**SPATIO–TEMPORAL PATTERNS OF MAMMAL ROAD MORTALITY IN MIDDLE MAGDALENA VALLEY, COLOMBIA**

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Running title: *Mammal Roadkill in Middle Magdalena Valley, Colombia*

**Table S1.** General description of the surveyed route segments, landscape, management, anthropogenic features (urbanization level), and wildlife roadkill management measures.

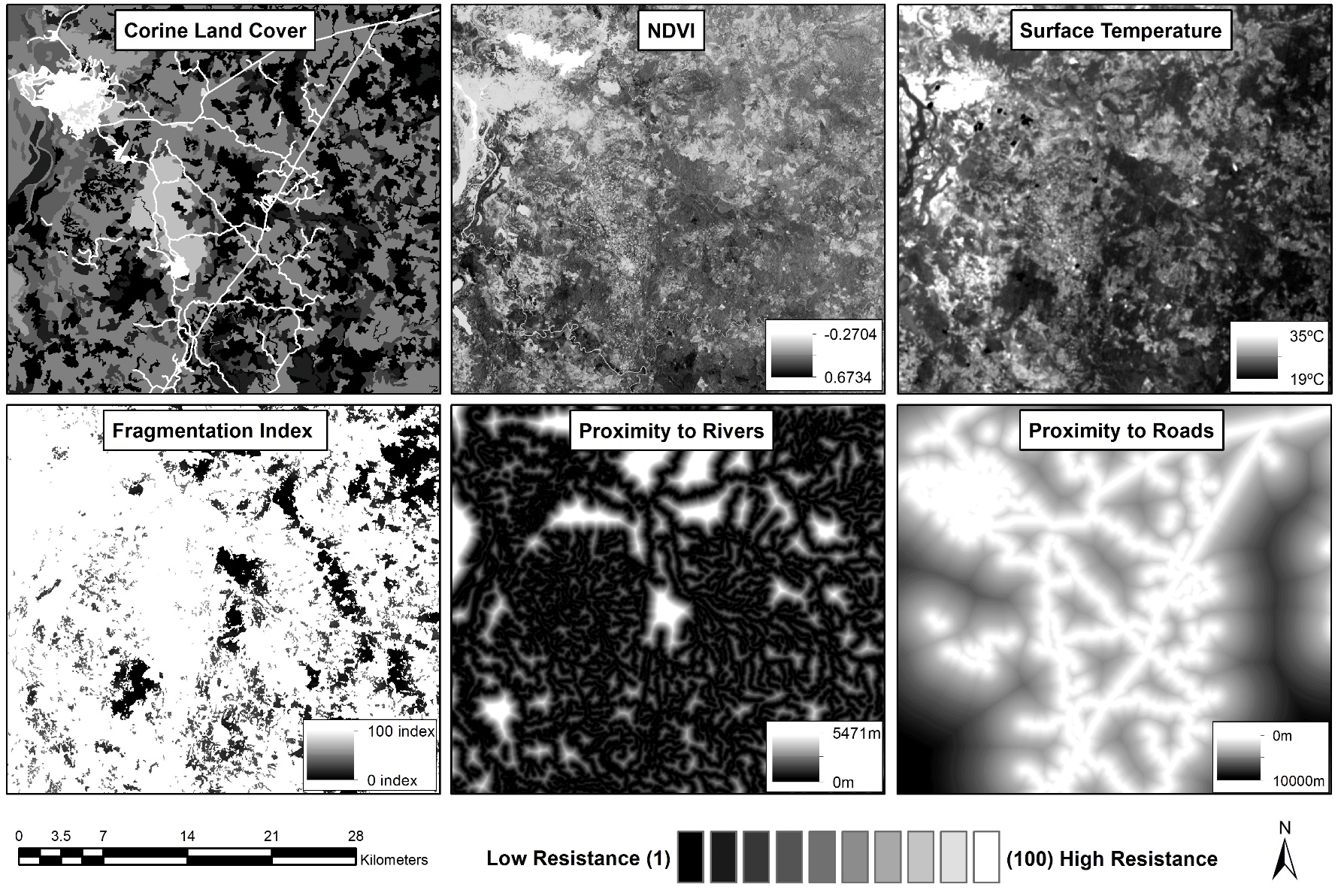
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Route** | **Segment description** | **Length** | **Landscape description** | **Urbanization level** | **Management measures** |
| DR01 | 2–lane paved road; narrow to absent shoulder, some roadside ditches; speed limit 80 km/h | 26 km | Smooth hills dominated by oil exploration and extraction areas, pastures, herbaceous and shrubby vegetation | Suburban | Warning signs |
| NR45 | 2–lane paved road; wide shoulder; discontinuous roadside ditches; speed limit 100 km/h | 18 km | Smooth hills and plains dominated by pastures, heterogeneous agricultural areas, herbaceous and shrubby vegetation, and forest patches | Rural | None |
| NR66 | 2–lane paved road; wide to absent shoulder, intermittent roadside ditches; speed limit 100 km/h | 31 km | Smooth hills dominated by pastures, heterogeneous agricultural areas, small forest patches, and dump and construction sites | Rural | None |

**Table S2.** Resistance values assigned to different landscape features in the study area.

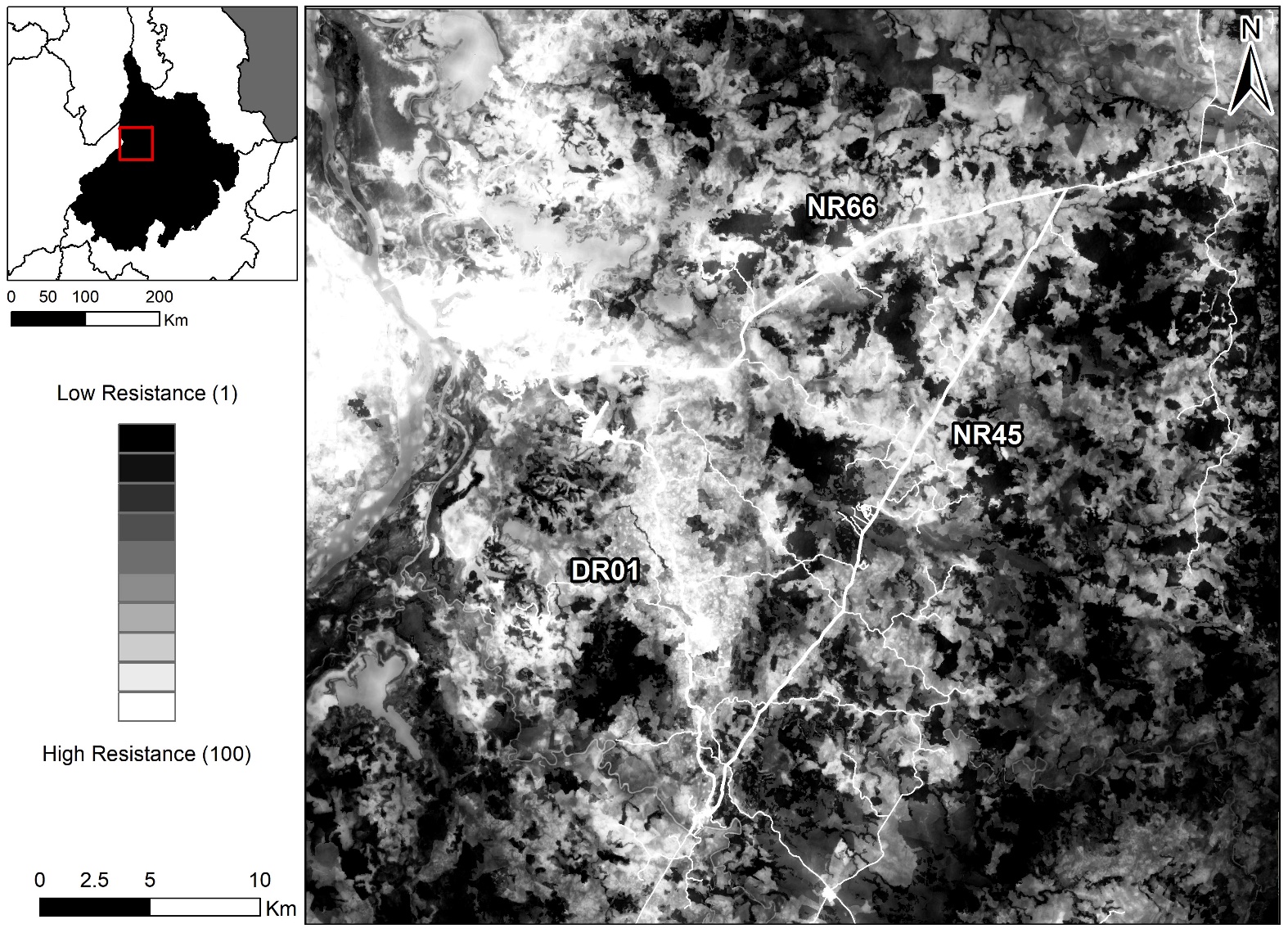
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Group** | **Corine Land Cover (CLC) class** | **Resistance Value** |  | **Fragmentation index** | | **Resistance Value** |
| Artificial surfaces | Continuous urban fabric | 100 |  | Less Fragmentation | 0–9 | 1–10 |
| Discontinuous urban | 90 |  |  | 9–15 | 10–20 |
| Industrial or commercial units | 100 |  |  | 15–21 | 20–30 |
| Road network | 100 |  |  | 21–26 | 30–40 |
| Airports | 100 |  |  | 26–32 | 40–50 |
| Mineral extraction sites | 70 |  |  | 32–39 | 50–60 |
| Green urban areas | 90 |  |  | 39–46 | 60–70 |
| Sport and leisure facilities | 90 |  |  | 46–54 | 70–80 |
| Agricultural areas | Permanent arboreal crops | 10 |  |  | 54–75 | 80–90 |
| Grassland prevailingly without trees and shrubs | 40 |  | More Fragmentation | 75–101 | 90–100 |
| Grassland with trees and shrubs | 20 |  |  |  |  |
| Crops mosaic | 30 |  | **Proximity to rivers (m)** | | **Resistance Value** |
| Grassland and Crops mosaic | 30 |  | Closer to river | 0–21.46 | 1–10 |
| Crops, Grassland and natural vegetation mosaic | 10 |  |  | 21.46–64.37 | 10–20 |
| Grassland and natural vegetation mosaic | 10 |  |  | 64.37–107.29 | 20–30 |
| Crops and natural vegetation mosaic | 10 |  |  | 107.29–171.66 | 30–40 |
| Forest and semi–natural areas | Forest | 1 |  |  | 171.66–236.03 | 40–50 |
| Gallery forest and riparian formations | 1 |  |  | 236.03–300.40 | 50–60 |
| Agroforestry | 10 |  |  | 300.40–386.23 | 60–70 |
| Herbaceous vegetation associations | 30 |  |  | 386.23–514.10 | 70–80 |
| Shrub areas | 10 |  |  | 514.10–793.92 | 80–90 |
| Secondary vegetation | 1 |  | Further from river | 793.92–5,471.61 | 90–100 |
| Water bodies | River | 40 |  |  |  |  |
| Inland wetlands | 50 |  |  |  |  |
| Large water bodies | 90 |  |  |  |  |
|  |  |  |  |  |  |  |
| **NDVI** |  | **Resistance Value** |  | **Proximity to roads (m)** | | **Resistance Value** |
| More greenness | 0.53–0.67 | 1–10 |  | Far from roads | 10,000–6,313.67 | 1–10 |
|  | 0.49–0.53 | 10–20 |  |  | 6,313.67–4,745.05 | 10–20 |
|  | 0.44–0.49 | 20–30 |  |  | 4,745.05–3,686.24 | 20–30 |
|  | 0.39–0.44 | 30–40 |  |  | 3,686.24–2,823.50 | 30–40 |
|  | 0.32–0.39 | 40–50 |  |  | 2,823.50–2,078.41 | 40–50 |
|  | 0.23–0.32 | 50–60 |  |  | 2,078.41–1,529.40 | 50–60 |
|  | 0.12–0.23 | 60–70 |  |  | 1,529.40–1,098.03 | 60–70 |
|  | -0.01–0.12 | 70–80 |  |  | 1,098.03–745.10 | 70–80 |
|  | -0.19––0.01 | 80–90 |  |  | 745.10–156.86 | 80–90 |
| Less greenness | -0.28––0.18 | 90 –100 |  | Closer to roads | 156.86–0.00 | 90 –100 |
|  |  |  |  |  |  |  |
| **Surface temperature (ºC)** | | **Resistance Value** |  |  |  |  |
| Less temperature | 19.96–23.81 | 1–10 |  |  |  |  |
|  | 23.81–24.18 | 10–20 |  |  |  |  |
|  | 24.18–24.55 | 20–30 |  |  |  |  |
|  | 24.55–24.91 | 30–40 |  |  |  |  |
|  | 24.91–25.22 | 40–50 |  |  |  |  |
|  | 25.22–25.59 | 50–60 |  |  |  |  |
|  | 25.59–26.01 | 60–70 |  |  |  |  |
|  | 26.01–26.57 | 70–80 |  |  |  |  |
|  | 26.57–27.42 | 80–90 |  |  |  |  |
| More temperature | 27.42–35.56 | 90–100 |  |  |  |  |

**Table S3.** Current density statistics from 100-m circular buffers around each roadkill location. Low landscape connectivity (< 0.50 amperes), high landscape connectivity (> 0.50, gray highlighted). \*Mortality events associated to roadkill hotspots.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Roadkill ID** | **Current density values (amperes)** | | | | |
| **Minimum** | **Maximum** | **Range** | **Mean** | **SE** |
| 1\* | 0.32 | 0.35 | 0.03 | 0.33 | 0.01 |
| 2\* | 0.31 | 0.34 | 0.03 | 0.32 | 0.01 |
| 3\* | 0.33 | 0.35 | 0.02 | 0.34 | 0.01 |
| 4 | 0.43 | 0.45 | 0.02 | 0.44 | 0.00 |
| 5 | 0.48 | 0.74 | 0.32 | 0.57 | 0.07 |
| 6 | 0.46 | 0.55 | 0.09 | 0.50 | 0.02 |
| 7 | 0.55 | 0.58 | 0.03 | 0.56 | 0.01 |
| 8 | 0.44 | 0.45 | 0.01 | 0.45 | 0.00 |
| 9 | 0.44 | 0.50 | 0.06 | 0.47 | 0.02 |
| 10 | 0.45 | 0.48 | 0.03 | 0.47 | 0.01 |
| 11 | 0.41 | 0.45 | 0.04 | 0.42 | 0.01 |
| 12 | 0.49 | 0.53 | 0.05 | 0.51 | 0.01 |
| 13 | 0.41 | 0.49 | 0.08 | 0.44 | 0.02 |
| 14 | 0.32 | 0.33 | 0.01 | 0.33 | 0.00 |
| 15\* | 0.35 | 0.40 | 0.05 | 0.38 | 0.01 |
| 16 | 0.41 | 0.53 | 0.13 | 0.47 | 0.03 |
| 17 | 0.51 | 0.57 | 0.06 | 0.55 | 0.02 |
| 18\* | 0.37 | 0.38 | 0.01 | 0.37 | 0.00 |
| 19\* | 0.39 | 0.39 | 0.00 | 0.39 | 0.00 |
| 20 | 0.42 | 0.43 | 0.02 | 0.43 | 0.00 |
| 21 | 0.42 | 0.42 | 0.00 | 0.42 | 0.00 |
| 22 | 0.52 | 0.58 | 0.06 | 0.55 | 0.01 |
| 23 | 0.44 | 0.45 | 0.01 | 0.45 | 0.00 |
| 24 | 0.30 | 0.34 | 0.03 | 0.32 | 0.01 |
| 25 | 0.62 | 0.68 | 0.06 | 0.64 | 0.01 |
| 26 | 0.62 | 0.65 | 0.03 | 0.64 | 0.01 |
| 27 | 0.61 | 0.67 | 0.06 | 0.63 | 0.01 |
| 28 | 0.47 | 0.52 | 0.04 | 0.49 | 0.01 |
| 29 | 0.44 | 0.47 | 0.03 | 0.45 | 0.01 |
| 30 | 0.32 | 0.39 | 0.06 | 0.34 | 0.01 |
| 31 | 0.38 | 0.44 | 0.06 | 0.40 | 0.02 |
| 32 | 0.37 | 0.38 | 0.02 | 0.37 | 0.01 |
| 33 | 0.50 | 0.65 | 0.15 | 0.57 | 0.04 |
| 34\* | 0.34 | 0.37 | 0.03 | 0.35 | 0.01 |
| 35\* | 0.33 | 0.35 | 0.02 | 0.34 | 0.01 |
| 36\* | 0.31 | 0.33 | 0.02 | 0.32 | 0.01 |
| 37\* | 0.31 | 0.33 | 0.02 | 0.32 | 0.00 |
| 38 | 0.40 | 0.47 | 0.07 | 0.43 | 0.02 |
| 39\* | 0.31 | 0.34 | 0.03 | 0.32 | 0.01 |
| 40\* | 0.32 | 0.33 | 0.01 | 0.33 | 0.00 |
| 41 | 0.38 | 0.50 | 0.13 | 0.41 | 0.03 |
| 42 | 0.31 | 0.33 | 0.01 | 0.31 | 0.00 |
| 43 | 0.42 | 0.46 | 0.04 | 0.43 | 0.01 |
| 44 | 0.53 | 0.57 | 0.04 | 0.55 | 0.01 |
| 45 | 0.57 | 0.64 | 0.07 | 0.61 | 0.02 |
| 46 | 0.49 | 0.49 | 0.00 | 0.49 | 0.00 |
| 47\* | 0.34 | 0.37 | 0.03 | 0.35 | 0.01 |
| 48 | 0.45 | 0.64 | 0.20 | 0.51 | 0.04 |
| 49 | 0.31 | 0.32 | 0.01 | 0.32 | 0.00 |
| 50 | 0.38 | 0.40 | 0.02 | 0.38 | 0.01 |
| 51 | 0.41 | 0.43 | 0.02 | 0.42 | 0.01 |
| 52 | 0.38 | 0.41 | 0.02 | 0.39 | 0.01 |
| 53 | 0.46 | 0.46 | 0.00 | 0.46 | 0.00 |
| 54 | 0.42 | 0.46 | 0.03 | 0.44 | 0.01 |
| 55 | 0.49 | 0.60 | 0.10 | 0.56 | 0.03 |
| 56 | 0.46 | 0.54 | 0.08 | 0.49 | 0.02 |
| 57 | 0.53 | 0.57 | 0.03 | 0.55 | 0.01 |
| 58 | 0.50 | 0.55 | 0.06 | 0.53 | 0.02 |
| 59 | 0.40 | 0.66 | 0.26 | 0.49 | 0.08 |
| 60 | 0.49 | 0.56 | 0.07 | 0.52 | 0.02 |
| 61 | 0.56 | 0.83 | 0.26 | 0.72 | 0.06 |
| 62 | 0.42 | 0.46 | 0.03 | 0.44 | 0.01 |
| 63\* | 0.33 | 0.35 | 0.02 | 0.34 | 0.01 |
| 64\* | 0.31 | 0.36 | 0.04 | 0.33 | 0.01 |
| 65 | 0.57 | 0.59 | 0.02 | 0.58 | 0.00 |
| 66 | 0.61 | 0.67 | 0.06 | 0.63 | 0.01 |
| 67 | 0.49 | 0.55 | 0.06 | 0.51 | 0.02 |
| 68 | 0.41 | 0.44 | 0.03 | 0.43 | 0.01 |
| 69 | 0.30 | 0.33 | 0.03 | 0.31 | 0.01 |
| 70\* | 0.33 | 0.35 | 0.03 | 0.34 | 0.01 |
| 71\* | 0.33 | 0.33 | 0.01 | 0.33 | 0.00 |
| 72 | 0.31 | 0.33 | 0.02 | 0.32 | 0.00 |
| 73 | 0.48 | 0.48 | 0.00 | 0.48 | 0.00 |
| 74 | 0.53 | 0.71 | 0.18 | 0.58 | 0.04 |
| 75 | 0.31 | 0.41 | 0.09 | 0.37 | 0.02 |
| 76 | 0.31 | 0.33 | 0.02 | 0.32 | 0.00 |
| 77 | 0.39 | 0.44 | 0.05 | 0.41 | 0.01 |
| 78 | 0.63 | 0.80 | 0.18 | 0.70 | 0.06 |
| 79 | 0.43 | 0.51 | 0.07 | 0.45 | 0.02 |
| 80 | 0.47 | 0.50 | 0.02 | 0.49 | 0.01 |
| 81 | 0.49 | 0.65 | 0.16 | 0.56 | 0.04 |
| 82 | 0.24 | 0.30 | 0.03 | 0.28 | 0.01 |
| 83 | 0.40 | 0.46 | 0.06 | 0.43 | 0.02 |
| 84 | 0.34 | 0.45 | 0.10 | 0.38 | 0.02 |
| 85 | 0.36 | 0.39 | 0.03 | 0.37 | 0.01 |
| 86 | 0.46 | 0.52 | 0.06 | 0.50 | 0.02 |
| 87\* | 0.31 | 0.33 | 0.02 | 0.32 | 0.01 |
| 88\* | 0.32 | 0.35 | 0.02 | 0.33 | 0.01 |
| 89\* | 0.33 | 0.34 | 0.01 | 0.33 | 0.00 |
| 90 | 0.43 | 0.47 | 0.04 | 0.46 | 0.01 |
| 91 | 0.43 | 0.47 | 0.04 | 0.45 | 0.01 |
| 92\* | 0.31 | 0.33 | 0.02 | 0.32 | 0.00 |
| 93\* | 0.38 | 0.44 | 0.06 | 0.42 | 0.01 |
| 94 | 0.38 | 0.42 | 0.04 | 0.40 | 0.01 |
| 95 | 0.40 | 0.86 | 0.46 | 0.59 | 0.10 |
| 96 | 0.62 | 0.63 | 0.02 | 0.62 | 0.01 |
| 97 | 0.46 | 0.52 | 0.06 | 0.50 | 0.02 |
| 98 | 0.42 | 0.44 | 0.02 | 0.43 | 0.00 |
| 99 | 0.64 | 0.64 | 0.00 | 0.64 | 0.00 |
| 100 | 0.77 | 1.34 | 0.57 | 0.94 | 0.13 |
| 101 | 0.45 | 0.48 | 0.03 | 0.46 | 0.01 |
| 102 | 0.54 | 0.56 | 0.02 | 0.55 | 0.01 |
| 103 | 0.47 | 0.50 | 0.03 | 0.49 | 0.01 |
| 104 | 0.58 | 0.63 | 0.06 | 0.60 | 0.01 |
| 105 | 0.43 | 0.46 | 0.03 | 0.44 | 0.01 |
| 106 | 0.47 | 0.57 | 0.10 | 0.51 | 0.00 |
| 107 | 0.39 | 0.43 | 0.04 | 0.41 | 0.01 |
| 108\* | 0.32 | 0.32 | 0.01 | 0.32 | 0.00 |
| 109 | 0.37 | 0.58 | 0.21 | 0.45 | 0.01 |
| 110 | 0.43 | 0.52 | 0.10 | 0.48 | 0.03 |
| 111 | 0.43 | 0.45 | 0.02 | 0.44 | 0.01 |
| 112 | 0.54 | 0.57 | 0.03 | 0.55 | 0.01 |



**Figure S1.** Landscape features used for createating a resistance surface of the study area. Spatial resolution of 30 m.



**Figure S2.** Resistance surfaces of the study area representing the hypothesized relationships between environmental features and multi–scale structural connectivity. Spatial resolution of 30 m.