# AR Biosphere

Mobile App User's Manual

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# 1 Introduction

## 1.1 What is the AR-Biosphere mobile app?

AR-Biosphere mobile app is a mobile application that allows users to use their device's camera to interact with aquatic and terrestrial species models with Augmented Reality. Users can access information about augmented species to read their descriptions and access external links. This app also allows users to save information about species to an inventory that can be opened and viewed anytime.

This project is a first stage prototype of a larger concept to integrate AR experiences for public engagement and learning.  This project aims to engage individuals of all ages and backgrounds with Canada's aquatic biosphere through presentations and media, community programs, and an upcoming public attraction. Currently, the app will only be tailored to environments within the University of Alberta North Campus.

**What devices does the mobile application support?**

You can install AR-Biosphere on Android and iOS mobile devices.

## 1.2 How to install and build app from Unity

### Install Unity

If you don't already have Unity installed on your desktop, use this link and choose the correct version for your operating system: https://unity.com/download

After you installed Unity, open Unity Hub on your desktop, go to Installs on the left side panel, and install the editor version 2021.3.19f1.

Before installing, ensure that you check "**Add Modules**" and include **Android Build Support** and **iOS Build Support**.

## Clone the project repository

Navigate to our Github repository: [https://github.com/UAlberta-CMPUT401/ar-biosphere](https://github.com/UAlberta-CMPUT401/ar-biosphere)

- Click the Green <> Code Button

- Copy the repository link

- Clone the repository with your preferred method. If you use a terminal, navigate to a directory you want the project to be in, and use the `git clone <repo_link>` command to clone the project repository. Replace <repo_link> with the link you copied.

- Once your project has been cloned, open Unity Hub, select "**Open**" in the Projects tab, and open the "**app**" folder in your project directory.


## Install Firebase

Use this link to install the Firebase SDK:

[https://dl.google.com/firebase/sdk/unity/firebase_unity_sdk_10.5.0.zip](https://dl.google.com/firebase/sdk/unity/firebase_unity_sdk_10.5.0.zip). Make sure to select 10.5. Other versions of Firebase might not work. After downloading. Go to your Unity Projects, Click on **Assets > Import Package > Custom Package**. Navigate to where you saved your Firebase SDK, Import Firebase Firestore, and Firebase Storage.

## Android Build

Open the project in Unity, connect your phone to the laptop using a USB cable. Make sure you have enabled USB debugging in your phone. Once connected, follow the instructions below:
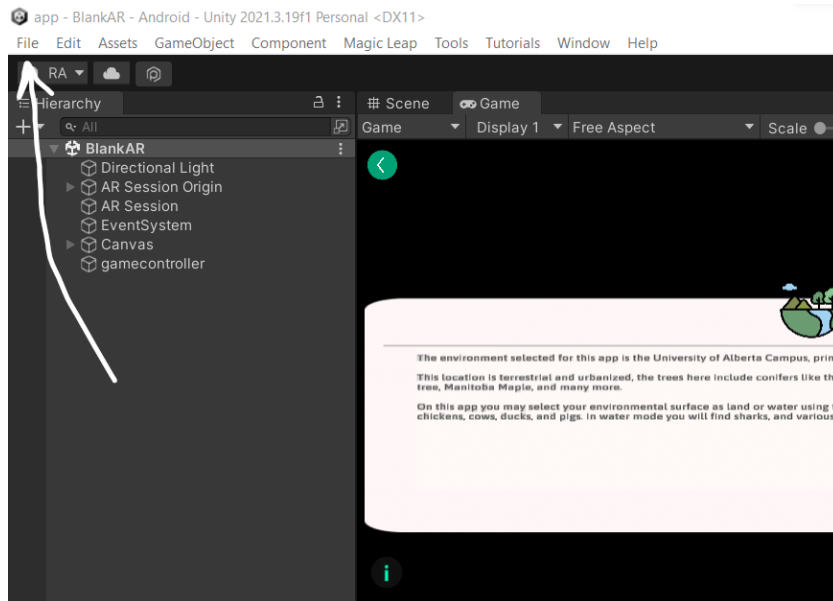


Select the "File" tab on the top right and navigate to Build Setting. This will open the pop-up below.

Select the device you want to load the application on. And then click on "Build and Run" on the bottom right. It will take some time to load the application on your device.
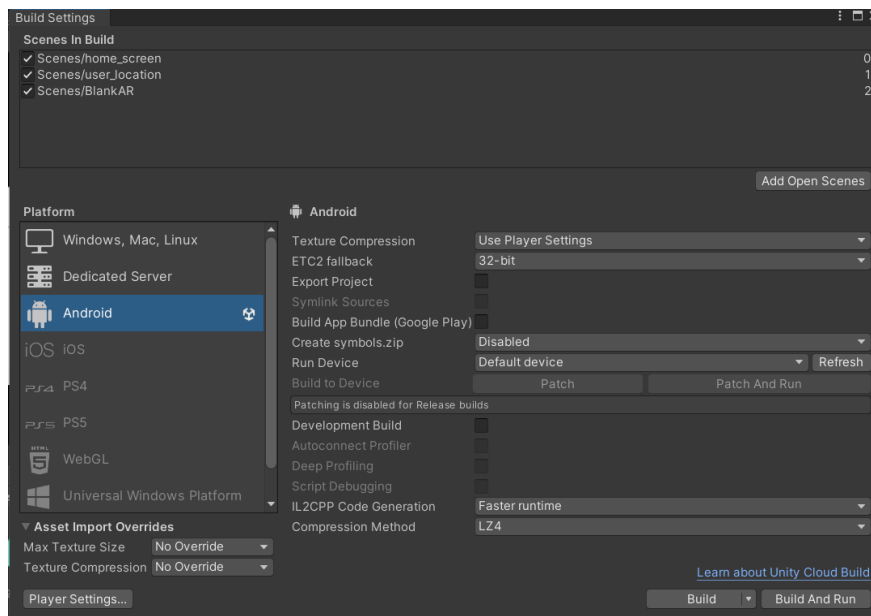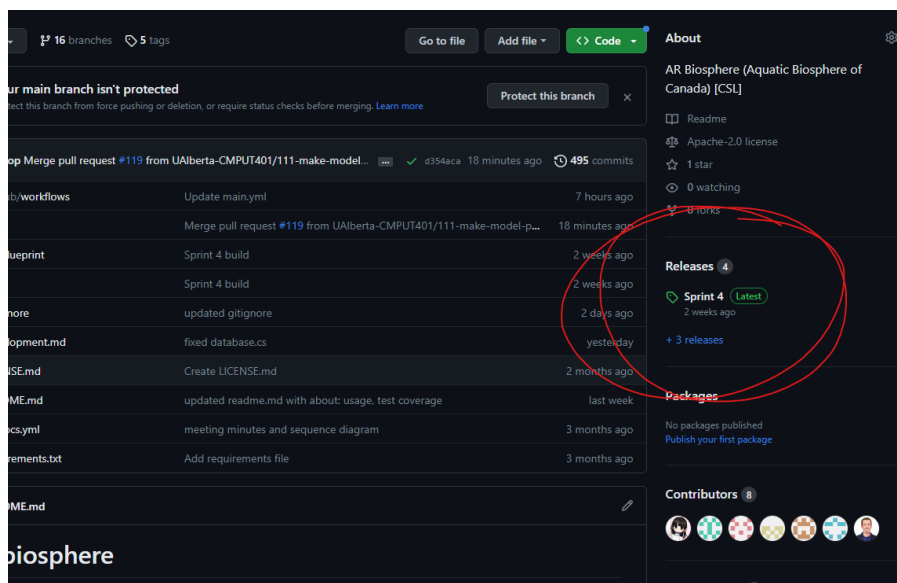


### iOS Build

Follow the same instructions as above, but select "iOS" as your build platform. Note you can only build directly from an iOS phone using a MacBook.

## 1.3 How to install from an APK

In our Github repository, there will be a section called Releases on the right sidebar:

You will be able to find a file that ends with .apk. Download this to your Android device. You should then be able to see this in your file manager of choice; this might be in the Downloads app, the Files app, or something else, depending on your device.
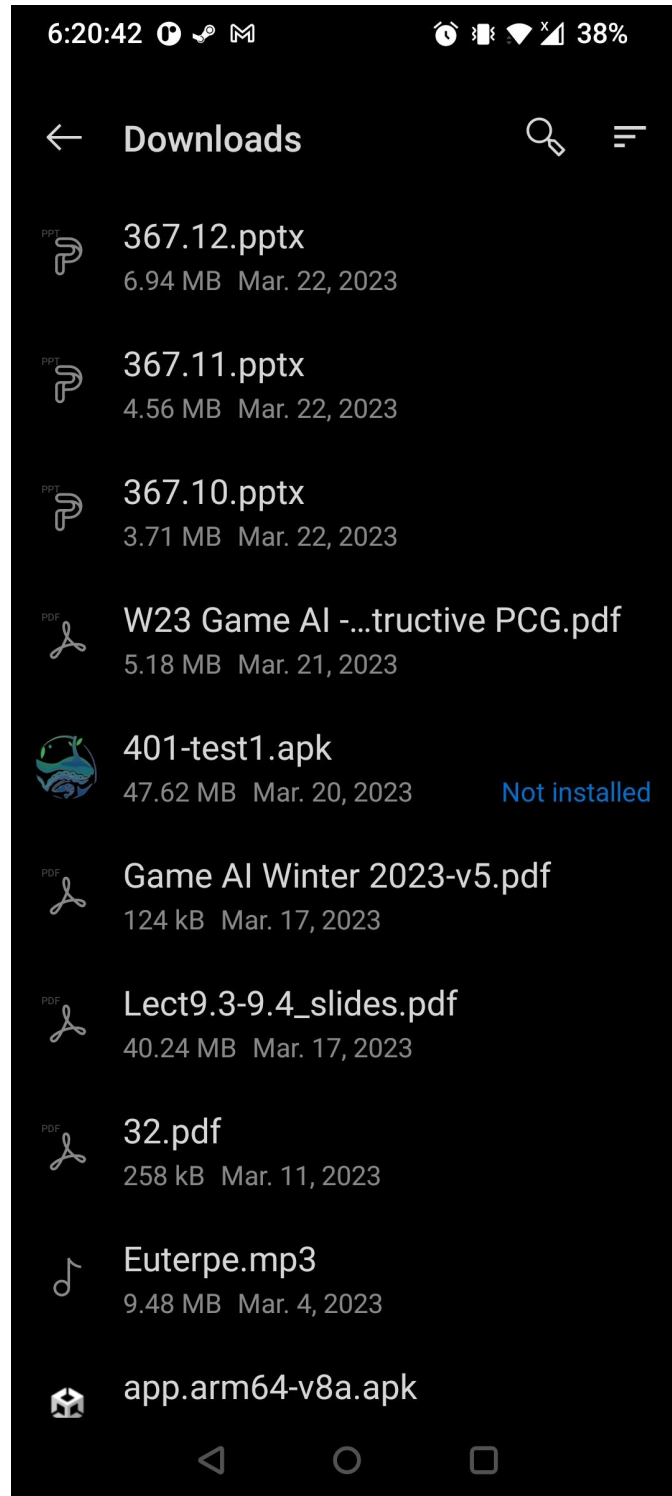
Click on this file, and it will direct you to install the app. You may get security warnings; ignore these, and keep proceeding until the app is installed.
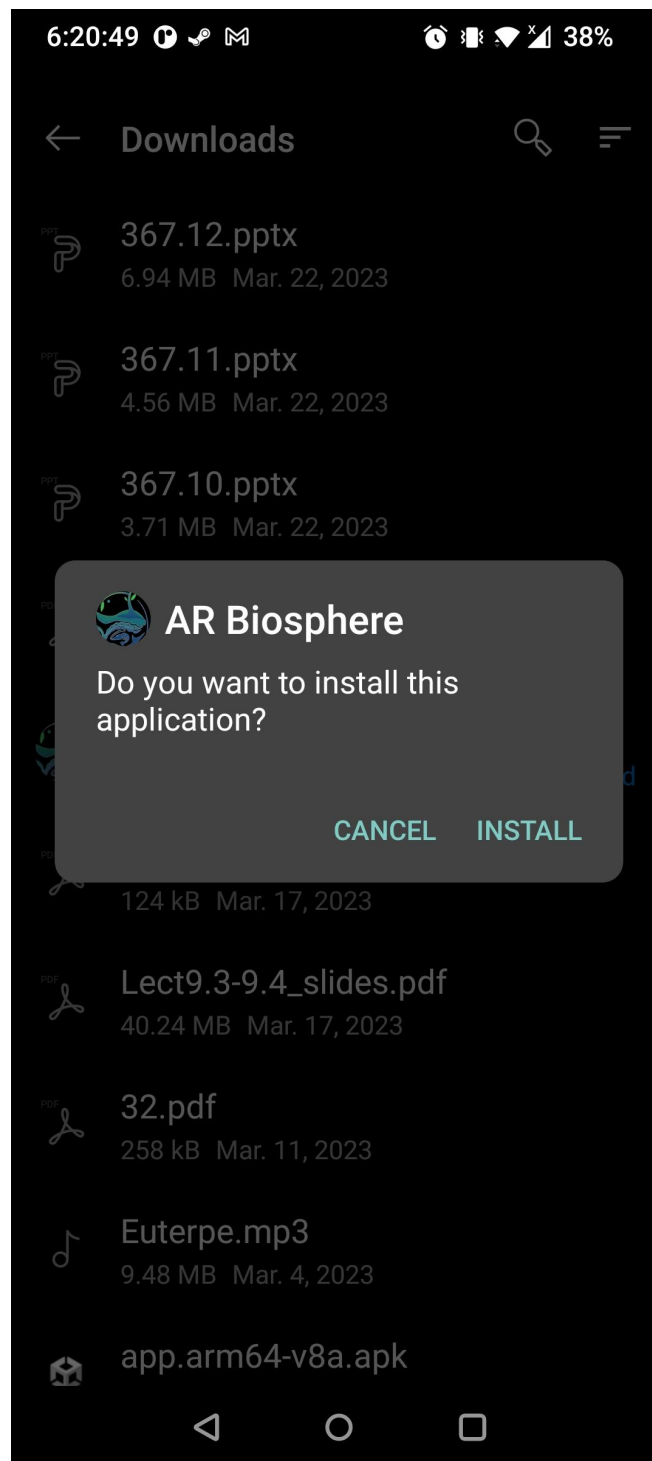
# 2 About Program

## 2.1 App Overview

### Homepage

The homepage component is the first to appear when you open the app on your device. This page contains a Continue button and an 'About us' link. The About us link will open the Aquatic Biosphere Project of Canada web page when clicked, where you can find detailed information on the project initiative. The Continue button will navigate to the Location page.

**Location page**

The location page will display an image of your current location in Google maps, it requires internet connection to display. The app will also ask you to enable location permission if not enabled already. Your location will be used to generate different species models, this prototype assumes a fixed location at the University of Alberta. The aim is to provide a more realistic exploration experience that links the appearance of different species based on their natural habitats in future iterations.
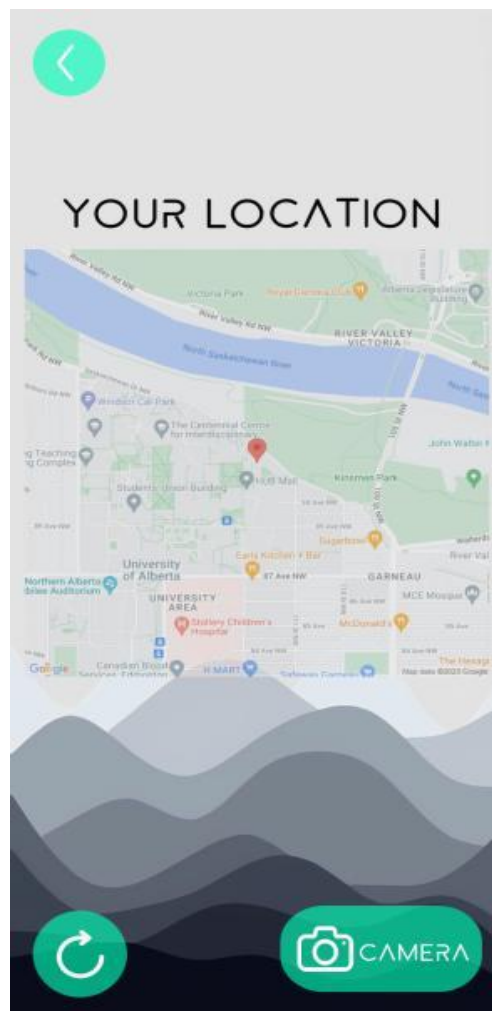
## Camera

The camera page is the main feature of the app, it uses your device's camera to spawn AR models in your surroundings. It may take a few minutes for the models to load when you first open the camera. The species you see will spawn randomly, thus some will appear more frequently than others. You will only see models that belong to your current surface environment (can be changed in camera scene). From this page, you can navigate back to the location page using the back button.
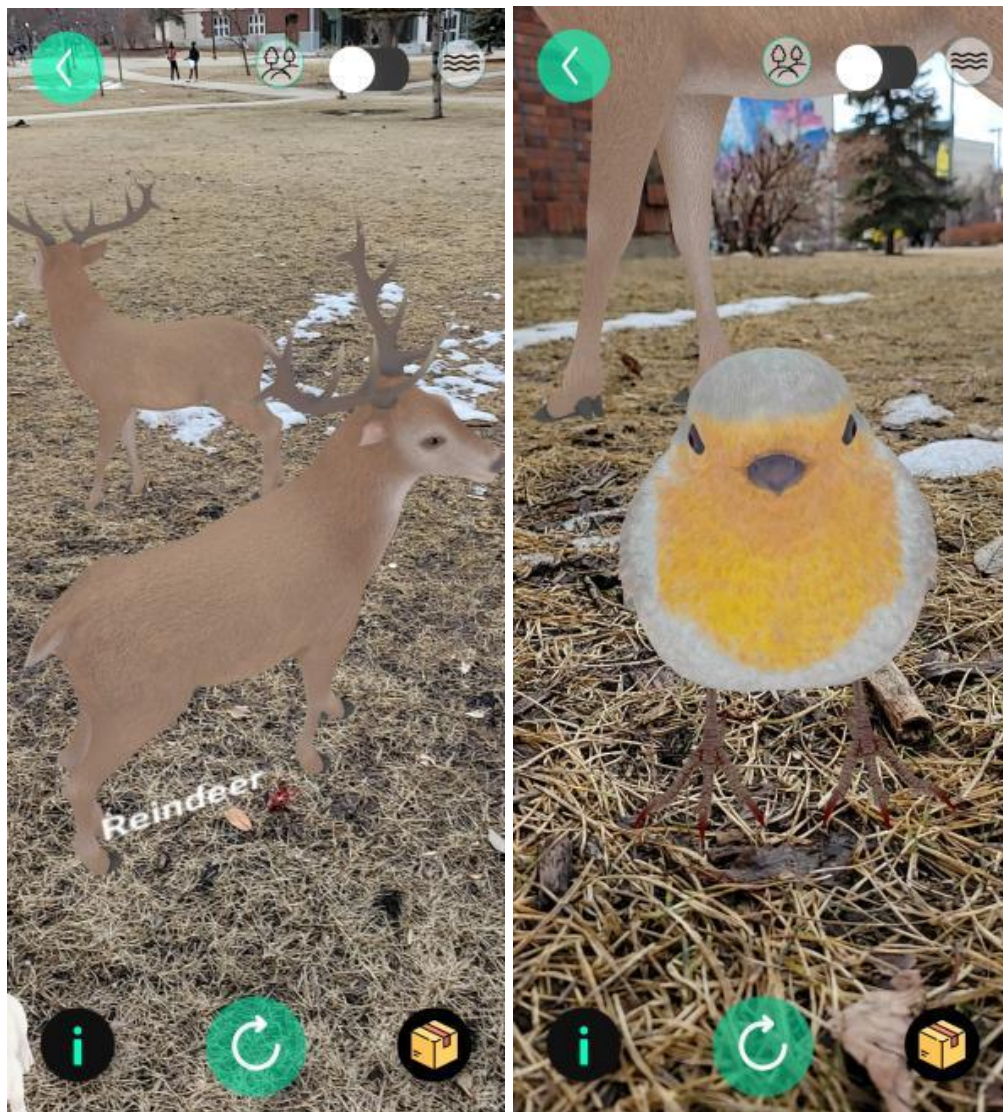
## Inventory

The inventory page can be accessed by clicking the box shaped button at the bottom right of the Camera screen. Here, the species that you have liked will be displayed on a button. You can click the button with the species name to access an external web browser. To go back to the camera screen, click the back button on the top left.
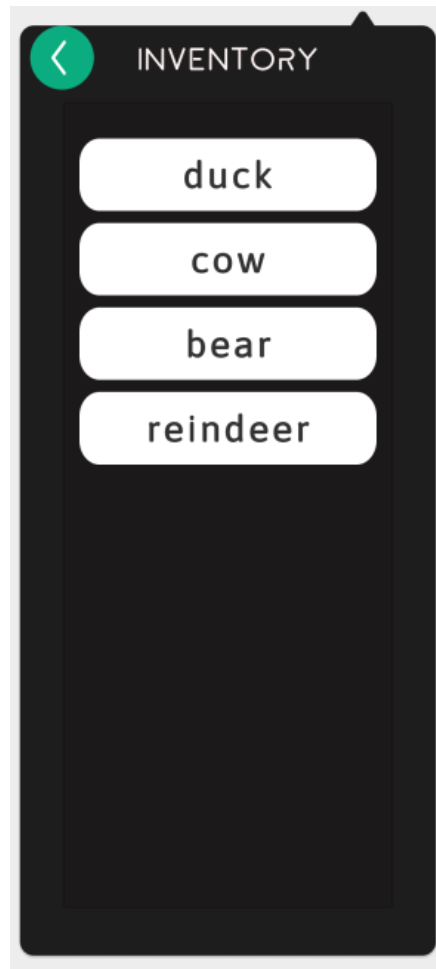
## 2.2 User Tasks

As a user, you will be able to do the following.

Read more about the Aquatic Biosphere project initiative: From the home page, click the "About Us" button. This will take you to the Aquatic Biosphere Project of Canada website in an external browser.

Navigate to the Location page from the home page: click the "Continue" button from the home page.

Navigate to the camera from the location page: click the "Camera" button from the location page.

View the name of the AR species: single tap the AR model.

View a short description of the AR species: double tap the AR model to open its information box.
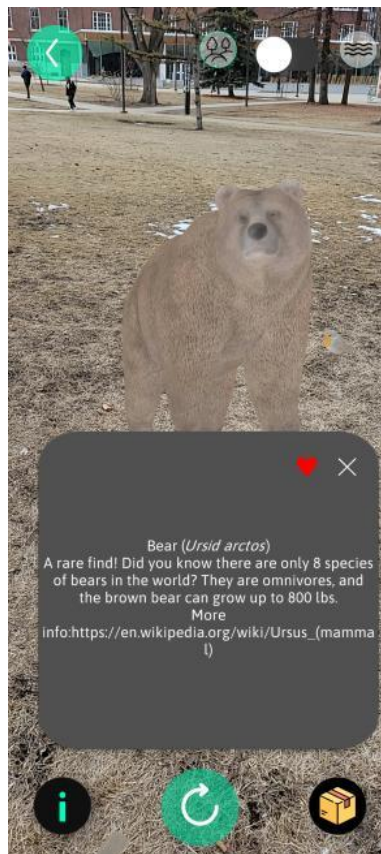


Save an AR model to my inventory: tap the heart shaped "Like" button inside the information box, the heart will turn red. Tap again to unlike.

View additional information about a species: click the "read more" link inside the model's information box. This will navigate you to an external browser.

Close the information box of a model: tap the "X" button inside the information box.

Read a short description of the ecosystem: tap the "i" button at the bottom left corner of the camera scene, tap the "close" button when finished.

Refresh the camera scene: tap the circular arrow button in the bottom center of the screen, this will remove all models from the screen.

Change my surface environment: tap the toggle switch at the top right corner of the screen. This app allows for 2 surface environments: land (left) and water (right). Switching the surface will refresh the screen, and you will only see models that belong to your current environment (terrestrial or aquatic).

VIew my inventory: tap the button on the bottom right corner with a box icon. This will open the inventory. Species that you have liked will be saved in the inventory with an external link that includes their information. The inventory will allow you to revisit information about species you previously saw. Note you must "find" a species to be able to save them to inventory.

Visit external link from inventory: click on the button labeled with the name of a species you want to view. This will open an external browser with more information on that species.