Effect of Social Organization in Wild Animals on Reproduction

Introduction

Wildlife traditionally refers to undomesticated animal species, but has come to include all plants, fungi, and other organisms that grow or live wild in an area without being introduced. Wildlife can be found in all ecosystems. Deserts, forests, rain forests, plains, grasslands and other areas including the most developed urban areas, all have distinct forms of wildlife. While the term in popular culture usually refers to animals that are untouched by human factors, most scientists agree that much wildlife is affected by human activities Wild animals, from ants to elephants, represent a natural resource of great significance for most forest-dwelling communities, as well as for those living in many other rural contexts. In spite of this, most development projects ignore their role in subsistence as well as non-subsistence rural economies.

The distinction between domestic and non-domesticated animals remains theoretical, as follows: most domestic animals may return to the wild as feral taxa, demonstrating that domestication is not a permanent state and many wild taxa may be domesticated and perhaps all may be imprinted. Some animals, however, have adapted to suburban environments. This includes such animals as domesticated cats, dogs, mice, and gerbils. The so-called non-conventional animal productions are in fact very ancient, having been practiced for hundreds of millennia, while domestic animal production (so-called conventional) has been in practice for only a few millennia. Numerous and varied animal production systems exist for wild and domestic animals. There are grey areas where physical control of the wildlife is limited, yet wildlife products for consumption and trade are highly organized and of high quality.

It is time for community forestry and other development professionals to consider the significance of wildlife as another natural resource, both from the point of view of nutrition (mostly meat) and that of income generation, and to include wildlife among the resources which need to be managed sustainably for the benefit of local communities. By improving wildlife management and integrating it into development programs, community forestry is better able to fulfill the dual objectives of improving the well-being of communities while simultaneously helping to preserve the diversity of the natural world.

From the direct benefits to humanity, food is perhaps the most important contribution wild animals make. This “subsidy from nature” in the form of wildlife

remains vital to the survival of many rural dwellers and forest-dependent people. For example, various indigenous hunting groups sharply distinguish being "hungry" from being "meat hungry." Wildlife provides a major part of the animal protein in the diets of rural people in a great many developing countries. The purpose of this community forestry note is to fill the vacuum left by the fact that in community forestry, as well as in agro forestry and other development activities, the contribution of wildlife to rural livelihoods has been greatly undervalued. The intent is to raise wild animals to their rightful value in the community forestry development process, and to provide an input for designing projects in ways that better fit the reality of most rural people in the tropics.

A study of over 60 countries shows that game and fish contribute 20 percent or more of the animal protein in the average human diet, and that percentage is much higher among rural and poorer parts of these countries' populations. Detailed studies are few, but estimated that 75 percent of sub-Saharan Africa depends largely on traditional wildlife sources of protein. Wildlife plays indispensable roles in the maintenance of complex, healthy ecosystems; as these ecosystems are indispensable to human well-being, the role of wildlife is also indispensable. The global wildlife population has decreased by 52 percent between 1970 and 2014; according to a report by the World Wildlife Fund. There are variations in grouping patterns according to habitat and season have been investigated in wild animal. These relationships form a web of interdependent features and any attempt to subdivide the continuum poses problems in interpreting cause-effect relationships. Based on this the objectives of this reviewing assignment are: To review social organization of wild animals and its effect on reproduction.

Social Organization of Wild Animal

Social organization is a pattern of relationships between and among individuals and social groups. Sociality is one of the most striking features in the Animal Kingdom. A large number of animal species, including humans, are social. Social systems have evolved in several distinct taxa, such as insects, birds, and mammals. Whereas some animals are highly social and live in groups for their entire life, others form groups only for a short period. The diversity of social organizations ranges from eusociality in insects or communal breeding in vertebrates to solitary life in some mammalian species. Social living is common in animals and directly influences important biological processes such as resource acquisition, predator avoidance and social learning.

Advantages of social organization

Safety from Predators: Individual animals are vulnerable to predators, but groups give individual animal's greater protection. Group said defense from predators in a number of ways:

Increased vigilance: Larger groups of animals detect predators sooner than smaller ones. More pairs of eyes to spot approaching predators, and greater possibility of alarm calls (the "many-eyes" hypothesis or collective detection. For example, the Arabian babbler (Turdoides squamiceps) produced approximately 50% more calls per minute at the sight of a snake when in a group than when the bird is alone.

An individual animal can spend more time eating (or even sleeping) and less time watching for predators than when alone. This advantage is especially important for animals that have to feed for many hours per day in order to gain sufficient calories (e.g. grazers). So, all members of the group are alerted to a threat as soon as one member detects it. Increased vigilance within a group is formalized in "sentinel behavior", "one member from a cooperative group standing guard in a prominent position while the rest of the group forages in comparative safety". But there are times when the "sentinel" uses their position to scrounge or steal food from others rather than doing their duty.

Reduced risk of capture: Individual animals have less risk of capture by predators because there are so many preys to choose from. For example, hundreds of wild beast crossing a crocodile infested river during migration. So many prey over whelms the predators and only a limited number of individual animals get caught.

Confuse predators: Predators can be confused in different ways, varying from inability to visually distinguish individual animals from the group to prey escaping in different directions when attacked. While certain types of lemur combine their calls to make them louder, making it sound like a much larger animal, and thus scare predator away.

Increased risk of injury for predators: Groups pose the risk of injury for predators in ways like stampede threat on attack. For example, eagles find it hard to attack flamingos in massive groups because of the risk of injury to wings from hitting other birds during an attack on one bird.

Easier to fight back if large number of animals: A group of animals can respond to a predator with mobbing behavior. It has a number advantages and disadvantages as a predator defense (Table 1).

Table 1: Advantages and disadvantages of group living for protection of predators

Advantages	Disadvantages
1. Deters predators.	1. Risk of injury or mortality by approaching predator.
2. Alerts others to predator's presence, and thereby removes the threat of ambush.	2. Use of energy.
3. Assessment of risk of predator i.e. their motivation to hunt and level of danger. Prey can adjust their behavior accordingly.	3. Lost opportunity for other behaviors, like foraging and mating.
4. Can signal quality to potential mates	4. Risk that conspecifics may take advantage at this time to steal food or mates.
5. Teaches young about predators by observing adults.	

Food finding

Living in a group gives various benefits in relation to food finding

Cooperative Hunting/Group:- Foraging/Social Predation Animals working together to hunt can tackle prey larger than themselves, and combat the group defense of herding. It is used for: Conserve energy, Capture larger or dangerous prey, Use different skills, Increase food intake when food scarce and Protect kill from scavengers. Certain lions run around potential victims and chase them back to where other lions lay in wait. Lions are strong but cannot run for long, and may easily be outrun by lighter, faster prey. Working together also allows them to bring down prey that weighs much more than a single hunter could catch. Possibly up to twelve times heavier than a single animal could capture. Group foraging allows the capture of preys that are dangerous to the single predator. Hunting in groups also conserves energy for individual animals. It allows the combination of different skills: certain lions may be better at perceiving prey and others at chasing. Schaller noted that lions on the Serengeti Plains are not that successful in their hunts. When hunting alone, only 15% of the times of the lions were successful compared to 30%

for group hunting. Animals engaged in cooperative hunting benefit from using less energy to capture the prey, and gain from the calories eaten after the kill.

Food sharing: Those animals with food can share with those animals not successful in the hunt. Wilkinson (1984) observed blood sharing by vampire bats (Desmodus rotundus) in Costa Rica. One hundred and ten regurgitations of blood were witnessed and most were for genetic relatives. But between one-quarter and one-third were non-genetic relatives. The evolutionary benefit of sharing with non-genetic relatives was a system of reciprocity that existed in a cave. In other words, one bat gives tonight and can benefit from receiving another night.

Help in finding food: one member of the group can communicate to others where the food source is situated. Von Frisch noticed that individual honey bees (Apis millifera), returning to the hive, performed a "dance"(particular movements) to communicate to the others where flowers were to be found (direction and distance).Subsequent research showed that sound and olfactory communication was also used.

Defending the food: A groups of animals are better able to defend a kill from conspecifics or scavengers while it is consumed, or defend a territory containing food.

Mate Access

Group living means that mates are readily available. Some species may group together just for breeding as well as permanent groups. While other groups are a male and his females (harem) (e.g. gorillas). Darling (1938) noted a faster reproduction in crowded areas. This is the "Fraser Darling effect" the stimulation of reproduction by the presence of other members of the species not the mating pair. It may be due to social facilitation where behavior is generally influenced by the presence of others as opposed to alone.

Table 2: Advantages and disadvantages of social organization for mate access.

Advantages	Disadvantages
1. Little energy expended in finding mate.	1. Risk of conflict and injury, particularly male-male competition
2. Availability of choice and variety of genes, including the best quality.	2. Males have no guarantee that female will not mate with someone else, unless they "mate guard" ("paternity certainty" hypothesis.

3. Little risk of non-breeding season through failure to find mate.	3. If temporary group, males often leave after mating and females left to raise offspring.
4. Opportunity to mate with more than one partner.	4. If permanent group, males may help raise offspring that are not genetically related because of female extra-pair copulation (EPC).
5. Females mating with many males guarantee multiple supports for raising offspring.	5. Many permanent groups have dominance hierarchies which mean that subordinate animals limited in their mating opportunities.
6. In permanent groups, opportunity to accurately assess the quality of other animals over a period of time.	6. Females in harems restricted and controlled by dominant males.
7. Best for species with brief mating period, like one night a year.	7. Risk of inbreeding in large groups.
8. Allows "mate-sampling" (short-term liaisons) before finding life-long monogamous partner (e.g. barnacle geese)	8. Evolutionary costs of group living for males; e.g. larger body size for competition; strategies to guarantee paternity.

Communal care

There are four types of communal care (CC) according to Gittelman:

• Nuclear family with reproductive pair and offspring from previous seasons; e.g. beaver;

• Matriarchy with reproductive female only; e.g. little brown bat

• Harem; e.g. Northern elephant seal;

• Multi-male/multi-female group contain both related and unrelated individuals; e.g. lions.

Table 3: Advantages and disadvantages of communal care in social organization[23].

Advantages	Disadvantages
1. Predator defense	1. Attract predators.
2. Communal suckling.	2. Mix-up of litters.
3. Acquisition of food easier.	3. Disease spreads quickly.
4. Infanticide possible	

The young are vulnerable to predators even more than adults as well as needing large amounts of food.

Group living helps in these two problems.

a) <u>Protection of the young</u>: A group can defend the young by physical protection (e.g. forming a circle around them in the presence of predators), or by having members to look after them ("auntying") while the parents forage. Some animals, like wildebeest, have "nursery herds" formed by cows and their calves to aid defense of the young.

b) <u>Feeding the young</u>: Groups give more "pairs of hands" to acquire food for the young.

In some cases, like lionesses, "communal suckling" occurs where all the litter is fed by a lactating female. Because females remain in the pride (and males leave), future generations will still be genetically related to the adult females, but in smaller amounts. Lionesses in a pride show synchronous breeding which means that they all benefit from co-operative cub rearing as "co-operative breeding". This is where individuals (usually kin) aid the parents in raising the offspring. It is estimated to occur in 8% of bird species and 3% of mammals. The kin members who help tend not to breed themselves that season, but gain an evolutionary advantage because some of their genes are surviving in the form of nephews / nieces or grandchildren. This is known as an indirect fitness benefit. Generally there is a positive correlation between group size (i.e. number of adult helpers) and number of young who survive to adulthood.

Social Transmission of Information

Individuals living in groups can learn from other animals, most notably through observation learning. For example, macaque monkeys in Koshima, Japan were observed to copy each other in washing a sweet potato in sea water before eating or in terms of survival, learning from others which new food is safe. Galef and Wigmore offered pairs of rats (Rattus norvegicus) two new foods. One rat ate their choice first ("demonstrator") and the other observed. The observer mostly chose the same as the demonstrator rat. Franks and Richardson found evidence of teaching of route from the nest to food by ants. One ant ("teacher") travels with another ant ("pupil"), known as "tandem running", and the "pupils" learnt the route four times quicker than when learning alone. Bats changing tree roosts daily within a large ecolony can transfer information about food sources and colony members.

Examples of other Benefits

Specialization: Among eusocial insects, different shapes and sizes have evolved to perform specialist tasks in the colony. In the Asian Marauder ant (Pheidologeton diversus), for e.g. "minor" workers are one five-hundredth of the weight of "majors" (soldiers).

Thermoregulation: huddling together at night for warmth; e.g. Emperor penguins[17].

Control population level: In situations of high population density, only stronger animals survive and are able to mate.

Save energy on movement: Individual fish in massive schools use less energy as they move compared to alone. v) Weight gain: Fritzsche took the usually solitary golden hamster (Mesocricetus auratus) and kept them in female pairs for five weeks. Each animal had increased their body weight by 25% compared to less than 5% increase for the solitary animals.

Synchronization of circadian rhythms: Groups of fruit flies, degus, birds, fish, bats and beavers, but not rats and hamsters, all show asynchronization of circadian rhythms (bodily rhythms over 24 hours) i.e. sleeping and eating at the same time.

Disadvantages of Social Organization

Increased Competition: The presence of many animals means that there will be more competition for food and mates, and the consequent risk of fights and injury.

Competition for food: Groups find it less easy to hunt by surprise oram bush compared to individuals. Thus hunting often means chasing, and this is not the most successful method in relation to energy costs (e.g. 15% of chases successful for lone lions. The presence of large numbers can overwhelm food sources (e.g. eating all the

grass). The increased size of the population affects red deer, for example, directly through lack of food, and indirectly through calf survival and growth. Males tend to move area more in situations of high population density. This may be because they need more food to achieve the large increase in body weight ready for the rut. There is also the pressure to share food with other members of the group.

Competition for mates: Competition for mates in the group can mean that some individuals may not find one, or there is guarantee against cuckoldry, particularly for males, when a mate is found.

The competition between males for mates occurs before mating and after. Competition between males can be both direct and indirect. Direct competition involves males confronting each other and fighting, as with red deer (Cervus elaphus). This leads to the evolution of larger body size in the male compared to the female of the species. This is known as body size dimorphism and is found most commonly in monogamous or harem situations. However, in situations where many males are living with many females, a more indirect type of male competition evolves. Here it is not body size that matters because the males rarely confront each other. It is the ability to produce a lot of sperm quickly this is known as sperm competition and leads to the evolution of larger testes relative to body size (e.g. chimpanzees). Sperm competition occurs also in the size of the penis and the number of sperm in an ejaculation. The presence of other males in the vicinity as in multi-male/multi-female groups leads to larger number of sperm in each ejaculation. This requires larger testes to carry them.

Increased Risk of Infection: Animals living in close proximity are at higher risk from the spread of disease than solitary animals. In cliff swallows, for example, nestlings in massive colonies (over 5000 birds) had five times more swallow bugs on their bodies than in small colonies (less than100 birds). Bugs reduced survival by 50%. Group living also leaves animals vulnerable to parasite infection. Parasites survive by living within host animals and following a particular life cycle, which can involve “encouraging” one host to be eaten by a predator, and thus the parasite moves on found higher rates of mosquito bites (and risk of malaria) in larger groups of primates in South America. Mosquitoes detect animals’ odors (like carbon dioxide) which will be higher in larger sleeping groups. Eusocial insects may, in fact, benefit from improved immunity from disease by group living. Traniello found a “social transfer” of infection resistance to fungus in damp wood termites (Zootermo psisangusticolis). The immunity of non-immunized termites improved in the presence of immunized nest mates, through, for example, grooming behavior.

Exploitation by Other Animals: Animals in groups are at risk of exploitation by other members of the group. This is particularly so in groups with dominance hierarchies.

Exploitation by dominant animals: Dominance hierarchies developed in groups as a way of maintaining order and avoiding costly confrontations too often. The dominant animals benefit from more (and better) food and access to mates. For subordinate animals, life in a group can be hard. Among meerkats in South Africa, where only one dominant female and one dominant male breed each season, the subordinate animals are "forced" to babysit, feed pups, and guard the burrow. The position in the hierarchy influences sexual activity through sexual contraception in some species. In naked mole rat (Heterocephalus glaber) colonies, the queen (dominant female) only breeds and urinary chemico-signals "switch off" the release of hormones and ovulation in subordinate females (such that 90% never breed); thus ignored by males. Social stress may also result from the queen's bullying of females.

Exploitation by conspecifics: Even in groups where there is not dominance hierarchies, animals can be exploited by group members. Food stealing (parasitism) is one example. The animal that does not join the hunt saves energy and gains from the food. This is the risk of "free riders" or "cheaters" -animals gaining without doing their share of the work. Because of this risk, animals in a group would be expected to watch other members to make sure they are doing their "fair share". This has been observed among humans but not for example, in birds like dark-eyed juncas and American tree sparrow.

Lima wanted to see if these birds would monitor the vigilance of group mates in the case of "collective detection". Food deprived birds were added to the flock. These birds would be concerned to eat and not "do their turn" at watching for predators. The rest of the flock did not change their vigilance behavior suggesting that they were not monitoring the group mates 'behavior. Observation at the Okavango lion project suggests that the females have little bond to the males. Kat reported the case of attempted deception by "Vouvray"(lioness). She had found a carcass killed by a leopard, and tried to call her cubs from the pride to eat. But two adult males followed, so "Vouvray" took the cubs to the water-hole away from the carcass. The males followed. Shethen tried to sneak off with her cubs to the food, but it failed and the males found the food.

More obvious to Predations: Large groups are easy to spot for predators (i.e. more conspicuous), and there is less chance that such large group can hide. It seems obvious that small groups are at more risk in some species, but so are groups that are too large. Thus there is an optimal size for groups in different species. McGuire investigated the optimal group size for prairie voles (Microtus ochrogaster) based on a population living in Illinois, USA. The groups were studied over seven years. The ideal size of group was three adults and offspring. Larger groups were more likely to have disappeared during the study, mainly due to predation by weasels. For example, adults in groups of eighteen adults had an average survival of less than fifty days compared to 150 days for adults in the optimal group size.

Risk of Inbreeding: Mating is paramount, yet, at the same time, it is important not to mate with those who are too genetically related because of the higher risk of recessive traits appearing. Recessive genes require both copies (i.e one from each biological parent) to appear, and can transmit genetic flaws. Dispersion of the offspring at puberty is one mechanism that animals can use to avoid incest. For example, adolescent lions are driven out of their birth pride and wander looking for other prides. While the "Westermarck hypothesis" originally suggested that biology turns off sexual arousal to close genetic relatives.

Risk to the Young: There are risks to the young of being raised in a group.

Misdirected parental care: The young may suffer if the parent(s) fail to feed and care for them because the care is misdirected to non-genetic animals. This is also a risk for the parent(s).Where many young are raised in proximity, it is crucial for the mother to distinguish her own offspring. Providing care for non-genetic offspring is an evolutionary disadvantage, especially in mammals where lactation is costly for the mother. So the mother must be able to recognize her offspring, and one mechanism is olfactory (smell). Jesseau tested the ability of degu (Octodondegus) (South American rodent) mothers to recognize the smell of their offspring compared to sisters off spring(genetic relatives), co-nesting mothers offspring(familiar but genetically unrelated) and strangers offspring (unfamiliar and unrelated).

In the experiments performed, mothers could discriminate the odors of their own pups (familiar own -FO) from non-genetic related pups (familiar alien, FA, and unfamiliar alien, UFA), but they could not distinguish between familiar and unfamiliar non-genetic related pups at two weeks old. However, with pups at six weeks old, the mothers could not distinguish between the odours of their own pups and co-nesting genetic unrelated pups, but they could tell the difference between FA and UFA. Importantly, degu pups are weaned by six weeks old, so recognition of own offspring is not so crucial. However, there is still a risk of social grooming or uttering alarm calls to non-genetic related animals. There is a risk of misdirected care against the probability that the familiar alien young are distant genetic relatives. Thus indirect fitness benefits to nursing alien young. But, even if mothers can recognize their offspring, there are cases of mothers nursing alien young in the group.

Risk to health of young: In larger groups where there are many animals (both young and adults), the young may be injured or killed by, for example, adults fighting which ends in the young's trampling. The greatest risk to the young is death. Bourke reported that in singly-mated queen wood ant (Formica exsecta) colonies, worker ants killed male offspring to maintain the balance of daughters to sons (sex ratio) this is fratricide. The young of some species are also at risk from infanticide. In lions, for example, incoming males to the pride will kill the cubs less than nine months old already in the pride. Pusey and Parker believed that up to a quarter of all cubs die this way. The reason is sperm competition.

Factors Affect Social Organization of Wild Animal

Physical factors: These include geological constraints such as the size, location and isolation of land masses, as well as the presence of mountain ranges, rivers other shaping landscape features and changing environments. For example, the ranges of some tropical mammals do not extend across Africa's Dahomey Gap. This category also includes climatic parameters. For example, animal species diversity generally decreases with increasing aridity and with increasing altitude[4].

The composition of a source fauna is also influenced by site changes and modifications to forest vegetation. It is important to understand some of these potential influences in order to help predict fluctuations in source fauna populations. Variations in the presence and abundance of animal species within a site may be due to natural succession in the vegetation, to changing patterns of human use, or to a combination of both these factors. In turn, these changes will affect the number of game animals available to a hunter, the nature of the animal-mediated pollination, the number and density of pest species, and many other factors of keen interest to the local humans.

Changes in forest size and connectivity can also change the fauna of a given area. For example, as a forest is fragmented, the fauna loses those species whose area-requirements are now no longer met, often the case for the large predators, large primates and large ungulates. Not only are these species no longer available for direct exploitation by humans, but their absence will change the remaining community of species.

Environmental changes have huge impacts on the life and reproduction of wild animal; as indicated in **Table 4.**

Table 4: Impact of environmental degradation on wildlife

S/No	Environmental degradation factors	Effect on wildlife
1	Habitat loss/Fragmentation	Affect the animal's breeding, foraging, dispersal behaviors and predation rate
2	Deforestation	Increase human and wildlife conflict, soil erosion, water pollution and habitat loss
3	Soil Erosion	Affect the productivity of all natural ecosystems, loss of biodiversity.

4	Global climate change	Affect the linked food chains, circulation of nutrients and ocean flow.
5	Desertification	Affect the Climate shift, species migrate to other areas, and there is a disturbance in biogeochemical cycles
6	Effect of roads on wildlife	Effect on animal behavior, hindrance in animal movement, home range alteration, loss of reproductive success, and change in physiological conditions
7	pollution	Diseases, mortality, bioaccumulation and physiological stress.

Biotic factors: This category refers to the ecological mechanisms that mediate the number and abundance of animal species, and therefore their availability for use by humans. It includes the external, environmental influences together with internal, species-specific regulators such as an individual's phylogenetic make-up. The first of the external, environmental regulators is plant species diversity itself. There seems to be a generally positive correlation between the number of species of plants and the number of animals. This is due not only to the fact that greater numbers of plant species provide greater sources of food, but also because the increased architectural complexity of the forest associated with more diverse vegetation seems to provide the variety of habitat that allows greater animal diversity. Increased environmental heterogeneity increases the number of microhabitats for animals and their prey.

Predation: The role played by predators in structuring communities has been well studied in marine and intertidal systems. This work has shown that predators can increase the overall species diversity in a community by decreasing the abundance of smaller predators and competing herbivores, and by reducing dominance of prey species. Research of this sort has not been conducted in tropical forests, but biologists working in various locations have observed that the decrease in abundance of large predatory mammals is correlated with the increase in abundance of medium-sized terrestrial mammals. Absence of large predators such as tigers, jaguars, leopards and ocelots also seems to result in dramatic differences in densities of prey species, which are found in more regular numbers in the presence of these predators.

Habitat Destruction and fragmentation: Habitat loss due to destruction, fragmentation, or degradation of habitat is the primary threat to the survival of wildlife in the United States. When an ecosystem has been dramatically changed by human activities such as agriculture, oil and gas exploration, commercial development, or water diversion it may no longer be able to provide the food, water, cover, and places to raise young that wildlife need to survive. Destruction, fragmentation, and degradation of natural habitats have been the main causes of world biodiversity decline. They have left numerous plant species facing the risk of extinction. Historical and contemporary losses in forest cover associated with human activities have occurred in many regions of the world. China has experienced a major loss of natural habitats, particularly from the 1930s onward, mainly due to the over logging of forests for timber, fuel wood, and paper, as well as from the conversion of natural forests into mono specific plantations and croplands.

Humans have a detrimental impact on natural habitat due to various activities including deforestation, urbanization, roads, the energy sector (renewable and coal), mining, and climate change. The most important form of habitat destruction is deforestation either to develop land for agriculture (70%) or to harvest lumber intensively. It is considered that overpopulation and poverty is the major cause of environmental degradation, there is negative relationship between poverty and stable environment and if we reduce the human population and poverty these are the important factors to save the environment.

Effect of Social Organization on Reproduction: Reproduction is a metabolically highly demanding process, and generally offspring are quite more sensitive to deleterious environmental factors than their parents. Reproductive strategies vary with the genetic background of different animal species, and the most important environmental factors are those having greater influence on offspring survival. Many mammalian wild species inhabiting temperate zones adjust their reproductive season so that offspring births are concentrated during spring. Available resources are most scarce in winter, and offspring being born in spring have better chances of survival the older and heavier they are when they will be forced to face wintertime conditions. On the other hand, it seems to be easier, from an evolutionary perspective, to change the timing of the mating season than to change the duration of gestation or lactation.

The physiological idea of mating (coition to order), familiar through the keeping of animals for breeding purposes, should certainly not be applied to the pairing and mating of free wild animals. Even in closely related species the ceremonial may differ widely, as Antonius has shown for various Equidae (members of the horse family). Finally, personal sympathies and antipathies often play a decisive role among wild animals. A meeting between a mature male and female of the same species, mammal or fish, does not invariably lead to pairing or mating. Unlike the case" of domestic animals, the rutting period of wild animals is mostly confined to definite seasons. Most wild mammals, especially those of greater size and longevity,

are to some extent, seasonal breeders. Such animals limit their mating activity and offspring births to well defined seasons of the year. However, some domestic species such as cattle, pigs and rabbits exhibit no seasonal breeding if they are raised in environments with mild climatic changes throughout the year.

The main environmental factors influencing animal reproduction are temperature, humidity, amount and distribution of rainfall, solar radiation and photoperiod, nutrition, productive system management, social interactions among individuals within the same population, predator-prey interactions, parasite- and pathogen- host interactions. Many species have evolved complex social systems in which only a few individuals within a social group reproduce. For example, reproduction among subordinates can be suppressed or delayed in eusocial animals a number of bird species and in social carnivores. The importance of specific individuals may be especially variable for social species that exhibit reproductive suppression of subordinates, because this suppression creates skewed heterogeneity in the reproductive value of individuals. Population models are particularly sensitive to variation in reproductive performance among individuals or age classes. However, the impact of reproductive individuals on the population dynamics of species with complex social structure remains poorly understood.

All mammals, particularly those that live in large groups, are immersed in a rich and complex social environment that is full of the sights, sounds and smells of their offspring, their mates and their neighbors. When they are received, these sensory inputs evoke changes in many physiological and behavioral processes, including those that are involved in reproduction. Some of the reproductive responses have been documented in detail for a few domestic animals and laboratory rodents, and they have been observed in many other species, including marsupials, wild rodents and primates. In the marmoset monkey, for example, a most striking effect is the blockade of ovulation through female-female dominance interactions. In mice also, reproduction can be blocked by such signals but, in this species, pregnancy is only interrupted in females that encounter a strange male. These sorts of inhibitory effects have not been detected in sheep or goats and, if they do exist, they seem unlikely to be important. On the other hand, the small ruminants have remarkable systems in which socio-sexual signals stimulate gonadal activity the effects range from subtle increases in secretion of sex steroids through to the induction of ovulation in anoestrous females, the most profound and useful of all reproductive responses.

The presence of opposite sex and Pheromone effect: Female mice attained puberty earlier when they were reared in the presence of adult males and then went on to show that the effect is due to a urinary pheromone produced under the influence of androgens. In the female, the pheromone first increases the basal secretion of LH and this stimulates the production of estrogen by the ovary and begins the normal sequence of endocrine events that leads to the preovulatory surge of LH and ovulation. The pheromone releases LH and induces ovulation more effectively when it is accompanied by auditory, visual and tactile cues. The same

phenomenon is seen in rats so it may apply to all rodents, including voles, for example. However, in this species, mature as well as immature females do not ovulate unless males are present and they are all very photoperiodic.

In the opossum, male odours can clearly advance puberty in females but we do not know whether this applies to other marsupials. In pigs, there is a similar effect and, as in the mouse, the presence of mature males also enhances the maintenance of cyclic activity after puberty is induced by exogenous gonadotrophins. We also need to consider the reciprocal effect in which the presence of mature females might advance puberty in males, an effect that has been documented in mice. On the other and, in sheep compared the times of onset of puberty in rams that were raised as mixed-sex or single-sex groups and found no difference.

When female mice are held in groups in the absence of males, their reproductive cycles become irregular in length and the reproductive tracts atrophy. The introduction of males to the group results in ovulations and estrous on the third night that is a highly synchronized among the females, followed by regular estrous cycles ('Whitten Effect'). As with the pheromone that advances puberty in this species, the Whitten Effect is caused by a substance that is secreted into the urine of males under the control of androgens.

Another pheromonally-mediated interaction between males and females is the 'Bruce Effect' in mice, in which a strange male terminates pregnancy by inhibiting the luteotrophic system (Figure-1). This was considered to be peculiar to rodents but it is most interesting that the presence of vasectomized rams during early pregnancy appears to reduce the incidence of multiple births without affecting pregnancy rate or gestation length. This may reflect embryonic loss induced by the male. The existence of opposite sex in social organization on has impacts on reproduction; as (Figure-1).

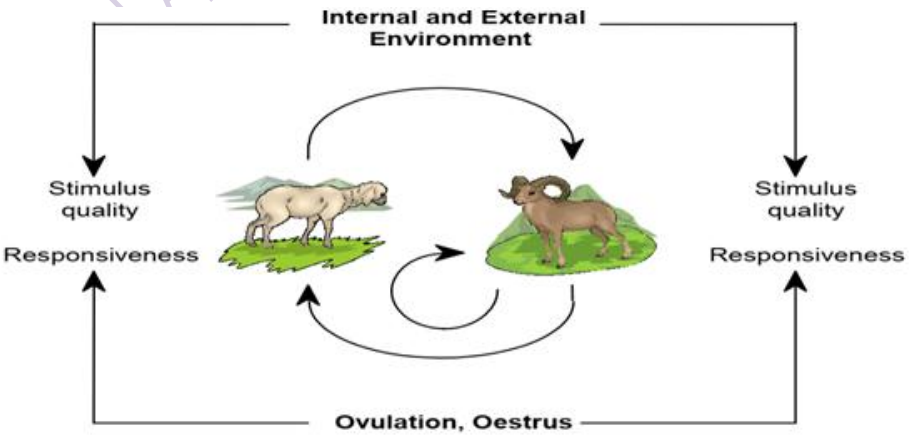

Figure 1: The mutual stimulation of male and female to increases GnRH and sex steroid secretion.

Competition for food and mating: Several species which are competing totally or partially for the same resource (i.e. pasture) can be strongly selected for desynchronization of their breeding seasons. Such a situation has been well documented for herbivorous ungulates in the African savanna. Thus, we need to interpret such observations very carefully social effects can affect nutritional status and thus reproduction without necessarily involving direct actions of socio-sexual cues on the reproductive system.

Social structure and dominance: Amongst the primates, the marmoset provides a remarkable example because dominant females can completely block ovulation in subordinate females. This effect seems to involve olfactory signals that inhibit the secretion of gonadotrophins. A similar phenomenon is seen in males of the lesser mouse lemur, where the urine of the dominant male of a heterosexual group seems to reinforce the inhibitory effects of testosterone on gonadotrophin secretion, thus reducing testicular function. By contrast, male activity, including the process of establishing a dominance hierarchy, seems to depend on urinary signals from females[94]. Mature female mice, grouped in the absence of a male stimulus, exhibit suppressed estrous cycles (the "Lee-Boot effect"). Ma have shown that adrenalectomized mice exhibit regular estrous cycles in either isolated or grouped conditions, so clearly the adrenal gland is involved in this phenomenon. It is tempting to consider the Lee-Boot effect as a response to stresses that develop from the social structure of grouped females, but we need to remember that adrenal function may be only correlated with stress and not necessarily a cause or a mediator. Indeed, adrenal steroids play a variety of other roles and, in rodents, are considered to be important for the normal expression of cycles. In red deer living under natural conditions, social factors can affect reproduction in several ways. Compared to subordinate females, dominant females have greater reproductive success, births earlier in the season, and more male progeny. On farms, they do not seem to display this as clearly, although there is some evidence that dominance status affects ovarian function. It appears that this relationship is most clearly expressed when the animals in the herd need to compete for food.

The reproductive success of females depended to a large extent on their social ranks. The mechanisms responsible for the higher reproductive success of dominant females were manifold and were based on pre- and postnatal effects, which were probably caused by a better physical condition of the females. Although food can affect the health of females, food was never limited.

During the breeding season in our study and competition for food is unknown in rabbits under natural conditions. The concept of dominance is central to the study of animal social organization. Dominance hierarchies are usually more prominent in males than in females and are thought to regulate access to limited resources. In males, priority of access to mating partners should result in a higher reproductive success in dominant individuals. Because dominant individuals can supplant subordinates from limited food resources and nesting sites, dominant females should

be able to rear their offspring more successfully. In addition, in most mammalian species, social subordination leads to stress responses which can greatly impair the reproductive functions of females.

Effects of the Young on the Mother: In females that are nurturing their young, the frequency of GnRH pulses is low, so the ovarian follicles do not enter the final phases of development that precede ovulation, leading to lactational anoestrus. At weaning, the inhibition is removed, GnRH pulse frequency increases within a few hours, and reproductive function is restored. A dramatic example of this effect is observed in pigs.

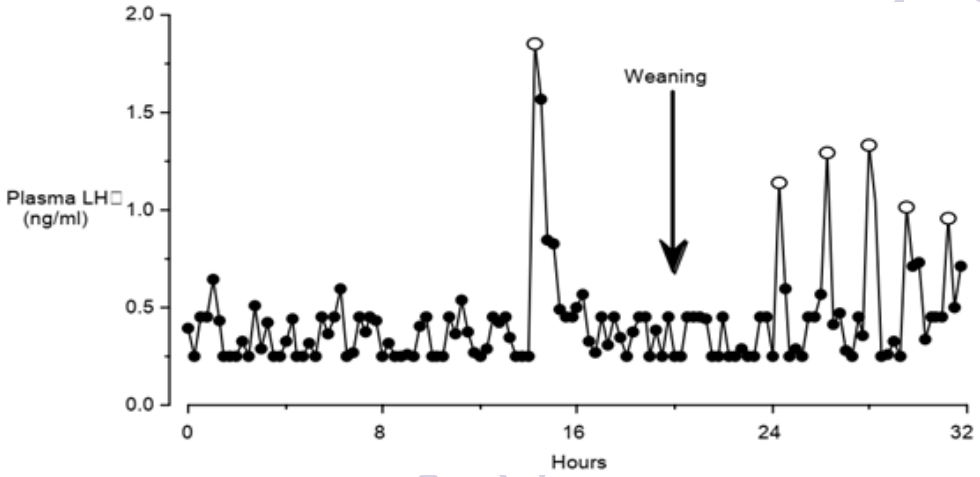

Figure 2: An LH profile from a sow showing the effect of weaning on LH pulse frequency.

Social Stress and Risk of Diseases: Social stress is known to cause major health problems through increased susceptibility to infectious and non-infectious disease. However, different social variables may elicit a stress response, and the same factors may evoke contrasting physiological responses in different species, highlighting the need for broad comparative approaches to identify general principles. Moreover, group living also creates unavoidable costs at the group level in the form of increased risk of social transmission of infectious agents.

Stress can be assessed by both behavioral and physiological indicators. One of the most commonly measured immediate physiological responses to stress is activation of the hypothalamic–pituitary–adrenal (HPA) axis. During stressful events, corticotropin releasing factor (CRF, also called CRH) is released from the hypothalamus, and is the primary trigger of adrenocorticotropic hormone (ACTH) secretion from the anterior pituitary. ACTH then triggers systemic release of glucocorticoids from the adrenal gland. Stress and diseases have opposite effects on the formation of mate preferences in male and female.

Risk of inbreeding: Sociality is usually explained by the fitness advantages it supposedly provides, as for example, increased mating opportunities and offspring survival. Because it also incurs costs, such as higher risks of disease infection or parasite transmission, and inbreeding in small groups, the maximization of observed heterozygosity would therefore appear to act against some of the main costs typically associated with group living. Geneticists usually consider that due to the small size of social groups, these are at high risk of losing diversity and becoming inbred.

Conclusion and Recommendations

Social organization is a pattern of relationships between and among individuals and social groups. Grouping patterns vary according to habitat and season has been investigated in wild animal. Social living is common in animals and directly influences important biological processes such as resource acquisition, predator avoidance and social learning. Social organization has also disadvantages like increased competition, risk of infection and diseases, risk of predation, risk of inbreeding and risk for young animals. This social organization is affected by physical factors, biotic factors, environmental and fauna changes and predation. Social organization has impacts on animal reproduction through competition for mate, social stress, diseases, social rank and dominancy, opposite sex pheromones, inbreeding and sucking of young. Once the social organization of animal is affected, physiological process of the animal will be affected. Based on the above conclusion the following recommendations are forwarded:-

o There should be awareness creation for the benefit of wild animal for human needs,

o Factors affect social organization of wild animal should be managed

o Both governmental and nongovernmental should give attention to wild animal.