SOURCES PART 1

CHACMA BABOON ECOLOGY, BEHAVIOUR AND CONSERVATION

No.	Quote	Context	Research / Source	Link
1	**Chacma baboon is a crucial seed disperser.** **Chacma baboons are not restrained by fencing in the same way other large dispersers are, and, as such, are responsible for the seed dispersal of a wide variety of plant species over a much larger area.** **Also, baboons can be messy eaters and when foraging upon trees will often knock off leaves**	Chacma baboons are capable of dispersing at least 24 different seed species. This represents a broader range of seed species than those dispersed by a variety of birds, reptiles, or other mammals in the subtropical thicket, and nearly five times the number dispersed by domestic goats. These findings suggest that chacma baboons	Tew E. et Al, 2018. *The Contribution of the Chacma Baboon to Seed Dispersal in the Eastern Karoo, South Africa*. South African Journal of Wildlife Research 48(2)	(PDF) The Contribution of the Chacma Baboon to Seed Dispersal in the Eastern Karoo, South Africa

	and fruit which antelope and other wildlife below feed on.	play a crucial role as seed dispersers.		
2	***'Sentience'* is now part of recognised within Norms & Standards for other species (elephant (2008/2023) and lions (2023))**	Sentient; the ability to have feelings. The capacity for a creature to experience sensations & emotions. It is essential to protect all six species of indigenous primates in South Africa.	Dewhirst, S. and Munro, S. for the Primate C.A.R.E., 2024. *South Africa's Primates; Threatened & in Need of Protection*. Presentation to the Ministerial Wildlife Wellbeing Forum	South Africa's Primates; Threatened & in Need of Protection
3	**Non-human animals are indeed conscious. They have the neuroanatomical, neurochemical, and neurophysiological substrates of conscious states along with the capacity to exhibit intentional behaviours. Humans are not unique in possessing the neurological substrates that generate consciousness. Non-human animals, including all mammals and birds, and many other creatures, including octopuses†,**	In 2012 prominent international group of cognitive neuroscientists, neuropharmacologists, neurophysiologists, neuroanatomists, and computational neuroscientists gathered at The University of Cambridge to reassess the neurobiological substrates of conscious experience in human and non-human animals. The outcome was the Cambridge	Low, P. 2012. *The Cambridge Declaration on Consciousness*. Proceedings of the Francis Crick Memorial Conference, Churchill College, Cambridge University, July 7, 2012, pp 1-2.	CambridgeDeclarationOnConsciousness.pdf

	also possess these neurological substrates.	Declaration on Consciousness		
4	**All fish, other vertebrates, cephalopod molluscs and decapod crustaceans are sentient.**	Most people consider that they have moral obligations to many animal species.	Broom, D.M. 2024. *Sentience*. In: Encyclopedia of Animal Behavior, 3rd Edition, ed. Brown C., 4 pages.	Broom 2024 Sentience
5	**Baboons and humans have a genetic similarity of 94%.**	Baboons are the world's largest monkeys. Easy identifiable for their long snouts and large canine teeth, they have powerful jaws and, like humans, long fingers and opposable thumbs. From head to bottom, male baboons can grow up to nearly 90 centimetres, they reach about 70 cm in height and weigh between 15 and up to over 35 kilograms.	**Amboseli Baboon: 40 years Research Project. University of Notre Dame**	Amboseli Baboon Research Project // Amboseli Baboon Research Project // University of Notre Dame
6	**Chacma baboons have a significant role in altering the landscape. They can displace about 11.000 rocks per ha per year. By moving rocks, they expose and make larvae and insects**	Chacma baboons function as zoogeomorphic agents through their role in rock displacement during foraging activities. Baboon-induced rock movement along belt	Maré C. et Al, 2019. Rocking the landscape: Chacma baboons (Papio ursinus) as zoogeomorphic agents. Geomorphology Volume 327, 15 February 2019, Pages 504-510	Rocking the landscape: Chacma baboons (Papio ursinus) as zoogeomorphic agents - ScienceDirect

	available for other wildlife to eat.	transects established across a catena in the semi-arid Karoo region of South Africa was measured. Chacma baboon was found to play an important geomorphic role and serve as a keystone species as they are the only species in this environment to intentionally move rocks in this way.		
7	**Baboons play a pivotal role in seed dispersal and potential seed germination of fynbos post-fire. Baboons are often seen in newly burnt areas foraging on seeds and other foods exposed by the burning process.**	Baboons access different food types by digging at various depths. Food items such as roots, rhizomes, insects, and seeds typically require shallow digging or soil surface scraping, while obtaining tubers and bulbs requires relatively deep holes. Digging helps loosen the soil and increase oxygen availability to microorganisms and burrowing animals. It also helps to distribute nutrients and, in some	NCC – Environmental Services, Cape Peninsula Baboon Management. Ecological Role of Baboons	NCC- Ecological Role of Baboons

		cases, promote root growth.		
8	**Keystone species have a disproportionately large effect on their natural environment and play a critical role in maintaining the structure of an ecological community.**	Maintaining key ecological processes is a strong argument for conserving biodiversity, and this should extend to preventing the local extinction of keystone species. If those single species are removed, dramatic changes result in the varieties and population densities of all the other species in the community.	Maré C. et Al, 2019. Rocking the landscape: Chacma baboons (Papio ursinus) as zoogeomorphic agents. Geomorphology Volume 327, 15 February 2019, Pages 504-510	Rocking the landscape: Chacma baboons (Papio ursinus) as zoogeomorphic agents - ScienceDirect
9	**Habitat fragmentation can be extremely detrimental to population size and dynamics and metapopulation survival.**	Habitat fragmentation causes local animal populations' extinction by decreasing the viable "core" habitat area and increasing edge effects. It is widely accepted that larger fragments make better nature reserves because core-dwelling species have more suitable habitats.	Ewers RM, Didham RK. *The effect of fragment shape and species' sensitivity to habitat edges on animal population size.* Conserv Biol. 2007;21(4):926–936.	The Effect of Fragment Shape and Species' Sensitivity to Habitat Edges on Animal Population Size- Society for Conservation Biology
10	**Primates, in particular, are greatly affected by**	Human population expansion has left	Lee PC, Priston NEC. 2005. *Human attitudes to primates:*	Human attitudes to primates: Perceptions of pests, conflict, and consequences for primate conservation

	anthropogenic land alteration and land use conflict.	many animal species with decreased available habitat or forced them into direct competition with humans. Primates are in direct competition with humans and have become known as a pest species, suffering considerable persecution.	*perceptions of pests, conflict, and consequences for primate conservation*. In: Patterson JD, Wallace J, editors. Commensalism and conflict: The human-primate interface. Alberta: American Society of Primatologists; 2005. p. 1–23	
11	**About 60% of primate species face extinction, and about 75% have declining populations due to escalating human pressures.**	Nonhuman primates are vital to ecosystems, human cultures, and understanding human evolution. Declines are linked to habitat loss from industrial agriculture, logging, mining, infrastructure development, hunting, the illegal pet trade, climate change, and diseases. These threats often combine, worsening population declines. Immediate global action is necessary to address primate conservation and the need to raise awareness of the ecological and societal	Estrada, A. et Al, 2017. *Impending extinction crisis of the world's primates: Why primates matter*	(PDF) Impending extinction crisis of the world's primates: Why primates matter

		impacts of primate loss.		
12	**Perceptions of the local people regarding the wildlife in the area are important in determining whether the situation qualifies as a conflict issue.**	Persecuted species are those less charismatic fauna that are believed to be abundant. The chacma baboon (Papio ursinus) is one such animal.	Lee P C., Priston N.E.C. 2000. Human attitudes to primates: Perceptions of pests, conflict, and consequences for primate conservation	(47) HUMAN ATTITUDES TO PRIMATES: PERCEPTIONS OF PESTS, CONFLICT AND CONSEQUENCES FOR PRIMATE CONSERVATION
13	**Chacma baboons are crucial in mitigating the effects of climate change on the distribution of plant communities and should not be persecuted.**	As climate change shifts the distribution of plant communities, baboons become increasingly important as seed dispersers. Their vital role underscores the importance of conserving chacma baboons rather than persecuting them.	Tew E. et Al, 2018. *The Contribution of the Chacma Baboon to Seed Dispersal in the Eastern Karoo, South Africa*. South African Journal of Wildlife Research 48(2)	(PDF) The Contribution of the Chacma Baboon to Seed Dispersal in the Eastern Karoo, South Africa
14	**Anthropology is by definition anthropocentric. It cannot be denied that, in some cases, anthropologists play a significant role in undermining the work of conservationists. Because the values underlying**	In this paper, Dr Kopnina compares self-interest to humanistic altruism and biospheric altruism. While the first two values are anthropocentric in assigning instrumental value to nature, biospheric altruism	Kopnina, H. 2010. *Anthropocentric Bias in Anthropology: Re-Examining Culture/Conservation Conflict*	Anthropocentric Bias in Anthropology: Re-Examining Culture/Conservation Conflict | Helen Kopnina - Academia.edu

	anthropocentric support of the environment are utilitarian, this approach is less likely to act to protect the environment. This attitude undermines the conservation focus.	recognises the intrinsic value of the environment or species outside of human interests. People with ecocentric orientations are much more likely to act upon their values, attitudes, and beliefs to protect the environment than those with anthropocentric orientations.		
15	**Anthropological advocacy of indigenous rights, and support for development enterprise, on the part of applied anthropologists, results in anthropocentric bias in anthropology. While applied anthropologist claims to be morally engaged, this engagement rarely supports biospheric altruism when remains in favour of a utilitarian approach to plants and animals.**	The strong claims that all indigenous people are by nature conservationists can easily be attacked by counterexamples—species extinctions due to human hunting in the prehistoric past and indigenous peoples who grant large timber cutting or mining concessions on their lands.	Kopnina, H. 2012. *Re-examining culture/conservation conflict: the view of anthropology of conservation through the lens of environmental ethics.* In International Business Management Studies (IBMS), The Hague University of Applied Science, The Netherlands.	(PDF) Re-Examining Culture/Conservation Conflict: The View of Anthropology of Conservation Through the Lens of Environmental Ethics
16	**South Africa's laws are failing to protect**	A moratorium on the trade, hunting, and	EMS Foundation and Ban Animal Trading. 2023. *Our Kin*	Our Kin Discarded: South Africa's Cruel and Gratuitous Trade and Killing of (Nonhuman) Primates

	(nonhuman) primates and are not preventing the negative consequences of South Africa's so-called legal trade in (nonhuman) primates and their body parts.	killing of South African indigenous (nonhuman) primates needs to be put in place immediately.	*Discarded: South Africa's Cruel and Gratuitous Trade and Killing of (Nonhuman) Primates*. Investigative Report.	
17	**Early adversity in life negatively impacts survival and social integration.**	In both humans and animals, early-life adversity strongly predicts adult health and lifespan. A study of 196 wild female baboons found that females experiencing three or more adverse conditions during early life had a median lifespan of about 18 years vs. 28. These females were also more socially isolated in adulthood, suggesting social factors partly explain the link between early adversity and reduced survival.	Tung, J. et Al. 2016. *Cumulative early-life adversity predicts longevity in wild baboons. In National Center of Biotechnology Information – Library of Medicine.*	Cumulative early life adversity predicts longevity in wild baboons | Nature Communications
18	**Baboons can produce sounds with a formant structure similar to human vowels ([ɨ æ ɑ ɔ**	Language is a unique trait of humans, and understanding its evolution is a	L-J. F. Berthommier et Al. 2017. *Evidence of a Vocalic Proto-System in the Baboon (Papio*	Evidence of a Vocalic Proto-System in the Baboon (Papio papio) Suggests Pre-Hominin Speech Precursors | PLOS ONE

	u]). This finding indicates that the ability to produce contrasting vowel qualities precedes humans and that spoken language evolved from skills present in common ancestors around 25 million years ago.	significant scientific challenge. It has been traditionally believed that a low larynx is essential for human speech, while the high larynx of nonhuman primates limits their ability to produce human-like vowel systems.	*papio) Suggests Pre-Hominin Speech Precursors.* Research Article published in Journals PLOS-One	
19	**Females form lifelong bonds within their troop, staying with the same group from birth to death. They maintain close relationships with maternal relatives—mothers, aunts, and sisters—engaging in grooming, resting together, and providing social support.**	Large hierarchical troops of up to 250 individuals exhibit complex social behaviour. Maternal and paternal sisters are treated equally, showing stronger interactions compared to non-relatives.	Silk J.B. et Al., 2009. *The benefits of social capital: close social bonds among female baboons enhance offspring survival.* In National Center for Biotechnology Information – Library of Medicine	The benefits of social capital: close social bonds among female baboons enhance offspring survival - PubMed Amboseli Baboon Research Project - Baboon's social life
20	**Baboons mourn after loss.** **Stress hormones i.e. glucocorticoids significantly increased for two months after experiencing loss.**	Baboons understand life and death. They care about their own lives and the lives of others, and they mourn the loss of their relatives, seeking the comfort of close friends.	Corbin K. et Al., 2023. The Mourning Behaviors & Funeral Rituals of Animals. Worcester Polytechnic Institute.	The_Mourning_Behaviors__Funeral_Rituals_of_Animals.pdf

21	**Within baboon societies, rank plays a major role in determining how individuals interact with one another. Alpha males have priority access to resources such as food and females while lower-ranking members must compete for these privileges.**	Alpha males exhibited much higher testosterone and stress hormone levels than second-ranking (beta) males, suggesting that being at the very top may be both advantageous and costly.	Gesquiere L. et Al. 201. *Life at the top: rank and stress in wild male baboons. In National Center for Biotechnology Information – Library of Medicine*	Life at the top: rank and stress in wild male baboons - PubMed
22	**The mother's dominance rank has a powerful effect not just on her daughter's adult rank.**	When a female baboon reaches adulthood, she typically ranks just below her mother in the adult dominance hierarchy of the group. The pattern of rank inheritance results in rather stable dominance relationships among families that may persist even across many generations.	M.E. Pereira. 1988. *Agonistic Interactions of Juvenile Savanna Baboons.* In Ethology 79, 195-217 (1988) - Paul Parey Scientific Publishers, Berlin and Hamburg	Agonistic Interactions of Juvenile Savanna Baboons: I. Fundamental Features
23	**High-ranking females can displace lower-ranking females from food and water sources, can push them away and take their place in grooming episodes, and**	Ranking and females behaviour	Samuels, A. 1987. *Continuity and change in dominance relations among female baboons*. Anim. Behav., 1987, 35, 785-793	Continuity and change in dominance relations among female baboons

	generally enjoy much more freedom to go where they want to go and do what they want to do within the group.			
24	**Differences between high and low-ranking animals affect feeding behaviour, the rate at which their offspring grow, and the age at which they reach maturity.**	Ranking influences feeding and breeding behaviour.	Altmann J. et Al, 1995. *Baboon fertility and social status*. Published in Nature, Vol 377 Oct 1995, 688-690	Baboon Fertility and Social Status 25.pdf
25	**The number of fertile females in a group influences the presence of adult males, who may leave if unsuccessful in mating.** **However, males who have fathered several infants in a group stay in that group for a considerable period after they are reproductively successful.**	For a male, the effects of rank are less subtle and have pretty direct consequences for how many offspring he leaves behind. This is because high-ranking males manage to form sexual consortships with females more successfully than low-ranking males do.	Noe, R. 1994. A model of coalition formation among male baboons with fighting ability as the crucial parameter. Anim. Behav., 1994, 47, 211-213.	A model of coalition formation among male baboons with fighting ability as the crucial parameter.pdf
26	**The presence of multiple males in a troop discourages infant killing by other males.**	Infanticide, typically committed by a newly arrived alpha male, occurs to make	Palombit R.A. et Al, 2009. *Male infanticide and defence of infants in chacma baboons*. Cambridge University Press	Male infanticide and defense of infants in chacma baboons (Chapter 6) - Infanticide by Males and its Implications

		lactating mothers sexually available by ending their nursing period.		
27	**Female baboons typically form close social bonds with a male friend, who is distinct from their mating partner.**	Mothers with young offspring often seek out friendships with males solely for the protection they may offer, especially when it comes to defend their baby from an attack. It is usually only the male friend of the infant's mother who will get involved directly and actively	Amboseli Baboon Research Project. Baboon Social Life	Baboon social life "Friendships" between new mothers and adult males: aAdaptivebenefits and determinants in wild baboons - Nguyen_etal_BehavEcolSociobiol2009.pdf
28	**Social status predicts wound healing in wild baboons.** **Social status significantly impacts health in humans and other vertebrates, including baboons. Alpha male baboons, seldom fall ill or injured and, in case, recover quicker. This is relevant in conservation considerations.**	In male vertebrates, low social status is associated with chronic stress, poor physical condition, and aging. A 27-year study of wild male baboons found that high-ranking males, including alpha males, were less likely to fall ill and heal faster than low-ranking males.	Archie, E. A. et Al. 2012. *Social status predicts wound healing in wild baboons.* Published in PNAS for the Department of Biological Sciences, University of Notre Dame, Notre Dame.	PNAS- Social status predicts wound healing in wild baboons- 201206391 9017..9022

29	**A 16-year study of wild baboons shows that female sociality is positively linked to infant survival, a key factor in female lifetime fitness.**	This effect is independent of dominance rank, group membership, or environmental conditions. The findings align with human evidence, suggesting that social support benefits health and well-being across species, highlighting the adaptive value of sociality.	Silk, J.B. et Al. 2003. *Social Bonds of Female Baboons Enhance Infant Survival*. In SCIENCE VOL 302 14 NOVEMBER 2003	Social Bonds of Female Baboons Enhance Infant Survival-2003Science302.pdf
30	**Research on steroid hormones like estrogens (E), progestins (P), and glucocorticoids (GC) has focused on their role in successful pregnancy.**	This study examined fecal steroid hormones from wild yellow baboons in Kenya to compare hormones in successful pregnancies with those ending in fetal loss or stillbirth.	Beehner J.C. et Al. 2006. *The endocrinology of pregnancy and fetal loss in wild baboons*. In Science Direct: Hormones and Behaviour 49 (2006) 688–699	The endocrinology of pregnancy and fetal loss in wild baboons -10.1016/j.yhbeh.2005.12.016
31	**Environmental conditions, troop size, and age significantly influence baboon reproductive success.** **Females in large groups are less likely to**	An analysis of reproductive cycles from 1976 to 2004 found that drought and extreme heat reduced the likelihood of females cycling, conceiving, or maintaining a successful pregnancy.	Beehner, J.C. 2006. *The ecology of conception and pregnancy failure in wild baboons*. Behavioural Ecology, Advance Access publication 19 June 2006	The ecology of conception and pregnancy failure in wild baboons -- Beehner et al. 17 (5): 741 -- Behavioural Ecology

	conceive during droughts compared to those in smaller groups.	Age impacts conception, with the youngest and oldest females being the least successful.		
32	**Father baboons play a significant role in offspring fitness, suggesting that paternal effects in multimale societies may be more important than previously recognised.**	A 30-year study of 118 baboons found that paternal presence during the offspring's immature period accelerates physiological maturation, especially for daughters. Sons also benefit from accelerated maturation if their father is high-ranking at birth.	Charpentier, M.J.E. 2007. *Paternal effects on offspring fitness in a multimale primate society.* PNAS February 12, 2008 vol. 105 no. 6, *1988–1992*	Paternal effects on offspring fitness in a multimale primate society. Charpentier_etal_PNAS2008.pdf
33	**Baboon Sleeping Site Preferences. Results indicate a preference for:** **1. sites offering better protection,** **2. lower parasite risks,** **3. proximity to food.**	The study examines the use of multiple sleeping sites by wild baboon groups and the factors influencing their selection. Groups typically stayed at woodland sleeping sites. At the population level, preferred sites were reused approximately every 4 nights.	Markham, A. C. et Al, 2015. *Haven for the night: sleeping site selection in a wild primate.* In Behavioural Ecology (2015), 00(00), 1–7. doi:10.1093/beheco/arv118	Behavioral_ecology_2015_markham_beheco_arv118.pdf

34	**Baboons prioritize sleeping sites based on their inaccessibility to predators, selecting in descending order:** **1) steep cliffs and caves,** **2) tall emergent trees in continuous forests,** **3) forest canopies without emergent trees, and** **4) open woodland trees.**	The observed patterns support the hypothesis that predation avoidance drives site selection. **Also, abundant sleeping sites may facilitate smaller social units, while sparse sleeping sites may promote the formation of larger groups.**	HAMILTON, W.J. 1982. *Baboon Sleeping Site Preferences and Relationships to Primate Grouping Patterns.* In American Journal of Primatology 3:41-53 (1982)	Baboon sleeping site preferences and relationships to primate grouping patterns
35	**Behaviour after infanticide**	If infanticide occurs, bereaved mothers turn to their female friends for comfort, often using the act of grooming as a tactile form of grief therapy.	2006 - Murder in the Troop. Documentary - by PBS	Murder in the Troop | About | Nature | PBS "Nature" Murder in the Troop (TV Episode 2006) - IMDb Murder in the Troop.doc
36	**Baboons thrive in temperatures between 15 and 40o C in habitats extending from sea level to high altitudes of up to about 700 m. They adapt well to a variety of climatic and environmental conditions in semi-deserts, lowlands, mountains, open**	Baboons often inhabit areas near rivers or streams where they can access fresh water for drinking and bathing. Unlike other monkeys, baboons stay on the ground much of the time. They sleep high up in trees, on cliffs, or on high rocks, to keep safe.	Bronikowski A.M. and Altmann J. 1995. *Foraging in a variable environment: weather patterns and the behavioural ecology of baboons.* In Behav Ecol Sociobiol (1996) 39: 11–25	Foraging in a variable environment: weather patterns and the behavioural ecology of Baboons 131.pdf

	savannas, grassy plains, woodlands, dry shrubland regions, and coastal landscapes.			
37	**Food availability – as well as lack of food due to environmental changes - has measurable impacts on dietary choices in Baboons.** **Feeding time is significantly correlated with the quality of available food items.** **Baboons can feed more efficiently on fruits in warmer temperatures, at lower altitudes, and in areas with high plant productivity.**	Baboons are highly adaptable and exhibit significant variation in foraging behaviour and diet, which is largely influenced by ecological conditions. These differences are thought to result from the impact of climatic conditions on food availability, which in turn shapes dietary composition.	HILL, R.A. and DUNBARE. R.I.M. 2002. *Climatic determinants of diet and foraging behaviour in baboons.* In Evolutionary Ecology 16: 579–593.	Climatic determinants of diet and foraging behaviour in baboons | Russell Hill - Academia.edu
38	**A 'Duty of care' should be added to the Cape Peninsula Strategic Management Plan and all management procedures.**	The Management Plan lacks essential elements for ethical and effective wildlife management, including recognition of animal sentience, a clear duty of care, and a precautionary approach to prevent	WILDLIFE ANIMAL PROTECTION FORUM SOUTH AFRICA COMMENT: CAPE PENINSULA BABOON STRATEGIC MANAGEMENT PLAN - 2023	WAPFSA SUBMISSION - CAPE PENINSULA BABOON STRATEGIC MANAGEMENT PLAN

		harm. It also fails to align with Ubuntu values, which emphasize compassion and shared responsibility for all living beings. The omission of wildlife corridors, crucial for biodiversity and reducing human-wildlife conflict, further limits its effectiveness.		
39	**Intuitive Interspecies Communication (IIC) is introduced in scientific research as a valuable process to deepen understanding of animals' perspectives and standpoints.**	IIC involves detailed, non-verbal, and non-physical communication between humans and other animals using a wide range of intuitive capacities.	**Speaking With Other Animals through Intuitive Interspecies Communication: Towards Cognitive and Interspecies Justice** **Barrett M.J. et Al. 2021**	(PDF) Speaking with Other Animals through Intuitive Interspecies Communication: Towards Cognitive and Interspecies Justice