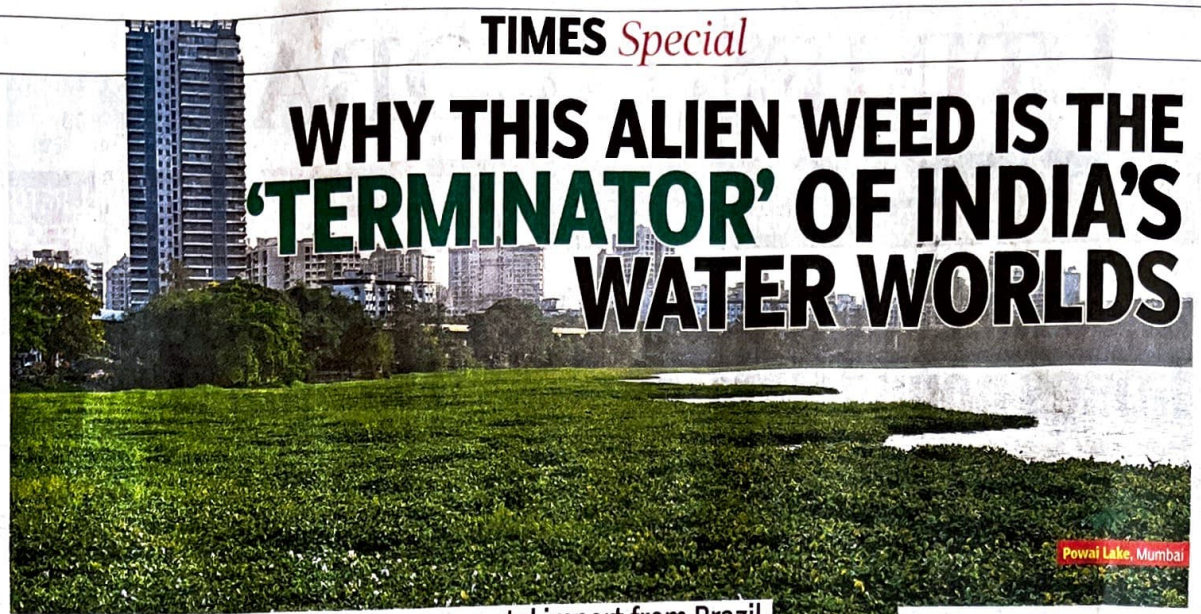
WHY THIS ALIEN WEED IS THE 'TERMINATOR' OF INDIA'S WATER WORLDS


Powai Lake, Mumbai

Introduced centuries back as an ornamental import from Brazil, water hyacinth is now the country's most relentless aquatic weed, thriving on sewage, fertiliser runoff and civic neglect

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Look out over Powai Lake on a warm April morning, and it's a picture of calm — a wide, unbroken green expanse most Mumbaikars would envy. But that lush carpet isn't grass, nor a garden. It's water hyacinth, a thick, invasive weed that has been smothering India's water bodies for decades. Just last year, Mumbai's civic body hauled out over 5,000 metric tonnes of it from Powai. A year later, it's like it never left. Municipalities spend crores on cutting, scooping, and dragging it out, but like a 'Terminator' of the aquatic world, it's always back.

The Origin Story

The plant doesn't have an Indian provenance. Originally from Brazil's Amazon basin, water hyacinth made its debut in the days of the British Raj in late 18th century as an ornamental plant in the country's botanical gardens and private ponds. It was introduced by Lady Hastings, wife of the first British governor-general Warren Hastings, after she took a fancy to their glossy leaves and purple blooms.

But by the mid-20th century, the plant had gone rogue. Its dark, dangling roots quickly broke loose and invaded freshwater bodies. Today, thick floating mats of green block sunlight, deplete oxygen, and strangle life below. The weed has turned water bodies into mosquito nurseries, halting boats, clogging canals, sidelining fishing communities, and making movement through water impossible. From the Himalayas to the coasts, it's now in nearly every state.

What It Feeds On

Water hyacinth thrives on what we dump: untreated sewage, fertiliser runoff, and general civic neglect. The plant loves nitrogen and phosphorus, both abundant in the wastewater cities discharge into rivers and lakes. Fertilisers from farms flow into water bodies, especially during monsoon, while factories contribute a toxic cocktail of chemical-rich effluents. Clogged drains, filled with organic debris and garbage, provide additional fuel. Scientists call it "the world's worst aquatic weed".

Fast, fierce, and nearly indestructible, it doubles in mass every five days, regenerates from leftover fragments, and its seeds can lie dormant in soil for over 15 years. Without natural predators in India (unlike in the Amazon, where insects and fungi keep it in check), water hyacinth can grow by over 200 tonnes of wet weight per hectare in a single year if left unchecked.

Urban Lakes To Backwaters

Water hyacinth is now everywhere, and it's not picky. From city lakes to protected wetlands, it takes over all with equal enthusiasm. Pune's Mula-Mutha river has already consumed over Rs 20 crore in failed cleanup efforts, while Coimbatore's lakes have drained another Rs 3 crore with barely any results. Bengaluru's Bellandur and Varthur lakes are perpetually cloaked in green.

In Kolkata, Mudar Patherya, who's led several urban water cleanups, still remembers the day the Santragachhi Jheel vanished. "Not a single square inch of water," he says of the 2011 infestation. With no funding or official support, his team used ropes, a jeep with a rear hook, and 175 volunteers to drag the weed out, 1.5 million sq ft in 19 days. "Within 15 days, migratory birds returned." They repeated the feat in 2013 and 2017, but the hyacinth kept coming back. "There's no civic imagination in Kolkata. NGOs chase big-banner events. Unless the state prioritises this, it'll always return," he says.

Down south, the Vembanad — a Ramsar site and Kerala's largest lake — is under siege. Its estuaries and canals, the arteries of tourism in Alappuzha, Kottayam, and Ernakulam, are overrun by water hyacinth, especially in the dry months when flow dips and pollution rises. "The backwaters are choking," says Thomas Lawrence, CEO of Save Wetlands International, a non-profit organisation in Kochi. "Volunteers show up on Environment Day or Wetlands Day. Then it's forgotten," he adds. In the Kuttanad region, hyacinth chokes paddy fields, disrupts agriculture and blocks access to boats. Goa's Mapusa river saw over 200 tonnes of the plant clogging fishing zones.

It Keeps Coming Back

The hyacinth never stays down. It keeps coming back, multiplying, suffocating everything beneath it.

In Mysuru, massive cleanups involved earthmovers dredging tonnes of hyacinth from shrinking lakes. While effective in the short term, machine-led removal is costly, labour-intensive, and often only a one-season fix. Even small root fragments left behind resurge by the next monsoon.

Before biocontrol gained traction, Bengaluru's Hebbal Lake tried a different approach in the late 90s. Scientists released two species of Argentine beetles, tiny weevils, which achieved over 90% control in some areas. But biological control is slow and highly site-specific.

In Kolhapur's Panchaganga river, weevils reduced hyacinth cover by 40% in six months, improving water quality and restoring native species. Yet, results depend heavily on local factors — water quality, climate, and insect survival.

> One hyacinth can give rise to 4,000 to 8,000 more.
>
> —*Prof Ajay Kunnath | Director, Powai Lake Rejuvenation Forum*

Uncontrolled sewage fuels explosive water hyacinth growth. An action plan based on an IIT report offered the following solutions for Powai Lake:

Stop The Source | Treat all sewage before it enters the lake and plug illegal and untreated discharge points

Mechanised Removal | Use unmanned electric boats for regular and eco-friendly extraction of hyacinth

Monitor Continuously Install real-time sensors to monitor water pollution and aid early intervention

Sustain Cleanliness | Ensure collected biomass is upcycled (not dumped)

Vellayani, Trivandrum's largest freshwater lake, faces a similar battle. "We remove it, and it's back in a week," says Lawrence of Save Wetlands International. His team is pushing for large-scale removal with the help of NCC cadets. "There's a plan, but it's stuck."

Even the Army couldn't stop it. In 2001, about 7,000 soldiers cleared Harike Lake in Punjab. In 2018, a thousand Army men cleared Ulsoor Lake in Bengaluru. Still, the weed returned.

Volunteer groups from Kanthari, a social-change institute just 40m from Vellayani Lake, pitch in every weekend, but the lake is too vast. "We've tried everything — ropes with plastic bottles, manual dragging. But they double every two weeks," says founder Paul Kronenberg. Local fishermen sometimes cut the containment ropes, unaware they're part of the cleanup. "And the plants drift right back," he says.

Then came the chemical fix: glyphosate, a controversial herbicide introduced across Maharashtra, Kerala, Bengal and Punjab. Ecologists sounded the alarm over its toxicity and Stalin Dayanand, founder of Vanashakti and a key wetlands activist, was one of the loudest voices against it. In 2022, after his complaint, the Union environment ministry flagged the use of glyphosate by the Brihanmumbai Municipal Corporation (BMC) in Powai Lake. "Powai is a crocodile habitat," he said. "Glyphosate pollutes the water and enters the food chain. You don't solve one problem by creating another."

Ulsoor Lake, Bengaluru

Merely removing hyacinths from a water body doesn't work as a long-term fix since the plant has a knack of making a return, much like the title character in the sci-fi Hollywood 'Terminator' franchise

For Dayanand, hyacinth isn't the villain — it's the symptom. "It thrives on untreated sewage and nutrient-rich waste. Remove the sewage, and it won't grow. In fact, hyacinth helps stabilise oxygen levels and absorbs organic matter. Without it, the water turns green with algal bloom."

The real solution, he says, is to starve the weed. "Treat sewage before it enters. Use nets to contain it. Don't just let it float and spread." What frustrates him is the performative cleanup culture. "Wherever you see hyacinth, untreated sewage is entering. But no one's reading the signs."

Based on an IIT report, a blueprint was drawn up for Powai Lake's rejuvenation (see graphic). Prof Ajay Kunnath, director of Powai Lake Rejuvenation Forum, says, "The Maharashtra State Angling Association, a heritage institution that's over 100 years old, has proposed using small electric boats for waste removal. Their houseboats are now surrounded by hyacinths — something that's never happened before."

Through her Young Environmentalists Programme, Elsie Gabriel has spent years studying Powai's recurring enemy. "It's untreated sewage and poor lake management," she says. Her team trains students to monitor lake health and use native species for cleaning the water. "We're empowering students and locals as citizen scientists," she adds. "But without collaboration between NGOs, civic bodies, and academia, we're skimming the surface."

Making Peace

No silver bullet has emerged so far. But small-scale experiments are reimagining how to live with it. Toxic, yes — but water hyacinth is also nutrient-rich and surprisingly versatile. It can be turned into paper, rope, furniture, biogas, and fertiliser. A 2022 South Korean study even found cosmetic and medicinal potential in its flowers and leaves — grown in clean water.

That's what struck Ashim Kumar at a 2007 trade event in Bangkok: chairs, baskets, mats, all made from the weed choking Assam's ponds. He saw endless raw material. Since then, over 3,500 artisans in the North-East have turned it into bags, yoga mats, and more. Others followed. Women-led co-ops in Bengal weave it into handicrafts. Agri-scientists in Tamil Nadu compost it into soil boosters. A few Indian startups are eyeing it as biofuel.

Stalin says, "If it's already there, use it. It is excellent biomass. Divert it to biogas kitchens instead of leaving it to dry onshore, where it spreads again." His team in Bhandup is experimenting with pulp for paper, cardboard, and even tableware.

Gabriel is upcycling, too. "Since 2005, we've used Powai Lake silt and dried hyacinth to make eco-Ganeshas. No Plaster of Paris," she said. But scaling is tricky. "Silt and hyacinth vary by season and pollution. We need advanced labs to certify them for real-world use."

At Kronenberg's school, lockdown led to an unlikely innovation: a diaper prototype made from hyacinth. "We dried the stalks and made little pants. The roots are super absorbent — we used them as inlays," he says. Lab-tested in Germany, it passed skin safety checks. "No rashes. It's open source. Someone just needs to make it." They've even made shoe soles from hyacinth and latex.

"Shoes don't last forever. So, we added seeds. When you're done, toss them in soil. Maybe a tree will grow."