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Bangalore's Dead Fish Are Just a Symptom of the Time Bomb that Lies Ahead

BY ANJALI VAIDYA ON 21/03/2016 • 2 COMMENTS

Ulsoor Lake is one of the last strongholds in a water-starved city whose hundreds of old reservoirs have largely been drained to be built upon or reduced to dumping grounds in the last 40 years.

Ulsoor Lake in Bengaluru. Credit: araswami/Flickr, CC BY 2.0

Bangalore: Two weeks after thousands of fish floated belly up to the surface of Ulsoor Lake in Bengaluru, there is little sign that such a morbid scene ever occurred here. Walkers stroll as usual in the evening on well-manicured paths that circle the lake. Their shoes press a soft dusting of violet jacaranda flowers into the ground, past pink bougainvillea entwined with the lakeside fence. On the other side of that fence are pond herons (https://en.wikipedia.org/wiki/Indian_pond_heron), small brown bodies revealed in a burst of white as they take flight, skimming across Ulsoor on outspread wings. The flash of a black cormorant above dark waters that look almost pristine in the fading dusk light, unbroken by the choking weeds that have overtaken many of Bengaluru's remaining lakes… until one looks close to find an oily sheen.

Stormwater drains bring to the lake a wide assortment of garbage in addition to rainwater, along with a discoloured ooze that almost looks lovely in the red of the setting sun, but not quite. "This used to be a really nice place," one walker says with regret to another as he strides quickly past. The breeze across this cloistered bit of paradise, fenced off from the evening roar of Bengaluru's traffic, brings with it the faint

but unmistakable scent of dead fish.

Mass fish death is not uncommon on Bengaluru's dying lakes. Delving into recent years shows fish kills occurring with regularity (reports here (http://www.thehindu.com/todays-paper/tp-national/tp-karnataka/article1843633.ece), here (http://www.newindianexpress.com/cities/bengaluru/Sewage-Water-Kills-Fish-At-Sankey-Tank/2014/07/16/article2332872.ece) and here (http://www.thehindu.com/news/cities/bangalore/mass-fish-death-in-dorekere/article7139746.ece)) from March to July, as temperatures rise and then rain runs through the city's network of drains to choke lakes with sewage. The citizen outcry that follows the discovery of deceased fish is, in turn, as much a part of the city now as complaints about decaying infrastructure, bad traffic and how hot the weather has gotten. Beleaguered government officials pointed out last week that these grisly events are common in warm weather, and it's true that the deaths themselves were not surprising. Walk along the polluted canals that feed into and out of Ulsoor Lake and the more pressing question becomes how any fish survived long enough to be killed.

Despite the ubiquity of fish death on Bengaluru waters, it takes effort to kill fish – and Priyanka Jamwal at the Ashoka Trust for Research on Ecology and the Environment (ATREE) asserts that at Ulsoor many factors conspired to do so. Jamwal's lab analysed early-morning water samples from Ulsoor to find a multi-pronged assault against the animals. Ammonia levels were high due to sewage in the water, which would have weakened the fish in the face of further stresses. Dissolved oxygen levels, in turn, were very low. The latter was due to the many beings in the water that require oxygen and thrive, unlike fish, on sewage: algae, proliferating in the presence of nitrogen and phosphorous, and bacteria.

Finally, early March in Bengaluru saw unprecedented high temperatures as it did across the globe (http://www.slate.com/blogs/future_tense/2016/03/01/february_2016_s_shocking_global_warming_temperature_record.html). Warm temperatures encourage bacteria and algal growth, while supporting lower levels of dissolved oxygen. Dissolved oxygen then reaches its

low at night, when algae are net consumers rather than producers of oxygen. The consequence: thousands of fish suffocated to death overnight on March 6, to be discovered by alarmed residents the next morning.

Brewing trouble downstream

Jamwal points out that the lake lacks basic facilities for treating raw sewage. "The first thing is to have a sewage treatment plant [at the lake]," she says. "Once you have a sewage treatment plant, then you need to decide how much nitrogen and phosphorous you can discharge from the treatment plant so there is not too much algae in the lake." But the problem, she shows, is much bigger than Ulsoor. The Bangalore Water Supply and Sewerage Board (BWSSB) has focused more on water than sanitation in its race to keep up with the growing city. Thus, while the city imports 1,400 million litres of water from the Kaveri River every day, it only has the facilities to treat half that amount of sewage – and those facilities operate at one third capacity.

The math is simple: most of the waste produced by Bengaluru has nowhere to go. Much of it ends up in storm water drains, thence to canals, and from there to lakes which are – in effect – acting as the city's storehouses for 8 million souls' worth of toxic sludge.

Ulsoor Lake, polluted as it is, is one of the last strongholds in a water-starved city whose hundreds of old reservoirs have largely been drained to be built upon or reduced to dumping grounds in the last 40 years. But like all the others, Ulsoor is in decline, and there is a tired frustration to those many who have fought its fall. Zaffar Sait is one such person, member of the Richard's Town Residents Welfare Association and with ancestors going back over a century in the city. The canals that empty into Ulsoor run past British-era slaughterhouses near Pottery Road, he points out.

Slaughterhouses, which once marked the old borders of Bengaluru,

have now been enveloped by the expanding city without their method of waste disposal being altered in kind. Sait has taken photographs (https://roha75.wordpress.com/2015/05/14/what-flows-into-the-lakes-of-bangalore/) of blood and offal in the canals leading south to Ulsoor, along with garbage-choked screens meant to filter solid waste. He believes that a lasting solution to Ulsoor's problem lies farther afield than the lake itself: "If you allow raw, untreated sewage and other pollutants to come to the lake, and then try cleaning it there, that's not going to solve the problem," he says. "It has to be done upstream."

There are equally grim stories downstream of Ulsoor. Between the western border of Ulsoor Lake and the busy road, fenced off from traffic and walkers alike, a canal makes its smelly, weed-choked way from the dense habitations and markets of Shivajinagar to the northwest, oozing along toward the neighbourhood of Halasuru to the south. If you turn away from birdwatching walkers to follow Ulsoor's southeastern canal, it dips under a pedestrian deathtrap of a road to collect waste from a *gurudwara* on the other side, emerging within Halasuru in a dramatic cascade of white froth and plastic.

Ulsoor Lake gets its name from Halasuru, a centuries old township to its south and east. Halasuru's narrow labyrinthine streets are a puzzle to vehicle-focused Google Maps, which populates the place with blank dead ends: the modern day equivalent of *here be dragons*. Between one step and the next lie centuries. Nineteenth century peeked roofs rub shoulders with mid-20th century standalone houses and newer multi-storied apartments, where old men lean on balconies and the sky is a bare sliver above. In 1897, B. L. Rice described Halasuru (https://books.google.co.in/books?id=p0wSoEIub1YC&printsec=frontcover#v=onepage&q=halasur&f=false) as a suburb of Bengaluru, population 6,650. Now Bengaluru's waste runs through the neighbourhood, making it impossible to lose one's way.

To find the canal in this maze, follow your nose to walkways that span the water. Below, a dark almost-liquid mixes with all manners of garbage, additional waste water splashing out of drain pipes from residences and public toilets. The Bruhat Bengaluru Mahanagara

Palike (BBMP) is busy shoring up the canal against the coming monsoons. But that will not fix the fact that when the rains come, the sewage being continuously deposited into this canal and many others in Bengaluru will search for an outlet and find none. Like Google's map of Halasuru, Bengaluru's once extensive network of canals and lakes has lost its logic: it has become a mess of dead ends.

Democratise the BWSSB

Here, on the roads that line this toxic river waiting for rain, one finds the true risk posed by the city's crumbling and sometimes non-existent sanitation system. On one side of the canal, a schoolhouse filled with children poring over books twice the size of their heads. Farther along, a fly-specked vegetable market. Annual spates of dead fish are tragic but they are nothing to the disaster that Bengaluru regularly courts.

Water pollution bad enough to kill fish is not new to Bengaluru. T.V. Ramachandra at the Centre for Ecological Sciences in the Indian Institute of Science has been documenting and speaking out against the decline and fall of Bengaluru's water bodies for 20 years. What initially drew him to urban environmental issues, he says, was a fish-kill at Sankey Tank in 1995. His lab showed that fish had died due to suffocation (http://wgbis.ces.iisc.ernet.in/energy/water/paper/fishmon.htm) following the overflow of sewage into the lake during the monsoons. Fish-kills reduced after sewage lines were repaired and an aeration fountain added, at Ramachandra's suggestion, but he points out the local community's vigilance around Sankey Tank is what makes its upkeep possible. "When local people start feeling that the lake belongs to them, nobody will pollute," he says.

Ramachandra suggests that proper sewage treatment and aeration could also help at Ulsoor. But the problem is complicated by the sheer scale of growth (http://www.ces.iisc.ernet.in/energy/paper/Bangalore_heatisland/introduction.htm) that Bengaluru has faced. Between 1973 and 2009, Greater Bengaluru's built up space grew by 632%, he says. The 2000s

alone saw a 79% decline in water bodies in the city, with 66% of those remaining being sewage fed. Bengaluru's urban heat island effect has raised temperatures by an estimated 2-2.5°C in the past decade, which again increases the likelihood of fish death. "Decongest and decontaminate" Bengaluru.

The former may be easier said than done. A decongested Bengaluru growing at a slower rate would undoubtedly have had fewer environmental problems. But in the meantime, it may also be constructive to question the type of growth that the city has faced. Economic liberalisation in the early 1990s led to vast transformations in growing urban spaces across India. The favoured type of development has been of a very specific kind: encouraging corporate growth while decentralising government function, and deprioritising public utilities such as water and sanitation.

Kshithij Urs, head of ActionAid Bangalore, points out that with the crumbling of public utilities, the state of Karnataka has become the capital of water privatisation in India. And although the government may be criticised for its inefficiency, "You cannot cut off your nose because you've got a cold," he says. In the case of Bengaluru's frequently vilified water and sewerage board (BWSSB), the nose appears to have been sliced off even prior to the cold's worst impacts. The World Bank-funded Karnataka Municipal Reform Project, says Urs, required the BWSSB to have a 90% "operating ratio" from 2006 onwards – increasing net profits by decreasing fixed institutional costs. What this meant, according to him, was a freeze on new hires even as Bengaluru's administrative area was expanded in 2006 to the 741 km^2 of Greater Bengaluru. Many problems plague Bangalore's sanitation system but an understaffed sewerage board has certainly not helped.

Urs' solution is similar in spirit to Ramachandra's emphasis on community driven change: "Democratise the BWSSB," he says. In Bengaluru, all civic bodies but the BBMP are now parastatal organisations not directly answerable to voters. Urs suggests that we need to give the people of Bengaluru greater say in the management

of their own water.

Ulsoor's woes lack easy solutions but they point to a problem far deeper than dead fish. Eight million people sit on top of Bengaluru's time-bomb of a water- and waste-crisis, with crippled governing bodies a convenient but not always useful scapegoat. An overhaul of Bengaluru's sewage treatment infrastructure is at this point just as challenging as it is desperately necessary. Smaller scale models of effective solutions exist: Jakkur Lake (http://www.newindianexpress.com/cities/bengaluru/Jakkur-Model-Key-to-Sustainability/2014/04/24/article2185956.ece), for example, is often pointed to as an example of sewage management done right. And public awareness of the crisis has grown since Bellandur (http://thewire.in/2015/05/23/beneath-the-foam-and-fire-2342/) and Varthur lakes caught fire last year. That awareness just needs to grow into city-wide action given that in this city of interconnected canals and seeping groundwater, there is no such thing as localised pollution.

Across the street from Ulsoor Lake's northwest gate, an upscale coffee shop carries a full-wall depiction of a lake. The water in it is pristine, illuminated bluer than blue by clear sunlight that shines through unpolluted air. Given the general fondness of businesses for natural images, the irony is almost certainly not intentional. In the air-conditioned quiet of the café, Ulsoor's smokey haze could be worlds away. Does the image represent the past we remember – or does it represent the future we strive for? Time will someday tell.

Anjali Vaidya is a freelance writer in Bangalore.

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