

Lifelines for Ramat Hanadiv: the necessity of ecological corridors in Northern Israel

Theo van der Sluis, Michiel van Eupen, Naomi Apel, Albert Kaminer

Theo.vanderSluis@wur.nl; Alterra Wageningen UR, Wageningen, NL

keywords: Ecological network, spatial modelling, fragmentation, Israel

theme: Changing Mediterranean landscapes / Ecological networks in real landscapes

Abstract

Biological diversity is highly dependent on the quality, quantity, and spatial cohesion of natural areas. Fragmentation of natural habitats severely affects the abundance of species. A solution to this problem is the development of ecological networks, linking core areas of nature by means of corridors and small habitat patches. This paper presents the results of an analysis of the ecological network for Ramat Hanadiv, a protected area of some 400 ha. in Northern Israel. We assessed the impact of spatial developments, the development and expansion of two industrial zones just east of Ramat Hanadiv. We used the LARCH Landscape ecological model to assess, first, the long-term viability of the wildlife populations of Ramat Hanadiv, and secondly, to identify where the most important landscape connections or corridors are situated. We have selected species which are indicative of Ramat Hanadiv, and may be affected by fragmentation: six mammal species, one bird species, one reptile, and one butterfly species. Parameters required for modelling were collected such as habitat preference, home range, and dispersal distance. A habitat map was prepared in GIS based on maps and remote sensing data for the wider region.

Analysis shows, that only three species are viable in Ramat Hanadiv alone and that almost all require some exchange with surrounding populations, which is essential for maintaining biodiversity. In particular, the large mammal species, Roe deer and Mountain gazelle, are vulnerable to fragmentation and are likely to disappear in the long term. However, almost all species will decrease as a result of the scenario of industrial development. Specific defragmentation measures are important for Roe deer and Mountain gazelle, but will benefit all other species as well. The best measure to improve viability will be to ensure that corridors eastward are maintained as these are the true 'lifelines' for Ramat Hanadiv. The width of a planned corridor should be at least 100-150 metres wide. Landscape connectivity will remain sufficient to support biodiversity in the long term if with a corridor also a safe and functional crossing of the main road is developed.