OBSERVATIONS OF HUMAN- NILGAI (BLUE-BULL) CONFLICTS INSHEKHAWATI REGION OF THAR DESERT, INDIA

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Abstract: Conflicts between animals or organism isasocial phenomenon. The present study conducted in Shekhawati Region of Rajasthan during 2012 and 2013. Which deals with observation of conflicts between residing population of Human and Nilgai in Churu, Jhunjhunu and Sikar districts of Rajasthan, which is collectively known as Shekhawati Region.

Nilgai is a protected animal under the schedule III of wildlife (Protection) act, 1972. Nilgai enjoy a much wider geographical distribution and higher number in Rajasthan. Today there are about 90,000Nilgai distributed in Rajasthan. A large number of Nilgai come in contact with human leading to increase in Human-Nilgai conflicts. Human-Nilgai conflicts include crop damages, Carcasses, Human casualties and Nilgai mortality by Human. At the time of chasing them away from crop fields create more crop damage by trampling.

Depredation of cultivated crops by Nilgai is widespread in Shekhawati region. Nilgaihave damaged crops ever since the advent of agriculture and Nilgai -Human conflicts occurs throughout the study area. Human–Nilgai conflicts that has been documented to occur to varying extents from very negligible levels as in the optimal habitats with high density of Nilgai in Indian Thar Desert. However, the extent of conflicts increased over time across the geographical range of Nilgai as natural habitats. Traditionallyhabitat used by Nilgai was gradually converted into agricultural lands and settlements. This resulted in a large number of Nilgai remaining in contact with Humans leading to increased levels of Human-Nilgai conflict. The present scenario of increasing conflict is largely due to unplanned developmental activities of Human in agriculture and deforestation foe Human settlement

Keywords: Human, Nilgai, Conflicts, Thar Desert, Crop damages.

Introduction: Nilgai are member of the family Bovidae and are the only species of *Boselaphus* (Fall, 1972). They are closely related to the 4-horned antelope (*Tetracerus quadricornis*), African eland (*Taurotragus oryx*) and cattle (*Boss spp*.).

The Nilgai is the biggest Asian antelope (John and Barnnabas, 1978). The Indian name "Nilgai" can be translated to mean blue (nil) bull (gai). "Gai" is feminine gender, but is used to connote either sex of the species as one of a variety of cattle (Mohammad Haque pers. Comm.). Both Indian and English prefixes of the name refer to the blue-gray color of adult males. Females and all juveniles are light brown in color. Blue-bull is a horse like animal and show clear sexual dimorphism.

Nilgai is distributed in India from Himalayan foot hills southward through Central India to Mysore (Sankhala, 1964; Walkar, 1968). Nilgai does not occur in Eastern Bengal, Assam and on Malabar Coast. There is practically no permanent resident population in Pakistan today, but Nilgai still regularly occur around the Indian Border of Kasur in the north eastern corner of the Punjab and further south around Bhawalpore (Mirza and Khan, 1975; Roberts, 1977). It was stocked in Royal Karnali-Bardia wildlife preserve, Nepal (Dinerstein, 1979).

The Nilgai is the largest antelope of India and enjoys immunity against molestation by Hindus, who consider it as a wild cow (the cow is a sacred animal for Hindus). Like most Indian species of wildlife, Nilgai has not received adequate attention of biologists. The species is endemic to the Indian sub-continent, occurring in a wide variety of habitats. Although it is a serious pest to agricultural crops, it is an animal of much biological as well as economic importance. Ecological aspect of Nilgai has been little studies. In their native range in India and Nepal, Nilgai prefer level to rolling terrain with scattered shorts trees and brush interspersed with open grassland. They are rarely found in dance forest. Although Nilgai are mainly crepuscular, they can be active throughout the day and night.

Historical records points out that all Mughal emperors were extremely fond of hunting in Nilgai, especially, Jahangir, credited with hunting down, among other animals, nearly 900 Nilgai (Ali, 1972). Nilgai is a protected animal under the schedule III of wildlife (Protection) act, 1972. Nilgai enjoy a much wider geographical distribution and higher number in Rajasthan. Today there are about 90000 Nilgai distributed in Rajasthan. A large number of Nilgai come in contact with human leading to increase in Human-Nilgai conflicts.

Status of Nilgai: Nilgai is herbivores and it browses on shrubs and small trees and also grazes on grasses and herbs. The population density is not much but for last 10-15 years people have destroyed the forest and converted most of the waste land into the agricultural land so there is no place for these antelope except roaming around the crop-field, and

people say Nilgai population have increased. It may also be affect because on predator has been left in this area. The entire population of Nilgai could not be counted but it is about 0.68 animals per sq. km. as observed around Shekhawati Region. Due to agricultural field and shrinkage natural foraging grounds, the ecological balances have disturbed and Blue-bull has often raids oncrops available in the area. Subsequently it has become a serious pest of the crops in western Rajasthan (Prakash, 1964, 1986; Rajpurohit, 1988; Rajpurohit and Mohnot, 1988; Bohra et al., 1992).

Photo 1: Herd of Nilgai with fawn.

In Shekhawati Region Nilgai is associated with cow by Hindus and considered sacred. Due to absence of large predators and tolerance by humans it is becoming a serious pest of standing crops in the Shekhawati region.

Being prolific breeder, new individuals are added in every breeding season and its population is burgeoning. Large herds of this species are competing with farmers' livestock for food resources. The situation is deteriorating rapidly due to increased developmental activities like sources of water and availability of crop food. The population of Nilgai is increasing and hence this results in crop raiding incidences and subsequent conflicts with local communities.

Human-Nilgai Conflicts: The issue of crop depredation and subsequent conflicts arising between Human-Nilgai population in recent time is a growing concern of wildlife managers in India (Prater 1980; Rajpurohit and Mohnot 1988). A number of attempts have been made to document and quantify the crop depredation by wild herbivores in different parts of country.

Photo 2: Nilgai enters in corral of domestic animals.

The crop raiding issues by the Nilgai has recently increased because of lack of natural predator, open vegetation area as well as natural dispersal of increasing populations into adjacent agriculture landscape. Although few efforts were made to estimate Nilgai population and ecological aspects of Thar Desert (Goyal and Rajpurohit 2000). Issues related to quantification and mitigationof Human-Nilgai Conflicts have not been addressed comprehensively.

The major concern pertaining to the long term conservation of the last surviving population of Nilgai are:

A. Human-Nilgai conflict resulting from crop raiding incidences and

B. issues related to management of increasing population of Nilgai.

Nilgai has been implicated for extensive crop damage in agricultural areas in Shekhawati region. Damage of crop is caused not only by foraging but also due to various activities of Nilgai *viz.* trampling, resting and movements of the animals. In addition to Nilgai, wild cow and wild ass are also causing extensive crop damage in some selected areas. However, substantial increase in the population of latter species i.e. cow and ass has resulted into mass crop damage in Shekhawati region. Such mass crop damage subsequently cause antagonism of local farmers towards large herbivores. The small scale agro pastoral activities in this desert area are prone to high uncertainties and risk in form of uncertain rainfall, poor ground water quality, and droughtand pest attack; and therefore crop damage by Nilgai may be perceived as a major factor for Human-Nilgai Conflicts.

The result reported here is the output of the questionnaire survey targeted to random farmers in study area as well as self observation in study area. Farmers want to remove this unconventional pest and need to shift them in corrals. During post

monsoon season increased Nilgai population in the area as a primary cause of increased crop raiding issue. The logical explanation to the major shift in people's response due to recent damage by any wild herbivores in their crop field. Nilgai resists near agriculture landscape where water sources are found. Sometimes Nilgai choose corrals of domestic animals, due to availability of water and fodder (Photo 2).

The domestic cattle refuse the water and fodder which is used by Nilgai. The domestic cattle also reject the grasses grown by farmers, if it is used by Nilgai. The main reason of this rejection is smell of saliva of Nilgai in grasses, fodder and water(Gautam and Bissa, 2014 C).

Overall, farmer's perception for wildlife in general and Nilgai in a particular was positive as assessed during informal discussions. However, their apprehension over crop raiding issues during study was very clear.Perception of the local community in study area for the presence of Nilgai in vicinity these are-

Photo 3: Crop damaged by Naigai.

A. A species needs to be strictly conserved and causes no damage and no conflict.
B. Their number has increased but causes tolerable damage and causes no conflict.
C. Species causes damage but if mitigated, conflict can be avoided.
D. The damage is intolerable and species needs to removed from immediately.

It shows that though they are historically conservationist community, recent increases in economic loss due to increased crop raiding issues coupled with gradual socioeconomic change, has caused a negative shift in their conservation belief.

The most susceptible crops to be damaged by Nilgai are observed "between" 15% to 45% of the crop land in the area for all different crop types but sometimes it reaches up to 80 - 90% in particular crop lands due to fighting between two males as well as over grazing (Photo 3). The damage caused by Nilgai was much more wide spread and problematic than wild ass and wild cow. Interesting observation was that Nilgai was more generalist and damaging crop at all growth stage.Mostly immature crop damage gains due to feeding and ripe crop damage due to trampling. Receiving the indication of danger Nilgai run very fast as tiger and it looks behind only after running 400-500 meters.

Nilgai raids on Brinjal (*Solenum melongena*), Bhindi (*Hibiscus esculentus*), Carrot (*Daucus carota*), Ghobi (*Brassica aleracea*), Mooli (*Raphanus sativus*), Methi (*Trigoneela foenum*), Matar (*Pisum sativum*),Tomato (*Solenum esculantum*), Dhania (*Coriandrum sativum*) etc. were consumed and damaged by Nilgai. Nilgai make roosting site in the crop and use *Brassicacompestris* (sarson), *Pennisetum typhoidenum* (bajra), *Cyamposis tetragonoloba* (guar), *Sorghum vulgare* (jawar), *Gossypium arboretum* (cottan)and seldom *Triticum aestivum* (wheat) or small crops for hiding (Gautam and Bissa, 2014 A). This phenomenon cause complete devegetationparticularly in the area where they settle. Being alert Nilgai detects the presence of farmer, and on sighting farmer they would not move and will not any noise which can reveal their presence in the field. In a particular roosting when they suddenly chased by farmer, their speed become slow because of the standingcrop as they don't get access to theirnormal pathways.

Photo 4: Interaction of Nilgai with other animals.

Nilgai was found associated with goat (*Capra hitcus*), sheep (*Ovis oriensis*), cow (*Bos taurus*) and Donkey (*Equas asinus*) in feeding area. Grasses are preferred components of nilgai diet mostly during and soon after monsoon. Nilgai migrates in their home range and territory for water and fodder. Interaction between Nilgai and domestic animals create exchange of viruses presented on their body. Nilgai

spread viruses of domestic animals in nature (Photo 4).

Conclusion: Human population growth and activities like deforestation, agriculture and urbanization lead to an ever increasing encroachment of wildlife habitats. Reduction of wild animals' natural habitats altered into small marginal patches. Observations were scored who initiated the interaction (Human or Nilgai), the noted age classes and sex of the human and the Nilgai.

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