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Migration in Fishes: A Study

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Abstract:

The migration of animals is an amazing phenomenon in which freshwater fishes are also included. The migration or residency at one place of an individual fish helps in the evolution of costs and different strategies' benefits by which the lifetime reproductive effort is increased. The life history of fishes like foraging and reproduction cannot be seen from a single habitat. This is because of the variation in habitat conditions such as temperature, climate etc. The migration in fishes is necessary for the completion of life cycle. The variability in migration is observed by physical scale that ranged from hundreds of meters to thousands of kilometers in case of coastal and stream dwelling fishes. This paper discussed about the causes of migration of freshwater fishes. There are many factors that affects the migration in fishes as the fishes' migration is affect by the chemical and physical changes in water environment. And the migration in fishes has many advantages and disadvantages.

Keywords: *Migration, Factors, Variation, Habitat*

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Introduction

In Animal Kingdom, the journeys through the migration are prevalent among the kingdom of animals and most occurrence of the migration is done majorly for the purpose collecting food, for reproduction or the temperature adjustment. This all factors are sometimes called as the process of migration of breeding, feeding, and the wintering. In 2011, Binder et al also suggests about the conditions of habitat which are variable or the requirements or needs are changing for the particular habitat along with the needs that are continuously changing of the population too. Then In 1996, the advantage of fish migration is described as a habitat that is an added process for the purpose to avoid the circumstances which are adverse. The major aim of this particular paper is to study the activity of fish migration.

The migration of fishes

The process of migration takes place in many kinds of fishes on annual basis whereas in case of others, the involvement of individuals takes place in the particular habitat change which should be at definite stages of the development. There are various migration processes which are having the nature of diurnal. The diurnal nature involves the migration towards the vertical or tidal waves of the fishes which are mesopelagic present in the deep layer. The movement of fish species which are inland and are at a considerable distance and is present within the ways of water for the purpose of feeding and reproduction. The study of the radio tagging reports the movement to the depositing ground which is natal that ranges from the 100 to 300 km and the habits of migration for fishes may differ along the parameter of latitude. The Gastrosteus Aculeatus is the fish which is marine in case of the north side of cold waters whereas to the south direction, a dweller which is of freshwater is predominant (Obande, Dambo and Adah 2013).

The first direction for the movement of downstream, the migration or the swimming using the current. The factors which are responsible for behavior and ecology impacts the inconsistency of the migration which are downstream of fish- larvae and the fry which are understood very poorly. The second of the point is relate to the movement of upstream or the migration against the current. The phase of the upstream water are related with the activities of which have the demands for the high energy. This is mostly focus on different type of signals present in the migration of homes. There are various kinds of methods for migration that involves the random drifting which have locomotive movements and the directional swimming. The migration types are alimentary or migration for feeding, migration of gametes, the climatic migration and the migration related to the osmoregulatory.

There are some of the strategies for the migration purpose which are diverse in nature, particularly among the fishes. The diversity of the migration rates can be conducted in a numerous ways which are classified into different migration types such as the

- Migration by the function
- Habitat migration
- Temporal scale
- Patterns among the animal movement

The migration in the spawning are somehow seasonal and is evolving. In adults and juveniles, the standard habit for the purpose of determining the growth and the rate of survival that differs in both i.e., juveniles and adults. The migrants who are refuge are the individuals whose purpose of migration is the reduction in the predation along with the potential of growth also decreases (Bronmark 2013).

In case of the biology of fish and management, the counters of fish are considered as the necessary tool which helps in measuring the size of mesh and in calculating the fishes who are migrating to rivers. This tool also involves the Iceland Rivers testing from few years ago. The Vaki Ltd. Company manufactured this counter which includes the total of 16 counters. All these counters are positioned in separate Iceland Rivers where working of every counter is proper but take proper care of this at the time of installation. In these tools, the check for the maintenance should be regular where their source of the energy is generally uses as a battery of car and a solar panel cell. The fish stock size should be known during the management of sound fishery and for the purpose of fish stocks which are migratory undergoes variabilities in the size of stock which is somewhat very important in this case. In the fish stocks category, sea run salmonids fall.

There are fish stocks in the ice lands which have three kind of species:-

- Atlantic Salmon
- Brown Trout
- Arctic Char

The importance regarding the high economy is of the Salmon whereas the fishery of char and trout are becoming more in their value. The salmonids size of stock may vary widely in Iceland (north region) along with the data that proceeds from a fish counter and very correctly solve the statistics and the spawning size of the stock. As we have discussed this above, the fish counter may give us the idea regarding the distribution of size and the species of fish in number on the basis of size along with the existence of information on which species run by time or the knowledge of the migratory conduct. As according to the Gudjonsson et al some of the examples are discussed for the counter usage that is based on the salmonids size. And it also depends on the migration time both at the time of summer and the migration of diurnal pattern present in separate fish stocks (http://www.miljodirektoratet.no).

The migration styles of fish differs as majorly the anadromous species of fish in adults migrates from the ocean region into fresh water to the spawning area. There are different kinds of program in rivers for the restoration purpose of the anadromous fishes in which the passed by the dams upstream that uses different ways for trucking. The surviving process they adopted for anadromous species are the spawning and the returning of the downstream water to the salt water and this does not involves the Petromyzon marinus that dies after the spawning process.

Various fishes of river continuously migrates upstream and downstream throughout their life time to refuge. Then, all these movements have some variation on the basis of seasons and years. In natural rivers where there is an open area, there occurs a fish migration that keeps continuing from many generations. They are particularly considered to be for the survival of long period and the population health. As per the Kynard 2003 in his paper "Review of Migration, Research methods and passage for downward migrant Fishes in the Northeast USA", the adult fishes in pre spawning migrate from the Atlantic Ocean in the month of May-June and, many of the species survives depending on the spawning and downstream to the water which is salty. In this paper, various researchers studied about the migrations of fish downstream that uses the traps and the techniques of hydrocoustic. In case where the studies in the field is not possible, the stages of life are discussed for the migration in case of the artificial streams (Kynard 2003).

Review of Literature

Nabi *et al.* 2014, explained about the over view that causes the migration of fishes, and its associated hormonal role. According to this paper migration **is** found to be the phenomena that very common and talks place on both the seasons such as diel and the seasonal one whether it is for the feeding purpose, reproduction, or the seeking of refuge from the predators and in the climate conditions which are very much adverse. Various factors which are extrinsic triggers the migration process which are level of water, the precipitation, color of the water, density of fish and the hunger of some particular insects whereas there are some of the factors which are intrinsic such as the hormone for growth, growth factor – insulin, gonadotropin which is the releasing hormone, FSH i.e., Follicle stimulating hormone and the testosterone. The migration is one of the necessary phenomena for fishes and for their existence as they requires a mono habitat that do not provide them sufficient amount of food and the environmental conditions which are ideal.

Landsman *et al.* 2011, researched on the *movement of fishes and the migration process in Great lakes,* the agencies that manage the resources in Great Lakes has performed the study for the movement and migration of fishes that helps in understanding the fish distribution among the temporal and spatial process. This process takes place within the tributaries and the lakes. In this paper, the researcher has studied about the 112 paper, and examined the migration and movement phenomena of the fishes. The main objective of this study is to use the current and the new instrumentations or the techniques. The new developed techniques are analysis of isotopes, biotelemetry or the hydro acoustics. The information about the migration related gaps are examined and through this information is obtained.

Mbalassa *et al.* 2015 studied about the migratory processes and the habitats of the spawning process of the Clarias gariepinus found in the East Africa. In this paper, the main focus is provided to the identification of the habitat for the migration process and the patterns of movements of fish which are spatial and found to be as evidential for the migration

between the surroundings in its adjacent sides. In many of the regions of the lake watershed, the wetlands are particularly identified around the ground of spawns for *Clarias gariepinus.* The resilience capacity of for the migration process and the habits which are not dependent across the watershed should be concluded. Using this paper, it is suggested that the consideration should be fragile and exists in the regions which are sensitive.

Flecker *et al.* 2010 worked on the riverine ecosystems present in the fishes of migration and the subsidies of the phenomena. The migration process for the fishes are considered as common among the world that changes the ecosystem of recipient. The various kinds of process of migration is described and their necessity from the view of the ecosystem is studied. The two divisions of the subsidies are differentiated which are subsidies of material and the processes. Subsidies of the material are for the energy transfer, distribution of the nutrients and the other type of sources that results in the resource change.

Conclusion

In both fresh and marine environment, fishes are widely distributed. The fishes are migrated from one habitat to another. These migrated fishes are important indicator of ecosystem recovery. But now these days, the migration are delayed or failed due to the construction of dam and water pollution. This paper suggests to understand the behavior of migration of the fishes which is sometimes considered as a necessity for controlling the stock of fishes and their utilization and misuse.

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