

Effect of Exotic Species on Local Flora and Fauna in and around Sengaon

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ABSTRACT- The many exotic species introduction has been causing chaos in biological world as they turned in to invasive species by making interspecific competition stronger mentioned by Darwin in theory of natural selection. Effect of *Parthenium spp.* of plant and *Clarias gariepinus* of fish in India has been one of the problems in the same terms. In the present study we have noted the effect of a new exotic animal emu *Dromaius novaehollandiae*, fish *Clarias gariepinus* and plant *Parthenium spp.* collectively in the region, indicating its effect on other life forms because of absence of natural predators for the same.

Key-words- Exotic species, Invasive species, Emu, *Clarias gariepinus*, *Parthenium sp.*, *Dromaius novaehollandiae*

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INTRODUCTION

Biodiversity is the variety of life forms on earth. It is necessary for stabilization of ecosystem, protection of environmental quality for understanding intrinsic worth of all species on the earth [1]. Anthropogenic have brought the Earth to the brink of biotic crisis. In this century habitat destruction and fragmentation has become a major cause of population declines and extinctions of different life forms. The destruction and serious degradation that have swept away over 75% of primary forests worldwide, about the same proportion of the mangrove forests of Southern Asia, 98% or more of the dry forests of western Central America, and native grasslands and savannas across the USA is the famous example of habitat destruction and fragmentation. With increasing human impact it spreads and intensifies over the whole planet, conservation concerns evolve. Endangering of animal species is being brought by a mass-scale climatic change. Amphibian populations decline is a good example of the same. The consequent challenge of it to conservation biologists is to investigate large spatial and temporal scales over which ecological and evolutionary processes become closely intertwined.

To handle this challenge, it is urgent to integrate currently disparate areas of conservation biology into a unified framework. The scenario of extinction and threatening has been happening on large scale [2,3] but in place biodiversity has been seriously neglected [4-6]. Conservation biology has focused terrestrial biodiversity, which is readily observed and with which humans are more familiar [2].

Significant threats for the biodiversity are:

- Overexploitation
- Habitat degradation
- Invasive species
- Especially at the population level
- Pollution

Over-exploitation

According to FAO in 2006 more than 75% of world's species are fully exploited, overexploited, depleted, or collapsed of the all ecosystems coastal ecosystems are facing greatest threat [7].

Habitat degradation

Habitat degradation has greatly affected in coastal habitats and terrestrial ecosystems [8].

Invasive species

Invasive species affect both the ecosystem at both population and species level. This era has turned out to be a greatest of extinction of vertebrates [9]. Invasion of *Parthenium sp.* (Congress grass) from USA to India during the extreme drought conditions was lack of natural predators for itself in India but turns as feed of *Zygodamm*

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abicolorata and stem galling moth *Epiblema strenuana*. The continued exposure of farmers to the plant *Parthenium spp.* causes skin inflammation, eczema, asthma, allergic rhinitis, hay fever, black spots, burning and blisters around eyes [10]. Another burning problem being faced by inland fishery in India and Bangladesh is the introduction of fish *Clarias gariepinus* also called African Magur is also covered in the paper.

MATERIALS AND METHODS

In the present study the three life forms *Parthenium spp.*, *Clarias gariepinus*, and *Dromaius novaehollandiae* were studied in and around the Sengaoon city. The latitude and altitude of the city are 19.79°N and 76.8865°E. The city was placed with emu farm 12 years back in year 2004. The study was done during the academic year 2014-15 and 2015-16 for consecutive two years.

External Morphology

Emu has been first reported on Western Australia in 17th century by some European people. The word emu means ema in Portuguese which means to denote a large bird similar to an ostrich or crane. The bird can reach up to 1.5 to 1.9m in height, its average height of females is greater than male [11] and weighs about 31 and 35 kgs in male and female respectively [11]. Vestigial wings are the features of the birds and are very small which make them more cursorily adapted with quiet small bill. The bird can run at the speed of about 50 km/hr, as the bird is endowed with highest developed pelvic muscle. The muscles bear significant body mass of the total body weight. Nictitating membrane is present in eyes meant for protection. The bird maintains its body temperature by taking bath in water during hot sunny days. Female emus cry louder than male birds.

It forges itself in diurnal pattern feeding on different plants depending on availability. The bird requires pebbles and stones to assist in digestion of the plant material eaten. Emu male and female pair remains together for about 5 months and generally breed during summer. Weight of both the breeding partners increases slightly during breeding season. The average egg laying capacity of female is 11 eggs. An egg takes 56 days for incubation to happen.

Predation

There are more or less no predators of emus in India and has been causing huge problem in prey predator theory. Dingo is one of the natural predators for the bird in Africa, it feeds on its eggs and making the bird vulnerable to mass destruction. Natural calamities are also reported to have caused mass destruction of the bird [12].

The present study deals with the loss of prey-predator theory being brought in region by introduction of this animal Sengaoon.

The emu farms studied were:

1. Apurva Emu Farm, Sengaoon
2. Kesapur Emu Farm, Kesapur

3. Ruturaj Emu Farm, Hingoli

During the study it was found there was no significant income out of the business

Highlighting effects were:

- Absence of eggs sellers.
- Costly food intake by the birds.

As a result least care of birds was taken. When the birds were released to the environment used to cause huge fear amongst the native animals and even humans by the huge appearance of the bird. Though the bird was exotic in nature was not invasive to other species.

The Sengaoon fish market studied during the present work:

The fish varieties being sold in the market were mainly observed which included *Catla catla*, *Labeo rohita*, *Cyprinus carpio carpio*, *Cirrhina mrigala*, *Pangasius pangasius*, and few other small fish species were: *Labeo boga*, *Labeo calbasu*, *Salmophasia novacula*, *Mystus armatus*, *Mystus bleekeri*, *Sperata aor*, *Glossogobius giuris giuris*.

Few times the fish *Clarias gariepinus* has also been sold which is a huge cause of mass destruction of habitat and has proved itself as an invasive species [13]. The fish has come to India through ballistic waters. The fish ascends the height and pond banks with the help of its strong pelvic fins.

RESULTS AND DISCUSSION

For Emu Cultivation

- The animal even though being exotic species has not proven itself invasive.
- The loss of natural predators to the bird emu increases its threat biologically.
- The costly feeding and maintenance of the bird.
- The bird shows intraspecific competition many times resulting to death many times.

For *Clarias gariepinus*

- The fish even though banned in India is being sold in the market because of lack of public awareness.
- Raising knowledge of fishermen and fish cultivators for hazardous effects of fish.
- Increasing knowledge of fish consumers regarding the ill effects of fish consumption, which can indirectly support growth and cultivation of fish by the fish cultivators.

For *Parthenium sp.*

The plant is renown to have caused diseases to humans hence it is better to avoid complete irradiation of plant with bare hands.

The plant can be irradiated better with weedicides.

CONCLUSIONS

In the present study we conclude that the exotic species may or may not prove as invasive, but can cause chaos in native biological cycle. Hence the strategy of government

before introduction of exotic species has to be more experimental before being brought in practice.

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