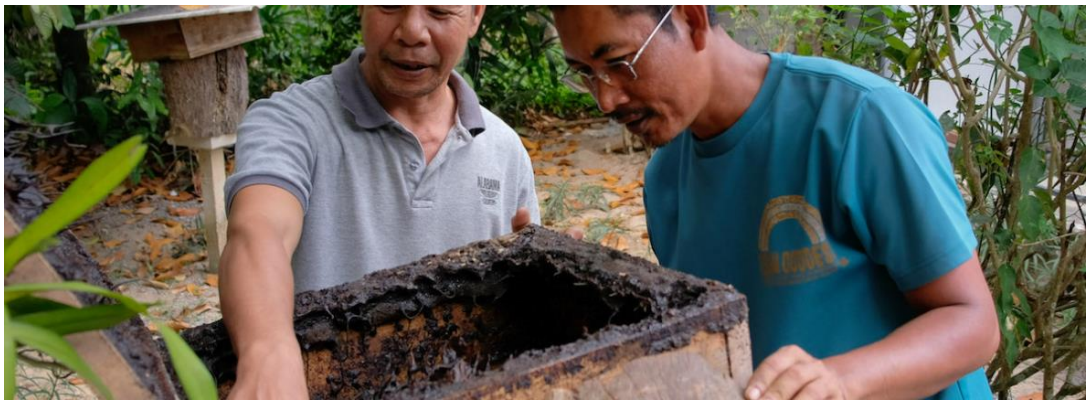
Beekeeping helps villagers tend coastal forests in Thai mangrove hotspot



- *Community-led approaches to mangrove restoration are increasingly recognized as more effective than many state- or market-driven initiatives in terms of both ecological and economic outcomes.*
- *Nestled within southern Thailand's mangrove-rich but fast-developing Phang Nga Bay, the village of Ban Nai Nang has developed a mangrove conservation model based on beekeeping.*
- *By rearing colonies of native honey bees and stingless bees that are important pollinators of local mangrove trees, the villagers earn money from honey sales, which in turn fund their community mangrove conservation efforts.*
- *Since they began their beekeeping and conservation activities, they've observed signs of rejuvenation in their local mangrove forests and are now helping neighboring villages to follow their conservation model through training and mentorship.*

BAN NAI NANG, Thailand — Carefully prying open the lid of a wooden bee box, Ali Madwang gazes intently into the cavity as sunlight illuminates the scene within. A hubbub of tiny bustling black bees hover and crawl over scores of thumb-sized, bulbous cells, each glistening with dark treacle-like honey.

"I have seen how bees collaborate as a unified group, helping each other take care of the hive," Ali tells Mongabay during a visit to the village of Ban Nai Nang in southern Thailand's Krabi province.

As the secretary of the Ban Nai Nang community enterprise group, Ali helps to manage bee hives in the village of 1,700 inhabitants nestled on a mangrove-lined backwater at the edge of the Andaman Sea's picturesque Phang Nga Bay.

The village fishing pier overlooks dense mangrove forests that sustain local fish and shellfish harvesting, and provide habitat for threatened species, including otters, marine turtles, dugongs and sharks, not to mention their vital carbon storage capacity. Artisanal fishing boats putter up and down the sun-dappled waterway, while white egrets stalk brown-camouflaged mudskippers that slip and slide across the mangrove flats.

For Ali, growing up in the coastal village meant mangroves were always part of his life. But he says he truly began to appreciate the interconnected relationship between village life and the surrounding natural ecosystems when his community developed a close relationship with bees as a way of galvanizing support for mangrove conservation.

“Mangrove forests and bees are the way of life of the Ban Nai Nang community,” Ali says. “We are connected with the mangrove forest … villagers go to find food in the mangroves, such as shrimp, shellfish, crabs and fish.”

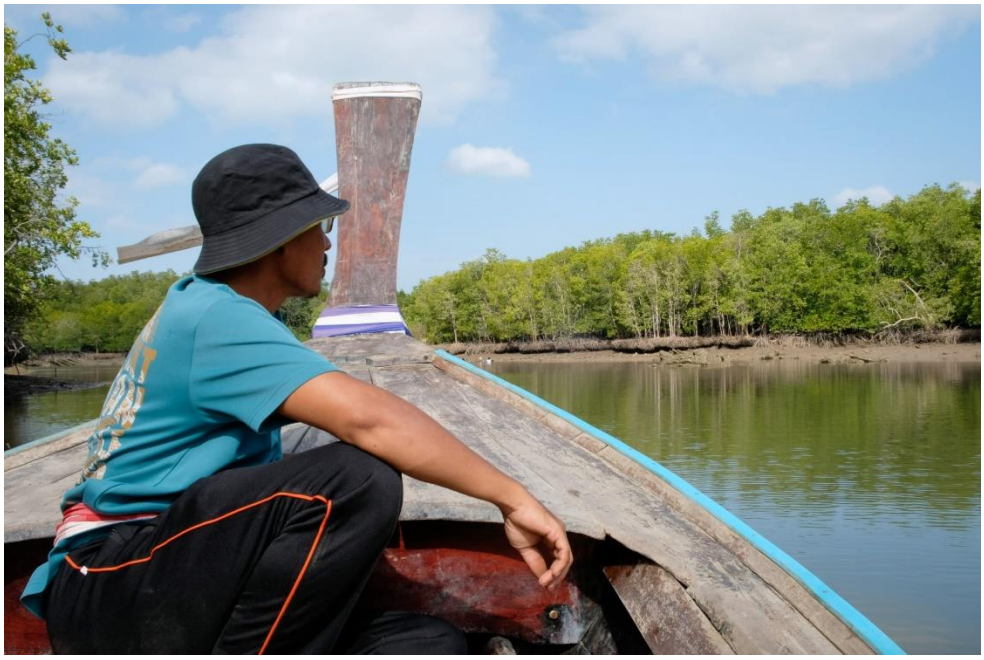
More than 600 hectares (1,500 acres) of the local mangroves are managed as a community forest by the villagers of Ban Nai Nang. While the villagers derive most of their income from rubber and oil palm smallholdings and artisanal fishing, the mangroves are at the heart of their community education and ecotourism pursuits.

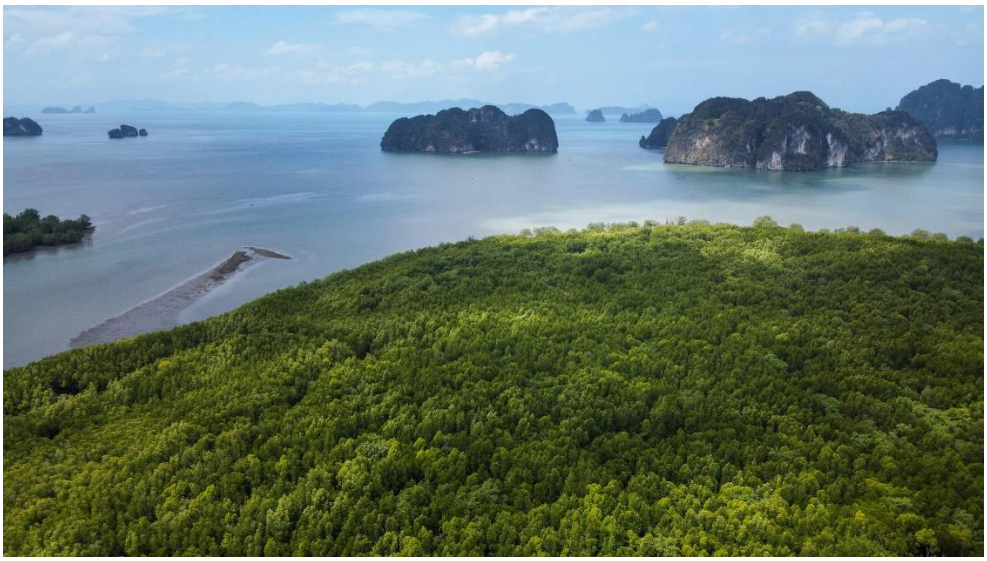
Ban Nai Nang’s early beekeeping work was supported through a partnership with Mangrove Action Project (MAP), a U.S.-based conservation nonprofit operating in Thailand at the time. Together, the villagers and MAP identified an opportunity in the bees that flourish in the nearby mangrove forests: beekeeping provides a source of supplementary income and an incentive to preserve the mangrove forests.

The villagers earn a small income from the honey they harvest, while boosting the natural regeneration of the mangroves through the bees’ pollination services. This has in turn created more fish habitat among the tangle of mangrove roots, where the shellfish and shrimp that the community depend on flourish.

While the Ban Nai Nang community has earned a reputation in Thailand as a pioneer of its sustainable beekeeping-mangrove conservation model, it’s by no means alone in its grassroots approach to mangrove preservation. Communities in other parts of Thailand, from fast-eroding shorelines along the Gulf of Thailand to the tourism hub of Phang Nga Bay are doing their bit too. Initiatives include the use of bamboo poles to prevent land erosion and stabilize mangroves; plastic waste cleanups; campaigning against destructive fishing practices and marina developments; and leveraging culinary and firefly ecotourism to promote mangrove conservation.

An expanding body of research shows that such community-led conservation models often outperform state-led or market-driven approaches in terms of both ecological and economic outcomes. These are significant accolades, given the rising private sector interest in large-scale carbon credit projects, which are often based on monoculture tree-planting approaches and heavily criticized by conservationists as false climate solutions that enable companies to continue polluting.





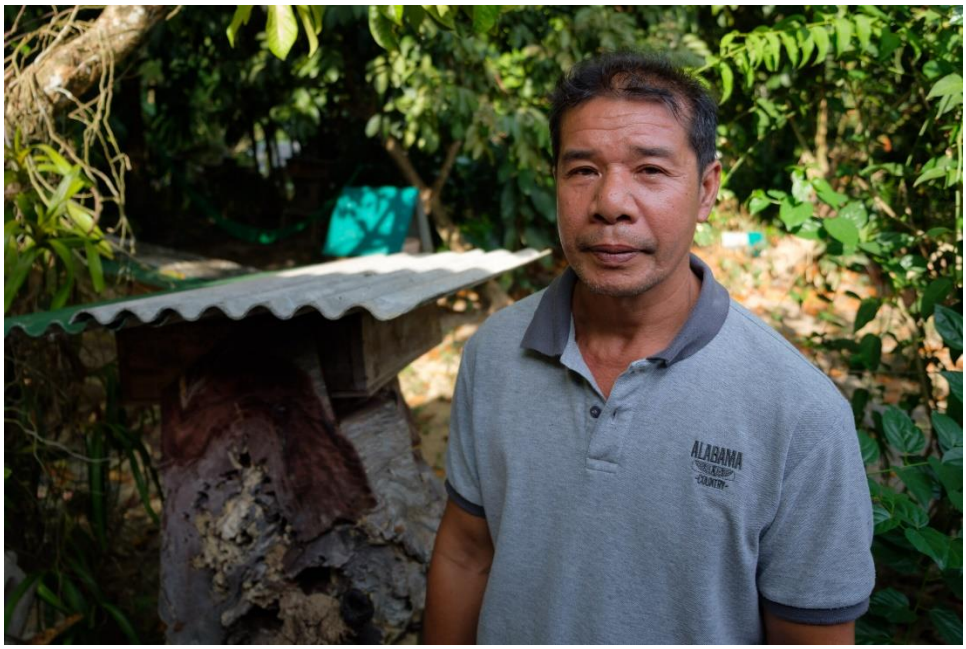
Grassroots mobilization

Recognition of the importance of mangroves has not always been so prevalent in Thailand. Located at the intersection of land and sea, mangroves are often subject to poorly defined legal protections and governance frameworks. As a result, they've fallen through the cracks in the past.

Between the 1960s and mid-1990s, pressure from urbanization and port infrastructure, coupled with government policies that encouraged investors to develop charcoal and tin mining concessions and expand shrimp farms along coastlines, led to a halving of the area of mangrove forest in Thailand. Mangrove coverage dropped from roughly 352,000 hectares in 1961 to less than 160,000 hectares by 1996 (870,000 to 395,400 acres).

Suthee Pankawan, president of the Ban Nai Nang community enterprise group, says around 80% of the mangroves around the village had been lost by the mid-1990s. He recalls how magnificently fertile the ecosystems were prior to the wave of destruction. “When I picture what I saw when I was a kid, the trees were very big: some of the *Rhizophora* trees grew so large that a person couldn’t wrap their arms around them!”

Following major protests by coastal communities over their deteriorating quality of life and a growing grassroots movement to protect and restore coastal areas, the government halted granting coastal concessions and began a state-led campaign of mangrove restoration in the mid-1990s.



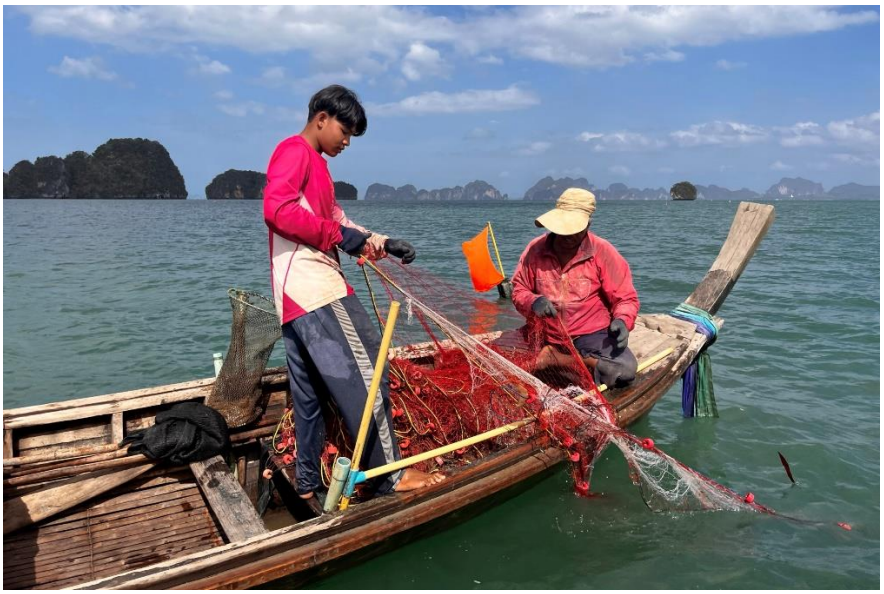
The combined efforts of communities and state effectively halted the mangroves’ trajectory of decline. Thailand now has 248,400 hectares (613,800 acres) of mangrove, according to UNESCO figures.

Although Ban Nai Nang made an earnest attempt to align with the state-led restoration efforts, it experienced mixed success, Suthee says. The approach, which focused on planting monocultures of *Rhizophora* seedlings on bare coastal ground, failed in many places, especially in abandoned shrimp ponds that proved too wet for seedlings to survive.

Galvanizing local support for mangrove conservation was also a major challenge at the time, Suthee recalls. He says the turning point in people’s awareness of

the importance of mangroves was the 2004 Indian Ocean tsunami. Although the tsunami hit the coastline around Ban Nai Nang, it only damaged fishing equipment; there was no loss of life here, even as the disaster killed nearly a quarter of a million people across much of the Indian Ocean shoreline. The protective function of the remnant mangrove forest was plainly clear.

“When the tsunami came, I went to watch it at the pier,” Suthee says. “I heard the tsunami coming. It was very loud. It was as if the mangrove forest was about to collapse. When it ended, we found the damage was only to the boats and fishing gear. Before the tsunami occurred, it was difficult to convince [people] and raise awareness about conservation. Some people even saw mangrove forests as useless forests with no benefits. Nowadays, people in the community see the importance of mangrove forests and everyone wants to work together to preserve and restore the mangrove forest.”



A sweet partnership

Newly engaged and enthusiastic to restore the mangroves in the aftermath of the tsunami, the villagers teamed up with the Mangrove Action Project. MAP was beginning to trial new mangrove restoration techniques founded on ecological principles developed over decades of research in Florida in the U.S. With the Ban Nai Nang community keen to explore methods beyond planting of monoculture seedlings planting, the timing was right for a long-term partnership to bloom.

Ban Nai Nang became one of the first communities MAP engaged with to develop its community-based ecological mangrove restoration (CBEMR) methods that are now implemented around the world.

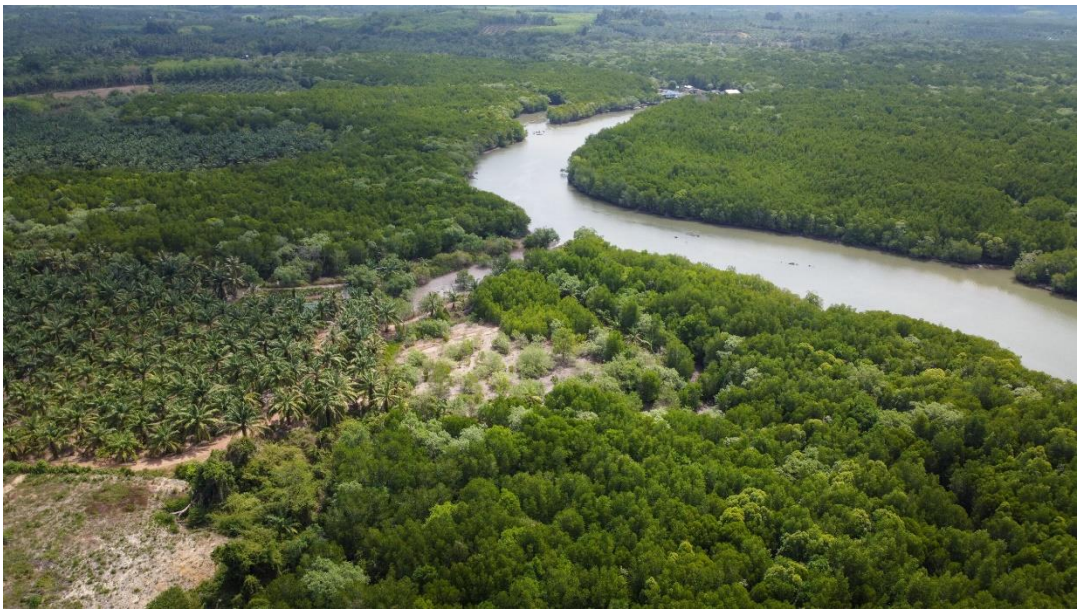
Jim Enright, former Asia coordinator for MAP, which operated in Thailand between 2000 and 2018, says CBEMR is a way of restoring mangroves while simultaneously respecting and valuing the contribution of communities who have stewarded the ecosystems for generations. It's an approach that bears stark contrast to the government restoration efforts that have received criticism for marginalizing community involvement in favor of private sector investors and tree-planting targets.

Enright says the residents of Ban Nai Nang were ideal partners. Due to their commitment to their community mangrove forest, it was clear that any conservation gains would be safeguarded into the future. "They were already managing the mangrove forest themselves," he says, "and because of that involvement, they've always been very protective of the forest from any possible outside threats."

The CBEMR approach takes advantage of the natural fertility and resilience of mangrove ecosystems to self-restore. "Mangroves produce lots of seeds, like other trees do, and so if conditions are suitable, mangroves will naturally regenerate," Enright says. "When that happens, we have more natural and biodiverse forests." Although the natural recovery process can initially be a little slower than direct tree-planting methods, Enright says that over the longer term, a fertile and healthy forest develops.

Two conditions must be met to kick-start the natural regeneration. First, favorable hydrological conditions must be restored. This could take the form of relandscaping the shoreline so that tides don't drown the new seedlings. Second, there must be a natural source of mangrove seeds and seedlings nearby, such as mature stands of trees that can reseed the area.

As Enright puts it: "Fix the problem that's preventing the ecosystem from self-restoring, and then allow nature to take its course."



Together, the community and MAP selected some small sites to trial the technique in Ban Nai Nang's community-managed mangrove forest, mostly abandoned shrimp ponds, and set about restoring the hydrology and topography of each site. While some areas began to regenerate with tiny seedlings, they found that other sites had been too heavily impacted by prior development — they were just too wet for mangroves to thrive.

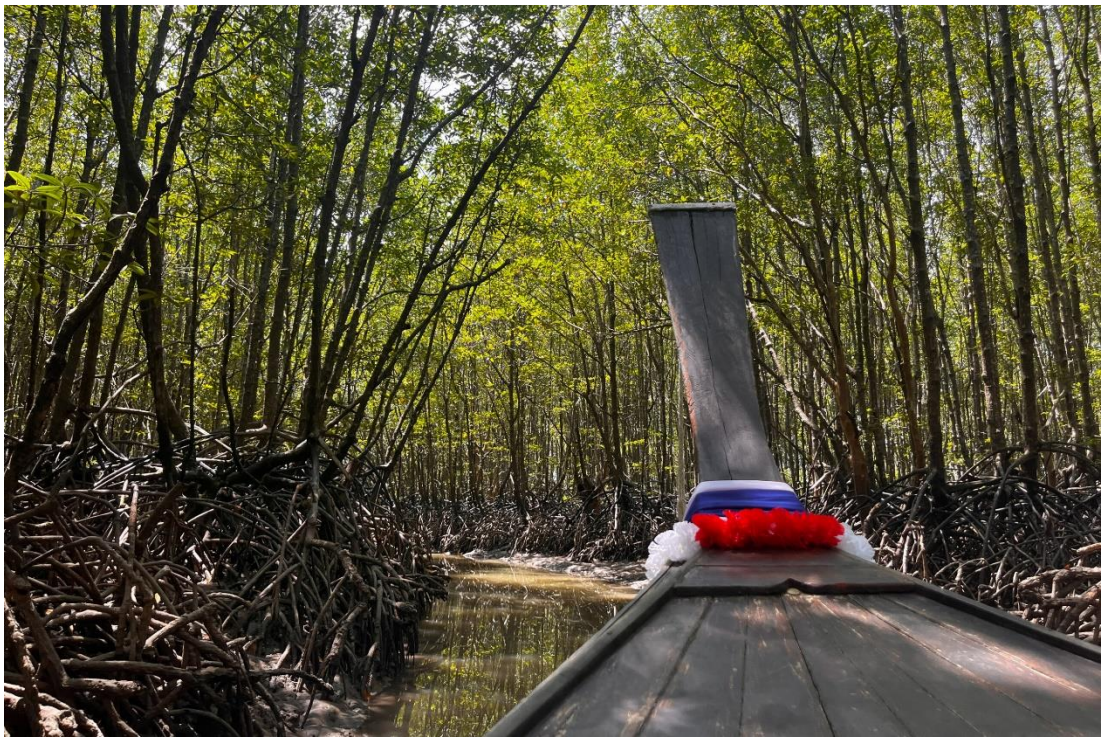
In the sites that could be restored, trees began to take root naturally, and today many of them now reach more than 6 meters (20 feet) skyward. The sites have a diverse mix of species in differently aged stands. Compared to nearby stands of even-aged mangrove monoculture, the legacy of government-led tree-planting programs, the ramshackle CBEMR plots look much more natural and inviting for local wildlife.

One key aspect of the long-term vision of CBEMR is ensuring additional income streams for local villagers that are contingent on the preservation of the mangrove ecosystem and that reduce their economic dependence on livelihoods that have historically been linked to deforestation, such as monoculture plantations and shrimp aquaculture.

As a local leader, Suthee says he's very aware of the need for livelihood incentives when it comes to conservation work. People in the village lead busy lives of hard labor, he says. "We found that focusing on conservation work alone and building awareness is not enough. We believe there is a need to have income as an incentive, then sustainability will follow."

The village collectively decided on harvesting and selling honey from keeping bees, since they'd long noticed the abundance of bees in the mangrove forests.

“When we visited the mangrove forest, we noticed that three types of insects help with pollination: honeybees, stingless bees and ladybugs,” Suthee says. “[We] thought it would be great if we could achieve the goal of supporting the conservation team and helping mangrove pollination by the bees at the same time.”



Honey production drives conservation motivation

At the community beekeeping center just behind Suthee’s house, the air is thick with the sound of chirring cicadas and a barely perceptible, but ever-present,

hum of bees. Colorful timber boxes of every shape and size line a network of pathways that crisscross a garden canopy of fruit trees.

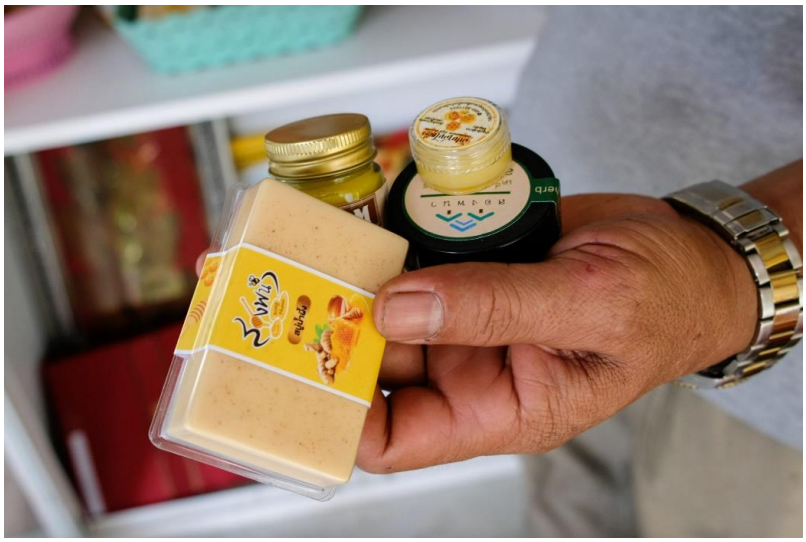
Ban Nai Nang village has roughly 1,200 beehives, with 32 families involved in the beekeeping activities as members of the beekeeping and conservation group. Members either help with the village beekeeping center or house hives in their own gardens. At first, the group focused on the Asian honey bee (*Apis cerana*), a large-bodied species that occurs in the wild locally, before later branching out into keeping nearly a dozen species of native stingless bees that are much smaller in size.

When they began, Suthee and his fellow villagers knew very little about bees: "We knew nothing about how to trap bees, the types of bees, the structure of bee hives," he says. With MAP's assistance, they attended courses at the Thailand Apiculture Training Center in Chumphon province and gathered experience as they went along, sharing knowledge with each other and learning by trial and error.

In addition to linking the village with apiculture training opportunities, MAP supported their initial forays into beekeeping by providing woodworking equipment with which to build the bee boxes, and supplying packaging, processing and marketing materials for the honey produced.

In 2020, the village produced more than 177 liters (47 gallons) of honey, collectively earning $8,250 from the raw honey and processed products, such as shampoo, soap, lotions, balms and sweets, that they sell to hotels in Krabi and Phuket and to visiting tourists. They also manufacture and sell beehives and starter bee colonies to nearby communities. In this way, each family can make 3,000 baht ($82) per month, according to Suthee.

Although this amount might not seem like a lot, Suthee says it's a substantial supplement to primary incomes derived from farming and fishing. The average resident of Ban Nai Nang earned an annual income of $1,400 (51,600 baht), according to data compiled by MAP in 2020.



The supplementary income from honey sales has provided a valuable safety net for village residents in the past. A crash in the price of rubber and palm oil nearly a decade ago devastated every family in the village, according to Ali. It was the money from the beekeeping project that helped to tide the community through the challenging period. As Ali describes it, the community was "saved by bees."

Ten percent of the honey profits are invested back into a community conservation fund to support mangrove protection efforts and environmental initiatives collectively chosen by the villagers. Projects include boat trips to collect garbage from local beaches and mangrove areas, improved waste disposal facilities within the village, and training to learn how to add value to their honey products. The fund also provides social security to villagers in need.

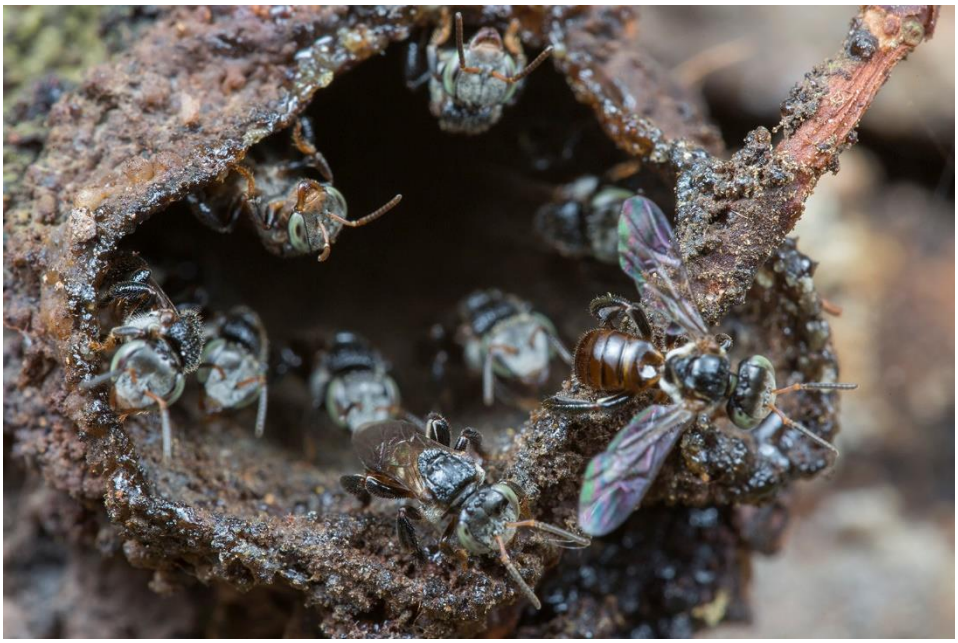
It's vital to have even a small income to sustain the conservation work, Suthee says. Long working hours are common in the village; Suthee himself rises at 3 a.m. every day to begin his rubber-tapping rounds, and the life of local fishers is no less laborious. It's therefore important to be able to offer people something in exchange for their time spent protecting surrounding ecosystems and improving the village environment.

"In the past, there was no such fund and we relied on budgets from different agencies," Suthee says. "Raising our own funds for activities allows us to create sustainability in community-led conservation initiatives."

The benefits of the beekeeping extend far beyond economics. By pollinating the local mangrove forests, the bees are boosting the fertility and diversity of mangrove species in the area. They also pollinate local fruit orchards and forest gardens where householders grow mangoes, jackfruit, durian and other types of fruit trees alongside medicinal and culinary herbs, contributing to diversified and nutritious local diets.

The honey itself also tastes great, according to Suthee. Derived from mangrove trees whose roots are steeped in seawater, they honey has a natural hint of sea salt, he says.

Suthee has also observed noticeable gains in the fertility of the local mangroves, which he attributes to the pollination services of the bees. "We've been observing the changes and the impacts on nature," he says. "We observed that since we started the beekeeping, it has helped some types of mangrove plants, such as Xylocarpus, which previously had produced only a few flowers and fruit, but now it produces a lot of fruit … This is the way of creating more forests without having to plant them."



The honey-conservation cycle continues

The community is now training local schools and other villages on how to follow its beekeeping-mangrove conservation model. On the day of Mongabay's visit, Suthee and Ali were preparing to receive a community group from the nearby island of Koh Lanta.

To date, they've provided training for 15 community groups from eight districts in Krabi province, with plans to expand to four more communities later this year. After the initial training, representatives of Ban Nai Nang follow up with nascent initiatives to evaluate their results and offer advice on aspects such as marketing strategies and setting up conservation funds.

This learning model is effective as villagers trust the experience of their peers more readily than they do guidance from officials or academic trainers. “We try to convince people [of the] obvious relationship: If you want to get money from the bees, you have to protect the bees’ resource,” Suthee says.

But it isn’t all smooth sailing in Ban Nai Nang. Village residents face challenges from waterway pollution from upstream palm oil and sugar refineries, and are increasingly concerned about how the impacts of climate change will affect their coastal livelihoods.

Besides community education, the beekeeping group’s future is focused on adding value to its honey products through training in handicrafts and improving its ecotourism and sustainable agriculture practices. All 32 members of the apiculture and conservation group have agreed not to use chemical fertilizers, herbicides and pesticides on their land, for instance, out of respect for the bees.

The group says it also wants to improve its engagement with tourists and visitors by cultivating the IT literacy and English language skills of the village youth. Getting more young people involved is key, Ali says. “We believe whatever we as adults initiate now [is] for the next generation too. Young people can carry on beekeeping and mangrove conservation practices continuously for their future.”

With the future in mind, Ali is now helping to build a shop in the village where they plan to sell their honey products to local residents, wholesale buyers and visiting tourists.

Beneath the canopy of fruit trees that shade the Ban Nai Nang beekeeping center, Ali and Suthee continue their rounds to check the condition of the beehives. They pry open one of the hives and hoot with delight at the abundance of tiny honey-bearing cells within.

“When I go into the mangrove forest and see the trees that are plentiful, I feel happy and my heart is full,” Ali says. “Seeing the trees that have grown beautifully makes us proud of ourselves.”

Source: https://news.mongabay.com/2024/06/beekeeping-helps-villagers-tend-coastal-forests-in-thai-mangrove-hotspot/