

‘Sahyadri’s underground fishes’: developing conservation action plans for the subterranean fishes of Western Ghats

(Progress Report)

Exploration of the secondary resources on subterranean fishes of the Western Ghats

A detailed analysis of the documents published on the subterranean fishes, from Kerala state, was conducted in order to get insights about the diversity and distribution of these rare species. Research papers, news describing the appearance of “*snakes which die if taken out of the water*” in the dugout wells, tube wells and small water channels emerging during the time of monsoon, articles appeared in the science magazines published in the vernacular language etc. were analyzed and the geographical locations from which the subterranean fishes had been reported were collected. This information was used for planning the survey subsequently.

Survey

Research team visited the locations from which the subterranean fishes had been reported and the water bodies had been studied for the presence of the subterranean fishes and a few *Kryptoglanis shajii* and *Monopterus sp.* (Fig.1) were collected for the taxonomic studies. The owners of the wells or the land through which the small water channels passing through were interviewed to know the season at which the focal species appear in the wells/ water channels of that region.



Figure 1 Subterranean fishes collected from the wells of Kerala

Development of a diversity and distribution map

Based on the information obtained from the analysis of the secondary data and the result of the survey a diversity and distribution map of subterranean fishes of Kerala was developed (Fig. 2).

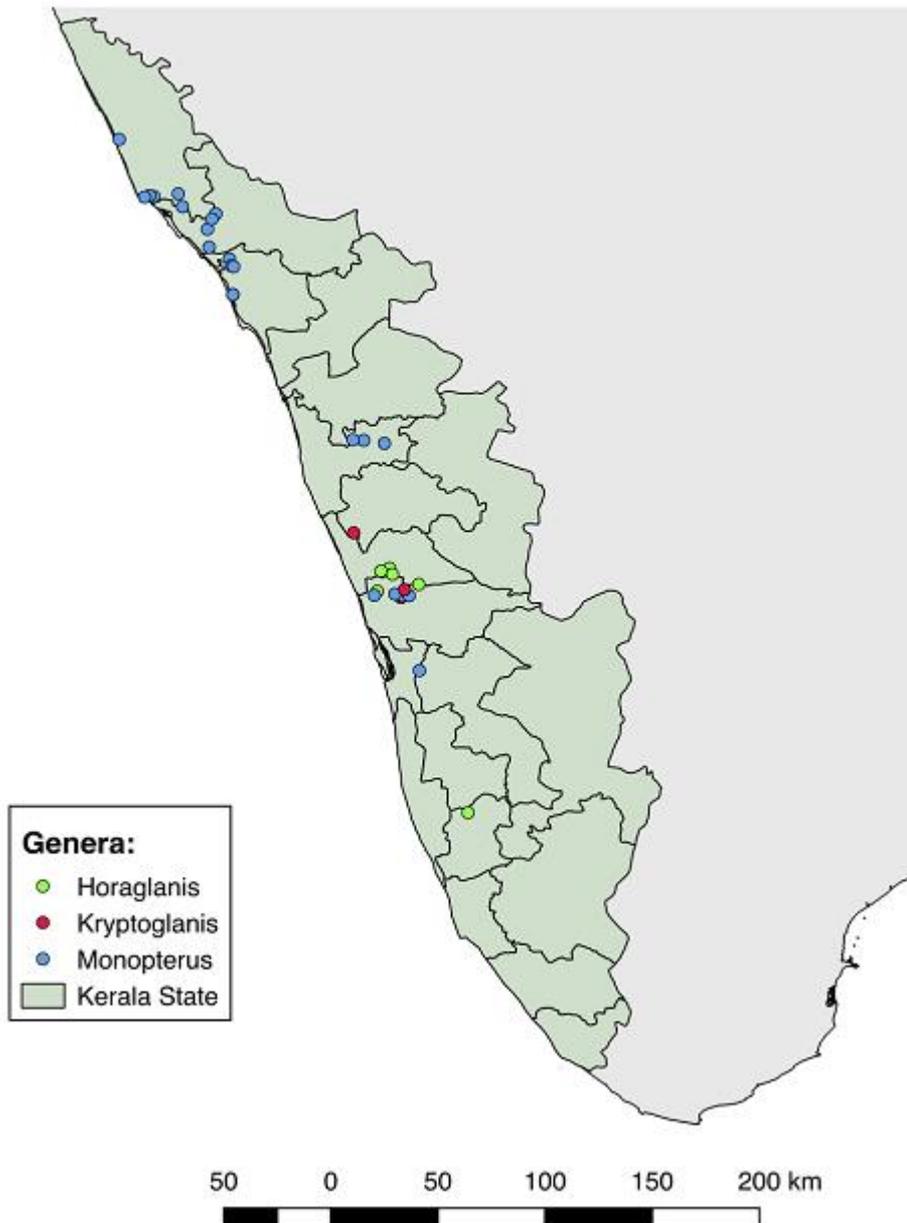


Figure 2 Map showing diversity and distribution of the subterranean fishes of Western Ghats

Identification of the hotspots

Two hotspots for the subterranean fishes, one located in the Thrissur district and the other at Kannur district of the Kerala state were identified using GIS based analysis and surveys. A research paper is under preparation based on these results.

Tracing out the ecological parameters sustaining the population of the subterranean fishes

Currently our team is involved in tracing out the factors deciding the ecological uniqueness of the geographical locations from which the subterranean fishes had been reported. We aim to come out with a map predicting the locations to be explored for the presence of subterranean fishes in the Western Ghats and nearby areas in the near future.

Awareness creation

Our initial discussions with the owners of the wells from which subterranean fishes had been reported revealed that people are scared of these fishes, many believes that these fishes are poisonous and generally people kill it once they notice them in their well. Subsequently they will treat the well with bleaching powder since those wells may be the sole source of drinking water for their family, which would remove all other fishes, if any, living in that water body. Hence we tried to reach the facts about subterranean fishes to the general public through various media of communication and to eliminate the misconceptions about the subterranean fishes.

Newspapers and TV

Our request to share the information about the subterranean fish, harmless nature of them and their ecological importance was accepted by some local newspapers (Fig. 3) and local TV channels (Please a news clip aired by a local TV channel attached). Our team is in constant touch with state level newspapers to get wider publicity for our efforts to conserve these rare animals and to attract more people to the venture.

പുല്ലുക്കരയിൽ കണ്ടെത്തിയത് ഭൂഗർഭജല മത്സ്യം

● സ്വന്തം ലേഖകൻ

ചൊല്ലി (കണ്ണൂർ): പുല്ലുക്കര കുനിയയിൽപിടികയിൽ വീട്ടിലെ കിണറിൽ കണ്ടെത്തിയ ജീവി മോണോപ്റ്റിറസ് എന്ന ഭൂഗർഭജല മത്സ്യം. മത്സ്യങ്ങളെക്കാൾ വിരകളോടും പാമ്പുകളോടും രൂപസാദൃശ്യമുള്ളതാണു കഴിഞ്ഞ ദിവസം കണ്ടെത്തിയ മത്സ്യം. മത്സ്യത്തെ കാണാൻ നിരവധി പേരാണു് പാറേമ്മൽ സ്കൂളിനു സമീപമുള്ള നന്തോത്ത് അൽത്താഫിന്റെ വീട്ടിലേക്ക് എത്തുന്നത്. ആരൽ കുടുംബത്തിലെ ഒരംഗമായ ഈ മത്സ്യം ഭൂമിക്കടിയിലെ ഉറവുചാലുകളിലാണു വസിക്കുന്നതെന്നും ബ്രസീൽ പോലുള്ള ചില രാജ്യങ്ങളിലാണു് കണ്ടുവരാറുള്ളതെന്നും വിദഗ്ധർ വ്യക്തമാക്കി. കേരളത്തിലെ ചില ഭാഗങ്ങളിൽ ഒറ്റപ്പെട്ട രീതിയിൽ ഇവയെ കണ്ടുവരുന്നുണ്ട്. ചുട്ട് കൂടുതലായതിനാൽ ശുദ്ധവെള്ളവും നല്ല മണ്ണുമുള്ള കിണറുകളിലേക്കു ചേക്കേറുന്നതാണിത് ഇതിനു പാമ്പുമായി യാതൊരു ബന്ധവുമില്ല. ഈ മത്സ്യം കിണറുകളിൽ കണ്ടാൽ വെള്ളം ശുദ്ധമാണെന്ന് അനുമാനിക്കാം. ഭൂഗർഭജലത്തിൽ മാത്രം വസിക്കുന്നതിനാൽ ഭൗമോപരിതല മത്സ്യങ്ങളുടേതുപോലെ നിരമോരുപമോ കൈവന്നിട്ടില്ല. വെള്ളത്തിലെ ചെറിയ ചലനങ്ങൾ പോലും മനസിലാക്കാനും ഇരതേടാനും ഇണയെ കണ്ടെത്താനുമുതകുന്ന ഇന്ദ്രിയങ്ങൾ ഇവയ്ക്കുണ്ടെന്നും വിദഗ്ധർ ചൂണ്ടിക്കാട്ടുന്നു. ഇവയെക്കുറിച്ചുള്ള വിശദമായ പഠനം ബംഗളൂരുവിലെ നാഷണൽ ഇൻസ്റ്റിറ്റ്യൂട്ട് ഓഫ് അഡ്വാൻസ് സ്പെഷിയലിലെ ഡോ. വി.വി ബിനോയുടെ നേതൃത്വത്തിൽ നടത്തിവരുന്നുണ്ട്. വംശനാശ ഭീഷണി നേരിടുന്ന ഈ മത്സ്യങ്ങളെക്കുറിച്ച് പഠിക്കാൻ യു.കെ ആസ്ഥാനമായുള്ള സുഹോർത്ത് ഫൗണ്ടേഷൻ ഗ്രാൻഡ് അനുവദിച്ചതായും ഗവേഷകർ പറഞ്ഞു. ജനിതകം, ആവാസ വ്യവസ്ഥ, സ്വഭാവം എന്നിവയെക്കുറിച്ച് വിശദമായ പഠനം നടന്നുവരുന്നുണ്ടെന്നും ഇവർ വ്യക്തമാക്കി. ഈ മത്സ്യങ്ങളെ ലഭിച്ചാൽ നിർമ്മലഗിരി കോളജിൽ സുവോളജി വിഭാഗം ആരംഭിച്ച പുനരധിവാസ കേന്ദ്രത്തിൽ ഏൽപ്പിക്കാം. ഇത്തരം മത്സ്യത്തെ കണ്ടെത്തിയത് അറിയിച്ചാൽ സ്ഥലത്തെത്തി സേവിക്കുമെന്നും അധികൃതർ വ്യക്തമാക്കി. ഫോൺ: 9400059926.



പുല്ലുക്കര കുനിയയിൽപിടികയിൽ അൽത്താഫിന്റെ വീട്ടുകിണറിൽ കണ്ടെത്തിയ ഭൂഗർഭ ജല മത്സ്യം

കണ്ടെത്താനുമുതകുന്ന ഇന്ദ്രിയങ്ങൾ ഇവയ്ക്കുണ്ടെന്നും വിദഗ്ധർ ചൂണ്ടിക്കാട്ടുന്നു. ഇവയെക്കുറിച്ചുള്ള വിശദമായ

Figure 3 Newspaper article on subterranean fishes

Facebook

A poster on the subterranean fish with photographs and the contact details of the research team was prepared (Fig. 4) and shared in various Facebook pages to create grassroots level awareness about these rare fishes. We got very good response and many people contacted the research team over telephone to know more about this fishes and they assured that they will inform us when they come across these fishes.



Figure 4 Facebook post on subterranean fishes

Public awareness programmes

In order to eliminate the fear and aversion towards this harmless animals appearing in the wells, especially during the time of the summer and with the onset of the monsoon rain, an interaction session was conducted at the CEC Payyaparamba, Mattanur, Kannur district Kerala on 19th March 2017. One hundred and twenty five participants, mainly housewives and laborers, attended the sessions and shared their concern about the presence of these fishes in their drinking water resources. Dr. V V Binoy (NIAS) and Dr. Siby Philip, Assistant Professor, Nirmalagiri College, Kuthuparamba Kannur and CP Arjun (Malabar Awareness and Rescue Centre, Kannur) and Girija Sumitlal (Institute of Sustainable Development and Education Research, Kasargode) disclosed the secret life of this cryptic organisms, explained the ecological importance of this species in maintaining the health of the groundwater ecosystems and the discussed the strategies for protecting this rare organisms with the support of the local people.



Figure 5 The public awareness programme conducted at Mattannur, Kannur district

Conservation strategies

Survey of understanding the knowledge, attitude and behavior of the people

Conservation of the subterranean fishes are not possible without out the support of general public because the habitats of these animals, the dugout wells, are located in the private properties and in many context the sole source of the water for drinking and other household purposes. Hence, a questionnaire was developed to study the knowledge and attitude of people towards subterranean fishes as well as the behaviour of the people towards the “*snakes which die if taken out of the water*”. Our group is involved in the survey the houses located in the areas from which these fishes are reported. This information will be contributing our efforts to come up with an effective strategy for conserving this rare species.

Support from the snake rescuers

Snake rescuers, who are often approached by the people to remove these fishes from their wells was contacted and discussed the need for protecting the subterranean fishes. Rescuers from Malabar Awareness and Rescue Centre, Kannur have extended their support to the research team and are involved in rescuing the fishes from the wells if the owner is not interested in keeping this fish in his/her well.



Figure 6 Research team with the members of MARC involved in the protection of the subterranean fishes

Development of rescue facilities

With the support of Dr. Siby Philip, Assistant Professor, Nirmalagiri College, Kuthuparamba Kannur and Dr. Rajeev Raghavan, Assistant Professor, Kerala University of Fisheries and Ocean Studies (KUFOS), Kochi, facilities for keeping the subterranean fishes rescued from the wells were developed. The fishes rescued from the Kannur and Kasargode Districts are kept in the rescue center at Nirmalagiri College and Thrissur District at the KUFOS. These two institutions are also collaborating with the research team in making people aware of the importance of protecting this fishes and also in documenting various behaviour patterns of the subterranean fishes.