A botanist in my smartphone

To observe how ecosystems develop under the effect of global changes and learn how to manage them optimally, up-to-date information on the distribution of species, particularly plant species, is a necessity.

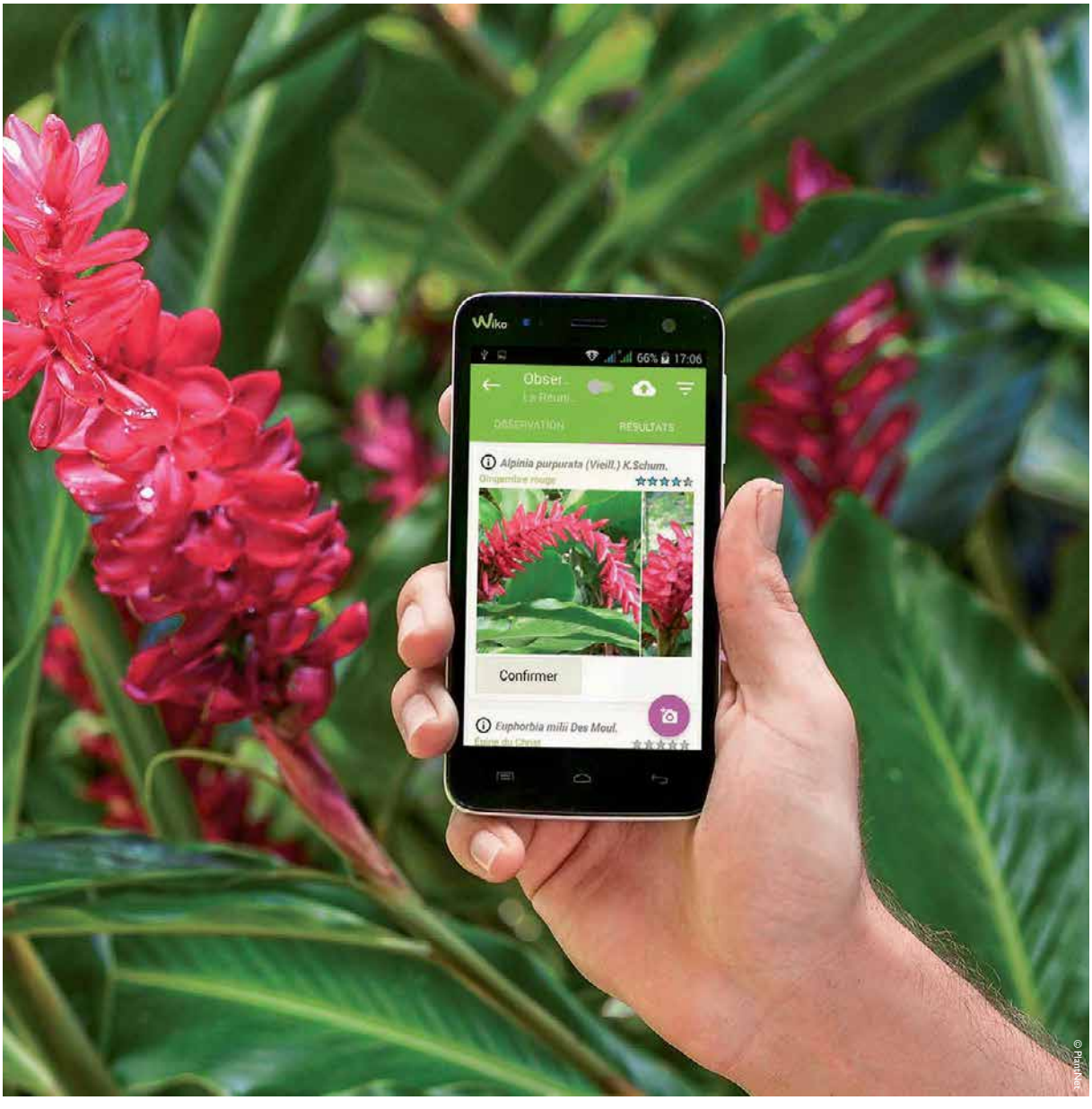
Flowering frangipani tree, Madagascar.

Eight million downloads since 2013, 55 million daily connections by approximately 100,000 users from 171 different countries, the Pl@ntNet application, designed to identify a plant based on a simple photo, is a worldwide success. This success was born out of interactions between botanists, ecologists and agronomists from IRD, Cirad, Inra and the Tela Botanica community network, as well as the chance encounter, in 2008, between the director of an IRD botany unit and the head of an IT team at Inria, who at the time was working on software capable of analysing and comparing images. A decision was made to use a similar approach to create a collaborative platform allowing anyone to recognise and determine plants.

This initially took the form of a private website where Internet users could send their photos. In 2013 however, the application was put within everyone's reach, with the first version of the smartphone application. At first, the application only covered the flora of Western Europe, before it was extended to other regions in 2015, including overseas and tropical regions. Entirely free and translated into nine languages, the application is fun to use and intended for the general public.

It relies on a computer programme and an extensive database of images. It is also underpinned by a network of botanists who contribute to the data validation process. In addition, every photo sent by users is geo-referenced, retained by the platform and added to an ever-expanding database which now features tens of millions of

··· An application transforms citizens into custodians of plant biodiversity ···



Pl@ntNet application on a smartphone.

observations. A valuable resource for ecology studies, the monitoring of biodiversity and invasive plants.

World leader in its field, Pl@ntNet has also developed an online game, *The PlantGame*, to allow as many people as possible to build skills in botany while contributing to validating images taken by users. This is an effective virtuous circle as the identification success rate exceeds 90%, for a total of 17,000 species listed in the database.

PARTNERS

Inra, Cirad, Inria, France

Tela Botanica, France

Numerous partnerships in Latin America, Africa and the Indian Ocean

BIODIVERSITY
IN THE GLOBAL SOUTH

Research
for a sustainable world

IRD Éditions
INSTITUT DE RECHERCHE POUR LE DÉVELOPPEMENT
FRENCH RESEARCH INSTITUTE FOR SUSTAINABLE DEVELOPMENT

Marseille, 2020

Written by
Viviane Thivent/Les Transméduses

Editorial coordination
Corinne Lavagne

Design and page layout
Charlotte Devanz

The photos in this publication come from the Indigo image bank (IRD), unless otherwise specified

Cover photo
Swim At The Lake - Henri Robert Brésil
By courtesy of www.naderhaitianart.com

ISBN print : 978-2-7099-2874-8
ISBN PDF : 978-2-7099-2875-5

New tools for studying biodiversity

Swimming in a stream of information

Anne-Elisabeth Laques, landscape geographer, UMR Espace-Dev
Stéphanie Carrière, ethno-ecologist, UMR Gred
Danielle Mitja, ecologist, UMR Espace-Dev
Pierre Couteron, ecologist, UMR Amap
Éric Delaitre, specialist in the use of remote sensors for terrestrial analysis, UMR Espace-Dev

Artificial intelligence to the rescue for biodiversity

Morgan Mangeas, mathematician specialising in artificial intelligence, UMR Entropie
Corina Iovan, specialist in remote sensing and artificial intelligence, UMR Entropie
Laurent Vigliola, marine biologist, UMR Entropie

The Nagoya protocol, reconciling ambition with effective action

Jean-Louis Pham, plant geneticist, Nagoya scientific advisor, UMR Diade

Listening to the environment

Amandine Gasc, eco-acoustician, UMR IMBE

A botanist in my smartphone

Jean-François Molino, ecologist, UMR Amap

Using genetics to identify the adaptative capacities of coral

Véronique Berteaux-Lecellier, geneticist, UMR Entropie
Gaël Lecellier, geneticist, UMR Entropie
Oliver Selmoni, geographer, UMR Entropie and EPFL
Stéphane Joost, geographer, EPFL

Protecting biodiversity

Converting waste water into fertiliser for leafier cities

Didier Orange, eco-hydrologist, UMR Eco&Sols

Of dams and fish

Pablo Tedesco, biologist, specialist in aquatic ecology, UMR EDB

Cataloguing the French Guiana forest

Raphaël Pélissier, ecologist, UMR Amap

Birds and tourists as research topics

Martin Thibault, ecologist and population biologist, UMR Entropie
Philippe Borsa, population geneticist, UMR Entropie
Catherine Sabinot, ethnoecologist and anthropologist, UMR Espace-Dev
Éric Vidal, ecologist and population biologist, UMR Entropie

Making sure that regulation rhymes with appropriation

Catherine Sabinot, ethnoecologist and anthropologist, UMR Espace-Dev
Jean-Brice Herrenschmidt, geographer, GIE Oceanide, UMR Espace-Dev
Gilbert David, geographer, UMR Espace-Dev
Fabrice Brescia, ecologist, Institut Agronomique Néo-Calédonien (IAC), Arboreal team

The proportion of birds

Philippe Cury, marine ecologist, UMR Marbec

Biodiversity and health

Nature's abundance protects us against pandemics

Benjamin Roche, biologist, specialist in the ecology of pathogenic agents and health threats, UMR Ummisco and Mivegec

At the cutting edge of ethnopharmacology

Geneviève Bourdy, ethnopharmacologist, UMR Pharma-Dev
Christian Moretti, eethnopharmacologist, UMR EIO, retraité

Tracking infectious diseases

Oleg Mediannikov, microbiologist, expert in infectious diseases, UMR Mephi

Controlling the inevitable

Laurent Granjon, biologist, UMR CBGP

Biodiversity to feed the world

Trees, the backbone of agriculture

Geneviève Michon, ethnobotanist, UMR Gred

Moving towards sustainable aquaculture

Marc Legendre, fish physiologist, UMR Isem

Adaptive fishing in Peru

Arnaud Bertrand, marine ecologist, UMR Marbec

Pastures and humans drip-fed by glaciers

Olivier Dangles, ecologist, UMR Cefe

Custodians of agricultural diversity

Serge Hamon, plant breeder, UMR Diade
Yves Vigouroux, population genomicist, UMR Diade

Rice as a common good

Alain Ghesquières, geneticist, UMR Diade

The potential of the world beneath our feet

Alain Brauman, soil ecologist, UMR Eco&Sols
Éric Blanchart, soil ecologist, UMR Eco&Sols

Mangroves, a new Eldorado?

Marie-Christine Cormier-Salem, geographer, UMR Paloc

Plant symbiosis

Éric Giraud, microbiologist, UMR LSTM

The Hidden Agriculture of the Amazon Forest

Laure Emperaire, ethnobotanist, UMR Paloc