

## Recreation Monitoring at the Dutch Forest Service

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**Abstract:** In 1996 the former Institute for Forestry and Nature Research (now Alterra) started to develop a system to monitor the recreational use of forests and other grounds owned by the Dutch forest service. The aim was to determine the number of visitors, their activities and the perceived quality. This information provides a valuable management tool for targeting of resources. The system uses three methods to gather the information:

1. Monitoring vehicle and bicycle use at the sites by using traffic counters with induction loops installed in the road (all year round).
2. Visual counting of visitors at all entrances (on 12 days during the year).
3. Survey of visitors (on 12 days during the year).

When the system is fully implemented there will be a network of 48 sites. All of these will be monitored by using this method once in every 10 years, on average 5 sites a year.

### INTRODUCTION

Management of nature parks need data about the recreational use of their areas in order to control and direct the flow of visitors. Several sociological founding studies were carried out by the former Institute for Forestry and Nature Research, now Alterra (Visschedijk 1997a, Visschedijk 1997b) before the set up of a recreation monitoring system (Visschedijk 1998a). The number of visitors to a site, the recreational use as well as the quality of the experience are monitored. It serves as a knowledge base for the future.

### METHODS

The study was carried out in several areas managed by the Dutch forest service across the Netherlands, among which Ugchelen-Hoenderloo. This area serves as an example for this paper (fig 1).



Fig 1. Location of monitored forests.

*1. Monitoring vehicle and bicycle use at the sites by using traffic counters with induction loops installed in the road (all year round).*

The use of traffic counters enables one to gather information about the number of passing vehicles and bicycles all year round. The counters automatically register the numbers and also provide other details such as date, time and speed. With this information it is possible to see the variation in use throughout the year.

*2. Visual counting of visitors at all entrances (on 12 days during the year).*

Counting all the site-entrances visually is essential for determining the exact number of visitors. With traffic counters it is impossible to cover the complete site, only cars and bicycles can be counted and you don't know how many people are for instance in the vehicles. In combination with the figures from the traffic counters it is possible to calculate the number of visitors during a certain period of time.

*3. Survey of visitors (on 12 days during the year).*

With the visitor surveys information is gathered among other things about activities, use of facilities, number of visits a year, place of residence, duration of visits and last but not least the perceived quality of the site.

The quality-score is generated by asking the visitors their opinion about 17 items concerning outdoor recreation. First through 17 thesis about recreation in general in which the visitors are asked about the importance of the items (general importance), in the next question the same thesis are asked in connection with the visited site (verdict).

Then the questions are combined, the answers about the site itself are weighted by the answer about the general importance of a certain subject. Table 1 shows the weightfactors.

Verdict		General importance				
		Very unimportant	Unimportant	Neutral	Important	Very important
Very negative		-1	-2	-4	-6	-8
Negative		0	-1	-2	-3	-4
Neutral		0	0	0	0	0
Positive		0	1	2	3	4
Very positive		1	2	4	6	8

Table 1. Quality-scores

When an item is being considered as very important by the visitor, then his verdict about the item in the visited site can raise a score between -8 and +8. However, when an item is qualified as unimportant then a score is between -2 and +2. When an item raises a total average score of more than 1 the quality is qualified as being sufficient.

Since this system of monitoring is only carried out in 48 sites, there was a need to get information about all the other grounds of the Dutch forest service. Since counting is too expensive to be done in all sites, in the sites not covered by the monitoring network visitors are going to be given a questionnaire which they can fill out and send back by mail. Through extrapolation we try to predict the unknown factor, the number of visitors.

**SOME SELECTED RESULTS**

*Results of traffic counters*

The trafficcounters give year-round information about the number of cars and bicycles. With this information the 10th busiest day is determined. The 10th busiest day in Ugchelen-Hoenderloo was the 25th of July. Figure 2 shows the division of vehicles per day where every bar represents a day. The black bars indicate the days where interviews were held and visual counting took place.

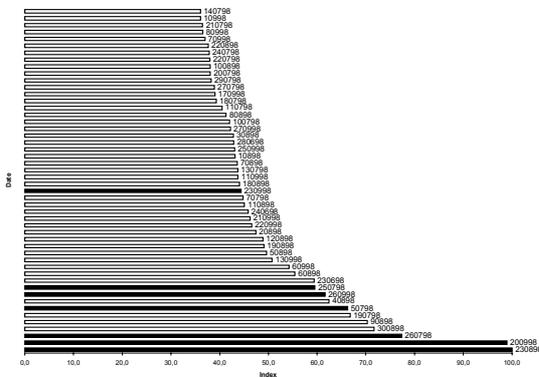


Fig 2. Number of vehicles per day where the busiest day is set at 100.

*Results of visual counting*

The number of visitors on the 10th busiest day was 2,093. As the size of the area is 1,814 ha this means an average visitor intensity of 1,15 per ha. The amount of facilities for recreation depends on this number. Figure 3 shows the number of visitors present in the area during the day.

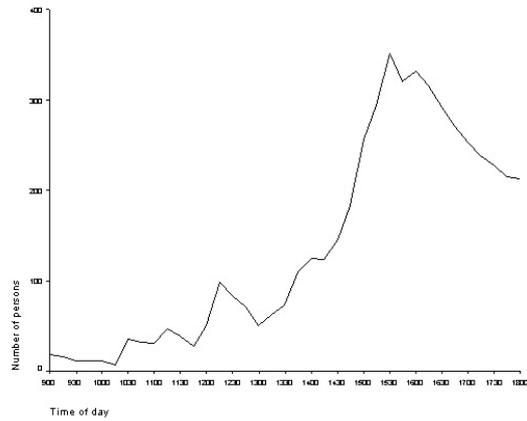


Fig 3. Number of visitors present in Ugchelen-Hoenderloo at certain period of time.

*Results of interviews*

The quality score showed a score lower than 1 for the number of benches and the chance of seeing birds and other animals (Fig. 4). This should be improved by management.

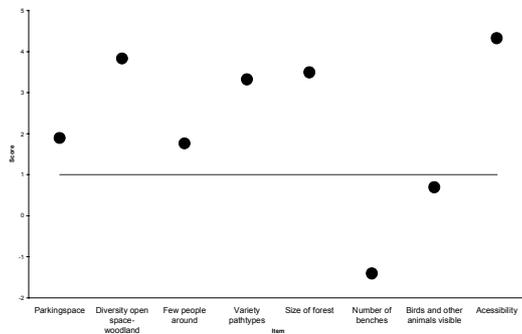


Fig 4. Quality-scores of Ugchelen-Hoenderloo

**CONCLUSIONS AND OUTLOOK**

The recreation monitoring system proved to be a valuable management tool.

At the moment Alterra is improving its system of: combination of monitoring and smaller onsite surveys through extrapolation of results (Visschedijk 1998b).

- Besides Alterra is working on a model which predicts the number of visitors to a site based upon:
  - Number of different sites in an area
  - Quality of the site
  - Quality of the routes leading to a site
  - Number of inhabitants in an area of approx. 25 km around the site.

## REFERENCES

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