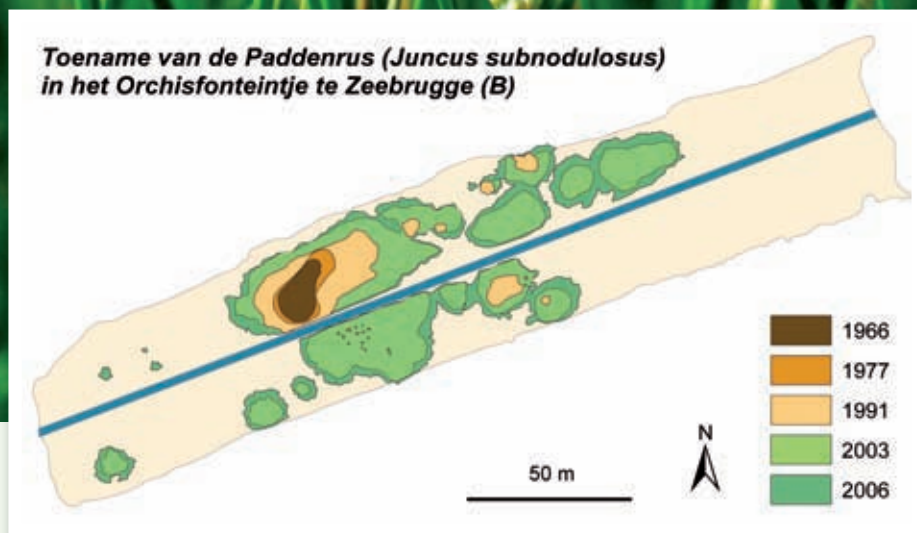


## Searching for Tussocks with GPS

# Mapping Plants Accurately

*The National Botanic Garden of Belgium, measuring 92 hectares, can be found near Meise, between Antwerp and Brussels. Not only in the Botanic Garden is it important to map the plants and objects. Also for botanical research in Belgium and for similar institutions from all over the world MobileMapper from Magellan is used to enter data.*

By Job van Haften



*Blunt-Flowered Rush.*

*Map displaying the occurrence of Blunt-Flowered Rush in the "Orchis Fontejntje".*

Biologist Leo Vanhecke is a researcher of plants in the National Botanic Garden of Belgium. He makes use of MobileMapper Pro to map data such as growth locations and the occurrence of specific plants. Vanhecke: "The relatively high degree of precision and the speed with which data on the terrain can be collected are very important to us. In Flanders, the Dutch-speaking part of Belgium, so-called Flepos ground station data can be collected from the Internet for free and used to correct the georeference data. When the satellites are in a favourable position an accuracy of just a few decimeters can be achieved with our GPS device. For cartographic applications this error is not relevant."

### Separate Plans

At the extensive terrain of the National Botanic Garden there are several options for using MobileMapper. The majority of these applications is still in preparation. Vanhecke: "In the botanic garden itself the landscape architects will in particular make use of the GPS device to measure new structures and

designs in the garden. An example of this is an old drainage system that was recently uncovered and measured. Until recently these tasks had to be done by using measuring tape: a very accurate but cumbersome job." "Besides this many separate plans came into existence in the previous situation. But now these can be connected by means of GPS and GIS. It is now possible to digitally draw new and old geometric structures. All objects such as benches, roads, plantation, streetlights, striking trees and buildings are entered by making use of ArcGIS. The reason for this is twofold: on the one hand managing collections and infrastructures is quite important, on the other hand the organisation wants to have a user-friendly interface for potential visitors. Via the Internet these visitors can collect information about the collections and the places of interest."

### Note Down on Cards

"When maintaining the botanic garden collections it is important to know where to find a certain type of plant. In the early days it was necessary to note this down on cards, and a

location system with big zones was needed. Now we can do this more accurately for all 18.000 types of plants in the garden. There are native but a lot more non-native plants. Examples of thematic collections are the medicinal plants and the fruticetum (a collection of shrubs)."

"Many of the special plants that are originally from areas with a warm climate are cultivated under glass. The Botanic Palace measuring one hectare is accessible to the public. There are plant collections that are assembled based on different climatic zones and from different continents. Examples are the rain forest, deserts and the Mediterranean. Besides this one can find glass houses with a certain theme, such as economic crops from tropical areas, the evolution of the vegetable kingdom and the season of spring. At the moment the Botanic Palace is reconstructed."

"An important outdoor collection is the systematic collection that provides an overview of the scientific classification of the seed plants based on their natural relationship. Besides the collections of living plants we also have a very extensive herbarium of dried

role in this because the position of the collecting points can be scanned quickly. This work used to be undertaken by using maps. Without doubt the role of GPS will become more important in future.”

### Tussocks and Plants

“One of my colleagues and I already made extensive use of a traditional GPS in South west Turkey in 1998. We localised places for tussocks traps. These were of importance for the research by colleague Marleen Vermoere who studied the fall of tussocks for an archaeological project. In order to be able to make a good comparison between the occurrence of the plants and the amount of fallen tussocks, we had to collect tussocks of plants that now occur and relate these to the vegetation observed. This is why we placed tussocks falls; a kind of mug with a filter on it.”

the new MobileMapper this would have been a lot easier.”

“Anne Ronse, another colleague of ours, is drawing up an inventory of the growth locations of rare plants in Belgium that are under threat in Europe”, tells Vanhecke. “These plants are protected according to the Habitat guidelines. Ronse uses MobileMapper to register all populations of Creeping Marshwort. This is essential in order to be able to have an overview of changes in these populations in future and to evaluate the consequences of control measures.”

### ‘De Fonteintjes’

“Currently I am active in a swamp area near the coast, called ‘de Fonteintjes’, the Fountains, where I am mapping the Blunt-Flowered Rush, a rare kind of Bulrush. In the early days we used measuring tape and millimetre paper, a very time-consuming method. Since 2006 we have MobileMapper which means we are much faster and more accurate in following the expansion of the population. We used to be working for two days, now it only takes half a day. Every second the GPS device makes a measurement, which comes down to one measurement per meter when walking at a slow pace. This offers great opportunities: being able to correctly measure the mowing borders which differ every year for example.”

### Floodable low Areas

“Another research area I am working on is an old polder area with many ditches, poles and shallow quarries, one square kilometre in size. Because this part of the polder has become a reserve and because European subsidies became available, it was possible to execute far-reaching control activities, especially in favour of the birds. As a consequence a lot of new ditches, poles and trenches and other capriciously formed floodable low areas were levelled. This means old topographic maps cannot be used anymore.”

“It was my job to monitor and draw up an inventory in order to make a comparison with a 20-year-old inventory. Making use of a surveyor would mean several days work at high cost. Now it took me six days to collect and map the data. We are ready for the next step: the inventory.”

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*Leo Vanhecke and his MobileMapper.*

plants from all over the world. Especially our Central-African collection is very extensive. Without collections like these taxonomic research (studying mutual relationships) is impossible. Traditional GPS devices played a

“With the GPS we had back then we were able to achieve an accuracy of about 20 metres. Photos of the exact locations helped us to retrieve most of the tussocks falls one year later in a mountainous area full of rocks. With



*Creeping Marshwort.”.*