**SUPPORTING INFORMATION**

Table S1. Total activity area size (over ~1.5 years) of the 21 reintroduced rhinos at two sites in IPZ in Gonarezhou National Park in 2021-2022. Based on a minimum of 30 annual locations to accurately estimate the KUD activity area, all rhinos had sufficient data. However, only rhinos with a number of locations above 80, i.e. 19 individuals, were used to estimate the MCP activity area to meet the minimum requirement of ~50 annual locations (Plotz et al., 2016). We give the number of individuals used to calculate the activity area size by category; when applicable, the number of individuals for calculating the MCP activity area between brackets.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Release site | Sex | Age | Number of individuals | Activity area  Mean ± SD (min. – max.) | | | Core activity area  Mean ± SD (min. – max.) |
| 95% KUD (*n* = 21) | 95% MCP (*n* = 19) | 100% MCP (*n* = 19) | 50% KUD (*n* = 21) |
| South | Female | Adult | 2 | 37.6 ± 19.2 (24.0 – 51.2) | 34.2 ± 28.5 (14.1 – 54.4) | 52.7 ± 38.2 (25.7 – 79.7) | 8.1 ± 4.4 (5.1 – 11.2) |
|  |  | Subadult | 2 | 49.4 ± 10.9 (41.7 – 57.1) | 52.1 ± 8.06 (46.4 – 57.8) | 65.8 ± 2.37 (64.2 – 67.5) | 13.0 ± 2.4 (11.3 – 14.7) |
|  | Male | Adult | 2 | 37.5 ± 19.2 (24.0 – 51.1) | 36.0 ± 12.5 (27.2 – 44.8) | 44.2 ± 23.3 (27.8 – 60.7) | 9.6 ± 3.0 (7.5 – 11.7) |
|  |  | Subadult | 1 | 25.2 ± *na* (*na – na*) | 16.3 ± *na* (*na – na*) | 36.6 ± *na* (*na – na*) | 4.7 ± *na* (*na – na*) |
| North | Female | Adult | 6 | 63.7 ± 17.6 (46.4 – 96.9) | 54.1 ± 21.9 (34.7 – 97.1) | 142.0 ± 54.5 (86.4 – 209.0) | 12.6 ± 4.1 (7.3 – 17.9) |
|  |  | Subadult | 1 | 84.7 ± *na* (*na – na*) | 147.0 ± *na* (*na – na*) | 163.0 ± *na* (*na – na*) | 16.2 ± *na* (*na – na*) |
|  | Male | Adult | 3 (1) | 77.9 ± 24.7 (50.6 – 98.6) | 43.7 ± *na* (*na – na*) | 95.1 ± *na* (*na – na*) | 17.1 ± 7.1 (10.3 – 24.4) |
|  |  | Subadult | 4 | 62.5 ± 9.8 (52.3 – 74.8) | 54.2 ± 9.69 (46.1 – 66.2) | 110.0 ± 44.3 (78.0 – 174.0) | 14.3 ± 2.5 (10.8 – 16.5) |

Table S2. Comparison of home range size of reintroduced black rhinos with previous studies

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Study area | Population status (at the time of the study) | Study period (monitoring time) | Area size (in km²) | Rhino density (inds / km²) | Fenced / unfenced | Home range size (in km²) range | Reference |
| Released populations | |  |  |  |  |  |  |
| Okavango Delta, Botswana | Reintroduced | 2014-2018 (4 yrs) | 15,000 | 0.009 (at release; including white rhinos) | Partly fenced | Annual range: 27-110 (MCP95)  Annual range: 48-281 (KUD95) | Pfannerstill et al. (2022) |
| Pilanesberg National Park, South Africa | Reintroduced | 1981-1995 (15 yrs) | 550 | 0.044 (at release) | Fenced | 28-63 (method unkown) | Adcock et al. (1998) |
| Gonarezhou National Park, Zimbabwe | Reintroduced | 2021-2022 (1.5 years) | 500 | 0.058 (at release) | Fenced | 24-98.6 (KUD95)  14.1-97.1 (MCP95)  25.7-209 (MCP100) | Our study |
| Etosha NP, Namibia | Reintroduced | 2005-2007 (2 yrs) | 368 | 0.02 | Fenced | 10.8-234.6 (MCP100)  7.1-220.2 (KUD95) | Göttert et al. (2010) |
|  |  |  |  |  |  |  |  |
| Established populations | |  |  |  |  |  |  |
| Kruger National Park, South Africa | Resident (reintroduced from 1971) | 2016-2018 (2 yrs) | 19,485 | 0.03 | Unfenced | Annual range: 15.9-88.4 (KUD90) | le Roex et al. (2019) |
| Serengeti National Park, Tanzania | Resident | 1974-1978 (4 yrs) | 12,920 | 0.05 | Unfenced | 43-133 (MCP) | Frame (1980) |
| Masai Mara Game Reserve, Kenya | Resident | 1971-1972 (~1 yr) | 1,530 | 0.07 | Not reported | 5.6-22.7 (MCP100) | Mukinya (1973) |
| Hluhluwe-iMfolozi Park, South Africa | Resident | 1962-1963 (< 1 yr) | 900 | Not reported | Fenced | 2-5 (method similar to MCP100) | Hitchins (1969) |
| 2004-2009 (6 yrs) | 0.24 | Mean annual range: 8.7-10.4 (MCP95)  Mean annual range: 2.1-19.0 (KUD95)  Mean annual range: 15.1-16.8 (KUD90) | Plotz et al. (2016) |
| Olduvai Gorge, Tanzania | Resident | 1964-1966 (3 yrs) | 440 | 0.16 | Unfenced | 3.6-90.7 (MCP100) | Goddard (1967) |
| Laikipia plateau, Kenya | Resident | Not reported | 400 | 0.25 | Unfenced | 15.0-54.0 (KUD90) | Brett et al. (1989) |
| Ngorongoro crater, Tanzania | Resident | 1964-1966 (3 yrs) | 264 | 0.32 | Unfenced | 2.6-58 (MCP100) | Goddard (1967) |
| 1981-1982 (~1.5 years) | Not reported | 12.5-69 (MCP100) | Kiwia (1989) |
| Ndumu Game Reserve, Mozambique | Resident (reintroduced between 1962 and 1970) | 1984-1986 (2 yrs) | 116 | 0.38 | Fenced | 4.3-14.3 (mean = 11.4; MCP100) | Conway et al. (1989) |
| Sweetwaters Rhino Sanctuary, Kenya | Reintroduced in 1989 | 1995 (4 months in dry season) | 93 | 0.2 (reported in Pfannerstill) | Fenced | 2.3-14.4 (mean = 7.7; MCP95; in dry season) | Tatman et al. (2000) |

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