

# Argali Sheep (*Ovis ammon*) Movement Corridors Between Critical Resources in Ikh Nart Nature Reserve, Mongolia

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## Abstract

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Understanding how animals move through a landscape can reveal corridors or narrow paths of movement that connect discrete parts of a landscape. Identifying corridors can be important for planning conservation activities, especially for threatened species. We synthesized information on the ranging behavior and distribution of argali sheep to quantify linkages and potential pinch points of movement between critical resources in Ikh Nart Nature Reserve, Mongolia. We used a cost-weighted distance approach to quantify the relative cost of movement between water sources (springs), which represent critical resources. We used values to map a corridor of movement and examined movement flow through the corridor using a circuit theory approach. We identified a corridor connecting all springs that covered 50.6 km<sup>2</sup>. Most of the corridor overlapped the reserve (77%) and reserve's core area (62%). A least-cost path between the furthest separated springs (18 km) was 26.4 km. Most movement flow through the corridor concentrated around springs, especially those in the southern and central portions of the corridor. The analysis also revealed several pinch points that represent a conservation concern. We recommend prioritizing activities at pinch points and extending protected area boundaries to encompass all springs to effectively protect the entire corridor.

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## Introduction

Effective population management relies on an understanding of how individuals move through a landscape (Wiens *et al.*, 1993; Kareiva & Wennergren, 1995; Crooks & Sanjayan,

2006). This is especially the case for large mammals, which often move great distances between food patches or other critical resources (Swihart *et al.*, 1988). The landscape 'matrix'