A new wave in oyster farming: Making oysters cheaper than chicken

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Shellevator® transport of 400,000 oysters to a new area 10km away. The voyage took two hours and used 10L of fuel

After a 37-year career as Lead Seafood Microbiologist at the USFDA, Dr Angelo DePaola decided to tackle a different challenge: oyster farming

The Shellevator® is poised to change the way oysters are grown. Dr Angelo DePaola's latest invention presents a sustainable and scalable solution to food production that could revolutionize oyster farming, much like automation transformed chicken farming in the

1950s, making oysters a more affordable and sustainable source of protein.

Why oysters?

Oysters are among the greenest foods on the planet. They filter up to 200 liters of seawater daily, turning tiny marine algae into nutritious food – no feed, fertilizers, or chemicals required. Oyster farming also benefits the environment by removing harmful nutrients, stabilizing shorelines, creating habitats, and sequestering carbon in their shells. But despite these advantages, oyster farming has struggled to scale. Traditional methods are labor-intensive, expensive, and vulnerable to climate risks like storms and heatwaves, leaving many oyster farmers playing ‘climate roulette’ each year.

Emerging Shellevator® technology that automates oyster farming at scale

Enter the Shellevator®

The Shellevator® changes the game. Using compressed air, it moves up and down in the water like a submarine, lifting oysters to the surface in seconds. This eliminates the need for farmers to manually enter the water or handle heavy equipment. By automating these

tasks, the Shellevator® reduces labor costs significantly and speeds up operations. It's simple, efficient, and designed to last ten to 50 years – much longer than traditional oyster farming gear.

Metric	Manual Gear	Shellevator	Megavator*
Capacity (Kg/# oysters)	100/1000	5000/100,000	1,3000,000/30,000,000
Footprint (M2)	<1-1.5	15-30	2600
Yield (oysters/hectare	250,000-500,000	2-5 million	150 million
Operational depth (m)	<1-10	1-3	5-30
Equipment $/oyster	$.2	$.4	$.2
Labor $/oyster	$.2-3	$.05-.1	<.01
Storm vulnerability	High	Low	Very low
Durability (years)	2-5	10-50	20
Portability	Slow/laborious	Fast/seamless	Medium/seamless

Table 1. Comparative scale, yield, economics, and durability of manual gear (conventional gear), Shellevator®, and Megavator for oyster farming in the Gulf of Mexico.

Built for climate resilience

Climate change has made oyster farming riskier, with hurricanes and extreme weather destroying farms overnight. The Shellevator® is portable, allowing farmers to move oysters to safer locations when storms or environmental changes threaten their farms. This mobility offers a safety net for oyster growers, ensuring their investment isn't wiped out by a single storm.

Scaling up

The Shellevator® doesn't just make oyster farming easier – it makes it bigger. Traditional oyster farms yield around 250,000 to 500,000 oysters per hectare. A Shellevator® farm can grow between two and five million oysters per hectare, and the next-generation Megavator – a scaled-up version of the Shellevator® – could produce a staggering 150 million oysters per hectare. These numbers put oysters on track to become a dominant, affordable source of protein.

Beyond food: ecosystem benefits

The Shellevator® isn't just a tool for farming oysters; it's a multi-purpose ecological powerhouse. A single unit holding 50,000 oysters can filter ten million liters of seawater daily. Shellevators can be deployed to:

- Improve water quality by removing excess nutrients;
- Create habitats for fish and other marine life;
- Stabilize shorelines to prevent erosion; and
- Boost oyster populations in areas where natural reproduction is limited.

They can even be placed near sewage outflows to reduce harmful pathogens, making downstream waters safer for swimming and fishing.

Looking ahead

The Shellevator® is still evolving, with exciting features in development:

- Remote operations: Automation for loading, unloading, and cleaning;
- AI and renewable energy: Autonomous movement to find the best-growing conditions powered by sustainable energy; and
- Low-cost models: Affordable versions made with materials like bamboo for use in developing countries.

The ultimate goal? To make oysters cheaper than chicken by scaling up production with systems like the Megavator. This leap forward could transform oysters from a niche luxury to a staple protein source.

Changing the future of food

The Shellevator® is more than an invention – a vision for a better food system. Combining automation, scalability, and ecological benefits offers a way to grow nutritious food sustainably while protecting the planet. With this technology, oysters could soon feed millions, support ecosystems, and prove that innovation can bring us closer to a healthier, greener future.

* Megavator is a concept based on scaling existing Shellevator® prototypes by modifying standard barges for industrialized oyster production systems capable of surpassing the combined production of all oyster farms in the Gulf of Mexico.

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