# SPRING SEEKER

## SKY ISLAND ALLIANCE

# Field Manual
# Step-by-Step Instructions

This community science field manual offers step-by-step instructions on downloading the survey to your smartphone or tablet, completing the survey in the field, and submitting your data to Sky Island Alliance. Review it ahead of time, or print it and take it to the field to help you complete the Spring Seeker Survey.

Thanks in advance for your help in protecting the springs of the Sky Island Region!
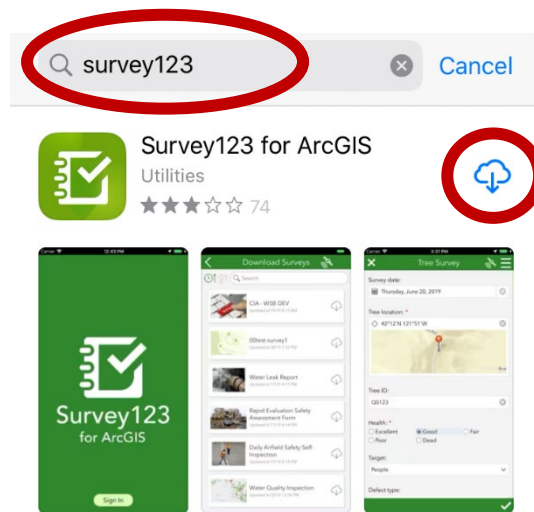
# Part I. Getting Started

## Download Survey123

**Survey123** is the free Application that will allow you to access our Spring Seeker Survey on your smartphone or tablet. In your App Store or Google Play Store, type **Survey123** in the search bar.



Download the Application listed as **Survey123 for ArcGIS** by clicking on the download cloud icon.

Depending on your security settings, you may have to authorize the application download.
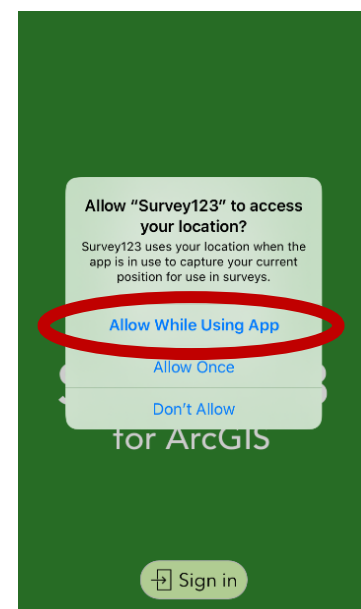
## Open Survey123

Once the **Survey123** Application has downloaded it will appear on your phone's home screen.

Open **Survey123** and allow it to access your location while using the App. This will allow it to record GPS coordinates at the spring.

The survey is public. You are not required to create an ArcGIS account or Sign in.

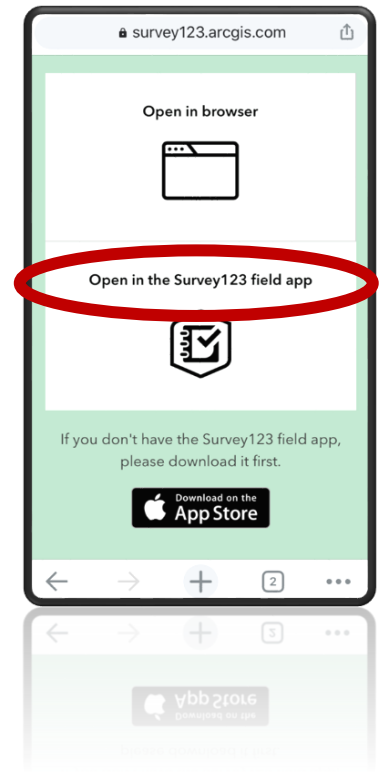You can exit out of **Survey123** now.

## Access the Spring Seeker Survey

Open the link to the Spring Seeker Survey provided on the Sky Island Alliance website, or by typing in this link on a web browser on your phone or tablet that you will take to the field:

# https://arcg.is/18aCjm

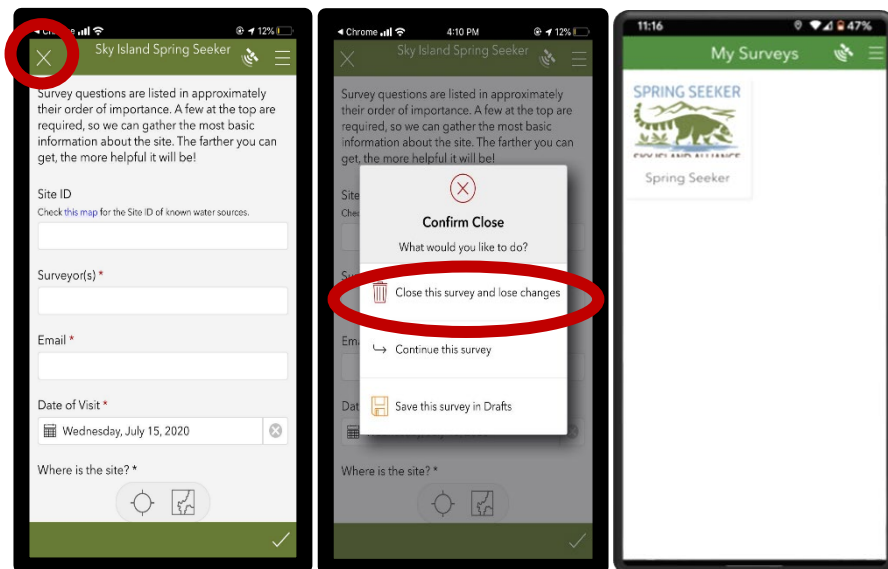Select the bottom option, **Open in the Survey123 field app**.

## Confirm the Spring Seeker Survey is Saved

You will be brought to the Spring Seeker form in the Survey123 app.

You can close out of the survey, and then confirm the Spring Seeker Survey is saved under My Surveys.

**Make sure to do this step before you go to the field, while you still have cell phone signal.** You'll also want to check for updates on the form before each excursion.
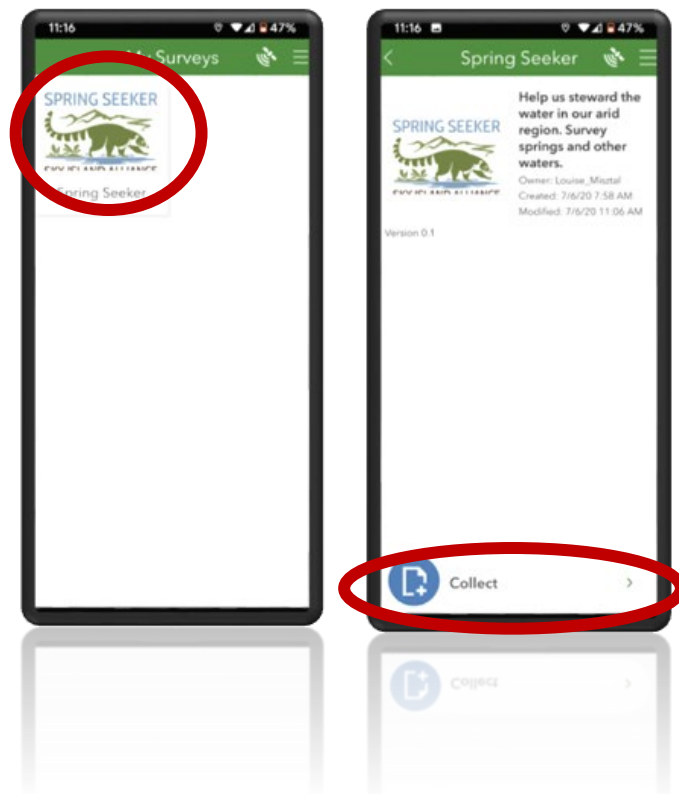
# Part II. In the Field

## Open the Spring Seeker Survey

When you find a spring, it's time to collect some data! Open the **Survey123** Application on your smartphone and under My Surveys you will see the Spring Seeker.

Select the **Spring Seeker** Survey, and then open the survey by clicking on **Collect** at the bottom.

The survey form is split into two parts, the first is general information about the spring, and the second is for additional information if you're able to spend a little more time at the site.

Completing the full survey should take about 30 minutes.

## General Spring Information

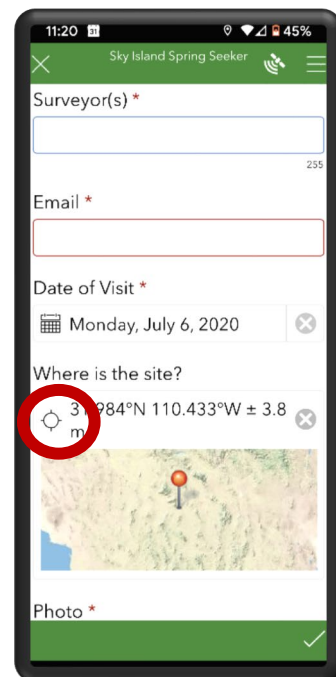General Spring Information will include questions relating to:

- Basic Information
- Photos
- Water Source Information
- Open Water Information
- Human-made Structures
- Human Impacts
- Mining
- Livestock
- People
- Invasive Species
- Soil Health
- Fire

If the categories are collapsed, you'll need to select the down arrow to see the related questions appear.

## Spring Identification Information

You will be asked for some basic information including your name, email, and date, which will populate automatically. If you know the Site ID, you can enter that as well. Check the **Helpful Links** page on our website before going out to identify the Site ID.
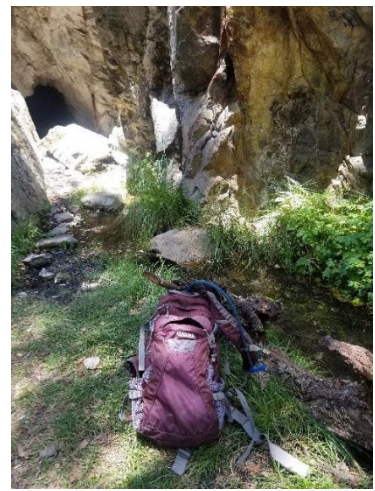
Click on the location icon to automatically populate your location. If you are familiar with the area and the location does not seem accurate, you can adjust the location based on your knowledge. This will only work if you are getting cell phone signal.

## Spring Seeker Photos

The survey will prompt you to take a few photos of the site.

First, take a **representative photo** of the site that includes the water, vegetation, and immediate surroundings. If you're hiking with a backpack, place it by the water to demonstrate relative size. This will give us a "zoomed-out" idea of the size of the site.



Next, submit any additional photos that are relevant to the site. These include photos of the spring source, the largest pool, the vegetation landscape, and any extra photos you wish to submit. Follow the directions on the survey for tips on how to capture these photos in the most helpful way.

The **spring source** is usually the farthest uphill upstream water. In some cases, it may be captured in a concrete box. Place a backpack or water bottle for size comparison.

A photo of the **largest pool** in the area will help us understand the size of open water.



A photo of the **vegetation** shows us how large the area is that is affected by the spring's presence



Additional photos can include photos of multiple spring boxes, or just an alternative angle of the largest pool or vegetation, especially if it is so large it is hard to capture in one shot. Or, perhaps a second representative photo if the area is large and heterogenous.

## Water Source Information

You will be asked for some information about the water source. If you know the area well, please share your knowledge about what the source is usually like.

Even if it's your first time to the area you can tell us about the wetness today, and, later, and also about the length and width of the largest pools later on.

## Human-made Structures

Document any human-made structures you spot and identify at the site. Once you mark "Yes," you will be prompted to upload a photo. Every site is unique, but most developed sites will include some of the following human-made structures. At some undeveloped spring sites you may not see any of these structures, and can leave the default "No" checked.

**Spring boxes**—Concrete box at or near source of water, intended to capture flow. The size can very greatly across sites.

**Troughs**—Structures designed for animals to drink from. Some may be in working condition; others may no longer hold water and be overgrown with vegetation.



**Tanks**—Constructed to store water from spring source, then to be piped to a trough or off-site. These can be very large, or look similar to a spring box.



**Piping**—metal or plastic pipes of any size. May be currently in use, or just some remaining pieces.

**Dams**—May be a rock, stone, or concrete dam, or an earthen dam.



**Wells**—May be open or enclosed, hidden within another structure.



**Power Sources**—These include windmills, solar panels, or any power poles or signs of electricity running through the site.

## Human Impacts

Some spring sites will have heavy impact from humans, and others will have less. Record what you see at the site under each category. No photos need to be uploaded, but you can always add anything of note to the additional photos described above.

**Mining**—Note any impacts from mining. This may be a mine shaft, mining equipment, rocks pulled out a mine, or red or orange water reflecting compromised water quality.
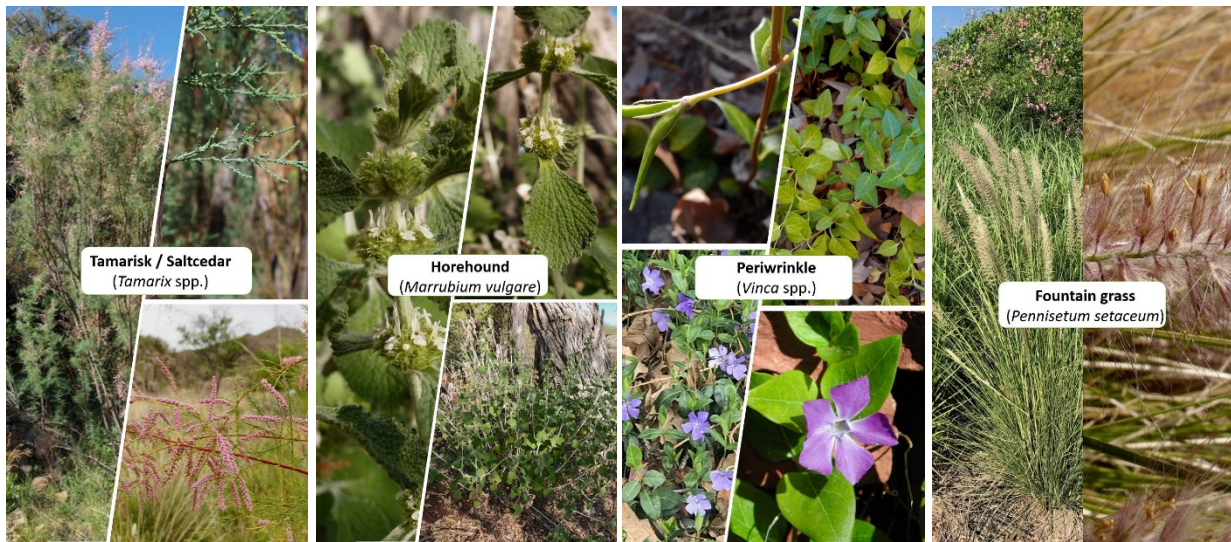



**Livestock**—You may see evidence of livestock such as cow, horse, or sheep at the site, including signs of herbivory or grazing leading to patches of bare soil, hoofprints, poop, or animal trails.

**People**—Mark any evidence of people using the site, including toilet paper or other trash, access roads and trails, or campsites.



**Invasives**—Mark any invasive species that you are able to identify. If you're not sure you don't need to check any species. While in the field, you can click on the thumbnail to see a photo of the species, and use other Species Identifier apps like Seek by iNaturalist to help you identify.



Tamarisk / Saltcedar (*Tamarix* spp.)

Horehound (*Marrubium vulgare*)

Periwrinkle (*Vinca* spp.)

Fountain grass (*Pennisetum setaceum*)

Giant reed (*Arundo donax*)

Johnsongrass (*Sorghum halepense*)

Tree of heaven (*Ailanthus altissima*)

Brome (*Bromus*)

**Soil Health**—Record any observations of reduced soil health, including large bare areas, trampling, incised channels, or soil sloughing off slopes or banks.





**Fire**—Mark any effects of recent or historical fire you notice at the site. This could include burn marks and charred trees, standing or heavily burned fallen trees, or signs of heavy flooding as a result of fire.
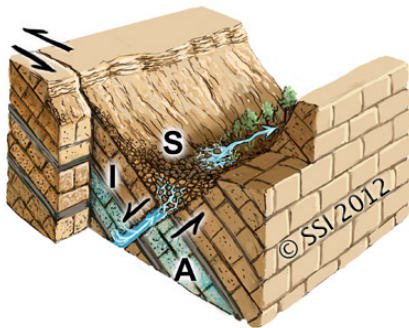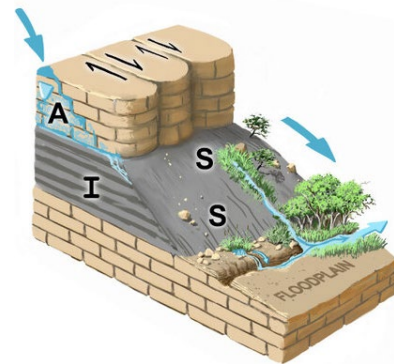
## Additional Questions

If you have additional time to spend at the site, please continue on to the second part of the survey, which has questions that go more in depth on water, flora and fauna, a site description, and any cultural information.

**Water**—Let us know the depth of the water at the deepest point of any open water you spot. Don't worry about measuring, just estimate if it is less than 1 foot, 1-3 feet, or greater than 3 feet.
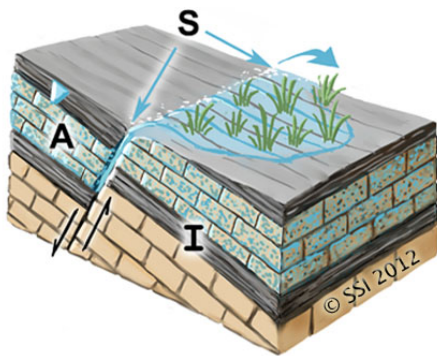
Then see if you can tell from where the water is originating. There are thumbnails that can help on the Spring Seeker Survey form. A site may be more than one type of spring. The most common springs in the Sky Island region are: rheocrene, hillside, helocrene, and hanging gardens.
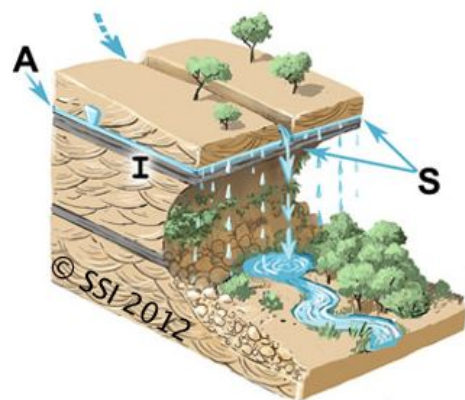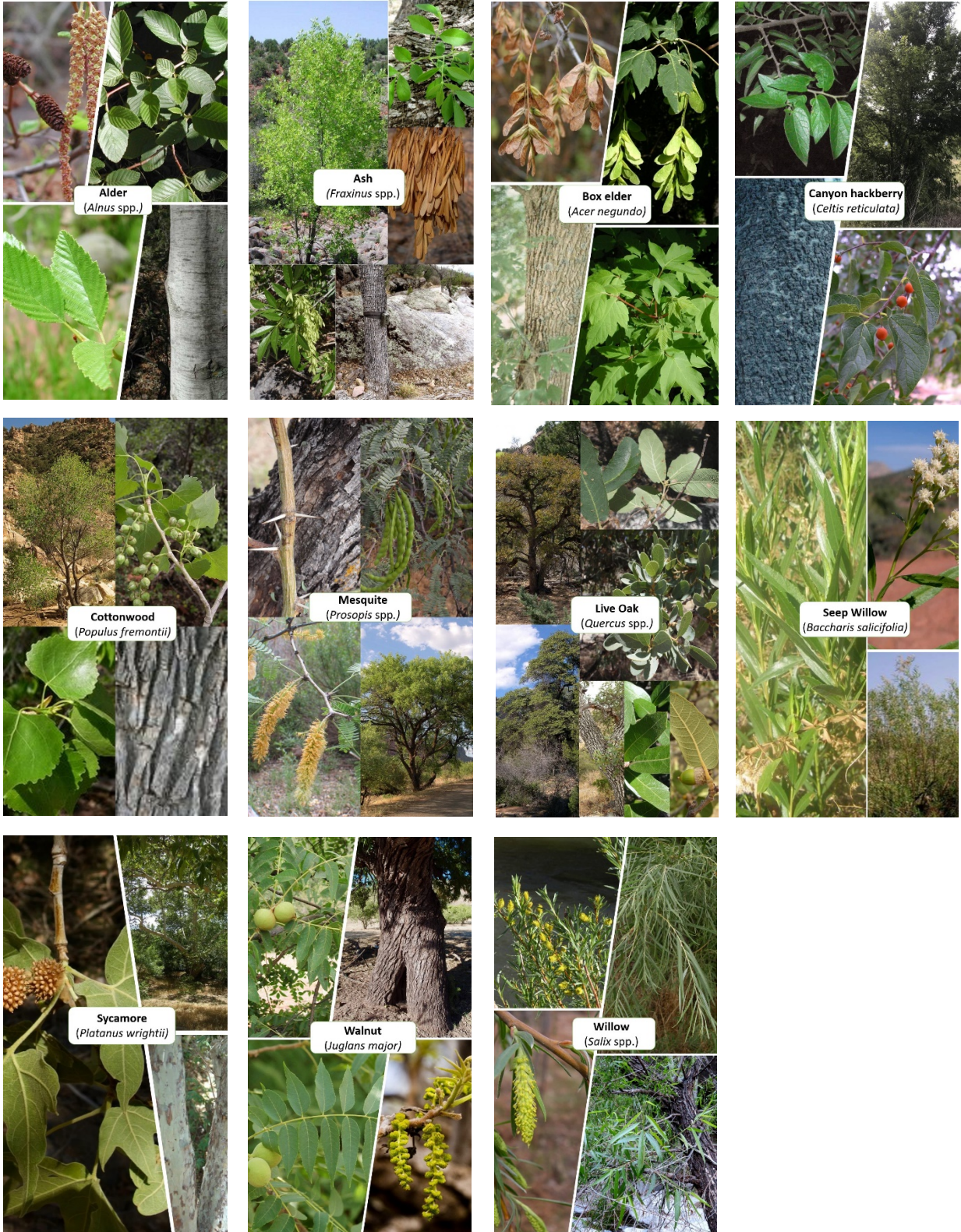


**Rheocrene** (stream channel)



**Hillside**



**Helocrene** (wet meadow, fen, ciénega)



**Cliff** (Hanging Garden)

**Flora and Fauna**—If you recognize any of the flora and fauna at the site, record it on the survey. If you aren't sure, feel free to skip these questions.

**Woody Plants**—Some common woody plants you might observe in a spring site


Alder
(*Alnus* spp.)


Ash
(*Fraxinus* spp.)


Box elder
(*Acer negundo*)


Canyon hackberry
(*Celtis reticulata*)


Cottonwood
(*Populus fremontii*)


Mesquite
(*Prosopis* spp.)


Live Oak
(*Quercus* spp.)


Seep Willow
(*Baccharis salicifolia*)


Sycamore
(*Platanus wrightii*)


Walnut
(*Juglans major*)


Willow
(*Salix* spp.)

# Wetland Plants—Some common wetland plants you might observe in a spring site

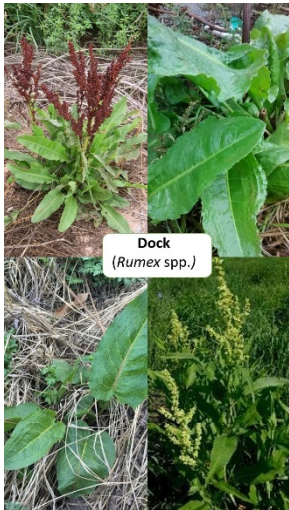**Canyon grape**
(*Vitis arizonica*)

**Cattail**
(*Typhus* spp.*)

**Columbine**
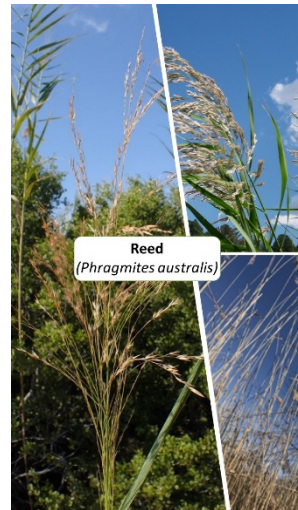(*Aquilegia chrysantha*)

**Deer grass**
(*Muhlenbergia rigens*)

**Dock**
(*Rumex* spp.*)

**Horsetail**
(*Equisetum* spp.*)

**Maidenhair fern**
(*Adiantum* spp.*)

**Reed**
(*Phragmites australis*)

**Rush**
(*Juncus* spp.*)

**Scarlet monkeyflower**
(*Mimulus cardinalis*)

**Sedge**
(*Carex* spp.*)

**Spikerush**
(*Eleocharis* spp.*)

**Yellow/seep monkeyflower**
(*Mimulus guttatus*)

**Fauna**—Record any sightings of fish, snails, amphibians, or aquatic insects. If you do see any species that are not listed on the Survey, add their names into the notes.

**Site Description**—Take a moment to observe the spring site at large.

First, estimate the **size of the area** that is changed due to the water's presence. This size estimate should match up with the vegetation photo you took earlier, so it is clear where the vegetation changes in the landscape.



Then, select the **direction that the site faces**, or in which way the land slopes (towards the N, NE, E, SE, S, SW, W) or if it is perfectly flat.

Enter in any other notes about the **setting and layout of the site**, as well as any tips on **accessing the site** in the future.

**Cultural**—Share anything else you find interesting about the site, including any knowledge of it as a cultural resource, if it in need of some maintenance or stewardship, or any other feedback you may have.
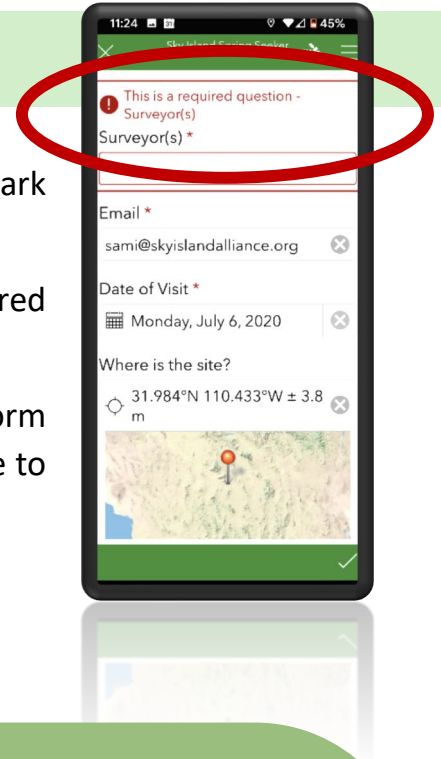
# Part III.  Finishing Up

## Submitting the Survey

Once you have completed the form you will select the check mark at the bottom right screen.

If you left any required fields blank, they will be selected in red and you will be redirected to answer them.

If you don't have any cell phone service, don't worry! The form will be saved offline until you're able to connect back at home to submit it from the Outbox.
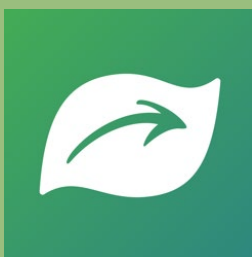


## TIPS FOR SPRING SEEKER USERS

### Species Identification

While completing our survey you may want to utilize additional resources to help you identify flora and fauna. In addition to the photos in this guide and in our Photo Galleries on our website, we suggest using the **Seek by iNaturalist Application.**

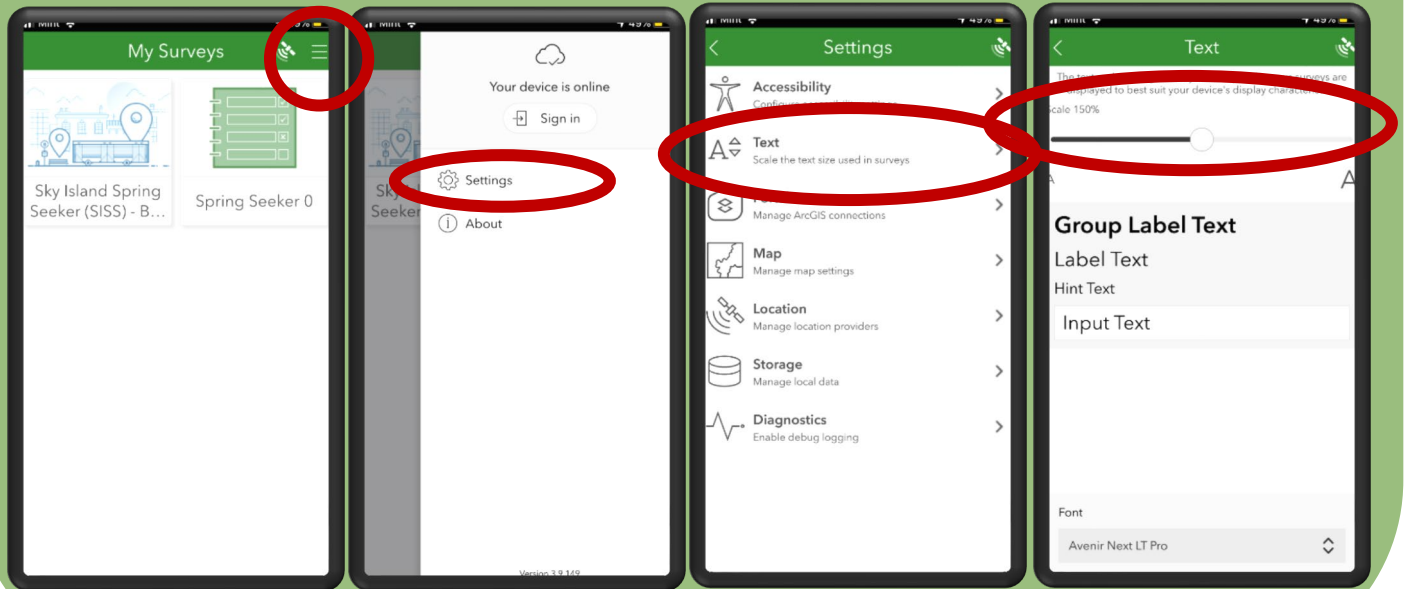Download **Seek before** you go for in-the-field help with species identification.

Simply hold your phone up to a species, and the app will help to identify it.

# TIPS FOR SPRING SEEKER USERS

## Survey Text Size

If the survey is too small to read on your smartphone, you can adjust the text size by navigating to My Surveys and Settings. Text can be scaled up to 200%.

## Navigating to Springs

To find springs and other water sources to survey, explore our Spring Seeker Waters Map on our Spring Seeker webpage.

To navigate to springs in the field, we recommend a mapping application on your phone like Gaia GPS or Avenza PDF maps along with resources like hikearizona.com for information on trails.

Remember to always carry a paper map of the area, too! Check the **Helpful Resources** tab on our Spring Seeker webpage to find links.