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Protecting cornerstones of our existence

by Robert Meier and Hildegard Holenstein

Swiss have a long tradition of fostering and preserving the country's biodiversity and understand it is the cornerstone of our existence on Earth. The Swiss agriculture policy supports biotopes, or biological communities, and has proactively set agreements to protect and manage biotopes such as raised bogs, fenlands and dry grasslands, and land owners who carry out these set agreements receive compensation. New agricultural policy, taking effect from 2014 to 2017, has made direct payments to land owners managing biotopes possible. In order to assess the possible landscape quality effects

of these supported biotopes, the Canton of Glarus's Department Construction and Environment commissioned ARNAL, Büro für Natur und Landschaft AG, to conduct a study covering all areas in need of protection in Canton Glarus.

Robert Meier, CEO at ARNAL and project manager of this study, spent two weeks in the summer of 2014 with his intern Elias in the Glarus Alps. During this time, they measured land areas and collected other relevant information concerning the biotopes, and also finalised agreements with the local land managers. A Leica CS25 GNSS tablet PC was brought along to digitally collect data from the surface areas that needed to submit assessments.



About ARNAL

The ARNAL company, with its five employees, is involved in numerous projects fostering harmony between humans and nature, and their shared landscapes, and have been offering solutions for a variety of complex and challenging issues for more than 15 years.

From their headquarters in Herisau, the company manages projects in the greater eastern Switzerland area and throughout the rest of the country. Large nature and landscape projects in the state of Salzburg are also managed from the branch location in Salzburg, Austria. (www.arnal.ch)

Location

- Around 20 mountains in the Glarus Canton
- Field hikes up to an altitude of 2,000 metres (6,562 feet) above sea level

Hardware and software

- Leica CS25 GNSS with Helix antenna
- Leica Zeno Field
- QGIS office software

Benefits

- Easy, faster and more precise data acquisition
- Leica Zeno data can be transferred directly into the QGIS software
- More efficient workflow, as several steps are no longer necessary
- Easier orientation in the field

As a company with extensive environmental experience that works closely with its customers, ARNAL has always supported the environment, taking the landscape needs into consideration first. In the summer of 2014, ARNAL were commissioned to make new land management agreements and update existing ones in order to protect the fragile biotopes found in the Glarus Alps. For this purpose, land area sizes needed to be assessed and agreements negotiated with the land managers locally.

Checking and expanding biotopes

During this project, intern Elias gained first-hand experience of what it meant to be an ecologist. While on their field hikes, Robert Meier explained to Elias the riches and diversity to be found in each of the biotopes and demonstrated to Elias how to use the Leica Zeno GIS tablet. In just a short period of time, Elias was familiar with the device and ready to start collecting data.

Under the supervision of Robert Meier, Elias was able to verify existing biotope sizes on location by using the tablet's integrated GPS and the Leica Zeno

field application. Any area sizes which needed to be changed were carried out directly in the field using precise positional data. As Robert Meier explained, "Using the Leica Zeno Field, we were able not only to record and correct geometric surfaces but we could also enter valuable information on managing the corresponding areas for later assessment directly in the field."

Back at the office, the data was imported directly into the QGIS GIS system, a free and open source program for creating, analysing and publishing geospatial information. Thanks to the work carried out with the Leica Zeno Field, it was no longer necessary to manually draw the areas in a field map and digitise them later in the office.

Ideal orientation in the field – even with poor weather conditions

It's well known that weather can change very quickly in the mountains, and the summer of 2014 was no exception. This made having an orientation aid all the more helpful in misty conditions with poor visibility. "We used to use paper maps for this, which had to be



■ Intern Elias collecting data of the biotopes in the Glarus Alps in Switzerland.

protected from the rain. Thanks to the water-proof Leica CS25 tablet, we can leave the umbrella behind and pinpoint our exact position in the area through localisation. It's also possible to 'pilot' the navigation function to the desired location," said Meier.

Making invisible boundary lines visible

The Leica CS25 tablet offered the team other advantages as well, such as the ability to display boundary lines, which often can't be seen or found. "Property boundary lines, for example, play a crucial role when it comes to direct payments. Using the Leica CS25, we were able to show land managers the boundary lines in the field. Land usage boundaries, such as the boundaries of forests, also play a role regarding payments. We could show these boundaries to them on the tablet as well, and made use of them as a basis for discussion," explained Meier.

"Our experiences with the Leica CS25 GNSS in this project were very positive, as some work steps could be consolidated and others, such as sketching, weren't needed at all. The data was recorded quickly and precisely with the GPS, meaning that we could reduce

the amount of time spent on location by a considerable degree," concluded Robert Meier.

Believe it or not, this can have its downsides, too. Intern Elias would have gladly spent more time in the Glarus Alps: "I had a lot of fun out there. We were outside every day, and when the day was done, we knew that we had done something positive for the environment." ■

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