Elephant Specialists Alliance International

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ESAI is a global alliance of specialists in the natural science, conservation, veterinary medicine, welfare, and care and management of elephants

Statement on Keeping of Solitary Elephants, Male and Female, in Captivity

See also ESAI's Statement on Exhibition of Elephants in Captivity

ESAI opposes the keeping of solitary, singly-confined elephants, of African and Asian species, in any form of captivity. ("Solitary" refers to an elephant held entirely alone at a facility with no other elephants.) All evidence shows it to profoundly contradict the basic elements of their biology.

Elephants are extremely intelligent and highly social animals

Elephants are large-brained, long lived, and socially complex mammals. They live in large social networks, with a highly organized structure involving strong family bonds that can last a lifetime[1,2]. Relationships among females radiate out from the mother-offspring bond through family, bond group, clan, and sub-population, and among independent adult males through male groups of kin and non-kin[3]. They form alliances and coalitions with other elephants and can work together to solve problems[4].

The evolution of elephant intelligence is inextricably linked to their complex social structure. Much evidence implies that living in large social networks correlates with high cognitive function. Further considerable evidence suggests that social living, more than environmental factors alone, is responsible for the development of higher intelligence[5]. To cope with the challenges of maintaining contact with individuals in a large and widely dispersed social network, elephants have developed sophisticated systems of communication. They include long and short distance signalling and the identification of conspecifics through tactile, olfactory and visual signals, and seismic and acoustic communication[6]. Elephants can recognize the calls of about 100 other elephants from various families and clans, and they possess an extensive memory of others' calls[7]. They also have highly developed long-term olfactory memory and can distinguish up to 30 individuals through olfactory cues found in elephant urine[8].

Elephants have been shown to have empathy[9], meaning they can understand and share the emotions of another individual. The ability to respond appropriately to the emotions of others is a cornerstone of normal social function[10,11]. Empathy is governed by mirror neurons, which exist in various human and non-human species[12]. Mirror neurons have been identified in elephants, who display self-awareness as revealed by self-image recognition[13]. Empathy is closely associated with social living and social bonding, with individuals reacting appropriately to others. Elephants

particularly are closely bonded; mothers and allomothers react quickly to a calf in distress, showing comfort behaviour, assisting, and protecting the calf.

Because of their intelligence, cognitive abilities, empathy and social complexity, elephants are likely to suffer when socially isolated, as this condition is completely contrary to their essential nature.

Elephants' social relationships are vital to their welfare

Mother-offspring bonds are essential for both male and female offspring and form the core of elephant society[14]. Females typically stay with their natal herd and their mother for the entirety of their lives[15,16,17,18.] These bonds are crucial for the upbringing of a young elephant who has much to learn, including what to eat and where to find it[19]; how to make tools[20], auditory[21], tactile, and olfactory communications[22]; social abilities and how to function in elephant society; mothering and allomothering skills[23], and much more. In captivity, the mother-daughter bond maintains its strength and importance, even after years of separation[24]. Non-kin females in the wild[25] and in captivity[26] may also choose to form relationships which may include strong bonds.

It is not only female offspring for whom the mother-offspring bond is essential: Male calves naturally remain with their mother and family until adolescence, and separate from them only gradually[27]. As males become independent from their natal families, they form relatively stable associations with other preferred males, with whom they exchange information and assess potential reproductive competitors[28]. Adult males may choose to join female groups when they are sexually active[29] or, occasionally, to simply renew social bonds[30]. Therefore, males are not socially isolated.

Keeping an elephant solitary is harmful to health and welfare

Keeping an elephant alone, without other conspecifics, is entirely alien to their nature at a fundamental level, and it is harmful to their psychological and physical health and overall welfare[31].

Studies involving other mammalian species have found that chronic social isolation induces alterations in several neurochemical systems, including those associated with anxiety-like behaviours, neuro-psychiatric disorders, and increased aggression and depression-like symptoms[32]. Other profound and lasting psychological effects include disturbance in perception and learning, total apathy and withdrawal symptoms, anxiety behaviour, self-mutilation, aggression, and compromised cognitive processes[33,34,35,36,37]. Similar problems have been observed and documented in single captive elephants, including self-mutilation, anxiety, stereotypies, and aggression[38,39]. Structural changes to the brain in response to social isolation have also been observed in species other than elephants and may underlie cognitive and behavioural deficits and induce neuroendocrine disturbances[40,41,42,43].

Impoverished environments and social isolation have been shown to disrupt normal function of motor control pathways in several species, resulting in stereotypic behaviours[44]. Stereotypies are defined as repetitive, unvarying and functionless behaviours[45], and they indicate a neural attempt to cope with an impoverished environment[46]. Stereotypies are commonly seen in captive and, in particular, solitary elephants in the form of repetitive head bobbing, rocking, and swaying. These behaviours are often linked to poor welfare[47], as well as life-threatening health problems such as foot disease[48].

It is clear that an impoverished captive environment – which would include solitary living – is associated with detrimental changes in mammalian brains, as compared to the brains of mammals living in enriched natural environments. Such changes include decreased cortical thickness, smaller capillary diameter, decreases in neuronal soma size and fewer glial cells per neuron, less complex dendritic branching, fewer dendritic spines, and less efficient synapses[49]. Thus, the deprivations of solitary, captive living conditions result in fundamental and long-lasting damage to the brains of elephants at the basic, cellular level.

The physiological responses of animals, such as the buffering of stress, are also influenced by social conditions[50]. Biologically inappropriate social conditions, such as incompatible companions or complete isolation, have been shown to alter and adversely affect the functioning of the mammalian hypothalamic-pituitary-adrenocortical (HPA) axis, which mediates the body's stress response. The effects are particularly evident in response to additional acute stress in animals already dealing with stress of isolation. Chronic isolation has been associated with changes in gene expression and glucocorticoid resistance, which heightens risks of inflammatory processes, reduced immunity, and disease[51].

Humans cannot replace social contact with other elephants

Human carers with a long-standing commitment to compassionate husbandry may provide some alleviation of the impacts of social deprivation, as seen in sanctuaries devoted to the care of orphaned elephants[52,53]. In the longer term, however, human substitutes cannot replace the full social environment necessary for elephants' health and well-being. Therefore, elephants should not be held alone unless it is unavoidable for medical reasons.

Conclusion

Keeping an elephant solitary goes against the most basic principles of animal welfare. All observations of the fundamental nature of elephants indicate they are highly social beings with intricate social lives that are crucial to their health and welfare. Depriving captive elephants of the company of other socially-compatible conspecifics must be avoided for the sake of their physical and mental well-being.

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