

Dr. Abdar R. N.

Research Achievements

- This research identified numerous avian species, including resident, migratory, and endemic birds.
- It provided insights into the seasonal patterns of bird migration, breeding habitats, and the role of the dam in supporting bird populations.
- It focused on assessing the habitat quality and suitability for avifauna in the vicinity of the Sina Dam. Factors such as vegetation cover, water quality, and availability of food resources, influence on bird species richness and abundance is examined.
- These assessments help in understanding the habitat requirements of different bird species and guide habitat management efforts to support avian biodiversity conservation.
- The conservation status and threats to avifauna in the Sina Dam area are evaluated.
- The vulnerability of different bird species to habitat loss, pollution, hunting, and other anthropogenic activities have assessed.
- It explored factors influencing fish distribution, growth rates, reproductive biology, and community structure. It provided insights into the ecological functioning of the dam's aquatic ecosystem and guide fisheries management practices.
- The water quality parameters and the ecological health of the Sina Dam's aquatic habitat are evaluated.
- Physicochemical parameters, nutrient levels, and pollutant concentrations in the water body are evaluated.
- The impacts of water quality on the health and diversity of fish species is assessed.
- It provided a scientific basis for conservation and management strategies of the dam.

It proposed measures to mitigate the impacts of human activities, promote habitat restoration, and enhance the biodiversity of avifauna and ichthyofauna.

Dr. Jadhav S. S.

Research Achievements

- The Acute Toxicity of Mercury and Lead Nitrate on the Freshwater Crab *Barytelphusa guerini* provided the impacts of heavy metal pollution on aquatic organisms.
- Toxicity endpoints as median lethal concentration (LC50) and sublethal effects determined, providing quantitative data on the toxicity levels of mercury and lead nitrate to the crabs.
- It has explored the morphological and behavioral changes in *Barytelphusa guerini* to mercury and lead nitrate. The alterations in the crab's external features, including changes in coloration, shell integrity, and appendage abnormalities are observed. Behavioral responses such as locomotor activity, feeding patterns, and avoidance behavior, provided insights into the sublethal effects of heavy metal exposure.
- It focused on the physiological and biochemical effects of mercury and lead nitrate on *Barytelphusa guerini*. Parameters such as enzyme activities (e.g., acetylcholinesterase, glutathione S-transferase), oxidative stress markers, DNA damage, and histopathological changes in organs are observed. It revealed the mechanisms that heavy metal exposure induces physiological and biochemical alterations in the crabs.
- It investigated reproductive parameters such as gonadal development, egg production, and hatching success. This provided insights into the potential impacts of heavy metal pollution on the reproductive success and population dynamics of the crabs.
- The ecological consequences of mercury and lead nitrate toxicity on *Barytelphusa guerini* and its habitat. The crabs play a vital role in ecosystem functioning, including nutrient cycling and prey-predator dynamics.
- The effects of heavy metal exposure on the feeding interactions, competition, and overall ecological functions of *Barytelphusa guerini*, provided insights into the potential implications of heavy metal pollution on aquatic ecosystems.

Dr. Vaidya V. V.
Research Achievements

- Isolated and identified bioactive substances from polychaetes that exhibit strong antimicrobial properties against a wide range of bacteria and fungi. It has the potential of antibiotics or antifungal activity.
- It exhibits neuroprotective effects.
- Mechanistic studies reveal the interaction of enzymes, receptors, and signalling pathways, aiding in the development of targeted therapies.
- It demonstrated the potential of marine polychaete-derived compounds as effective agents against various diseases, infectious diseases, neurodegenerative disorders, and inflammatory conditions.
- It has also focused on sustainable extraction methods and synthesis strategies.
- The effect of heavy metals on the physiological activities of earthworms, specifically *Perionyx excavatus*, yields several important achievements.
- It determines the toxicity thresholds and the adverse effects caused by different heavy metals.
- It has potential for heavy metals to bio-magnify in the food chain, as earthworms are a food source for many other organisms.
- The enzyme activities (e.g., Catalase, superoxide dismutase) like antioxidant defences, oxidative stress markers, and changes in metabolic pathways are focused
- It provided long-term consequences of heavy metal pollution on earthworm populations and ecosystem functioning.
- The earthworm's behaviour, burrowing activity, feeding patterns, and overall ecological functions, is helpful to evaluate the implications of heavy metal pollution on soil quality and ecosystem stability.