

A DAY IN THE LIFE IN CAMBODIA

Spring 2024



INTRODUCTION

The School for Field Studies aims to transform study-abroad experiences through field-based learning and research. It allows undergraduate students to explore the social and ecological dimensions of complex environmental problems. The program is based on a rigorous academic curriculum but also offers off-the-beaten-track learning experiences—another type of classroom, as the saying goes!

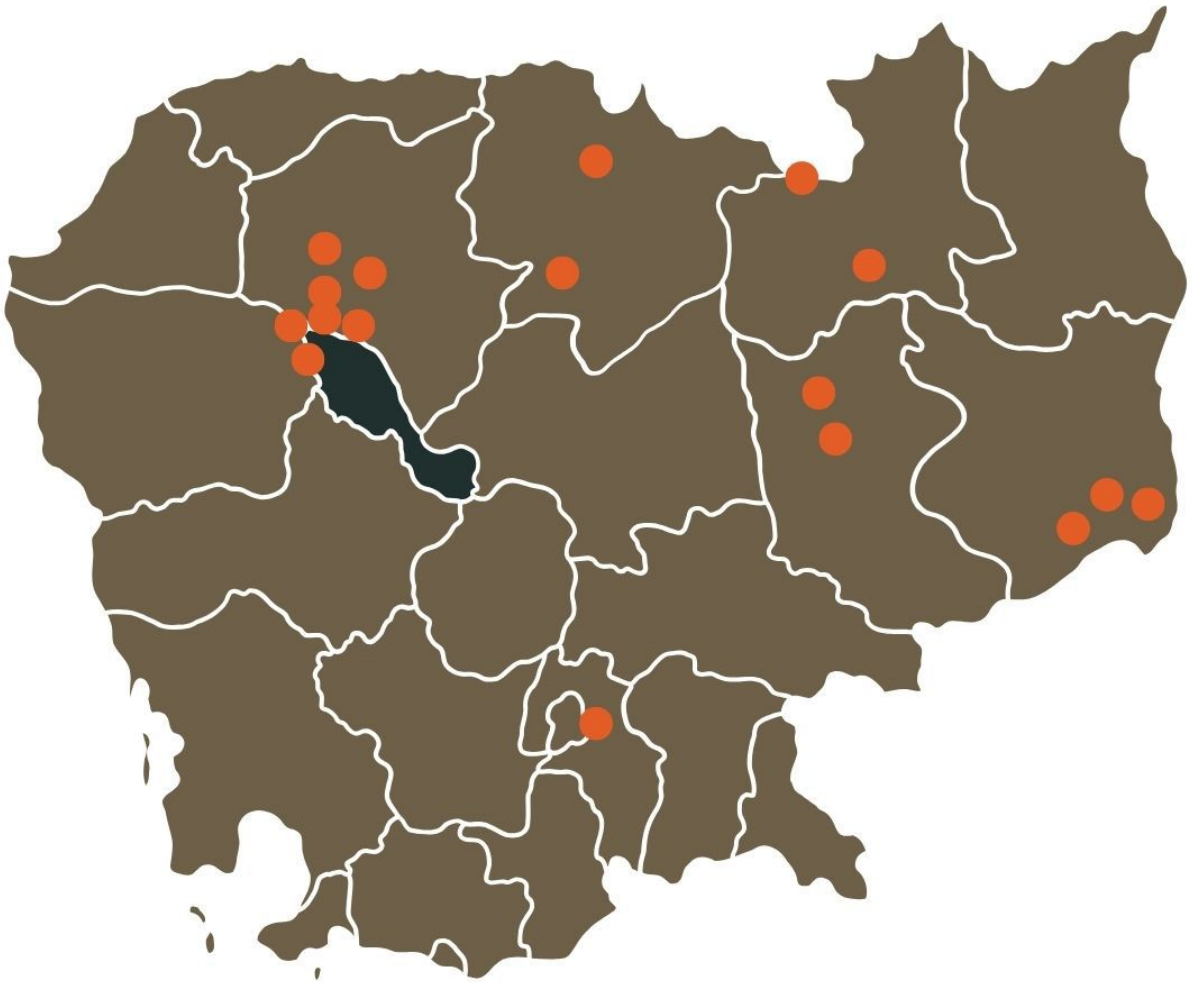
In Cambodia, the Center for Environmental Justice and Mekong Ecologies is based in Siem Reap. The students learn about nature conservation, adaptive management, and the struggles of rural communities to maintain functioning social-ecological systems in a context of unprecedented environmental transformations, uneven development, and authoritarian governance.

Tomorrow, we will welcome the new Spring 2024 cohort of 19 students. Throughout the semester, which lasts from February to May, I will post short stories to give a feel of what we learn and do with the students: lectures, field exercises, directed research projects, etc.

- Jean-Christophe Diepart, PhD.

The document includes various illustrative photos, some of which were taken during semesters other than Spring 2024.

VISITED AREAS OF CAMBODIA

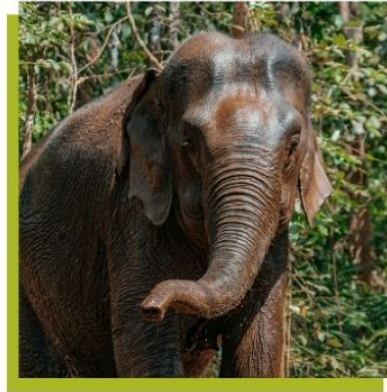


- Pagoda, Shrine and Royal Gardens
- Kbal Spean, Angkor Centre for Conservation of Biodiversity
- Angkor Wat and other temples
- Phnom Kulen
- Community Forestry | Prey Kbal Teuk
- Aquarium
- Phnom Tnout and BeTreed
- Brome
- Preak Romkel Dam
- Lower Se San II Dam
- Koh Pdao
- Kampi
- Elephant Valley Project
- Lao Ka and Pu Trom Village
- Pu Lu Village
- Phnom Penh
- Prek Toal Village and ornithological reserve
- Phnom Kraom

THE CENTER FOR ENVIRONMENTAL JUSTICE AND MEKONG ECOLOGIES

in Siem Reap





The Spring 2024 cohort has arrived. The academic program has started after all the necessary briefings and Health & Wellness check-ins. Until the end of March, the program is organized around 4 interconnected courses:

- Culture and Language (30h) introduces the students to the history of Cambodia, its traditions, and cultural identity (Coordination: Sophal Nguon, SFS Cambodia Center Director)
- Conservation Sciences (60h) dives into key ecological concepts and approaches to identify and protect fauna & flora (Coordination: Megan English, Faculty)
- Ethics and Development (60h) looks into the political ecology of land and natural resources governance in Cambodia (Coordination: Tim Frewer, Faculty).
- Ecosystems and Livelihoods (60h) explores the transformations of human-nature relations in Cambodia's agrarian, forest, and wetland resource systems (Coordination: Jean-Christophe Diepart, Faculty).

ENGAGED GREEN BUDDHISM

On Wednesday, February 7th, the students and some faculty members headed to Wat Damnak Pagoda, a famous Buddhist temple and one of the teaching monasteries in Siem Reap.

We had a chance to meet with Venerable Nan, who introduced the students to some important principles of Buddhist philosophy. Venerable Nan explains how, in the Buddhist tradition, all processes and forms of life are interdependent.

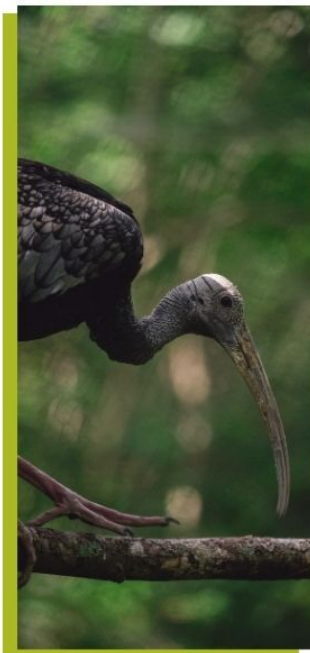
Humans are fundamentally embedded in nature; our everyday practices and concrete actions nurture our relations with the environment. He went on to explain the four immeasurable virtues that can guide these practices: loving-kindness (metta), compassion (karuna), sympathetic joy (mudita), and equanimity (upekkha).



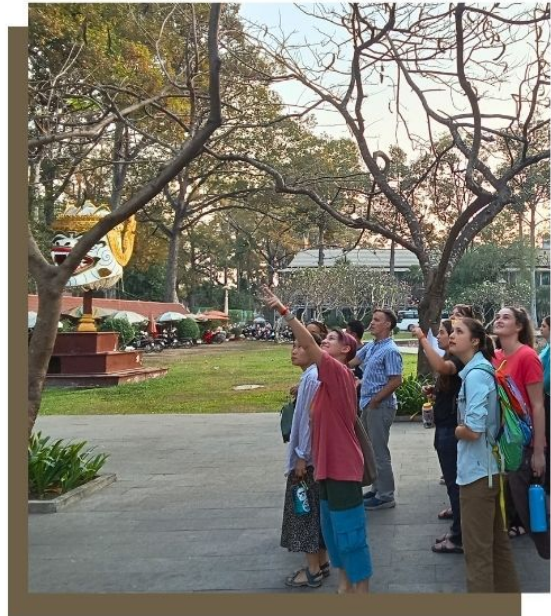
FOREST ECOSYSTEMS AND THE CHALLENGES OF BIODIVERSITY CONSERVATION

After lectures on Cambodian forest ecosystems, the cohort took a guided eco-cultural walk to explore the semi-evergreen forest around Kbal Spean, an archaeological site on the southwest slopes of Phnom Kulen National Park. The site is home to spectacular carving formations of the riverbed and banks (Sandstone of the Middle Jurassic, 174- 163 Ma).

This first field excursion was also connected to the Conservation Science class. The students visited the Angkor Centre for Conservation of Biodiversity, a partner organization of SFS. We learned about the in-situ and ex-situ conservation strategies for endangered species and animals rescued from the illegal wildlife trade, e.g. Pileated Gibbon (*Hylobates pileatus*), Silvered Langur (*Trachypithecus germaini*), or Malayan Pangolin (*Manis javanica*).



BAT ECOLOGY AND SURVEYING TECHNIQUES



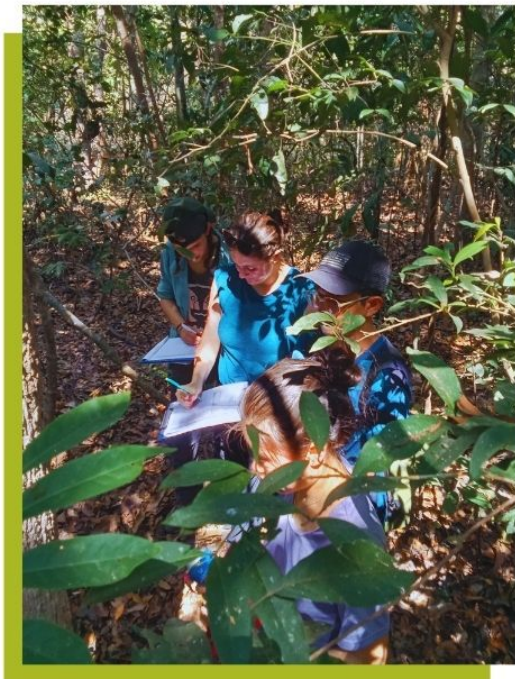
Dr Neil Furey - affectionately called the Batman by the students - stepped into the SFS arena to give a class and tutorials on bat ecology and surveying techniques. Neil presented the extraordinary diversity and adaptation of bats to their environment as revealed through their body design, flight capacities, roost types, foraging strategies, echo-location/call structure, etc. He also discussed important ecosystem services bats provide in Cambodia such as bio-control of insect pests, production of high-quality fertilizers, seeds dispersal, pollination, or ecotourism. He drew interesting parallels between bat habitats (mainly in caves found within karst formed from limestone) and cultural practices or Theravada Buddhism ceremonies that might pose certain challenges for bat conservation in the region.

During two outdoor sessions, students observed Lyle's flying fox (*Pteropus lylei*), a fruit bat found in the Royal Gardens at the centre of Siem Reap town. They learned several counting methods (departure or direct count) and later used the data collected to conduct descriptive statistical analyses in class.

FROM PHNOM KULEN TO THE 'HEADWATER FOREST'

On the 19th and 20th of February, the cohort headed to Preah Jayavarman-Norodom Phnom Kulen, a national park with major symbolic importance for Cambodia as it marks the birthplace of the ancient Khmer Empire, i.e when King Jayavarman II proclaimed independence from Java in 802 CE. The students met with national park authorities (Ministry of Environment) and witnessed waste management challenges within the park. They also discovered a diversity of livelihood activities and conservation efforts supported by the Archeology and Development Foundation: eco-tourism, traditional blacksmiths and weavers, a tree nursery run by a primary school, an agroecology initiative ... We all spent the night in a homestay on the top of the mountain.

Traveling down from Phnom Kulen, the group stopped at Tbeng Lech village and spent the day at Prey Kbal Teuk - the Headwater Forest - one of the first Community Forests (CF) established in Cambodia. We conducted a focus group discussion with the CF management committee to learn about the history of the CF, the presence of important forest spirits (Neak Ta), the reliance of local livelihoods on forest products (timber and non-timber), and the success and challenges of their long-enduring forest management and protection efforts.



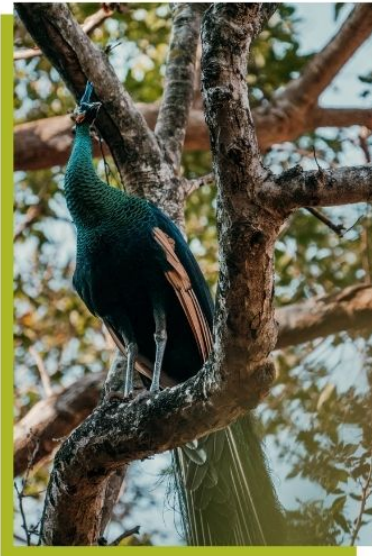
After lunch, we walked into the forest with CF committee members to conduct a forest inventory. We aimed to understand the ecology of this semi-evergreen forest and measure the key characteristics of trees and the abundance of other forest products. Back at the center, the student will ID every species inventoried, calculate the timber volume, and present all information collected on the day in a creative poster.

GUEST LECTURES

Last week, the Cambodian SFS center hosted two great guest lectures. On Wednesday 21, Eric Guerin introduced the students to wild honeybee conservation in Cambodia. He briefly presented the ecology, habitats, comb structure as well as swarming and migration strategies of the 4 main wild honeybees (*Apis dorsata* or giant honeybee, the *Apis florea* or the dwarf Asian honeybee, the Asian hive-bee (*Apis cerana*), the stingless bees *Apis andreniformis*). After emphasizing their importance for pollination (especially for flooded forests or cross-pollinating crops like cashew), he reviewed their main conservation challenges: the coupling of deforestation (habitat loss) and agricultural intensification (i.e mono-cropping and the use of systemic insecticides like neonicotinoids), the competition between beekeepers, unsustainable honey harvest, and change in plant phenology associated with changing climate patterns.

On Friday 23, Prof. Trần Sỹ Nam talked about agricultural development and food security issues in the Vietnamese Mekong Delta. He presented the ins and outs of environmental transformations in the delta, including shifting water in other river basins, land cover change, urbanization/industrialization, saline intrusion, and land subsidence. Against this backdrop, he sketched the long-enduring efforts by the Vietnamese State and communities to contain and manage water in the delta, primarily through the full- dyke and semi-dyke systems but increasingly by developing more diversified and integrated production systems.

PHNOM TNOUT WILDLIFE SANCTUARY



The whole team traveled for a first long trip to the North. We first stopped at Phnom Tnout (BeTreed), a relatively new wildlife sanctuary in Cambodia. The student seized the opportunity to explore the Dry Dipterocarp Forest of the Northern Plain landscape.

We took a guided walk through a mosaic of dry deciduous and semi-evergreen forests and reached a Trapeang (seasonal pond) that plays an important role as a water source for wild animals. As such, it is crucial to help maintain the biodiversity of these ecosystems. Back to BeTreed, Megan English explained how to use and set up cameras and cage traps for wildlife surveys. After a night walk watching nocturnal wildlife and a good night's sleep in stilt houses, the students conducted bird monitoring using different transect techniques.

Before leaving, we had a chance to discuss the area with Ben and Sharyn, who have been living there since 2012. They talked very openly about their fortress conservation efforts, success, and tensions with local communities that have contrasting views on how the area should be managed.

THE PREY PREAH ROKA COMMUNITY FORESTRY NETWORK



After BeTreed, we spent the day and night in Brome, a village of ethnic Kuy people in Preah Vihear province. We were hosted by the Prey Preah Roka Community Forestry Network, with which Tim has a long-term engagement. The network representatives told us about their struggles with a Chinese Company that grabbed their land in 2012 to start an ill-conceived large-scale sugar cane production and processing plant (for the European Union market under the 'Everything But Arms' trade scheme).



They explain unsuccessful attempts to file complaints to local and sub-national authorities, the parliament and senate, the Chinese embassy, the EU, and the United Nations. In a very unlevel playing field and the absence of proper grievance mechanisms, their everyday resistance against the company was the most effective strategy to regain access to their land. The community network is also struggling to maintain access to the Prey Preah Roka forest area, which is vital to local livelihoods. "Prey Preah Roka is the land of our ancestors, but it is also our marketplace and bank", they said!

However, despite countless efforts to patrol and protect the forest against illegal logging, they are not considered legitimized guardians of the forest. The Ministry of Environment wants to confine them to managing a small Community Protected Area, but their claim is much more ambitious. After this deep discussion, we visited farmland (rice, cassava, and cashew) and a spiritual forest (Prey Neak Ta).

HYDRO-POWER DAMS AND RURAL COMMUNITIES

After Preah Vihear, we headed to Steung Treng province for lectures, discussions, and visits to hydropower dams and impacted communities. We first stopped in Preah Rumkel village at the Cambodian-Lao border, a few meters away from the controversial Don Sanhong dam (260 MW). We met with Mr Phoy Vannak, the lead of the local community-based ecotourism initiative. He explained how the blasting of rock during the dam construction has decimated the remaining population of Irrawaddy dolphins living in surrounding deep pools. The extinction of the dolphin population has been a major blow to the development of ecotourism in the area and the local livelihoods depending on it. He also explained how the water flow change in the rainy and dry seasons caused by the dam has altered the flooded forest ecosystems downstream.

The next day, we visited the Lower Se San II hydropower dam, which is, to date, the largest in Cambodia (400 MW). It is operated through a 45-year Build-Operate-Transfer concession by the Chinese Huaneng Group, Vietnam Electricity, and the Royal Group of Cambodia. After a visit to the main infrastructures and a discussion with some Chinese engineers, we looked at the fish ladder and new village areas where communities were resettled.



The highlight was a discussion with some villagers of Srae Kor and Kbal Romeas villages who deplored the absence of meaningful consultation with local communities and argued that the compensations offered to them by the government and dam operators were unreasonable.

As a result, they refused to move from their villages and decided to resist until their requests were met.

KOH PDAO: AN ISLAND ON THE MEKONG

After visiting the dams, the group traveled downstream along the Mekong and settled for 2 days in Koh Pdao to discover local livelihoods and natural resources management. The local ecotourism association and supporting organization, Cambodian Rural Development Team Organization, provided interesting insights about the emergence of community-based ecotourism activities, the services they provided to tourists, and the mechanisms mobilized to share benefits between the families involved. We also had a chance to meet with a river guard leading a patrol team to enhance the conservation of the Irrawaddy dolphin.



Among other things, he explains the dilemmas of dealing with people fishing for their subsistence but using illegal gear. We also had a chance to discuss with local farmers, who explained how land shortages on the island drive labour migration and the clearance of forest on the other side of the river in areas delineated as agricultural concessions and protected areas. Later, we biked to visit a shrine dedicated to local spirits (Neak Ta Trapeang Thom) and spent the nights in homestays. On the last day, we kayaked through the flooded forest to reach deep pools that some Irrawaddy dolphin communities called home. Perfect conditions to observe them in their natural habitat without noise disturbance!



LAND STRUGGLES OF BUNONG PEOPLE IN MONDUL KIRI PROVINCE

The cohort spent a week in Mondul Kiri province learning about Bunong history and Indigenous Peoples's rights to land and natural resources. In Lao Ka, Pu Trom and Srae Y villages we discussed with community representatives and members of the Bunong People Network. They carefully described their traditional land use practices (swidden agriculture and extensive livestock as well as fishing, hunting, and collection of diverse non-timber forest products) and how these activities are managed under customary, local, and consensus-based tenure arrangements. They further explained how agricultural and mining concessions, intensified Protected Areas management, private land titling, boom crops, and indebtedness have threatened access to and control over land and forest resources in the past 2 decades, in ways that make the Indigenous Communal Land Titling process tedious or impossible. At the end of the week, we headed to Busra, close to the Vietnamese border. In Pu Lu village, three representatives of the indigenous community described their long-enduring struggles with two rubber companies that received an ELC agreement in 2008 and expropriated a large number of smallholder farmers of Bu Sra commune. They explained how the conflicts unfolded, and the different conflict resolution mechanisms activated to address the grievances, including a court case filed against Vincent Bolloré - one of Socfin's shareholders - at the Tribunal of Commerce in Paris. We walked across the village farmland and rubber plantations and met with farmers on the way to see and understand the livelihood impacts of this land grab.



THE ELEPHANT VALLEY PROJECT IN MONDUL KIRI PROVINCE



Students had the opportunity to visit the Elephant Valley Project (EVP) in Monduliri, where elephants previously used for riding, logging, and the entertainment industry are given the chance to roam the forest foraging each day under the care of their Bunong mahout, the traditional elephant carers of Cambodia. Students had lectures on elephant ecology, conservation, and welfare by Dr Megan English, SFS faculty member and member of the IUCN Asian Elephant Specialist Group.

While at EVP, students were taught how to conduct a health assessment, including determining body condition scores, assessing any injuries, and learning about required treatments. Behavioral observations were made using interval sampling to understand the activity budget of the elephants to compare their behavior to wild elephants and elephants in a poorer welfare environment such as a riding camp, ultimately the goal is for these elephants to continue to display more wild behaviors the longer they have been at EVP. The indigenous Bunong community from Putrom village works alongside EVP and benefits from the ecotourism opportunity.

TONLE SAP FLOODED FOREST AND BIRD-WATCHING AT PREK TOAL

As an introduction to the Tonle Sap Lake and floodplain ecology, the SFS students sailed to Prek Toal, a sanctuary internationally recognized for its botanical diversity and the endangered bird colonies that nest there. Prek Toal's ornithological reserve offers a unique bird-watching experience. Migratory waterbirds feeding on the abundance of fish and aquatic life of the flooded forest co-habit in mixed colonies with forest birds that feed on insects, giving the area a unique diversity.

Mr. Sun Visal – a Mekong Conservation Hero – instructed the students to monitor birds through continuous sampling. In addition to common bird species such as egrets, herons, or cormorants, we also enjoyed observing endangered species such as the fish-eagle, painted stork, greater and lesser adjutant, spot-billed pelicans, and the Asian openbill. Breathtaking! At Prek Toal's floating village, we discovered how local communities have adapted to living on water. We were hosted by OSMOSE Tonle Sap, a community-based association that runs an eco-tourism program, provides environmental education for local children, and supports community development activities.



FAMILY-SCALE FISHERIES



Small-scale fishermen living in the wetlands surrounding the Tonle Sap Great Lake are under pressure. Their livelihoods face multiple issues, such as the degradation of fish habitat due to the expansion of agricultural areas into the flooded forest, unregulated fisheries after fishing lot cancellation, and changes in the annual flood patterns... These have resulted in a sharp decline in the individual catch. As part of the lecture series on the Tonle Sap fisheries, Dr. Tim Frewer organized and facilitated a series of interviews to understand how different families have adapted to this decline. Interviews were conducted along a virtual transect line from Siem Reap town toward the Lake.

We first met with families who resettled from the Tonle Sap Lake to wetlands close to Siem Reap City and started a new life as golden apple snails (*Pomacea canaliculata*) collectors and traders. The students then met with a Cham family who stopped fishing to become boat tour drivers in the tourism sector. Further south, we discussed with two middle-scale fishermen to learn how they diversify their fishing grounds and gears depending on seasonal variations in water level and changes in fish assemblages. The students also talked with a fish trader who explained how she organizes the commercialization of two important fishes: Striped snakehead - *Channa striata* (trei roh) and Gray eel-catfish - *Plo-tosus canius* (trei andeng).

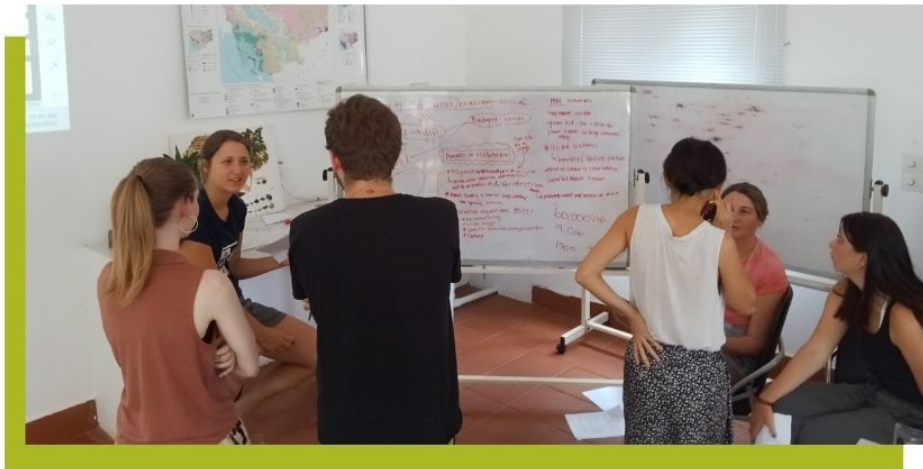
AN INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEM

Throughout the semester, Tim and J.-C. organized a series of tutorials and field exercises on Geographic Information Systems (GIS). We introduced the students to core concepts in GIS and key tools for manipulating, geoprocessing, and editing vector and raster data sets using QGIS.

In the field, the students had a chance to use drone technology and take aerial pictures. Back in the classroom, they learned how to geo-reference these drone images. They also have an opportunity to conduct a land survey with a mobile mapping application on Koh Pdao Island and use the data collected to produce a simple land cover map of the area.



MULTI-STAKEHOLDER ENVIRONMENTAL NEGOTIATIONS



A few weeks ago, students embarked on a role-play exercise based on a fictitious - yet realistic - development scenario about a new Biodiversity Conservation Corridor in Northeast Cambodia. The “proposed” corridor spans a large area of dry deciduous forests and farmlands used by local indigenous groups for activities essential to their livelihoods. The students were assigned roles of various stakeholders who animate the proposed corridor project and have contrasting views on how it should be managed (ministries, development banks, local communities, local NGOs, conservation groups, agricultural investors, etc.). They were tasked to develop a viewpoint on the development of the biodiversity corridor and defend it in a multi-stakeholder forum.

Each student did some desk research to understand the strategies, values, and discourses mobilized by the stakeholders they ‘play’, and then they formed alliances with like-minded actors. Each stakeholder group then negotiated with other parties to figure out the specific implementation of the corridor: the actual size of the area, how the social and environmental impact assessment should be conducted, how existing land rights should be identified and secured, the level compensation in case of expropriation, etc.

Though based on a fictitious scenario, this day-long exercise allowed the student to embrace the complexity of such a multi-stakeholder forum and realize the unlevelled playing field in which it takes place.

DIRECT RESEARCH PROJECTS

The semester is slowly phasing out. Yesterday, the students had the chance to present the research project they conducted for about 4 weeks. This time, most of the projects were organized in the Tonle Sap flood plain as a collective effort to understand how environmental transformations have affected this fragile social-ecological system and the livelihood of people who depend on it.

Congratulations to all the students on these important achievements:

- Isabelle Larson and Grace Winkelman: Soil in the Tonle Sap: Assessing Nutrients, pH, and Microbial Communities
- Liberty Chesney and Jordan Durst: Assessing Water Quality Parameters and Macroin- vertebrate Bioindicators Near Kampong Khleang Commune, Tonle Sap Lake
- Kaitlin Cowan, Erica Erdenesanaa and Nathan Parr: Land Use and Land Cover Change in Kampong Khleang and Surrounding Areas
- Camille Newman and Eliza Sullivan: Livelihood Diversification Strategies of Two Villages in the Tonlé Sap Floodplain: Cheay Chet and Preaek Sramaoch
- Whitney Byington, Jolina Rich, and Alyna Sigel: Survivalist Fishers of the Tonle Sap
- Mayu Joiner: Filming the Survivalist Fishers of the Tonle Sap
- Anna Hoehlein, Sara Reiss, Julia Willey: Strike a pose: A camera trap survey analyzing the impact of domestic water buffalo (*Bubalus bubalis*) reintroduction on species richness and relative abundance across seasonal ponds in Cambodia's Northern Plains

CONTACT DETAILS



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