Annual Report

on SDG14 Life Below Water

14.2 Supporting aquatic ecosystems through education

14.2.2 - Does your university as a body offer educational program / outreach for local or national communities on sustainable management of fisheries, aquaculture and tourism?

Educational Programs and Outreach on Sustainable Fisheries, Aquaculture and Tourism Connecting Aquatic Knowledge, Responsible Resource Use and Community Livelihoods

Thaksin University provides education and outreach that connect the sustainable management of fisheries, aquaculture, and tourism with the lives of communities around Songkhla Lagoon. Aquatic resources support food production, employment, and community identity. Their continuing contribution depends on people understanding the habitats that sustain them, making informed production decisions and sharing responsibility for the surrounding environment.

In 2025, the University continued this work through its **Academic Service Unit for Natural Resource Management in the Songkhla Lagoon Area**, participating faculties, research projects and partnerships with communities and schools. Learning took place through field activities, practical workshops, household follow-up and community learning spaces. These settings brought scientific knowledge into dialogue with local experience, enabling participants to relate what they learned to their livelihoods and responsibilities.

Learning about Sustainable Fisheries through Community Habitat Management

The **Aquatic Life Shelter**, or **Living Fish House**, program provides a practical setting for fisheries education. It connects the ecological functions of aquatic habitats with decisions about conservation areas, resource use and continuing care.

At **Ban Mai, Singhanakhon District, Songkhla Province**, the University worked with residents on fish-house activities, including the event on **28 May 2025**. University staff provided information,

explained construction methods and participated alongside community members. Fishers contributed knowledge of local conditions and practical experience, creating opportunities for shared learning during implementation.

The educational content draws on the University's research into fish-house designs suited to different environments. Water depth, substrate, waves, currents and surrounding vegetation influence the suitability of an intervention. Discussing these factors helps participants understand why habitat management must respond to local ecological conditions. The Ban Mai conservation framework extends this learning into shared responsibilities. Its provisions address fishing restrictions, maintenance, surveillance and educational and research activities. Meetings and field engagement therefore connect ecological knowledge with the practical questions of how a community protects and uses its aquatic resources.

Continuing water quality and fish surveys reinforce this process. During 2025, the University supported survey design, equipment training, species identification and analysis, while residents participated in sampling, measurements and recording. The surveys documented **32 fish species**, providing local information for discussion of aquatic conditions and management needs.








Aquatic animal conservation activities and aggregate fish device activity

Public evidence:

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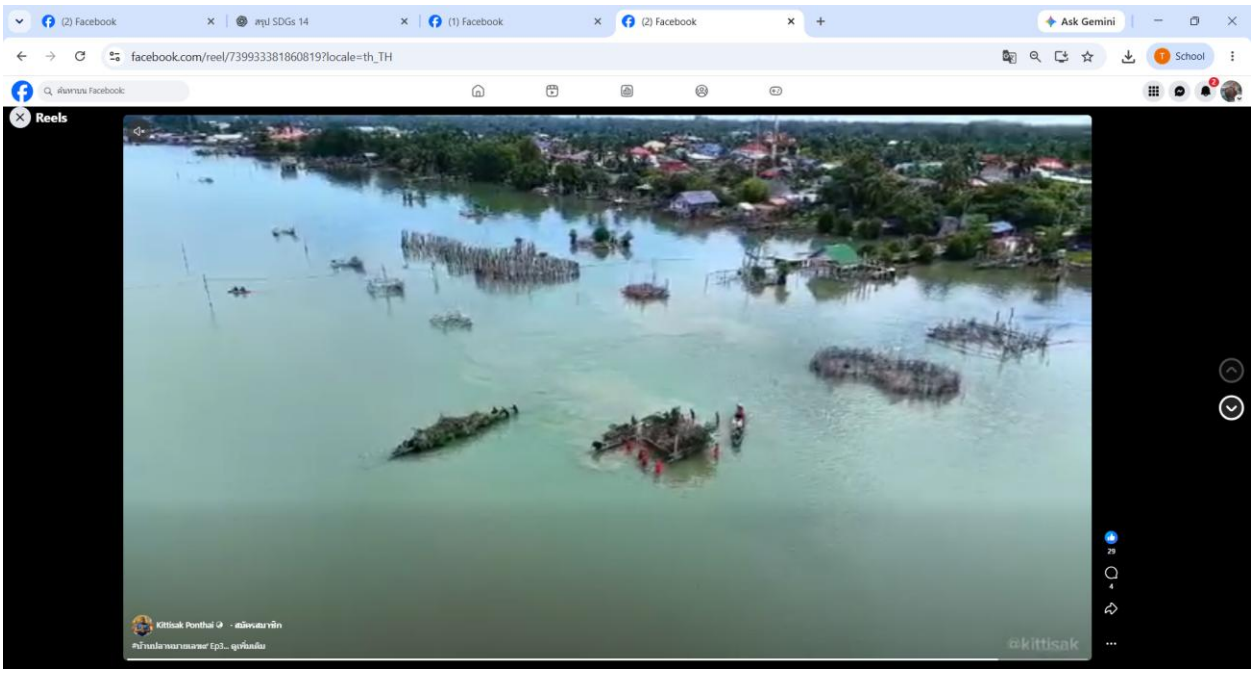

Public evidence:

facebook.com/reel/739933381860819/?s=single_unit&locale=th_TH



A research team from the Faculty of Science and Digital Innovation at Thaksin University, in collaboration with local communities, has further developed traditional artificial fish habitat structures (Sang) into an innovative **"Living Fish Habitat" model.** Traditional fish habitats required regular maintenance and replacement of natural materials approximately every six months, while non-compliance with community conservation regulations posed additional challenges. To address these issues, the research team introduced a nature-based approach by planting mangrove trees within traditional fish habitat enclosures (Sang Ko). As the mangrove trees grow, their root systems provide increasingly suitable habitats for aquatic species, allowing the structures to regenerate naturally and reducing the need for frequent maintenance. This innovation represents an integration of local wisdom, scientific knowledge, and community participation to support the long-term sustainability of aquatic ecosystems in Songkhla Lake.

The **"Living Fish Habitat" innovation,** developed through the integration of local wisdom and community-based innovation, received an Outstanding Award in the Appropriate Innovation/Technology Category at the 2nd Learning Innovation Community Event. The

innovation also earned a Silver Medal at the 2024 Kaohsiung International Invention and Design Expo (KIDE 2024), an international innovation competition held in Taiwan. These awards highlight the recognition of community-driven innovation and its potential to contribute to sustainable aquatic resource conservation and ecosystem restoration.

Public evidence: https://thaipress-asso.com/news/M2uf5AZrwRcFaa79



UKM Visits Thaksin Folklore Museum: Pandan Leaf Folding, Crab Releasing & Learning About Sea Innovation

The Faculty of Law, Thaksin University, led by Miss Natchaphat Kiss, Vice Dean for Phatthalung Campus Administration and International Relations, together with faculty members and students, welcomed a delegation from Universiti Kebangsaan Malaysia (UKM) as part of the academic cooperation project between TSU and UKM.

At the Thaksin Folklore Museum, the delegation learned about local history and culture and participated in a hands-on workshop on folding pandan leaves into flowers and woven fish (Pla Tapian) — a traditional Southern Thai handicraft that greatly impressed the Malaysian visitors.

The group then visited Fish Home No. 9, where they joined the activity of releasing crabs back into nature. They also attended a presentation from the Marine Sustainability Operations Team of the CP Group, led by Dr. Patchaporn Kueanui, Ms. Chayani Boonsan, and Ms. Kulkanaya Rattanachat on the "Sea Innovation Aquatic Animal Bank", a project aimed at restoring marine resources and supporting sustainable community-based fisheries using innovation and local knowledge.

This study visit served as a meaningful opportunity for cultural, social, and environmental knowledge exchange between students of both countries. It also further strengthened the international academic collaboration of the Faculty of Law, Thaksin University

Public evidence: https://law.tsu.ac.th/detail.php?aNum=20251117135145&id_list=1125

Supporting Aquaculture through the Bangkaew Model

The **Bangkaew Model: Small-Scale Fisheries for Poverty Alleviation** connects university research with opportunities for households to develop livelihoods suited to their circumstances. Its educational approach combines practical support with follow-up, allowing difficulties to be discussed after participants begin applying knowledge.

On **21 January 2025**, the project followed up pilot households undertaking **butter catfish farming** as an additional income-generating activity. The visit examined progress and supported the application of fisheries knowledge in household production. This continuing engagement creates opportunities for technical advice to respond to actual operating conditions.

The University's research provides a supporting knowledge base for this outreach. A butter catfish feeding study published in 2025 examined supplements derived from fishmeal-processing by-products and reported improvements in survival, feed conversion and feed costs under the tested conditions. Earlier work at Laem Tanot also developed black soldier fly products for supplementing floating fish feed. These studies contribute technical knowledge for discussing

feeding practices and resource utilization, while community adoption is documented through the relevant training and follow-up records.





Public evidence: https://www.tsu.ac.th/home/details.php?id=6270

Providing Practical Training on Aquatic Animal Culture

On **4 November 2025**, the **Faculty of Technology and Community Development** organized a practical workshop on the breeding and hatchery culture of **glass catfish**, locally known as *Pla Kang Phra Ruang*. The activity translated university expertise into an opportunity for participants to learn about a locally relevant aquatic species. The workshop involved **fisheries who joint a Thaksin's Agricultural fair**. Direct exchange with academic specialists enabled participants to discuss culture requirements and the suitability of techniques for their own circumstances.

Aquaculture training during the agricultural fair in late 2025 added an environmental-management component. Delivered by Faculty of Agriculture on 4 November, the training addressed animal hatteries. This connected production knowledge with the need to manage potential effects on surrounding waters.

Together, these activities provided technical learning opportunities for producers while bringing animal husbandry, resource use and environmental responsibility into the same discussion.



Thaksin University transfers breeding innovations Phra Ruang Herringbone Fish to commercial production Increase export potential to the world market

Public evidence: https://tsu.ac.th/home/details.php?id=5592

Extending Learning from Fish Production to Processing

The University's work on **Pla Duk Ra**, or dry-fermented catfish, extends education along the production chain. It connects fish culture with processing quality, product development and the use of materials remaining from production.



Phatthalung moves forward to develop grassroots economy, builds up fermented fish network, and expands local wisdom

Public evidence: https://tsu.ac.th/home/details.php?id=5182

At the agricultural processing community enterprise in **Koh Tao Subdistrict, Pa Phayom District, Phatthalung**, the project supported the development of production knowledge and diversified products. The reported range included dry-fermented catfish, ready-to-eat fish, chilli paste, rice seasoning and sauces. Uses for fermentation liquid and other processing materials provided practical examples of obtaining additional value from available resources.

The project reported outcomes in **March 2025**, with combined monthly revenue of **THB 91,000** and a combined monthly net return of **THB 22,750** across the activities listed in the report. These figures describe the community enterprise case and demonstrate the livelihood relevance of applying production and processing knowledge.

The educational activities relevant to the reporting year comprised **[รายละเอียดการถ่ายทอดและติดตามปี 2568 พร้อมจำนวนผู้ร่วม]**. The University's separate work with the **Ban Chumphon community enterprise** provides additional experience in product quality, packaging and by-product utilisation. Activities continuing there in 2025 comprised **[รายละเอียดที่ยืนยันได้]**.

These cases broaden the meaning of responsible aquatic resource use: learning concerns how fish are produced, how quality is maintained and how processing materials can be used more completely.





https://www.tsu.ac.th/home/details.php?id=6266

Connecting Community Tourism with Environmental Responsibility

At **Talat Tai Thun**, education takes place in a community setting where aquatic resources, food, culture and tourism meet. The market continued operating in 2025, alongside a community learning centre, fish houses and a conservation area.



https://sdg.tsu.ac.th/detail.php?aNum=20241213170202&id_list=745

The University worked with the market committee to support learning activities, develop materials and provide facilitators. Its contribution also included training on waste separation, collection and environmentally friendly packaging. These subjects connect tourism management with the care of the waterside environment on which the destination depends.

Market practices included the use of natural-material packaging such as banana leaves, reusable items and facilities for separating recoverable materials, including plastic bottles. Vendors shared responsibility for collecting waste. These arrangements demonstrate environmental responsibility through the way the destination operates.

Recorded gross sales across participating stalls totaled **THB 1,404,843** in the ledger covering **February–November 2025**, including **THB 314,616** recorded for **3–4 May**. These sales demonstrate the scale of local livelihood activity associated with the market. The educational contribution lies in connecting this activity with knowledge of aquatic resources, community interpretation and practical environmental management.



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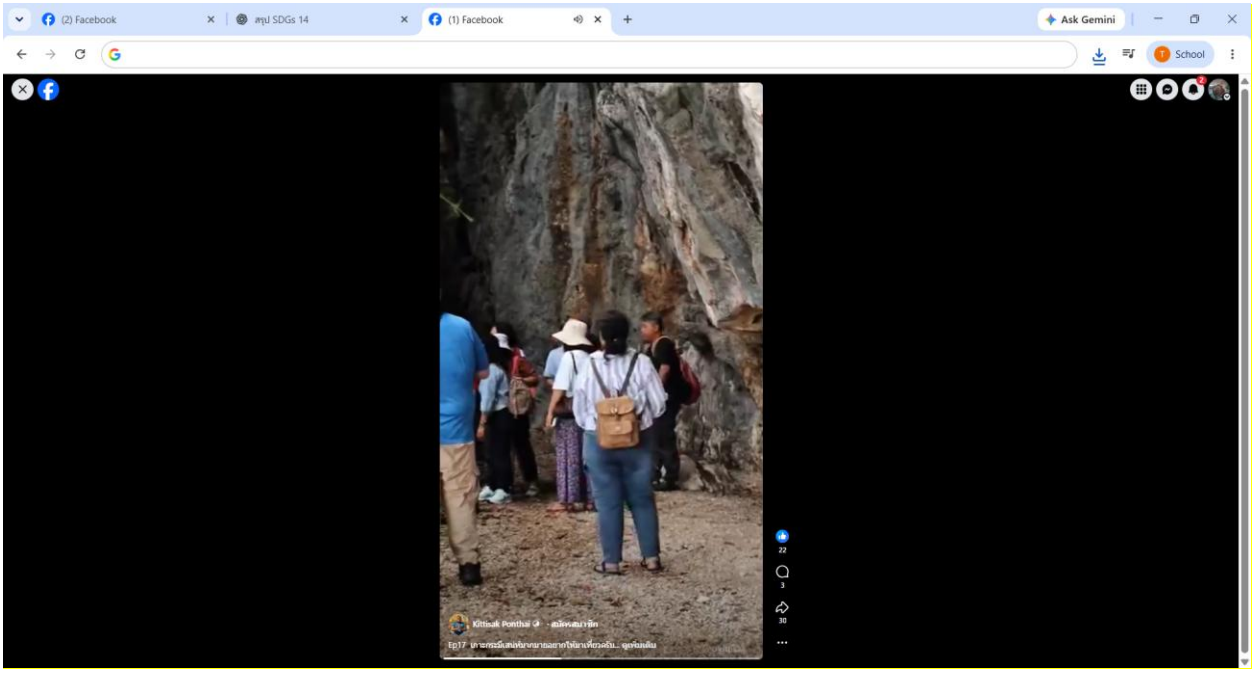

Tourism at Talat Tai Tun, Pak Payoou, Phattalung province

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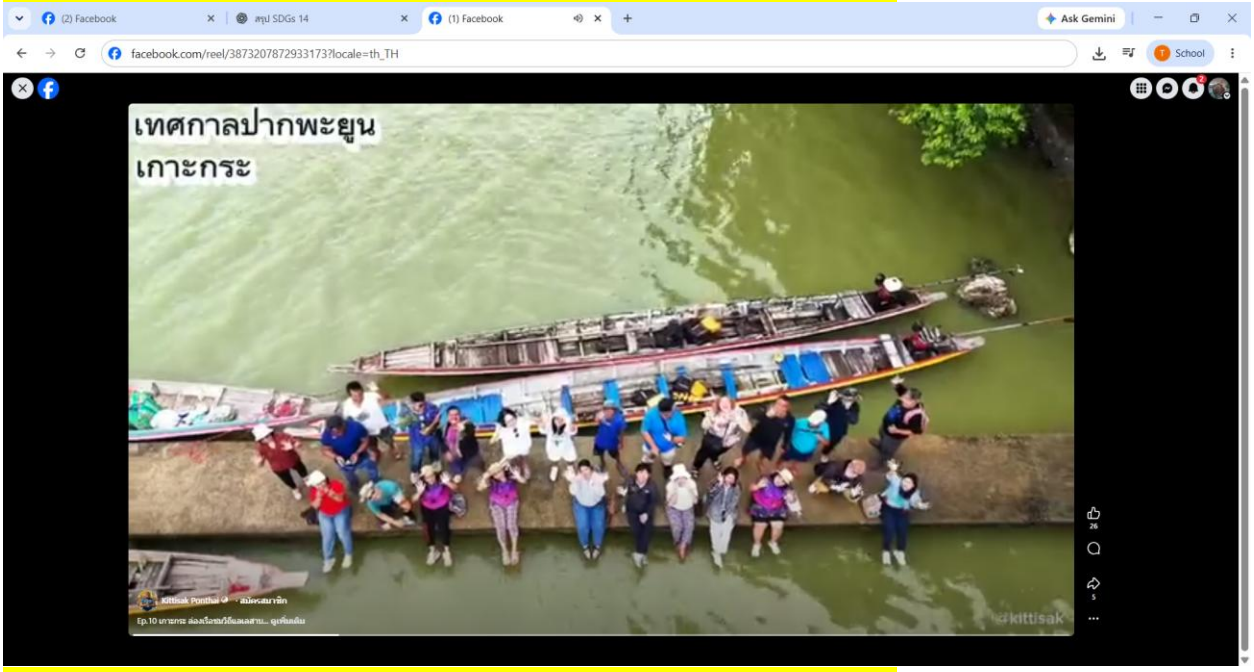

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Thaksin University, in collaboration with its partner networks, implemented the **"Songkhla Lake: A Three-Water Ecosystem Learning Initiative for Developing Mechanisms toward a Creative and Sustainable Economic City"** project, supported by funding from the Program Management Unit on Area-Based Development (PMU-A) under the 2024 Learning City initiative. The project activities were held on May 3–4, 2025, at the Ban Klang Pak Phayun Community (Phatthalung Provincial Central Mosque), Pak Phayun District, Phatthalung Province.

Public evidence: https://www.facebook.com/photo?fbid=1222195272022406 68&set=pcb.1222195326202406 68&locale=th_TH

Developing Community Learning and Youth Participation

The community learning centre remained open and continued offering activities during 2025, with approximately **450 participants** reported for the wider learning program. Activities

included **Songkhla Lagoon Fish Bingo** and the **Songkhla Lagoon Monopoly** game, providing accessible opportunities to engage with local aquatic resources.

Fish-printing, or *Gyotaku*, added an observational and creative dimension. On **19 January 2025**, an activity at Talat Tai Thun involved pupils from Benjama school, Phttani province. Guided participation encouraged close observation of fish and discussion of fish diversity, natural resource management and fish habitat.







Songkhla Lake Learning City: Phatthalung–Songkhla & Thaksin University

Public evidence: https://m.tsu.ac.th/home/details.php?id=5133

The **Water Detectives** activities introduced children and young people to water quality analysis and the use of aquatic organisms as biological indicators. This helps connect the needs of aquatic life with observable conditions in local waterways.

Youth engagement associated with the **first Pak Phayun Festival** also supported skills relevant to community tourism. A reflection session on **31 May 2025** enabled participants to discuss their experience of planning and delivering the event, including cooperation across schools and organizations, communication, leadership and problem-solving.





Thaksin University Collaborates with Partner Networks to Organize the "Pak Phayun Learning City Festival: Three Waters, Three Lands, Celebrating the Arts and Heritage of the Historic Town"

Public evidence: https://sdg.tsu.ac.th/detail.php?aNum=20250718150256&id_list=1126

Separate community records document **230 participant entries** across school and youth activities in 2025. They also identify **THB 75,000 in learning-related income** from three activities. These records describe the broader community learning setting and are reported separately from the approximately 450 participants and market sales because their coverage may overlap.












Activities provides by Pak Payoon natural resource center

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Learning about Aquaculture through Ecological Engineering

In 2025, Thaksin University extended aquaculture learning into a school setting through the **Bangkaew Model: Small-Scale Fisheries for Poverty Alleviation, Phase II**. At **Ban Had Khai Tao School, Na Pa Kho Subdistrict, Bang Kaeo District, Phatthalung**, researchers worked with an existing school fish-farming facility to explore how ecological processes could support fish production and environmental management.

The study adapted two 100-square-metre earthen ponds from single-species culture to a mixed-species system incorporating striped catfish, hybrid catfish, Nile tilapia and butter catfish. Water spinach was cultivated to support nutrient utilisation and provide shelter, while natural food production complemented commercial feeding. The school setting provided practical opportunities for students to learn about fish husbandry and the relationships among aquatic organisms, plants, feeding and water quality.

Throughout the six-month culture period, researchers monitored water quality and fish growth monthly. The system operated without water exchange or artificial aeration, while recorded water conditions remained suitable for fish culture. Total fish production reached **320.9 kilograms**, and survival rates ranged from **80% to 90%** across the cultured species.

The experience also demonstrated the importance of economic assessment. Production costs exceeded the estimated market value of the fish, highlighting the need to improve feed management and species combinations. This finding adds value to the learning process by showing that sustainable aquaculture requires attention to environmental conditions, production performance and financial feasibility together.

Through this school-based work, the University connected research with practical learning and food production. The ponds served as a setting for examining how aquaculture could support school lunch activities while introducing students to the management of aquatic resources.







Public evidence: https://www.tsu.ac.th/home/details.php?id=6267

Summary

In 2025, Thaksin University connected education on sustainable fisheries, aquaculture and tourism through community habitat management, household aquaculture follow-up, school-based ecological aquaculture, practical culture workshops, fish-processing knowledge and learning at Talat Tai Thun. The school programme at Ban Had Khai Tao demonstrated six months of mixed-species culture without water exchange or artificial aeration, alongside monitoring and economic assessment. Other reported outcomes included monthly revenue of **THB 91,000** in the Koh Tao Pla Duk Ra case, approximately **450 participants** in the community learning programme, and **THB 1,404,843 in recorded market sales for February–November**. Together, these activities connect scientific expertise and community experience with practical learning on the responsible management and use of aquatic resources.