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Risk assessment study of sea water intrusion and probable remedial measures: Groundwater quality at Adirampattinam, East Coast of Tamil Nadu, India

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Agriculture, an important sector of our economy accounts for 14 per cent of the nation's GDP and about 11 per cent of its exports. India has the second largest arable land base (159.7 million hectares) after US and largest gross irrigated area (88 million hectares) in the world. Specifically, Thanjavur district of Tamil Nadu with an ancient history of rice cultivation has been subjected to reduced rice output due to several direct and indirect anthropogenic pressures. The major concern is the quality and availability of ground water in this area. The objective of this study is to examine the occurrence of sea water intrusion in Adirampattinam, which is 45kms from the sea. Water samples were collected from five different locations using sterilized containers from open well, hand pump, bore well in the respective study area on monthly basis from January - June 2015. The samples were analyzed to predict the suitability by evaluating the physiochemical parameters as per APHA and the obtained results were compared with BIS: 10500-1991, WHO standards of drinking water quality parameter. The present study evidently reports that ground water samples collected from Adirampattinam was not suitable for potable and domestic purpose; which implies seawater intrusion. Though saltwater intrusion is a natural phenomenon in the coastal aquifers, these areas had been pumped faster in this century, than it is replenished. Possible remedial measures like creation of artificial ponds or watch catchments areas which have to be distributed across the areas where possibility of sea intrusion is high. A model restoration strategy was framed to effectively reduce the extent of sea intrusions using GIS. Our strategy will also pave way to check further sea intrusions in the district irrigated well by fresh water.

Biography

Kumaraguru Arumugam completed his Doctorate in Wildlife Biology (Biodiversity-specialization) from Bharathidasan University, Tiruchirappalli, Tamil Nadu, India during the year 2006. Presently, he is working as a Conservation Scientist at Biodiversity Conservation Foundation, Tamil Nadu, India. With a passion for nature, he has explored the prey predatory relationship for large carnivores – tiger, leopard and dhole along with the role of vegetation as a factor for conservation of these large carnivores. With a view to conserve nature as a biodiversity entity, he created awareness among young generation and forest tribes to conserve their ecosystem. He has worked with Government and NGOs in various conservation projects starting from tree planting in urban areas to conservation of an endemic and endangered species in forest ecosystem.

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