Annual Report
on SDG14 Life Below Water

14.5 Maintaining a local ecosystem

14.5.2 - Does your university as a body monitor the health of aquatic ecosystems?

Monitoring the Health of Aquatic Ecosystems

Connecting Scientific Monitoring with Community Stewardship in Songkhla Lagoon

Thaksin University monitors local aquatic ecosystems through continuing collaboration with communities around Songkhla Lagoon. The approach combines water quality measurements, fish surveys and community observations to understand environmental conditions and identify concerns requiring further investigation. Monitoring accompanies the University's work on aquatic life shelters, locally known as fish houses, and conservation areas, connecting habitat protection with continuing assessment of the surrounding ecosystem.

In 2025, this collaboration involved Ban Mai and Pak Pra communities. At Ban Mai, repeated water quality and fish surveys supported the assessment of local aquatic conditions. At Pak Pra and neighboring communities around Thale Noi, community reporting and coordination with the University and fisheries authorities strengthened surveillance of suspected invasive fish. Together, these activities connect organized field surveys with observations made by people who regularly use the lagoon.

Continuing Community-Based Monitoring at Ban Mai

Monitoring at Ban Mai builds on an established relationship between the University and a community actively involved in fish-house and conservation-area management. Residents' knowledge of local aquatic resources and their continuing conservation activities provide a practical foundation for repeated surveys.

During 2025, surveys were undertaken every three months. The University contributed survey design, training in the use of monitoring equipment, verification of fish identification and

data analysis. Community members participated in sample collection, field measurements, recording and observation. These complementary roles combine scientific support with local experience and keep monitoring connected to the community's management needs.

The continuation of this work from earlier years enables the University and community to examine conditions over time. It also maintains opportunities for residents to seek academic advice and contribute observations between scheduled surveys.



Ban Mai Community: A Model for "Living Fish Habitats" to Restore Aquatic Resources in Songkhla Lake

Assistant Professor Dr. Tueanta Raman, a lecturer at the Faculty of Science and Digital Innovation, Thaksin University, Phatthalung Campus, and a researcher involved in the project, explained that the initiative began with a study of local fish diversity. It was subsequently expanded through research funding from the Program Management Unit on Area-Based

Development (PMU-A) in 2021 to develop “fish habitats” that integrate local wisdom with scientific approaches, enabling measurable and statistically verifiable assessments of their effectiveness.

The design of these fish habitats is adapted to local environmental conditions. For example, in shallow waters with relatively weak currents, a traditional fish habitat structure known as Ban Pla Ko is used. This structure consists of a bamboo enclosure filled with branches, with mangrove trees planted at its corners. This innovative design aims to provide suitable shelter and breeding grounds for fish, thereby enhancing aquatic biodiversity.

Following the implementation of the project, researchers reported the return or increased presence of more than 10 fish species, including “Pla Kot Khi Ling,” a locally known catfish species that had previously disappeared from the area. These findings demonstrate the potential of integrating community-based conservation practices with scientific research to restore aquatic ecosystems while creating supplementary livelihood opportunities for local communities.

Public evidence:
https://nbtsongkhla.prd.go.th/th/content/category/detail/id/2988/iid/442587

Assessing Water Quality

Water quality monitoring covered temperature, salinity, dissolved oxygen and pH. Field equipment included water quality test kits, a refractometer and a pH meter. The measurements provided information about the conditions experienced by aquatic organisms and complemented the biological information obtained through fish surveys.

Public evidence: https://soqd.tsu.ac.th/upload/files/1747126000_5453e1edf9ae14c8.pdf

Monitoring Fish Diversity and Habitat Use

Fish surveys provided a biological perspective on ecosystem conditions. At Ban Mai, the University and community used traditional fishing gear to collect information on fish species, numbers, sizes and weights. The surveys documented the aquatic community associated with the monitored area and provided information for comparison with the previous year.

The surveys recorded **32 fish species in 2025**. This finding establishes a reporting-year record of observed fish diversity. Comparison with earlier surveys provides a basis for discussing changes in species occurrence and catch characteristics, with attention to differences in season, fishing gear and sampling effort.

The surveys also create opportunities for knowledge exchange. Fishers contribute their experience of seasonal species occurrence, fishing grounds and changes in catches, while university staff support identification and analysis. Bringing these perspectives together helps make survey information useful for reviewing fish-house and conservation-area management.



Public evidence:
https://www.facebook.com/photo?fbid=10230293562706625&set=pcb.10230293570106810&locale=th_TH



Field surveys of fish diversity in Songkhla lagoon conducted by community

Public evidence:
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Community Surveillance and Verification of Suspected Invasive Fish

Scheduled ecosystem surveys were complemented by community surveillance of suspected invasive fish, connecting observations by local resource users with academic support and investigation by fisheries authorities. During 2025, community members reported fish suspected to be blackchin tilapia to Thaksin University's Academic Service Unit for Natural Resource Management in the Songkhla Lagoon Area. The Unit coordinated with the Phatthalung Provincial Fisheries Office and joined community members in field visits to investigate the reports and support species identification. Three suspected occurrences were investigated during the year, and the fish concerned were determined not to be blackchin tilapia. This reporting and verification process enabled community concerns to receive technical attention while ensuring that suspected sightings were distinguished from confirmed records.

To support community participation in surveillance, the University also provided education on blackchin tilapia, covering its reproductive biology, ecological characteristics and potential impacts on local aquatic ecosystems. Awareness activities involving Pak Pra and other communities near Thale Noi on 19 December 2025 addressed species identification, ecological concerns and reporting channels. Knowledge sharing was linked with field follow-up, enabling community members to contribute local observations while university staff and fisheries officers supported investigation and clarification. Together, these activities connected education, community reporting and joint field monitoring, supporting the continuing surveillance of potential invasive species in Songkhla Lagoon and its connected aquatic habitats.



Public evidence:
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Public evidence:

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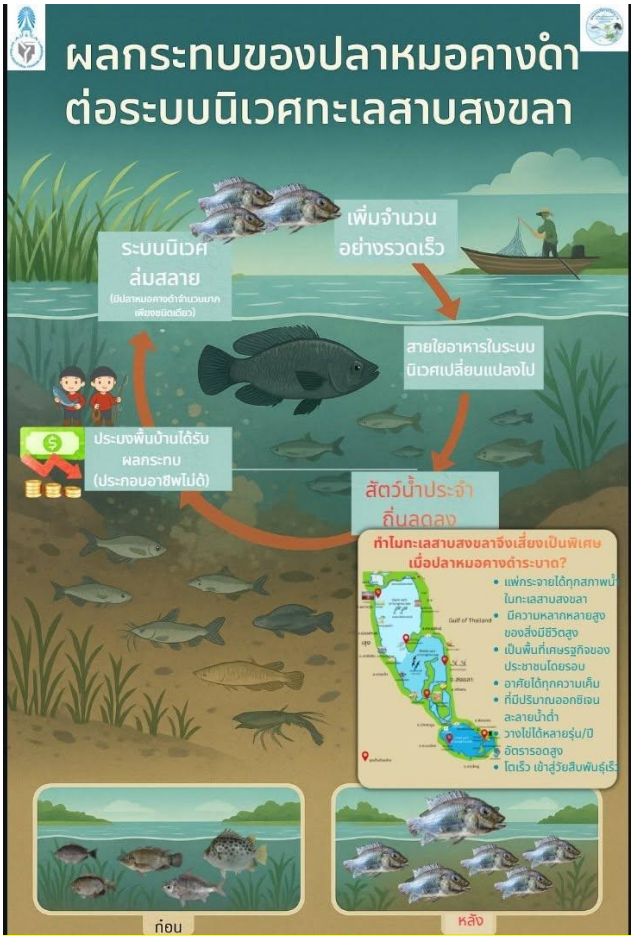

Public evidence:

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Public evidence:

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Public evidence:
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Using Monitoring Information in Local Management

Water quality results, fish survey records and community observations are brought together through the Academic Service Unit for Natural Resource Management in the Songkhla Lagoon Area. Information is discussed in meetings involving communities, the Unit and relevant agencies.

These discussions connect monitoring with practical responsibilities, including the care of fish houses, additional site inspections, review of community rules and coordination on emerging concerns. The suspected invasive-fish reports provide a clear example of this connection: an observation made by a community member led to communication with the University, investigation with fisheries authorities and clarification of the species concerned.

The University's role therefore extends beyond collecting environmental data. It supports the interpretation and communication of information so that communities and responsible organizations can consider appropriate responses.

Extending Environmental Observation through Education

The University also introduces children and young people to aquatic environmental observation through **Water Detectives** activities. Conducted in locations including Mueang Phatthalung District and Khlong San Daeng in Tamot District, these activities connect water quality learning with local aquatic environments. Participants learn about biological indicators through the observation of aquatic macroinvertebrates and consider what these organisms can reveal about water conditions. This educational work complements the community monitoring program by developing familiarity with environmental observation and the relationship between aquatic life and habitat quality.

The activities undertaken in 2025 involved 55 persons. Evidence comprises as followed. Their educational contribution is distinguished from the repeated monitoring records used to assess ecosystem conditions.









Water quality measurement activities using macroinvertebrate as water quality indicators for primary school.

Public evidence:
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Summary

In 2025, Thaksin University continued monitoring local aquatic ecosystems through quarterly water quality and fish surveys at Ban Mai, recording **32 fish species**. Community surveillance at Pak Pra and neighbouring areas around Thale Noi complemented this work through reporting and coordination with the University and the Phatthalung Provincial Fisheries Office. Three reports of suspected blackchin tilapia were investigated and found not to be the species concerned. Together with Water Detectives educational activities, this collaboration connects scientific monitoring, local knowledge and environmental learning with continuing care of Songkhla Lagoon and its connected aquatic habitats.