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Marine Pollution and Respiratory System of Teleost Fishes in Course of Study Under Integrated Teacher Education Programme (ITEP)

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***Abstract* - The three fourth area of Earth is covered by ocean. The water quality of ocean is salted and it is also called the marine water in marine water the teleost fishes are living and also phasing the pollution problem. The fishes take oxygen for respiration from water resources. In water resources the oxygen is dissolved. The pollutants also enter with dissolved oxygen from water resources. The respiratory system is influenced by the marine pollutants. According to the guidelines of Integrated Teacher Education Programme (ITEP), the integrated studies of Earth, Oceans, marine water and it's pollution, teleost fishes and respiratory system of teleost fishes are essential to complete the studies and researches and making the course of studies at various levels of Biology.**

Keywords: Earth, Ocean, Sea, Pollution, Fishes and ITEP.

1. Introduction

Oceans cover nearly three fourths of Earth's surface. They surround all the continents and give Earth its blue appearance when viewed from space. Although the oceans are composed of a contiguous body of water measuring some 139 million square miles, geographers divide it into four entitles; largest to smallest, Pacific, Atlantic, Indian and Arctic,

About 3-5 percent salt, ocean water also contains traces of all the chemical elements found on Earth. It enables life on the planet as part of the water cycle, The Oceans regular global temperatures by absorbing heat in the summer and releasing it in water.

Earth is unique among the nine planets that circle that Sun. It is the only one that can support life, because it has enough oxygen in its atmosphere and plentiful water. In fact, seen from space, the Earth looks almost entirely blue. This is because about 70% of its surface is under water, submerged beneath four huge Oceans: the Pacific, Atlantic, Indian and Acetic oceans.

2. Marine Pollution

All that what is carried by rivers ultimately ends up in the sea. On their way to sea, rivers receive huge amounts of Seavage, garbage, agricultural discharge, pesticides including heavy metals. These all are added to sea. Besides these discharge of oils and petroleum products and dumping of Radionuclide's waste into sea also cause marine pollution. Huge quantity of plastic is being dumped in sea of commercial fleets, whereas over 300 million lo entering through inland watery ways is U.S.A. Many marine birds ingest plastic that causes gastrointestinal disorders. The chemical principle in PCBs causes more damage as thinning of eggshell and tissue damage of egg. Radionuclide waste in sea includes Sr-90, Cs-137, Pu-239, Pu-240.

As the oil is discharged on Surface it starts spreading horizontally over the water surface to attain level. As heavier oil drifts faster than thinner portion its accumulation starts forms the leading of an advancing oil slicks. As the oil spreads the process of evaporation starts operating and as much as 50% - 60% is lost through this process. Light, low boiling point fraction of crude oil, such as benzene, toulene, xylene etc. is lost in this way. There is an appreciable reduction in the toxicity of crude petroleum as a consequence of removal of this fraction which is ultimately photo- Oxidized or reacted upon by various constituents in the atmosphere.

Recent increases in shipping and drilling operations have caused increased Contamination of our oceans with chemical pollutants, including petroleum hydro-carbons. Marine fish, crustaceans, molluscans and zooplanktons accumulate hydrocarbons from polluted water. Aquatic species may be more sensitive than mammals to acute lethal effects of a variety of chemicals, and they may also exhibit the biological effects of nonlethal exposure to chemicals more quickly, or at lower doses, them mammals. Marine species and fish form an important Constituent of the diet of many people and greater knowledge of the interactions between marine species and pollutants is needed in view of the increasing chemical content of knowledge on our physiologically Oceans. Most of our

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knowledge on the effects of pollutants in marine Systems comes from experiments to determine concentrations which are lethal or developmentally or effective for species grown in laboratory aquaria, or from observations natural ecosystems only a small fraction of the numerous species present can be examined, and it is possible that critical or sensitive species are missed.

3. The Bony of Fishes

The bony fishes (Osters sent thyes) are the dominant fishes of the Devonian due to their efficient locomotory and feeding mechanism. Some of these became speciallised and gave rise to the land vertebrates. The osteichthyes into two groups.

1) Sarcopterygii
2) Actinopterygi

The Sarcopterygii lived in small fresh water reservoirs, and had fins with fleshy lobes adapted for resting on the ground. The actinopterygii possess fins with fleshy lobes and were active swimmers. Presence of bone is an important character of Ostichthyes. Various names have been used for long time for fub groups of extant actinopterygeams, such as Condrostei (the cartilaginous bony fishes), Holostei (entirely bony fishes), and the Teleostei (the final bony fishes).

The Marine Bony Fishes

The following Bony Fishes are present in sea water (Marime Resource):

A) Sardine Fishes

1) Sardinella longiceps (oil Sardine)
2) Dussumieria spp. (Rainbow Sardine)

B) Mackerel Fishes

1) Rastrelliger kanaguria (Scombridae)
2) Rastrelliger brachysoma

C) Bombay Duck

1) Harpodon nehereus

D) Ribbon Fish

1) Trichiurus haumela
2) Trichiurus intermeding
3) Trichiurus muticus

E) Eel Fish

1) Muraenesox talabonoides
2) Muruaenesox cinereus
3) Anguilla bengalensis

F) Pomfret Fish

1) Pampus argenteus (Silver Pomfreet)
2) Pampus chinensis (White pomfret)
3) Parastromateus niger (Black pomfret)

G) Polynemids

1) Polynomus indicus
2) Polymerus microstomae
3) Polynemus paradiseus
4) Polynemus heptadactylus
5) Eleuthronema tetradactylum

H) Sole Fish

1) Cynoglossus semifasciatus
2) Psettodes spp.
3) Solea spp.
4) Pseudorhombus spp.
5) Paraplagusia spp.

I) Cat Fishes

1) Plotossus conius
2) Plotossus angularas
3) Tachysurus sona
4) Tachysurus maculatus
5) Tachysurus jello

4. Respiratory system of Teleost Fishes

Blood supply of a Gill

A teleostean gill generally contains one afferent and one efferent branchial vessel, there are two vascular pathways in the teleost. These are:

(i) Respiratory Pathway (arterio-arterial)
(ii) Non-Respiratory or nutritive Pathway (arterio-venous)

The respiratory pathway consists of an afferent unit and an efferent unit, and functions for the oxygenation of blood. Each afferent branchial vessel brings deoxygenated blood to the gill. It runs along the entire length of the gill arch giving of these filamental artery divides laterally into a number of lameller arterioles which run acress the gill rays and divide into finer capillaries that breakup to form blood channels in the lamellae, The channels are interconnected with each other, and form the vascular central core of the gill lamella. The oxygenated blood is collected by the efferent lamellar arterioles which carry the blood to the efferent filamental artery that runs along the margin of the gill filament. Finally,

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the blood is carried to the main efferent bronchial vessel of the gill arch.

In addition to the roof respiratory pathway, there is a non-respiratory system consisting of a complex arrangement of sinuses and veins that carry the blood direct to the heart, by-passing the systemic circulation. Its function appears to provide nutrition and oxygen to the gill tissue. It may also be associated with the circulation of hormones and in osmoregulation. This non-respiratory pathway consists of the efferent filament artery, nutritive blood channel, central venous simus, venules and to the branchial veins. The water containing oxygen flows from oral to aboral side of the gills, and the blood in the lamellae flows from aboral to oral side. This is called counter current system, which ensures maximum exchange of gases.

5. Integrated Teacher Education Programme

This programme aims at preparing teachers for Foundational, Preparatory, Middle and Secondary stages as per the new school structure of NEP 2020. It will ensure that out standing students enter the teaching profession; A student undergoing this course will be grounded in Indian values, languages, knowledge, ethos, tribal tradition and also well versed in latest advanced in education and pedagogy. This course caters to the need of 21st. century skills.

Integrated Teacher Education Programme (ITEP) is a four year dual- major holistic undergraduate degree offering B.A. B.Ed./B.Sc. B.Ed. and B.Com B.Ed. This course will prepare teachers for the 4 stages of the new school Structure i.e. Foundational, Prepatory, Middle and Secondary. The programme is being offered in piolet mode initially in reputed central / state Government Universities/ Institutions.

ITEP will be available for all students who choose teaching as profession after Secondary, by choice. This integrated course will benefit students since they will save one year by finishing the course in 4 year rather than the customary 5 year required by the present B.Ed. plan. Admission for the same will be carried out by the National Testing Agency (NTA) through the National common Entrance Test (NCTE).

ITEP will not only import profession after impart cutting edge pedagogy but will also establish a foundation in early childhood care and Education (ECCE), foundational literacy and numeracy (FLN), inclusive education and an understanding of India and its and its values/ ethos/traditions, among others. The course will contribute substantially to the revitalization of the whole teacher education sector.

6. Discussion, Conclusion and Recommendation

Earth is unique among other planets that circle the Sun. It is the only live plant of the solar system, because it has enough oxygen in its atmosphere and plentiful water. In fact, seen from space, the Earth looks almost entirely blue. This is because about 70% of its surface is under water, submerged beneath four huge oceans; the Pacific, Atlantic, Indian and Arctic Oceans. Land makes up about 30% of Earth the Earth's surface. It is divided into seven landmasses of Varying shapes and sizes called continents. These are Asia, Africa, North America, South America, Antarctica, Europe and Australia.

Just over two-thirds of the Earth's Surface is covered by water and more than 98% of this water is continued in the oceans. Movements within the Earth shape the ocean floor in the same way as they do the land surface, creating mountain ranges, trenches and plateaus, and changing the shape and size of the oceans. The differences between an ocean and a sea are simply its size; oceans are much bigger than sea.

The sea is the source of marine water. The marine water is salted water. In the Sea (marine water resource), various animals are living. Due to the activities of human beings and natural disasters the pollution is also enters in the sea. The teleost fishes are also inhibiting in the various animals, and also they are part of the marine ecosystem. These fishes take the oxygen (02) from the sea water, which is the salted Kawates marine pollutants, which are also dissolved in the sea water, and also respiratory system of enters in the elasmobranchs fishes during the process of respiration and also affects the life of elasmobranchs fishes.

The National Education Policy 2023 (NEP-2023) marks a transformative policy 2023 (NEP-2023) replacing a rose three-decade-old frame work, envisions modernized education system that transcends boundaries. A major departure past is the swift from the traditional 10+2 model to the progressive 5+3+2+4 structure. This new frame work emphasizes essential skills and life competencies across all level of education.

The four year Integrated Teacher Education Programme (ITEP) is milestone achievement in fulfilling one of the major mandates of National Education policy 2020, The course will contribute substantially to the revitalization of the whole teacher education sector. The prospective teachers passing out of this course through a multi-disciplinary environment, grounded in Indian values and traditions will be instilled with the needs of 21st century on global standards, and hence will be largely in shaping the future as of New India.

As per the new National Education Policy and Integrated Teacher Education Programme (ITEP), the following contents may be suggested to fulfil the research under this title:

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(i) Earth, Single living planet of solar system.
(ii) Oceans and seas.
(iii) Sea & Marine water Resource.
(iv) Marine Pollution & Pollutants.
(v) Teleost fishes and their respiratory organs.
(vi) Affects of Pollution on respiratory system of Teleost fishes.

It is concluded that deep & more effective areas of research may be highlighted with the Integrated Teacher Education Programme.

The rapid advances in science and technology have put the scientists and their heels to cope up with technologists on the simultaneous changes that have occurred during the past decades. Various types of revisions, rectifications as well as modifications and Sometimes even all together innovated ideas that developed in numerous fields of specializations have required to be Incorporated with the advanced level concepts in order to keep pace with the recent researches advanced in the Concerning fields of the study. The innovative techniques have put the researches on consistent think' and `rethink' level to entertain higher concepts related to the biology. The following recommendation can be advanced since the incorporation of units of present study.

To sum up, it may be stated with firm determination that the standard to life of courses of study related sa sciences and the introduction of advance concepts of learning along with well-defined practical work is significant for the successful living and maintenance of the present-day society as well as for the advancement of the standard the biology education. Hence the findings of the present study will prove highly useful in order to put forth ideas for improvements and up-dating the curricula at different strata and grade levels in order to keep pace with the recent researches taking place in the field of life sciences.

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