

**ENV 3102**

**Environmental Challenges: Asian Case Studies II**

**2015 UPDATE**

“A society grows great when old men plant trees whose shade they know they shall never sit in.” - Greek proverb



# 1. FOREWORD

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Among all courses offered at NUS, ENV 3102 stands out in one fundamental way – as the only mandatory overseas field course. Every year, in Special Term 1, the entire third-year cohort of the BES programme leaves Singapore to learn about environmental challenges and their solutions (primarily community-based) in another ASEAN nation. In this way, the theoretical knowledge that our students have gained in their coursework to date is given real-world context.

For many, if not most students, ENV 3102 takes them far outside their comfort zone. Some are traveling without their families for the first time, and many deal with homesickness at some point. They are made to carry out projects in groups composed of classmates with whom most have not collaborated before. Virtually every one of them, at some point, does something he or she has never done, be it snorkeling, hiking, handling soil or even just visiting a developing nation. In addition, they are living communally in conditions vastly different to those they are used to. Any one of these factors on its own represents a challenge, but our students also face long hours and a heavy workload all while learning and applying new skills related to ecological and social science field work.

Thus, in many ways, ENV 3102 allows BES students to demonstrate exactly what they are made of. In 2014, when it was offered for the first time, it became quite clear that the substance in question is pure gold. Despite the various hiccups that one might expect in any inaugural offering of a field course, our students did not just cope – they rose to every challenge presented to them. This was evident in the high quality of work that they produced as well as in their feedback.

Some of that feedback and work was showcased in a thorough report (Report on a Field Course 2014) prepared following the completion of the course. That document also provided all the basic information about the course, the: objectives, learning outcomes, themes, pedagogical methodology, assessments, field site and activities, as well as partnerships with local institutions. Therefore, it can (and should) be consulted on an ongoing basis in order to understand what ENV 3102 is fundamentally all about.

As for the current document, it serves as a continuation of that first report – providing new information, including aspects not previously covered, relevant updates (from the preparation phase to delivery in 2015), as well as current plans for future offerings. Thus, over the years, these update reports will add to a cohesive narrative that tells the story of ENV 3102.



**Joanna Coleman, PhD**

Lecturer and ENV 3102 Coordinator

## 2. LOCATION AND MAIN PARTNERSHIPS

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In 2013, we (BES Programme Committee) decided to hold the field course in the Visayas region of the Philippines, for a number of reasons (see Report on a Field Course, section 1). The initial plan was to spend one week on the island of Leyte, hosted by Visayas State University (VSU), and one week on Bohol, hosted by Holy Name University (HNU). During our time on Leyte, we also intended to spend two or three days in the Camotes Islands, specifically in Pilar, which, with its numerous community-based, environmental initiatives and innovative ways of implementing them, is one of the most forward-thinking municipalities in the country. However, because of the devastating effects of Typhoon Haiyan (Yolanda), we were forced to change our plans and shift the entire field trip to the island of Bohol.

In the hopes of resuming our original plan for the second iteration of ENV 3102, a recce trip was made in November 2014 with the goal of assessing the feasibility of returning to Leyte and Pilar. One year after the typhoon, a day trip to Tacloban City, which was especially hard-hit, revealed that the situation had stabilised, but remained fragile. Although the official death toll stands at around 6,300, many locals dispute that figure and say it should be at least doubled. Many people were still in temporary housing, in conditions scarcely resembling their lives before the typhoon. Even the airport, the only one on the island, was not functioning normally – damage to the runways had not been repaired, and jets were unable to land. Clearly, the recovery is not over and there is still a lot of work to be done. This is further evidenced by the fact that nearly all hotels and other travel accommodations have remained fully booked by all the foreign aid workers who have continued to assist with the various relief efforts.

**Image from Tacloban City, November 2014**

Typhoon Haiyan, or Yolanda (as it was known in the Philippines) was one of the most powerful tropical storms on record anywhere. It struck the Philippines on 7 November, 2013, first making landfall on Eastern Samar. The neighbouring island of Leyte and several other islands in the Eastern Visayas received catastrophic damage. One year later, in Tacloban City, the capital of Leyte, many of the large ships that were washed ashore still dotted the landscape, some encroaching right onto main roads. Many of those fortunate enough to escape with their lives were still living in tent cities, one of which is visible in the background here. The reconstruction effort is hampered by, among other things, an apparent lack of consultation with the people and misdirection of funds. The impacts of this storm will clearly be felt for years to come.



Compared to the eastern part of the island, the west coast, where VSU is located, was much less affected by the typhoon. On the campus, many trees were damaged, as were a few buildings, but life had effectively returned to normal, thus making it possible to accommodate our group. Also, it seemed that bringing our students to visit Tacloban and see the human and environmental impact of this unprecedented natural disaster would be a valuable part of the learning journey.

During the recce trip, it was possible to visit certain sites and ascertain that they could be very suitable locations for fieldwork by our students in future. One of these is the VSU demo farm, which would be perfect for a study of rainforestation as a method of forest rehabilitation (see 2014 Report, p. 5). VSU was running a number of interesting experiments, investigating topics such as the effects of different shading and fertilisation regimes on growth of various native trees, including dipterocarps, all of which would be relevant and interesting to our students. In addition, the demo forest is very conducive to fieldwork because it is easily accessible on foot and the terrain is gently sloping.



#### ***Gulayan sa Paaralan* farm on Apid Island**

Cuatro Islas, off the west coast of Leyte, presents a great comparison of the effectiveness of two marine protected areas (MPAs: see Report on a Field Course, section 2), from ecological and social science perspectives. One MPA is accessible from the shore of Mahaba Island, which receives tourists and where shell-collecting is still practiced. The other (with one of the healthiest coral reefs in the Philippines) is off the coast of Apid Island, with its small, environmentally-minded community. *Gulayan sa Paaralan* (as in this photo) is a sub programme of the National Greening Programme. It promotes the production and consumption of vegetables to improve the health and wellbeing of children.

Despite the above, we ultimately decided not to return to Leyte for ENV 3102 (at least not this year) because the recce trip was not as productive as it should have been. Specifically, several visits to assess key sites and/or activities for the course did not work out, partly because our main contact people were unexpectedly away, and so were relatively unable to assist with logistics. Also, according to the mayor of Pilar, the entire municipality remained in a state of devastation, and very little recovery, if any had taken place, making it impossible to receive our group for the time being. Finally, in December, 2014, another powerful storm, Typhoon Hagupit (known as Ruby in the Philippines), slammed into Samar and the east coast of Leyte, bringing the recovery effort back even further and causing VSU to advise us that holding ENV 3102 in Leyte this year would be ill-advised.

We therefore held the 2015 field course in Bohol, but with a fairly major change. Last year, our students were joined by ten of their local peers, i.e., final-year biology students from HNU, a facet of ENV 3102 whose value cannot be overstated. It could reasonably be considered almost integral to the overall experience, as evidenced by its impact on both groups of students (see 2014 Report, p. 4). Therefore, we had every intention of repeating this practice every year, but unfortunately, we could not do so in 2015 for two reasons.

One, there were no senior biology students at HNU (perhaps due to an intake abnormality). Two, there was a nationwide moratorium on all educational field trips – a reaction to two recent, fatal incidents. In February 2013, an accident involving a bus carrying faculty and students from Marinduque State College killed seven of its passengers. At that time, the Commission on Higher Education (CHED) was pressured to impose a ban on field trips, but did not. Then, in August 2014, seven students from Bulacan State University drowned in a river after being swept away by a flash flood. It was after this second accident that CHED put the moratorium in place, a situation that still has not changed. The lack of local students did not go unnoticed by our students, some of whom expressed the view that they sometimes felt more like tourists than students and that it would be better to integrate local students into the course.

Finally, it is important to acknowledge the key role played by Bohol Biodiversity Complex (BBC), which should probably be considered an institutional partner by now. BBC is a consortium of several agencies, including the provincial government (Bohol Environment Management Office, BEMO), Bohol Island State University (BISU) and the Soil and Water Conservation Foundation (SWCF), among others. It serves as a clearing house and training centre for biodiversity education and research, and promotes a number of environmental initiatives. Last year, our students spent two days and two nights at BBC, where they participated in several activities, including assessing rainforestation and learning about every phase of it, from the collection of wildlings (seedlings from the forest) to the planting of saplings. Moreover, this year once again, BBC and its personnel helped organise many activities in other locations and on other days, including providing guiding services and logistical support, and helping to make this trip possible.

		
<b>Restituto Piollo</b> , Forester-in-charge, talks to BES students, photo by Benjamin Ho	<b>William Granert</b> , Executive Director of SWCF is interviewed by BES students	<b>Jasmin Tumilap</b> , SWCF Training Centre Coordinator, plants a tree

### 3. PEOPLE

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The most important people involved with ENV 3102 are, naturally, our students. After all, this course is designed for them. Also, the fact that the group dynamic is so positive is a testament to their ability to work well together and have fun in spite of (or maybe because of) all their differences. Like any class, each BES cohort is composed of some individuals who are outspoken while others are more introverted, some who are serious while others are often cracking jokes, and some individuals who are incredibly creative (and perhaps a little less attentive) while others are more meticulous. It is this ever-changing combination of traits that helps keep this course interesting and fresh from one year to the next. To list every student and his or her unique contribution is beyond the scope of this report, but this section would be remiss if it did not start by paying homage to our students, 46 of whom participated this year.



As for the NUS teaching staff, the two constants are the course coordinator, Dr Joanna Coleman, and co-lecturer, Dr Jesse Hastings. Jesse is a conservation social scientist with an impressive body of experience, notably work with MPAs, conservation programs and biodiversity policy, and considerable work for NGOs in developed and developing nations. He is also very well-traveled, having set foot on every continent! His diverse background, easygoing nature, sense of humour and willingness to try anything make him a hit with the students.



Joanna is a wildlife ecologist and conservation biologist, whose area of interest is urban animals in general and bats in particular. She is also a passionate teacher, having been involved in education for more than 15 years, and one thing her students know for certain is that she genuinely cares about them. Like Jesse, she is well-traveled (though not to the same extent) and adventurous.

Together, they make quite a team. While Jesse is the go-to person for all things related to social science, Joanna handles the biology and ecology side of the equation. Interestingly, some of their impact on our students may lie not as much in the ‘official’ teaching as in inadvertently imparted life lessons, as evidenced from this quote from a field diary (see 2014 Report, section 4):

*Also, before this, whenever I thought about what kind of job I would want in the future, I only thought of jobs within Singapore, mostly so I can remain close to my family. Yet, I feel like this trip to the Philippines opened my mind to the possibility of working overseas in the future. Looking at Dr. Coleman and Dr. Hastings, who are so well-travelled and seem to have a whale of a time working overseas, I feel like that is what I might want for myself in the future. – TAN, Jia Xiu*

To supervise and guide such a large class, our lecturers are supported by teaching assistants (TAs), and this year, we were finally able to have members of the previous cohort fulfil this role, representing a major improvement to the course. The BES programme fosters a spirit of cross-cohort communication and cooperation that makes it fairly unique among degree programmes. Thus, for our students, having familiar seniors as their TAs gives them, if nothing else, a sense of familiarity and comfort. And, after all, who better to accompany them than people who were in their shoes exactly one year ago?

We hired four seniors: Mr ANG Nicholas Teck Choon, Ms CHUA Xin Yi, Mr CHUA Yuan Cheng, and Ms LEE Kai Ling Kaylene, as well as two local TAs: Ms Reizl Jose and Mr Wilbert Aureo. Reizl is a professor and research biologist at BISU and we first met her last year (see 2014 Report, p. 18). Wilbert is completing his MSc. at VSU, where he also works as a TA. Together, these six people were the perfect blend, and feedback from this year's students about their TAs was generally very positive. With these eight staff members, each project group (see 2014 Report, section 4) had its own, dedicated supervisor. However, what the TAs contribute goes way beyond supervision – here is one example:

*Another learning point that I found valuable was from my TA, Nicholas, who shared with me to talk to interview subjects like they are human. I do not think Nicholas was trying to say that I talked to them inhumanly, but rather his advice was to have a genuine conversation with them, demonstrating interest in them not just because they are my interview subjects, but also because they are unique individuals that are worth getting to know. His advice resonated with me, and made me realize that perhaps is the key to building rapport with strangers, something I hope to work on in the future.* – field diary of CAI Sara Weiling

### Teaching assistants, 2015

Clockwise, from top left:

**Reizl Jose**, in centre, with two of her students to either side of her

**CHUA Xin Yi** in her typical pose

**LEE Kai Ling Kaylene**, planting her second tree at BBC

**ANG Nicholas Teck Choon**, in foreground, spotting a tarsier (reacting just like last year), with student in background

**Wilbert Aureo**, carrying one of his students while two others in background

**CHUA Yuan Cheng**, at left, with two students to his left



Last, but by no means least, Dr Corazon (Cora) Batoy must be acknowledged. Cora has been our main contact at HNU from the beginning, tirelessly accompanying us every step of the way throughout the trip and helping with the planning. She has negotiated deals on our behalf and, along with all the other local people, helped with translation when necessary. Her vitality, sense of humour, knowledge and no-nonsense attitude win her the respect of the entire team and our students, as evidenced by these two quotes, from two students' field diaries:

*Dr Batoy sees things that we do not see. Her comments always made me go "Ohhhhhh". Her wealth of knowledge and ability to think critically with respect to the local context is something I don't even think I can do in the Singaporean context despite living here my entire life. While some might find her harsh, I was just fascinated with her insights, such as when she mentioned that parrot fishes are a source of food for some people, and that the diving eco-tourism group had neglected that fact and relegated all those who consume them to be practicing unsustainable activities. – CHIN Kimberley*

*Post field work, we were having fun taking videos for the montage at the end, Dr. Batoy showed us the importance of being young at heart. She lives and breathes the fact that growing old doesn't necessarily need to mean growing up and that being able to have fun at the right times is still an important skill to have. She gamely joined us for our pictures and videos, something I really hope I will be up to when I reach her age. – CHAN Yong Kit Samuel*



This year, at the end of trip party, Cora announced her upcoming retirement (December 2015), which came as a surprise given her amazing energy and dedication to teaching. Apparently, having reached the mandatory age of retirement in the Philippines, she has no choice. Although Cora expressed her willingness to continue to be involved with ENV 3102 in whatever capacity possible, we will have to secure a new contact within HNU. While we obviously wish Cora well, it would be untrue to say that this was not a rather unwelcome piece of news for us – she has truly been an incredible friend to BES. For that reason (and so many others), we love her dearly and hope to implicate her in the course in future.

## 4. PLACES

### DAO DIAMOND HOTEL AND RESTAURANT

For the majority of the field trip, Dao Diamond is our home away from home. It is located in Tagbilaran City, which, with its amenities and access to major roads, is an ideal home base. For us, this hotel is the best option because it is the only one that offers dormitory-style accommodations, which helps minimise the budget – although the trip is partially subsidised by the BES programme, the students must pay a sizeable portion of costs.



Not only do we sleep and eat here, but also the hotel provides the facilities and A/V equipment for the various seminars our students receive and for students to work in groups.

Staying at Dao Diamond has an added benefit – it allows us to give back to the community. The hotel is owned and operated by the International Deaf Education Association (IDEA), Philippines, and its profits go to help deaf adults and children on the islands of Bohol and Leyte. The staff is largely deaf, and everyone who works there knows sign language. They are all extremely friendly and consistently deal with our large group and its raucousness, demands and messes with nothing but patience and professionalism. Staying at Dao Diamond lets our students feel good about where some of their money is going and continually proves to be a humbling experience.

Photo taken from <http://www.boholphilippines.info/category/tagbilaran-city-hotels/>



### PANGLAO ISLAND NATURE RESORT (PINR)

About 20 minutes' drive from Dao Diamond, PINR is an idyllic retreat on the small island of Panglao, the main destination for most tourists who visit Bohol because of its white sandy beaches and abundance of dive shops.

Both MPAs that our students survey (Bingag and Tabalong) are within a five-minute boat ride, and the two caves they visit (Hinagdanan and Cambagat) as well as the MPA officials they interview are within walking distance.

Therefore, PINR has been the jumping-off point for all our marine activities, providing us with the rental of boats and snorkeling gear, great food and drinks and use of its pool and other facilities.

## 5. ACTIVITIES

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Last year's iteration of ENV 3102 was 15 days long. With the two-day introductory session and two days spent traveling, that left 11 days for the field portion of the course. This time around, in response to overwhelming feedback from our students, the duration was extended by three days. With this extra time, we were able to add a new activity (mangrove day – see below) and give students more time to prepare for and practice ecological surveys (see below), work on their projects or just use as they pleased (see section 8).

Another change this year was in the pre-field trip period. Last year, the students had two lectures and one tutorial (led by Joanna) within the context of ENV 3101 (prerequisite to this course), toward the end of semester 2. The goals were to introduce them to the field location (the Philippines and Bohol), and to hold a logistical meeting during lectures, and to teach them some of the ecological field techniques they would use overseas during the tutorial. However, torrential rain and a lightning warning during the tutorial made the session somewhat ineffective. In addition, several students felt that the separation between the tutorial and the actual fieldwork (seven weeks) was so long that by the time they had to use the methods, they had difficulty recalling what to do. Finally, it was apparent that last year's cohort lacked an understanding of the theory behind ecological fieldwork – basic concepts such as sampling units, random sampling, indices and scales of diversity, types of transects, etc.

For these reasons, we revamped the preparation phase. Most notably, the tutorial was devoted to: (1) explaining the ENV 3102 assessments, (2) forming project groups (thereby giving students much more time to meet in their groups beforehand as compared to last year, when groups were formed during the introductory session), (3) collecting information about students' individual goals for and fears about the course (thereby allowing us to address issues ahead of time), and (4) teaching them the basics of ecological fieldwork and sampling methods, as well as the principles of and tools used in marine, forest, bird and bat surveys. At this time, students were also made aware that it is appropriate to expect things to go wrong – sometimes very wrong – during fieldwork, especially when doing things for the first time.

Like last year, ENV 3102 began with a two-day introductory session on the NUS campus, with the same objectives, basic topics and format (see 2014 Report, p. 8), but with the addition of a seminar by Prof Dan Friess, from Geography. In preparation for the mangrove day on the itinerary, this talk served to provide background information on the ecology of and methods used to restore mangrove forests, particularly in the Philippines.

Most of last year's activities and field sites were successful in that they allowed students to achieve the learning outcomes, as evidenced by their output. Because there is no sense reinventing the wheel, last year's itinerary was retained, with only those modifications that seemed necessary to make things run more smoothly – these are described below – otherwise, for descriptions of activities, see 2014 Report.

First of all, whereas we had last year's students do real marine surveys on their first full day in the Philippines, this time we brought them to PINR on the first morning, but only to learn the giant stride

technique in the pool and practice snorkeling over a transect in shallow water. Students then spent that afternoon preparing for the actual marine surveys, to be done the following day, with groups whose projects were tied to the marine theme leading the session, i.e., by setting standardised procedures and teaching them to their peers, preparing equipment, etc. This highlights a key feature of ENV 3102 – it mainly involves self-directed learning – staff are present to supervise and offer guidance, but do not tell students what to do or how to do it. This is critical because the entire class participates in the collection of all data, which are then pooled and used by various groups as needed.

Similarly, students had an afternoon and evening to organise themselves for the forest surveys, and adopted the same approach. Two days later, it was time for the real deal, but they had the morning in the Manmade Forest to do dry runs before completing their actual transects in the afternoon. These changes, no doubt combined with the knowledge that last year's cohort was somewhat inefficient when performing surveys for the first time, were extremely helpful. Compared to their seniors, these students performed quite well in the field and, when things did go awry, they were more able to take it in stride.



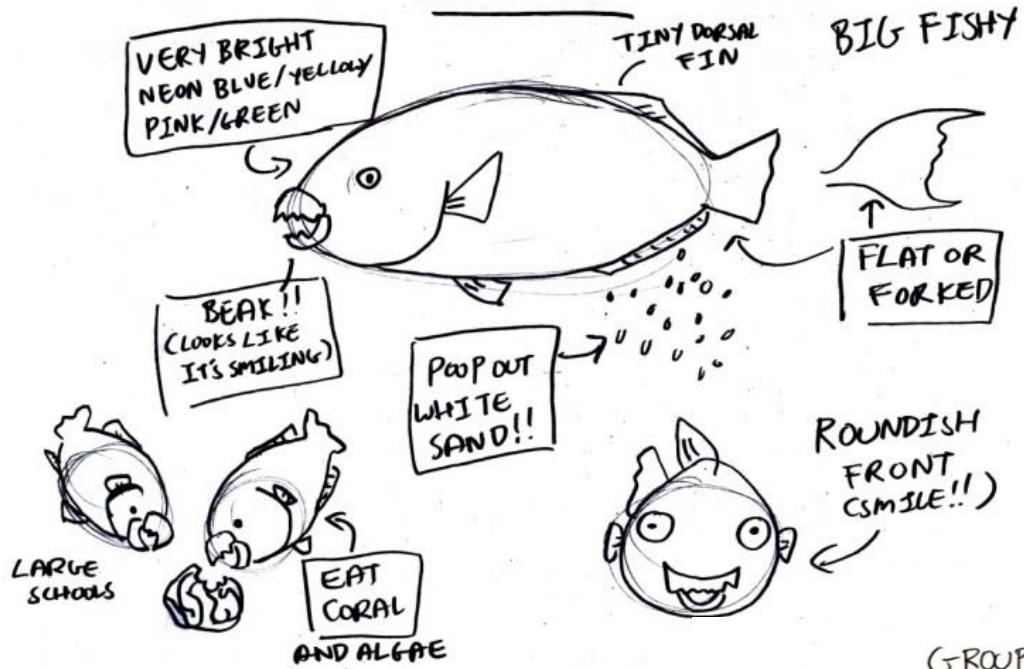
A perfectly executed giant stride – this virtually eliminates the risk of striking one's head on the boat or cracking one's mask upon entering the water – as CHUA Xin Yi looks on.



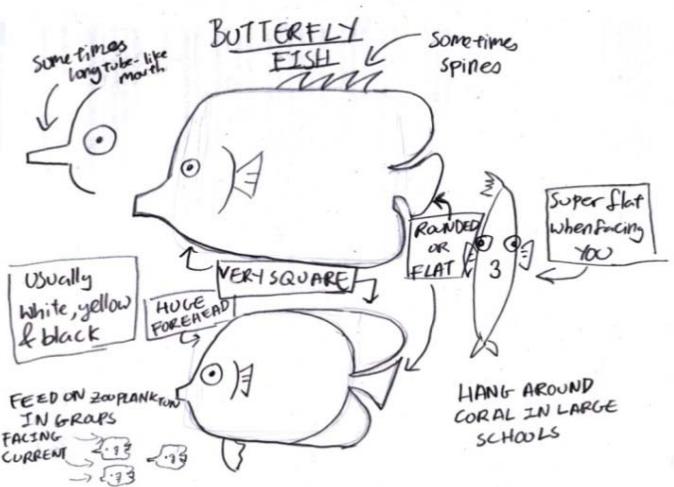
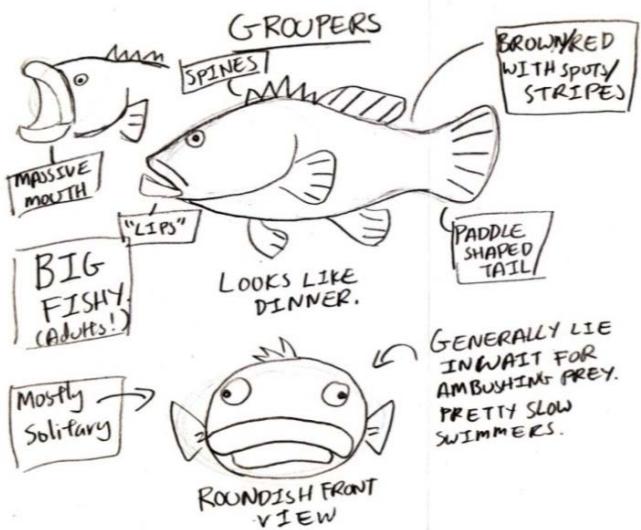
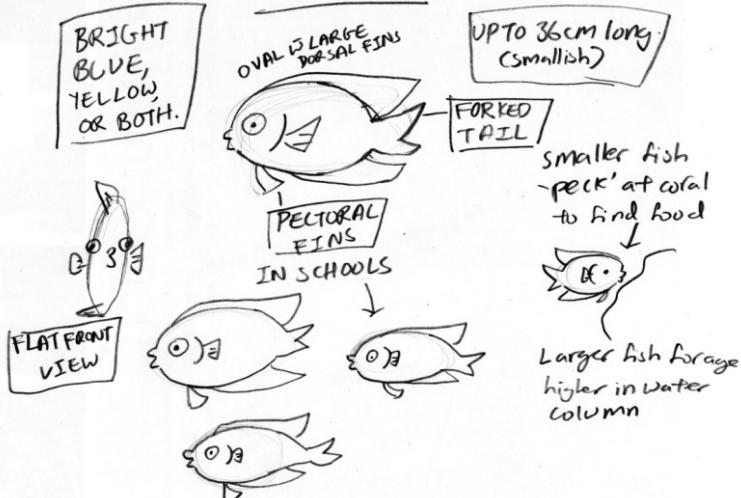
GOH Jia Chen Judy, assisted by NG Chiew Rong Alicia (on her right) and LEE Xiao Tong Nicole (on her left), explains to a group of peers how to use a clinometer to measure the height of trees. In the background, another group of students is learning from their classmates how the forest transects will be set up, using diagrams drawn on a white board.

**NEXT PAGE:** Diagrammatic representations of the key characteristics to look for in order to distinguish among the four main groups of fishes that the non-swimmers allocated to the stationary fish survey were likely to observe. These sketches were drawn by CHUA Li En Jacqueline, whose group had a marine project, and then given to those student fish surveyors.

## PARROT FISH



## DAMSEL FISH



As already mentioned, a new activity was added to this year's itinerary – a day centred on mangroves – this was a suggestion by a few of last year's students. Anyone who googles "mangroves Philippines" will quickly discover that the name "Jurgenne Primavera" appears on most search results. This is precisely how we came to learn that Dr Primavera is not only one of the world's foremost experts on mangroves, but moreover, one of the Philippines' most tireless and outspoken conservationists. For this reason, she was named one of TIME Magazine's heroes of the environment in 2008.

Last year's report described how our profoundly students were affected by being able to meet and interact with the many locals who work toward conservation (i.e., our invited guests, our partners and members of local communities whose initiatives students assessed). It was no different this year when they had the opportunity to spend a day with Dr Primavera. After traveling from her hometown on the island of Panay, she began the day with a seminar on the regimes used to restore mangroves in the Philippines (and was very frank in giving her opinion that government funding is basically being wasted because most of the government's current rehabilitation schemes are misguided). This was followed by a guided visit to San Vicente Mangrove Association (SAVIMA), where mangroves are being restored for various purposes in the nearby town of Maribojoc. This edited field diary entry, from a student who wished to remain anonymous, perfectly describes the day and his/her impressions of it:

*Today's talk on the importance of mangroves and disaster preparedness by Dr Primavera was an engaging and impactful one ... Also, despite having an injured toe, Dr Primavera still made her way here early in the morning to talk to us, which was pretty mad dedication and I really respect her for it. Furthermore, when she was running out of time by the end of her talk, she still wanted to spend the last 5 minutes to speak to us about mangrove rehabilitation. That really showed me how passionate she was about her work and how keen she really wanted to share it with us.*

*The main focus of the talk was undoubtedly her criticism of the rigid state 'system' of planting the wrong species of mangroves at the wrong place. I could really feel her frustration and helplessness at the inefficient methods of the congressmen and empathized with her.... Indeed, so much more can be done (and more cost-effectively) if policy-makers spend more time listening to and consulting scientists before pushing their developmental projects and policies forward.*

*I was really impressed by her never-say-die spirit and determination to obtain the most environmentally-beneficial outcome possible ... The case of how she kept pushing to stop the construction of tourist vacation cottages at a fragile mangrove forest, despite political resistance, was pretty admirable and inspiring to me ...*

*Something else that I found pretty cool was how local governments came up with novel ideas to get locals involved in mangrove rehabilitation efforts. I agree that the idea of providing free weddings and academic credits in return for contributions to mangrove sapling planting is an interesting and effective way to get locals interested in and concerned about local environmental issues. I believe that these efforts will go a long way in promoting global conservation efforts of fragile and vital mangrove ecosystems, so perhaps Singapore can do something like that too! It'd*

*be interesting to find out if Singaporeans, being as ‘kiasu’ (opportunistic) as they are, take to the idea of getting rewards for mangrove planting as well as the Boholanos.*

*Lastly, Dr Primavera’s passion in teaching students really shone through during the SAVIMA mangrove tour. She paused every few steps on the boardwalk to describe (in great detail and enthusiasm) the traits of the various mangrove species, and came up with innovative methods to help us distinguish them from each other. I may not be much of a plant and/or mangrove person, but her desire to share her knowledge and interest in mangroves with us really encouraged me to pay close attention to her explanations, which helped me learn a lot today. – anonymous*



#### IMAGES FROM SAVIMA

Clockwise, from top left:

Song LIN, ZHENG Zhangxin, ONG Wei Bin and Dr Primavera, as HO Minjie Benjamin snaps a selfie.

Letisha Sarah FONG Rui Zhen holds a *Rhizophora* propagule. Our group was asked to plant these trees, the exact species that Dr Primavera had explained were inappropriate to the conditions. This presented our students with a tough decision – if they refused to plant them (as several did), then this would mean reduced income for the community members working at SAVIMA, who receive a sum for every propagule planted. Many students' field diaries revealed how they wrestled with this dilemma, which thus turned out to be an important learning point.

TOH Xinyi Cindi in foreground and other students view an area replanted with *Avicennia floridum*.

Two students try their hand at gleaning – an important source of income for locals.

That many of our students were equally impressed with and inspired by Dr Primavera as the author of diary entry above was obvious as they clamoured to have their photos taken with her and to get her autograph. Having her engage with our students also reminded them that women can play front-and-centre roles in science and conservation. When it comes to equality of the sexes, the Philippines consistently ranks among the world's top 10 nations. Given that Singapore does not even rank among the top 50 and yet most of our students (40/46 in 2015) are female, the importance of having Dr Primavera, Cora Batoy and other women involved in our course (not to mention exposing them to many women in positions of political power) really cannot be overstated.

Although the main purpose of this document is to describe updates, one rather ironic similarity between years is worth mentioning. Once again, only one activity had to be called off due to bad weather: the assessment of Assisted Natural Regeneration (ANR; see 2014 Report, pp. 5, 13) in Janlod Batuan. Actually, bad weather is an understatement – this was a torrential downpour that lasted for a solid hour. And, like their seniors, this year's students made the most of the situation (particularly the opportunity to interact with Patrick Dugan) and perhaps dealt with it even better. Indeed, crowding under a tarp together brought everyone much closer together, and not just in the physical sense. This is demonstrated by the following field diary entry, from a student who wished to remain anonymous.

*The greatest takeaway of the day was learning to challenge my own perspectives. For instance, the rain which I dreaded created precious new memories which I now treasure dearly, and watered the ANR site trees and the crops of the farmers to provide for their needs. Likewise, my perspective of the human race as the most evolved species and guardians of the Earth was challenged by Mr. Dugan's advice. Perhaps, he is right in saying that we should leave nature alone, that the environment would benefit most if humans "devolve" to lose their aggressive traits, and stop trying to manage nature so much.*

		
Felicia GOH Xiu Xian, irrepressibly joyful, as always despite the rain	LAI Jun Li (at left), Patrick Dugan (centre) and Wilbert Aureo, all enjoying the shelter	TAN Jia Xiu and fellow students, surveying birds brought out by rain

The only other significant change to the itinerary was to increase the critical-thinking aspect of the wildlife conservation and eco-tourism theme (see 2014 Report, pp. 6, 16). Instead of just visiting the Philippine Tarsier Foundation, Inc. (PTFI) as our students did in 2014, this year, they also visited Loboc Tarsier Conservation Area (LTCA). Although both establishments showcase the same species – the Philippine Tarsier (*Carlito syrichta*), endemic to the southeastern islands of the country and Bohol's flagship animal – and offer visitors the chance to see them up close, they operate quite differently.

PTFI is a non-profit organization mandated by the Department of Environmental and Natural Resources (DENR) to implement the Philippine Tarsier Conservation Program. There are 20 individual tarsiers living in the PTFI's 7.4-hectare sanctuary, which is nestled within a larger reserve (protected by a permanent



logging ban) that harbours a larger population of roughly 1,000 tarsiers. Every morning, guides locate tarsiers in their resting spots, and then visitors can enter the sanctuary with the guides and view them in their natural habitat. Guides ensure that visits are brief and that people are quiet and do not use flash photography – measures designed to minimise stress to these sensitive, nocturnal animals. Visitors can also go hiking in the sanctuary, on one of two trails. In high season, PTFI, which is pretty far off the beaten tourist path, receives a maximum of 50 visitors per day – it barely makes ends meet.

LTCA is a for-profit operation on the tourist circuit, conveniently located very close to Loboc River Cruise, one of Bohol's main attractions. Not surprisingly, in high season, it receives at least 10 times as many visitors as PTFI does. There is little reliable information about how LTCA operates, but its tarsiers (of unknown provenance) are maintained in captivity, and then strategically placed on branches during the day so that tourists can see and photograph them. Visitors are given a five-minute briefing that includes some basic information about the animals' and reminders to be quiet and not use flash photography. Although Guides are present throughout the exhibit to answer questions, they seem unconcerned about minimising disturbance to the animals. In fact, they commonly poke the tarsiers with sticks to get them to turn toward people's cameras.

This year, our students spent the morning and early afternoon at PTFI, where they viewed the tarsiers (reacting as expected – these tiny primates and are incredibly cute – see above photo, by HO Minjie Benjamin). They hiked the more difficult of the two trails, and most made it to the summit, where they were rewarded by one of the best views on the island. Like their seniors last year, they were also able to interact with the founder of PTFI, Carlito Pizarras. In mid-afternoon, they went to LTCA, where they had the standard tourist experience and were expected to compare the two operations in terms of their effectiveness when it comes to conservation.

In their field diaries, most students wrote that they thoroughly enjoyed the day – for some it was their favourite day of the trip. The chance to do some investigative digging into both operations really appealed to them. However, during the end-of-day debriefing, many also lamented the negative bias they had toward LTCA before even arriving there because Carlito had spoken poorly of it. This was surely inadvertent on his part, but students felt that they went in looking for flaws and not with a truly open mind. They suggested that in future, it might be worthwhile varying the order of activities, and voted overwhelmingly in favour of having half the class visit PTFI in the morning while the other half visits LTCA, and then having them switch places. This seems like a good suggestion that we will consider for the next iteration of the course.



## 6. ASSESSMENTS

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In terms of assessments, the only changes were to the weightages of the group project (worth 30 % of the final grade – 5 % more than last year) and of the grant proposal (worth 25 % of the final grade – a 5 % less than last year). These modifications seemed warranted once it was apparent that the students put more work into the group projects than into the proposal.

Like their seniors last year, this year's cohort produced some remarkable stuff. The quality of work on the group projects (see 2014 Report, p. 22) continues to amaze, especially considering that they must be completed within just two weeks. During the project presentations this year, the audience also included individuals from the municipality of Dauis, who came to hear about findings on both marine sanctuaries, as well as a class of tourism students. Despite this added pressure, our students performed well. To describe all eight projects here would be excessive, but the following three seem particularly worth mentioning: the ones that received the highest grades and that, according to the field diaries, made the best impression on the rest of the class.

The first group chose the question: "Come up with a working definition of eco-tourism, including criteria. Discuss the extent to which the various operations you have seen are meeting that definition and offer suggestions for improvement." For the deliverable, these students designed a brand new concept for a website, called the Eco-meter. Using criteria they developed, the idea was to rank various, ostensibly eco-tourist operations, so that tourists who want to travel responsibly could have a means of making more informed choices. The entire audience was wowed by the amount of thought that went into the project and the professional quality of the website. The quality of research was also excellent.

The second group selected the question: "Place the vulnerability of the Philippines to natural disasters in global context. Are the people and ecosystems more, less or equally at risk? What, if anything, should be done to mitigate this issue?" The research on this topic was very solid and the deliverable was one of the most creative ideas many of us could have imagined. Basically, by combining their knowledge of GIS with their understanding of their topic, these students developed an app (for use on a mobile phone) to allow rescuers to determine the best route to obtain medical assistance for victims of natural disasters. In other words, the app receives information about roads that are impassable and calculates the quickest way to help, thereby helping to minimise the loss of human lives.

The third group chose to answer a modified version of: "What is the best way to restore forests for each of the following: (1) erosion prevention, (2) biodiversity, (3) watershed restoration?" What was really impressive about this project was the sheer amount of work these students put into the deliverable, a 30-page (!), illustrated guide to conducting forest surveys and designed to be used by local foresters. All the staff members who evaluated the projects were stunned by the fact that this group managed to put together something that was not only useful and lengthy, but also beautifully-made.

Similarly, the grant proposals (see 2014 report, p. 25) by this year's students were no less impressive than those of their predecessors, but there was one that really out – by the second group mentioned

above. When they were working on the proposal, they asked if they could use the premise and deliverable from their project, i.e., seek funding to develop the app. However, the grant proposal assignment stipulates that students must adopt the role of a researcher seeking funding for an environmental study or an NGO looking to finance a project to benefit the environment. After quite a bit of back-and-forth, these students decided that they could not successfully argue that an app intended to reduce human fatalities and injuries was, in essence, a project to benefit the environment, and so, with just a few days to spare before the deadline, they started over. In that circumstance, one might not expect a stellar performance, but BES students often blow our expectations out of the water – and this was a perfect example. Here is the abstract from their proposal:

*Mt. Hilong-hilong in the Caraga region of Mindanao, Philippines is a Key Biodiversity Area threatened by illegal logging. In line with the national aim for zero illegal logging by 2016, our NGO proposes to install M2M tracking technology called Invisible Tracck strategically on trees in Mt. Hilong-hilong to monitor and deter illegal logging activities. Remote sensing and GIS can be incorporated into the monitoring system to further enhance monitoring capacity. The total cost of the project is estimated to be PHP 500,000 and take 1 year to complete. Once the project is complete local authorities will take over the monitoring and maintenance. If proven to be conclusively successful, the project may be emulated at other sites.*

Admittedly, there were some holes in the proposal. However, these students, more than any others demonstrated incredible resilience and the ability to react to an unexpected disappointment with flexibility and creativity. Moreover, despite the flaws – the proposed idea addressed a real need, was fundamentally feasible and certainly seems like something worth pursuing.

As for the reflective field diaries, the quality was generally quite good. This report contains several quotes, and the experience of grading these 30-page documents is, while extremely tiring, unbelievably rewarding. This is the best way to assess the deep learning that takes place within each student, and the thoughts shared by some students are so intensely personal and insightful that it is almost a privilege to read their words, which at times can evoke strong emotions.

## 7. ANIMALS



**Arthropods** are the most diverse and abundant animals on land. Shown here are (from left): a grasshopper (photo by HO Minjie Benjamin), a millipede (photo by CHUA Li En Jacqueline) and a robberfly



**Marine invertebrates** are surveyed by our students. Shown here are (from left): a colony of tunicates, or sea squirts, on the reef and, from the intertidal zone, a sea star and a slug (both photos on right by CHUA Li En Jacqueline)



**Vertebrates** are also seen. Shown here are (from left): two red and black anemonefish (*Amphiprion melanopus*), a rough-backed forest frog (Rough-backed Forest Frog) and a short-nosed fruit bat (*Cynopterus brachiotis*, photo by CHUA Li En Jacqueline)

## 8. FREE TIME

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As mentioned earlier (section 5), the longer duration of the field trip this year allowed for a more relaxed itinerary, something that feedback from last year's cohort suggested would be appreciated by most students. Therefore, the last planned activity, a seminar on sea cucumbers by Cora Batoy, was followed by nearly two full days of free time before the presentation of group projects.

Some students chose to use this time to work on their various assignments, but others opted to get out there and explore Bohol. Although it may seem unusual to include a section about the use of free time in a report on a field course, some of the things our students did are not only worth mentioning, but also may be worth suggesting to future cohorts. Therefore, three different uses of this time are described below.

After some of our students heard about what is apparently a rather popular attraction in Bohol – firefly watching on the Abatan River in Maribojoc, a group of about 16 of them set out to experience it. The river is lined by Nipa palm and mangrove trees, some of which are sites where fireflies aggregate, forming spectacular displays. There are two ways to view the fireflies – from a motorised boat with a capacity of 10 people or from one-man kayaks – most students went on motorised boats. Of the many students who wrote about the evening in their field diaries, all said that it was not only enjoyable (an understatement – many felt that it was magical), but also very educational. Upon arrival, they got to see a ritual involving the burning of incense and designed to ward off evil spirits, thereby gaining interesting insight into the culture of Bohol. They unanimously deemed the firefly tour very ecologically friendly and informative, with guides expertly explaining the biology and ecology of the fireflies. This is not an expensive activity, and the students who participated said that it is worth suggesting to future students, but should not be included in the itinerary (they want the freedom to choose).

One pair of students, Sara CAI Weiling and TAN Sing Yee Jacelyn, did something truly unique with their free time. After connecting well with two of the women (Sheila and Michele) who were serving food to us during our three days at BBC, they were invited by Sheila to have dinner and stay over at her family's home, in Loboc. They clearly enjoyed every aspect of the visit and learned a lot – underscoring the value of homestays in general – something that could really improve this course if it were possible to arrange. Below are excerpts from their written descriptions of the experience.

*The heartfelt conversation that we had with Michelle and Sheila reminded me how terribly blessed I am to have this opportunity to go overseas and experience different things, and learn about the world beyond Singapore. Even though they have to work to help supplement their family income, I do not think that they are any less happy than any of us here. In fact, they might even be happier than many of us on this trip who own and have many material comforts, simply because they are contented with what they have. Through them, I experienced happiness in simplicity. – TAN Sing Yee Jacelyn*

*Our bus took about 45 mins to fill up, and boy, we were really surprised when it started moving. The bus flicked on its bright lights, blasting oldies, cruising so fast that the wind was continually caressing our faces. I was in wide-eyed wonder at all the little things – how the bus ticketer could balance at the steps, punching holes on the tickets while the bus was moving so fast on bumpy roads, how he could count the number of people that boarded the bus so quickly when a huge throng of people boarded ... and how fast people hopped on the bus (as though the bus never really stopped). The people on the bus really warmed my heart as well, even though they were strangers, they had small conversations with one another. The teenager in front of me also gave up his seat for a dad carrying his daughter – there was no need for any “give up your seat” sign!*

*As if I was not impressed by the warm Boholano culture enough, we had an absolutely warm welcome by Sheila’s family as well. They were all so excited to meet us, and were extremely hospitable, doing their best to make us feel comfortable. Sheila’s family really touched my heart because it was not about how much they had, but about how they were willing to give the best of what they had to us guests. We had a whole fish for dinner, which when I asked Sheila, was not what they had all the time. Even though staying with them was definitely out of my comfort zone – they found two baby rats in the house that night, we couldn’t shower at night because the showering facility was outside the house and it was too dark, and the village chickens started cooing at 1.30am, it was an experience that I greatly cherish because Sheila and her family were so genuine and giving. This kind invitation to a stranger she just met 3 days ago, I will remember for life. – Sara CAI Weiling*

Finally, a large group of students, perhaps half the class, along with several staff members, organised a trip to Balicasag, considered one of the world's premier diving destinations. Several students (already certified divers) went diving while the rest went snorkeling. Naturally, the good condition of the reef and huge abundance and diversity of marine life was impressive – everyone saw sea turtles. For all the students, this was their best marine experience ever, and many said that it was the most special day of the entire trip. Although this is not something we would ever add to the itinerary (given the cost), students should be encouraged to consider going out here on their own.

#### **IMAGES OF BALICASAG, all photos by CHUA Li En Jacqueline.**

**Sea turtle**



**ONG Wei Bin**



**Students handle Linckia sea star**



## 9. IMPRESSIONS OF ENV 3102

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Our students had many things to say about the field course – the following is just a sample of their impressions, all from field diaries – clearly, the experience profoundly affected them including in many ways that do not necessarily result from planned activities.

One of the most interesting learning achievements for me was that we were able to impact the locals directly through our fieldwork and analysis instead of being given hypothetical scenarios and problems. Initially it seemed daunting, as there is a good chance we will not be able to recommend anything useful for the Barangay or that our projects will not reveal anything new other than what they already know due to our inexperience as field researchers. At the end of the trip, I realized that it is not all about the results of our project. Instead, it is about the process of doing field research and learning how to apply what we have learned in the classroom into a real world situation. I am really grateful to have had the chance to experience and learn about being a real researcher before I go to work in the future. This not only increased my experience, but I feel that I am more ready to do any kind of fieldwork because I now know what it is like to be one. Most importantly, I learned that nothing would go as planned such as weather, logistics, transport arrangements or field conditions. Knowing this, I now know that a field researcher has to learn how to be on the ball at all times and adapt to any changes quickly. – WONG Ting Yen

After three enriching days spent in BBC and a touching farewell to all the people behind the scenes, we made our way back to Dao Diamond. How I missed my insect-free room! Sitting on the comfy chairs in the lobby, I looked around, everyone was looking down on their phones again! Suddenly, I had this feeling again, the ‘coldness’ in people, the missing human touch. Everyone back in their deprived cyber world. But, just this morning or even the last few days, all of us were so sociable, making small talks, jokes or conversations whenever we are in group. It was during the days we spent at BBC where there was no internet that I got to know a lot more about my classmates. Could we have a “Take a break from the Internet” week to celebrate that life is not impossible without wireless connections? – CHOW Khai Yin

One important thing that I learnt (or was made clear to me) by the Boholanos is to do what you are truly interested in. The Tanods or voluntary police at the MPAs we visited received no pay (only a small honorarium amount yearly), and said that they did it out of concern for the welfare of the environment and their family members' wellbeing. Carlito Pizzaras, head of the Philippines Tarsier Foundation has dedicated so many years of his life to conserving the tarsiers in Bohol, despite little financial returns. Dr Primavera, Sir Pat Dugan and many others have also been such inspirational figures throughout the trip, and their passion and love for their work greatly inspire me to do my best for the environment. I believe the right attitude is just as (or even more) important in the process of learning, as the content or technical details of it. To me, this positive mentality is the greatest lesson that I have received during this trip, thanks to these amazing teachers. I believe that I will put this to good use in years to come. – anonymous

Overall, I would say that ENV3102 has been unequivocally my favourite BES module! I have taken many classes which have profoundly changed my focus in my undergraduate career, and put me on specific paths towards research projects or skills development like computer modelling. However, none have struck me at such a deep and personal level as this one has, with subtle learning that did not require rote memorisation and practice. I've thoroughly enjoyed ENV3102 in a way that this field diary only begins to capture. – GOH Jia Chen Judy

The 14-day trip was both physically and mentally draining. However, what I learnt from the experience goes beyond what could be taught in any classroom. I would say that I am much more confident now regarding research techniques, in both the natural and social sciences. I feel more empowered now to proceed with my Final Year Project (FYP) and more aware of the many problems field researchers often face. – anonymous

Meeting with environmentalists in the field has also encouraged me to take bigger steps out of my comfort zone to do more for the environment. It is easy for me to fall into the spirit of mediocrity and settle for less, but these determined individuals that I have met on the trip has shown me that there is much more to be done in our generation! I believe that in the future, when I hesitate to share with others about conservation and sustainability, I will remember them, and have the courage to take a stand in what I believe in as well. – Sara CAI Wei Ling

The gleaner asked us to refer to her as “lola”, which means grandmother, and even took us out to meet her late husband’s brother, who was also collecting infauna for sale and subsistence purposes. She had come from neighbouring Mindanao, and had 9 sons back home. She did not speak English very well, but I am still very touched that she took the time to catch all these animals and tell us their local names. When we told her that we were from environmental studies, her face lit up and she told us to study hard, which is a much more positive response than what I sometimes get back home. I think that it’s amazing that the people in the Philippines value their environment so much, and that they are so willing to entertain a bunch of bumbling students who are overly-enthusiastic about random animals in the intertidal zone. I wish that people back home were as hospitable. – CHUA Li En Jacqueline

The most rewarding experience was learning how to produce a deliverable. It was meaningful for it was meant for the host communities to use and make a real impact. During the last semester, we were tasked to come up a creative project for ENV3101 ASEAN case studies I, but compared to this deliverable, it seemed like child’s play. Here, it was not a mere school project anymore. So, we were keen to make the deliverable truly useful. I was reminded that the reason for international field work and research is not just to learn and gain knowledge, but also to improve the situation or make a change, a real difference. – anonymous

Most of the amazing things happened at night though. Post sunset, a group of us went to lie down in the middle of the fields to stare at the stars. It was an awe-inspiring sight, something we never get to experience in Singapore. Seeing the sky full of stars, glowing through the dark skies really gave us another feel of nature, a sense of what we have been missing out in the cityscape in Singapore. The vastness of the sky and the uncountable stars made me feel small, a minuscule speck in the universe – a similar experience to being in the sea.

The hands-on experience was amazing. Being able to try each step in the journey of planting a wildling gave us more insight into the process, learning the nuances and the rationale behind each small action. It was also a first, for many of us. Seeing their ability to make things and shape what they want was another great experience. In science and ecological experiments, we often think of new ideas and craft these experimental setups using materials bought from random hardware stores. Here, they craft everything from what they have, making sustainable use of their resources and ensuring that the products can always go back into nature when they are broken. Their resourcefulness and creativity is definitely something we should learn to pick up.

I'm really glad that our class managed to break out of our original cliques cemented through years of project work and mix around – having way more fun than we would have if we just stuck to people we knew. I'm also really glad that the random project groups put different people together because it was a really nice chance to work with new people for once, and to see how different people bring different things to the table, with a mix of biology and geography creating amazing work. This module has definitely been a success to me. – CHAN Yong Kit Samuel

We watched as the fish wardens skilfully free free-dive and set up the transect with far less equipment than we used to bob on the surface. Apart from the severe inadequacy that it evoked in me as I looked at all my proper gear and then at their home-made flippers, it got me thinking about the wealth of knowledge that the locals possessed. We always read about cases where locals are neglected in environmental conservation measures. While this may not be the most representative piece of evidence, the ingenuity and adaptability of the locals to their surroundings was sort of an indication to me of the locals as a possibly large and untapped resource. – CHIN Kimberley

I have always appreciated the 'last' of anything because, as cliché as it sounds, things become valuable only when you know that you will never get or experience them again. Honestly, I was not super excited for this trip at the beginning because it felt like a super intensive and tiring trip with no avenues for recreation. Yes, it was indeed quite intensive, but I felt like I have experienced so many first-times and bonded so much with my batchmates, and seen the human side of so many people. I am so thankful for this fieldtrip and so thankful that it is compulsory (because my conservative parents always have issues with me travelling out of the country without them even though I am adult now). Also, thank you Dr Coleman for being so caring and taking such good care of us! – LAI Jun Li

One thing the Chocolate Hills, the fireflies tour and the damaged churches had in common was that it was all caused or brought about by Mother Earth and her earthly processes. She can bring such beauty into our lives, fill our lungs with fresh air, but at the same time take away the ones we love most in an instant. – Sharifah Nadia Bte Syed Mohamad Hamid

Mr Dugan was really inspiring as he spoke of how he managed to engage the local community in participating in ANR with a lot of patience. His passion in his work was evident from the way he spoke and it was encouraging hearing his success story of his path in conservation. I have grown fairly pessimistic about conservation in Singapore throughout my 3 years of education in BES as I gradually believed that it is impossible to see much changes in our environmental landscape from the way our country is so economically driven. Mr Dugan's talk, however, prompted me to rethink conservation and was a reminder that no path in advocacy is ever a smooth-sailing and easy one. Like Mr Dugan mentioned, it would take a lot of patience and I suppose the first step to that would be even believe what you are working on. All the key people we met so far in this trip all showed immense faith in whatever they are working on, coupled with patience and passion. It is important that we stand firmly for what we want we achieve, before we can even inspire others in doing so. – HO Xu Qin Dawn

ENV3102 is truly a one-of-the-kind experience for every participant. Nowhere else in NUS could one find such a fulfilling, exciting and memorable experience. It helps me to put knowledge and skills learned in lectures and textbooks into practice and evaluate how useful they are. Most importantly, it helps me bond with my fellow classmates through shared experiences, awesome or shitty. It is a memory of a lifetime. – Song LIN

This trip to the Philippines wasn't my first time out in the field, but it was the first field module I'd ever done and indeed, looking at things on PowerPoint slides, in books, and on the internet, was nothing compared to seeing it in the flesh. Sure, we all know that sea turtles are real, but seeing one in real life made it more relatable ... the thing that I aim to eventually save with whatever work I do was not just a picture on a piece of paper, but something moving before my very eyes. That's why I feel that field modules should be an essential part of any student's academic life. It's your textbook come to life, allowing you to explore the world around you with room for making mistakes. – TAN Jia Xiu

If every student in Singapore were to engage in some form of environmental work during their summer holidays, I wonder if our society would be one that allows for and recognises the importance of having idealists and environmentalists in the midst of economists and bankers. In Singapore we focus too much on theory-based learning. Yes there are fieldtrips to places but often trips are task-based trips, with the worksheets and things that we have to analyse so much that we forget to take notice of a joy that comes from the doing. – TAN Sing Yee Jacelyn

## 10. LOOKING AHEAD

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Without a doubt, experience is the best teacher. Understandably, last year's inaugural offering of ENV 3102 was not without its missteps (recognising that unforeseen problems can always crop up, no matter how many times a course is given). Thankfully, based on our own observations and student feedback, we were able to streamline things and improve the course, with perhaps one of the biggest lessons being the importance of managing students' expectations. Naturally, this course is bound to change slightly from one year to the next, but hopefully fewer and fewer modifications will be necessary as time goes on. However, we are already thinking ahead to 2016 and beyond, because we are well aware that there will necessarily be some major adjustments, as follows.

For next year, the biggest consideration is the number of students, which will swell to 67, representing a 46 % increase over 2015. This presents a number of challenges. First, although Dao Diamond fortunately has *just enough* dormitory space to accommodate this many students, it will be impossible to have the entire class participate in any given activity simultaneously because we will exceed the capacity of many of our venues. For example, we cannot take 34 students plus staff out to either MPA at once (until now the protocol has been to have half the class go out on the water while the other half does land-based activities), nor can we bring 67 students plus staff to BBC all at once. Second, it will be impossible for the course coordinator to singlehandedly deal with all of the grading, as has been the practice so far.

For these and other reasons, we have tentatively decided that the best option is to bring the whole group to Bohol together, but then to divide the class in half for all activities and assessments. This has several implications, with the two most important ones being as follows.

First, the course coordinator and co-lecturer will each have to assume sole responsibility for teaching and assessing one half of the cohort. This creates two more potential problems. One is the fact that they will not be able to rely on each other to handle the teaching outside their respective areas of expertise. To deal with this, we are hoping to find two local faculty members – an expert in ecology and biology to teach with Jesse and a social scientist to teach with Joanna – who can help out with the course. The second problem is that this scheme raises the spectre of unequal assessment, i.e., the concern that both halves of the class may not be assessed with the same rigour, but hopefully, the grading rubrics already created by the course coordinator will help to minimise this problem.

Second, it will unfortunately be necessary to create two separate itineraries, such that each half of the class does the same things, but not in the same order. Naturally, this makes the task of organising the field course much more complicated because each arrangement will have to be made twice. It also threatens to make the course more expensive for our students because we may have to pay twice as much as before for many services (e.g., transport, marine activities, guiding fees, etc.), but with only 1.5 times the number of students to cover those costs. We are already considering ways to reduce this financial impact – for example, by making our own group booking with Tiger Airways instead of going through the NUS travel agent, in order to save the commission. In addition, we know that an integral part of the ENV 3102 experience for many students lies in being together for two weeks, and they may

not be entirely thrilled about having to do things separately. Hopefully, the shared time spent at Dao Diamond and the free days will help alleviate this problem.

In preparation for this daunting task, Joanna will soon take another recce trip to make some of these arrangements ahead of time. In addition, she hopes to travel to the island of Panay, where Prof Ted Webb has a connection with a former graduate student who may prove to be a valuable resource person. Having recently accepted a position at Aklan State University (ASU), he is keen (at least in theory) to work with BES on this course. Therefore, it is worth looking into whether Panay might be an equally good or better field location. It will be important to assess all the same sorts of issues as those we did initially. Does Panay offer suitable opportunities to explore environmental challenges from the terrestrial and marine perspectives, while focusing on community-based solutions? Is ASU a good institutional partner? Would going to Panay increase the logistical challenges involved in travel, health and safety?

Therefore, even though ENV 3102 is a great course, one that is both edifying and well-loved by our students, there are bound to be some significant changes in the very near future, which will hopefully continue to get brighter and brighter every year.

## 11. VIDEO AND BLOG

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To conclude this report, it seems appropriate to mention two features of ENV 3102. The first is a course blog, created by Joanna <http://blog.nus.edu.sg/env3102> but maintained by her and whichever students feel inspired to contribute. Our students have posted photos and written entries, and this blog is a great platform to show everyone what ENV 3102 is all about.

The second is a video, available at <https://www.youtube.com/watch?v=cQe9SxijLzc&feature=youtu.be> and created by CHUA Li En Jacqueline. This montage of scenes set to music showcases more than just Jacqueline's amazing skill and creativity. It demonstrates that our students are not just academically excellent, but moreover very talented, particularly when it comes to having fun and being wacky. Perhaps one of the most amazing things about this video was that, unbeknownst to the staff, Jacqueline was working on it every night during the trip so that on the last day, just after the students presented their projects, she could show it to the entire class. Needless to say, everyone in the room was very impressed, and many were touched, as was I – here is what CHIN Kimberley wrote about it in her diary:

The last moments at HNU were particularly heart-wrenching especially when we watched the video compilation. Seeing Dr Coleman tear up like that made me realise how much this course meant to her and how much she cared about our learning process. Her passion to impart knowledge and to help her students learn the best way possible was inspiring.







