

# Marine Pollution and Respiratory System of Elasmobranch 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 elasmobranchs 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, elasmobranchs fishes and respiratory system of elasmobranchs 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 entities; 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 Arctic 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, toluene, 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, molluscs 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, than 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

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. Elasmobranch Fishes

The class Elasmobranches comprises the living shark, rays, and chimaeras, together with a number of extinct orders. Elasmobranches fishes are generally almost exclusively marine in habit, although a few successfully colonized brackish and even completely fresh water. Most of them are predacious,

They include the largest fishes that even lived. The biggest was probably 80 known giant Tertiary species of carcharodon, which may have been about 80 feet in length. Teeth of this monster measures about 6 inches long, and in shape are very like those of to-days's representatives, other smaller teeth, but at the same time still larger than those of any living form, have been dredged from the Pacific floor and appear to be of very recent origin. The largest living shark is the oceanic, tropical oviparous whale shark (Rhiodon), which reaches nearly 70 feet. It lives on plankton, as does also the Basking shark (Cetorhinus), which grows to a length of 40 feet.

The sharks are active swimmers and predators. The heterocercal tail is a powerful organ, giving thrust over a wide range of angles, so that the fish is capable of diving and climbing in water at various speeds, and attacking the prey obliquely so as to tear off flesh from its body using sharp teeth. The sharks use their various sensory organs identifying and attacking the prey, Sharks detect their prey through mechanoreceptors of their laterals system, well developed eyes and the olfactory organs. They have large eyes adapted for vision at low light intensity at night or in deep water. Its sensitive olfactory sence helps in locating the prey, especially when the prey is wounded or releasing body fluids.

Species of sharks commonly found along the Indian coast are *stegostoma tigrenum* (Tiger Shark), *Rhinocoden* (whale Shark), *Carcharius tricuspidatus* *Sphyrna zygaena* and *Scolioden sorrakswha*.

*Rhinobatus granulosum* is the common skate found along the Bombay coast. It has a depressed body, and a tapering Snout. Pectoral fins are poorly developed, Spiracles are prominent, situated close to the eyes. The muscular tail has two dorsal and a caudal fin

Rays commonly found along the Bombay are the sting ray (*Dasyatis*), eagle ray (*Aetobatus*) and the electric ray (*Torpedo*) In the sting ray, pectoral fins are jused with lateral sides of the head, thus forming a flat and wide disc.

Eagle ray (*Aetobatus flagellum*) is found along the east and west coast of India and in chilka lake. The pectoral fins are large, fused with the side of the head so as to form a disc which is wider than long. The head projects beyond the disc, as the pectoral fins do not extend up to the anterior end of the snout. Eyes and spiracles are laterally placed. Gill slits are ventral. Tail is long, whip-like, having a small dorsal fin. The fish deed on molluscs and the teeth are flat to crush their shell,

The electric rays have a round disc and a short, thick tail. Two dorsal fins a caudal fin is present. Spines and denticles are absent. The characteristic feature is the presence of two large electric organs between the pectoral fins and head which are modified gill muscles. In the live fish, these organs are capable of giving a powerful electric shock to paralye the prey. They are also useful as organs for defence. *Torpedo* and *Narcine* are the two common electric rays of the Indian cost,

### 4. Respiratory system of Elasmobranch Fishes

The organs of respiration are the gills, situated in the gill-sacs, Each gill sac is an antero-posteriorly compressed cavity opening internally into the harynx and externally by the corresponding gill slits. The walls of the pouches are supported by the branchial arches, the last between the fourth and fifth branchial arches with their rays, the first borsch being situated between the hyoid and first branchial arches, the last between the fourth and fifth branchial arches on the anterior and posterior walls of the pouches are the gills, each hemibranch consisting of a series of close-set parallel folds of highly vascular membrane. Through this exceedingly thin membrane occur gaseous exchanges between the animal and the sea-water that is forced by buccal and pharyngeal musculature into the mouth and out through the gills, carbon dioxide (CO<sub>2</sub>) is given off by the blood and oxygen is taken up by its hemoglobin. The re-oxygenated blood meanwhile continuous its journey towards the dorsal aorta for redistribution throughout the body.

Seperating adjoining gill-porches, and supporting the gills, is a series of broad interbranchial septa, each containing the corresponding branchial arch with its connected branchial rays. The most anterior hemibranch is borne on the posterior surface of the hyoid arch. The last gill-pouch differs from the rest in having gill-folds on its anterior wall only, On the anterior wall of the spiracle is the pseudobrunch.

## 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 outstanding 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, Preparatory, Middle and Secondary. The programme is being offered in pilot 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 impart 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 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 planet 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'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 contained 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 elasmobranchs fishes are also inhabiting in the various animals, and also they are part of the marine ecosystem. These fishes take the oxygen (O<sub>2</sub>) 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 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:

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