



Stimulation of instinct behaviour in captive Jungle Cat (*Felis Chaus*) with feeding and sensory enrichments at Rajkot Zoological Park-Rajkot

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Abstract:

*Behavioural observations and various enrichment tools help to stimulate instinct behaviours in wild captive animals and provide better physical and mental health for the animals. The present study was conducted from October 2018 to February 2019, at Rajkot Zoological Park, Rajkot, Gujarat. Two male Jungle cats (*Felis chaus*) were observed in captivity through direct observations. The observations were made thrice in a week from 9:00 am to 12pm. The frequency of behavioural activities was recorded and calculated by Altman focal sampling method. Two types of enrichments were provided (feeding and sensory) randomly to avoid habituation. Results of the data analysis of pre and post enrichment experiments show that enrichment can reduce stereotypic and inactive behaviours in both the cats, and increased the active behaviours. In this paper, we report the recent sightings of the Sociable.*

Key Words: Small cat, Enrichment, Captive felids, Stereotypic behaviour

Introduction:

Zoo community was among the first to raise concerns over abnormal and stereotypic behaviors in captive animal and to begin to develop environmental enrichment strategies to deal with the perceived problem. Stereotypes are relatively in variant, repetitive behaviors that seem to have no immediate function (Mason, 1991). In the zoo community, environmental enrichment has become almost a catchall term for husbandry activities with the specific aim of improving wellbeing and as such is the method of choice for reducing stereotypic behavior. Environmental enrichment involves changing the environment of the captive animal to provide opportunities or choices not available before. Often a heavy emphasis is placed on the importance of providing enrichment that is appropriate to the specific biology (to the extent to which it is known) of the species under consideration (Mellen and MacPhee, 2001).

Biologically appropriate complexity can be increased in many ways, by adding substrates that increase the information content of the environment and elicit foraging and investigatory behavior by concealing food, smells, naturally occurring insects, other wildlife, etc. Barriers and landscaping can provide privacy, promote territorial behavior, provide escape routes, and thus improve social interactions. Climbing structures allow more efficient use of space and provide shade and temperature gradients for the choice of microclimate. They can also



provide hiding places from conspecifics, the public, and keepers. More recently, the potential of training, not just as a management tool but also as cognitive enrichment for captive animals, has begun to be realized (Laule and Desmond, 1998).

The Jungle cat (*F. chaus*) is considered one of the widely distributed yet least studied species in India. It is also known as a reed cat or swamp cat. It occurs in North Africa and is widespread in Asia from the Middle East, Southwest Asia, Central and South Asia over to Southeast Asia, reaching Indo-China and possibly the Malayan Peninsula (Abu-Bakeretal.2003, Duckworthetal.2005, Sanei et al., 2016). Ten subspecies of the Jungle cat have been proposed so far based on the diversity of morphological traits (Heptner & Sludskii 1972), but no genetic or cranial analysis was carried out yet to test this hypothesis (Duckworth et al.2008).

The purpose of the present study is to observe and analyze the health of Jungle Cat in captive condition; opting behavioral activities and enrichment as a management tool at Rajkot Zoological Park, Rajkot, Gujarat. The study aimed to understand the positive effects on the behavior of jungle cat after providing enrichments.

Methodology:

Study site:

The study was conducted at Rajkot Zoological Park, Rajkot Gujarat (22°174 N and 70°503 E). The zoo is located in between two lakes named Randarda lake and Lalpari lake with hilly and rocky terrain. Its geographical location is (Fig1).

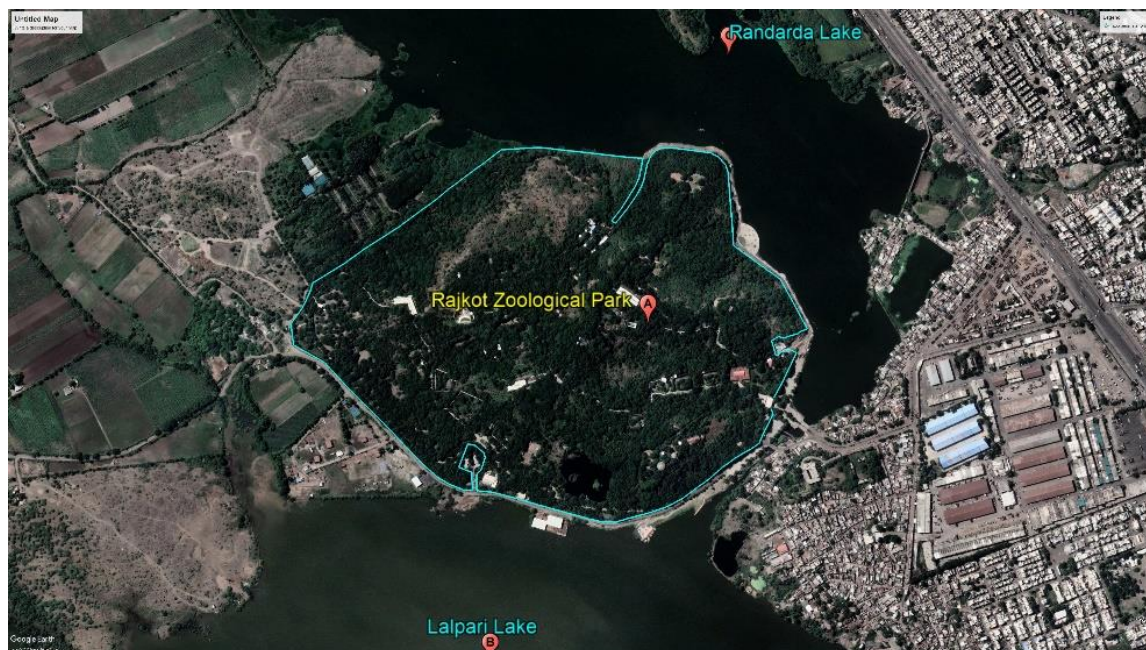


Figure 1. A Google Earth® image showing the geographic location of Rajkot Zoological Park



The Display exhibit is a large landscape and allow for public viewing of the animals. Two cats were kept in the enclosure inside the night shelter at night or when not available for public viewing.

Environmental enrichments of exhibit enclosures for jungle cats were provided for behavioral and physical improvement; which enhancing zoo animal environment to perform several activities and care within the context of their inhabitant of exhibit closures. The environmental enrichments, such as vegetation layers small tree, large tree for climbing, clawing and watching, table top for resting and sitting, concrete steps for climbing concrete shelf for play, jump, watch, swinging tool for play, the roof for shed and cover that provide for a walk, hide and watch. (Figure 2)

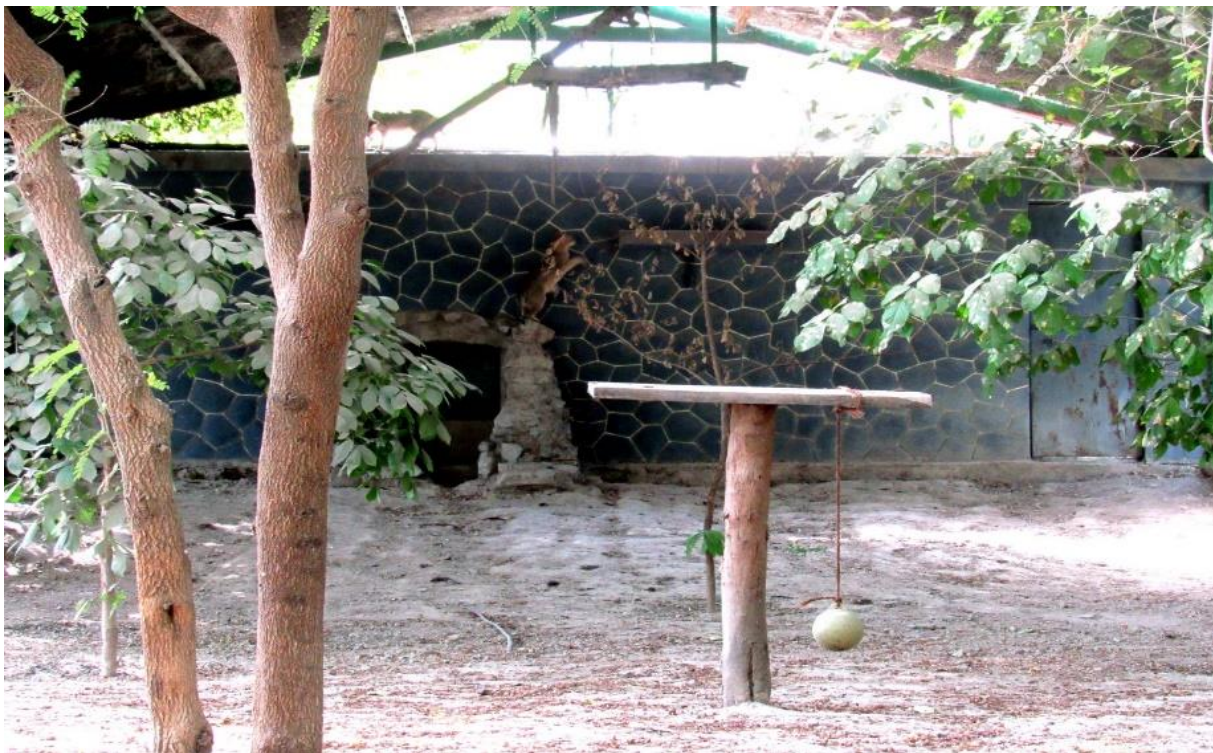


Figure 2. *Enclosure with environmental enrichment tools of Jungle cat at Rajkot Zoological Park (Inside View) ©Rupal Pala*

Observations and Data analysis:

The experiments were carried out from October 2018 to February 2019 during the winter season for master's dissertation. Continues observations on two individual jungle cats were made in a day time 09:00hr to 12pm thrice in a week. A total of 94 hours of data were collected including pre and post enrichment experiments. Two individual animals, Cat1 (male, 4 years old), Cat2 (male, 5 years old), were selected and observed for data collection.



The frequency of the behavioral activities was calculated by Altman focal sampling method. (Altman 1974). For data analysis, prime behavioral activities were considered.

Feeding and sensory enrichment experiments were conducted for 3 days set by morning hours, randomly to avoid habituation. Regular feeding time was in the evening by 6:00pm. Animals were fed six days a week with a day fasting on every Friday. Post enrichment experiments were done randomly for 8 days and data of 25 hours was collected.

Experiment 1: Sensory enrichment

Fresh fish was rubbed at various places in-display exhibits such as a tree, small wooden pole and hanging ball to stimulate the feeding sensation.

Experiment 2: Feeding enrichment

Fresh fish and boiled eggs were hidden at several places in-display exhibit to encourage seeking and foraging purposes.

Statistical analysis was carried out by calculating the standard deviation, of a total mean of important behavioral activities of both the cats. Such as resting, licking, pacing, climbing, spray marking, defecating, standing, drinking, scratching, sniffing, sitting, aggression and fight.

Results:

We categorized the behavior activities of both the jungle cats, which were most frequently displayed, such as resting, sleeping, licking, walking, climbing, urination, defecation, standing, drinking, scratching, smelling, sitting, aggression and fight.

The analysis of data shows that both the cats were displaying stereotypic behavior in pacing (Cat1 63.7%, Cat2 67%) and resting (Cat1 33.27%, Cat2 66.94%) among all the other activities (Figure 4 and 5) before the enrichment experiments. After providing feeding and sensory enrichments improvements were observed in instinct and active behavior such as sniffing 7.94%, climbing 7.15%, was observed and the pacing was significantly decreased from 63.57% to 4.72% and resting was decreased from 33.27% to 2.61% in Cat-1. Similarly, Cat-2 also improvement in instinct and active behavior was reported such as sniffing 26% climbing 23%, and resting was decreased from 66.94% to 9% and the pacing was decreased from 67.70% to 16%.



a. pacing



b. resting



c. sniffing



d. climbing

Figure 3: A jungle cat displaying stereotypic activities before the enrichment experiments such as Pacing and Resting Fig: 3 a, b, and improvement was seen in other activities after providing feeding and sensory enrichments such as sniffing and climbing. Fig: 3 c, d, © Rupal Pala

During the study period through direct observations, it was noticed that sensory enrichment (fish rubbing at a random place of the enclosure) helped in the enhancement of sniffing and foraging while feeding (boiled egg, fish) helped in climbing and territory marking enhancement.

Discussion:

Response to the enrichment experiments was seen in both the individuals, after providing the feeding and sensory enrichments. In zoos, stereotypic behaviour such as pacing and inactive behaviour such as resting are common due to the captive environment (Mason, 1991) though the captive environment provides natural surroundings. Due to solitary habits with large territories, they become stereotypic in captivity.

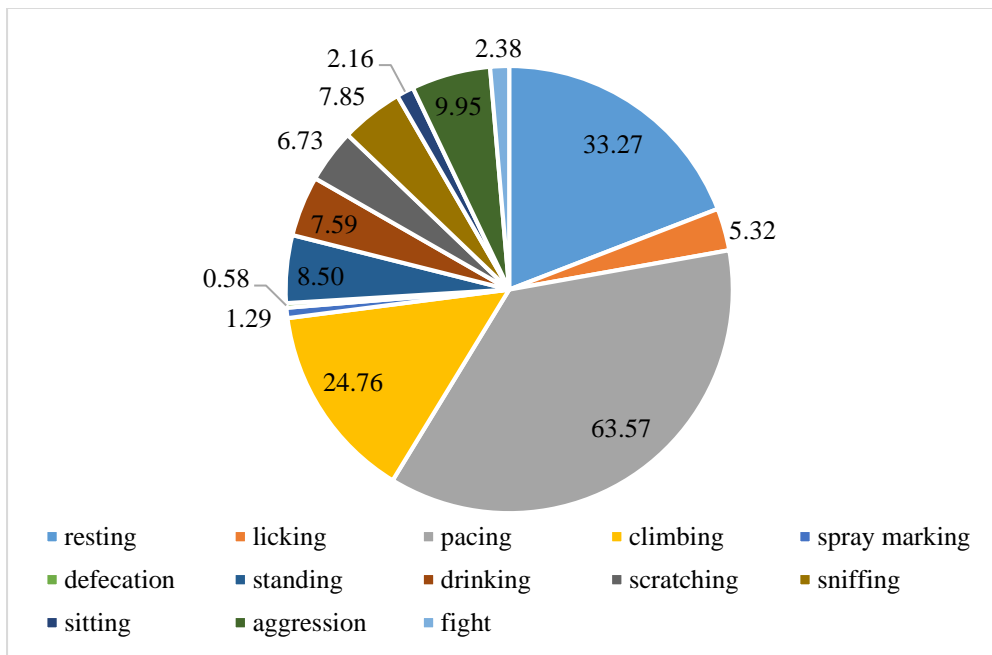


Figure 4(a): Standard deviation in % of the frequency of behavioral activities of Cat-1 before enrichment (total 69 hours)

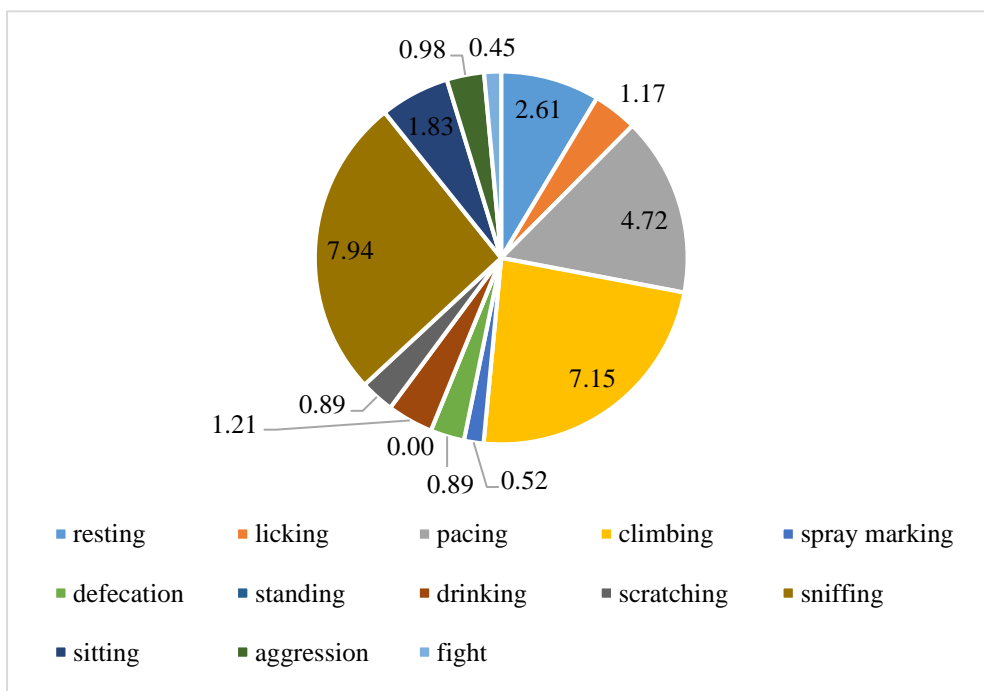


Figure 4(b): Standard deviation of the frequency of behavioral activities of Cat-1 after feeding and sensory enrichment (total 25 hours.)

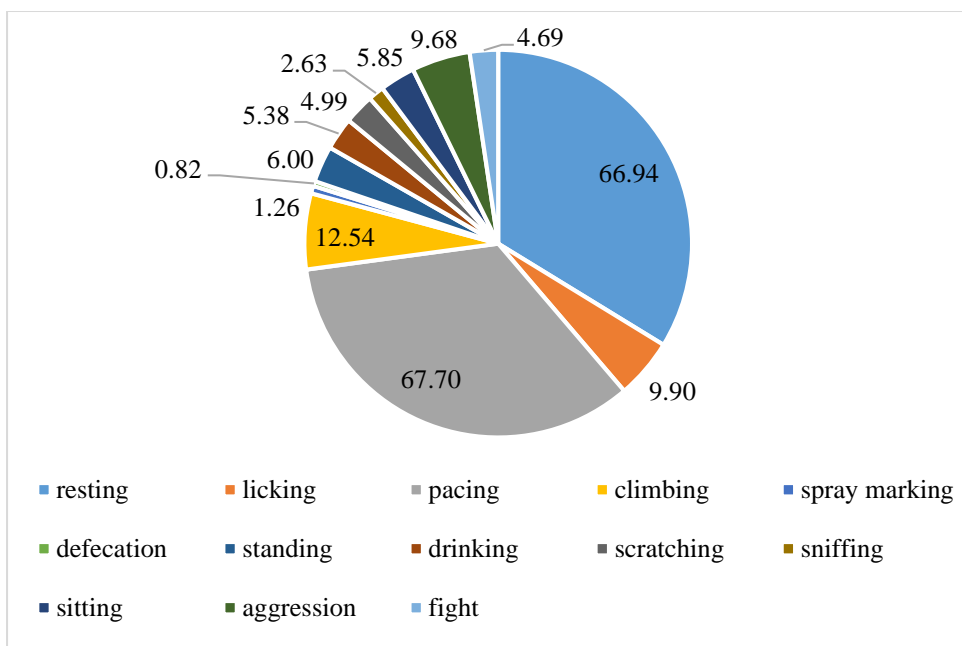


Figure 5(a): Standard deviation (%) of the frequency of behavioral activities of Cat-2 before enrichment (total 69 hours)

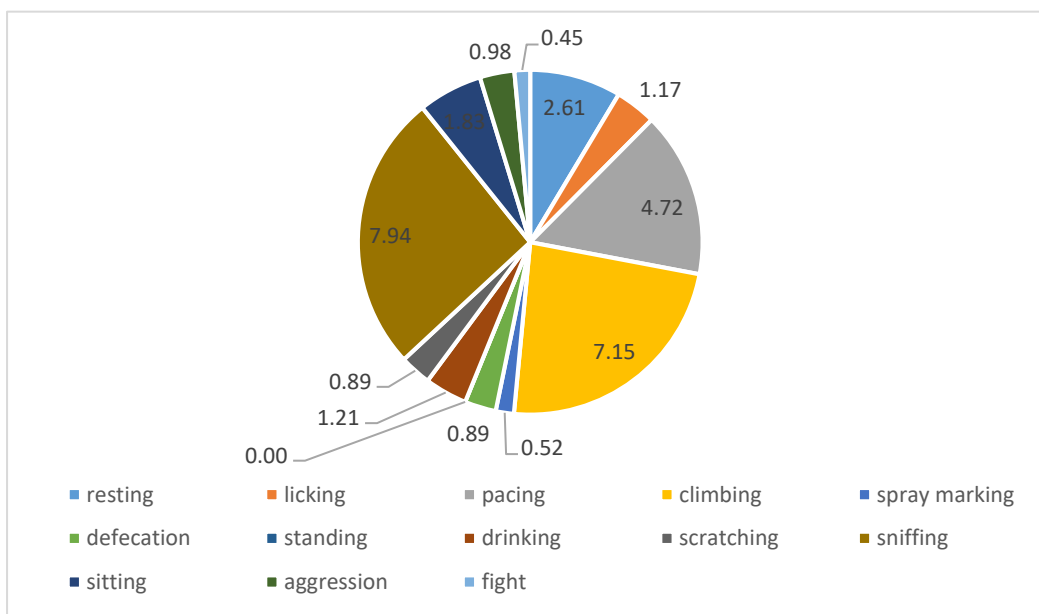


Figure 5(b): Standard deviation (%) of the frequency of behavior activities of Cat-2 after feeding and sensory enrichment (total 25 hours)

Sensory enrichment can improve their natural behaviours such as foraging and sniffing while feeding enrichment can enhance their other natural behaviours like climbing, maintenance and may reduce over aggressive and stereotypic behaviour (Shepherdson et al.1993).



However, response to the enrichment tools may vary according to the condition of health and age of the individual (Debora et. al, 2018).

In present study we observed that Cat2 was dominating on Cat1 in its territory, such as on a roof, on the bench and step at the right corner of the enclosure. Which covers approximately 70% area of the enclosure. Territory marking was done by spray marking or clawing most of the time.

The study also supports the previous studies by Mellen and MacPhee, (2001) and Laule and Desmond (1998) that effecting stimulation of instinct behaviour after providing the feeding and sensory enrichments. Benefits of environmental enrichments were seen in both the cats, by increased active behaviours. However, changes in behaviours were varied in both the individuals.

Conclusion:

Results of the present study show that the physical and mental health of the animals can be improved through enrichment by encouraging their instinctive behaviors. The health of the animals is disproportionately important to pass the better traits to their offspring. It is also one type of holistic approach that one can do to keep the captive animals stress free, and mentally as well as physically healthy.

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