

An overpass for amphibians – does it work?

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Abstract: In the Netherlands wildlife overpass “Groene Woud” is one of the first that aims to provide habitat connectivity for amphibians. In both the design and management of the overpass much attention has been given to create optimal conditions for amphibians. Besides a controllable groundwater level on top of the overpass, across the whole length of the overpass and its access ramps a wetland zone has been constructed existing of a chain of small pools. Water is pumped up to the top of the overpass and slowly released through the cascade of small pools towards bigger pools at the feet of the access ramps. The philosophy of these special adaptations is to maintain sufficient humid conditions to improve amphibian use throughout the dry season. The question we addressed is if those expectations are correct, i.e. whether the use of the overpass by amphibians is significantly improved in contrast with the situation that the humid conditions on the overpass are not artificially maintained. We monitored amphibians 1-2 times a week at the overpass and in the direct surroundings for three years (2006-2008). We analysed the impact of the overpass adaptations on amphibian use by: (1) comparing amphibian numbers in periods in which the humid conditions on the overpass were maintained with amphibian numbers in periods in which the water pump was not operating, and (2) comparing amphibian numbers in the wetland zone on the overpass with amphibian numbers in the dry zone on the overpass during periods that the water pump was operating. We found that, depending on general weather conditions, the adaptations to maintain a humid environment on the overpass and its ramps significantly improve overpass use by amphibians. As a result wildlife overpasses with special adaptations as implemented at the Groene Woud overpass may become an alternative, and less costly, measure than elevating roads to restore habitat connectivity for semi-aquatic species in wetland areas. Further research should focus in more detail on individual movements of animals to better quantify overpass use and qualify the role of the linkage in maintaining amphibian life cycles and population persistence.