

## NEWS PAPER ARTICALS

**BANGALORE**

# 12 Indian fish species on verge of extinction in Bengaluru lakes

As many as 12 indigenous Indian species of fishes found in city lakes face the danger of going extinct in a few years due to increasing pollution and climate change, says an ongoing study by a team of researchers from the Bangalore University. The study focuses on relation between the aquatic life and climate change. Dr M Ramachandra Mohan, HoD, Department of Zoology, is conducting the study along with a few of his PhD students. The team studied fish life in 10 lakes between Bengaluru and Melekote (in Doddaballapur taluk of Bengaluru rural district). "The vulnerability of fish in Bengaluru lakes has increased manifold in the last five years," Mohan, who is studying fish and other aquatic life in Bengaluru for the past 15 years, said. The 12 species endangered include the Karnataka Labeo (Labeo Calbasu) and Indian Glassy fish (Pseudambassis Ranga) to name a few. "Of the 12 species, five are under the vulnerable category and the rest are endangered. Two foreign species are also in danger," said Mohan. In Karnataka, 201 freshwater fish species have been found. Of these, 40 fish species are under threat and urgent conservation measures are needed to be implemented to ensure their survival, says the study. It goes on to say that the native freshwater fish diversity in water bodies is declining rapidly. The crucial reason for the decline are the destruction of habitat due to construction of dams and barrages, pollution and exploitative fishing practices. Climate change is generally causing the waters to warm as well as bringing changes to rainfall patterns, water levels, river flow

and water chemistry. The predominant presence of exotic species like Tilapia, Silver carps, Grass carps and African catfishes in rivers and reservoirs is because they can tolerate high pollution and static water levels. "Despite this higher level of tolerance, neither the indigenous nor foreign varieties are able to sustain themselves in the 10 lakes which were part of the study. Agricultural pollution and destruction of lakes due to agricultural and layout encroachments are other major problems," said Mohan.

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## WHEN LAKES VANISH, WATER TABLES DIP



**SUBIR GHOSH** | Wed, 21 Mar 2012-12:35pm , Bangalore , DNA

*The term "water woes" has today become a cliché. But it's not water supply issues or the associated woes that are disturbing.*

The term "water woes" has today become a cliché. But it's not water supply issues or the associated woes that are disturbing. What is, is the fact that water has been disappearing right from under our noses. Bulk of the water supplied to Bangalore has to be carried from afar because there's precious little groundwater left.

Najeeb KM, regional director of the south-western zone of the Central Ground Water Board (CGWB) offers a pointer as an explanation: "One of the prime reasons groundwater tables have been falling drastically, particularly in the peripheral areas of the city, is the rapid disintegration of lakes. As lakes keep either drying up or being converted for 'development' purposes, the water tables are bound to dip."

Ads by Revcontent

The consensus among experts is that the groundwater tables are falling mostly in peripheral areas. "The water table is falling precipitously all along the periphery

of the city where the Bangalore Water Supply and Sewerage Board (BWSSB) network does not exist, but is rising in the city centre, thanks mainly due to leaking pipes," says Vishwanath of the Biome Environmental Trust, an NGO that works on water-related issues.

Ramachandra Mohan, professor, Bangalore University, goes further and links lakes to watertables. "Lakes are like kidneys of the ground. They filter the unwanted matter and seep in only the necessary clean water into the ground. But, the number of lakes have gone down in recent years. Groundwater tables have gone down to 1,000 feet. Although there is a enough rain in the city and in the state, there is no place to store it. Lakes have become very shallow too. The number of lakes have decreased as well."

The relation between lakes and water tables is no mere theory. A case in point is the Puttenahalli Lake which was revived through citizens' intervention a few years back.

The Chairperson of the Puttenahalli Neighbourhood Lake Improvement Trust, Usha Rajagopalan, points out that the groundwater levels in the area have definitely improved. "The increase in number of birds present in the lake is another indicator. At the same time, evaporation has caused the surface level to drop a bit. We are hopeful that soon the 200-odd trees that we have planted around the periphery will reduce the rate of evaporation and the Puttenahalli lake would be full of water even in summer. We are also trying to divert more rainwater into the lake," says Rajagopalan.

If the number of trucks streaming out of the area is any indication, borewells here are working once again. Says Rajagopalan, "The borewell operators in the area are definitely aware how the restoration of the lake has recharged the water table. I am not very sure if the more educated and economically better-off see the connection, since their supply of bottled water is still intact. The importance of

lakes, not only in relation to recharging the water tables, but in so many other ways cannot be underestimated.”

Mohan takes the issue further and predicts a disaster. “We are heading towards a major drought if we don’t take immediate action. In Bangalore, there was a time when we could find water at 25-30ft. Where is that now? This is because, we are not replenishing lakes and have no water sinking areas. Lakes are very important to the city. That’s it.”

Rajagopalan saves the last word as one of advice, “It is in people's own interest to protect lakes/tanks – as much as villagers in the past took care of ponds. Our education and lifestyles have distanced us from nature. We need to take corrective steps urgently so that our children do not suffer because of our callous indifference to nature and to waterbodies in particular.”

TOP

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*India*

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# A Bangalore accountant says he’s invented a way to clean the Ganga

Looks pristine but the holy river is filthy. (AP Photo)

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WRITTEN BY

Nayantara Narayanan

OBSESSION

A Bangalore-based chartered accountant says the seeming impossibility of cleaning the Ganga is a matter of mastering the underlying chemistry, and he has a solution to the problem. When dissolved in polluted water, his invention promotes the growth of a beneficial kind of algae, which releases oxygen into the water as it grows. More oxygen means more aerobic bacteria, which breaks down pollutants in the water.

With new prime minister Narendra Modi pledging to clean the Ganga—he represents Varanasi in the Lok Sabha—the enormity of the task has come into focus. The [tourism ministry has already allocated Rs18 crore](#) (about \$3 million) to renovate the *ghats* of the pilgrim city.

Like the Ganga, Bangalore's lakes have been host to untreated wastewater and sewage for many years now. And like the Ganga, the consequences include algal blooms, stench, mosquito infestations and drinking water contamination. These foul waters have been the laboratories of T. Sampath Kumar, a chartered accountant by training, who is also the inventor, producer and sole supplier of a proprietary nutrient he calls Nualgi—Nu for new and algi for, well, algae.

Fishermen in Bangalore are using his concoction of nutrients to clean their hunting grounds so that fish livestock is replenished. Kumar believes the mechanism that works in the lakes of Bangalore can work in the mighty Ganga.

1

T. Sampath Kumar, the Bangalore-based inventor of Nualgi.

Kumar's technique works by kick-starting the foundation of the aquatic food chain. He feeds a mixture of nutrients to diatoms—the

most basic, single-cell life form found in ponds, lakes, rivers and oceans. As the algae formed by diatoms grow, they release oxygen into water. Oxygen sustains all other life in water, including aerobic bacteria, which can efficiently break down organic matter and clean the water.

Untreated, sewage-filled water has too much nitrogen and phosphorous, which helps blue-green algae grow. This slimy variety of algae allows the growth of anaerobic bacteria, which break down organic matter only partially, leaving behind a host of pollutants and releasing malodorous gases like hydrogen sulfide and methane.

The major ingredient in Nualgi is silica in nano form. Silica, which constitutes the cell wall of diatoms, forms tiny containers for various elements in the Nualgi mixture—iron, magnesium, zinc, copper, sulphur, manganese and calcium. Kumar says that when Nualgi is added to water, it restores the nutrient balance and allows diatoms grow and oxygen to be pumped into the system. One litre of Nualgi, he says, can purge 4 million litres of water of its contaminants.

Kumar has used the lakes of Bangalore and Hyderabad to test the product, and he holds a [US patent \(No. 7585898\)](#) for it. With no scientific training and no institutional support, he has tweaked his formula through trial, error, and observation.

In 2011, Kumar sent Nualgi from a small manufacturing facility in Bangalore to clean [a three-acre duck pond in New York state](#). His company, Nualgi Nanobiotech, continues to export the product to a couple of US firms that undertake water treatment projects. Kumar has also developed a crop spray using the same technology. Last year, he says, he sold about Rs 1 crore (\$170,000) worth of the two

products, priced at Rs1,500 (\$25) per bottle, and about half the sales were exports.

Kumar says he has submitted his invention for analysis at several government and research institutes. Bangalore University zoologist and water quality expert M. Ramachandra Mohan visited one of Kumar's test lakes back in 2009 and was surprised by what he saw—a cleaner looking lake and healthier looking fish. He took Nualgi back to his lab. "We used to feed the fish and see what happens. We saw the fish grew to a bigger size than otherwise. So the product is being converted into proteins," Mohan said. But he was also concerned by the sudden bloom of diatom algae. "The dead algae sediment add more calcium to the water but otherwise there is no problem." Mohan continues to test Nualgi in his lab for long-term effects.

Kumar, however, shrugs off the importance of a stamp of approval saying, "Testing is only for your satisfaction. Here you want a particular job done and it (Nualgi) is working for that job."

Kumar is now looking towards the Ganga with interest.

The Ganga is both the source for water and the receptacle for sewage for major cities and towns, including Haridwar, Allahabad, Varanasi, Patna and Kolkata. Some 4.4 million people live along the river and it accepts industrial discharge from Kashipur, Moradabad and Meerut.

A [Central Pollution Control Board assessment of the river between 2007 and 2011](#) revealed how [oxygen-starved](#) it is as it passes through cities. [Fecal coliform](#) levels take off as sewage accumulates in the lower reaches.

The oxygen depletion spikes sharply at Varanasi.  
spikes at Varanasi.

Fecal Coliform levels also

Enter Nualgi. "Millions of villages, town and cities through the length are sending their sewage to the Ganga. Distribute this product to all of them. Estimate the total volume, if you are adding 4 million liters (of

sewage) everyday, add one liter (of Nualgi) to that. Let it go into the Ganga," Kumar says.

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One of the most polluted stretches is near Kanpur and its tanneries. Rakesh Jaiswal, founder of the Kanpur-based NGO Ecofriends, has been campaigning for a clean Ganga for the last 20 years. Jaiswal's solution for the river is a conventional and widely supported view.

"The amount of water flowing through the original course of the river should be increased," he says, referring to the irrigation canals upstream that have left Ganga depleted in the middle and lower reaches without the necessary power to wash away the muck. "There are enough laws, rules and regulations but those have to be implemented. Industries should be disciplined," says Jaiswal.

But Kumar says it doesn't matter whether the Ganga is flowing, trickling or stagnant, as long as you have Nualgi. "Let the water be there," he says. "You can clean it."

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## **NEWS PAPER Create Awareness to public**

### **1.Kengeri lake strangulated**

Aquatic life here has been choked by rampant growth of hyacinth and release of sewage water

**By Deepthi M R**

**Posted On Tuesday, May 12, 2009**



Yet another lake is fighting a 'dying battle'. Kengeri lake, also known as Doddakere, is completely filled with hyacinth, showing signs of nearing its end, says a Bangalore University zoology team which has done an extensive study of the lake.

BU Zoology professor Dr Ramachandra Mohan said, "The dissolved oxygen content in the lake was 6.5 mg/litre in 2007 but it has reduced to less than 2 mg/litre now. As it is filled with these plants, sunlight cannot enter the lake." Worse still, sewage water from Kengeri and Visvesvaraya Layout are let in to the lake.

### **DEADLY WATERS**

"When the sewage flows into the lake, heavy matter settles at the bottom. As this hinders aquatic life under water, they come up for oxygen. The temperature of water on the upper surface being high, makes it difficult for them to survive there as well. So they get killed," he explained.

According to the research team that includes two research scholars Latha N and Gayatri S, though aquatic life dies during desilting, if herbivorous Tilapia fish are let in after desilting the lake, they will eat the surface algae. Once the algae are removed, the water remains clean for a longer time. Even the sewage lines have to be diverted and the lake needs to be fenced.

### **PRESCRIPTION TO SAVE LAKE**

1. Release Tilapia fish into the lake as they will eat surface algae, thereby making water clean.
2. Divert sewage lines which are connected to the lake.
3. Put a fence around the water body.

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# **Preserving foetus, an elephantine process**

[Dhanya Matsa](#)

*Express News Service*

Last Updated : 06 Jul 2011 11:27:13 AM IST

BANGALORE: An elephant carrying a six-month old foetus died in the forests surrounding Mysore around 85 years ago; but a visionary physiology professor Subba Rao took it upon himself to preserve the foetus for students of Zoology. The foetus, is still being proudly preserved by the Department of Zoology in a museum in Bangalore University .

In the contemporary scene, where students learn physiology through virtual media, such rare specimens need to be accorded importance. "Several research students from other countries come to take a look and it and study it, but no such interest is shown in our own country," said Head of the Department of Zoology, Bangalore University, Prof Ramachandra Mohan.

An even more telling tale of apathy is that this museum, which also hosts now extinct frog specimens and other valuable natural science specimens, is being maintained by the Department of Zoology with its department funds and with no money to spare even to secure the rare and valuable specimens.

A rarity by itself, the preservation of the foetus requires extra care as opposed to regular specimens that are preserved in formaldehyde. Professor Mohan explains, "Every visiting professor and delegates of an international conference held last year were stunned to see the preserved elephant foetus. I fear to put a monetary value on it as it would be sought after by several natural sciences museums in the world. The value is in the foetus itself as it can play a vital role in research of the natural sciences."

Natural science enthusiasts can tell you that tourists stream into the National History Museum at Mozambique to see the 22 elephant foetuses, each representing varying periods of growth in the nearly twoyear pregnancy period of the elephant. Apart from the tourist value, scientists can derive invaluable data from which inferences regarding evolution can be arrived at.

"The DNA fingerprinting of these specimens can throw light on several aspects of natural sciences, especially physiology. Students from colleges and schools in the city used to visit the museum after which they even included some of the specimens in their syllabus to learn and understand the concept better," says Professor Mohan.

These valuable specimens also reflect another important aspect Most of the specimens were collected by students of the 100yearold department of Zoology and that list includes Professor Subba Rao.

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## **100 year zoo story**

The museum belonging to BU's zoology department completes a century of existence, helping students and universities alike

Deepthi M R



Posted On Tuesday, September 08, 2009 at 12:50:00 AM



**Dr Ramachandra Mohan and Zoology professor Dr Asha Devi**

What began as a lab for the zoology department of the Bangalore University and transformed into a museum later housing some rare specimens, has now completed 100 fruitful years, aiding students and universities alike.

A 67-day-old elephant's foetus welcomes you to the museum that was started in 1909. This elephant specimen itself is 72 years' old.

"Each of these specimens have a tale to tell. Some have genetic value, while some are important for animal studies," said Ramachandra Mohan, head of the zoology department.

### **AIDING VARSITIES**

Recalling his student days and narrating stories of specimens that are over 80 to 100 years old, he

said, “The museum was started by Prof Narayan Rao, who also started the department. It is because of him that the department has resources that have now become source material for many other universities.”

Though the museum began as a lab, it was turned into a museum as the number of specimens began to grow. “Some of the oldest specimens we have are from 1937, which were found by Rao himself. Since he was a conservator of forests and a zoology professor, it was his passion that led him to collect them,” said Mohan.

### **1,000 SPECIMENS**

The museum has over 1,000 specimens, including that of mammals, amphibians, reptiles, spiders and aquatic species. “Some of the species are very rare. None of these is less than 30 years’ old. These were collected in their natural conditions, which is not allowed now,” he said.

The museum caters to many branches of zoology. “Osteology, embryology, marine and reptile studies are some of the branches of study it caters to. Students can conduct research on bones, birds, amphibians and reptiles,” said Mohan.

### **SETTING SIGHTS HIGHER**

The department celebrated 100 years recently. “It is my luck that I am a student of this department and in its 100th year, I am its chairman. I want to achieve more,” he added.

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## **Soon, satellites to the rescue of fish in lakes**

**by Khanna, Bosky**

On April 14, walkers at Cubbon Park were greeted by the stink of dead fish, as sewage mixed with the water in Lotus Pond after heavy rain. Is there a way to prevent such sudden changes in the quality of water? Yes, say experts.

Sensors can be fixed in the water, equipped to measure the acidity or alkaline quality of water, the presence of dissolved oxygen, and the quality of water in city sewers. Dissolved oxygen should ideally be between 6.5-8.5 micro grams per litre in water that supports life; otherwise, fish could die. If the oxygen levels in water fall below these levels, the sensors would send

signals. The sensors would be connected to satellites, so the information gathered could be monitored. This would aid city authorities in acting on time.

Ten lakes in the city will form part of a pilot project undertaken by the Bangalore Development Authority (BDA) in the use of electronic sensors. These are: lakes at Jakkur and Sampigehalli; Rachenahalli; Ullalu; Mallathahalli; Kommaghatta; Ramasandra; Thalaghattapura; Konasandra; Somapura; Kothanur.

Professor and zoology department head, Bangalore University, Ramachandra Mohan, said Sonde probe sensors would be pressed into service to help monitor water quality in the lakes. He made a presentation in this regard to the BDA on Monday.

In India, monitoring water quality in lakes is limited to sending water samples for testing when glaring problems are observed - when a large number of fish are found dead, for instance. The process is often tedious, and the tests are time-consuming. If probe sensors at the ground station could send signals to satellites, the results of the chemical analyses of the water could be obtained much faster. Mohan and environmentalist AN Yellappa Reddy are inspecting the 10 lakes and preparing a detailed report. The project, if successful, could extend to all 80 lakes in the city. This is the first time that the technology is being tested in the state. The project will cost around Rs15 lakh for 10 sensors; each probe has a life span of about 15 years.

[k\\_bosky@dnaindia.net](mailto:k_bosky@dnaindia.net)

Credit: Bosky Khanna

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Blow hot, blow cold, yaake?



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Simple, Bangalore's climate has a split personality. Some pockets are hot and some pockets are cold. Take a testdrive from one point to another and the truth will dawn upon you



Blow hot...blow cold...blow hot...blow cold. Well, this would most certainly be the conflicting description of Bangalore's climate as perceived by a motorist passing through the city these days. For the temperature is not uniform at any given point in time.

While some pockets are extremely hot, some areas are cold. So, if you are driving from Indian Institute of Science (IISc) towards Peenya Industrial Estate, the temperature will increase by two degrees Celsius — leaving you with no option other than to increase the AC in your car.

Speaking to Bangalore Mirror, Uttam Kumar, research scholar, Centre for Ecological Sciences, IISc, said: "In the last two decades, Bangalore's temperature has increased by two degrees, corresponding with an urban growth of 466 per cent."

#### GLASS OF THE MATTER

In fact, a study undertaken by Dr T V Ramachandra, Centre for Ecological Sciences at IISc, has shown that areas like Electronics City and Information Technology Park-Bangalore (ITBP), which sport buildings that make use of more glass panes, record higher temperatures when compared with places that sport more vegetation like Ulsoor, Lalbagh, IISc and Hebbal.

"We divided the whole city into eight divisions: North, South, East, West, North east, North West, South East and South West regions. The areas with trees and lakes were found to be cooler while places with buildings were hotter. This is because cement absorbs heat and glass reflects it, thus increasing the heat," he said.

The city has also lost much of its water bodies which is increasing the temperature. The city had 207 water bodies in 1973, but today, only 81 of them have survived. "There has been a 55 per cent decrease in the number of water bodies in the city which is adding to the heat," he said.

#### VANISHING GREEN COVER

The study also states that there has been a 45 per cent increase in the built up area adding to the heat. "The city had 46,639 hectares of vegetation in 1973, but it has decreased to 17,298 hectares in 2007. For instance, when you are driving from one place to another, you may notice that it would be raining in one area while it is dry in another. This is due to a lack of vegetation", Uttam Kumar explained.

With increase in vehicular movement and emission of carbon dioxide and carbon monoxide, the temperature is continually going upwards. “The study shows that areas in the outskirts get more rain than the central parts of the city. This is also due to the vegetation which is thicker there,” he said.

Higher, the cooler!

Another study by the Zoology Department, Bangalore University, shows that some areas which are located at higher altitudes have better rainfall and cooler weather conditions in Bangalore. Dr Ramachandra Mohan, HoD, Department of Zoology, Bangalore University, said, “We have been studying changing weather conditions in Bangalore city for the last 15 years. We undertake a test-drive from Jnana Bharathi to Bannerghatta National Park every year. We have seen a drastic change in the temperature conditions. Our study also shows that the areas surrounding Bannerghatta area are at a higher altitude with thicker vegetation. So the temperature is cooler there.”

The study focuses more on the altitudes of the locations and hence shows that low lying areas like Mysore Road, Magadi Road, Chandra Layout and Rajarajeshwari Nagar are hotter. “There has been a drastic increase in the number of vehicles in the city. The smoke emitted by the vehicles has also added to the rising temperatures,” he said.

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## Invited

BANGALORE,KARNATAKA M. Ramachandra Mohan of the Department of Zoology, Bangalore University, has been invited to the 14th World Lake Conference to be held from October 31 to November 4 at Au ...

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## ***INTERNATIONAL CONFERENCE ON ENVIRONMENTAL POLLUTION, WATER CONSERVATION AND HEALTH***

- [Bengaluru](#)
- 133 reads

Event Date:

Thu, 29/07/2010 (All day) - Sat, 31/07/2010 (All day)

Environmental Pollution is one of the most challenging problems facing the international community; it has clear and known impacts on human health and natural ecosystems. Understanding and managing environmental relationships associated with economic development, population growth, ecology and human health requires inter-disciplinary interactions and co-operation among social, physical and life scientists. The international conference on environmental pollution, water conservation and health (ICEPWCH-2010) aims to bring together students, engineers, scientists and other professionals from different countries, involved in various aspects of environmental science to exchange and share their experience, new ideas, research results and latest developments in all aspects related to environmental pollution, water conservation and its impact on ecology and human health.

Venue - Jnana Jyothi Auditorium, Central College Campus, Bangalore University.

Dr.M.Ramachandra Mohan icepwch2010@gmail.com INTERNATIONAL CONFERENCE ON ENVIRONMENTAL POLLUTION, WATER CONSERVATION AND HEALTH

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## BU professor to present paper in Texas



[Express News Service](#), [The New Indian Express](#)

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BANGALORE: Prof M Ramachandra Mohan of the Department of Zoology, Bangalore University has been invited to present a paper titled, 'Water Quality Monitoring of Magadi Hill Range Lakes and Reservoirs in Bangalore, India' at the, the 14th World Lake Conference. The conference is jointly organised by the United States of America and International Lake Environmental Committee, Japan from October 31- November 4 at Austin, Texas, USA. The World Lake Conference will provide an international forum for discussing lake/ reservoir related issues from international, national and state agencies. NGOs, academic institutions, water industry and resource management professionals, private sector and other water stakeholders will be participating.

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Daily News Events 29th July 2010



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29th July 2010

**Photo Caption :**

Higher Education Minister Aravind Limbavali with Dr N Prabhu Dev, Vice Chancellor of Bangalore University, M Ramachandra Mohan Former Vice Chancellor of UAS, RM Ranganath, Registrar and others inaugurating centenary celebrations of the department of Zoology, Bangalore University during International Conference on Environmental Pollution, Water Conservation and Health at

Jnana Jyothi auditorium, Central College, in Bangalore on Thursday 29th July 2010

**Photo Credit :** pics4news.com

## City lakes dying

Study shows that only 40 lakes will exist three years down the line

By Deepthi Ranga

Posted On Friday, May 01, 2009



## Ulsoor Lake, one of the main attractions in the city

If you believe that Bangalore is a city with plenty of lakes, here is a reality check. **Dr Ramchandra Mohan, a professor at the Zoology department, Bangalore University** and his team of researchers have conducted a study on all the lakes in the city. Speaking to Bangalore Mirror, **he** said, “There was a time when Bangalore was known for its lakes and water bodies. Not so long ago, in 1979, Bangalore had 379 lakes. Now the city has only 81 lakes and most of them are well on their way to the grave.”

Resurrection of these lakes may not be possible. But saving the existing ones has become his goal. “The health of a lake is considered good if the dissolved Oxygen level in the water is above 6.5 milligrammes per litre. But the Oxygen level in most of the lakes in the city is below 2 mg per litre. This can prove to be fatal for the aquatic life of the lakes,” he said. Pollution and encroachment are just a few reasons for the vanishing lakes. **Dr Mohan** felt that if these lakes are saved, the water needs could be met. “The population has increased drastically over the years.

In 1942, Bangalore had 4.5 lakh people. That increased to 90 lakh in 2008. Now with growing demand for water, the number of lakes should have also increased. But it has not. Bangalore needs 840 million litres of water per day. Our government is only supplying 705 MLD (million litres of day) of water. If these lakes were restored or at least if the existing lakes are maintained, this difference of 135 million litres can be met everyday.”

### **GLOOMY OUTLOOK**

The team has found that if this depletion continues, then 40 of the 81 lakes will die within the next three years. “Five of my students are working on various lakes in the city. Our government is struggling to keep small lakes clean. Government should budget water and give equal supply of water to every household so that water can be used sparingly. Our study shows that these lakes will need massive cleaning up. All the sewage should be diverted and not let into the lake,” said **Dr Mohan**.

**He** said water should be categorised into three types: Water for domestic use, for irrigation and recycled water. “Bangalore never uses 70 million litres of water which is recycled. About 98 per cent of water supply is from the Cauvery river. It’s about time that we clean up these lakes and use this water for domestic use.”

Statistics reveal that of all the water that the city gets, 35 per cent is used for household purposes, 3 per cent for non-household purposes, industries use 2 per cent, Defence uses 3 per cent and Railways use 1 per cent. Public taps use 17 per cent and the remaining 39 per cent of water use has not been assessed. If this water can be used well or even traced, then our water

demands can be met.

### **VANISHED LAKES**

Lakes in Bangalore have turned into buildings and complexes.

Dharmambudi lake is now Majestic bus stand

Sampangi tank is now Kanteerava stadium

Koramangala Lake is now National Games Village

### **Symptoms of death**

The first sign of a lake dying (Eutrophication) is algae growth. Algae release Nitrogen gas which is toxic for the fish. They also block sunlight from entering the lake. When sunlight is blocked, photosynthesis doesn't take place. Water temperature also goes down and the dissolved Oxygen levels go down. Thus the aquatic life is affected and the lake begins to die.

### **Comment** (2 Comments Received)

I am glad to bring to your kind notice that recently it came in rediffmail, out of all the cities in India, Bangalore has been identified as the best city. It is all due to the efforts of people like you to preserve the lakes and ponds in the city. Currently,

krupanidhi, [krupanidhi\\_srirama@rediffmail.com](mailto:krupanidhi_srirama@rediffmail.com) Dated : Wednesday, May 06, 2009 08:54 AM

Ms.Deepthi Ranga and Dr. Ramachandra Mohan deserve Compliments to inform Public through Press and try to open eyes of Authorities concerned in control of Lakes preservation. Lake is also home for Fish cultures which is food for all living beings can not be ignored. Apart from augmenting Drinking Water resource, maintaining healthy Lakes will rejuvenate Ecology and Environment with opportunity for Business of Water sports and entertainment. Inventions in Nano Dimensional low investment Products of High Merit originated from INDIAN Research such as Biosanitizer and Nualgi, are ignored by Authorities which can offer low cost ecology maintenace of Lakes for life with Drinking Water Quality auto maintenace, despite sewage ingress continued with or without STP output Reconditioned resource let off in Lakes.

Kishore Kaikini President { BAE MISSION} NGO, [kishorekaikini@gmail.com](mailto:kishorekaikini@gmail.com) Dated : Tuesday, May 05, 2009 01:00 PM

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Women and water" to mark World Water Day

**THE**  **HINDU**

Women worried over Cauvery verdict

Special Correspondent



**WATER POLITICS:** The former Minister H.N. Nanje Gowda (third from left),

**Pramila Nesargi, chairperson of Karnataka State Women's Commission, and the former Minister Leeladevi R. Prasad, at a seminar on 'Water and women' on the occasion of International Water Day in**

**Bangalore on Friday. — Photo: V. Sreenivasa Murthy**

Bangalore: The seminar organised by the Karnataka Women's Commission on "Women and water" to mark World Water Day turned into a forum for discussions on a variety of topics, including the Cauvery Tribunal Award, rather than one for a discussion on how the water crisis impacts the lives of women.

Commission chairperson Pramila Nesargi, in her introductory remarks at the seminar here on Friday, spoke of how India needed to evolve a long-term vision on water management and a water budgeting pattern.

Bangalore, a city once known for its tanks, had lost most of them and the few that survived did not have potable water, said Ms. Nesargi. She cited some experiments in Kerala and Maharashtra at recharging water bodies. The crisis of access to a basic resource like water had hit women the worst, because they were traditionally associated with collecting, storing and using water for household purposes, she added.

She said the verdict of the Cauvery tribunal would worsen the water crisis in Karnataka.

The former minister Leeladevi R. Prasad and the former Malnad Area Development Board chairperson Swarna Prabhakar spoke about the Cauvery award, veering off from the topic slated for discussion.

K.P. Puthuraya, former research director of the Rajiv Gandhi University of Health Science (RGUHS), chosen to be one of the resource persons at the seminar, started his presentation with jokes and a series of quotations from ancient texts that glorified the role of women in society.

H.G. Shobha, a social activist, tried to bring the discussion back to the topic, by speaking about women's claim to water as a natural resource and how even the Cauvery issue had got politicised. But it was close to lunchtime and there was hardly any room for elaboration.

The former Minister H.N. Nanje Gowda was left with barely five minutes.

**Prof. Ramachandra Mohan of Bangalore University, who had come prepared with a power point presentation, had to wait till after lunch to be heard.**

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# THE HINDU

Online edition of India's National Newspaper

Tuesday, Apr 12, 2005



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[Applications invited](#)

Applications have been invited for the post of project assistant for research on lake water quality

management to be taken up by Bangalore University and the Department of Statistics. A fellowship of Rs. 4,000 a month will be given for two years. Candidates with M.Sc. (Zoology, Microbiology,

Biotechnology, or Environmental Science) with 55 per cent marks and one year's experience in water quality or hydrobiology are eligible. Applications by registered post should reach M. Ramachandra Mohan, Professor of Zoology, Bangalore University, by Friday.

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# THE HINDU

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## **Illicit coral trade is on the rise in State**

K.V. Subramanya

*One person arrested, corals worth Rs. 20 lakh seized in Mysore*

*Corals are mainly procured from Kochi and Chennai by traders*

*Hoteliers and aquarium traders are the major buyers of corals in Karnataka: Chikkerur*

BANGALORE: Even as the State police are making efforts to check growing wildlife crimes, illicit coral

trade is said to be continuing to thrive in Bangalore and other parts of the State.

Coral is among the list of "highly endangered" species listed in Schedule-1 of the Wildlife Protection Act, 1972. Procuring, possessing or selling coral is a crime under the Act.

### Illegal trade

In gross violation of the Act, several unscrupulous elements are carrying out coral trade in Bangalore and Mysore.

The traders have been procuring corals mainly from Kochi and Chennai, Inspector-General of Police (CID Forest Cell) K.S.N. Chikkerur told *The Hindu* on Wednesday.

Corals are used for ornamental purposes in drawing rooms.

They are also cut and polished to make jewellery, boxes, vases and statues. Investigations have confirmed that hoteliers and aquarium traders are the major buyers of corals in Karnataka, he said.

Recent scientific advancements have made it possible for hobbyists to keep corals alive in their aquariums and this has caused a great increase in the demand for live coral, he said.

### Raids

Since July last year, officials of the CID Forest Cell have conducted over six raids and seized different varieties of corals worth Rs. 70 lakh (notional value). In the latest raid conducted in Mysore on Tuesday, one person was arrested and corals worth Rs. 20 lakh were seized. Cases have been registered in Shivaji Nagar, Cubbon Park, J.P. Nagar, MICO Layout and Byatarayanapura police stations in Bangalore, Mr. Chikkerur said. Identification of corals is often difficult as there are several look-alike species. In some cases, the CID Forest Cell has taken the assistance of marine biologists Ramachandra Mohan and Ravichandra Reddy of Bangalore University.

Cases were registered only after the experts confirmed and certified that the seized articles were corals, Mr. Chikkerur said.

### Great demand

Though Philippines and Indonesia top the list of coral producing nations, coral from Gulf of Mannar, the Gujarat coast and the Lakshadweep islands in India are in great demand.

Initiatives for preservation of coral reefs in India have been taken up on a large scale in the Wandur Marine National Park in the Andaman and Nicobar islands. Even the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) has classified many corals as threatened

species.

Corals are the skeletons of marine animals called polyps that accumulate over years to form large coral reefs, which are "rainforests" of the sea. They provide a place for marine life to lay eggs, feed and hide, and they also create a physical barrier for coasts against destructive wave action. Corals are collected underwater by diving, by dredging the ocean floor using trawling nets and also by dynamiting parts of the coral reef.

The last two methods cause heavy damage to the marine ecosystem, Mr. Chikkerur explained.

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## **Lake (g)razed to ground**

Bangalore's growth can be summed up in two ways. One, a super-fast growth and two (a dubious one, though), its vanishing water bodies. Take, for instance, the Nagarbhavi lake, which prided itself for its aquatic life and rare avian population. Now, it is almost invisible

Deepthi. M.R

**Posted On Monday, September 21, 2009 at 12:24:55 AM**

Bangalore's growth can be summed up in two ways. One, a super-fast growth and two (a dubious one, though), its vanishing water bodies. Take, for instance, the Nagarbhavi lake, which prided itself for its aquatic life and rare avian population. Now, it is almost invisible.

A vast stretch of water weeds has converted the lake bed into a grazing land. Located on a four-acre area, it was once home to several species of birds, but has now turned into a marsh filled with hyacinth and weeds.

Till recently, people used to flock to the lake to recharge their lungs with fresh air or for religious rituals.

### **SEWAGE THE CULPRIT**

"The disappearing lakes has got to do with sewage water getting mixed with lake water. With excess amount of nitrates and phosphates, sewage water is nothing but a fertile feed for the growth of aquatic weeds. When this is let into the lake either due to the encroachment of sewage canals or illegally, it will foster the growth of weeds and shrink the water-holding capacity of the tank," said Dr Ramachandra Mohan, professor, zoology department, Bangalore University.

Experts have said the increased growth of water hyacinth and grass will drive lakes towards the path of extinction. "When water plants grow in the lake, water gets more oxygen. But an excess amount of these weeds destroy the lake. Further, weeds consume all the oxygen available in the water and restrict sunlight from entering the lake. This spurs the growth of bacteria," Dr Mohan said.

### **FOUL SMELL**

Sampath Kumar, a resident of the area, said the accumulated silt and decaying weeds besides the sewage water emit foul smell.

A portion of the lake was given to Ambedkar Polytechnic College located right behind the lake. A dhobi ghat is situated behind the lake and washermen use this water for washing clothes. "The water is contaminated as the sewage water from the college hostel is let into the lake and the same water is used by washermen at the dhobi ghat. The lake has shrunk in size in the past 12 years," said Hemavathi, another resident.

The Karnataka State Pollution Control Board (KSPCB) officials had visited the spot in 2006 and asked the people in the locality not to come up with new buildings close to the tank bed. Since then, nothing has been done to preserve this precious water body.

