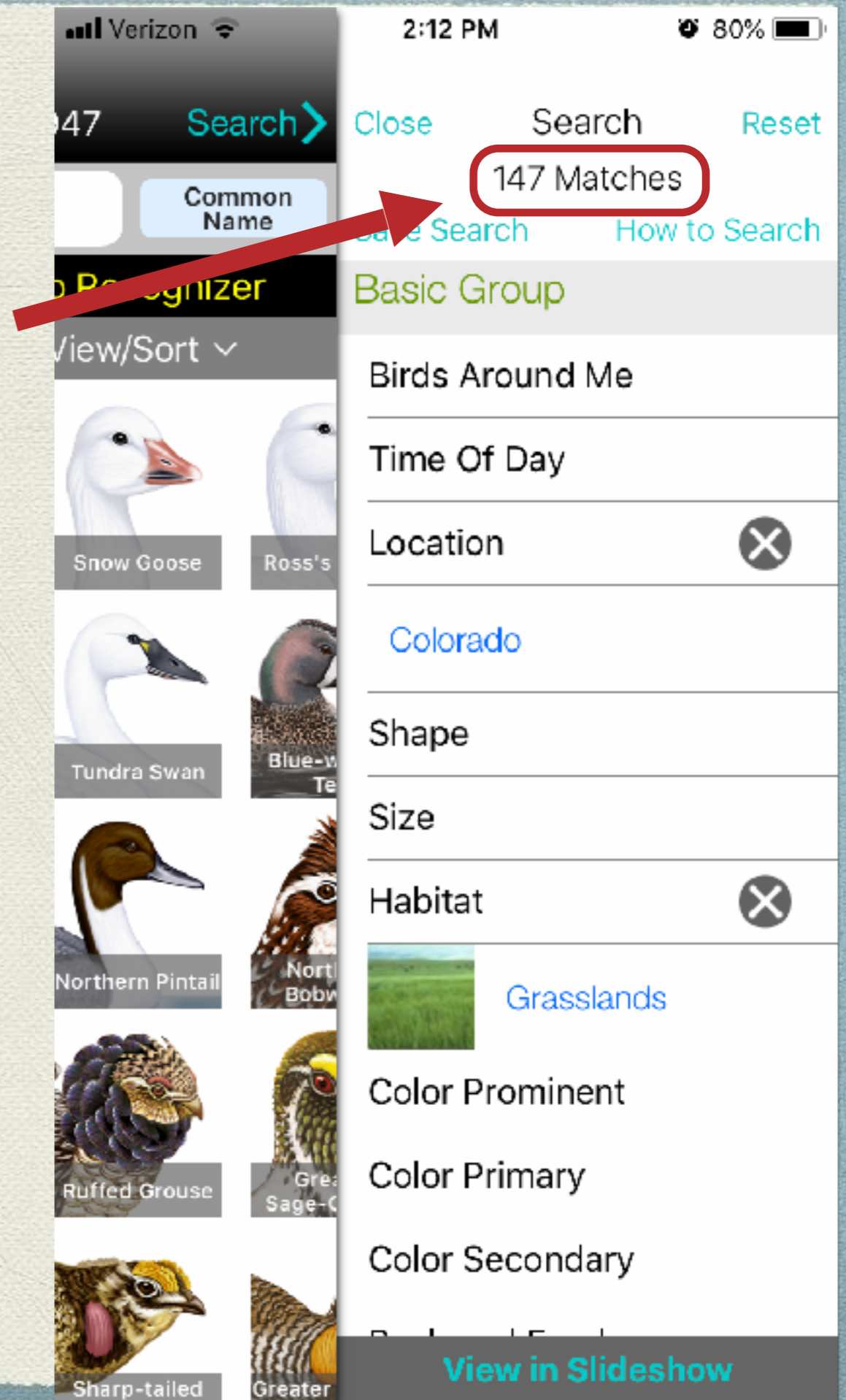
You can quickly narrow the number of choices by typing the name of the bird you want.



You can also narrow the choices by using "Search"

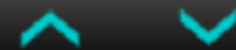


If you are birding in one place, you can narrow the options by selecting just state and habitat.



Close

Black-billed Magpie



FIELD MARKS

SHARE

FAVORITE

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

long tail

glossy blue and green-black wings and tail



Tap Illustration for Full Screen

General

Range

Photos (7)

Sounds

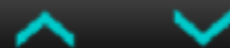
Similar

Feeders



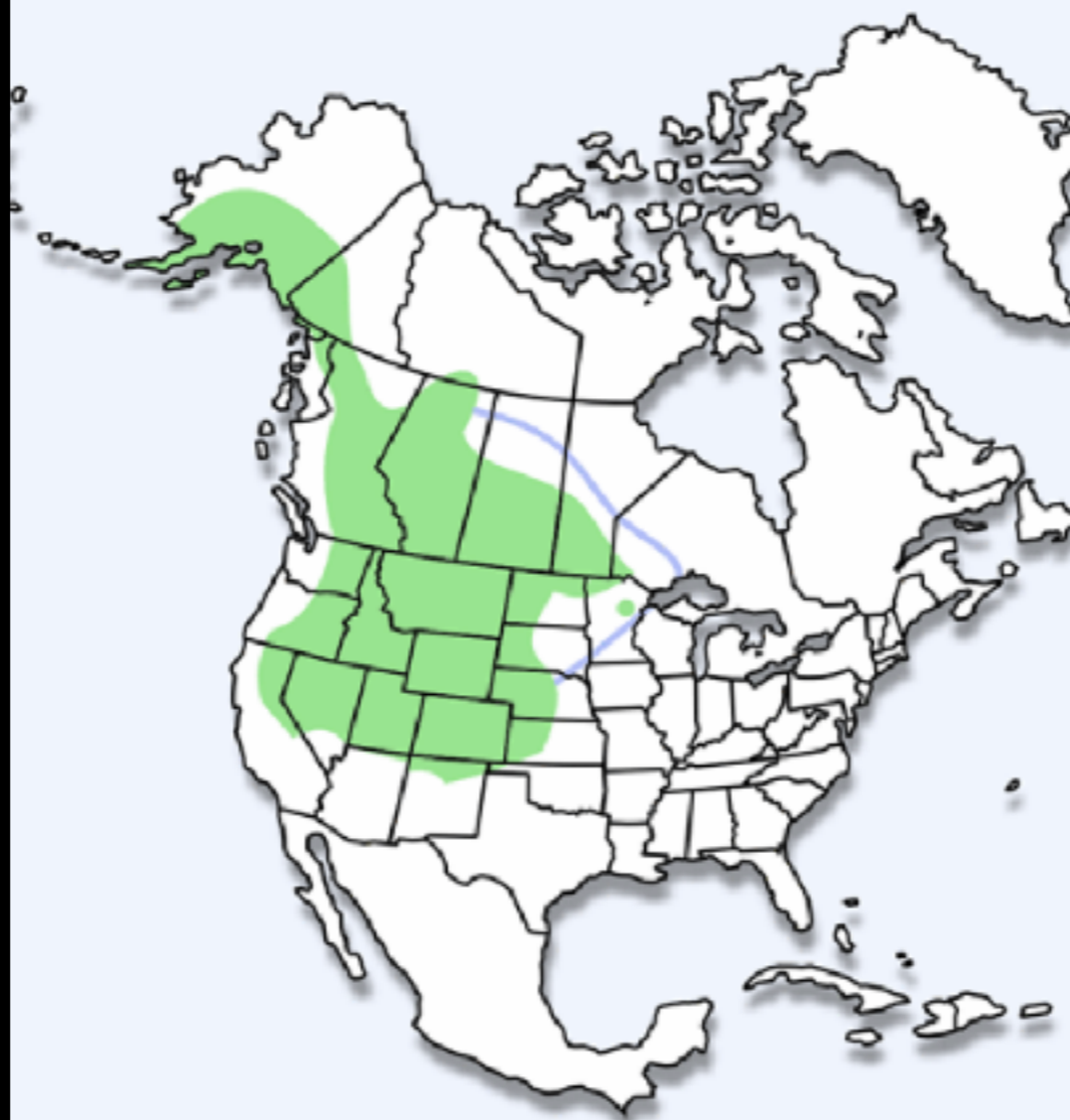
Close

Black-billed Magpie



RANGE MAP

Black-billed Magpie



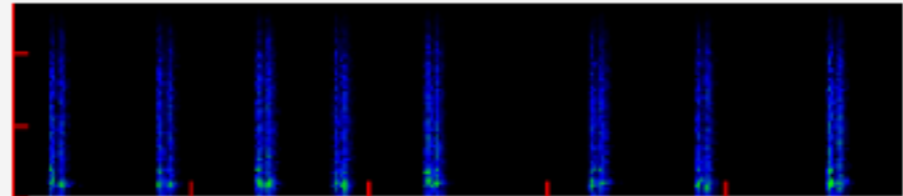
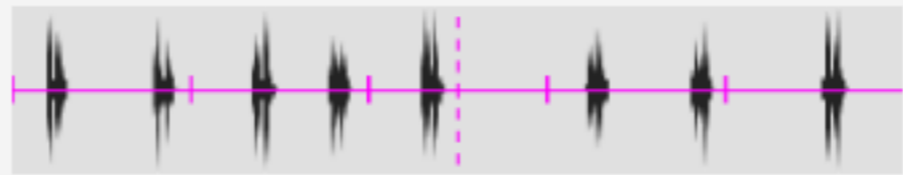
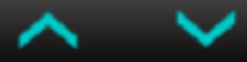
- Summer
- Migration
- Year-round
- Spring Migration

- General
- Range
- Photos (7)
- Sounds
- Similar
- Feeders



Close

Black-billed Magpie



0:00 -0:15

Black-billed Magpie C1



Nasal "shek" calls.

MN

Black-billed Magpie A1



Whisper song during nest building activity.

CO

Black-billed Magpie C2



Territorial yelping call.

WY

Phonetic Text

"mag-mag-mag", "yak-yak-yak"

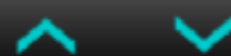
General Range Photos (7)

Sounds Similar Feeders



Close

Black-billed Magpie



Black-billed Magpie Adult 3



Copyright © Jeff Wendorff

General

Range

Photos (7)

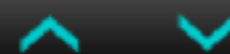
Sounds

Similar

Feeders



Close

Black-billed
Magpie

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

Identify

Ecology

Facts

Notes

Behavior

Journal

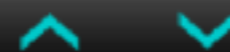
Ecology

Least Concern



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.

Close

Black-billed
Magpie

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.

Identify

Ecology

Facts

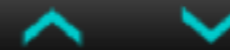
Notes

Behavior

Journal

Close

Black-billed Magpie



Similar Species



American Crow
Corvus brachyrhynchos



Brown Jay
Psilorhinus morio



Clark's Nutcracker
Nucifraga columbiana



Green Jay
Cyanocorax yncas



Yellow-billed Magpie
Pica nuttalli

General

Range

Photos (7)

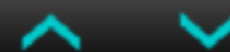
Sounds

Similar

Feeders



Close

**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.

Identify

Ecology

Facts

Notes

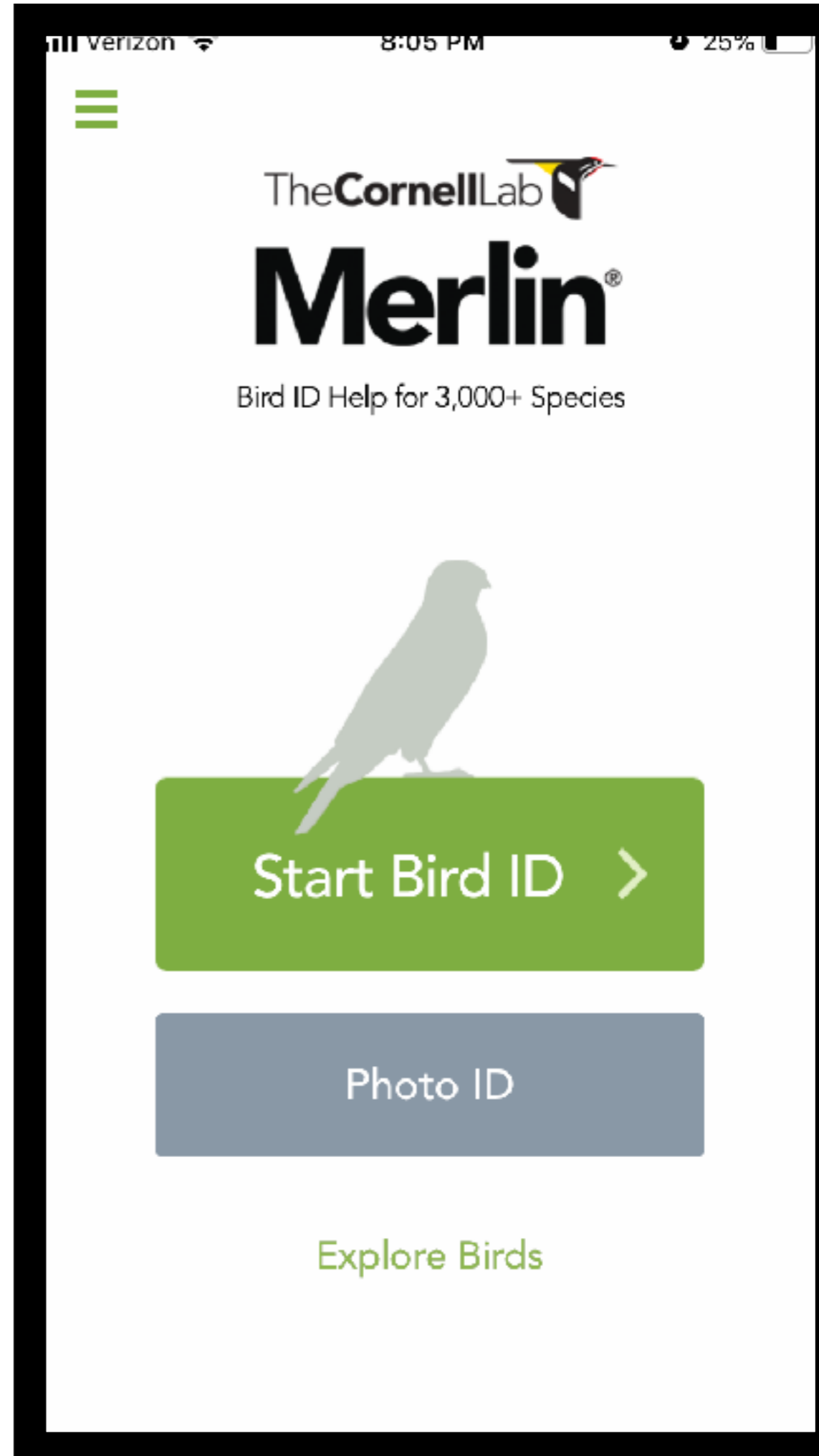
Behavior

Journal

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?

 Place or Postal Code

 Current Location 

 Map 


Boulder, CO 

Boulder, CO 

Cambria, CA 

Boulder, CO 

Paraiso, Cartago 

Longmont, CO 

< Back

2 of 5



PARAISO, CARTAGO | APR 10

When did you see the bird?

January	7
February	8
March	9
April	10
May	11
June	12
July	13
August	14

Reset to Today

PARAISO, CARTAGO | APR 10

What size was the bird?



between sparrow and robin

PARAISO, CARTAGO | APR 10

What were the main colors?

Select from 1 to 3



Black



Gray



White



Buff/Brown



Red/Rufous



Yellow



Olive/Green



Blue



Orange

[← Back](#)

5 of 5



PARAISO, CARTAGO | APR 10

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

Next



[Back](#)

[Detail](#)

[List](#)



BOULDER, CO | APR 10



House Sparrow



Chipping Sparrow



Red-breasted Nuthatch



Spotted Towhee



Red-winged Blackbird



House Finch



Cassin's Finch



Dark-eyed Junco



Plants and Wildflowers



Colorado Rocky Mtn Wildflowers

High Country Apps, LLC Books & Reference Education ★★★★★ 18

Everyone Family Friendly

You don't have any devices.

Add to Wishlist

\$9.99 Buy



Rockies Alpine Flower Finder

Renata Caviglia, webgestalten.ch Books & Reference

Everyone

You don't have any devices.

Add to Wishlist

\$6.00 Buy



Alpine Wildflower Finder

Betty Ford Alpine Gardens Photography

★★★★★ 1

Everyone

You don't have any devices.

Add to Wishlist

Install



2250 Colorado Wildflowers

Flora ID Lifestyle

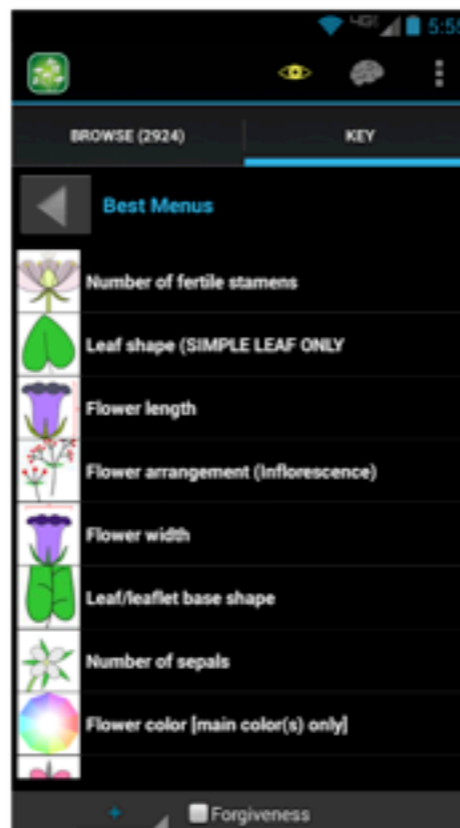
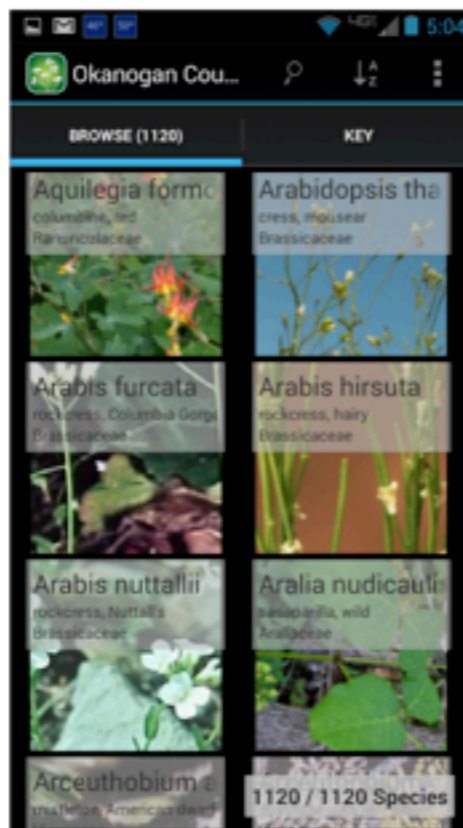
★★★★★ 7

Everyone

You don't have any devices.

Add to Wishlist

\$9.95 Buy



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 4+

Naturedigger, LLC

★★★★★ 4.6, 10 Ratings

Free



Colorado Wetlands Mobile App

Colorado State University

★★★★★ 5.0, 1 Rating

Free

Mammals

Tracks

Insects

Butterflies

Reptiles

Amphibians

Mushrooms

Dragonflies

Phytoplankton

...oh, my!



Fieldstone Guide: Birds
Reference



Fieldstone Guide: Ma...
Reference



Fieldstone Guide: Rep...
Reference



Fieldstone Guide: Am...
Reference



Fieldstone Guide: Inse...
Reference



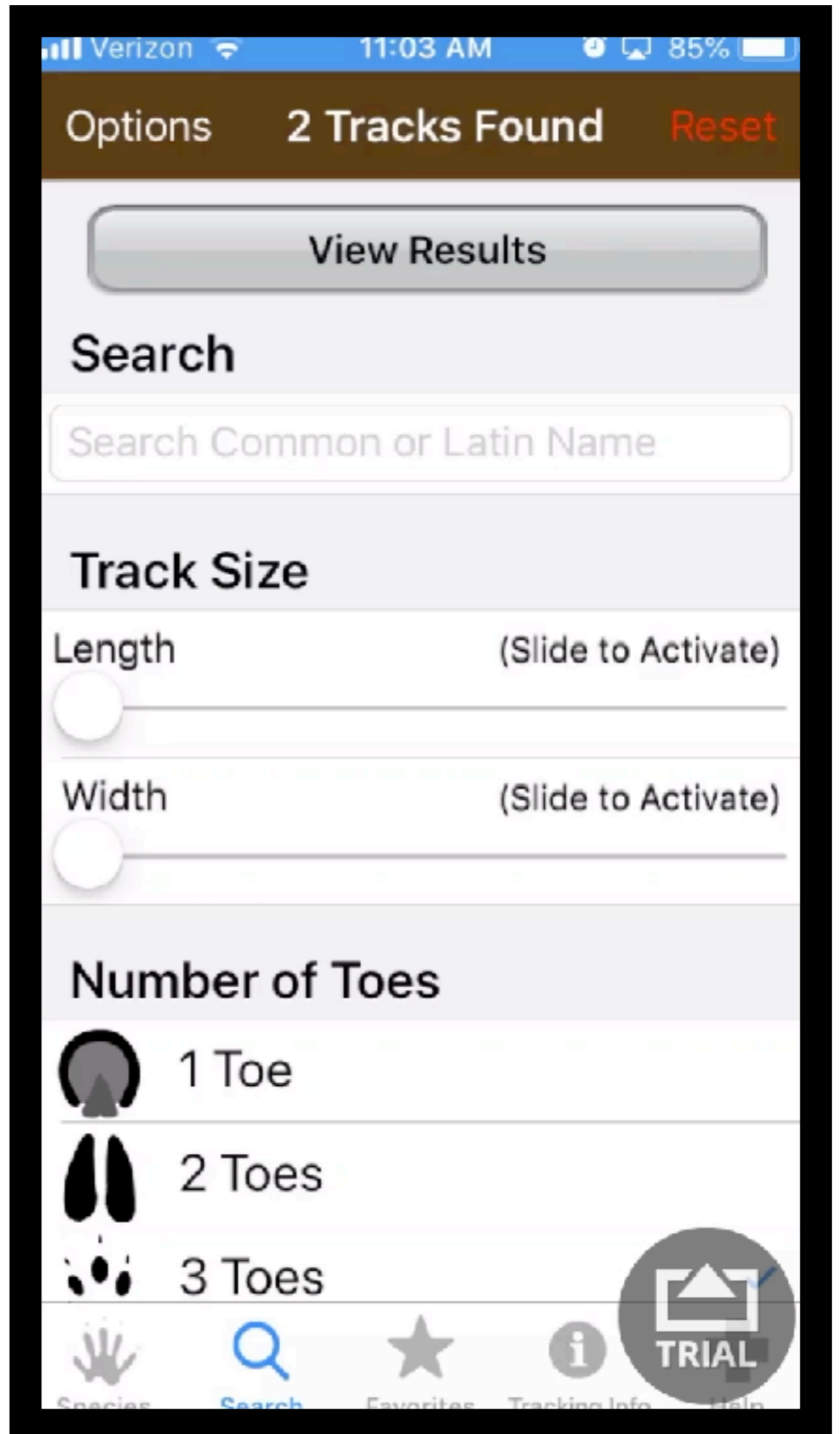
Fieldstone Guide: Butt...
Reference

National Audubon Society and National Wildlife Federation
Field Guides have developed six apps with:

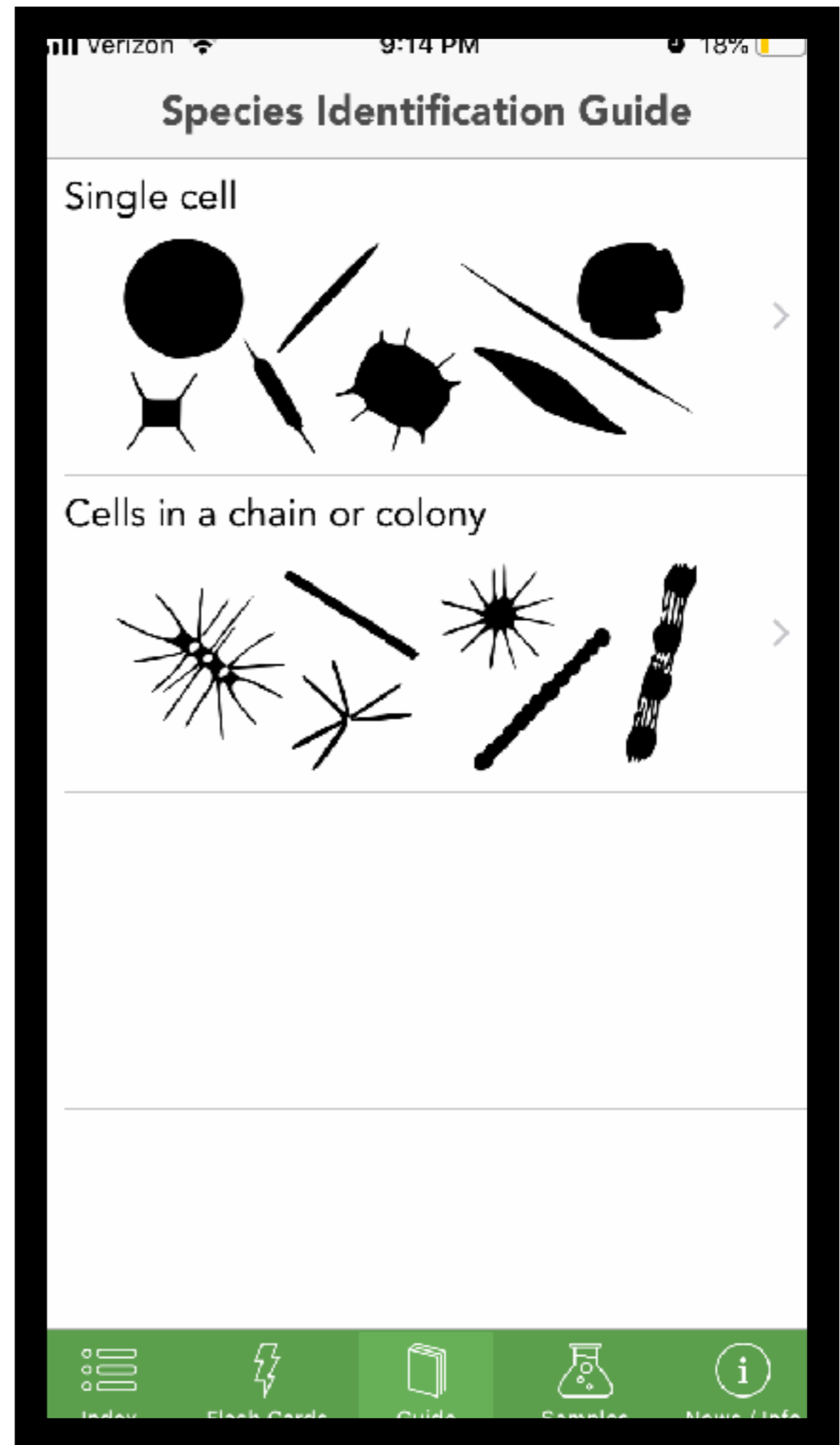
- * 7,000 photographs
- * 2,200 bird songs and call
- * 100 plus mammal and frog sounds
- * range maps

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

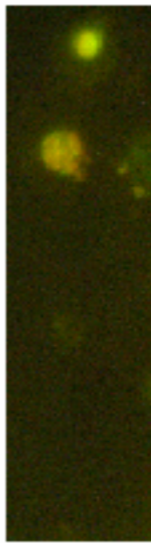
Sample
search from
iTrack Pro
App



Page from Phytoplankton App



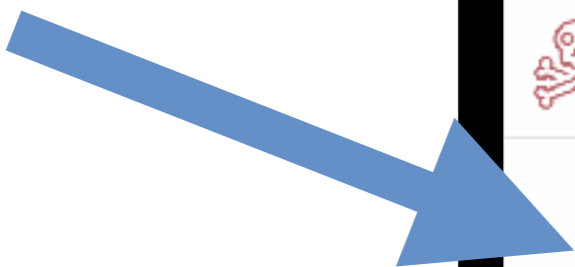
Aphanizomenon spp.



Type: Cyanobacteria Freshwater

Size: 2-3 μm wide

Toxin: anatoxins, cylindrospe...



 Pronounce

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



iNaturalist.org no-reply@inaturalist.org via sendgrid.me
to me

7:50 AM (1 hour ago)



iNaturalist.org

New updates in the last 24 hours from iNaturalist.org



[larryhalverson](#) added an identification to an [observation](#) by ccv-co



larryhalverson's ID: [Gyr Falcon](#) (*Falco rusticolus*)

Posted by [larryhalverson](#) about 9 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

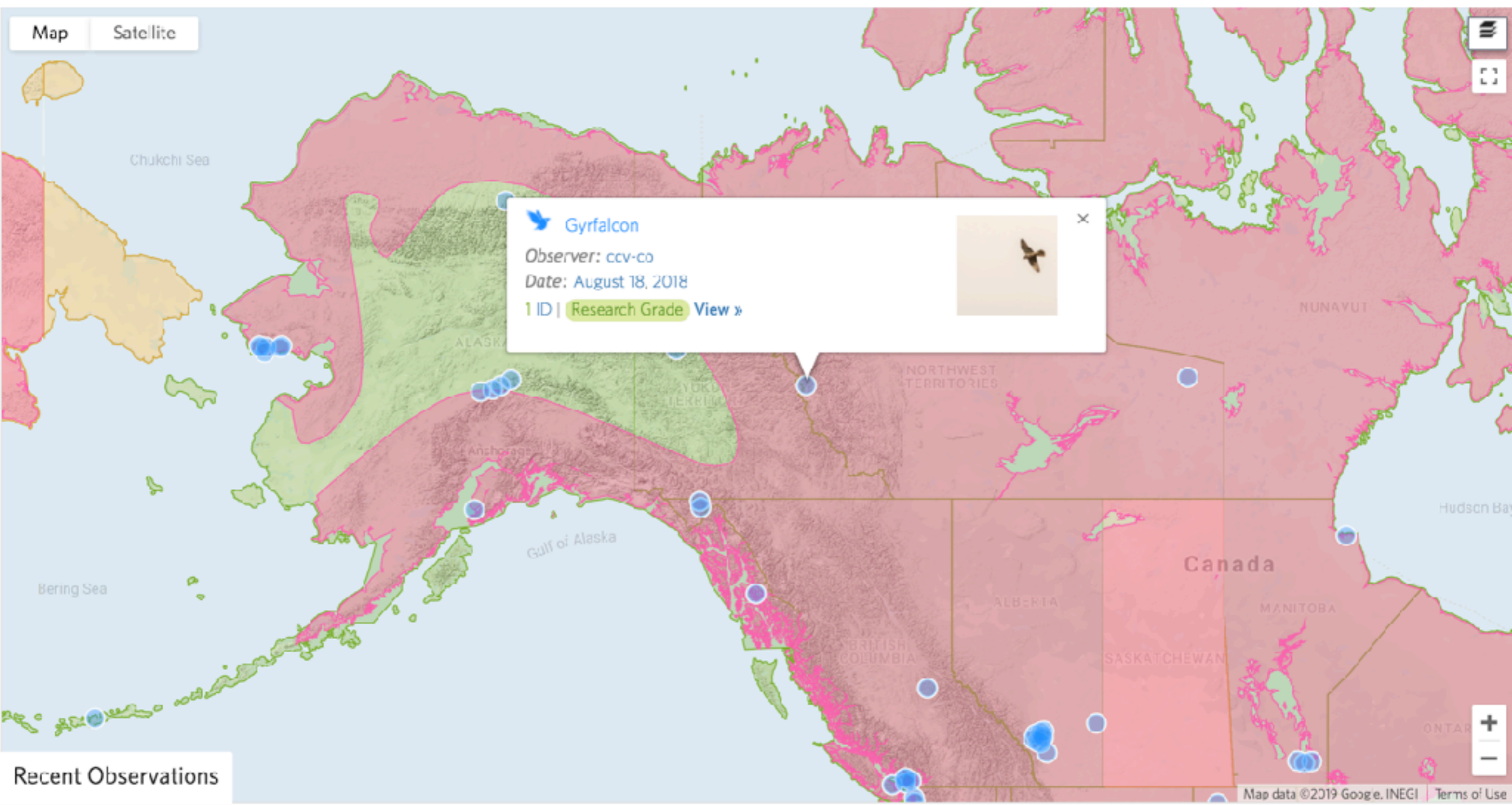
[View Observation](#)

[View your dashboard](#) for more updates



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55 Music Concourse Dr, San Francisco, CA
94118
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<http://bcna.org> has links to directions for downloading and starting to use iNaturalist

An infographic with a central illustration of a girl in a blue shirt and white vest looking at a smartphone. Five circular icons are connected to the central figure by lines: a person's head, a butterfly, a location pin, a calendar, and a photo of a butterfly. Each icon is associated with a text box providing instructions for using iNaturalist.

Who you are
You'll need to make an **iNaturalist account** and please only post your own personal observations

Where you saw it
Record both the coordinates of the encounter as well as their accuracy. You can obscure the location from the public

What you saw
Choose a group of organisms like **butterflies** or better yet a specific organism like the **Monarch butterfly**. If you provide evidence you can leave this blank and the **community** can help

When you saw it
Record the date of your encounter, not the date you post it to iNaturalist

Evidence of what you saw
By including evidence like a **photo** or **sound**, the community can help add, improve, or confirm the identification of the organism you encountered. Help the community by taking clear well framed photos, by including multiple photos from different angles

From <https://www.inaturalist.org/pages/getting+started>

Organized by:



WILD FOUNDATION

Parks & Open Space



City Nature Challenge 2018

City Nature Challenge 2018: Boulder

APR 27, 2018 - APR 30, 2018

About

Join 60

Help us show the world how biodiverse Boulder County, Colorado is by making as many observations of as many species as possible from April 27-30, 2018!

**Patagonia has generously donated two Stretch Rainshadow Jackets (valued at \$199 each) that

[Read More >](#)

NEWS

Overview

4,133
OBSERVATIONS

828
SPECIES

373
IDENTIFIERS

115
OBSERVERS

Stats

Recent Observations

[View All](#)



RG

Podisus placidus

3 a year ago



Genus *Gryllus*

1 a year ago



Round-backed Millipedes
Superorder Juliformia

2 a year ago



Subfamily Gerrinae

3 a year ago



Most Observations



Most Species



Most Observed Species

A Mantis Shrimp in Mozambique - Observation of the Week, 2/2/19



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