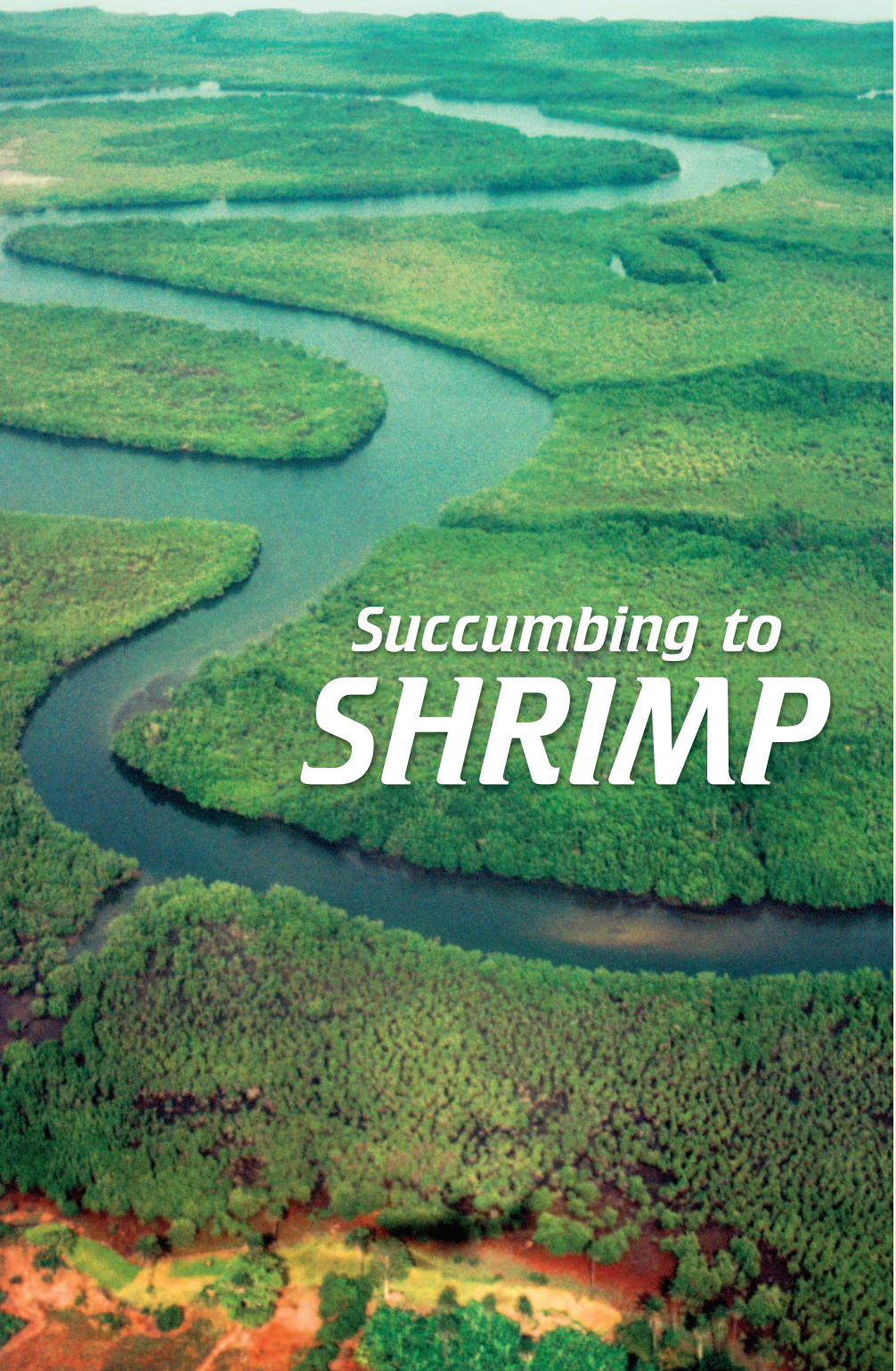
Succumbing to SHRIMP

Shrimp Farming in Thailand and Elsewhere Has Led to Wholesale Destruction of the World's Mangrove Forests

By Sharon Kelly



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Thailand's mangrove forests before (left) and after (below) being destroyed by shrimp farms.

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Over the past few decades, Thailand has become the world's largest exporter of shrimp and this near-monopoly on the market accelerated after the Gulf spill wiped out many of its competitors along the Louisiana coast. But this consolidation has come at a high cost. Thailand has seen the unprecedented decimation of its mangroves as tens of thousands of acres have been taken over by farmers engaged in the aquatic equivalent of factory farming. In this form of low-cost aquaculture, shrimp ponds are flooded with fertilizer and antibiotics to increase their capacity. This process so pollutes the waters that the ponds must be abandoned after roughly five years. Farmers move on and build new ponds, leaving in their wake a trail of destroyed coastline and sediment laced with chemicals.

The incentives to grow shrimp this way are enormous. Some ponds can produce nearly 90,000 pounds of shrimp per acre, roughly 200 times the 450 pounds that traditional shrimp farming yields. With nearly 10% of Thailand's population living on less than $2 per day, it's a level of productivity that rural farmers can't easily dismiss. But this shrimp farming also exacts a devastating environmental toll. Between 50% and 60% of these underwater factory farms are built by in areas where mangroves previously grew. Only 13% of Thailand's original mangrove forest remains, according to U.N. estimates.

Why We Need Mangroves

Some of the most biologically diverse ecosystems on the planet, mangrove forests serve as sea walls when shorelines are battered by storms and tsunami waves like those that devastated Indonesia in 2004. The interlocking roots of these trees, which thrive in salty marshes and muddy waters, also prevent coastline erosion and filter river-borne debris, keeping it from washing out into the ocean.

And the economic benefits of slash-and-burn style shrimping are often short-lived and poorly distributed. The majority of jobs

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Restoring an abandoned shrimp pond back to mangroves in Ranong, Thailand.

created are low paid, requiring long hours spent in unhealthy conditions. When the ponds die out, farmers go out of business. In Thailand, there is evidence of slave labor conditions with very repressive disciplinary actions and human rights abuse of workers, as well as child labor in shrimp processing plants, according to the Mangrove Action Project (mangroveactionproject.org).

The destruction of the mangrove forests also has broader climate change consequences because the trees are effective at trapping carbon. When mangroves, which also host coral, are cleared to make room for shrimp ponds, a host of serious climate change impacts follow. The shrimp from these ponds have a carbon footprint that is 10 times higher than beef raised on slash-and-burn farms in the Amazon rainforest.

Haphazard Planting

Mangrove replanting efforts have taken root worldwide, spurred by a growing awareness of the trees' importance, not only for combating global warming, but also as protection against tsunamis and storms.

In Eritrea, on the east coast of Africa, a six-year effort established a forest of 700,000 mangroves along a formerly bare shoreline, attracting fish, crabs and oysters that supply local fishermen with food. The Philippine Navy joined in their county's mangrove restoration campaign, working alongside volunteers to re-seed shorelines. In the wake of the 2004 tsunami, mangrove seeds, called propagules, became a much sought-after commodity in Indonesia, selling for a few cents each, as countries began replanting the protective forests.

But some of these campaigns have planted mangroves as if they were garden crops. Environmentalists and others have seeded thousands of saplings in long rows in soil and water that lack iron, phosphorus and nitrogen needed to sustain the trees. Driven by a desire for charcoal production, single species hardwood mangrove plantations are often established in areas where dozens of different mangrove species formerly grew. And too often mangroves are sown in places where they disrupt established ecosystems rather than in areas where the trees historically flourished.

"Most often, these 'gardening' efforts fail to establish any significant mangrove cover," Jim Enright, Asia Coordinator for the Mangrove Action Project, which works around the world to conserve and restore mangrove forests, wrote in an e-mail. "A compromise between economic value and biodiversity has thus to be found."

Many mangrove restoration efforts have failed to create sustainable mangrove growth. Despite over two decades and roughly $17 million spent promoting restoration of mangroves in the Philippines, the newly planted trees have had consistently stunted growth. In Eritrea, mangrove saplings withered in a few years, until workers began using a novel system that involves burying nutrients and fertilizers to feed the plants along with mangrove seeds.

Sustainable Regrowth

Some of the most advanced reforestation efforts have been in Thailand where the Mangrove Action Project has launched projects that foster biologically diverse mangrove forests while also helping to sustain local economies. Instead of planting row after row of mangrove trees, project workers and local volunteers first analyze how water flows through the area they hope to restore. They re-grade the abandoned shrimp ponds, removing debris and muck and ensuring that the water will be just deep enough to provide an ideal environment for mangroves to take root. Once the ponds are connected to existing rivers and streams, mangrove propagules float in from older forests upstream, as do the nutrients that feed the plants. Villagers, meanwhile, sow economically valuable trees like palms, while leaving room for natural selection to choose which other species take root.

The result: a resilient mangrove forest that more closely resembles the ones lost to shrimping and that provides products for locals to harvest and sell. Villagers may never get rich quick selling palms, but the returns from creating these forests last far longer than the chemical-laced shrimp ponds that destroyed them.

Alfredo Quarto, executive director and cofounder of the Mangrove Action Project, encourages shrimp farmers to use improved forms of shrimp aquaculture such as closed system production that recirculates water and waste and is built inland, away from biodiverse coastal zones. "This would bring back a healthy wild fishery and restore the coastal buffer zone needed to protect against cyclones, waves and winds," he says, adding that slash-and-burn style shrimp farms are not only ecologically harmful, but financially risky for farmers as well.

Of course, as Thailand makes clear, regrowing a forest is no simple task. But the mangroves are edging their way back in greater numbers, the trees are living longer and Thai shrimp farmers are better equipped to sustain themselves over the long haul.

It's a model worth watching. **E**

Thailand has seen decimation of its mangroves as tens of thousands of acres have been taken over by the aquatic equivalent of factory farming.

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