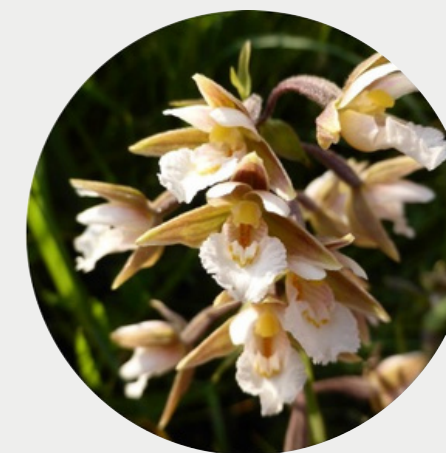# Tutorial for

PlantNet & BirdNET

For the World Environment Day for the RC sites, on the 10th of June 2022

BirdNET

Pl@ntNet

I. BirdNET App

① BirdNET, what is it?

BirdNET is an application created by the The Cornell Lab of Ornithology. It is a **research platform that aims at recognizing birds by their sound**. It is a citizen science platform as well as an analysis software for extremely large collections of audio. BirdNET aims to provide innovative tools for conservationists, biologists, and birders alike.

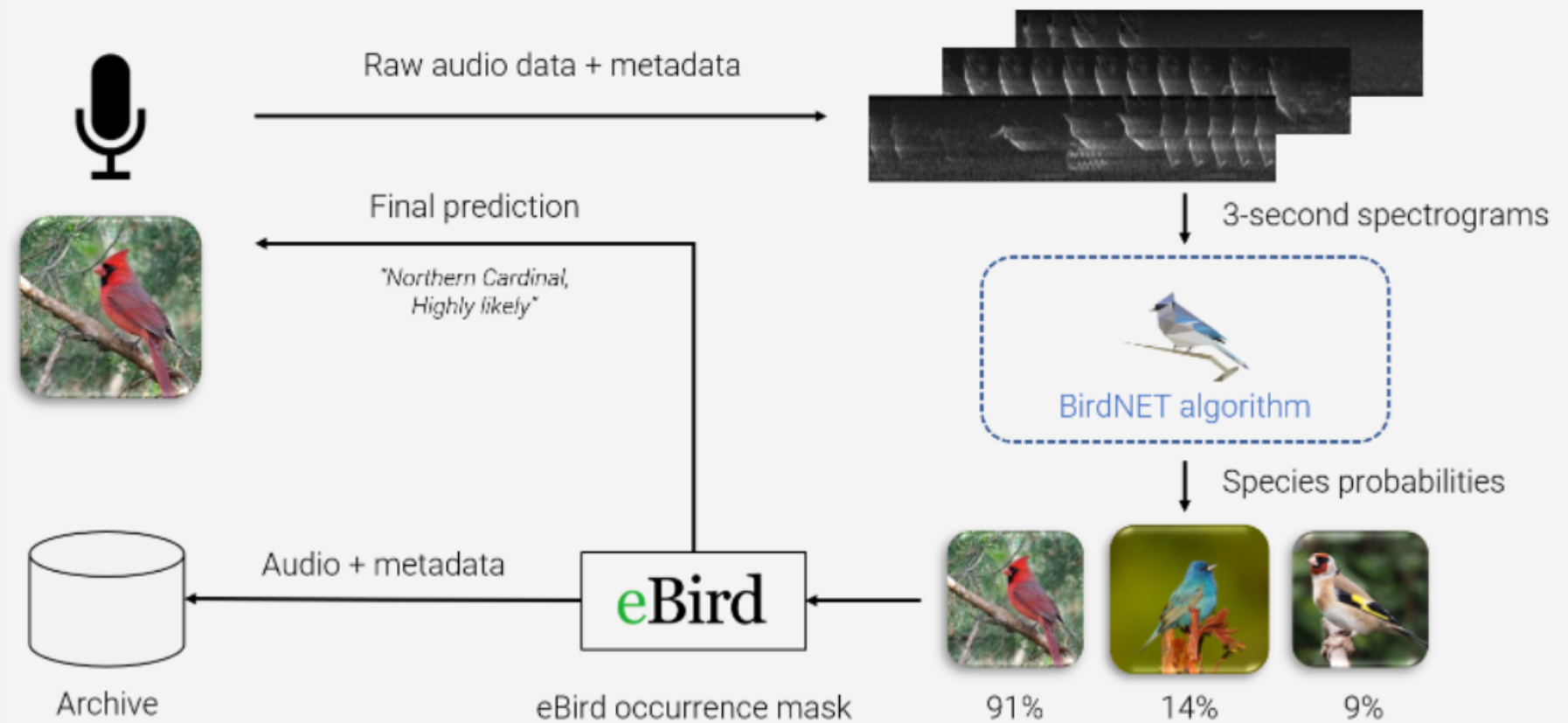**BirdNET can currently identify around 3,000 of the world's most common species.**

How to use BirdNET?

How it works:

Raw audio data + metadata

3-second spectrograms

Final prediction

"Northern Cardinal, Highly likely"

BirdNET algorithm

Species probabilities

Audio + metadata

eBird

Archive

eBird occurrence mask

91%   14%   9%

This application allows you to **record bird songs**. Start recording by pressing the "**Microphone**" button. You can see a visualization of the recorded sound in the spectrogram view.

Press the "**Pause**" button to stop recording. Select an interval by drawing a box in the spectrogram view. Send the selected portion of the recording to the BirdNET servers by pressing the "**Submit**" button. After a short time, the results will appear.

③ Why is BirdNET asking for our position?

BirdNET can identify several hundred bird species, but **there may only be a fraction in your area**. Using our location helps them improve the quality of identification based on eBird.org data for our area.

④ How does BirdNET identify sounds?

The inventors of BirdNet used over **5,000 recordings of bird songs** to train the network.

BirdNET divides your recording into one-second segments and makes a prediction for each segment. Each prediction contains probability values for each bird species.
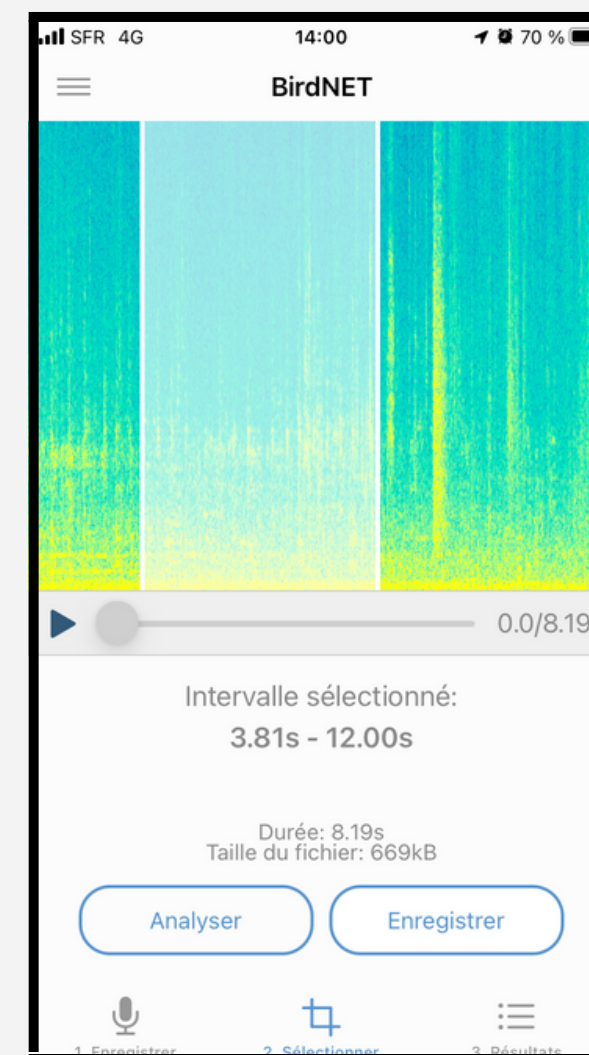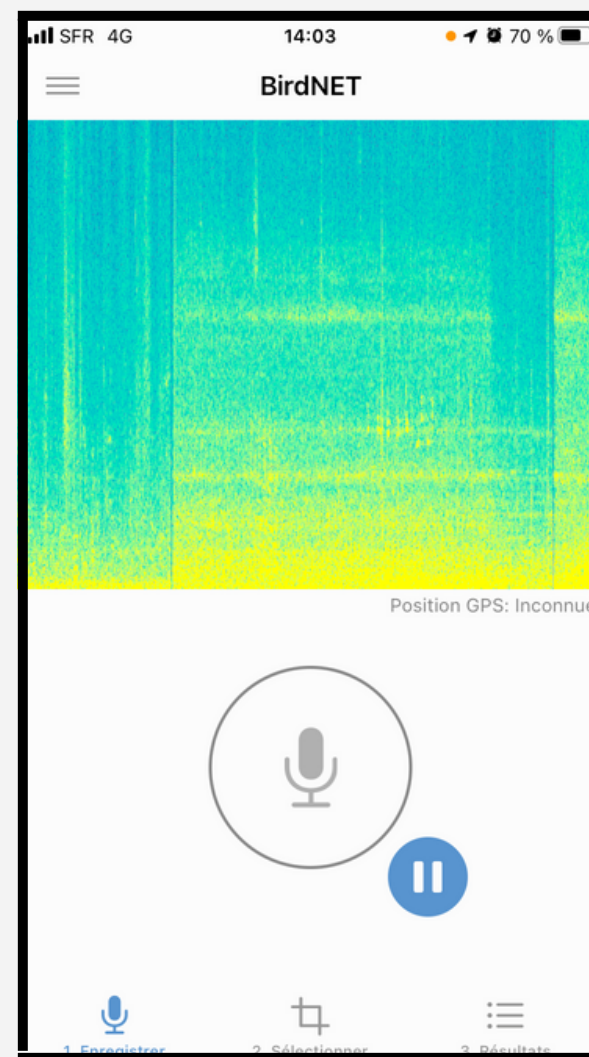
Test of BirdNET in the garden of La Défense

We tried the application BirdNET with a **Mésange charbonnière**. We had the results in a few second only. Here are a few screenshots of the stages we went through:

II. PlantNET App

① **PlantNET, what is it?**

PlantNET is a computer project that aims to identify plants from pictures using machine learning.

It led to an application for smartphones, which enables to **identify thousands of species of plants** from pictures taken by the user.

PlantNET is also **a major participatory science project**: all the plants that are photographed are collected and analyzed by scientists. By sharing your observations and voting for those of others, **you contribute to the advancement of research** in ecology, botany and computer science.
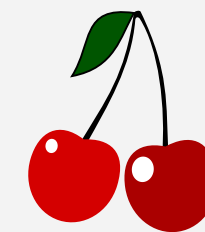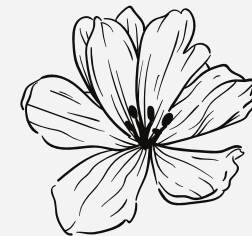
(2) **How to use PlantNET?**

First, choose "**Useful plants**" for ornamental and indoor plants OR choose **your location** from the list provided for wild plants (it is automatic if your GPS is activated).

Then import a photo from your **photo gallery** OR **take a photo** directly on the app.

At that point, choose the type of plant that most **closely matches** the one you have chosen.

You can then **choose another image** OR **launch the search**. Automatically, the list of corresponding plants will then appear! Choose which plant your photo most closely matches and **share your find**.

# 3   **Why is it important to take quality pictures?**

PlantNET is an image recognition based system. It is therefore necessary to **provide quality images**. A good photo for PlantNET is a plant centered in the middle of a clear picture, on which our fingers are not visible. The background should be blurred, natural or neutral.
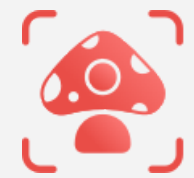
We tried the application PlantNET with a **Valériane des jardins** and it worked very well. We had the results in a few second only. Here are a few screenshots of the stages we went through:
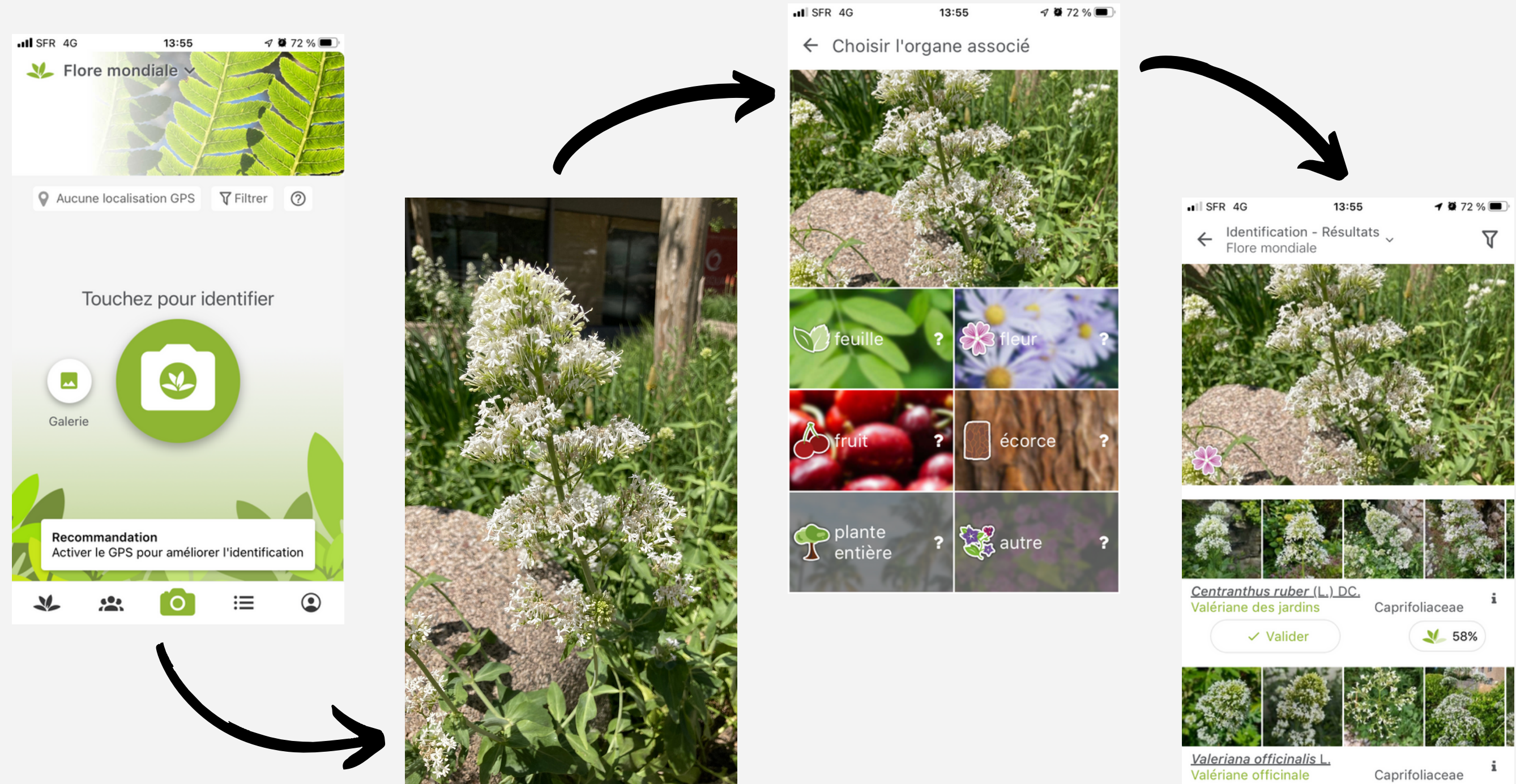
IV. Other interesting app

iNaturalist

This application allows to **identify** and **list the living beings**.

Picture Mushroom

This application helps to **identify mushrooms**.

⚠ Watch out for mistakes and the many poisonous mushrooms.

All of these apps are available on the Apple Store and Google Play!