Online Supplementary Material

**Figure S1.** Visualization of the interaction effect of PC3 × PC5 on relative canopy cover of *L. camara*. Decreasing cover of *L. camara* (arcsine sqrt and afterwards z-transformed values) along PC5 becomes evident for both cohorts of data when splitting the data by the median of PC3 (dashed line: PC3 > median; solid line: PC3 < median).

**Table S1.** Details of DISTANCE analysis of seasonal cattle and sheep/goat densities in 44 sampled quadrants. Given are best fitting models including key functions, series expansion, Akaike Information Criteria (AIC), \( \chi^2 \), Effective Strip Width (ESW), as well as numbers of detections (N), mean cluster size (\( \bar{Y} \)), density of individuals (D), standard error of density (D(SE)), percent coefficient of variation (V%), 95% confidence interval (CI 95%), and the density of clusters (Dg).

| Quad. | model         | AIC | \( \chi^2 \) | ESW | species | season | N  | \( \bar{Y} \) | D   | D (SE) | V%   | CI 95%   | Dg   |
|-------|---------------|-----|--------------|-----|---------|--------|----|-------------|-----|--------|-------|----------|------|
| C3d   | Halfnorm.-cosine | 33  | 0.3          | 53  | cattle   | dry    | 7  | 12.1        | 171.9| 101.8   | 59.2  | 48-616    | 9.3  |
|       |               |     |              |     |          |        |    |             |      |         |       |           |      |
|       |               |     |              |     |          |        | wet| 9           | 18.0 | 316.9   | 218.8 | 69.0      | 78-1282 | 12.0 |
|       |               |     |              |     |          |        |    | sheep/goat  | 5   | 8.8     | 717.0 | 538.7     | 14-591 | 6.7  |
|       |               |     |              |     |          |        |    | dry         | 4   | 6.2     | 99.4  | 106.0     | 11-915 | 5.3  |
|       |               |     |              |     |          |        |    | wet         | 7   | 17.4    | 71.1  | 50.9      | 71.6   | 18-283 | 3.1 |
|       |               |     |              |     |          |        |    | sheep/goat  | 3   | 15.3    | 379.7 | 1074.0    | 282.9  | 0-98  | 3.1 |
|       |               |     |              |     |          |        |    | dry         | 1   | 0.0     | 1.1   | 1.0       | 98.3   | 0-8   | 1.1 |
| D3c   | Halfnorm.-cosine | 31.2| 0.52         | 68  | cattle   | dry    | 5  | 14.4        | 20.3 | 13.7    | 67.6  | 5-83      | 7.3  |
|       |               |     |              |     |          |        |    |             |      |         |       |           |      |
|       |               |     |              |     |          |        | wet| 7           | 17.4 | 71.1    | 50.9  | 71.6      | 18-283 | 3.1  |
|       |               |     |              |     |          |        |    | sheep/goat  | 3   | 15.3    | 379.7 | 1074.0    | 282.9  | 0-98  | 3.1 |
|       |               |     |              |     |          |        |    | dry         | 1   | 0.0     | 1.1   | 1.0       | 98.3   | 0-8   | 1.1 |
|       |               |     |              |     |          |        |    | wet         | 2   | 0.0     | 7.1   | 4.2       | 59.2   | 2-77  | 7.2 |
| D3d   | Halfnorm.-cosine | 40.7| 0.34         | 20  | cattle   | dry    | 10 | 0.0         | 33.7 | 10.7    | 52.4  | 11-117    | 35.7 |
|       |               |     |              |     |          |        |    |             |      |         |       |           |      |
|       |               |     |              |     |          |        |    | sheep/goat  | 5   | 0.0     | 17.8  | 10.9      | 61.2   | 5-71  | 17.8 |
|       |               |     |              |     |          |        |    | dry         | 1   | 0.0     | 3.6   | 3.5       | 97.5   | 0.4-26 | 3.6 |
|       |               |     |              |     |          |        |    | wet         | 2   | 0.0     | 7.1   | 4.2       | 59.2   | 2-77  | 7.2 |
| E3c   | Halfnorm.-cosine | 31.2| 0.22         | 104 | cattle  | dry   | 8  | 13.6        | 84.8 | 61.8    | 72.9  | 21-344    | 5.5  |
|       |               |     |              |     |          |        |    |             |      |         |       |           |      |
|       |               |     |              |     |          |        |    | sheep/goat  | 4   | 11.5    | 52.1  | 33.8      | 64.9   | 14-196 | 2.8 |
|       |               |     |              |     |          |        |    | dry         | 2   | 8.5     | 11.7  | 12.6      | 107    | 0.8-161| 73  |
|       |               |     |              |     |          |        |    | wet         | 0   | 0.0     | 0.0   | 0.0       | 0.0    | 0.0   | 0.0 |
|     | Distribution | Lambda | ReLU | Cattle |          |          |          |          |          | Dry |          |          | Wet |          |          | Sheep/Goat |          | Wet |          |          | Sheep/Goat |          |
|-----|--------------|--------|------|--------|----------|----------|----------|----------|----------|-----|----------|----------|-----|----------|----------|------------|----------|-----|----------|----------|------------|----------|
| E3d | Uniform-cosine | 26.4 | 0.47 | 200    | cattle   | dry    | 3 | 16.3 | 17.5 | 12.6 | 72.2 | 3-89 | 1.1 | wet | 8 | 16.3 | 46.5 | 24.2 | 52.1 | 15-146 | 2.9 |
|     |              |        |      |        |          | sheep/goat | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |    | 0 | 0.0 | 0.7 | 0.7 | 95.8 | 0-6 | 0.36 |
| F3c | Uniform-cosine | 26.4 | 0.47 | 120    | cattle   | dry    | 5 | 7.4  | 22.0 | 137.0 | 62.4 | 6-83 | 3.0 | wet | 4 | 8.0 | 19.1 | 11.3 | 59.2 | 5-68 | 2.4 |
|     |              |        |      |        |          | sheep/goat | 0 | 0.0 | 9.5 | 5.1 | 53.2 | 2-91 | 3.8 |    | 3 | 5.3 | 0.0 | 0.0 | 0.0 | 0 | 0.0 |
| F3d | Uniform-cosine | 22.0 | 0.90 | 200    | cattle   | dry    | 3 | 12.7 | 13.6 | 14.9 | 110.2 | 2-112 | 1.1 | wet | 6 | 15.7 | 33.6 | 22.1 | 65.7 | 8-138 | 2.1 |
|     |              |        |      |        |          | sheep/goat | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |    | 1 | 0 | 2.1 | 2 | 95.8 | 0.3-17 | 0.36 |
| G3c | Uniform-simple | 39.5 | 0.47 | 99     | cattle   | dry    | 6 | 17.2 | 150  | 99.4 | 66.3 | 39-572 | 4.3 | wet | 7 | 16.4 | 40.0 | 24.9 | 62.3 | 10-156 | 5.1 |
|     |              |        |      |        |          | sheep/goat | 2 | 16.0 | 23.1 | 21.1 | 91.4 | 3-178 | 1.4 |    | 3 | 19.3 | 142.7 | 201.1 | 140.9 | 0-178 | 2.2 |
| G3d | Uniform-cosine | 27.6 | 1.00 | 101    | cattle   | dry    | 7 | 15.6 | 167.1 | 106.6 | 63.8 | 45-627 | 4.9 | wet | 6 | 12.0 | 23.6 | 16.2 | 56.8 | 8-165 | 4.2 |
|     |              |        |      |        |          | sheep/goat | 0 | 0.0 | 9.5 | 5.1 | 53.2 | 2-31 | 1.8 |    | 3 | 5.3 | 0.0 | 0.0 | 0.0 | 0 | 0.0 |
| H3c | Uniform-cosine | 8.8  | 0.78 | 80     | cattle   | dry    | 1 | 0.0 | 8.0 | 9.0 | 112.3 | 0.81-82 | 0.9 | wet | 2 | 5.0 | 8.9 | 8.2 | 92.2 | 1-78 | 1.8 |
|     |              |        |      |        |          | sheep/goat | 1 | 0 | 7.1 | 8.0 | 112.2 | 0.7-73 | 1.8 |    | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0.0 |
| B5c | Halfnorm-cosine | 79.3 | 0.19 | 174    | cattle   | dry    | 15 | 17.1 | 112.0 | 65.2 | 58.1 | 30-415 | 6.2 | wet | 21 | 12.3 | 101.5 | 59.2 | 58.8 | 30-348 | 8.6 |
|     |              |        |      |        |          | sheep/goat | 2 | 19.8 | 43.4 | 57.8 | 133.2 | 24-788 | 1.6 |    | 4 | 16.0 | 35.9 | 31.0 | 86.6 | 5.4 | 238 | 1.6 |
| B5d | Uniform-cosine | 36.0 | 0.84 | 100    | cattle   | dry    | 9 | 10.6 | 98.1 | 58.8 | 59.9 | 27-354 | 6.4 | wet | 9 | 6.9 | 32.6 | 19.5 | 59.7 | 10-111 | 6.4 |
|     |              |        |      |        |          | sheep/goat | 2 | 0.0 | 1.4 | 1.4 | 96.3 | 0-11 | 0.7 |    | 1 | 0.0 | 4.3 | 3.0 | 70.6 | 1-22 | 1.4 |
| C5c | Halfnorm-cosine | 44.9 | 0.33 | 101    | cattle   | dry    | 12 | 24.3 | 241.2 | 176.2 | 73.0 | 55-508 | 8.5 | wet | 16 | 10.4 | 105.2 | 60.5 | 57.5 | 31-352 | 11.4 |
|     |              |        |      |        |          | sheep/goat | 2 | 0.0 | 5.7 | 5.5 | 96.7 | 0.7-44 | 1.4 |    | 8 | 2.9 | 16.9 | 10.9 | 64.7 | 4-69 | 5.7 |
| C5d | Uniform-cosine | 36.9 | 0.75 | 125    | cattle   | dry    | 7 | 6.9 | 35.2 | 28.9 | 82.3 | 7-174 | 4 | wet | 11 | 6.6 | 66.7 | 34.7 | 52.0 | 21-212 | 6.3 |
|     |              |        |      |        |          | sheep/goat | 3 | 0.0 | 11.6 | 12.3 | 106.2 | 0-343 | 1.7 |    | 1 | 0.0 | 0.6 | 0.5 | 96.2 | 0-45 | 0.6 |
| D5c | Halfnorm-cosine | 38.7 | 0.36 | 103    | cattle   | dry    | 15 | 8.5 | 104.8 | 57.7 | 55.1 | 30-363 | 10.3 | wet | 13 | 8.2 | 88.8 | 58.0 | 65.3 | 23-345 | 8.9 |
|     |              |        |      |        |          | sheep/goat | 1 | 0.0 | 3.5 | 3.9 | 113.2 | 0-34 | 0.7 |    | 2 | 0.0 | 1.4 | 0.8 | 58.2 | 0-5 | 1.4 |
| D5d | Halfnorm-cosine | 21.9 | 0.68 | 139    | cattle   | dry    | 7 | 12.3 | 70.9 | 61.5 | 86.7 | 13-371 | 3.6 | wet | 5 | 14.2 | 28.6 | 25.5 | 89.1 | 5-162 | 2.6 |
|     |              |        |      |        |          | sheep/goat | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |    | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 | 0.0 |
| E5c | Uniform-simple | 33.9 | 0.95 | 110    | cattle   | dry    | 8 | 12.9 | 117.8 | 104.1 | 88.4 | 22-632 | 5.2 | wet | 6 | 27.5 | 296.5 | 246.3 | 119.3 | 20-2116 | 3.9 |
|     |              |        |      |        |          | sheep/goat | 1 | 0.0 | 1.9 | 1.8 | 96.5 | 0-15 | 0.6 |    | 4 | 15.3 | 123.2 | 148.6 | 120.6 | 9-1674 | 2.6 |
| E5d | Uniform-cosine | 43.7 | 0.45 | 122    | cattle   | dry    | 10 | 14.2 | 113.4 | 62.5 | 55.1 | 34-384 | 5.8 | wet | 6 | 12.9 | 117.8 | 104.1 | 88.4 | 22-632 | 5.2 |
|     |          |     |     |     |     |     |     |
|-----|----------|-----|-----|-----|-----|-----|-----|
|     |          | wet | dry | wet | dry | wet | dry |
|     |          |     |     |     |     |     |     |
| F5c | Uniform- | 37.1| 0.54| 126 | cattle | dry | 7  | 11.7| 60.9| 46.2| 75.7| 14-271| 4.7 |
|     | simple   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| F5d | Uniform- | 61.1| 0.35| 114 | cattle | dry | 10 | 13.0| 61.9| 41.5| 67.0| 14-277| 4.8 |
|     | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| G5c | Uniform- | 48.3| 0.42| 150 | cattle | dry | 10 | 13.0| 61.9| 41.5| 67.0| 14-277| 4.8 |
|     | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| G5d | Uniform- | 24.2| 0.53| 200 | cattle | dry | 3  | 19.7| 21.1| 15.6| 73.8| 4-107  | 1.1  |
|     | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| H5c | Uniform- | 25.0| 0.74| 200 | cattle | dry | 4  | 13.0| 18.6| 10.9| 58.8| 5-74   | 1.4  |
|     | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| H5d | Halfnorm-| 17.7| 0.54| 112 | cattle | dry | 3  | 11.3| 39.7| 40.6| 102.4| 5-305  | 1.9  |
|      | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| I5c | Halfnorm-| 22.3| 0.08| 44  | cattle | dry | 3  | 33.3| 246.9| 215.9| 87.4| 40-1508| 4.9  |
|      | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| B9a | Uniform- | 15.4| 0.87| 40  | cattle | dry | 1  | 0.0 | 1.8 | 1.7 | 95.8 | 0-14  | 1.8  |
|      | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| B9b | Halfnorm-| 19.3| 0.11| 16  | cattle | dry | 3  | 0.0 | 13.2| 13.0| 99.1 | 1-102 | 13.2 |
|      | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| C9a | Uniform- | 11.0| 0.82| 16  | cattle | dry | 2  | 3.5 | 31.3| 22.1| 70.6 | 6-167 | 8.9  |
|      | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| C9b | Uniform- | 8.8 | 0.78| 25  | cattle | dry | 1  | 0.0 | 8.5 | 9.6 | 112.3| 1-87  | 2.9  |
|      | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| D9a | Halfnorm-|      |     |     |     |     |     |     |     |     |     |        |     |
|      | cosine   |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
|     |          |     |     |     |     |     |     |     |     |     |     |        |     |
| D9b | Uniform- | 26.4| 0.47| 180 | cattle | dry | 3  | 24.3| 29.0| 24.3| 84.0 | 5-163 | 1.2  |
|   | Uniform-cosine | Halfnorm-cosine | Halfnorm-simple | Uniform-cosine | Halfnorm-simple | Uniform-cosine | Halfnorm-simple | Uniform-cosine | Halfnorm-simple |
|---|----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| E9a | wet | 6 | 9.0 | 21.4 | 13.4 | 65.5 | 6-78 | 2.4 |  
|     | dry | 7 | 17.9 | 44.6 | 31.9 | 71.5 | 8-205 | 2.5 |  
|     | wet | 6 | 17.9 | 38.2 | 25.5 | 66.6 | 9-162 | 2.1 |  
| E9b | wet | 5 | 14.0 | 25.0 | 15.1 | 60.5 | 6-100 | 1.8 |  
|     | dry | 4 | 5.0 | 7.1 | 5.3 | 74.1 | 1.5-35 | 1.4 |  
|     | wet | 4 | 5.0 | 7.1 | 4.8 | 66.7 | 2-29 | 1.4 |  
| F9a | wet | 6 | 10.0 | 66.3 | 43.1 | 65.0 | 17-258 | 7.1 |  
|     | dry | 5 | 14.0 | 25.0 | 15.1 | 60.5 | 6-100 | 1.8 |  
|     | wet | 5 | 14.0 | 25.0 | 15.1 | 60.5 | 6-100 | 1.8 |  
| F9b | wet | 2 | 3.0 | 7.1 | 4.8 | 68.1 | 2-31 | 2.4 |  
|     | dry | 2 | 3.0 | 7.1 | 4.8 | 68.1 | 2-31 | 2.4 |  
|     | wet | 1 | 0.0 | 7.1 | 6.9 | 97.6 | 1-56 | 1.2 |  
| G9a | wet | 8 | 6.3 | 62.9 | 46.0 | 73.2 | 15-271 | 8.5 |  
|     | dry | 4 | 5.0 | 7.1 | 4.8 | 66.7 | 2-29 | 1.4 |  
|     | wet | 4 | 5.0 | 7.1 | 4.8 | 66.7 | 2-29 | 1.4 |  
| G9b | wet | 10 | 7.9 | 70.7 | 32.8 | 56.2 | 20-240 | 11.8 |  
|     | dry | 2 | 3.0 | 7.1 | 4.8 | 68.1 | 2-31 | 2.4 |  
|     | wet | 1 | 0.0 | 7.1 | 6.9 | 97.6 | 1-56 | 1.2 |  
| H9a | wet | 6 | 12.0 | 134.5 | 150.8 | 112.2 | 17-1064 | 13.9 |  
|     | dry | 6 | 12.0 | 134.5 | 150.8 | 112.2 | 17-1064 | 13.9 |  
|     | wet | 3 | 6.7 | 40.3 | 59.9 | 148.5 | 1-1409 | 6.9 |  
| H9b | wet | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
|     | dry | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
|     | wet | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
| I9a | wet | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
|     | dry | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
|     | wet | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
| I9b | wet | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
|     | dry | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
|     | wet | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
| J9a | wet | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
|     | dry | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
|     | wet | 3 | 2.7 | 159.1 | 2856 | 179.3 | 0-9800 | 6.9 |  
| J9b | wet | 6 | 28.2 | 77.4 | 54.4 | 70.2 | 18-326 | 5.6 |  
|     | dry | 5 | 28.2 | 77.4 | 54.4 | 70.2 | 18-326 | 5.6 |  
|     | wet | 3 | 47.3 | 78.0 | 59.9 | 76.8 | 15-392 | 1.6 |  
| J9c | wet | 3 | 47.3 | 78.0 | 59.9 | 76.8 | 15-392 | 1.6 |  
|     | dry | 2 | 12.0 | 13.2 | 12.8 | 97.3 | 1-103 | 1.1 |  
|     | wet | 1 | 0.0 | 3.3 | 3.1 | 95.8 | 0-26 | 0.5 |  

**Note:** The table shows the results for different experiments with wet and dry conditions for sheep/goat and cattle, using Uniform-cosine and Halfnorm-cosine methods. The values represent different parameters measured in various conditions.
Questionnaire 1
Semi-structured questionnaire with questions asked to the respondents regarding the persistence and abundance of wildlife in the Mutara rangelands. Note that only the answers to questions 4 were analysed in this study.

Questionnaire
(The interviewees will be asked the following questions strictly in the given order)

1. At first we will request the interviewees to provide information on age, education level, gender, occupation (what do you do on this land), origin (local or stranger).
2. What wildlife species do you see (hear)?

Silhouettes will be presented to the interviewee

3. When did you last encounter that species on your land?
4. How often do you see that species?
5. Does this wild animal cause any damage?
6. What damage?
7. If crop is raided: What crop/livestock is raided?
8. How do you estimate the damage in % of expected yield?
9. Can you tolerate the species to be with your livestock/on your land?
10. Do you try to repel the wild animal?
11. In what habitat do you encounter this wild animal (garden, cattle ranch, riverine forest, bush and tickets)