



Discarded ships on the beach at Olkhon island. Image: Leisa Tyler/Getty

Earth's Deepest Lake Is 'Seriously Ill'

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On the main drag of Khuzhir, the principal town of Olkhon Island in Lake Baikal, Siberia, the dust blown from buses delivering tourists billows through the windswept streets. By the upturned chassis of vehicles picked clean of parts, babushkas wade through piles of trash, searching for anything worth claiming. In the shadows of a former prison, sunbathers line a beach around clumps of algae and rusted metal detritus. While Buryat shamans, who revere the lake as holy, perform ceremonies around totem poles festooned with ribbons on a bluff above town, in a ship graveyard below them, children toss empty vodka bottles at each other for entertainment.

Stretching for 395 miles, thirty-million-year-old Baikal is the world's deepest lake, its volume roughly equivalent to the five Great Lakes of North America combined. A UNESCO World Heritage Site, Baikal contains one-fifth of the unfrozen freshwater on the planet. Its unique closed ecosystem is home to over 3,500 species and subspecies of animals and plants, roughly sixty percent of which are not to be found anywhere else on Earth. The lake is now subject to an unprecedented catalogue of threats.

I visited the region this summer, when wildfires the likes of which [had never been seen before](#) were raging, leading locals to describe the scene as feeling “like doomsday.” The lake faces a range of environmental issues: phosphate run-off from unplanned tourist developments and poor sewage treatment, the rampant growth of algae mats and a sponge die-off, and low inflow that saw water levels hit [critical marks](#) this year, down 40cm since 2013. A waterfront industrial plant that produced [cellulose fiber for Soviet aircraft tyres](#) is now closed, but dotted around the dimly-lit derelicts lie 13 toxic reservoirs, [each the size of two football fields](#). Now, Baikal is further endangered by Mongolian plans for hydropower plants which, Professor Marianne Moore from Wellesley College told Motherboard, would effectively starve the lake of oxygen.



Detritus on the beach near the tourist town of Khuzhir. Image: Stephen M. Bland

A few miles from Khuzhir, beyond an abandoned fish factory that had operated as a gulag, I came across the rotting corpses of Nerpa seals which had washed to shore. [According to Greenpeace](#), the number of these unique seals, one of only three entirely freshwater seal species, has decreased by approximately a third since the beginning of the 1990s. Commenting on this “huge die-off,” Greenpeace Russia campaigner Roman Vazhenkov noted that although the seals had died of disease, chlorine substance found in the creatures' fatty tissues suggests their immune systems had been weakened.

I spoke to Professor Oleg Timoshkin from the Limnological Institute of the Russian Academy of Sciences about the levels of pollution threatening the lake. “In some areas of Northern Baikal, a crust of rotten spirogyra algae up to ten meters [wide] covers the once cozy beaches,” he told me. “Even cows and horses refuse to drink the water.”

Emissions from a failed sewage treatment plant in the town of Severobaikalsk on the northern shore have caused a bank of foul-smelling algae to form that stretches for six miles. In addition to this, locals report that for years, sewage trucks pulled up daily to dispose of wastewater at another dilapidated station near the shoreline.

“The [new] plant failed in large part because the railroad industry dumped a bunch of cleaning products into the sewage treatment facility,” Moore told Motherboard. “They were cleaning railroad cars with heavy duty detergent and it killed the microbes that helped remove nutrients. Untreated sewage has been entering the shallow waters up there.”



Discarded piles of litter at the abandoned gulag fish factory, Khuzhir. Image: Stephen M. Bland

I took a hydrofoil across the lake to [Ust-Barguzin](#), the boat cutting through swathes of smoke rising from the mainland. In this remote hamlet of feral dogs and high-walled compounds, we docked at a port choked with the rusting hulks of half-sunken ships. In an effort to dampen the acrid fumes, some residents had hung wet cloths across their windows. Despite being home to some 7,000 people, the sewage treatment facilities in Ust-Barguzin are, according to Timoshkin, “completely destroyed.”

With tourist numbers around Baikal rapidly increasing from 300,000 in 2009 to 1.3 million in 2015, [according to the Siberian Times](#), infrastructure is struggling to keep up with demand. “Down at the southern end of the lake, there’s a town called Listvianka,” Moore continued. “It’s a tourist mecca and the hotels there, many of which have gone up in the last fifteen years, none of them have treatment facilities, so sewage is going right into the lake.”

During his group’s latest expedition, Timoshkin and his colleagues also found that a pathogen had been killing sea sponges, which naturally filter the water. In the area under investigation, “from 30 to 100 percent of branched [Lubomirskia baicalensis](#) specimens were either sick or damaged and died,” Timoshkin commented.

On the shoreline near the *monogorod* (single-factory town) of Baikalsk lie the ruins of the Baikal Paper and Pulp Mill. The plant, from which chlorinated waste found its way into the lake, finally closed at the end of 2013—for financial, not ecological reasons—but [6.2 million tons of toxic waste](#) still remain in the aforementioned reservoirs. The Baikal trough is located on a rift zone and should an earthquake strike, the contaminated holding pods could easily rupture, causing an ecological disaster.



Buryat shaman performing a ceremony on the bluff above Maloe More. Image: Stephen M. Bland

In 2014, the [Moscow Times reported](#) that the site of the old factory would be turned into a “Russian Disneyland” called “Precious Russia” following the biggest clean-up in the country’s history, projected to take six years. With the economic crisis continuing though, [those plans have now been shelved](#). “I just don’t think Russia has the political will,” Moore told Motherboard.

Now, with Mongolia planning to build [a series of massive dams](#) upstream, Lake Baikal is facing a challenge which Moore believes could make all other problems “pale in comparison.” The plans, which are being evaluated as part of a [World Bank-funded environmental and social impact assessment](#), include a project to dam the Selenga River, which provides nearly 50 percent of the lake’s water.

“If this dam were built then this might cause major damage to Baikal’s ecosystem,” Professor Anson Mackay of University College London told Motherboard. “The Selenga is the lake’s largest tributary. Should flow be reduced [there could be] long-term catastrophic consequences for the ecology and wildlife in and around the lake.”

When NGOs met with local authorities in Irkutsk and Baikalsk last week, Mongolian plans for the so-called Shuren Hydropower Project were high on the agenda. As the Convention for the Protection of the World Cultural and Natural Heritage states that countries [should not take actions](#) that could affect World Heritage Sites in other nations, environmental groups have questioned the legality of the project.

As this row rumbles on, the Russian authorities have continued to [drain the lake](#) for an existing hydroelectric station downstream, which is at least partly culpable for water levels that Jennie Sutton from NGO Baikal Wave describes as “critically low.” A source, who spoke on condition of anonymity because the source did not have authorization to speak publicly, said that despite having poured 54 billion roubles into protecting the lake over the last three years, mismanagement of government funds has seen the state of the region continue to deteriorate. Disregarding evidence to the contrary, however, the [most recent report from](#) the Ministry of Environment and Ecology on the state of Baikal maintains that the ecosystem has not undergone “any significant changes.”

Ruminating on what needs to be done to save the lake, which he describes as “seriously ill,” Timoshkin says he is calling for the introduction of a more effective system of government monitoring. He is not alone in concluding that the current approach is only fit to “diagnose cancer in the last stage.” UNESCO has [accused Moscow of "dereliction of duty,"](#) per Deutsche Presse-Agentur, with regard to its handling of the Baikal region.

As the sun set, having completed their daily pilgrimage to the sights, a clutch of minivan drivers returned tourists to Khuzhir. Beneath ominous skies, Russian holidaymakers hit the bars, discarding their trash as they tottered down the dung-spattered streets. Illegal campfires illuminated the dusky woods along the Maloe More Strait. Mats of algae and flotsam washed to shore. With more of Baikal than ever before open to tourism, dependence on this source of income continues to grow. The future is uncertain for a lake that until recently was considered [the cleanest on Earth](#).

Clarification: This story originally referred to Lake Baikal as the "largest" lake in the world. It's the largest by volume, unless you count the Caspian Sea, which is a matter of debate. Baikal, however, is definitely the deepest freshwater body on Earth, which makes for a clearer headlines, so we've referred to it as such. The body of the story never referred to Lake Baikal as the world's largest lake. Apologies for any confusion.

Topics: [environment](#), [Earth](#), [Lake Baikal](#), [russia](#), [Baikal Pulp and Paper Mill](#), [Selenga dam](#), [features](#), [reports](#)

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