The use of wildlife overpasses for outdoor recreation

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Introduction

In debates on combining outdoor recreation and nature conservation scientific knowledge is used to find solutions for problems. When knowledge is lacking ambiguity tends to prevail (Pouwels et al. 2011). Providing new knowledge can help the debate, but we noticed that stakeholders use this knowledge differently. In the Netherlands both the public and recreational interest groups intensify the pressure on the government to open up wildlife overpasses for recreational co-use. In 2009 two Members of Parliament requested the Dutch government to allow recreational co-use on wildlife overpasses unless the impact on wildlife was notably high. However managers of nature areas as well as national and provincial governments are often reluctant to approve these requests. Only few studies on the effectiveness of wildlife overpasses and recreational co-use have been conducted (f.e. Clevenger and Waltho 2003). In none of these studies the intensity of recreational co-use is as high as in the Netherlands; more than hundred visitors a day. The goal of our study was to provide this knowledge.

Method

We selected two wildlife overpasses where human co-use is currently allowed; Zanderij Crailoo and Slabroek. The overpass in Zanderij Crailoo is 800 meters long and the width varies between 50 and 100 meters. The overpass crosses a provincial road and a railroad. In between the road and the railroad there is a small nature area. The vegetation on the overpass consist of dry grasslands, shrubs, small water bodies and some wet grassland types. On one side of the overpass there is a trail for horseback riders as well as a trail for both cyclists and hikers. These tracks are separated from the natural vegetation by shrubs and a small fence. The overpass Slabroek is considerably smaller, 100 meters in length and 15 meters wide. The overpass consists of dry and wet grassland types and there is one trail for horseback riders, cyclists and hikers. The use by humans was monitored by infrared counters (Trailmaster Active Trail Monitors TM1550). During the research some data were lost as the counters were vandalized with spray paint.

We monitored the use of the overpasses for mammals using sand pads (Ford et al. 2009). At Zanderij Crailoo four sand pads were constructed on the overpass itself and on both sides eight sand pads were randomly located as control plots within 1000 meters from the overpass. At Slabroek two sand pads were constructed on the overpass itself and twelve in the surroundings on both sides of the overpass. The sand pads were monitored almost daily between May 2008 and October 2009. When the tracks of for example one Roe deer on all pads on the wildlife overpass were directed from one side of the overpass to the other side, the combined tracks were considered as one 'crossing'. For all other combinations of animal tracks we assumed animals had turned back and these tracks were considered as a 'visit'.

Results

Based on the data from the infrared counters we estimated that during one year 180 000 hikers and cyclists used the overpass at Zanderij Crailoo and 1700 horseback riders. At Slabroek 60 000 hikers, cyclists and horseback riders used the overpass during one year. The use was highest on Sundays and in the spring and in the summer. Between 10 pm and 6 am there were hardly any visitors, while from 8 am until 6 pm there were visitors present at the overpass almost continuously. The use of the overpass by visitors outside the trails was low; at Slabroek almost 800 per year and at Zanderij Crailoo 150 per year. At Slabroek this use has led to degradation of the vegetation and resulted in a 'naturally' formed trail for horseback riders.

At Zanderij Crailoo tracks of 10 mammal species were found on the sand pads of the overpass and tracks of 9 species were found in the surroundings. At Slabroek tracks of 8 mammal species were found on the overpass and tracks of 9 species were found in the surroundings. At both sites tracks of Roe deer, Rabbit, Red fox, Hare, Hedgehog, European polecat, Pine marten, Red squirrel and Badger were found. At Zanderij Crailoo Roe deer and Rabbit were present every day and Red fox and Hare more than 75% of the days. At Slabroek Badger and Rabbit were present more than 75% of the days. Compared to other monitoring data from the Netherlands the use by Roe deer at Zanderij Crailoo is very high.

The results showed that crossing rates at Zanderij Crailoo were not necessarily less compared to overpasses without human co-use. However, overpass design seems important in this respect. At Slabroek a considerable number of species crossed less frequently compared to the control plots, which implies that they actively avoid the overpass. This difference might be a result of difference in width of the overpass or difference in design. Recreational co-use also affected the speed in which the animals passed and some species tended to use the overpass later in the day on busy days.

Discussion and conclusions

Our results may help improve decision-making on recreational co-use of wildlife overpasses and provide some practical guidelines for the design of such crossing structures. Still our results cannot provide the needed certainty for policy makers to what extend wildlife overpasses can be used before the impact on wildlife becomes too high. In the Netherlands this has led to ongoing debates on recreational co-use of wildlife overpasses. Recreational stakeholders use

the results from this study to back up their statements that recreational co-use should be allowed, while nature conservationists emphasize that it is not proven there is no impact. Therefore, we recommend increasing the knowledge about impacts. We also recommend that nature conservationists and stakeholders of outdoor recreation collaborate in early planning stages and provide integrated plans for increasing road permeability to both humans and wildlife.

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