

**ANNUAL REPORT  
CENTRE FOR SUSTAINABILITY  
2015**



March 2016

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## GENERAL INFORMATION

### NETHERLANDS

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**Legal name:** South Sea Exclusive Foundation

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### PHILIPPINES

**Legal name:** Southsea Exclusive Philippines Inc.

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5300 Palawan

**SEC number:** CS200910319  
**TIN number:** 007-326-723  
**Wildlife Farm Permit:** 2013-001

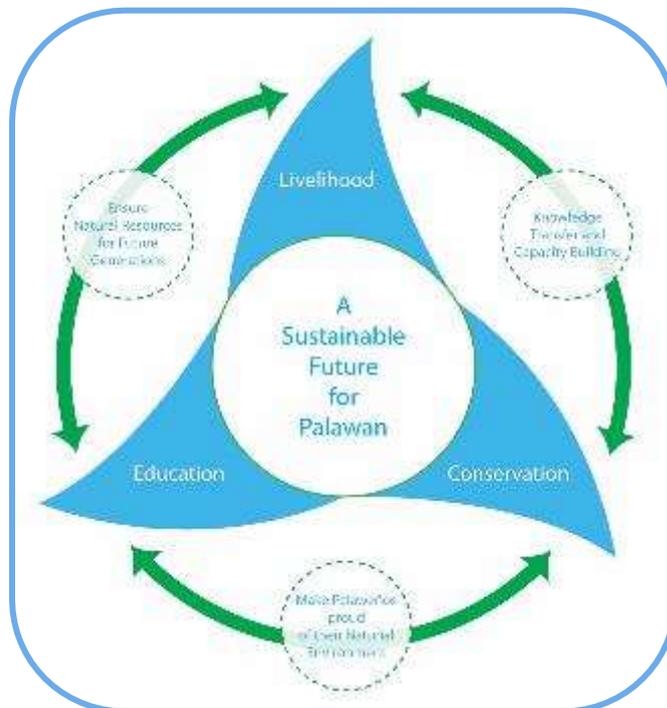
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## INTRODUCTION

The Centre for Sustainability is a non-profit organization working on sustainable development in Palawan, the Philippines. We are operating as social entrepreneurs and we focus on contributing to the creation of a sustainable future for Palawan through the execution of projects that are practical, environmental friendly and long lasting. With our style of developing and implementing sustainable projects, we aim to serve as a blueprint for sustainable development in other areas of the Philippines. Our mission is to contribute to **“A Sustainable Future for Palawan”**, through:

- **Livelihood:** Creating sustainable livelihood initiatives for coastal and upland communities.
- **Conservation:** Protect and restore coastal and upland ecosystems.
- **Education:** Making people more aware of the importance of our natural resources.

We believe that an integrated approach of these three focus areas is required to carry out our mission of contributing to a sustainable future for Palawan as is seen in the figure below.



The Centre works together with local partner organizations like the Philippine Coastguard Auxiliary, the Palawan Council for Sustainable Development, the City Government of Puerto Princesa, local universities and NGOs. By bringing together the knowledge, skills, and experience of local organizations with the vast knowledge present at international institutes like Wageningen University and Research Centre, the Centre for Sustainability is able to develop projects that are more effective and better adapted to local needs.

## **BOARD MEMBERS**

### **NETHERLANDS**

- 1) Jonah van Beijnen (Chairman)
- 2) Kyra Hoevenaars (Secretary)
- 3) Dirk de Wit (Board member)

### **PHILIPPINES**

- 1) Al Gonzales BSc. (Corporate Secretary and Hatchery Manager)
- 2) Jenny Rose Bagain BSc. (President)
- 3) Sharon Rose Charity Sumibacay Salazar M.D. (Treasurer)
- 4) Jonah van Beijnen BSc. (Vice-President)
- 5) Kyra Hoevenaars MSc. (Board member and Executive Director)

## **PARTNERS & ASSOCIATES**

### **AMPHIBIAN SURVIVAL ALLIANCE**

The Amphibian Survival Alliance (ASA) is a global partnership for amphibian conservation. This growing consortium of organizations and institutions is committed to thoroughly implement the global Amphibian Conservation Action Plan (ACAP). The Alliance is the major force for the conservation of amphibians globally and will bring focus, coordination, and leadership to address the world's most serious extinction crisis. ASA is a strategic partner, they provide technical and scientific input and funding support.

### **PALAWAN COUNCIL FOR SUSTAINABLE DEVELOPMENT**

The Palawan Council for Sustainable Development (PCSD) is a multi-sectoral and inter-disciplinary body, which under the law is charged with the governance, implementation and policy direction of the Strategic Environmental Plan for Palawan which aims to promote development, conservation, management, protection and utilization of the natural resources of Palawan for the present and future generations. The PCSD is our main local partner for our proposed Cleopatra's Needle Forest Reserve. They provide technical assistance, project management, permits and legal advice to our organization.

### **PUERTO PRINCESA CITY GOVERNMENT**

This local government unit has developed itself under the excellent leadership of Mayor Edward S. Hagedorn and the City's new Mayor Lucilo R. Bayron, as a role model in ecotourism and sustainable developing. The official mission of the city government is to be a model city in sustainable development exhibiting the character of a city is a forest embodying the balance and harmony between development and environment. The City Government of Puerto Princesa is our main partner for the grouper hatchery and livelihood program.

### **NATIONAL MUSEUM OF THE PHILIPPINES**

The National Museum of the Philippines is the official repository established in 1901 as a natural history and ethnography museum of the Philippines. We have teamed up with the herpetology section of this museum, which is led by Dr. Arvin Diesmos. His research focuses on systematics, ecology, biogeography, and conservation of amphibians and reptiles in the Philippines and the rest of Southeast Asia. He is a member of the Amphibian Specialist Group, Tortoise & Turtles Specialist Group, Crocodile Specialist Group, and the IUCN Amphibian Red List Authority. The National Museum provides scientific and technical input and partner in the implementation of our research projects.

### **KATALA FOUNDATION**

The Katala Foundation is a non-profit, non-stock and non-governmental organization and is active in protecting and conserving wildlife, particularly the critically endangered Philippine Cockatoo (*Cacatua haematuropygia*, local name: Katala), the Philippine Forest Turtle (*Siebenrockiella leytensis*) and other threatened endemic wildlife in the Philippines. The Katala Foundation provides scientific and technical input and partner in the implementation of our research projects.

## **WESTERN PHILIPPINES UNIVERSITY**

The Western Philippine University is a state higher education institution with main campus located at San Juan, Aborlan, Palawan, commits to develop quality human resource and green technologies for a dynamic economy and sustainable development through relevant instruction, research, and extension services. The WPU provides qualified students to carry out their internship or thesis for research projects.

## **DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**

The Department of Environment and Natural Resources is the government agency responsible for the conservation, management, development, and proper use of the country's environment and natural resources. The DENR's mission is to be the driving force in the pursuit of sustainable development, enabling stakeholders' participation in the protection, conservation, and management of the environment and natural resources for the present and future generations. DENR is tasked to formulate and implement policies, guidelines, rules and regulations relating to environmental management and pollution prevention and control. Through the Protected Area Management Enhancement program, DENR supports our project to set up the Cleopatra's Needle Forest reserve.

## **RAINFOREST TRUST**

Rainforest Trust protects threatened tropical forests and endangered wildlife by partnering with local and community organizations in and around the areas that are being threatened. They empower local people to help protect it by offering them education, training and employment. Rainforest Trust is our main donor origination for the proposed Cleopatra's Needle Forest reserve.

## **GLOBAL WILDLIFE CONSERVATION**

Global Wildlife Conservation (GWC) protects endangered species and habitats through science-based field action. GWC has built its success upon a foundation of excellence in Exploration, Research and Conservation. GWC supports our organization on many levels; fund raising, provision of financial assistance, technical advice and networking.

## **GERMAN DEVELOPMENT COOPERATION (GIZ)**

GIZ offers customised solutions to complex challenges. They are an experienced service provider and assist the German Government in achieving its objectives in the field of international cooperation. They offer demand-driven, tailor-made and effective services for sustainable development. GIZ provides both technical assistance and funding to our projects in the proposed Cleopatra's Needle Forest Reserve.

## **STARTLIFE**

Startlife is a Dutch foundation in collaboration with Wageningen University and Research center that supports starting entrepreneurs that work in agro, food and environment sector. Startlife have supported us since the start of our organization with financial, moral and technical support.

#### **THE OTTERFUND FOUNDATION**

The Otterfund Foundation is a small private foundation from the Netherlands. They have provided us with funding for our grouper hatchery project as well as a research project on the mammals in the proposed Cleopatra's Needle Forest Reserve.

#### **DEPARTMENT OF ENVIRONMENT, FOOD AND RURAL AFFAIRS (DEFRA) & FAUNA AND FLORA INTERNATIONAL**

DEFRA is the UK government department responsible for policy and regulations on environmental, food and rural issues. Fauna and Flora International acts to conserve threatened species and ecosystems worldwide, choosing solutions that are sustainable, based on sound science and take into account human needs. The Save the Almaciga project is funded through the Flagship Species Fund of the Department of Environment, Food and Rural Affairs (DEFRA) and Fauna and Flora International.

#### **BUREAU OF FISHERIES AND AQUATIC RESOURCES**

The Bureau of Fisheries and Aquatic Resources (BFAR) is the government agency responsible for the development, improvement, management, and conservation of the country's fisheries and aquatic resources. The bureau has its office under the Department of Agriculture. The BFAR provides technical assistance, education, and training services for our Grouper Hatchery and Livelihood project.

#### **PHILIPPINE TROPICAL FOREST CONSERVATION FOUNDATION**

The Philippine Tropical Forest Conservation Foundation, Inc. (PTFCF) is a non-government organization that provides grants and technical assistance to projects that aim to conserve, maintain or restore tropical forests in the Philippines. PTFCF provides financial and technical support for our 'Save the Almaciga' project.

#### **INTERCHURCH ORGANIZATION FOR DEVELOPMENT COOPERATION**

ICCO is the interchurch organization for development cooperation. We work towards a world in which people can live in dignity and well-being, a world without poverty and injustice. They support our organization by providing financial aid for expansion of the hatchery facilities and grouper grow-out training.

## PROJECT ACTIVITIES- GROUPER HATCHERY

### EXPANSION ACTIVITIES

#### POWER SYSTEM

To improve the quality of electricity, we purchased a Japanese back-up generator (15KvA) to ensure continuous and stable power supply.

#### NURSERY

We have expanded our nursery facilities to accommodate more fingerlings and thus increase the capacity of our facilities. We started with the flooring of the nursery (see figure 1). This will be followed by installing shading nets and nursery tanks, including piping for in-and outlet, as well as aeration.



Figure 1: Concrete base for nursery including water outlet on the left.

#### BROODSTOCK

Twelve pieces of Mouse Grouper (*Chromileptis altivelis*) broodstock were acquired which now makes the breeding group a total of 18 individuals. On arrival 12 Mouse Grouper were in perfect condition and one was showing signs of weakness. The 12 healthy fish were moved to a 25 ton broodstock tank, with a recirculating filter installation. The weak fish was separated in a round 800 liter tank until it



recovered. The breeders will be conditioned and monitored for sexual maturity regularly.

Figure 2-4: Fresh water bath (left), weighing of mouse grouper (middle) and stocking in the broodstock tank (left).

## BROODSTOCK CAGES

In order to accommodate the broodstock, we repaired a module of 8 floating sea cages. The cages were initially installed in 2009 and although the floating units are still in perfect shape, by now the GI-piping that hold the nets in place and catwalks needed replacement. Since the broodstock is of vital importance for the hatchery and the Amihan season (strong winds from the East causing high waves in the bay) has started, we repaired a module to ensure the safety of the broodstock.



Figure 5: repaired floating cages

## HATCHERY PRODUCTION

In 2015, we produced a total of 64,494 three inch grouper fingerlings of 3 different species; Orange-spotted Grouper (*Epinephelus coioides*), Tiger Grouper (*Epinephelus fuscoguttatus*) and Malabar grouper (*Epinephelus malabaricus*). This is an average of 5,375 fingerlings per month.

Table 2: Hatchery production per month for the year 2015.

Month	Number of fingerlings
January	7,941
February	4,250
March	2,039
May	10,077
June	5,200
July	5,275
August	10,500
September	6,542
November	4,500
December	8,170
<b>Total</b>	<b>64,494</b>



Figure 6-7: Orange-spotted Grouper fingerlings in the nursery tank.

## GROUPEr GROW OUT

We have provided fingerlings to 26 grouper farms in 19 different locations. Most of the farms provide income for more than one family.

**Table 2: Growers and farm location as of December 2015 that are growing fingerlings from the hatchery of Centre for Sustainability.**

#	Name of client/beneficiary	Farm location
1	Randy Brillantes- Nocs marine Inc.	Quezon, Palawan
2	Mark Pleyto	Taytay Bay, Taytay
3	Pacita Bravo-BFAR Quezon	Quezon, Palawan
4	Province of Davao Oriental-USAID GEM project -Lauro Ilagan	Davao Oriental
5	Theresa and Albert Cuyos	Sta Lucia, Puerto Princesa
6	Rodel Ong	Salvacion, Puerto Princesa
7	Imelda Pay	Sta cruz, Puerto Princesa
8	Mark Law	Sta Lucia, Puerto Princesa
9	Ramil Nolsol	New Guinlo, Taytay
10	Ralph Ceniza	Cebu
11	COMFAS (Coalition of Municipal Fisher Folks Association)-Dino Sagun	Mindanao
12	Mr Seracarpio	Tinuigiban, Puerto Princesa
13	Ms. Grace Abdala	Bataan, Pangasinan
14	Mr Tony Abillinde	Old Guinlo, Taytay
15	Mr. Jun Cruz	Old Guinlo, Taytay
16	Mr. Victor Carlos	Pancol, Taytay
17	University of Sto Thomas	Manila
18	LGU Roxas	Roxas
19	Fisherfolk association New Guinlo	New Guinlo, Taytay
20	Sacol association	Timburan, Taytay
21	Irrawaddy fisherfolk association	Pancol, Taytay
22	Fisherfolks association Pinagpala	Pinagpala, Taytay
23	Fisherfolks association Banbanan	Banbanan, Taytay
24	Ramir Nolsol	New Guinlo, Taytay
25	Bill Miller	Concepcion, Puerto Princesa
26	BFAR-ISRS Myrna Candelario	Sta Lucia, Puerto Princesa



Figure 8: Malampaya Sound in Taytay, Palawan.



Figure 9: Fixed sea cages, used for grow out of Grouper Fingerlings.

### EVALUATION GROUPEL GROWERS

A total of 11 interview were conducted with farmers in Palawan in November 2015. A questionnaire was used to gather the data.

#### Survival

The survival of the groupers at the farms ranges from 25% to 98%, with an average of 67%. The grow-out period ranges from 6-12 months. Low survival can be caused by a mistake or inexperience on the farmers' side or due to climate or environmental factors. We have evaluated the problems that were encountered by farmers and will incorporate this in our training manual and future training activities. All growers, but one, said to plan to order more fingerlings in the future.

Table 3: Number of fingerlings supplied and the survival rate per farm

Owner farm	No of Fingerlings	Survival (%)
Theresa and Albert Cuyos	3,259	29
Rodel Ong	2,530	84
Imelda Pay/Balin Sasayaw	1,300	83
Mark Law/Skylight	4,200	69
Ramil Nolsol	9,760	76
Mr Seracarpio	500	20
Mr Tony Abellinde	4,179	66
Mr Vic Carlos	1,360	85
Ramir Nolsol	2,000	66
Irrawaddy fisherfolk association	400	25
Sacol association	484	72

With an average survival of 67%, we can say that the grouper farmers are doing well, since most of them are beginners and normal survival is between 70-80%. This number is lowered due to a few instances of high mortalities. By doing this evaluation, we have identified the main problem growers encounter; high mortalities of green grouper in rainy season (Malampaya Sound). We will avoid this in

the future by only providing green grouper in the suitable season in this area. Other problems, like occurrence of cannibalism and deformities are smaller and easy to overcome by giving training to the growers on proper handling, sorting and feeding.

### Marketing

All farmers in Palawan sell their market size grouper to local buyer. The sales price ranges from PHP 400 to PHP 520 per kilo. They sell the fish when they are between 450 gram and 800 gram.

### Social impact

We also evaluate the social impact of the project (see table 3). We asked the farmers how many people work on the farm and an estimate of the total number of people that benefit from the earnings of the farms. We also inquired about other income sources of the owners of the farms.

**Table 4: Number of people working on the farm, number of beneficiaries and other income sources of the farmers**

Owner farm	Number of farmers	Total number of beneficiaries
Theresa and Albert Cuyos	3	3
Rodel Ong	2	10
Imelda Pay	1	2
Mark Law	2	3
Ramil Nolsol	1	15
Mr Seracarpio	1	5
Mr Tony Abellinde	3	20
Mr Vic Carlos	1	7
Ramir Nolsol	1	7
Irrawaddy fisherfolk association	6	25 (and their families)
Sacol association	2	30-40 (and their families)
<b>Total</b>	<b>23</b>	

All farms, have between 1 and 3 people working on the cages. The association has 6 people working on the cages in total, however they rotate and do not all work at the same time. The average number of direct beneficiaries per farm is 12 people. Other income sources are the culture of seaweeds or green mussels. Many growers are also engaged in other businesses.

### PARTNERSHIP PROJECT WITH WPU

On July 1, we started our official cooperation with the Western Philippines University by launching our partnership project at our hatchery facilities in Bgy. Sta Lucia, Puerto Princesa. The project is titled *'Protocol development for the culture of high value marine finfish species as a livelihood opportunity for the people of Palawan'* and is funded by USAID. It is part of STRIDE (Science, Technology, Research and Innovation for Development), is a five-year program to strengthen applied research activity in Philippine universities and industry.

The goal of the project is to optimize production of grouper fingerlings and expand hatchery output of other high value marine species to increase the number of project beneficiaries and decrease the pressure on Palawan's marine ecosystems. The project team has been trained by senior technicians of the Centre for Sustainability to ensure proficient skills to carry out the work necessary for the project.

Two egg incubation experiments were carried out using tiger grouper eggs. One on water temperature and one on water flow rate. The first larval rearing experiment on stocking density for Tiger grouper was completed. The experiment yielded 8,000 grouper fry, which are being used for the nursery experiments.

## **BORN TO BE WILD**

Born to be Wild is an environmental and wildlife program of a well-known television channel in the Philippines called GMA7 which is hosted by Doctor Ferdinand Recio and Doctor Nielsen Donato. They recently filmed at our grouper hatchery to document how we sustainably produce different grouper species.

The Born to be Wild host Ferdinand "Doc Ferds" Recio was guided to the nursery where the marketable grouper fingerlings are grown. Here, he experienced feeding the groupers and was thoroughly impressed – "This is fantastic!" he said. Afterwards he was directed to the algae and zooplankton department and went straight up to meet the empress of the grouper breeders. The empress (a giant grouper that weighs 40kgs and a meter long) is kept in a floating cage at sea. This species is known to be territorial and might be very aggressive, the technicians advised, just as Doc Ferds dove into the cage to start his adventure.

The episode was aired on June 14 and aimed to raise awareness of the fast-decreasing numbers of our seas' natural resources and show how sustainable ways of fishing like aquaculture does indeed represent an effective solution for responding to food shortages. After this episode we collaborated on several more episodes including one episode on the camera trapping program, one episode on the wildlife of Cleopatra's Needle and one episode on the wildlife of the watershed in Irawan.

## **AQUATECH**

The 6<sup>th</sup> Aquatech: Aquaculture Expo & Convention focused on the sustainability of aquaculture and the Centre for Sustainability was honored to be an official partner of the event. The event was held in the cold but beautiful Tagaytay (55km south of Manila, in Cavite Province). Several hundred representatives from the private and government sectors joined the event May 28-29, including BFAR National Assistant Director for Administrative Services, Benjamin Tabios, and Senator Cynthia Villar. Our Vice-President, Jonah van Beijnen, was asked to speak on the second day of the convention and he focused his presentation on the general aspects of sustainable hatchery and grow-out culture of different groupers. Centre for Sustainability operates the only grouper hatchery in the country that provides fingerlings to small-scale growers and the audience appreciated the learning experience. Additionally we received many requests for fingerlings.

## PROJECT ACTIVITIES- FOREST CONSERVATION

The lush island province of Palawan (approximately 12,000 km<sup>2</sup>) is located in the southwest of the Philippines. Due to a relatively low population density, the island has been spared from the major deforestation tragedy that took place in the rest of the Philippines, and approximately 50% of the primary forests in the province remain. Palawan has received international recognition by UNESCO as a Biosphere Reserve and it contains two World Heritage Sites. Nevertheless, the island remains relatively understudied and its forests are currently diminishing quickly.

There is a silver lining though: Puerto Princesa. This progressive municipality located in the middle portion of the island covers around 20% of province and holds a forest cover of 65%. Puerto Princesa contains one national park (Puerto Princesa Subterranean River National Park - 22,000 hectares) but approximately 80,000 hectares of pristine forest neighboring the park remains unprotected. The center of this large forest is shaped by Cleopatra's Needle (1,593 MASL), the highest peak of Puerto Princesa and surroundings. This area is a real biological gem, it is the last safe haven for countless endemic species, and it functions as an important corridor for species crossing the island. A large part of the area represents the ancestral lands of four communities of indigenous people. The members of these communities depend on the forest resources for their livelihood, including Almaciga resin, honey, and rattan. To protect the cultural and traditional practices of these communities, it is critical that the area is preserved. The area serves furthermore as the largest watershed in the municipality and provides water for approximately 30% of the residents in the municipality.

For these reasons, the Centre for Sustainability in collaboration with the Palawan Council for Sustainable Development and its other partners, propose to preserve a large proportion of the forest area (35,000 hectares) through the creation of Cleopatra's Needle Forest Reserve as a Critical Habitat under PCSD Resolution No. 13-481 as an amendment to Section 50 of Administrative Order No. 12, Series of 2011.

The main mission of the project is:

**“Preserve the natural resources for future generations of Indigenous Peoples, protect the largest watershed area of Puerto Princesa City, and safeguard the existence of countless locally endemic species by creating the Cleopatra's Needle Forest Reserve as a Critical Habitat”**



To achieve the mission and to ensure the long-term sustainability of the project we will accomplish six goals:

- I. Implement a delineation program to identify and mark the remaining forest and other valuable habitats on and around Cleopatra's Needle that will form the proposed Cleopatra's Needle Forest Reserve.
- II. Create an efficient management plan for the proposed forest reserve that serves as a guideline for the groups responsible for the management of the area.
- III. Increase the efficiency of law enforcement in the area through the capacity-building of forest wardens and deputy forest wardens.
- IV. Create a sustainable livelihood for members of the Batak Tribe in the area through ecotourism activities.
- V. Implement a research program to get a better understanding of different endemic and endangered species, their range, population status, habitat, ecology, and threats to their existence (completed in 2014).
- VI. Execute the 'Save the Almaciga project'.



## ACTIVITIES

### COMMUNITY CONSULTATION AND CONSENT

We are extremely thrilled to report that on November 26, 2015 we completed the momentous activity of signing a Memorandum of Agreement with the Batak community of Sitio Kalakwasan, Barangay Tanabag, as facilitated by the National Commission for Indigenous Peoples (NCIP) Provincial Office.

### SAVE THE ALMACIGA PROJECT

#### *Introduction*

In the last 50 years, forests in the Philippines have been reduced by almost 70 percent and by now, only 3 percent of the country is covered with primary forest. As part of a larger conservation program we are setting up the Cleopatra's Needle Forest Reserve (approximately 30,000 hectares) in Puerto Princesa, Palawan. The area is a real biological gem, it is the last safe haven for countless endemic species and it functions as an important corridor for species crossing the island. The area is furthermore home to several communities of Indigenous People, the last semi-nomadic tribes of hunter gatherers in the Philippines.

One of the key tree species in the area is locally known as Almaciga (*Agathis dammara*). This ancient coniferous tree, used to dominate the hill forests in northern Palawan and has a big impact on the ecosystem due to its huge size and (previous) high abundance. For the Indigenous People the Almaciga

tree is also of tremendous importance as their lives and income revolve around this tree; the tribes travel in groups around the forest to gather the resin of this tree. They sell this resin to traders and it makes up about 80 % of their income. The tree is considered holy as it also provides several benefits, and ownership of individual trees is passed from generation to generation.

Almaciga is rapidly vanishing even though its logging is currently banned by the Philippine government. Since demand for quality tree resin has been rising but the number of collection sites has been decreasing (logging and forest conversion), the Almaciga trees around Cleopatra's Needle have been overharvested due to the influx of outsiders that have come from areas where the trees have disappeared. Overharvesting causes the trees to become weak, they stop producing fertile seeds (since all nutrients in the tree are used to produce resin) and after a few years the trees collapse. If no action is taken, the future of the Almaciga tree and the livelihood and thus existence of the Indigenous People are very uncertain.

### *The objectives of the project*

- I. Increase the understanding of the role of *Agathis dammara* within the ecosystem;
- II. Increase understanding in the reproductive strategy of *Agathis dammara*;
- III. Raise awareness on the current overharvesting of Almaciga in the communities around Cleopatra's needle;
- IV. Develop sustainable harvest strategies of *Agathis dammara* resin with the Indigenous People by enhancing their knowledge about the reproductive strategy of the species and by increasing their knowledge of different harvesting strategies.
- V. Reforest the area (around 30,000 hectares) around Cleopatra's Needle with *Agathis dammara* seedlings.

### *Project achievements 2015*

#### **Research**

Under our joint supervision with Dr. Lita Sopsop of Western Philippines University (WPU), two Dutch interns conducted research on the following topics:

- *Effects of resin harvesting on reproduction and physical status of Agathis philippinensis*, principal author Kellie Bocxe.
- *Towards the sustainable use of Agathis philippinensis in Cleopatra's Needle Forest Reserve, the Philippines: A case study on resin harvesting*, principal author Lars Vermeer.

We are delighted that CS was invited to present the key findings of Kellie's article at the 2nd Research Symposium of the Palawan Knowledge Platform for Biodiversity and Sustainable Development. On December 9, 2015, CS Executive Director, Kyra Hoevenaars, presented Kellie's important work during this event before a local and national multi-sectoral audience. Lars' article will be presented during the 2<sup>nd</sup> International Conference on West Philippine Sea, which will be conducted by WPU on February 18-20, 2016.

In addition, we have been documenting our nursery protocol. Our Nursery Manager, Edgar Jose, has already formulated an extended abstract to sum up this work, entitled:

- *Developing protocols on propagation and nursery management of Almaciga (Agathis philippinensis Warb.): A means of preserving the future of the Batak tribe in the forest of Cleopatra's Needle, Puerto Princesa City, Palawan, Philippines.*

### Nursery

We have successfully established 3 Amaciga nurseries using seeds from cones that were collected during several expeditions. Once the seeds were planted, we have maintained around-the-clock monitoring under the supervision of local community members at each facility site, and with the assistance of CS staff. We have a total of 5339 seedlings and 35 wildlings growing in the nurseries.

Location	Number of seedlings	Number of wildlings
Binduyan	1228	5
Kalakuasan-Pulang bato	2072	0
Kalakuasan-Lipso	2004	30
<b>Total</b>	<b>5339</b>	<b>35</b>

It has become very clear that the Saving the Almaciga Tree project has been pivotal in bringing CS and the IP communities of the proposed CNFR closer together. In particular, the nursery activity has provided a crucial impetus for CS staff to have a daily presence in the communities, thus providing a wonderful opportunity to continue building and strengthening trust between all of us. We are thrilled to share our belief that this can only lead to more productive working relations not only in the conservation of the Almaciga tree, but also of the long-term sustainability of the proposed Cleopatra's Needle Forest Reserve.

### Capacity Building and Management Plan

We initiated an Indigenous Knowledge Documentation activity. On December 19-20, Edgar conducted a workshop with the assistance of three volunteers in sitio Kalakuasan, Bgy. Tanabag. One respondent each from 24 households was interviewed, representing approximately 50% of the total households in the community. Focus group discussions were held—principal topics included nursery activities, reforestation, and resin harvesting management. In these discussions, the tribes proposed to sign a resolution regarding the monitoring and management of the to-be-reforested Almaciga seedlings, as well as sustainable Almaciga resin harvesting techniques. This activity marked an important beginning in the dialogue where the community can fully realize the powerful role they possess in conserving the Almaciga tree, and protecting their own livelihood and those of their children, into the future.

### Environmental Education Component

The education materials are completed and the printing company has been contacted for printing. The Department of Education has been informed about the project and all principles of the schools have been contacted and are very enthusiastic about the program. We have found several volunteers to assist us with the school activities.

## STUDENT PROGRAM

In 2015, we hosted 4 international students; Melanie Ragon, Paris Marler, Kellie Boxce and Lars Vermeer Find below their research topics and summaries of their studies.

### **Mammalian Fauna of the proposed Cleopatra's Needle Forest Reserve (CNFR): A Camera Trap Study of Palawan's Mammals**

By: Paris Marler (& Melanie Ragon)

Humans have begun to destroy other species at an accelerating rate, causing researchers to predict the 6th mass extinction within the next three human lifetimes (Ceballos et al. 2015, McCallum 2015). Protecting and researching our global biodiversity hotspots would be a huge step towards reducing the effects of a human-induced sixth mass extinction (Hoffman et al. 2010). All hotspot research projects will give us more information on how a specific hotspot functions and its role in worldwide conservation efforts. Thus, we conducted a camera trap survey within the proposed Cleopatra's Needle Forest Reserve, a biodiversity hotspot (Ambal et al. 2012) in northern Puerto Princesa, Palawan, Philippines. In this survey, 30 camera stations were established along 3 transects, yielding a total of 711 trap nights. From these stations we recorded 6 out of 7 known carnivores native to Palawan, as well as other highly hunted and threatened species, like the Palawan Pangolin (*Manis culionensis*). The photo-captures allowed us to create species-specific relative abundance indices for the area following Gerber et al. (2010) and O'Brien et al.'s (2003) methodologies. The discoveries we have made within this project urge the need for cooperation among indigenous and government groups to protect this forest for future generations and for the prosperity of our global society.

### **Effects of resin harvesting on reproduction and physical status of *Agathis philippinensis***

By: Kellie Bocxe

In the Philippines 90 million people are directly or indirectly depending on the natural resources the forest ecosystem provides (Conservation International, 2011). One of the most direct ways is the people that live of non-timber forest products (NTFP). The ancient coniferous tree *Agathis philippinensis* (conspecific *A. dammara*) (Ella, 2000; Pers. Comm. A. Ella, 2015) is a tree species that produces the NTFP resin. This tree species grows in Palawan, including the proposed Cleopatra's Needle Forest Reserve, and is locally known as Almaciga. This area is home to several communities of indigenous people, called the *Batak*. The resin from the Almaciga is harvested by the collectors and covers about 80 percent of their income (Ella, 2008). However, Almaciga trees are vanishing rapidly (Halos & Principe, 1978; Ella & Domingo, 2012) and according to Westphal & Jansen (1989) and Ella & Domingo (2012) this is due to unsustainable resin harvesting methods. Generally, wood exudates, consisting predominately of carbohydrates, are assumed to protect the plant by sealing of injured tissues (Phillips & Croteau 1999; Rijkers et al., 2006). Additionally, plants allocate carbohydrates for multiple purposes such as growth, reproduction, assimilation of resources, and the protection of stored resources (Rijkers et al., 2006). The regular extraction of resin could potentially deplete trees of

carbohydrates, which under non-tapped conditions would be used for purposes that maintain the vitality of trees. This studies aims to find whether there is a relation between harvest intensities and the vitality of the tree, thereby focusing mainly on the physical status and the reproduction of individual trees. Another objective is to fill a knowledge gap on this specific *Agathis* species, as very little research on *Agathis philippinensis* is available. This includes a study on the dendrology and wood structure of this species.

The data was collected in the area of the proposed Cleopatra's Needle Forest Reserve. Overall, 257 trees were measured, of which 209 living and 48 dead. Multiple Multinomial Regressions were conducted with the most important result being that the physical status of the tree is highly related to the harvest intensity ( $p < 0.05$ , R-squared 0.623). The reproductive results show that the DBH is the explaining variable for the presence of cones ( $p < 0.05$ , R-squared 0.424) and the amount of cones ( $p < 0.05$ , R-squared 0.391). The harvest intensity does not significantly affect the reproductive state.

### **Towards the sustainable use of *Agathis philippinensis* in Cleopatra's Needle Forest Reserve, the Philippines: A case study on resin harvesting.**

By: Lars Vermeer

In Palawan, a biological hotspot is currently turned into a protected area, called Cleopatra's Needle Forest Reserve (CNFR). The most important goals of establishing the CNFR are to conserve the rich endemic biodiversity and to uphold the diminishing culture of the Batak, a group of indigenous people that are fully dependent on forest resources for their livelihood. This way of living, however, is in jeopardy because the natural resource on which they depend most, the resin from *A. philippinensis* trees, is overexploited to the extent of imminent local extinction. This study focusses on gaining insights on the causal mechanisms that cause this overexploitation and provides guidelines to divert to a sustainable relationship between the Batak and *A. philippinensis* in the CNF area. Both quantitative and qualitative field research provide the basis of these guidelines. The conducted research results in (i) a model with linear sequences on multiple spatial scales that indicates the causal mechanisms of the overexploitation of *A. philippinensis* and (ii) a map that provides a visual overview of the state of degradation of *A. philippinensis* in the proposed CNFR. On the basis of the model and map several solutions could be provided in order to ensure the sustainable use of *A. philippinensis*. These solutions are part of a concept, called: ecosystem stewardship. This concept proactively creates change that improves the long-term sustainability of ecosystems and their services in order to create support for human well-being. It achieves this by abiding to three strategies: (i) capacity building to facilitate adaptation, (ii) increasing and maintaining a diversity of (economic) options and (iii) stimulating the distribution of power over resource management among organizations that operate in multiple spatial scales. As a result, a new model for the socio-ecological system can be formulated that makes the old model obsolete. Subsequently, the socio-ecological system adheres to the sustainable use of resources, instead of overexploitation, which contributes to the continuous coexistence of the Batak and *A. philippinensis* in the proposed CNFR.

## FINANCES

### DONORS

We are very grateful for the support of our donors to our projects. In the following table the contributions to our projects from the respective funding agencies and donors is shown for 2015.

Project	Funding agency	Amount paid
<b>Grouper Livelihood Program</b>	ICCO	EUR 25,000
<b>Cleopatra's Needle Forest Reserve</b>	Global Wildlife Conservation/Rainforest Trust	USD 70,000
	German Development Cooperation	PHP 502,996
<b>Student Research program</b>	Student contributions	EUR2,500
	The Otterfund Foundation	EUR 2,500
<b>Save the Almaciga project</b>	Fauna and Flora International	PHP 1,016,652
	Philippine Tropical Forest Conservation Foundation	PHP 362,000

### NETHERLANDS

#### BALANCE SHEET

	<u>Dec 31, 15</u>
<b>ASSETS</b>	
Current Assets	
Checking/Savings	
1110 - Petty cash	4.00
1200 - Bank	<u>8,330.65</u>
Total Checking/Savings	<u>8,334.65</u>
Total Current Assets	8,334.65
Fixed Assets	
1410 - Investment in SSE Phil's Inc	<u>9,500.00</u>
Total Fixed Assets	<u>9,500.00</u>
<b>TOTAL ASSETS</b>	<b><u><u>17,834.65</u></u></b>
<b>LIABILITIES &amp; EQUITY</b>	
Liabilities	
Long Term Liabilities	
2400 - Loan POC Startlife	<u>46,982.44</u>
Total Long Term Liabilities	<u>46,982.44</u>
Total Liabilities	46,982.44
Equity	
3100 - Retained Earnings	-11,163.34
3600 - Owner s equity	585.00
Net Income	<u>-18,569.45</u>
Total Equity	-29,147.79

TOTAL LIABILITIES & EQUITY

17,834.65

## PROFIT AND LOSS STATEMENT

	<u>Jan - Dec 15</u>
Ordinary Income/Expense	
Income	
4300 · Student fee	2,625.00
4600 · Donations	1,190.00
Total Income	<u>3,815.00</u>
Cost of Goods Sold	
5110 · feeds	1,652.78
Total COGS	<u>1,652.78</u>
Gross Profit	2,162.22
Expense	
6200 · Marketing	
6230 · Website	68.24
Total 6200 · Marketing	68.24
8000 · CNFR	
8100 · Project staff	
8150 · Allowance staff	3,077.93
Total 8100 · Project staff	3,077.93
8200 · Goal 1 equipment	99.95
Total 8000 · CNFR	3,177.88
9400 · Donation to CS-PH	15,000.00
9535 · Interest loans	1,807.00
Total Expense	20,053.12
Net Ordinary Income	-17,890.90
Other Income/Expense	
Other Expense	
9510 · Penalties & fines	130.00
9540 · Bank charges	128.55
9550 · Taxes	420.00
Total Other Expense	<u>678.55</u>
Net Other Income	<u>-678.55</u>
Net Income	-18,569.45

## PHILIPPINES

### BALANCE SHEET

Dec 31, 15

## ASSETS

<b>Current Assets</b>	
<b>Checking/Savings</b>	
1110 - Petty cash	70,186.10
1200 - Bank	1,012,161.64
<b>Total Checking/Savings</b>	<u>1,082,347.74</u>
<b>Other Current Assets</b>	<u>63,242.40</u>
<b>Total Current Assets</b>	1,145,590.14
<b>Fixed Assets</b>	
1410 - Office	389,922.01
1420 - Hatchery	2,486,865.59
1440 - Transportation equipment	13,471.83
1450 - Security	47,149.08
1460 - Cages & nets	1,175,811.04
1480 - Generators & transformers	<u>281,479.50</u>
<b>Total Fixed Assets</b>	4,394,699.05
<b>Other Assets</b>	
1710 - Start-up Costs	<u>3,781,149.38</u>
<b>Total Other Assets</b>	<u>3,781,149.38</u>
<b>TOTAL ASSETS</b>	<u><u>9,321,438.57</u></u>
<b>LIABILITIES &amp; EQUITY</b>	
<b>Equity</b>	
30000 - Opening Balance Equity	25,140,663.94
3100 - Retained Earnings	14,537,583.27
Net Income	<u>-1,281,642.10</u>
<b>Total Equity</b>	<u>9,321,438.57</u>
<b>TOTAL LIABILITIES &amp; EQUITY</b>	<u><u>9,321,438.57</u></u>

## PROFIT AND LOSS STATEMENT

	<u>Jan - Dec 15</u>
<b>Ordinary Income/Expense</b>	
<b>Income</b>	
<b>4100 - Sales</b>	
<b>4110 - Sales fingerlings</b>	
4111 - Sales fingerlings Green Grouper	765,075.00
4112 - Sales fingerlings Tiger Grouper	<u>1,316,500.00</u>
<b>Total 4110 - Sales fingerlings</b>	2,081,575.00
<b>4120 - Sales market size Grouper</b>	<u>175,417.00</u>
<b>Total 4100 - Sales</b>	<u>2,256,992.00</u>
<b>Total Income</b>	2,256,992.00
<b>Cost of Goods Sold</b>	
5100 - Feeds	437,822.89
5140 - Health	26,088.00

Total COGS	463,910.89
Gross Profit	1,793,081.11
Expense	
6010 · Insurances	107,110.00
6100 · Freight and handling	19,083.00
6130 · Transport sales	117,123.80
6200 · Marketing	11,212.00
6300 · Staff - Grouper project	1,132,128.00
6330 · Temporary staff	5,100.00
6340 · Withholding tax on salaries	10,546.08
6400 · Travel	66,632.70
6500 · Office	
6520 · Utilities	355,705.05
6530 · Office supplies	4,363.00
6536 · Official docs and IDs	600.00
6537 · Xerox print extern	5,860.75
6540 · Communication	17,474.00
Total 6500 · Office	384,002.80
6600 · Professional fees	53,843.00
6700 · Materials & equipment	117,449.45
6800 · Depreciation	2,005,268.37
6900 · Repair and maintenance	290,671.50
7100 · Student program	79,381.50
8000 · Forest Conservation project	
8004 · rent, utilities, supplies	115,284.94
8005 · Telephone	27,344.00
8008 · General gasoline	8,287.00
8100 · Project staff	994,284.37
8200 · Goal1 Declaration demarcation	167,488.71
8400 · Goal 3 Forest wardens	17,643.75
8600 · Goal 5 Rapid Assesment	20,690.26
8800 · Research project	29,596.00
8900 · Save the Almiga-FFI	911,849.08
8000 · CNFR - Other	12,526.85
Total 8000 · CNFR	2,304,994.96
Total Expense	6,704,547.16
Net Ordinary Income	4,911,466.05
Other Income/Expense	
Subsidies and donations	3,656,344.87
Other Expense	26,520.92
Net Other Income	3,629,823.95
Net Income	1,281,642.10

## MEDIA

### ARCHIVE: CENTRE FOR SUSTAINABILITY IN THE MEDIA - 2015

- Jonah van Beijnen, Manila Bulletin, 11 May 2015, *Geological gem: Palawan's Cleopatra's Needle.*
- Shaira Panela, Mongabay.com, 8 May 2015, *Researchers find treasure trove of unique, threatened animals in Philippine forest.*
- Jonah van Beijnen, Philippines Today, 7 May 2015, *Quest to protect Cleopatra's Needle in Palawan for indigenous communities stumbles on exciting findings.*
- Jason Bittel, National geographic, 2 June 2015, *"Extinct" amphibians rediscovered after nearly half a century.*
- Sun star, 3 June 2015, *Supposedly extinct amphibians rediscovered in Palawan.*
- Lydia O'Connor, 3 June 2015, The Huffington Post, *Two species assumed to be extinct were just rediscovered.*
- Brendan M. Lynch, 11 June 2015, KU News Service, *In Philippines, researcher discovers the long-lost Malatgan caecilian.*
- Kira Jorgio, 8 June 2015, Philippine News Agency-InterAksyon, Puerto princesa City Govt, *Indigenous People ask: Protect Cleopatra's Needle in Palawan.*
- Shaira Panela, 15 June 2015, Rappler, *Two 'lost' animal species spotted in Palawan.*
- Alexis Chavetnoir, 7 June 2015, Sciencepost, *Deux especes disparues depuis un demi-siecle refont surface aux Philippines.*
- GMA network, 18 August 2015, *Animal spotlight: The frogs of MT Cleopatra's Needle in Palawan.*
- Rafe Brown, 3 November 2015, Amphibia web, *Species of the week: Ichthyophis weberi.*
- GMA network, 14 June 2015, Born to be Wild, *Grouper Hatchery.*
- GMA network, 21 June 2015, Born to be Wild, *Animal trapping at Cleopatra's Needle.*
- GMA network, 5 July 2015, Born to be Wild, *Giant eel in Cleopatra's Needle.*

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