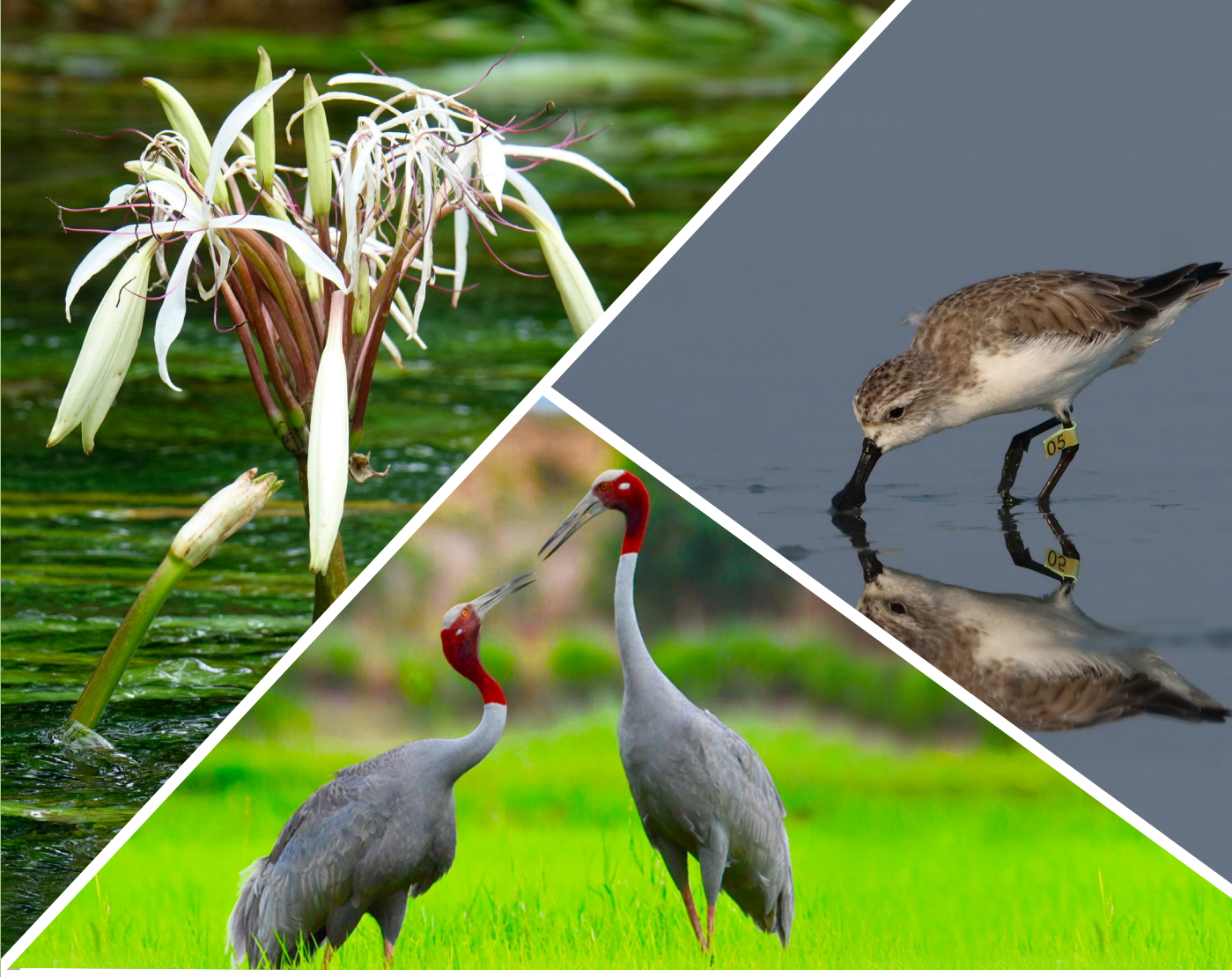

Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes Project Result Report

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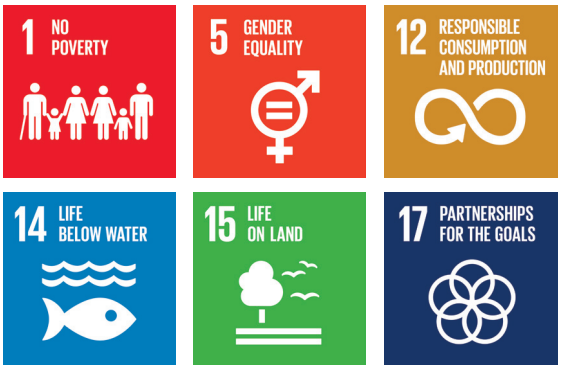
CONSERVING HABITATS FOR
GLOBALLY IMPORTANT
FLORA & FAUNA
IN PRODUCTION LANDSCAPES

Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes Project Result Report



Author:
Apiradee Treerutkuarkul

Contributors:
Yenta Nungvaewdaeng, Nuchjaree Purchkoon,
Usaras Janpakdee, and IUCN Thailand Programme

"We cannot talk about conservation without neglecting livelihood and community development. We can effectively conserve the Water Onion together with income generation for community through agrotourism."

Amarin Prasompol, Local Resident of Baan Rai Nai, Tambon Nakha, Suk Samran District, Ranong

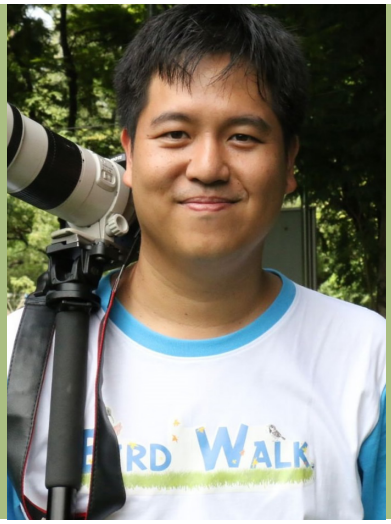
Contents

Foreword

Today, our planet is facing three major challenges—climate change, over population leading to food shortage, and loss of habitats for important species which leads to depletion of biodiversity resources. Thailand is facing these very same challenges alongside the rest of the world.

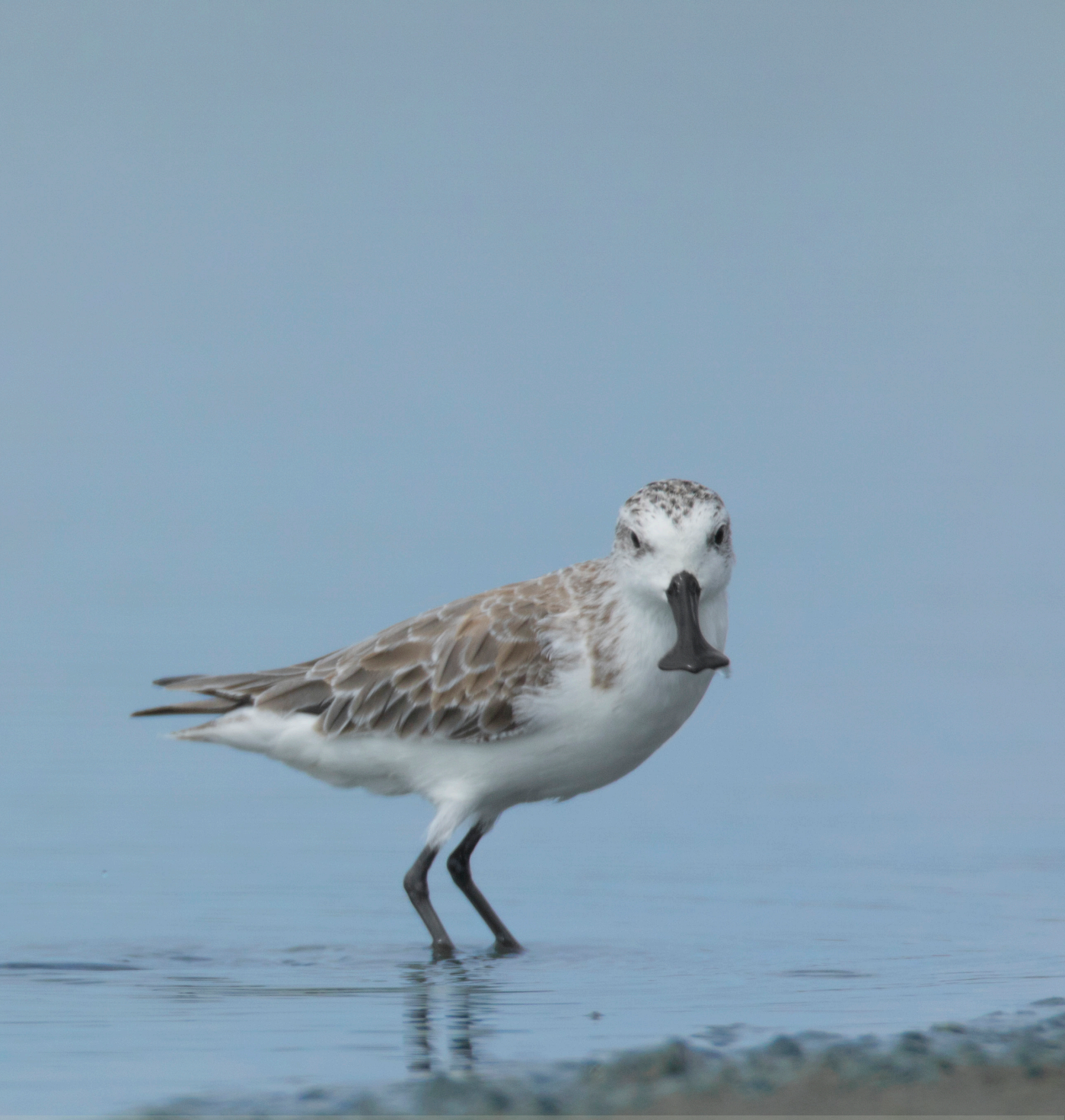
Addressing food shortage requires more production land, while loss of habitat requires that land is preserved for biodiversity instead. When faced with these two challenges, humans often choose to solve the first challenge, which can make the second worse. The project, "Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes," demonstrates that we now have the means and the will to solve these two challenges at the same time.

This document reports the advancement and success story of the conservation of three globally important species — the Eastern Sarus Crane, Water Onion and Spoon Billed Sandpiper. These species are faced with different opportunities and threats, which require different strategies to tackle the difficulties they are facing. These challenges require the government, NGOs (locally and internationally), and communities to work together to ensure the survival of these species. However, the most important role lies in the hands of local food producers—rice farmers, fruit and rubber orchard owners, as well as salt farmers. This report shows how this project has brought about cooperation between various organisations and local food producers to share the same goal and vision, which is to save endangered species while continuing to produce food on the same piece of land.



The success shown in this report is an important step for biodiversity conservation work in Thailand, for it has shown the world that us "Thai" can co-exist with these endangered species in our production landscapes. As a Thai, I would like to take this opportunity to thank all organisations, researchers, and communities involved in this heart-warming conservation success-story. There is still a long way to go as conservation work will never cease, but for now, thank you for showing us the possibilities that still exist.

Nonn Panitvong, PhD
ASEAN Biodiversity Heroes Award Recipient
Academic Team Member of the National Committee on Wetland Areas
Bird Conservation Society of Thailand Secretary-General
Green World Foundation Member



"Traditional salt farming is disappearing from Thailand fast. We need to seek methods to sustainable salt farming since every still needs salt... If salt farming is gone from Khok Kham Community, so will the Spoon-Billed Sandpiper."

Duangjan Kladkleep, Salt Farmer and Leader of Khok Kham Community Female Group

Preface

Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes is initiated under the cooperation between the United Nations Development Programme (UNDP), International Union of Conservation of Nature (IUCN), Office of National Resources and Environmental Policy and Planning (ONEP) and Zoological Park Organization (ZPO) with support from the Global Environment Facility (GEF). The aim is to promote conservation and biodiversity of globally important flora and fauna species through developing local habitat management in Thailand for Eastern Sarus Crane, Spoon-Billed Sandpiper and Water Onion.

The project was carried out during 22 September 2015 - 21 September 2019. Of the US$12,896,137 total funding, ONEP's contribution was US$6,997,234. The additional US$3,757,493 was from ONEP. GEF funded US$1,758,904 for the project and UNDP supported US$40,810 on administrative work. The Bird Conservation Society of Thailand and Thailand Environment Institute Foundation also contributed additional funding of US$143,171 and US$11,400 respectively. The aim is to achieve the main objectives of eliminating challenges facing management and conservation of habitats for globally important flora and fauna in production landscapes.

Thanks to strong cooperation between agencies and stakeholders at all levels throughout, the project was well implemented throughout the four-year period. We appreciate all your support and contribution leading the success of the project.

Project Objectives

Activities implemented under the Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes project can be categorised based on the following objectives:

Objective 1: To mainstream globally important biodiversity species conservation into production sectors through improved management of critical habitats

1) Promote legal framework development and other related regulations as follow:

    - Best practices and lessons learned from other countries

    - Draft measures and regulations essential for conserving critically-endangered flora and fauna in Thailand particularly Eastern Sarus Crane, Spoon-Billed Sandpiper and Water Onion

2) Availability of legislation framework for landscape utilisation, land integration for conserving critically-endangered species through the following decision making and working process:

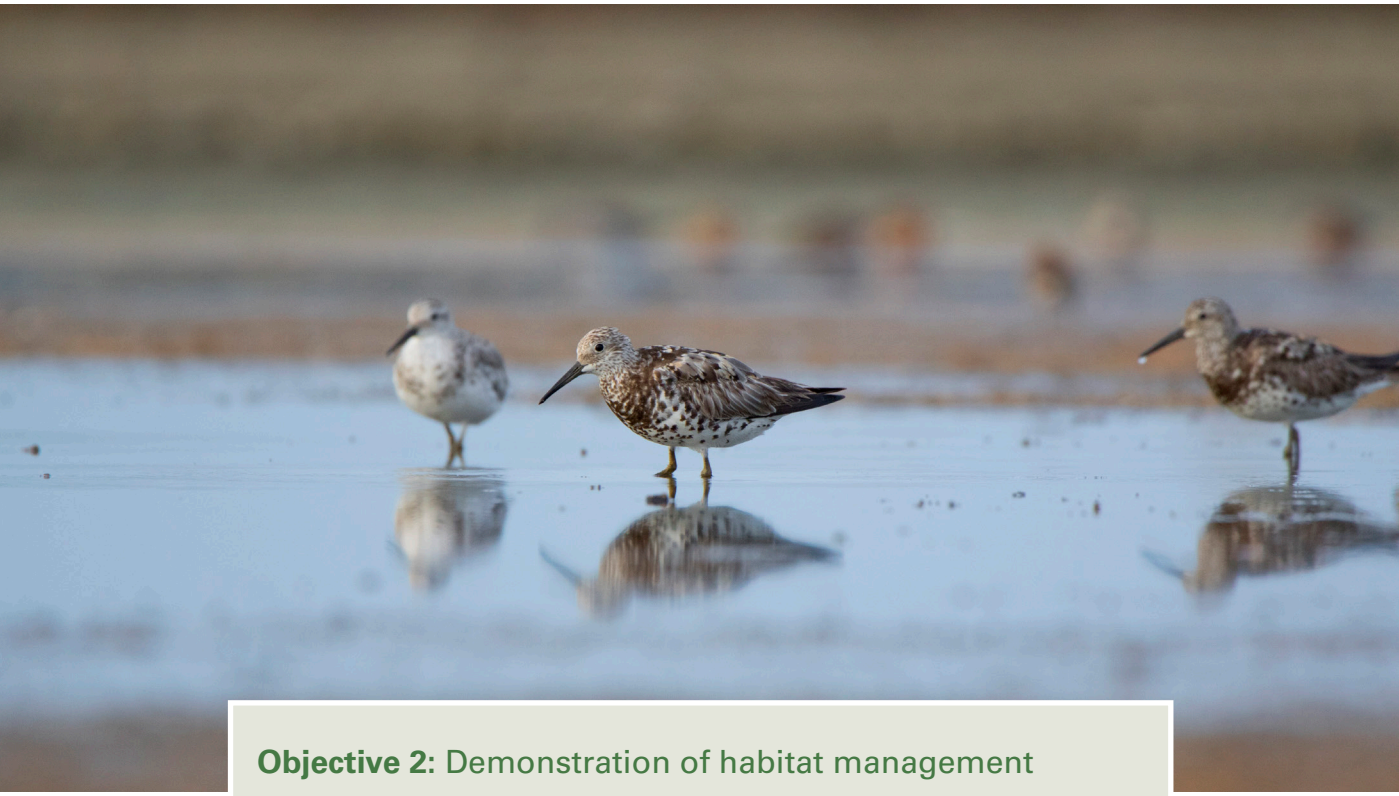
- Revise information and land utilisation plan
- Review law and regulation relating to framework for landscape utilisation with the Department of Public Works, Town & Country Planning
- Develop landscape utilisation plan for conserving habitats for critically-endangered species

3) Availability of monitoring system, leading to cooperation between departments and implementation of law enforcement for conserving critically-endangered species based on the following objectives:

- Develop and expand a conservation network
- Develop communication and information sharing channel for local networks and general public
- Integrate conservation of critically-endangered species and its habitats into development plan at community and provincial levels.

4) Strengthen capacity of the Office of National Environment and Policy and Planning (ONEP) in categorising, monitoring and rehabilitating critically-endangered species by:

- Gathering, categorising and combining biological status, habitats and factors that may threaten survival of Eastern Sarus Crane, Spoon-billed Sandpiper and Water Onion
- Develop information system such as GIS for collection data of critically-endangered flora and fauna species



Objective 2: Demonstration of habitat management for three critically endangered species

1) Implementation and management of land habitats for Eastern Sarus Crane, Spoon-Billed Sandpiper and Water Onion through the following processes:

- Organise trainings, workshops and study trips for relevant stakeholders at the provincial level
- Purchase equipment and tools to enhancing effectiveness of monitoring and conservation
- Campaign and raise awareness among youth and local communities on Eastern Sarus Crane conservation and reduce conflict between humans and wildlife

- Produce publications in the form of websites, social media, and knowledge management, for the general public

- Follow up and assess project implementation to achieve the project outcomes

- Develop an implementation plan on landscape utilisation and conserving habitats for critically endangered species

2) Develop financial strategy for sustainable management of habitats for critically endangered species through the following processes:

    - Raise awareness and advocate for conservation among local residents

    - Study and assess economic value, information preparation and ecosystem services. Identify economic opportunities for targeted communities

    - Construct financial guidelines and suggestions for supporting sustainable conservation and land utilisation

3) Support idea of land utilisation that is biodiversity-friendly through the following implementation processes:

    - Establish cooperative and/or organic rice farming group

    - Create knowledge and understanding on environmentally-friendly agriculture

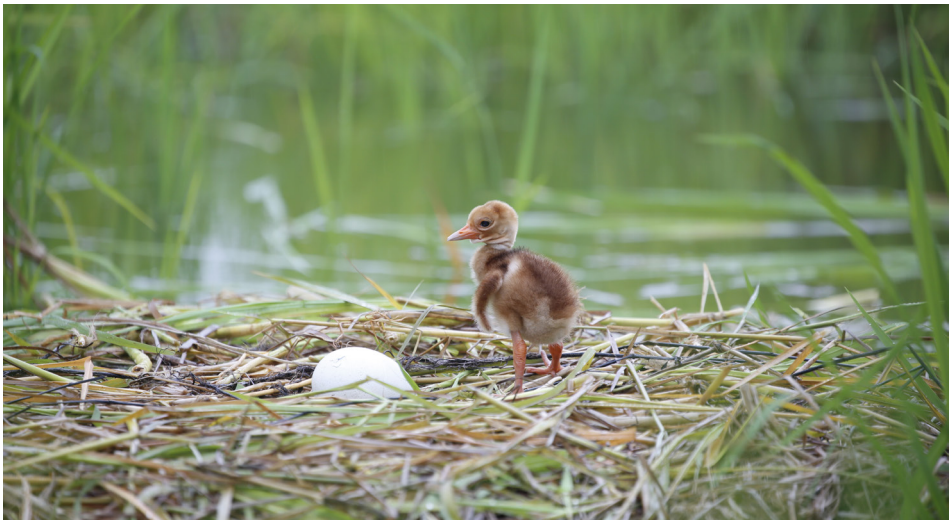
    - Enhancing skills and knowledge essential for conservation including accounting, product development, packaging, and marketing

    - Develop a visitor centre for raising awareness on conservation

Policy Challenges

The Spoon-Billed Sandpiper is listed as a critically-endangered animal species. The Water Onion is also on the list of critically-endangered flora and fauna. The project on Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes is aimed at seeking methods to conserve both species. The Zoological Park Organization (ZPO) received additional funding support to the implement of a conservation plan, leading to the return of the Eastern Sarus Crane, which were previously extinct in Thailand, to the natural landscape in Buriram province.

ZPO's expertise in conservation helped raise awareness among related stakeholders at the community and national levels, resulting in opportunities for future project implementation. Continuous efforts also have led to conservation partnership that drive all levels to work together for livelihood development and sustainability of the project following the Sustainable Development Goals (SDGs) 1: No Poverty, 5: Gender Equality, 12: Responsible Consumption and Production, 14: Life below Water, 15: Life on Land, and 17: Partnerships for the Goals.



Working Methods

Locals as a part of biodiversity preservation

Getting to know and understand biodiversity through its scientific definition seems to be difficult and makes us feel that biodiversity is not related to us. That is why much attention to this area has not yet been paid. Such issues are always raised by local administrative bodies asked to be a part of the conservation process.

Biodiversity means variety and variability of life on earth. Biodiversity can be categorised at three levels:

Level 1: Variety of species such as flora, fauna and microorganisms

Level 2: Variety of genetics, which make humans different from other species and look different

Level 3: Variety of ecosystems and environments with forests, water, planting land and habitats

The United Nations Development Programme (UNDP) worked with the Biodiversity-Based Economy Development Office, Global Environment Facility (GEF) and Thailand Environment Institute to seek methods for putting biodiversity concept into practice at the local level through the following four processes:

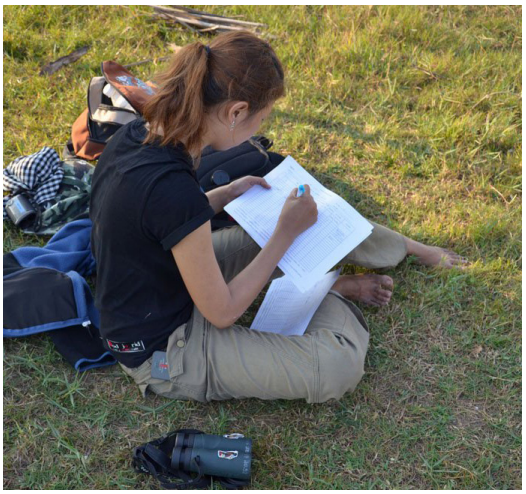
1. Protect and rehabilitate land habitats and green areas, water and natural resources that benefit flora and fauna species

2. Reduce threats and pollution that may affect habitats and variety of life on earth for example, control of wastewater and waste to the water. Reduce and stop use of pesticides in the agricultural sector as well as preventing and controlling alien species (for example water hyacinth, mimosa and mission grass etc.) in the environment

3. Preserve critically endangered, rare species such as migratory shorebirds, the water onion, and geographical plant species such as the cork tree or Lamphu Tree at Bang Lam Phu District of Bangkok

4. Develop regulation for management and utilisation, for example sustainable tourism, sustainable fishing, community forest rehabilitation through cooperation between local communities and related departments

Biodiversity management is dependent upon people and their habitats. Several communities adopt methods such as public area management, pollution management, prevention of threats and promoting products made of local organic materials. However, there are still many things to do according to indicators cited in biodiversity management guidelines.



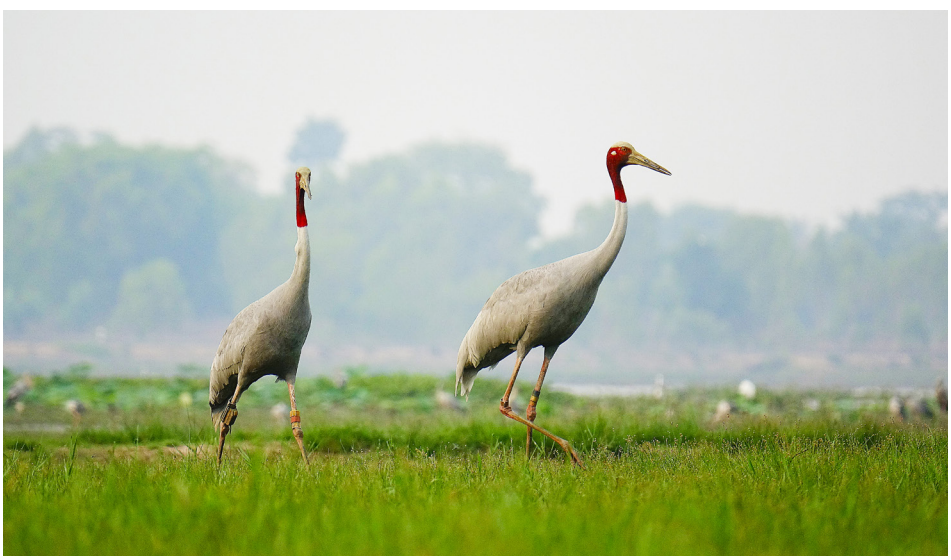
Local communities can adopt such guidelines for adjustment and implementation following their strategic plans. Biodiversity management is not a burden to be placed on the local communities alone. However, they should play a key role in coordination and management, since biodiversity management relates to their quality of life.

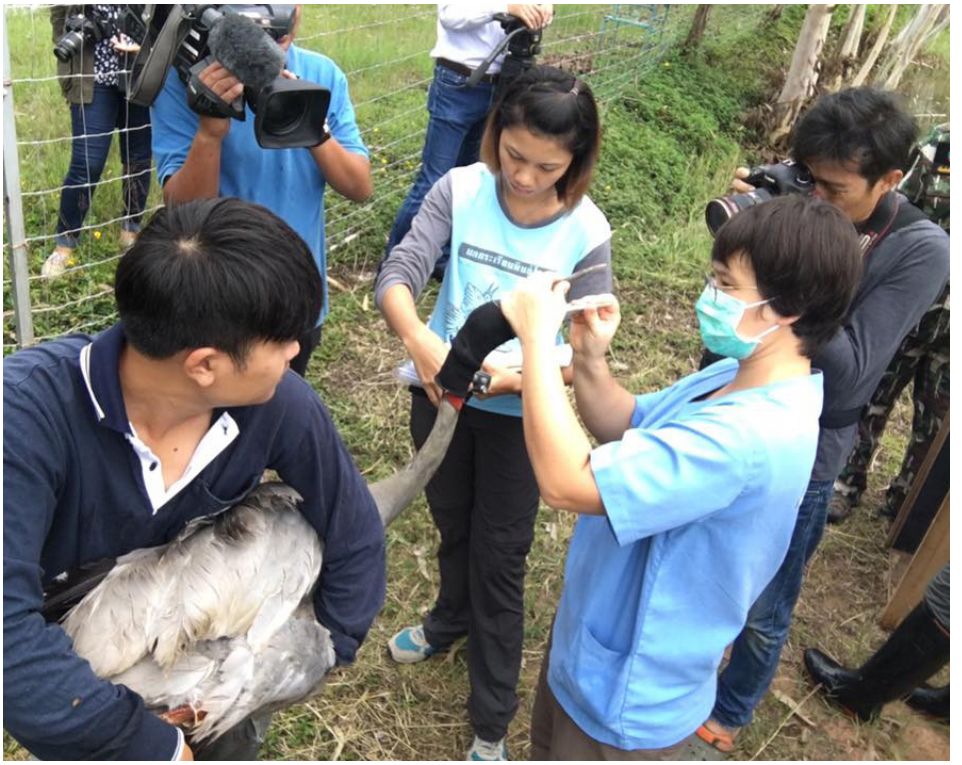
Eastern Sarus Crane Conservation Method

This is one of the three projects under the Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes project. It is aimed at conserving and protecting wetlands regarded as habitats of Eastern Sarus Crane and other rare species through cooperation with communities and local administration bodies. The Eastern Sarus Crane conservation project received a total of 25.6 million baht-funding throughout the implementation period of 2015-2019.

The Eastern Sarus Crane conservation project was successful, thanks to a strong network of ZPO researchers and those at Nakhon Ratchasima Zoo working together with an alliance of conservationists and local residents throughout the five-year implementation framework, leading to the success of releasing the Thai cranes back into the wild.

From 2011 until present, up to 118 cranes have been released to the wetland areas of Huay Chorakae Mak and Sanam Bin reservoirs in Buriram province.





The release of the Eastern Sarus Crane back into the wild is a landmark success of wildlife conservation. Their release is particularly important as this crane was recently extinct in the wild in Thailand. ZPO received additional financial support from ZPO to implement the project at the community level, raise awareness of the Eastern Sarus Crane and community ownership for sustainable conservation.

The implementation process of Eastern Sarus Crane conservation under the "Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes" project can be categorised into two parts:

1) Monitor survival rate of the Eastern Sarus Crane after releasing the birds back into nature by developing technique, following up on progress and reducing risk factors that may lead to loss of crane population. The following strategies have also been laid out for implementation:

Strategy No. 1: Strengthening effort to release the Eastern Sarus Crane back to the nature

Strategy No. 2: Fair and balanced management of wetlands

Strategy No. 3: Adding value to the wetlands where the cranes are released

Strategy No. 4: Enhancing capacity of wetland management together with Eastern Sarus Crane conservation

2) Develop organic farming process that is environmentally friendly around the focused wetland areas of Huay Chorakae Mak reservoir, Huay Talad reservoir, and Sanam Bin reservoir in Buriram province. These wetlands are targeted areas of the project and habitats of the Eastern Sarus Crane. The following strategies have also been laid out for implementation:

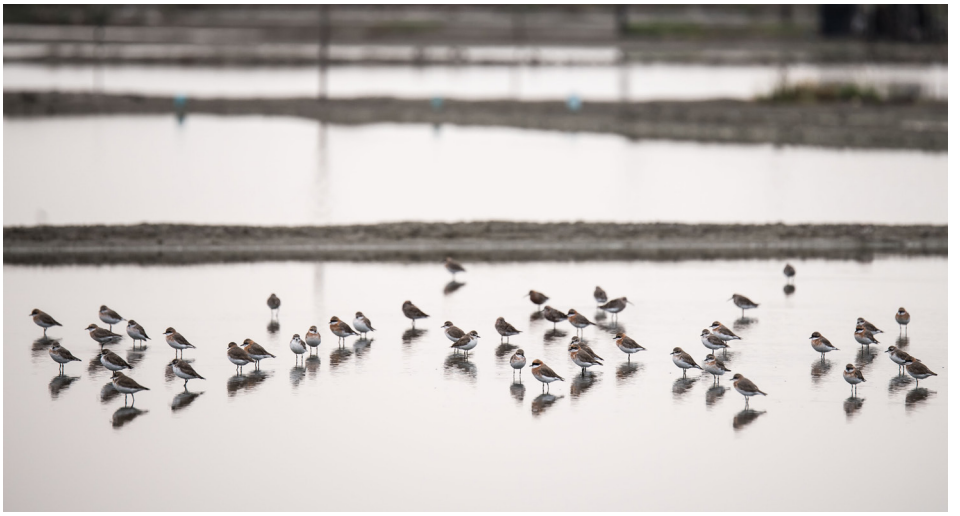
Strategy No. 5: Developing organic farming enterprise at the community level

Strategy No. 6: Enhancing knowledge and innovation

Strategy No. 7: Developing organic rice production with local wisdom

Strategy No. 8: Enhancing economic capacity of organic rice farming

In addition, there are indicators measuring policy, planning, data collection such as species and habitats for enhancing capacity and effectiveness of Eastern Sarus Crane conservation and management. Youth at local communities are encouraged to participate into the conservation process. They are advocated about the right way of animal protection and preservation that can lead to an increase in survival rate of the Thai crease while decreasing conflict between human and animals following Sustainable Development Goals (SDGs) 1: No Poverty, 5: Gender Equality, 12: Responsible Consumption and Production, 14: Life below Water, 15: Life on Land, and 17: Partnerships for the Goals.



Spoon-Billed Sandpiper Conservation Method

Conserving habitats for spoon-billed sandpiper in production landscapes in Samut Songkram province is a cooperation between Samut Sakhon Provincial Authority, Office of National Environmental Policy and Planning, Khok Kham Bird Conservation Group, representatives from local administration bodies, salt-farming communities regarded as habitats for spoon-billed sandpipers, private sector, and general public who are interested in spoon-billed sandpiper with funding support from GEF and IUCN.

Khok Kham seashore community is a major habitat for spoon-billed sandpipers and many migratory shorebirds. A total of three spoon-billed sandpipers including the "Lime No.5" named after the tracking number tagged to the bird's left leg has been spotted in Khok Kham for five years in a row. The other seven birds were observed in Laem Pak Bia and Baan Pak Tale in Phetchaburi province. The other was found in Ao Noi of Prachuab Khiri Khan province. The priority is to research why these coastal provinces are important habitats for such rare bird species. Consideration needs to be made to establish participation and cooperation between governmental and private sectors as well as local residents at salt farming communities. So they will be aware of the value of salt farming and conservation of spoon-billed sandpiper and other migratory shorebirds.

Water Onion Conservation Method

Crinum thaianum, or Water Onion as a common name, is in the Amaryllidaceae family. The rare species can only be found in running streams in Ranong and Phang Nga provinces. Dubbed 'Queen of the River', the blossom period is during October-December.

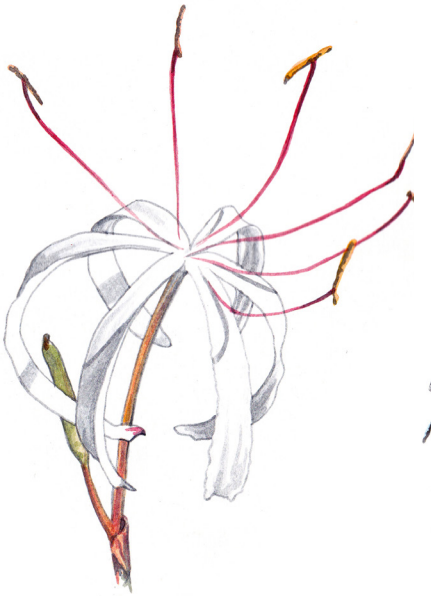
Water onion was first found in 1972 in Ranong province around Nakha, Rua and Wang Hin canals running through Suk Samran district. The critically-endangered species is also found in Yai Parb canal running through the province as well as Bang Pru and Chimee canals running through Khura Buri district in Pang Nga province.

At present, water onion is on the IUCN Red List of critically endangered species facing extinction due to water dredging, illegal smuggling and trade, natural disasters for example tsunami. All stakeholders start working together to revive water onion growth in natural habitats by preserving canals and promoting organic agriculture to ensure that its natural habitats are suitable for sustainable growth. Awareness of the importance of water onion among the locals can also

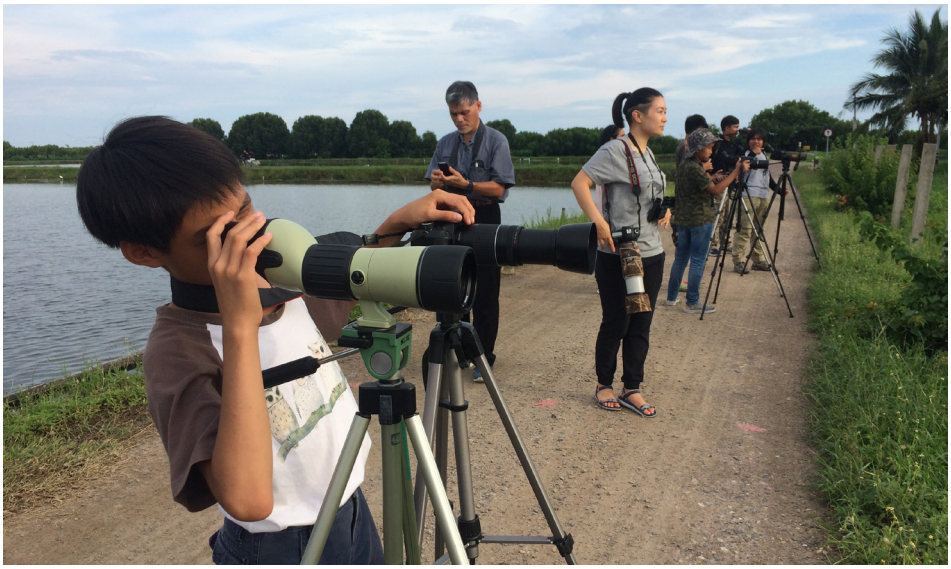
reduce threats and damages to natural habitats of water onion.

Water onion propagation and knowledge management are essential measures for conserving habitats of water onion and encourage local communities to preserve water onion population in the natural environment. Areas for natural habitat rehabilitation and organic farming are identified.

In Ranong, Water Onion Day is also held every year with cooperation from all sectors to raise awareness of the conservation, starting from 2015 as part of the process to conserve the natural habitats. Campaign against releasing wastewater and canal dredging are also carried out..



Outcomes following the project objectives



Apart from measuring success of the project through indicators for each objective, giving importance to working process that can be adjusted based on changing challenges need to be prioritized. Attempt that leads to qualitative success of the project can be identified as follow:

Indicators for measuring success of the project

Objectives:

To conserve habitats for globally important flora and fauna in production landscapes by improving habitat management for Eastern Sarus Crane, Spoon-Billed Sandpiper and Water Onion.

Indicators for measuring success of the project

1 Continuity

The project is continuously implemented with clear instruction available throughout the process

2 Reality

The project is based on reality and present situation

3 Suitability

Availability of technological support with suitable end-user approach

4 Cooperation

Experts at all levels work together

Table 1: Project Objectives and Outcomes

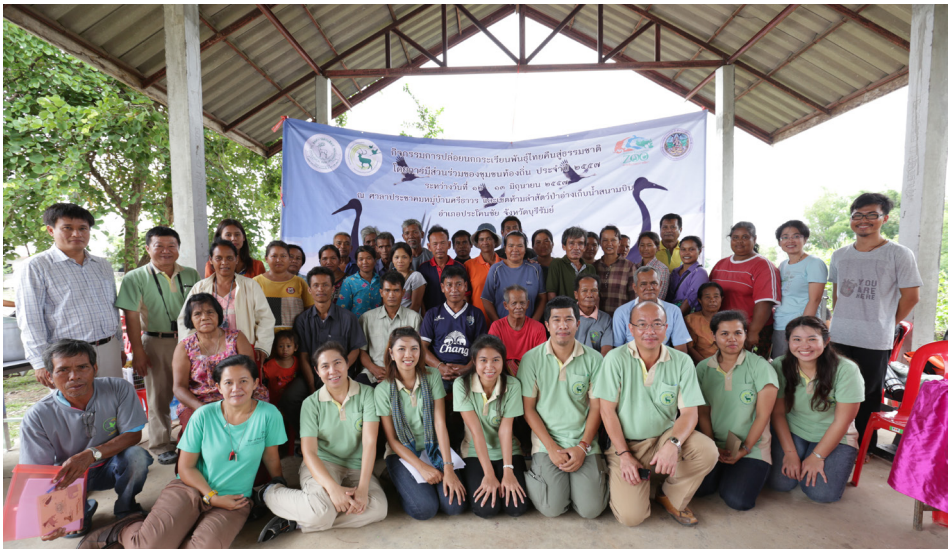
To mainstream globally important biodiversity species conservation into production sectors through improved management of critical habitats

Indicator	Target	Outcome (as of June 2019)
1. Implementation of law enforcement on habitat protection for Eastern Sarus Crane, resulting in an increase in survival rate	Wetland areas that are habitats of the Eastern Sarus Crane are managed for protection and conservation.	The project covers up to 211,862.5-rai plots of land areas. **Successful following the target**
2. The status of critically-endangered flora and fauna	The critically-endangered flora and fauna listed species are not increased.	• A total of 6 critically-endangered flora and fauna species on the ONEP list. Of the total, 3 species have been officially assessed by the Department of National Parks, Wildlife and Plant Conservation. • The status of 10 flora and fauna species has been reviewed and re-assessed by project consultant and on the process of approval by ONEP. • The status of Eastern Sarus Crane has been changed from extinct (EW) to the critically-endangered (CR) species following the ONEP report in 2017.

Table 2: Project Indicator and Success		
Outcome 1: Availability of implementation framework for capacity management of critically-endangered species		
Indicator	**Target**	**Outcome**
1.1 Support and develop legal framework and related regulation	Framework is drafted and implemented by the national committee.	Framework is completely drafted and proposed to the national committee for approval. **Success following the objective**
1.2 Availability of framework for land utilisation and conservation of critically-endangered flora and fauna species through participatory in decision making process	Zoning of land areas for the three critically-endangered flora and fauna species: Eastern Sarus Crane, Spoon-Billed Sandpiper, and Water Onion in five provinces is proposed to the Department of Town & Country Planning as part of the provincial plan.	Conservation zones for Eastern Sarus Crane, Spoon-Billed Sandpiper and Water Onion have been approved and included in the targeted five provinces. **Successful following the objective**
1.3 Management and following up on rehabilitation of the critically endangered species by using GIS system	A total of targeted 10 flora and fauna species are on the list for monitoring. Three flora and fauna species are piloted.	Study on 10 flora and fauna species by using GIS system is on the implementation process. **Successful following the objective**
1.4 Enhance ONEP capacity in developing rating indicator	Increase in rating capacity at Level 4 in indicator no. 2, 3, 5,11	Every indicator responsible by ONEP should be at Level 3. **Successful following the objective**

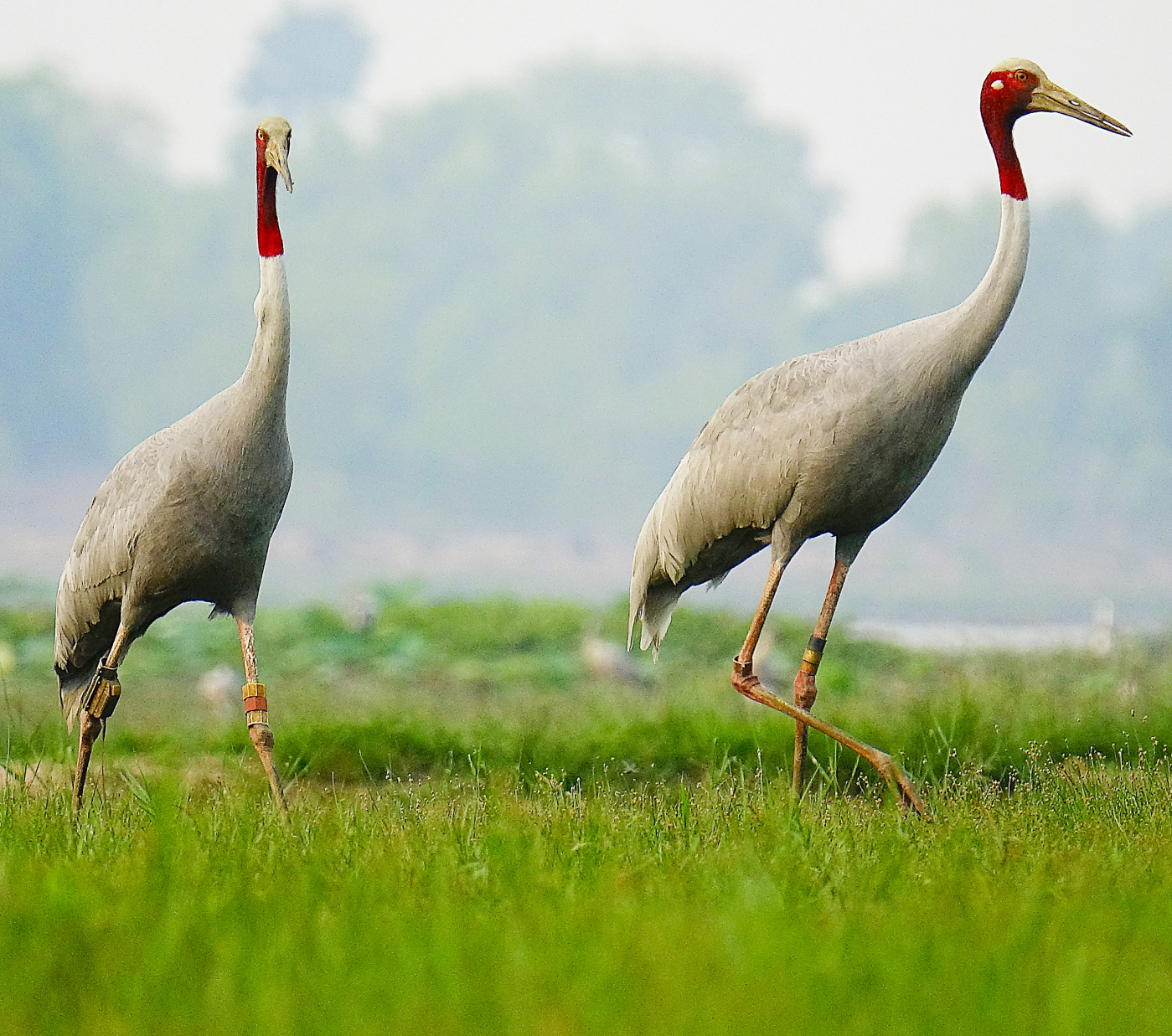
Table 2: Project Indicator and Success (continued)		
Outcome 2: Demonstration areas for conserving habitats of the critically-endangered flora and fauna		
Indicator	**Target**	**Outcome**
2.1 Implementation of management plan and zoning areas for Eastern Sarus Crane, Spoon-Billed Sandpiper and Water Onion.	• A total of 1,120-rai plots of land in Khok Kham sub-district is listed as sustainable salt farming area. • A total of 2,000-rai plots of land within the one kilometre-radius of the wetland areas are transformed into organic rice farming areas and habitats for the Eastern Sarus Crane.	• A total of 1,120-rai plots of salt farming land. • A total of 2,000-rai plots of organic rice paddies. **Successful following the objective**
2.2 Sustainability of flora and fauna species in the targeted areas.	• The number of spoon-billed sandpipers are not reduced. • Up to 10% increase of the Water Onion covering estimated 3.44-rai of areas. • Over 40 cranes are released back to the nature.	• A total of 11 spoon-billed sandpipers migrated to Thailand • Prior to the project, a total of 58 cranes were already released back to the nature. The additional 60 were released back to the nature during the project implementation. As a result, a total of 118 cranes are released. In addition, a total of 13 birds were born in the nature. • Water onion prior to blooming cover around 16 rai of areas. **Successful following the objective**

Table 2: Project Indicator and Success (continued)		
Outcome 2: Demonstration areas for conserving habitats of the critically-endangered flora and fauna (continued)		
Indicator	**Target**	**Outcome**
2.3 Indicators of risk factors among the flora and fauna species are reduced.	• No increase in risk areas for Spoon-Billed Sandpiper • Increase in survival rate of Eastern Sarus Crane • No report on illegal smuggling or trade of Water Onion	• Survival rate of the Eastern Sarus Crane is at 85.37% • Habitats of Spoon-Billed Sandpiper are not deteriorated to become risk areas. • No report on illegal smuggling or trade of Water Onion after the end of the project. **Indicators for the three species are completed.**



"Nowadays Eastern Sarus Crane has become a symbol of our community. Thanks to the Eastern Sarus Crane, our community is pinned on Facebook and Instagram and has become popular ecotourism area creating jobs, food safety and sustainable livelihood for members growing organic Hom Mali rice."

Thongpoon Oonjit, Farmer, Conservationist and Head of Baan Sawai Sor Village



Success Stories

Eastern Sarus Crane: Better local livelihood can lead to better survival rate and conservation

Outcome 1:

Availability of implementation framework for capacity management of critically-endangered species

- Eastern Sarus Crane conservation has been adopted in the national plan on environmental conservation

Outcome 2:

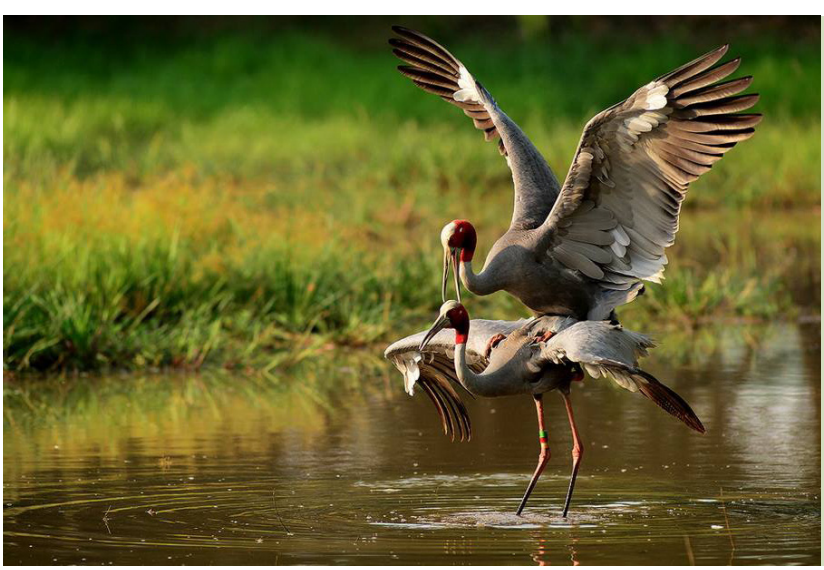
Demonstration areas for managing habitats of flora and fauna species

- Establishment of Eastern Sarus Crane Conservation Centre located at Huay Chorakae Mak Reservoir in Buriram province

Releasing Eastern Sarus Crane back to the nature has many stories to tell. The bird was one listed as one of 19 animal species already extinct from Thailand, and become only a memory. Eastern Sarus Crane is the largest among the 15 water cranes. It can be as tall as 1.8 metres and weigh up to 5-8 kilogrammes. Eastern Sarus Crane is one of the most beautiful Thai bird species due to its unique heights and characteristics especially when flying, Unfortunately height can make the crane become a target for hunting, leading its extinction in Thailand.

Details about abundance of Eastern Sarus Crane in Nakhon Ratchasima's Tung Maka was documented in a journal "Lan Nok Kra Rian" (Crane's Hollow) by Prince Damrong Rajanubhab in the reign of King Rama V. The last flock was spotted in Chiang Mai in 1945. In 1964, four Thai cranes were found at Wat Pai Lom in Pathumthani province. Four years later, two baby birds were found in the area near the Thai-Surin border and survive in captivity until 1974. No one found Eastern Sarus Crane ever since.

During 1990-1997, staff at Nakhonratchasima Zoo collected 27 baby birds from villagers living along the Thai-Cambodia border for nursery and breeding. Wanchai Svasu, former director of Nakhonratchasima Zoo, who is behind success of the project, told that the project went through trials and errors for seven years before breeding success. The first batch of Eastern Sarus Crane was born in 1997.



However it takes more than 10 years for the research team to develop breeding technology that is up to satisfactory. Nakhonratchasima Zoo is regarded as the world's largest center for Eastern Sarus Crane breeding, having about 100 cranes at the centre.

Apart from breeding, the next target to measure success of conservation is to ensure that Eastern Sarus Crane can be safely released to the nature. This is such a challenge.

Cooperation between governmental and private sectors, academic and local communities

ZPO received additional funding from the Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes Project for monitoring result after releasing the Eastern Sarus Crane. The agency signed MoU with conservation alliance comprising provincial and local administration bodies, private sector and communities in a bid to work together and raise awareness of Eastern Sarus Crane and wetland conservation while promoting ecotourism in the areas.

ZPO director Benjapol Nakprasert said the agency worked with Buriram Sugar Plc, True Corporation Plc and Thai Air Asia on opening the Eastern Sarus Crane conservation centre.

"The conservation center will be a place for raising awareness of Eastern Sarus Crane and wetland conservation while promoting ecotourism development. We also hope that younger generations will be able to learn the importance of conservation and continue preserving Eastern Sarus Crane and wetlands," he said, added that 10 birds were also released on the opening day of the centre in August 2019, apart from 119 cranes previously released to the nature.

Establishing Eastern Sarus Crane conservation centre reflects cooperation between governmental and private sectors, academic and local communities. Buriram Sugar Plc contributed 10 million-baht funding for the project, while the Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes project supported on training staff and operation.

Cooperation framework includes establishment of Eastern Sarus Crane conservation centre, raising awareness and expansion of conservation network through exhibition, learning activities and ecotourism.

Promoting ecotourism and organic rice farming as sustainable livelihood

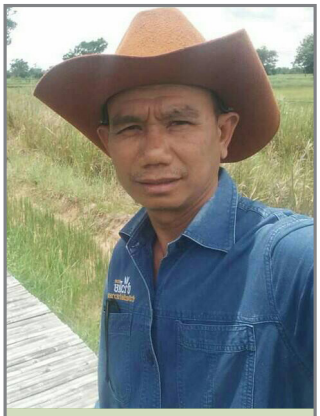
Despite previously listed as extinct species, more than 100 cranes have been released to the nature. However, its habitat areas are not yet listed as conservation zone and that results in an overlapping of human and animal habitats. The cranes are still critically endangered without good cooperation from the villagers.

"The crucial task is to ensure how human and Eastern Sarus Crane can co-exist. What we need to do is to include the crane into sustainable livelihood development," said Nuchjaree Purchkoon, ZPO researcher and coordinator of Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes Project.

As the Eastern Sarus Crane can only live in chemical-free environment, the project team works with local communities and several stakeholders to create understanding on Eastern Sarus Crane conservation. Local residents living in the area within 1km-radius of the wetlands are also encouraged to do organic rice farming.

Thongpoon Oonjit, Sawaisor Village Headman, is the key person spearheading the conservation project at the community level. He had an idea of switching to organic rice farming mainly due to health concerns. He encouraged village members to do organic rice farming while taking care of the crane's welfare.

Rice paddies that are partly damaged due to bird nesting and feeding will receive reimbursement from the Bird Conservation Society of Thailand and ZPO. Ecosystem has revived, thanks to chemical-free rice farming. The organic Hom Mali rice is also branded "Sarus Rice" showcasing a story of conservation. Although production capacity is still limited depending of weather conditions and water, villagers can sell the rice at the better price due to a high demand on food safety and organic rice.



Thongpoon Oonjit

Nowadays, villagers living around the wetlands are aware of the importance of Eastern Sarus Crane conservation. The area near Huay Chorakae Mak wetland can be developed and promoted for agritourism, managed by local community members. Crane conservation also generates sustainable income and livelihoods benefiting household business and organic farming development.

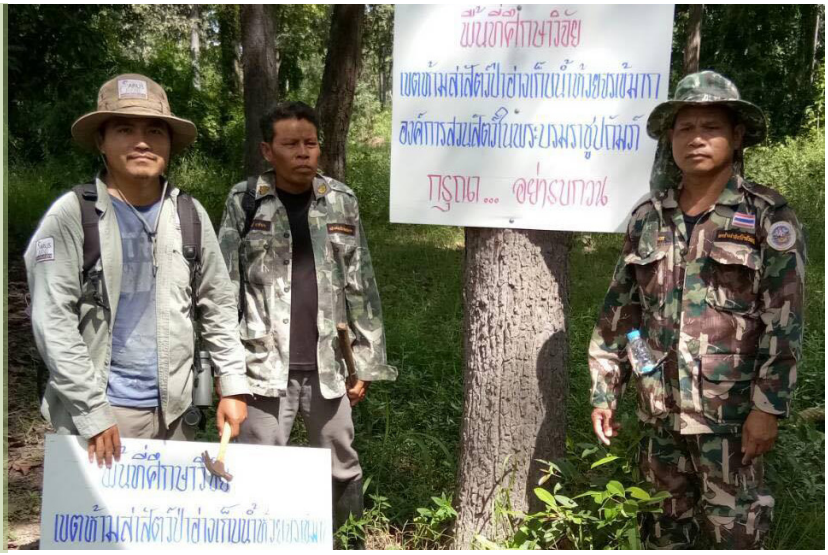
"Nowadays Eastern Sarus Crane has become a symbol of our community. Thanks to the Eastern Sarus Crane, our community is pinned on Facebook and Instagram and has become popular agrotourism area creating jobs, food safety

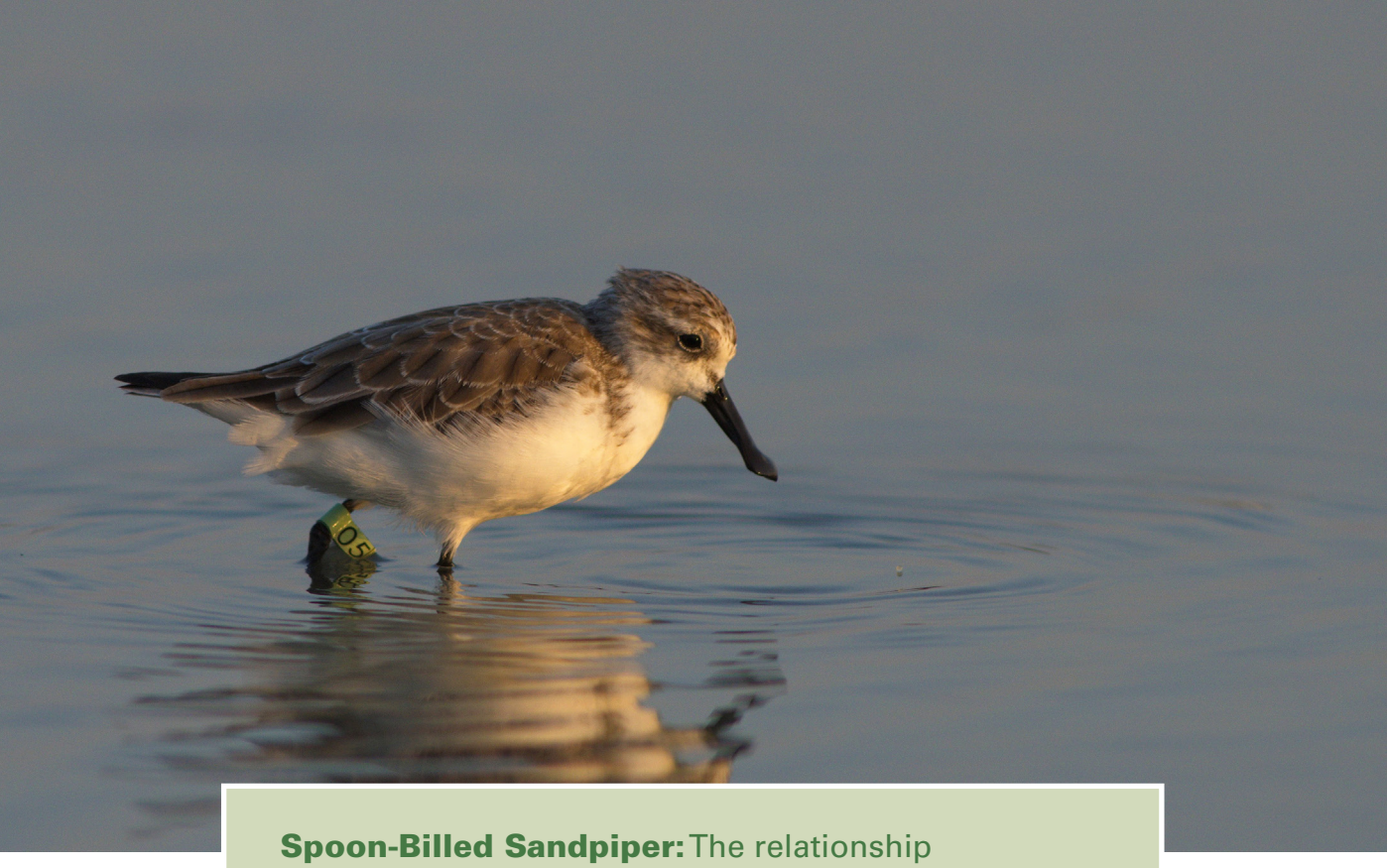
and sustainable livelihood for members growing organic Hom Mali rice," said Thongpoon Oonjit, farmer, conservationist and head of Baan Sawai Sor Village.

Opportunities and Challenges for Eastern Sarus Crane Conservation

Mr Oonjit proudly said that the cooperative group including female residents is set up for managing ecotourism project and over 100,000 baht administration budget that the group earned by themselves. The group can also sell organic Hom Mali Rice under brand 'Sarus'. Income from selling organic rice can also be managed for bird conservation activities. Social media and mobile apps can be a platform that enhance not only bird conservation but also communication among local communities and other stakeholders.

However, remote communities still need infrastructure development as it is difficult to reach the village by using non-asphalt road. Questions over infrastructure development, ecotourism as sustainable livelihood and environmental conservations need to be raised for seeking a balanced solution, he said.





Spoon-Billed Sandpiper: The relationship between migratory shorebirds and salt farming at Khok Kham community

Outcome 1:

Enhancing implementation framework for management of critically endangered species

- Availability of conservation zone for Spoon-Billed Sandpiper is on the process

Outcome 2:

Demonstration area for showcasing habitat management of critically-endangered species:

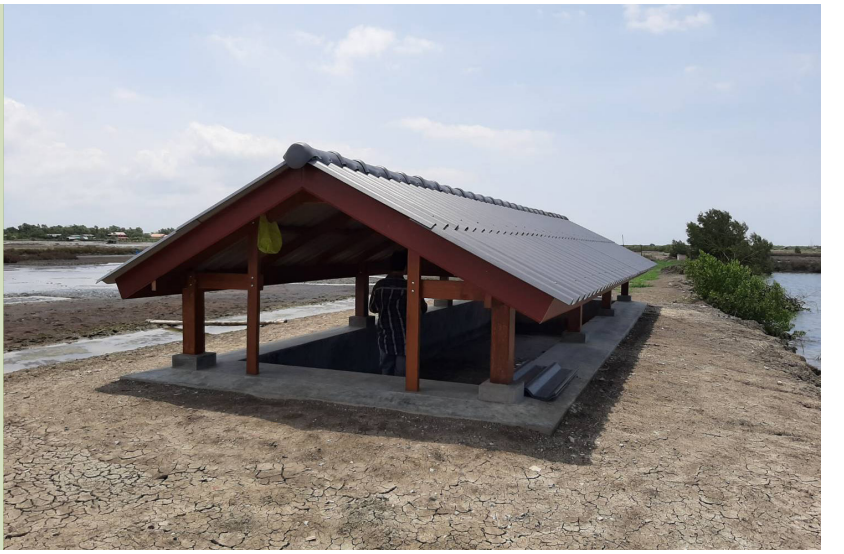
- Establishment of Khok Kham Bird Conservation and Learning Centre in Samut Sakhon province

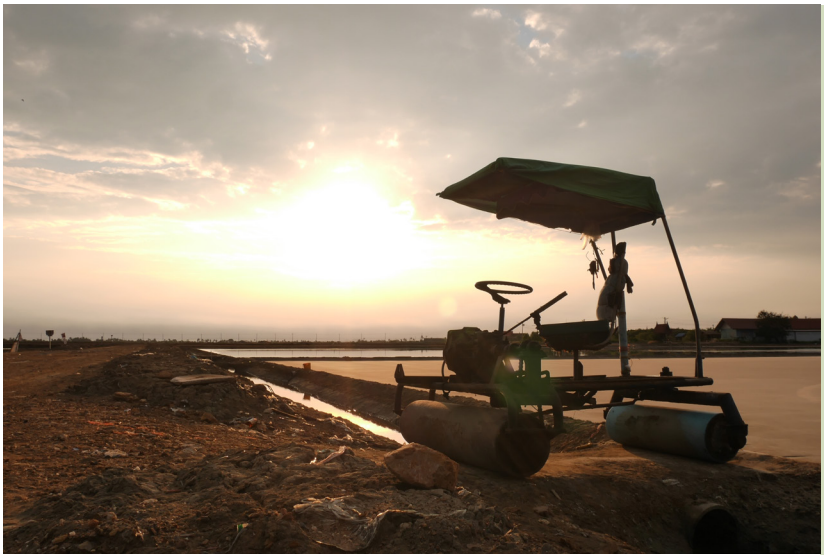
When the winter comes to Russia's Siberia region, every life needs to adjust itself to survive. Even the tiny spoon-billed sandpipers need to migrate to the warmer climate zone.

They fly thousands of miles to Thailand's Khok Kham salt farming community located in a coastal province of Samut Sakhon and Baan Pak Tale in Phetchaburi province.

With only 15cm in size, the population of spoon-billed sandpipers and their habitats are threatened due to climate change and reducing food resources along the East Asian-Australasian Flyway Route, the. It is estimated that there are only less than 400 spoon-billed sandpipers worldwide.

The good news is mudflats in Khok Kham salt farming community are rice in food resources for spoon-billed sandpipers and over 50 species of shorebirds. Salt farming method and process have created ecosystem suitable for feeding and habitats of migratory shorebirds including spoon-billed sandpipers coming to the area every year, starting from October to April, according to Suchart Daengpayon leading the Khok Kham Community Bird Conservation Club.



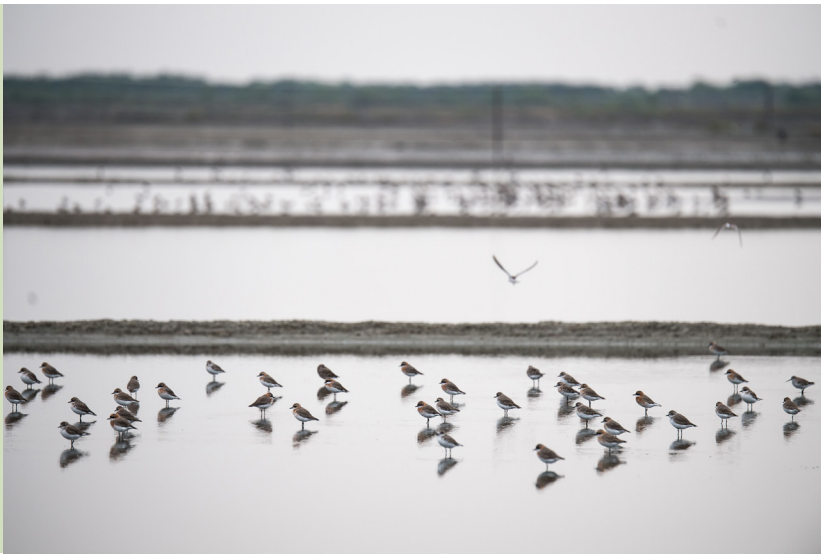


The bad news is there are just 28 salt farmers left. If salt farming disappears, it will difficult to see the shorebirds including spoon-billed sandpipers come back to Khok Kham community. Co-existence between salt farmers, spoon-billed sandpipers and other shorebirds are the theme for Khok Kham bird conservation and learning center showcasing how salt-farmers and spoon-billed sandpipers can co-exist.

Integrated Conservation of Salt Farming and Spoon-Billed Sandpiper

The Inner Gulf of Thailand is the major habitat for over 56 species of migratory shorebirds including Spoon-Billed Sandpiper. These birds bring the mudflats to life with their feeding behavior and loud noise.

Spoon-billed is the flagship migratory shorebird on the IUCN red list of critically endangered species. Researchers estimated that spoon-billed sandpipers will be extinct within the next 10 years. Without urgent conservation plan, Spoon-Billed Sandpiper will be only a history.

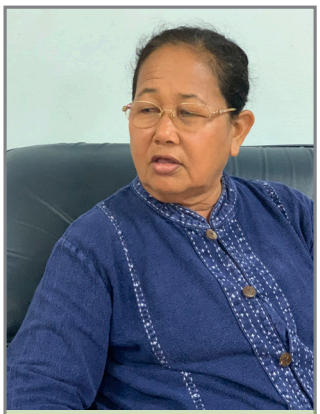


Khok Kham community in Samut Sakhon province, Baan Pak Tale in Phetchaburi province and Ao Noi in Prachuab Khiri Khan province are where spoon-billed sandpipers can be spotted.

In fact, the 80-km coastal areas along the inner Gulf of Thailand, from Bang Pakong delta to Bang Khun Tien have been facing soil erosion for over 30 years. Land habitats of spoon-billed sandpipers are diminishing. Higher sea level and global warming contribute to the loss of coastal land areas. Urbanisation and industrial estate development directly impact habitats of the Spoon-Billed Sandpiper.

Usually, spoon-billed sandpipers will look for food in salt pans and brackish water with less than 15cm in depth. However, these areas have hardly been available nowadays. The mudflats have been transformed into shrimp farming, fish ponds, salt farming, community and industrial estate, although these are prime areas where we can spot many sandpipers and migratory shorebirds. The traditional salt farming in Thailand is different from those in Mediterranean and in the US operating salt farming in big ponds, using large-scale machine for adjusting farming surface.

Mrs Duangjan "Daeng" Kladkleep, the third generation of salt-farming family at Khok Kham Community said Spoon-Billed Sandpiper can be spotted at her traditional salt farms. Since the water level is less than 20cm in depth, many small animal species including the tiny short-legged 'spoonies' come to the area looking for food. As mudflats and water-filled salt pans are not far from each other, Khok Kham Community is suitable for migratory shorebirds to stay and collect as much energy from food as they can to ensure that they are strong enough to fly back home in Siberia during a mating and breeding season.



Duangjan Kladkleep

The 64 year-old-year old female salt farmer said the weather is the key factor determining productivity of salt farming. Salt farming productivity in drought season. As salt farming is labour intensive and earns unstable income, younger generations are hardly interested in continuing salt farming. "They have seen that salt farming is difficult, and tiring. They need to fight against the sun and the rain. Salt price is unstable. These factors cannot draw younger generations to continue salt farming," she said.

Nevertheless, Mrs Kladkleep still would like her children to preserve the family's 70-rai plots of salt farm land inherited since King Rama V reign. She also aims to transform salt farming into a service and knowledge sharing center to transfer knowledge of salt farming and product development for younger generations.

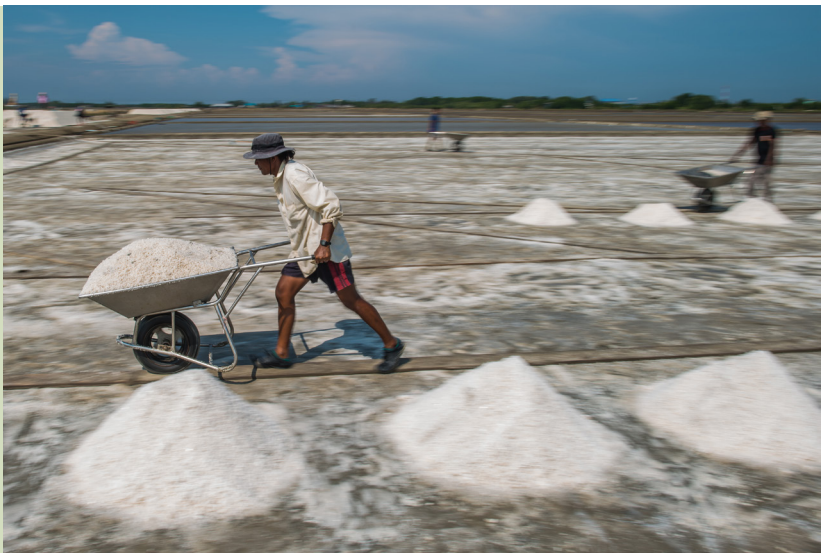
In the past, salt farming is labour intensive and dependent on the nature. However, equipment has been adopted for solving the issue. Electronic motor can turn windmills for controlling water level. In Phetchaburi, salt farming can also be done on canvas.

Assistance from academic sector and bird conservation stakeholders, Khok Kham salt farming group is formed. Auntie Daeng said the female group comprising

about 30 members, could earn income from selling several salt products, generate income to support their families and help strengthen community-based economy.

The Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes Project supports Mrs Kladkleep and the female group to attend study visits upcountry and overseas and learn about different ways of salt farming and livelihood development while continuing with environmental conservation.

Nowadays, the Khok Kham female group can earn income from selling local various salt products including the flagship salt flower which is the salt that forms as a thin, delicate crust on the surface of seawater as it evaporates. Salt flower can be sold at a better price than general salt because it can be used as a finishing salt to flavor and garnish food.

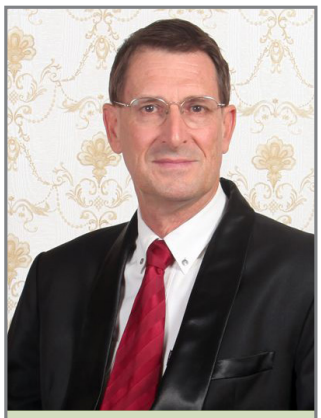


Opportunities and Challenges Facing Spoon-Billed Sandpiper Conservation

Further Research

The Inner Gulf of Thailand is internationally renowned as prime spot for migratory shorebirds including Spoon-Billed Sandpiper. However research and study on ecosystem suitable for these birds are still very limited. As the population of these birds are decreasing fast, researchers need scientific-based information that may contribute to their survival.

Dr Philip D Round, ornithologist at Mahidol University, said it is important to study on loss of nesting, laying and feeding areas which may affect the migratory shorebirds. Abundance of food resources in Thailand's wetlands where these birds spend 6-8 months as their habitats directly contributes to healthiness of migratory shorebirds including the Spoon-Billed Sandpiper. Further study is undoubtedly needed for upscaling community-based conservation.



Dr Philip D Round

"In-depth research on ecosystem of these migratory shorebirds and will lead to practical and effective conservation," Dr Round said. "These small birds deserve the right to live and breed freely, too, and they need to be conserved."

Studies should cover these following areas:

- The amount of food resources and energy gained compared between mudflats and salt pans, fish pond, and shrimp farming
- Long-term system for monitoring migratory birds in Thailand
- Mapping habitats and gathering spots for conservation planning

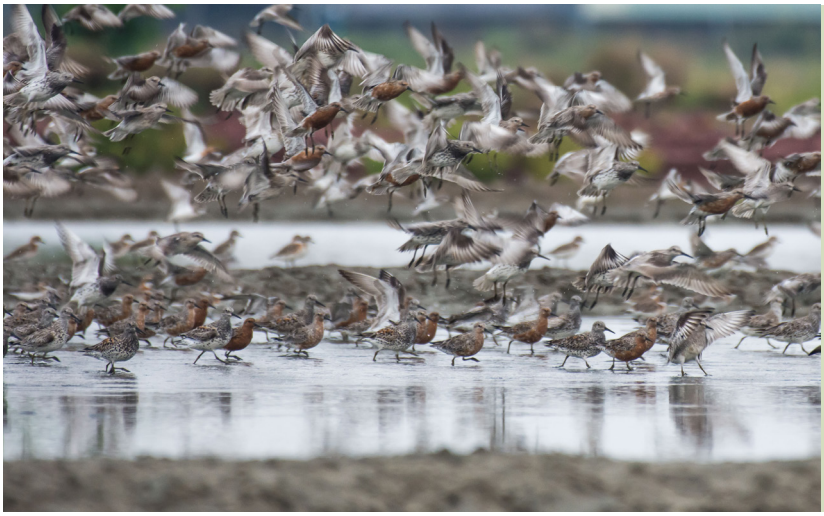
- Study on rare species found in the Inner Gulf of Thailand for example spoon-billed sandpipers. Tags, symbols and transmitting system should be available for studying immigration route

- Habitat rehabilitation via coorperation with salt farmers and local residents in the focused communities to improve deserted shrimp farms to become habitats for migratory birds while local salt farmers can continue harvesting and earn a living in the wetlands

Product development and ecotourism promotion

This approach will enable youth and younger generations to aware of the importance of salt farming and alternative ways to generate income while preserving their ancestors' occupation.

"Traditional salt farming is disappearing from Thailand fast. We need to seek methods to sustainable salt farming since every still needs salt. Samutsakorn is regarded as Thailand's major spot. Transferring knowledge and local wisdom while developing alternatives for income generation can help preserve the



traditional way salt farming and migratory birds. If salt farming is gone from Khok Kham Community, so will the Spoon-Billed Sandpiper," Mrs Kladkleep said.

Conserving traditional salt farming is considered a hopeful approach to increase survival opportunity of the shorebirds and income generation for Khok Kham Community. Research and studies will bring hope to systematic conservation based on scientific facts. Even a small conservation project and research will also benefit survival of the Spoon-Billed Sandpipers and migratory shorebirds in the Inner Gulf of Thailand.

"Learning center will become a symbol of sustainable spoon-billed sandpiper conservation for younger generations to learn about the life of migratory birds and livelihood development at their homes," said Suchart Daengpayon, conservationist, birdwatching leader of Khok Kham Community.

Water Onion: The Return of the River Queen

Outcome 1:

Availability of implementation framework for capacity management of critically-endangered species

- Provincial conservation plan with public participation process
- Land integration plan for conserving Water Onion in Ranong and Phang Nga provinces

Outcome 2:

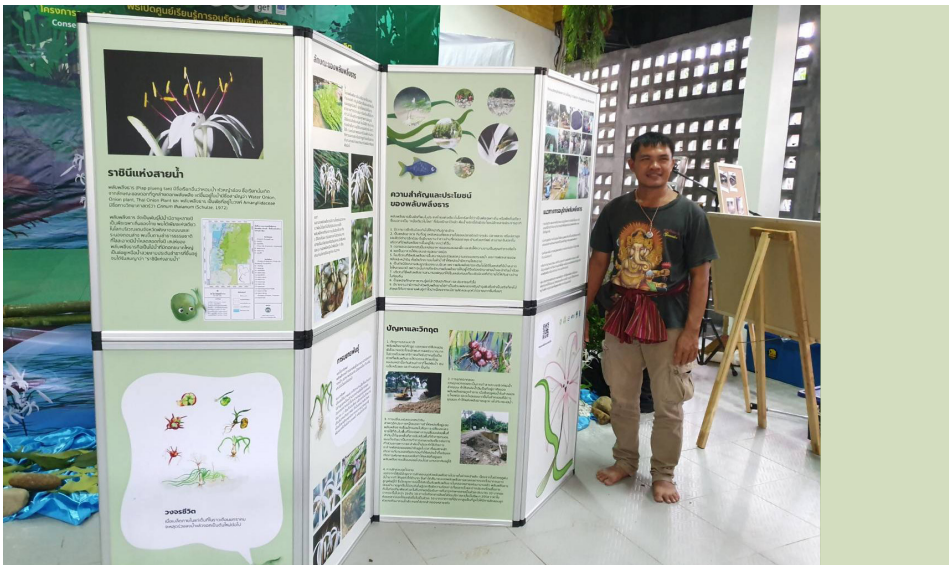
Demonstration area for showcasing habitat management of critically-endangered species

- Establishment of Water Onion Learning and Conservation Center in Ranong's Suk Samran district and Phang Nga's Khura Buri district.

Water onion is one of the famous species that draws visitors to Ranong's Suk Samran district every October to December marked as the blossoming period. However, the water onion has disappeared from the river after tsunami tidal waves in 2004. Canal encroachment and dredging have changed water direction and that deteriorated habitats of the rare plant species. Illegal smuggling and trading also cause worries among conservation groups.

Regrowing water onion is a challenging task that requires cooperation from government sector, community, academic and related stakeholders to work together in a bid to revive Nakha River regarded as the original habitat of water onion.

Canal dredging and land utilisation have changed river direction and led to soil erosion. River that was once clean and clear has become dirty and muddy. The water onion habitat areas have been reduced from 10.73 rai to 3.41 rai within two years. The Office of National Environmental Policy and Planning (ONEP) works with International Union for Conservation of Nature (IUCN) to study, survey, collect information and implement the project by brainstorming all stakeholders and local communities in a bid to seek a sustainable solution to water onion



conservation. Integrated plan on land utilisation, canal identification prior to proposing conservation areas to the provincial authorities for approval.

From collaboration to policymaking

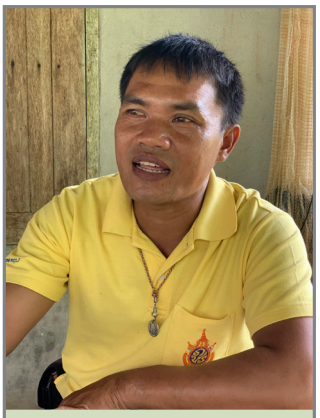
Nowadays Water Onion can hardly be seen in Khlong Nakha canal. However, there has been an attempt to regrow the plant species in a nearby canal at Khlong Rua. Amarin Prasompol, a resident of Baan Rai Nai, said the Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes project has created a platform that enables all stakeholders including local residents to share knowledge, experience and views on developing a study route in the Klong Rua area for Water Onion conservation, while also promoting agrotourism. Fruit orchards generate major income to the community.

With support from the UNDP-GEF project, IUCN, Prince of Songkhla University, and Nakha local administration body, a series of workshops was also organised for local residents of Suk Samran district and nearby Khura Buri district in Phang Nga province. The aim is to raise awareness of conservation and to support livelihood

development among local residents living near the water onion habitats. They also learn accounting skills essential for livelihood development and community-based tourism management.

Authorities previously planned to announce habitats of the water onion as Protected Areas and to prevent communities from encroaching on the land area close to where the plant species are found. This plan does not match the needs of reality, as the canal passes through private land. The conservation plan therefore needs to be revised accordingly. Public awareness and cooperation from the local community are crucial and should be integrated into this process.

"We cannot talk about conservation without neglecting livelihood and community development. We can effectively conserve Water Onion together with income generation for community through agrotourism," said Amarin Prasompol, Rai Nai resident, Tambon Nakha, Suk Samran district, Ranong province.



Amarin Prasompol

In fact, Amarin is not the original southern-born resident. Most of Khlong Rua residents, including his family moved from the Northeast when the government provided agricultural land 40 years ago. However, he is the key person spearheading the regrowth of water onion in the community.

As part of the public participatory conservation process, the Water Onion Learning and Conservation Centre was set up. Agrotourism areas were also identified as the community is full of fruit plants such as mangosteen, longkong, and coffee. A nature study route along Khlong Rua canal, where water onion plants are regrown, has also been agreed upon by the community residents and is in the process of being officially announced.

Public participation has also been included at levels of the conservation process, leading to a success of water onion conservation.

Lessons learned and challenges facing water onion conservation

The Conserving Habitats for Globally Important Flora and Fauna in Production Landscapes project is a platform for local residents to work with governmental authorities at local and provincial levels as well as for private and academic sectors to discuss and seek ways to revive the Water Onion in its natural habitat. Here are some of the future avenues to pursue:

- Habitats of Water Onion are much threatened by natural and man-made disasters. Illegal trade and smuggling have also resulted in a decrease in Water Onion. Availability of suitable policy and implementation plan will lead to successful conservation

- At the policy level, collaboration between related agencies is needed to ensure that conservation work can be implemented accordingly. Continuous collaboration and policymaking process from all parties are essential

- At the community level, conservation and rehabilitation of water onion habitats should be emphasised. Campaigns, research and studies on habitat changes will enable all stakeholders to seek measures to mitigate risks, (for example livelihood development) and provide incentives to support community-based conservation activities

- Good ecosystems are essential for regrowing this critically-endangered species

- In-depth study and research on changing ecosystems and consequences is needed. Continuous monitoring of habitats should be undertaken to collect up-to-date information essential for future conservation work

- Locals with land along the canals should be encouraged to preserve trees and plants in order to prevent soil erosion

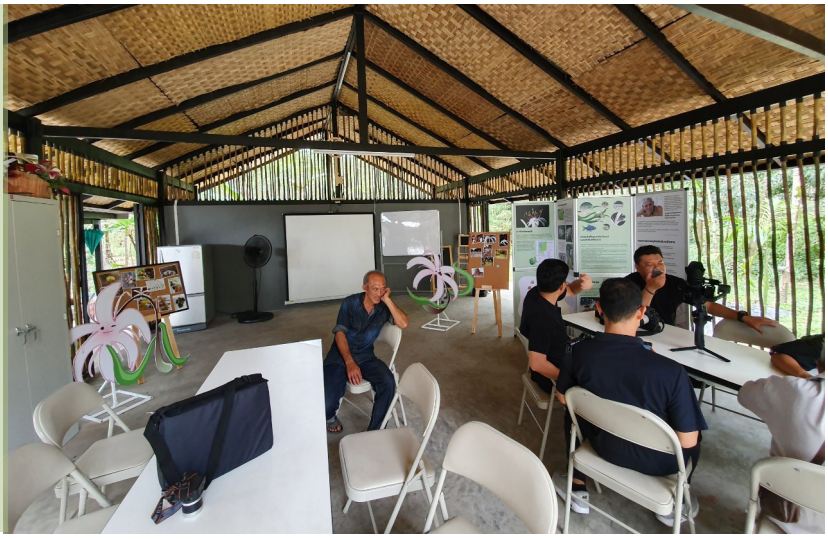
- Communities and land owners where the water onion is found should be encouraged to participate in the conservation process

- Organise a workshop for all stakeholders to discuss and come up with conservation plan and soil erosion prevention

- There are many organisations and development agencies working on canal management, but there is no law directly overseeing canals and rivers. All stakeholders should work together to seek measures that work well for conserving canals and habitats of the Water Onion

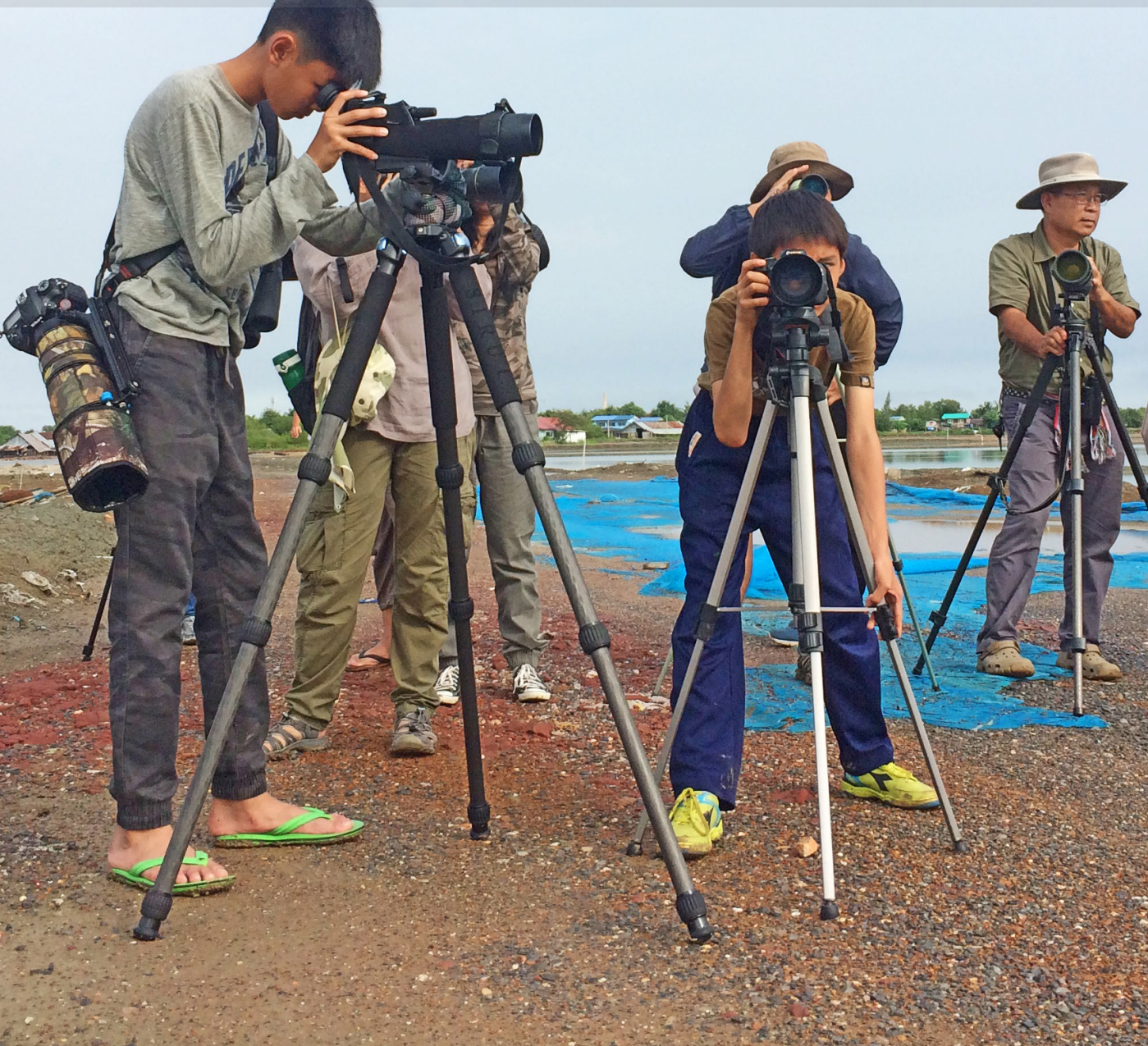
- Water Onion conservation and habitat management should be included in policymaking

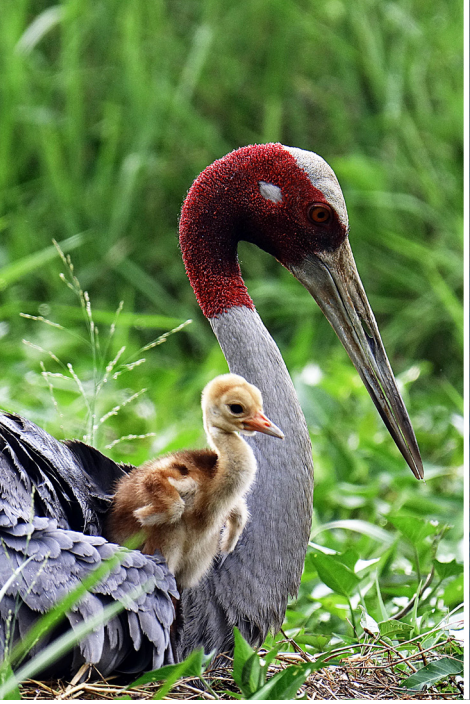
- Local administrative bodies at District and Provincial levels should be aware of the conservation and rehabilitation process and take part in implementation. Some state projects have already threatened the ecosystem and habitats of the Water Onion. Advocacy and public participation are essential for the conservation process



"Learning centre will become a symbol of sustainable spoon-billed sandpiper conservation for younger generations to learn about the life of migratory birds and livelihood development at their homes."

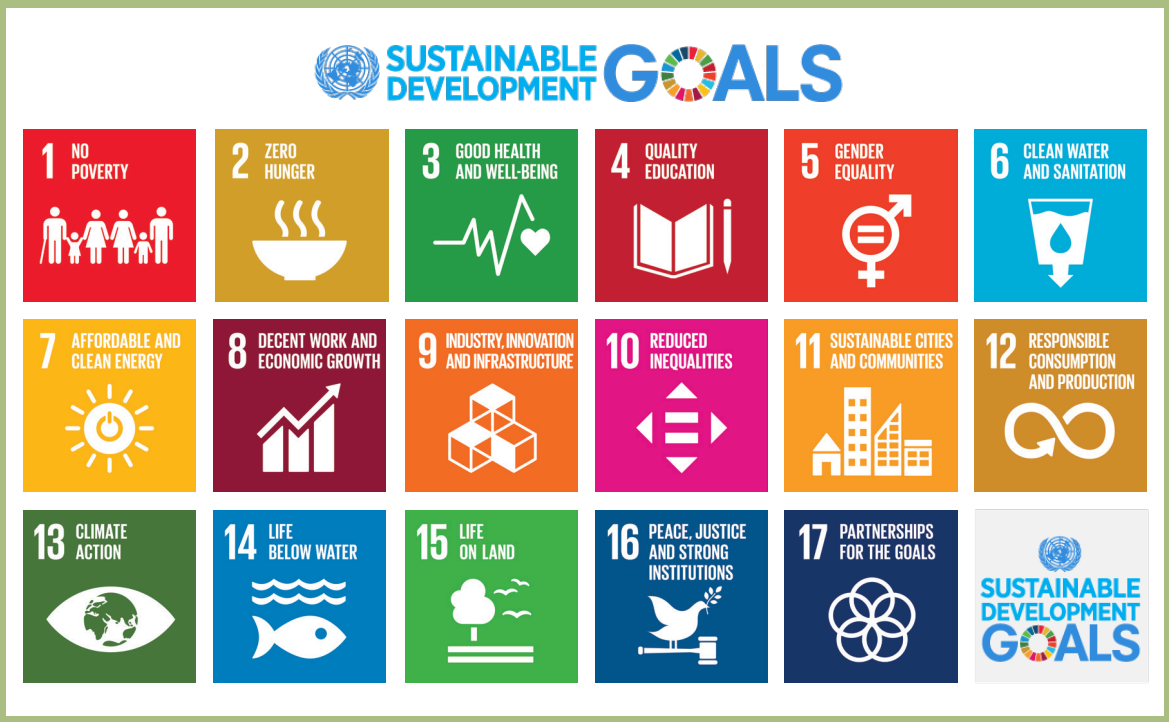
Suchart Daengpayon, Conservationist, Birdwatching Leader of Khok Kham Community





Epilogue

This process of sustainable conservation is one of the key approaches in addition to advocacy and raising public awareness among local communities, government and academic sector. All stakeholders should play their role in supporting locals to drive conservation efforts. Finding a suitable model community as a case study is also important in order to encourage other communities to be aware of the importance of critically-endangered flora and fauna like the Eastern Sarus Crane, Spoon-Billed Sandpiper, Water Onion, and other rare species in their communities in line with the Sustainable Development Goals (SDGs) 1: No Poverty, 5: Gender Equality, 12: Responsible Consumption and Production, 14: Life below Water, 15: Life on Land, and 17: Partnerships for the Goals. ■



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