

COURSE REPORT

INTRODUCTION TO THE USE OF ANDROID-BASED GPS FOR TROPICAL FOREST CONSERVATION & RESTORATION

March 21-23, 2018

Samboja, East Kalimantan, Indonesia

A field training organized by:

Environmental Leadership & Training Initiative (ELTI),

Tropenbos Indonesia Program (TBI), and

Research & Development Institute for Natural Resource Conservation Technology (BALITEK-KSDA)



A group of course participants during a field activity at Wartono Kadri

Background: Technological advances can significantly improve the ability of resource managers and other stakeholders to understand the spatial environment in which they live and work. Global Positioning Systems (GPS) is a particularly useful tool which can provide locational and navigational information anywhere on the surface of the planet, as long as signals from a network of satellites are received. This spatial information is extremely important in the surveying and marking of boundaries, as well as controlling access to natural resources located inside or outside of those boundaries. Such spatial information can, for example, help government land managers conserve protected areas, or local communities protect their land from encroachment by private sector actors. GPS can also be used to pinpoint the locations of trees and other

ELTI is an initiative of: **Yale SCHOOL OF FORESTRY & ENVIRONMENTAL STUDIES**



Opening ceremony with Dr. Neidel and Mr. Pamungkas

stationary features for the purposes of monitoring change over time, including the growth and survival of trees in a forest restoration area.

In the past, GPS was limited to stakeholders who were able to buy or otherwise access a GPS receiver. Nowadays, virtually anyone with a smartphone can download apps, which can provide much of the same functionality as a GPS receiver. In Indonesia, where many people have Android-based smartphones, this technology can empower an array of stakeholders to engage in the conservation and restoration of tropical landscapes. Few people outside of professional fields, however, know how to use this technology.

This training event was designed by ELTI, TBI and BALITEK-KSDA to increase the local capacity in using Android-based GPS. Ms. Ulfah Karmila Sari and Ms. Ike Mediawati, two ELTI online training program alumnae based at BALITEK-KSDA, played an important role in organizing the event with assistance from Dr. Arbainsyah and Mr. Sulton Afiffudin of ELTI. The training was intended for an array of local stakeholders who directly or indirectly influence the management of BALITEK-KSDA's 3,504 hectare Special Use Forest Area (KHDTK) of the Bukit Soeharto Grand Forest Park. A large portion of KHDTK, which is used by BALITEK-KSDA for conservation research, has been either deforested or degraded in recent years by local community members and other parties so it is important to begin developing a multi-stakeholder approach to the management of the site. This training is an early step in that process.

Objectives:

The primary objectives of this training are as follows:

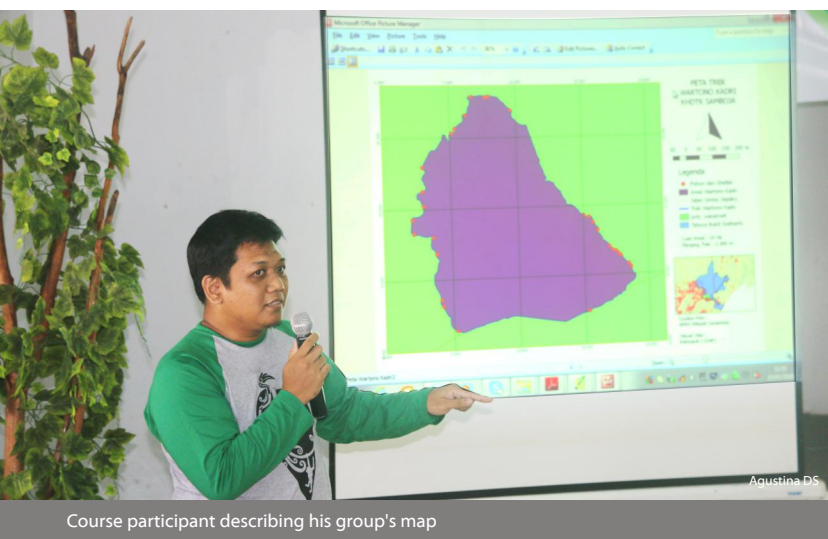
- To provide the background knowledge needed to understand how GPS works;
- To provide participants with the knowledge and skills needed to use GPS and input the data into a basic Geographical Information System (GIS) software package, as well as opportunities to practice those skills; and,
- To begin building trust between the different stakeholders in the training and start a dialogue about how best to address the drivers of deforestation/forest degradation and the obstacles to forest restoration within KHDTK.



Ms. Ulfah Karmila Sari providing an introduction to KHDTK



Dr. Yohanes Budi Sulistioadi giving an introduction to GPS



Course participant describing his group's map

Program

Day 1

The training started with an Opening Ceremony, including opening remarks by Dr. David Neidel (ELTI Asia Program Coordinator) and Mr. Ahmad Gadang Pamungkas (Head of BALITEK-KSDA). Ms. Ulfah Karmila Sari then provided a quick introduction to KHDTK, a quick overview of GPS, and a discussion of how GPS could help resolve some of the issues surrounding the management of KHDTK. Dr. Yohanes Budi Sulistioadi (Senior Lecturer at Mulawarman University) provided two short presentations on *Basic Theory: GPS and GIS* and *Applications of GPS*. During lunch, all participants installed two apps, *GPS Essential* and *Avenza Maps*, as well as local satellite images onto their smart phones. The participants were then divided into six groups and taken on a short walk around the Balitek-KSDA complex to begin learning how to use their smart phones as GPS units.

Day 2

The morning was supposed to start with a field exercise, however, because of heavy rains, Ms. Ulfah Karmila Sari presented an introduction to Geographic Information Systems (GIS), a computer platform used to store and manage spatial data. Fortunately, the weather cleared, so the participants were then divided into their groups and headed to nearby forest areas where they recorded their trek routes, marked waypoints, and took geo-referenced photos. They then returned to the classroom, where they installed ArcGIS onto



Course participants recording way points along the trekking route



Course organizer, Ms. Ike Mediawati, helping participants create their maps using GIS



Mr. Syamsu Eka Rinaldi demonstrating to participants how to fly the drone

their computers and transferred their tracking data and photos. After lunch, Ms. Ulfah Karmila Sari explained to participants how to classify their data, merge it with data from other sources in ArcGIS and Quantum, as well as create basic maps of the treks and waypoints. A team of Balitek-KSDA staff, who had already learned the programs, provided assistance as needed.

Day 3

The group continued working together to create maps of the area covered in their treks. Each group then presented their maps to the organizers and other groups for feedback. After lunch, Mr. Syamsu Eka Rinaldi (Balitek-KSDA staff) gave a presentation and demonstration of drones and the variety of ways they can be used for data collection and other management activities. Dr. Arbainsyah (ELTI Asia Program Assistant) provided an introduction to the ELTI Leadership Program, which the course alumni could apply to for additional training, professional development, and project support. The training then ended with a course evaluation and closing remarks by Dr. David Neidel and Mr. Ahmad Gadang Pamungkas.

Participants:

The training was attended by 25 people. Participants included community leaders, as well as representatives from local governments (Kelurahan and Kecamatan), local nongovernmental organizations, and the police.



Course participants and organizers

Follow-up:

The participants remained very active throughout the training, with some expressing the need for additional follow-up training. Training organizers from both BALITEK-KSDA and ELTI are available to continue working with the course participants in furthering their skills as needed. Several participants also approached the organizers about applying to the ELTI Leadership Program for project support. A second round of the introductory training might also be needed for the large number of people who expressed interest in the training but who could not be accommodated in the first training.

This event was possible thanks to Arcadia, whose Environmental Conservation grants support programmes that protect and enhance biodiversity, and provide field training and academic research.