

Reviewer comments to manuscript

Movement Patterns of Two Reintegrated African Elephant (*Loxodonta africana*) Herds: Transitioning from Captivity to Free-Living

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This is an important further study on reintegration of former captive elephants, to add to the rather sparse literature to date. The structure and experimental design, and the validity of findings are appropriate and well structured. The research questions are well defined in the introduction and the conclusions are linked and limited to the research question and results. The references are appropriate.

General Comments:

Here and there the grammar needs to be revised, but I made comments each time.

Sometimes you write a) and sometimes (a), which one is correct? I have not marked each time, so please check what the Journal requirements are and be consistent.

Abstract

Line 20 *Given the escalating challenges in captive elephant management,*

I would prefer the first word to be "With the escalating challenges....
Just sounds better?

Line 32 *.....reintegrated elephants demonstrated an adaptability*

Adaptability to what, the seasons? Environment? water points?

Line 54 *Although not new in southern Africa,*

What is not new, the studies or the reintegration? Unclear
Perhaps something like: "Although reintegration is not new in SA...."

Line 58 *Captive facilities are often ill-equipped to manage unwanted behaviours such as aggression and frustration, and to mitigate risk, may stop handling animals ...*

Something grammatically not quite right here. The captive facilities stop handling...?

"Keepers may stop handling...." Or in passive mode: "They are not handled any more or restrained further." or similar construction

Line 62 *..., leading to the conclusion that an animal is unmanageable*

Not sure what you want to say here. If it makes the animal unmanageable, then say so.
“Leading to the conclusion” could also imply wrong conclusion, or a suggestion

Line 71

You may want to add one or two references e.g.:

Chemical: Rasmussen LEL & Schulte B. 1998. Chemical signals in the reproduction of Asian and African elephants. *Anim. Reprod. Sc.* 53: 19-34

Auditory: McComb K, Moss C, Sayialel S, Baker L. 2000. Unusually extensive networks of vocal recognition in African elephants. *Anim Behav.* 59;1103-1109

Line 74 (*Mumby & Plotnik, 2018*)

Repetition??

Line 80 -82

You could add Goldenberg et al rather than Asian elephants:

I think you may find this paper relevant to your manuscript, and I feel you could integrate some of the results as comparison to yours, or at least reference it. It's one of the few on African elephants available.

Goldenberg SZ, Hahn N, Stacy-Dawes J, Chege SM, Daballen D, Douglas-Hamilton I, Lendira RR, Lengees MJ, Loidialo LS, Omengo F, Pope F, Thouless C, Wittemyer G and Owen MA (2021) Movement of Rehabilitated African Elephant Calves Following Soft Release Into a Wildlife Sanctuary. Front. Conserv. Sci. 2:720202. doi: 10.3389/fcsc.2021.720202

Is your behaviour paper not in print or in review?? Then you could add it?

Line 90 *The success of reintegration operations hinges on several factors, including the social dynamics of the elephant group, the age of the elephants, the method of reintegration, and the characteristics of the release site.*

What about the history of captivity?

Line 93 *Goldenberg et al 2021????*

Line 97 *The consensus is that adolescence is the optimal life stage*

As it does not seem the best for elephants, maybe don't use the word consensus, but rather say in some species as your references all refer to other species. I doubt that reintegrating a herd of adolescent elephants will be optimal.

Line 105 *Unbalanced bull hierarchies resulting in unusual elephant musth patterns, have been proven to contribute towards behavioural abnormality such as fatal encounters between elephants and white rhinoceros*

This implies there were fatalities on both sides, but it was not the case, only rhinos were killed, so perhaps rephrase.

Line 150 *This ability could explain the individual variation in movement patterns and home range sizes observed for elephants*

Does “this” refer to everything or only the last mentioned remembering location of herd members?? Not clear
Maybe: These abilities???

Line 171 *we wanted to determine whether they aligned with what literature has shown for their wild counterparts*

I find this phrasing a bit weird, maybe rephrase something like: whether they aligned with the patterns shown in literature for their wild counterparts ?

Line 172 *Wild elephants show seasonal and diurnal variation in their movement patterns such as larger home ranges and greater displacement distances in the wet season.*

This is a repetition from above, not sure if it should stay or not. Might depend on the editor

Line 176 *and how the utilisation of the reserve was exploited*

Exploited sounds negative and utilisation of the entire reserve is positive, please find a better wording

212 Table 1

Captive history SPGR *The elephants conducted elephant back safaris for 12 years*

I think its rather people than the elephants that conduct something, perhaps say the elephants were used for EBS, or a similar formulation?

For the remainder of the day, the elephant handlers lead the elephants out into the reserve to forage and returned them back into their stables at night.

Where they were free to roam under guidance?

Line 239 Table 2

Stables: *The elephants were not ridden; however, they were herded by the handlers during the day and locked up in individual stables at night.*

Where? On the reserve or in a boma?

Boma *The elephants were moved to an electrically fenced 1.7 ha, open-air boma#. They were allowed to roam free within a 5 km radius of the boma during the day and at night, they were closed in together*.*

#For international readers, please explain somewhere (Introduction or here) what a boma is in SA

*Back in the stables???

Line 251 Movement Data

African Wildlife Tracking GPS collars

You may need to provide more information here or in refs

Line 253 Same applies to Vectronic collar. You need to give specifications, especially if a patent
Most readers will not be familiar with this

Line 297 *For diurnal movement patterns, we calculated the mean distance travelled per second for each period of the day*

Is per second standard? Why not per minute? (Just for clarification). Seconds for such a large slow moving animals sounds very short

Line 321 *sizes during Phases 1 and 2.*

In Table 3 you have Part 1 and Part 2, but in Fig 3 and the text you mention Phase 1 and 2, which I think are the same? Change in the Table

Line 337 *Furthermore, the northern, eastern, southern, and western sections of the reserve were utilized during this Phase.*

Not sure what this means, as they also investigated north south, east and west during phase 1, so what is DIFFERENT in phase 2 ??
What do you mean by *furthermore*?

Line 350 *... of the reserve when they were just released (2015, wet season, 2016, dry season).*

Don't understand what you are explaining here. Does this mean during phase 1 (wet and dry seasons), as 2016 dry is not "just after release"?

Line 357. *During Phase 2, the elephants travelled through areas bordering one of the southern fence lines during wet, autumn, dry and spring seasons.*

This is not shown in Fig 5

Lines 371 -373 *Phases 1 and 2, the elephants travelled at significantly ($p < 0.0001$) faster speeds during the day (12:00 -14:00) and at dusk (18:00 - 20:00) than at dawn (05:00 - 07:00) and at night (22:00 – 02:00) The elephants also travelled at significantly faster speeds during Dawn than Night*

Upper or lower case? Please check for consistency

Line 390 **Figure 7** *SPGR elephants' average hourly displacements (+SD) 360 days post release (a) (Phase 1) compared to when free roaming on SPGR for 57 months (b) (Phase 2).*

A), a), or (a) ??? Please check for consistency

Line 508 *Additionally, the elephants' unfamiliarity with their new environment during Phase 1 could have overshadowed any of these environmental factors.*

Would the SPGR elephants not have been familiar with the environment from the EBS rides and walking with the guides between water sources (Fig 1)?

Line 526 *(Douglas-Hamilton, Krink & Vollrath, 2005; Leggett, 2006; Kikoti, 2009)*

Were these fenced areas in the references?? One a corridor (possibly), the other the Kunene region, is it fenced ???

Line 538 -541 *Thereafter, the elephants expanded their home range (5964-hectare) during the wet season where they utilised most parts of the reserve (Fig. 4). During Phase 2, the elephants continued to shift their focus towards different food and water sources across the different seasons (Fig. 4b). The elephants also had the largest home range size during wet season of Phase 2 (6054-hectare),*

Is it a name “wet season” (dry season, spring, autumn) or in general the wet season. Check for consistency.

Line 546 *Prior to their release (during the boma phase), the elephants were guided towards four water sources....*

Perhaps a “pers comm” or “own observation”, or where does this info come from?

Line 556 -560 . *During the dry season, the density of the water sources is less, therefore they are forced to move longer distances to try and locate new water sources, which*

would allow them to settle once they have found adequate sources. However, if they don't locate such sources, they need to return to sources they know or increase their distance of movement to search for other sources.

Are you especially using the present tense as it still applies today??? Or hypothetically? Otherwise use past tense as it happened a few years ago

Line 569 due to elephants' ability to remember the spatial location of other elephants

Or trying to avoid competition? Or becoming securer with more elephants present?

Line 527 ... displacement was investigated (Figs. 10 & 11)

What are the journal requirements, Fig. or Figs.?

Line 600 strategies to meet their physiological needs (thermoregulation), which they did not necessarily require during their time in captivity.

Do you have a reference or idea explaining why this may be different to captivity (where they could also move around during the day).

Line 612 This herd preferred to cross the open pans to water during dusk and night-time..

Perhaps somewhere an indication that KKR is much hotter with less vegetation cover for shade than SPRG????

Line 644 Both reintegrated herds showed the least movement at midday and increased movement during dusk and dawn,

Not sure this is entirely correct as the SPGR elephants moved faster, but displaced less over midday ? Or does movement refer ONLY to displacement?

Lines 657 When we **reflect** on what could have contributed towards the resilience of these reintegrated elephants, we **found** that appropriate release date (season),

Either past or present tense for reflect/reflected and find/found

Acknowledgements

Line 668 Furthermore, we would like to acknowledge TJ Steyn, owner of Shambala Private Nature Reserve (SPGR), and !Khamab Kalahari Reserve (KKR) for granting us access to the collar data of their elephant herds.

Either a comma, or "as well as" otherwise it reads as if TJ was owner of both

Appendix

Table A2 Animal Species KKR

The reserves also have number of large herbivores such as African buffalo, gemsbok

[More than one reserve???](#)

Line 821 **References**

Mole MA, DAraujo.... [Is this correct, a capital A??](#)