

ASSESSMENT REPORT:

Asian female elephant “Lucy” (alias “Skanik”)

Date: October 5-7, 2022
Location: Valley Zoo, Edmonton, Alberta, Canada
Performed by: Ingo Schmidinger on behalf of *FreeTheWild*

PART 1: IS LUCY FIT FOR TRAVEL

Aim

To carry out a range of medical and psychological observations on Lucy to help determine the cause of her undiagnosed respiratory issues, provide an appropriate course of treatment and suggest suitable locations to which she can be safely moved.

Methods

1. Observation of visible elephant body condition: get to know physiological aspects in general.
2. Observation of elephant behavior: psychological aspects observed and noticed during the course of the assessment.
3. Inspection of elephant holding areas and areas of elephant activities (during daily walk).
4. Observation of current husbandry management.

As the assessment on site lasted for 3 days, and as such must be seen as a snapshot of actual conditions and circumstances only, the team also relied on verbal answers to questions asked to Lucy’s caretakers and responsible persons, to obtain information on further husbandry aspects that could not be evaluated directly. Thus, this report is based on what has been observed by, and been told to the inspection team between the 5th and 7th October 2022.

Results

Referring to method 1:

Lucy clearly shows overweight. According to the Asian Elephant Body Condition Index (Morfeld et al.2016), her shape already ranks at Index 5. Description: ribs not visible, pelvic bone not visible, backbone not visible or difficult to differentiate, area alongside backbone is filled in giving a round appearance. Note: (1) highly underweight, (5) highly overweight.

Pressure sores on right body side (as preferred sleeping side), due to lateral recumbency on suboptimal substrate, at 3 spots: below ear, on elbow, and hip (latter is an older and healed lesion).

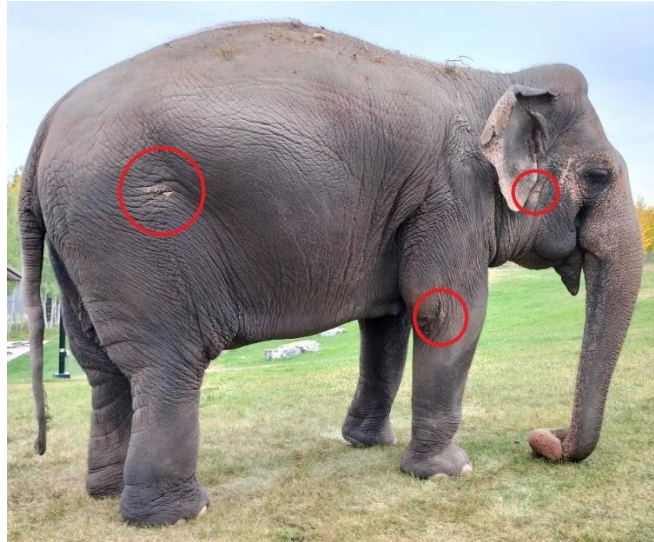


Fig. – Lucy’s general body shape and pressure sores

General mobility and joint flexibility during normal walk appeared rather a bit limited compared to how elephants usually move, although quite fast movements (here with regard to turnarounds) could be observed when doing *hide and seek* with her caretakers and when stimulated to.

Although her caretakers show huge efforts in providing footcare (including foot baths as mentioned by staff), some spots might still need more specific and target-oriented treatment, especially in regard to a still ongoing abscess in her right front foot (nail #3).

Her deformed molars don’t seem to bother her when masticating fodder of diverse texture such as hay, treats or small branches. Feces contain parts of fibre (bark of branches) of remarkable length, whereby boluses also seem to be smaller in size, but in good shape (examination of fresh boluses).



Fig. – Deformed molars



Fig. – Digestion of branches

Note: With currently 47 years of age, Lucy should not be referred to as a geriatric elephant, as mentioned in previous assessments and by several staff during the visit. It is more likely that elephants kept under specific husbandry conditions show a shorter life expectancy due to the environment they live in and the experiences they are going through. Besides the many discrepancies within this field, Lucy rather corresponds to the age-group of fully mature adult elephants.

Referring to method 2:

During the visit, Lucy showed gentle and responsive behavior. And although surrounded by a high number of non-familiar persons around her, including the performance of various hands-on health check activities, no indications for any stress-related behavior could be observed. Actually to the contrary by showing a fair interest in everyone.

Lower locomotive activity including smaller gaits (taking smaller steps if not forced to act faster) have been observed when moving up a light slope while additionally dragging her backfeet through the gras. Generally, both hindfeet show a medial swipe during unloading and loading of the feet while walking, starting at her knee joints (similar to a bow-legged walk).

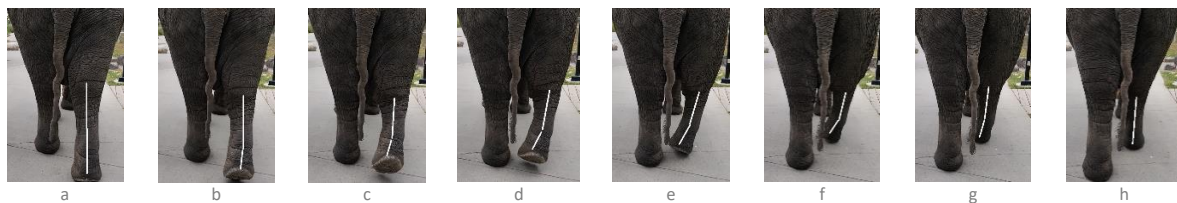


Fig. – Sequence of hindleg movements

Elephant activities inside the elephant main building are monitored by cameras and recorded during the night. Unfortunately 1 out of 2 cameras does not feature the recording due to technical issues (view of main pen and corridor not recorded). The other camera is installed above Lucy's night pen and her sleeping behavior on the sand pile is recorded each night. Lucy is on her own at night, whereby her activities are unknown if not spending her time within the night pen. Only the latest night recording could be analyzed (6th to 7th October), giving reason to believe that Lucy showed a kinda slow-motion stereotypic behavior during the night. It showed slow but regular side movements while in standing position and between periods of lateral recumbency. More research needed.

Note: During the visit she was controlled by her caretakers on a constant basic, making it sometimes difficult to observe Lucy's natural and own behavior. No access was given to outside yards during the entire assessment, thus behavior on both enclosures could not be observed (only within elephant main building, inside the "dome" and during the walk within the zoo). During the visit Lucy didn't choose to make use of the enrichment provided.

Referring to method 3:

Daytime temperatures during assessment: +50° F to +64° F, respectively +10° C to +17,8° C.

Elephant main building: heated by air- and floor heating system. Basically concrete flooring; night pen includes pile of sand, main pen floor is said to be coated with a rubber-like layer. A sand pile is provided in her night pen to support her in laying down, during lateral recumbency and when standing up.

Outside yards: A roughly 140 m²- yard at one end of the building, and one of ca. 1000 m² at the other end. The latter can be divided into 2 smaller yards. Roofed areas (canopys or similar) are not installed.

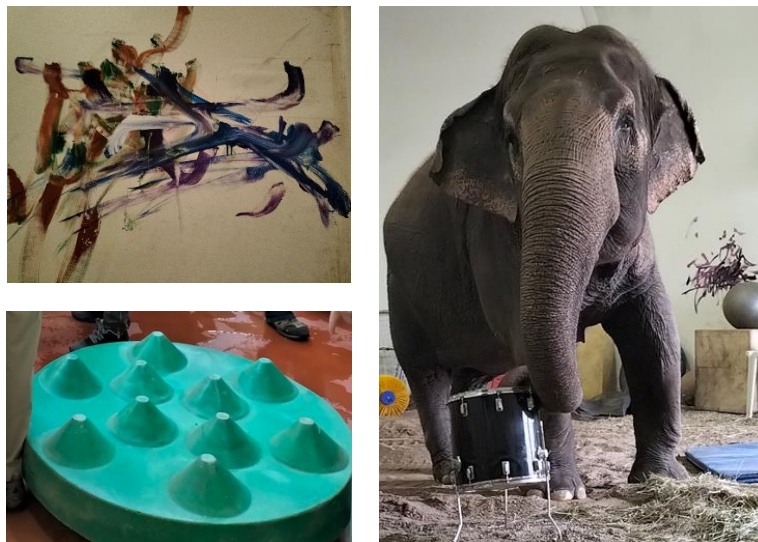
An additional non-permanent housing opportunity has been set up for Lucy within a linear distance of 130 m to the main elephant building. Access to this tented building can be provided during the day only, as it is no elephant-proofed construction. It is heatable and includes two fresh prepared sand/soil piles, beside various enrichment items and tools.

Main building (complete access by connecting pens and corridor)	250m ²
Bigger yard	1000 m ²
Small enclosure (yard)	140 m ²
Tented building (“dome”)	300 m ²
TOTAL AREA	1690 m²

Tab. – Constructed areas of elephant space (*GoogleEarth/rough estimate*)

Drinking sources: one solid water trough attached to the night pen of the elephant main building. During the day, and when inside the main building, drinking water is mostly provided from the hose by caretakers manually. The use of the solid water trough couldn't be observed.

Various enrichment items and sources are provided, e.g. hay net feeder, boomerballs, smaller tree trunks, acoustic drums, music to “dance” to, pencils for paintings (the latter reportedly no longer done). During the visit Lucy didn't make use of any enrichment (note: caretakers tried to get her playing drums).



Figs. – Examples of enrichment items and sources: former paintings, scratcher and drums

Referring to method 4:

For most of the current caretakers, Lucy, as well as Samantha (the African elephant previously kept at Edmonton Zoo), provided the basis for gathering experience in the management of elephants. The team shows huge dedication to their daily tasks. Extraordinary is the amount of Lucy's caretaker (8) and the time spent with the elephant during all daily working hours, as well as the extreme attention she receives from each team member.

Lucy is handled in a Direct Contact management (Hands On, Free Contact), whereby she is strictly directed (keeping her stimulated and engaged) at nearly all times, especially during daily walks through the zoo. Some of the caretakers behaved more cautious around the elephant than others. An *Elephant Manual* is available. Most likely, a comprehensive (including a practical) elephant caregiver training program, guided and implemented by a qualified person, does not exist.

Footcare is reportedly carried out on a regular basis, and treatment of main issues (here: abscess), couldn't be observed during the assessment.

Feeding routine: Timothy hay, branches (elm and apple as her favorites), supplements and treats. During the visit, thin apple branches of around 1m length have been provided, and caretakers assured that longer and thicker branches of various tree species are commonly provided as well.

Discussion

According to many similar cases, and also with respect to Lucy's behavioral state and despite the intense attention she currently receives from her caretakers, she is still able to adapt to a new environment if properly planned (including the support of her closest caretakers) and in case a proper rehabilitation program is in place for redeveloping autonomy, helping her to increase the level of welfare.

Unfortunately her respiratory issues have been addressed quite late and clear results are still open. Potential sanctuaries do exist, all within a reasonable and safe travel distance by road. These would likely be able to provide the highest level of specialized care as their focus is entirely elephant, but discussions would need to take place with each respective sanctuary to determine their capacity to receive Lucy into a social environment.

To provide a full perspective of options, an elephant-holding zoological institution might have to be taken into consideration if requirements can be provided similar to those of sanctuaries, including a milder climate.

Any travel option must be as stressless as possible, and various opportunities related to specific preparation regarding a possible move must be taken into account, e.g. familiarization to transport crates or certain vehicles, flat-bed trailers, sounds and movements in advance. A proper transport preparation training is mandatory. Accompanied by her caretakers, a well-planned route with multiple stops (possibly including frequent walks) and a low distance to end destination are just some examples for further discussion.

Panelist Conclusion

In general, Lucy appears fit for travel when looking at her visible body condition (from a superficial view only) and the sum of her behavior. There is either physical, nor psychological reason for not being able to travel. Furthermore, the current management system provides a feasible basis for familiarization and conditioning of travel processes.

The location of first choice would always be an elephant sanctuary – mainly due to its vast elephant space, the management that allows to redevelop autonomy and the chance to live a life with conspecifics. Moreover, elephant sanctuaries a) have the focus on the elephants, b) have the expertise to provide proper management and care of sick, older as well as geriatric or handicapped elephants, c) are experienced in rehabilitation processes, e.g. to develop autonomy, and d) have the possibilities to provide 24/7 care (all of which is usually not possible within another institutional system and to this extent).

But, as the question with regard to her respiratory issue is still not answered, although this ailment has been observed and mentioned now at least since 2008 (14 years), we have to assume that under the current circumstances, and as we still don't know what is happening to Lucy, she might not be fit for travel at this very moment. If we would have clarity on what is happening to her, we would be able to revise the entire situation. Thus, and in particular, the remaining questions are:

- Where does the underlying cause regarding her respiratory issue come from?
- Is the underlying issue treatable?

Only when we have this information, will we be able to know

- if Lucy is fit for travel. Aspects on this can be found within the previous paragraph.

PART 2: OVERALL HEALTH ASSESSMENT

Aim

To perform an in-depth assessment on the overall health and psychological wellbeing of Lucy with a view to provide treatment and long-term care options for any ailments and stressors that could be affecting her in day-to-day life.

Methods

1. Observations during the period of the visit, including what was already mentioned above.
2. Use of "Five Domains Model" to some extent and to learn more about the mental state.
3. Comparison with other proven elephant management systems.
4. Use of a scoring system (as already mentioned above).
5. Use of elephant management-specific questionnaire (not being used for scoring at this stage).

The "Five Domains Model" is a tool for guiding systematic and thorough assessments of animal welfare states. It focuses on identifying the animals' internal and external conditions that give rise to mental experiences, namely: the quality of its nutrition, the physical environment it lives in, its health status, and its behavioral interactions within its physical and social context. The sum of all mental experiences represents the welfare status of an animal at a given time. Therefore, the needed information is collected through a specific questionnaire, as well as through direct observation (looking at the aspects mentioned above), mainly to be able to provide a basis for target-oriented solutions to ensure Lucy's welfare and to meet elephants' essential needs.

Results (in addition to what has been already described above)

Body condition

Although Lucy's health records indicate a quite strict diet, she seems to keep on having issues of losing weight. Therefore, and most probably as one underlying reason regarding her overweight, the type and amount of treats - given during the entire day – should be reviewed as well.

Nasal discharge (exudate) could be observed regularly (within every 1 – 2 hours) and some of them in huge amount during the visit. A tumor formation at the uterus could be detected by the veterinarians.

In general, and her overweight and joint issues as partly responsible factors, her body shape shows some conformational abnormalities, especially regarding the positioning of her limbs and how she carries and distributes the body weight on her feet while walking or standing. In addition to her noticeable stiff walking behavior, she shows light tendencies to lean forward when in standing position, whereas during other observations she lightly leaned back (but rarely standing in a straight angle to the ground). Apart from masticatory movements, the region around her jaw area looks quite unusual, most probably related to her molar issues.



Fig. – Exudate from trunk during daily walk



Fig. – Jaw region

Behavior

As we had good weather conditions during the visit, caretakers took Lucy for a daily walk between 2-5 hours within the zoo. The rest of the time (19-22 hours) she spent inside the main building, respectively the tented building (dome) where she sometimes takes her afternoon nap. Lucy had no access to her outside yard during the visit.

Each day Lucy was surrounded by her caretakers, in some form or another, during nearly all working hours (11 hours in 2 caretaker shifts). Due to this amount of time and intensity spending with the caretakers, it was challenging to observe Lucy's natural elephant-specific behavior, as the mental stimulation performed by the team most often prevented Lucy from making her own choices. Hereof, and as a proper example, observation of the daily walking routine showed that most often various elephant-specific intentions went unnoticed, or have been redirected purposely (and if only for safety reason).

Unfortunately, and due to the technical issue of the second camera (malfunction of recording feature) attached above the main pen, observations of her behavior during the night couldn't be conducted, just at that moment when spending time on her own (13 hours/day) and also when somewhere else than inside the night pen.

Infrastructure

Main pen: the rubber-like layer on top of the concrete flooring supports a thorough clean-up. Unfortunately it does not have positive effect on elephant's feet as its degree of hardness is still similar to the one of the previous concrete flooring.

Generally, the main elephant building offers a low incidence of natural light as the entire construction only includes one row of roof windows. The construction of the tented building (dome) doesn't allow the incidence of natural light at all. Due to the lack of natural daylight, Lucy strongly depends on artificial lighting.



Fig. – Roof windows elephant main building



Fig. – Artificial lighting

The fine-grained texture of the sand pile provided inside the night pen can cause dust production (observed on night recordings during Lucy's sand bath activities) and could also be the reason for the development of her pressure sores. Sand of softer consistency (similar to the sand texture used at children's playgrounds) would support her more and not being too abrasive.

Lack of bathing opportunity (elephant pool) within the elephant infrastructure. Unfortunately there is also no other opportunity for bathing outside the elephant's infrastructure such as rivers or streams that could be used as an alternative.

Elephant management

During the visit, some situations have been observed, which certainly raises concerns regarding the safety of staff (i.e. standing on a ladder beside the elephant, kneeling below the elephant during footcare procedures). This is mainly the reason for mentioning the following:

The entire elephant caretaker team obviously provides great attention in terms of Lucy's well-being (also as already mentioned in the behavior paragraph). Generally, and regardless of whether staff has already gathered experience in working with elephants in the past (i.e. with both elephants Samantha and Lucy) or possibly be completely new to the field of elephant husbandry and care, staff should always be trained and act uniformly. Especially with respect to safety and the handling of elephants in a direct contact system, it is of utmost importance that every single person in charge of elephant care acquires the same basic knowledge to act consistently and according to related standards and guidelines – including safety protocols – also to create a working environment that is as safe as possible for the caretaker, as well as for the elephant. Its full understanding of each person involved is of great importance for the functional implementation of all future processes, no matter what kind of management system, and finally for the sake of elephant welfare.

Footcare: a grinder is used as a footcare tool. With regard to general footcare procedures, the use of a grinder should be reviewed as well. Elephant feet are highly sensitive to vibrations. Noise and dust formation might not be appropriate especially in the case of Lucy and with regard to her unknown respiratory issue. Proper footcare tools are on site, such as regular hoof knife, swiss hoof knife and rasp, and proper care can be provided in the exact same manner than using a grinder.

Discussion

With respect to most of the findings, impressions and also previous assessments, I believe some general but important aspects need to be highlighted:

Elephants, no matter if in the wild or cared for at any kind of animal facility, are extremely intelligent and highly social animals. By nature, they display complex cognitive capabilities, great intelligence, sentience and empathy. Altogether natural skills and behavior which are mixed up frequently by our own species, leading us to believe that elephants and humans form excessively and extraordinary strong bonds. But, humans simply cannot replace the social environment necessary for elephants' health and well-being. They have a highly social structure involving strong family bonds that can last a lifetime – towards other elephants. These highly regarded qualities can only be in conflict with the inadequate physical, social and species-inappropriate conditions generally found in captivity, finally resulting in poor welfare and mental state.

In the previous chapter I mentioned the compromise to bring Lucy to another elephant-holding zoological institution, but in milder climate, and only if a sanctuary won't be feasible at this stage. Other zoological options will have inherent spatial and social restrictions, but is the best alternative for Lucy if a sanctuary location is not viable.

Only in case the final decision should be made by responsible authorities to keep Lucy in Edmonton Valley Zoo, some kind of improvement could be achieved through creating a new living environment for her, that allows roaming within a more spacious environment and enables her to move without restriction. The current daily elephant management system could be improved to allow Lucy to move around freely within a secure environment. As the welfare of Lucy is of paramount importance, as well as the safety of caretakers, this type of management system would be a protected contact system.

A protected contact system is whereby the caretaker and the elephant do not share the same space thus creating a safe working environment for the caretaker and at the same time allowing the elephant freedom of movement and choice within that system. The benefits of protected contact have been shown to significantly improve the welfare of the elephant and the safety of the people working with the elephant. The training method used under protected contact is positive reinforcement. The use of negative reinforcement and dominance are not required in protected contact. The welfare of the elephant is enhanced under protected contact with the elephant displaying normal behavior patterns.

With this being said, the enclosures should be redesigned and enlarged significantly to create an environment where an improved enrichment program and management system can be implemented. As it has been stated that Lucy will be the last elephant at Edmonton Zoo, the new environment could be carefully designed such way that it can be dedicated to the husbandry of other animal species once the use for the elephant no longer exists.

As with any redesign this requires financial backing. Currently it is understood that the zoo has an opportunity to use a governmental grant of \$50m. By using a large portion of this grant, not only Lucy's life could be drastically improved, but also the safety of all caretakers can be ensured.

As an example, the current elephant habitat could be expanded by including the current sheep enclosures to the design, enlarging Lucy's living space to a minimum of 2 ha. Careful considerations must be taken in terms of indoor vs. outdoor facilities and their specific design, especially due to the local climate conditions. Find some rough but crucial points below, in regard to the required minimum infrastructure, devices and features, that need to be considered when planning her new home, enabling Lucy to express some physical and psychological needs as well as to stimulate her own natural behavior.

- **Outside enclosure, topography and substrate:** varying habitat where type of ground also varies between sand, soil, grass, stones, rocks, mud and stream. Needs to provide artificial shelter areas to protect Lucy from adverse weather (wind, rain, and snow).
- **Vegetation:** in outdoor and inside facilities for roaming and stimulation, providing shade and visual barriers as well as resting sites and for use as scratching objects.
- **Fencing:** solid, with horizontal steel rail, pipe or cable. Including safe zones for staff as well as public.
- **Elephant pool:** Lucy must have regular access to her pool that allows to bathe herself, being large and deep enough for her to lie over in and to provide her the opportunity to completely submerge herself. A pool is a highly important part of an elephant environment with access at free will and must not be shared with other species within the zoo.
- **Elephant inside facility:** proper heating system (including hot air curtains or similar), sufficient ventilation (air circulation) and adequate lighting (natural light) as well as direct access by specific type of vehicles. Comprised of minimum two pens designed to allow modification (e.g. single pen use or connection of all areas). Free access to indoor and outdoor.
- **Flooring:** ground with drainage and use of sand bedding, with only some carefully specified concrete areas (e.g. at medical training wall).
- **ERD/chute:** restricts the elephant's movements while allowing caretakers access for medical care. Integrated within the inside as well as the outside elephant infrastructure.
- **Medical training wall:** integrated within the design of pen- and outside enclosure barriers.
- **Drinking devices:** Lucy must have constant access to fresh drinking water inside pens and outside enclosures.
- **Specific enrichment:** food-based-, structural-, cognitive- and olfactory enrichment.

On a final note, and simply said, adequate infrastructure and proper implementation of protected contact management techniques are essential for improving elephant welfare conditions. With such conditions provided, Lucy could also be trained to permit all existing husbandry procedures through a protected contact training, finally providing the same access to the elephant as within the direct contact system, to ensure and maintain all types of medical- and routine body care procedures.

Even the distance that she's currently walked through the zoo at most of her days could easily be covered by herself on enlarged enclosures, but with the freedom to choose, thus giving her the chance to develop elephant-specific behavior based on autonomy and supporting her needs of natural elephant locomotion.

Panelist Conclusion

The following has to be mentioned as part of my conclusion, as it highlights again some of the most significant aspects with respect to elephant welfare (= Lucy's welfare), which are always associated with the mental state of each individual.

Apart from existing deficiencies regarding Lucy's husbandry environment and management, it is also crucial to highlight her current living conditions in terms of being kept as a solitary elephant. Her general conditions differ from those for which elephants are actually adapted. Elephants in an artificial environment do not have access to many of their most basic requirements such as sand, extensive mud bathes, naturally shaped scratching opportunities, and water for bathing at free will, and are, due to human management, often enough not allowed to socialize with other elephants, all of which are necessary for physical and psychological health and welfare. By nature, and by keeping elephants in an artificial environment, humans automatically fail to meet elephants' essential social, spatial, and also feeding requirements which inevitably results in reduced welfare and health.

Having said this, and in case the decision should be made for Lucy staying at Edmonton Valley Zoo, it would still mean a compromise. And as a consequence, all efforts must be taken to address Lucy's needs by providing her the best species-appropriate environment and management possible, taking into account all aspects which are a) critical for recovery, and b) of utmost importance in the life of any elephant.