

## Appendix 1. Elephant behavioral ethogram.

Category	Behaviour	Definition
<b>Solitary</b>		
	Stand	Upright and stationary, not performing any other identified behavior
	Locomote	Non-stereotypic forward or backward movement over one body length, not performing any other identified behavior
	Rest	Lying down, alert or eyes closed
	Feed	Manipulation and consumption of food
	Drink	Ingestion of water
	Eliminate	Voiding feces or urine
	Self-directed	Spraying mud or dust on body, scratching body with foot or trunk or on any surface
	Obj Manipulation	Examination and manipulation of an object with trunk, mouth, or tusks
	Tusking	Digging with or rubbing of tusks on logs or other substrate
	Other	Any solitary behavior not listed on ethogram
<b>Stereotypy</b>		
	Sway	Standing, moving from side to side at least three times in a row
	Bite bars	Chewing or knowing on bars
	Head bob	Movement of the head up and down in a repetitive motion
	Pace	Moving around enclosure on a set path, at least three repetitions are required to consider a behavior pacing
	Trunk toss	Standing, extending and withdrawing trunk at least three times in a row
	Throw faeces	Spraying faecal material on body or tossing it in the air
<b>Affiliative or neutral social behaviours</b>		
	Approach	Movement to within one body length of conspecific
	Trunk touch	Contact of the trunk with a conspecific in a nonaggressive manner
	Twining trunks	Gentle overlapping of trunks with a conspecific
	Sentinel	Standing proximate or in contact with another elephant that is lying down for at least five seconds
	Leave	Movement to more than one body length away from conspecific without displacement
<b>Antagonistic social behaviours</b>		
	Displace	Recipient moves one body length from current location within three seconds after conspecific approaches
	Avoid	Recipient moves one body length from current location prior to conspecific approach
	Drive	Proximate elephant places head against rump of conspecific and pushes
	Ear flap/threat	Ear held out perpendicular to head, oriented to conspecific, human, or change in the environment
	Push	Lunging at a proximate conspecific from a stationary position and making contact with head or tusks on recipient
	Strike	Forceful contact of conspecific with body, trunk, object held by trunk, or foot
	Bump	Forceful pressure with the hip against conspecific
	Spar	Mutual head to head contact between two elephants using trunks, tusks, or head for at least five seconds
<b>Proximity</b>		
	Contact	Any part of elephant touching conspecific
	Proximity	Less than one body length from conspecific
	Distant	More than one body length from conspecific
<b>Location</b>		
	Area 1	Section of outdoor habitat farthest from barn, where training occurs
	Area 2	Section of outdoor habitat closest to water feature
	Area 3	Section of outdoor habitat closest to barn
	Area 4	Section of outdoor habitat through which elephants are shifted from barn to exhibit, elephants are not visible to the public
	Area 5	Large indoor area where elephants are viewed by public
	Area 6	Small indoor area where elephants are not visible to public
	Area 7	Outdoor paddock, not visible to public