

# PHILIPPINE FRESHWATER TURTLE CONSERVATION PROGRAM (PFTCP) 2015 Annual Report



Katala Foundation Inc.

## Wildlife Reserves Singapore Group



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Carpus



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Puerto Princesa City, Palawan, Philippines  
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# 2015 ANNUAL REPORT

**COUNTRY:** PHILIPPINES  
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**PROGRAM SITE:** Philippines  
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Department of Environment and Natural Resources (DENR)  
Palawan Wildlife Rescue and Conservation Center (PWRCC)  
Palawan Council for Sustainable Development Staff (PCSDS)  
Provincial Government of Palawan  
City Government of Puerto Princesa  
Municipal Governments of Narra, Roxas, Dumarán, and Taytay  
Barangay Governments of Dumarao-Roxas, Antipuluan-Narra  
Protected Watershed Area Management Board (PWAMB)  
Concerned agencies and authorities



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Zoo, Zoo Landan, Zoological Society for the Conservation of Species and Population, Zoo Leipzig, Zoo Med Supplies, Zoo Parc Beauval, Zoo Schönbrunn Vienna.

## ACRONYMS and ABBREVIATIONS

Bakoko	Cuyunon term for freshwater turtles, especially <i>S. leytensis</i>
Barangay Captain	Barangay Chairman, elected leader of the village
Barangay	Filipino term for village
BMB	Biodiversity Management Bureau
BMZ	Federal Ministry for Economic Cooperation and Development
CE	Conservation Education
CENRO	Community Environment and Natural Resources Office(r)
Cuyunon	Dialect of the people of Palawan
DENR	Department of Environment and Natural Resources
ELAC	Environmental Legal Assistance Center
ENRO	Environmental Natural Resources Office
GPS	Global positioning system
IEC	Information Education Campaign
IP	Indigenous People
IUCN	International Union for Conservation of Nature and Natural Resources
Katala	Filipino Term for the Philippine Cockatoo
KFI	Katala Foundation, Inc.
KIEBC	Katala Institute for Ecology and Biodiversity Conservation
LGU	Local Government Unit
LPF	Loro Parque Fundación
MOA	Memorandum of Agreement
NEZS	North of England Zoological Society
NGO	Non-Governmental Organization
PA	Protected area
Pagong	Filipino term for freshwater turtles
PAWB	Protected Areas and Wildlife Bureau
PAWVI	Philippine Association of Wildlife Veterinarians Inc.
PCCP	Philippine Cockatoo Conservation Program
PCSD(S)	Palawan Council for Sustainable Development (Staff)
PENRO	Provincial Environment and Natural Resources Office
PFTCP	Philippine Freshwater Turtle Conservation Program
PNP	Philippine National Police
PO	Peoples Organization
PPDO	Provincial Planning and Development Office
Purok	also called sitio; division within the territory of a particular barangay; one of the smallest political divisions
PWA	Protected watershed area
PWAMB	Protected watershed area management board
PWRCC	Palawan Wildlife Rescue and Conservation Centre
SEP	Special Environmental Plan
Sitio	A territorial enclave that forms part of a barangay, the location of which may be distant from the centre of the barangay itself.
Tanod	Barangay police
TCF	Turtle Conservation Fund
TFTSG	Tortoise and Freshwater Turtle Specialist Group
TSA	Turtle Survival Alliance
TWG	Technical Working Group
WEO	Wildlife Enforcement Officer
WPU	Western Philippines University
ZGAP	Zoologische Gesellschaft für Arten- und Populationsschutz

## **RATIONALE**

The Philippine freshwater turtle fauna is one of the least known in Southeast Asia. Six species of native freshwater turtles are recognized from the country, four of which occur in Palawan. All native species are IUCN red-listed and all are listed under Appendix II of the Convention of International Trade of Endangered Species (CITES). Of special concern is the critically endangered Palawan Forest Turtle, *Siebenrockiella leytensis*, locally known as Bakoko or Suyan, which only occurs in Palawan. Knowledge is restricted to general descriptions of the habitat, feeding habits in the wild and captive care, phylogeny, morphology and first data on growth. Virtually nothing is known about demographic trends, size and age at maturity, reproduction, surviving numbers in the natural populations, population sizes, and densities.

All Palawan native freshwater turtle species live in waters of lowland forest areas, and habitat alteration in the form of large- or small-scale deforestation, drainage of swamps to give way for agriculture, aquaculture or human settlements are a major threat to their survival. Local utilization (food, medicine, pet, superstitious beliefs, curio), and international pet and food trade negatively affects the different species to varying extent.

The lack of basic information on the natural history of freshwater turtles in the Philippines stands as an obstacle to the implementation of effective conservation and management strategies. It was therefore recommended to establish of a national program for Philippine freshwater turtles to address priorities for research, conservation, and management of this threatened and poorly studied faunal assemblage.

To address this gap, Katala Foundation signed a memorandum of agreement with the Biodiversity Management Bureau of DENR (former DENR-PAWB) that covers the implementation of the **Philippine Freshwater Turtle Conservation Program** since 2006. Then in 2011, KFI was issued a clearance (RES-102811-010) the under Strategic Environmental Plan of the Palawan Council for Sustainable Development that covers the implementation of the PFTCP in Palawan.

The overall goal of the PFTCP is the conservation and sustainable management of Philippine freshwater turtles and their habitats. The objectives of the program are the following:

1. **Conservation** of Philippine freshwater turtle populations and their habitats, particularly but not restricted to Puerto Princesa City, Narra, Dumaran Island, and Rizal
  - 1.1. Establishment and development of facilities for conservation breeding / captive management / rescue of threatened freshwater turtle species.
  - 1.2. Provision of assistance in identifying areas / habitats of freshwater turtle for priority protection as well as in implementing conservation and protection measures and sustainable development of identified priority areas.
  - 1.3. Provision of assistance in wildlife law enforcement and information dissemination.
  - 1.4. Conduct of experimental soft release of turned-over / donated / confiscated and captive bred freshwater turtles.
2. Conduct of scientific **research** on the biology and management of Philippine freshwater turtles and their habitats, and socio economic frame conditions leading to threats and strategies for conservation, such as, among others studies / researches:

- 2.1. Research on biology such as but not limited to breeding, population dynamics, feeding ecology, synecology, diseases, threats, taxonomy, captive management, veterinary medical procedures, and behavior, among others.
- 2.2. Habitat conservation and restoration techniques.
3. **Education and capacitating** stakeholders of PFTCP on natural resource management and conservation; rehabilitation/restoration of species habitats, and environmental awareness by:
  - 3.1. Conducting environmental education on the status and threats of Philippine freshwater turtle species for key stakeholders like poachers, buyers, traders, decision makers, law enforcers, in and out of school youth, local communities, academe and local government units, among others;
  - 3.2. Capacitating local communities concerned on turtle conservation, including pre and post release activities for the species in their respective areas;
  - 3.3. Disseminating information on Philippine freshwater turtles and related conservation / protection issues through multi media, including publications and distribution of research outputs/results generated from this undertaking;
  - 3.4. Establishing a Center in Narra, Palawan as venue for biodiversity education and research.

### **PFTCP WORKPLAN 2015**

In 2015, we addressed the following objectives:

- 1) Quantify food items of the Palawan Forest Turtle *Siebenrockiella leytensis* and assess the relative composition of the different food items from two different habitats;
- 2) Come up with a quality nutritional diet for *S. leytensis* that will support conservation breeding;
- 3) Conduct controlled mating experiments with *S. leytensis*;
- 4) Conduct research on nesting sites, incubation time, incubation temperature and humidity of *S. leytensis*;
- 5) Improve quarantine facilities and water quality at the Katala Institute for Ecology and Biodiversity Conservation;
- 6) Conservation of confiscated Palawan Forest Turtles;
- 7) Continue capacitating the Protected Area Management Board in the management of the protected watershed area in Barangay Dumarao, Roxas;
- 8) Continue the wardening scheme for the protected watershed area in Barangay Dumarao, Roxas; and
- 9) Continue the conduct of research on species and habitat conditions in Dumarao; and
- 10) Publications, reports, conferences attended.



## **HIGHLIGHTS OF ACCOMPLISHMENTS**

### **1) Diet of wild Palawan Forest Turtles**

To quantify food items of *S. leytenensis* and to assess the relative composition of the different food items from two different habitats sampling has been conducted from January to December in Dumarao, Roxas. Turtles were trapped from two different stream habitats (*Pandanus* swamp forest and riverine lowland evergreen forest). Both sites are within the protected watershed area in Barangay Dumarao, Roxas. Each monthly sampling comprised one trapping night per habitat. Turtles were captured with 20 baited funnel traps, a method that proved to be effective in the past (Fig. 1). In addition, we tried collecting turtles from the shore with a dip net (Fig. 2).

All captured individuals were measured, notched and photo documented (Fig. 3). Then they were placed individually in containers with enough water to cover the plastron and the limbs and kept for 12 to 36 hours. Containers were covered with leaves to keep them dark which reduced stress (Fig. 4). Fecal matter was collected and preserved in 70% ethanol for identification (Fig. 5).



**Figure 1: Preparing foldable funnel traps.**



**Figure 2: Poles with baits were used to attract and then catch turtles with a scope net.**





**Figure 3: Assessing the catch (left). Hatchlings are marked with a nail clipper (right).**



**Figure 4: Turtles are kept individually in buckets that are covered with leaves.**



**Figure 5: Fecal matter was filtered and then preserved in 70% ethanol.**

In the laboratory, each fecal sample was identified under a dissecting microscope to the lowest taxonomic possible level e.g. plant matter, seeds, opercula of snails, gastropod shell fragments, shrimps, crabs, insects, vertebrate bones, etc. Then, the amount of

each fecal component was dried at about 60°C (Fig. 6) and weighed with a portable G&G digital professional jewelry scale to the nearest 0.001g. It was envisioned to also assess the volume of each item, but this proved to be impossible under our local working conditions and equipment available. To facilitate the identification of seeds, we collected potential food plants from the habitat and dried them and compared seeds with those found in the feces (Fig. 6).



**Figure 6: Fecal matter was sorted into taxa and then oven dried (left). Fresh fruits from the habitat were collected and dried to compare with fecal matter (right).**

So far, the relative composition of the fecal matter in terms of plant and animal matter was compared among the two habitats. Likewise the frequency of occurrence of each fecal/food component was calculated as the percentage of turtles in which a given fecal/food item was found (%F). At a later stage, we will further analyze the data and assess for a correlation of diet with any of the following variables: habitat, gender, life history stage and season.

Monthly samplings were conducted in both habitats from January to December 2015. Only in October the sampling areas in both habitats were not accessible, and an alternative area was sampled. Two hundred seventy five turtles were collected, this includes recaptures. From them a total of 200 fecal samples were secured. In the forest stream less turtles were collected than in the Pandanus swamp forest (Tab. 1). In the forest area, an average of 7.8 turtles and a mean of 6.6 fecal samples were collected monthly. In the Pandanus swamp forest, an average of 15.3 turtles and 10.6 fecal samples were collected monthly (Tab. 1). The highest number of turtles (21) and number of samples (20) were collected from the third sampling area which is a swampy area located between the forest site and the Pandanus site in October (Tab. 1).

**Table 1: Number of turtles and number of viable fecal samples per month and habitat.**

Months	Forest stream habitat		<i>Pandanus</i> swamp forest habitat		Swampy area	
	# turtles captured	# fecal samples	# turtles captured	# fecal samples	# turtles captured	# fecal samples
January	4	4	21	4		
February	4	1	18	2		
March	13	7	25	12		
April	11	10	17	15		
May	8	8	10	10		



Months	Forest stream habitat		<i>Pandanus</i> swamp forest habitat		Swampy area	
	# turtles captured	# fecal samples	# turtles captured	# fecal samples	# turtles captured	# fecal samples
June	7	4	12	11		
July	5	5	18	16		
August	10	10	17	17		
September	6	6	11	11		
October	N/A	N/A	N/A	N/A	21	20
November	15	15	7	7		
December	3	3	12	12		
<b>Total</b>	<b>86</b>	<b>73</b>	<b>168</b>	<b>117</b>	<b>21</b>	<b>20</b>
<b>Mean</b>	<b>7.8</b>	<b>6.6</b>	<b>15.3</b>	<b>10.6</b>		

A total of 35 different food items were identified (Fig. 7). Twenty-eight of these were plant matter, seven were animal matter and one was of inorganic nature.



**Figure 7: Some of the food items found in the feces of the turtles.**

Generally, the feeding habits of *S. leytensis* were similar in all sampling sites. Results showed that the species is primarily herbivorous. The frequency of occurrence of animal matter might vary with its availability in the habitat. For example, from a fecal study from a forest stream with abundant gastropods, the frequency of occurrence of animal matter was 44% (Acosta & Schoppe 2013).

Although data analysis is still on-going, and the correlations of food items to gender, season, life history stage and habitat are still pending the present results are already of great significance as they provide for the better understanding of the species. The fact that *S. leytensis* is primarily herbivorous is especially important for captive husbandry.

## 2) Diet of the Palawan Forest Turtle in captivity

At the assurance colony in KIEBC we switched the diet of *S. leytensis* from alternating different food items to providing “turtle pudding” which is a combination of some 20 food items and supplements (Fig. 8). For the pudding, ingredients are ground with a meat mincer and mixed and heated to 40°C. At the same time, gelatine bars are melted in hot water and then added to the plant-meat mixture. Before the pudding hardens it is poured into ice cube holders and plastic food containers. Those that are not fed the same day are frozen.



**Figure 8: Pudding-making.**

We tried different kinds of puddings in our facilities in Narra and in Puerto Princesa City. In KIEBC Narra, we used 11 different ingredients at a ratio of 1:1.3 plant to animal matter. In KIEBC PPC, we used some 13 different ingredients in different amounts but all at a ratio of 1:0.41-0.43 plant to animal matter. Once we tried a mixture of herbivore and carnivore formula with banana and pineapple. In both facilities, we fed about 5% of body weight per week and feeding frequency was three times per week. We always added mineral/vitamin mixture in the form of Arkvits. All kinds of pudding were always

readily accepted by the turtles (Fig. 9). Once we tried to reduce the animal matter to a ratio of 1:0.26 plant to animal, and most turtles refused feeding on the pudding.

We monitored body weight of the turtle on a monthly basis (Fig. 10). Large adults that are kept since 2007 in KIEBC had stable weights. Only sub-adult individuals that had joined the facility more recently increased weight (and size) at a moderate rate.



Figure 9: *S. leytensis* feeding on turtle pudding.

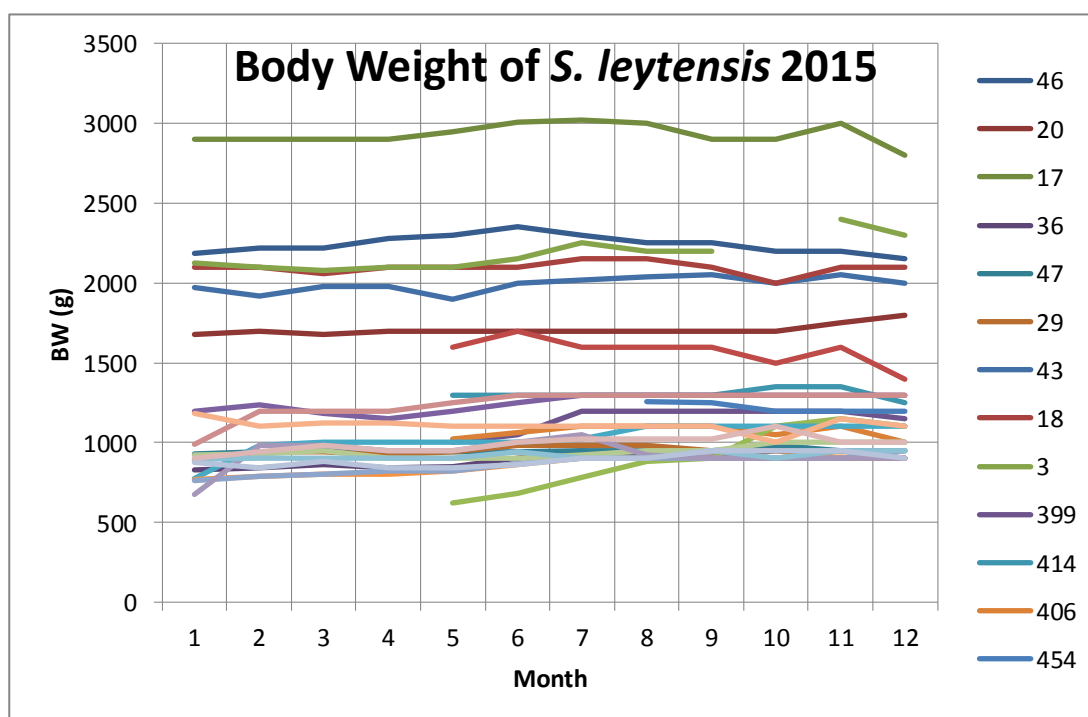


Figure 10: Monthly body weight of *S. leytensis* was stable for most of the adult individuals.

### 3) Pairing of Palawan Forest Turtles

Mating experiments with captured turtles were conducted between 6pm to 8pm, a time at which individuals usually get active. The females were paired with different males once a week. Every week one of the males was introduced to one female after the other. Each pair was then observed for a maximum of 15 minutes. After 15 minutes, the



male was moved to the next female. If the same female refused to mate for four consecutive weeks the experimentation with her was stopped for at least one month.

Mating experiments had been conducted regularly from January to April in KIEBC Narra. Once a week one of nine different males was introduced to the six females (36, 47, 29, 161, 168, 186). Also in KIEBC PPC mating experiments were conducted but not that regularly. Most of the females mated several times (Tab. 2, Fig. 11).



**Figure 11: Courtship and mating of a pair in KIEBC PPC.**

The females 161, 168, and 186 however never mated with any of the males. To give all females a period of rest, all experiments were stopped in May 2015. Only two of the females that had been included in the experiments had produced eggs. Together they laid four eggs but all were infertile (Tab. 2). In addition, three females that had only joined the assurance colony in February 2015 and that had not been included in the mating experiments, had laid one infertile egg each (Tab. 2).

**Table 2: Results of mating experiments in KIEBC Narra.**

Turtle ID #	Date mated	Date deposited (# of eggs)	Remarks
36	18-Jan-15, 15-Feb-15, 22-Feb-15 1-Mar-15, 22-Mar-15, 5-April-15, 11-Aug-15	none	-
47	4-Jan-15, 25-Jan-15, 15-Feb-15, 22-Feb-15, 1-Mar-15, 15-Mar-15	4-Jun-15 (1) ,21-Oct-15 (1)	infertile
29	4-Jan-15, 18-Jan-15,22-Feb-15, 8- Mar-15, 5-Apr-15	11-Apr-15 (2)	infertile
161	Never mated	none	-
168	Never mated	none	-
186	Never mated	none	-
399	N/A	24-Mar-15 (1)	infertile
406	N/A	29-Sept-15 (1)	in water, broken
455	N/A	11-April-15 (1)	infertile

We presume that *S. leytensis* loses fertility due to stress under captive conditions. This would explain why we were unsuccessful in breeding the species whereas eggs of gravid wild-caught females are fertile (see below).

#### 4) Incubation

We intensified our efforts of searching for nesting sites in the wild. Eventual nests were fenced and equipped with a HOBO Pro v2 temperature and humidity data logger with internal sensor to monitor temperature and humidity during incubation (Fig. 12). Once hatched or spoiled, data of the logger were downloaded with a HOBO Universal optical base station. Eggs laid in captivity were likewise established with data loggers.

We also modified the nesting areas, constructed artificial dens and renewed shelters in the enclosures.



**Figure 12: HOBO Pro v2 logger installed beside a *S. leytenensis* egg encountered in the wild (left). Logger installed beside an egg laid by a captive female (right).**

In 2015 we had 7 eggs laid by six females in our assurance colony in KIEBC Narra and we had 15 eggs laid by six females in KIEBC PPC. Those from Narra were incubated in an incubator. None of the eggs showed signs of being fertile and none of them hatched (Fig. 13).



**Figure 13: Infertile eggs produced by females from the assurance colony.**

In our project site in Dumarao, Roxas we had set one HOBO data logger in an area where a *S. leytenensis* had hatched in 2014 at a time when we did not yet have data loggers. We had set the logger from March 8 to May 6, 2015.



In 2015, we had found three eggs in Dumarao, one in April (Fig. 14), one in May (Fig. 15) and one in June (Fig. 16). We presumed that one was from *S. leytensis* and two were from *C. amboinensis* based on the nesting habitat.



**Figure 14:** Wildlife wardens in Dumarao found this turtle egg along a trail in April. They carefully checked if it showed any signs of damage – they were told not to touch the egg. Then they build a shelter around the egg.



**Figure 15:** Another egg had been found by wardens in June. During her monitoring visit, Sabine checked the egg. In the 2<sup>nd</sup> half of July the wardens checked the egg daily. On July 25 it had emerged from the egg (right).



**Figure 16:** This egg failed to hatch; it was flooded.





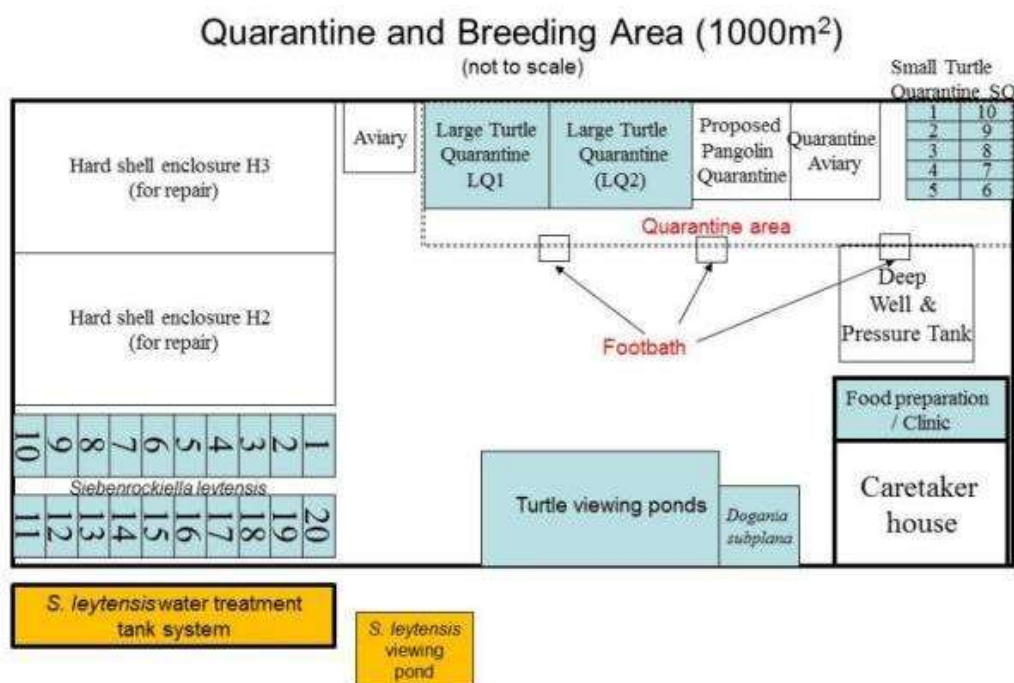
Females that had produced hatchlings did not produce viable eggs in later clutches. This provides strong evidence that the Palawan Forest Turtle (either female or male or both) loses fertility when kept in captivity for long. This strongly suggests that all alleged captive-bred Palawan Forest Turtles that occur in trade are either wild caught hatchlings or hatched from gravid wild-caught females. We also renewed shelters in the enclosures and added shelters in the ponds (Fig. 19).



**Figure 19: Palm frond sheds cover the nesting areas and part of the ponds (left). Cut PVC pipes were used as shelters in the water.**

## 5) Quarantine facilities and water quality

To establish a barrier between the quarantine enclosures and the breeding enclosures a physical barrier needed to be established (Fig. 20). Likewise repair and renovation works were conducted in the quarantine and breeding areas. We also introduced new water treatment methods in the water treatment tank system and the enclosures themselves. We installed a hump and in between three footbath basins (Fig. 21).



**Figure 20: Sketch of quarantine and breeding facilities in KIEBC (not to scale)**



**Figure 21: Lay-out of hump and foot bath (left) and pouring of concrete (right).**

The existing small / individual quarantine area was expanded by positioning 12 fiberglass tubs on top of the concrete enclosures (Fig. 22). Fiberglass tubs were locally made by a boat maker.



**Figure 22: Expansion work in small quarantine area. Now, six fiberglass tubs can be accommodated on top of the concrete enclosures on each side of the small quarantine area.**

In June, we had to replace the 42 gallon pressure tank by a much larger one because our water consumption had increased 20-fold due the large number of turtles that had been confiscated in June. We tried a couple of different plants in the water treatment tank (Fig. 23). The one that provides the best results – provided enough sunshine reaches the leaves – is the Water Pennywort *Hydrocotyle* sp. (Fig. 23). Its growth



however is hampered in our setup by fishes that were introduced by birds or other agents.



**Figure 23: Different aquatic plants are tested in the water filtering system.**

We changed the filters in the filter part of the water treatment system. The old filters had a wooden frame and synthetic filter material (Fig. 24, left). The new filters are made from aluminium frames with aluminium screen (Fig. 24, right). We used Efficient Microorganisms Extended (EME) to treat the tank water, and the enclosures' land and water areas (Fig. 25). We are spraying the solution with a back pack sprayer once a week (Fig. 25).



**Fig. 24: Old (left) and new filters (right) the water treatment system.**



**Fig. 25: Preparing a solution of EME from EM1 and molasses (left). The solution is then sprayed over the enclosures in land and water areas (right) and added to the pond water system.**

## 6) Conservation of confiscated Palawan Forest Turtles

Despite a general broader awareness about illegal wildlife trade, *S. leytensis* trade never stopped. Early 2015 evidence for this had been manifested in four confiscations within two months. In line with KFI's MOA with DENR-BMB and SEP clearance with PCSD, Palawan Forest Turtles are usually turned over to KFI for health care and release back to the wild. However, the running budget of KFI, did not cover the considerable additional expenses that occurred with these high number of confiscations. Hence, KFI had applied and was granted a micro grant from PTF CF to address the proper conservation of *S. leytensis* confiscated last 2014 and during the 1<sup>st</sup> quarter of 2015 (Schoppe, 2015).

Between December 22, 2014 and April 27, 2015, 309 Palawan Forest Turtles had been confiscated by PCSDS and turned over to PWRCC or KFI (Tab. 3). KFI took over the health care for all of them. We have conducted health care including three to four consecutive deworming at 10 day intervals (Fig. 26).

Husbandry and feeding at 5% body weight per week had been taken care of by an assistant keeper that had been hired for that purpose.

There were no mortalities among all turned-over Palawan Forest Turtles. With counterpart funding donated by concerned veterinarians from Hong Kong, we have monitored the turtles at the release sites.





**Figure 26: 78 Palawan Forest Turtles abandoned at a pier in Taytay on 10 January 2015 had been turned over to PWRCC where KFI took care of health and deworming.**

Then on 17 June 2015, KFI received a phone call from PCSDS with the shocking news that its Enforcement Group had confiscated 4,312 live, and 90 dead freshwater turtles in Southern Palawan. The majority of the turtles were Palawan Forest Turtles (Tab. 3). This exceeded by far, KFI's and PWRCC/PCSDS financial and technical capabilities, hence KFI had informed the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group (TFTSG) to appeal for assistance and we received an overwhelming response from turtle conservation groups from all over the world. In less than 12 hours, Asian, American, and European organizations had all committed financial support, technical assistance, and supplies.

**Table 3: Date, location, and number of Palawan Forest Turtle confiscated in 2015 as well as number of individuals released.**

<b>Date confiscated</b>	<b>Location of confiscation</b>	<b>No. of individuals confiscated</b>	<b>No. of individuals released after health care</b>
10-Jan-15	Taytay	78	78
19-Jan-15	Taytay	18	18
30-Jan-15	Taytay	28	28
20-Feb-15	Taytay	18	15
21-Mar-15	Taytay	61	61
27-Apr-15	Dumaran	71	71

Date confiscated	Location of confiscation	No. of individuals confiscated	No. of individuals released after health care
17-Jun-15	Bataraza	3,831	3379
18-Oct-15	Taytay	19	PWRCC
<b>TOTAL</b>		<b>4,124</b>	<b>3,650</b>

On 18 June 2015, PWRCC accommodated the thousands of confiscated turtles for a few days (Fig. 27,28). A first inspection revealed a conservation nightmare become reality. Most of the turtles were indeed Palawan Forest Turtles, and they were in terrible shape – dehydrated, smashed, injured, dying, with many already dead. Based on their dreadful condition, it was clear these animals had been collected and kept for up to six months. KFI accounted a total of 4,090 individuals excluding the fatalities incurred between confiscation and arrival at PWRCC. Turtles were composed of 3,831 Palawan Forest Turtles, 168 Asian Leaf Turtles (*Cyclemys dentata*), 25 Southeast Asian Box Turtles (*Cuora amboinensis*), and 69 dead individuals (63 *S. leytensis* and 6 *C. dentata*). The count confirmed that we were facing a crisis of unprecedented proportions; almost the entire estimated wild population of Palawan Forest Turtles had been confiscated.

KFI requested some 40 students from Western Philippines University (WPU) be excused from class to help PWRCC personnel and KFI staff with unloading. WPU is an active partner of PCSDS and KFI in wildlife conservation. The turtles were moved into the only available enclosures: two huge crocodile pens which were under repair that time and had not been used by PWRCC for months, thus with no running water and full exposure to the sun. Freshwater had to be trucked in to fill the pens so that they could be used temporarily for the turtles. We had to resort to this because there were no pens available large enough to hold the huge number of turtles.



**Figure 27: Truck loaded with turtles parked at PCSDS.**





**Figure 28: KFI staff and students from the WPU unloaded the turtles at PWRCC.**

In the meantime, KFI negotiated with PWRCC to move the turtles to smaller crocodile pens with less exposure to sunlight and not so deep for better management of the turtles. We were so lucky that these pens were vacant. These new pens had to be renovated and transformed from crocodile pens to turtle ponds to better meet the needs of the turtles. KFI staff – assisted by students, PWRCC personnel, volunteers, and hired labourers – repaired the pens, installed adequate shade over the ponds and work areas, and started transferring the turtles to the new areas on 19 June (Fig. 29-30).



**Figure 29:** Transfer of turtles to the new area (upper left). Triage by Dr. Sonja Luz (upper right). We bought pond liner as immediate measure to accommodate the turtles in an alternative area offered by PWRCC management (lower).



**Figure 30:** Setting pond liners and nets for shade. Filling with water from the local water district.

On 21 June 2015, the IUCN/SSC TFTSG made the recommendation on next steps, stating: *“We believe it is important to release back into the wild as many apparently healthy animals as possible at the first available moment. We recommend that animals*



*that do not clearly need extensive rehabilitative care should be released into the wild swiftly, ideally into areas that were previously inhabited by these turtles.”* KFI held the same view, considering *S. leytensis* shows intraspecific aggression and fares poorly when maintained in large groups. The confiscated number was so large that the species was in danger of becoming functionally extinct in the wild unless many of them were quickly returned. KFI staff began surveying possible release sites that would meet tough criteria: that turtle release occur within the species’ natural range, not within a pristine wild population, not be readily accessible, be away from people, and that the release team be unseen by locals.

Four days after the arrival of the confiscated turtles at the PWRCC, veterinarians had had started triage of thousands of turtles and treated those immediately in need of veterinary aid (Fig. 31-33). The team primarily dealt with necrotic shell lesions secondary to trauma and septicemia, dehydration, distal limb edema, severe eye lesions, and claw loss from extended contact with concrete. The number of turtle deaths decreased rapidly as the animals responded to aggressive antibiotic and fluid therapy and began to eat voluntarily. As early as 22 June, we started releasing turtles that were judged sufficiently healthy. By the end of the month, 2,773 individuals had been released back to the wild, giving the turtles a better chance for survival, and greatly reducing crowding at the rescue center for a species highly prone to stress in groups. All released turtles received a cohort notch as recommended by TSFSG-TSA-TC-TCF-CRF.



**Figure 31: Triage by Drs. Paolo Martelli and Sonja Luz, assisted by Fatima.**



**Figure 32: Treatment of turtles by Drs. Charles Innis, Paul Gibbons and Sonja Luz.**



**Figure 33: Dr. Sonja Luz and Dr. Indira Santiago from the Provincial Veterinary Office discussing conditions of the turtles that were ready for release.**

A local team of about 30 KFI volunteers helped in every possible way, notching the turtles for release; pumping dirty water out, and clean water into, ponds; moving countless bins of turtles around as needed; acting as veterinary assistants; and helping to keep everything organized (Fig. 34). Turtles were treated in two groups, every 48 hours, leaving every third day without treatment. Days without treatment were dedicated to morphology, blood work, necropsy, and laboratory work (Fig. 35).





**Figure 34: Local and international volunteers and PWRCC personnel.**



**Figure 35: Treatment (left); necropsy by Dr. Kenneth Conley (right).**

On July 6, we moved the remaining 254 turtles to KIEBC (Fig. 36). Prior to the move, we released another 439 turtles. In addition to KFI's resident keeper Angel Satioquia, we hired three new keepers, Kyle, Jovie and Archiel. With the smaller number of turtles now in KIEBC we had the luxury of keeping and treating them individually (Fig. 37).



**Figure 36: Transfer to KIEBC and briefing upon arrival.**





**Figure 37: To avoid that stronger turtles would fight, they were put in individual cages. Staff worked each night until 11pm to make additional cages.**

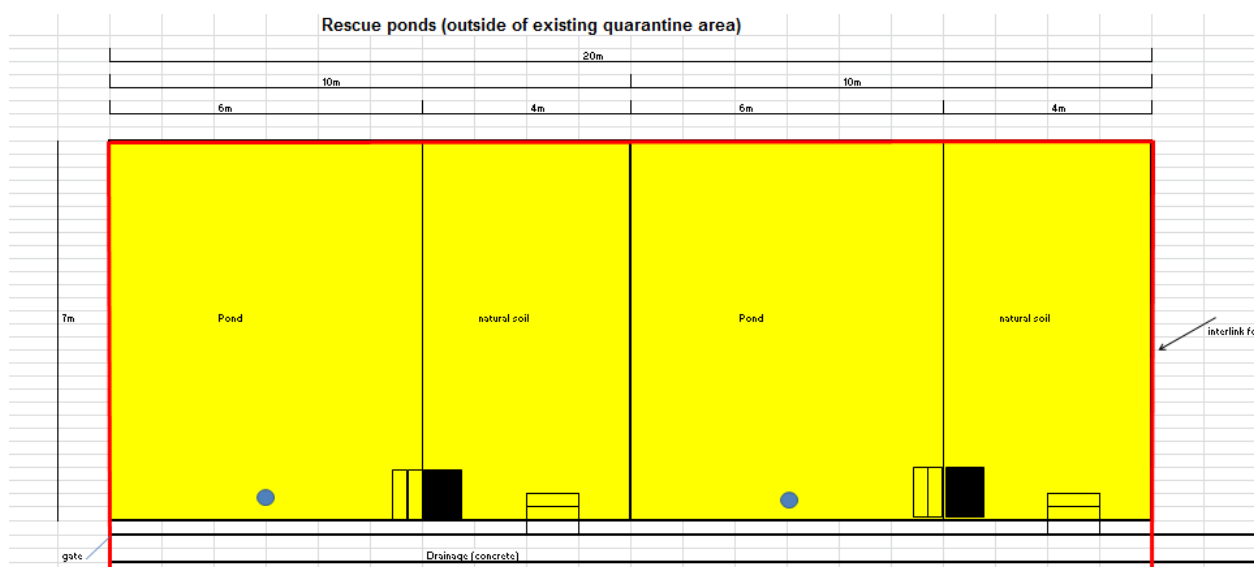
The 9<sup>th</sup> of July was the first day without mortality. On 13 July, all turtles were reassessed. Special emphasis was given to animals in critical condition and severe eye lesions. Having received training from 20 different veterinarians, technicians and keepers, KFI felt prepared to manage the remaining turtles (Fig. 38). As of late September, after one more release, we were left with just six turtles.



**Figure 38: Sheena, Alison, Kyle, and Mariah (left), and Vets Alex and Sandra, and Mat (right).**

Overall mortality was with 11.5% surprisingly low compared to other large confiscations. This success rate would have in no way been possible, had it not been for the prompt and swift action by a truly global team wholeheartedly united in the goal of saving the Palawan Forest Turtle from extinction. We hope to never have such a large confiscation again, but we are confident that if it ever does happen, we will join hands again and with the full support of the wonderful, worldwide turtle community we will be able to rescue them.

By November 2015 all temporarily ponds had been dismantled and we started renovating and expanding our facilities in Narra. We hired an engineer and contractor to construct three rescue ponds and signed contract with him in December 2015. By end of March the construction was finished. We now have two 6x7m ponds with adjacent 4x7m land areas out the existing turtle quarantine facilities (Fig. 39-42). In addition we have one 10x4m pond with shallow sloping water within the existing quarantine area (Fig. 43-45). We hope we never have to face a crisis like the one in 2015 but in case of a large confiscation we feel logistically ready for it. In case of use, GI pipes will be inserted in pre-perforated holes to build the frame for a shade providing net.



**Figure 39: Simplified design of two adjacent rescue ponds outside the existing turtle quarantine facilities.**



**Figure 40: The grass at construction site first had to flattened to do a layout of the area.**

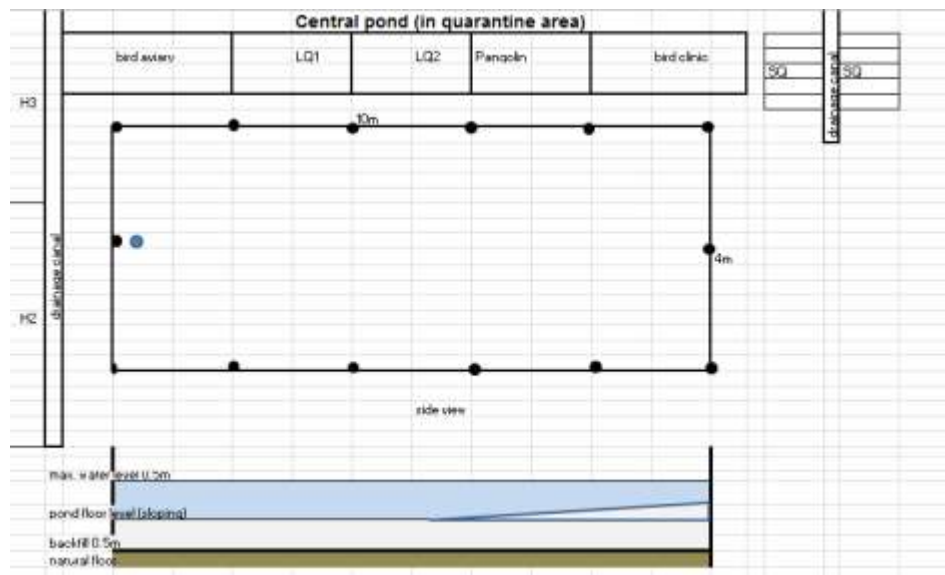




**Figure 41: Construction needed regular checking and meetings with the engineer.**



**Figure 42: The ponds measure 6x7m and each has a 4x7m land area.**



**Figure 43: Simplified design of a 10x4m rescue ponds that was constructed within the premises of the turtle quarantine area of KIEBC.**





**Figure 44: General location of the 10x4m rescue pond (left) and construction work at the early stage (right).**



**Figure 45: Finished central rescue pond.**

### **Monitoring of released turtles**

As of December 31, 2015 we were left with six turtles. We have started the monitoring of release sites as early as June 27 and we were able to win five undergraduate students of the Western Philippines University to conduct their theses on monitoring and surveying turtles at release sites (Fig. 46). The students cover five sites. The other sites are monitored by KFI staff (Fig. 47). Sites are monitored monthly or bimonthly. Depending on habitat conditions and stream flow, we monitor some 1km up and downstream of the release site. We do visual encounter surveys and trapping with baited funnel traps (Fig. 47). We assess weight and size of resident and translocated turtles (Fig. 48). New captures receive an individual notch (Fig. 49). We also assess and describe the habitat of the release sites (Fig. 51). All data are recorded on data sheets. We check population composition of the resident population and of released ones, and we check dispersal over time. We also conducted interviews with locals, and checked for dead turtles.

We have found few dead individuals in the first 2-4 weeks after release but most seem to be healthy and have established at the release sites. The translocated turtles are still



readily identifiable due to their many scars caused by shell rot but aside from that they are strong and seem healthy (Fig. 52).



**Figure 46: Aside from trapping, visual encounter surveys are conducted.**



**Figure 47: Kyle and Jovie packed for a monitoring trip (left). We set 20 funnel traps along the release site (right).**



**Figure 48: Released and resident turtles are measured and weighed.**





**Figure 49: Data are recorded on data sheets. Prior to release, turtles receive an individual notch.**



**Figure 50: KFI staff Dexter (left) and student Elvie (right) during monitoring.**



**Figure 51: Student Alvin doing an assessment of the habitat.**



**Figure 52: Still the released turtles are easily identifiable by their shell damaged caused by shell rot.**

### **Information Education Campaign (IEC)**

We use venues / events like Eco Camps, Science Weeks, World Turtle Day, and Foundation Days to inform about the Palawan Forest Turtle Crisis (Fig. 53, 54). The 2015 World Turtle Day Celebration was dedicated to the Palawan Forest Turtle. We celebrate Turtle Day with high school and college students since 2009. Normally we cover marine and freshwater turtles but this year we will exclusively talk about the Palawan Forest Turtle.



**Figure 53: Lecture during the Eco-Week in San Miguel National High School in Puerto Princesa City.**





Figure 54: In Palawan we celebrate World Turtle Day not on 23 May but in the 2<sup>nd</sup> half of the year when classes have resumed after the summer break. This year's celebrated was dedicated to the Palawan Forest Turtle with Quiz Bee and logo making contest.

## **7) Continue capacitating the Protected Area Management Board in the management of the protected watershed area in Barangay Dumarao, Roxas**

Regular meetings of the Protected Watershed Area Management Board (PWAMB) are held every last Friday of the first month of the quarter. In 2015 this was on 30 January, 24 April, 31 July and 30 October. All four meetings were held as scheduled (Fig. 55-57).

For the January meeting we had invited Barangay officials from the neighboring village Mendoza and the Mayor of Roxas, Honorable Angela Sabando. We first presented a power point presentation about the activities and highlights in 2014 which was the first year in which we had implemented the Wardening Scheme. Other business tackled were 1) Adoption of PA at the municipal level, 2) Research in the protected watershed area, 3) Foundation Day / Bakoko Day, and 4) Report from all member offices. Mayor Sabando was eager to learn about the activities of wardens and the progress in the management of the Protected Area. She reacted positive to the request of the board to have the protection scheme of the area adopted at the municipal level. So far the PA is only protected at the village (barangay) level. Mayor Sabando explained what documents are needed and that these need to be submitted to the municipal council headed by the Vice-Mayor. She expressed her wish to have similar projects in all 31 villages of Roxas. KFI explained that the collaboration with Dumarao has a long history and years of preparation before the needed research was available and awareness among the villagers high so that they had opted to have a protected area. As of today, the adoption at the municipal level is not yet final. Although approved by the Mayor, a decision of the Municipal council is still pending awaiting a resolution from the barangay council requesting such adoption.

The village chairman from Mendoza, Ernesto Llanera explained that his village has also a watershed that they are trying to protect but that they lack funds to do so.

Two student of the Western Philippines University requested the permission of conducting the fieldwork for their theses on frogs and crabs within the premises of the protected area. Since such study will add knowledge about the conditions of the protected area, the board approved the request and invited the students to present their results once finished. KFI further committed to assist the students technically.

The board also discussed the potential activities of the upcoming Bakoko Day (Turtle Day) and it was agreed to conduct the celebration during the foundation day on Feb. 20. Prior to the adjournment of the meeting all member offices reported about their respective activities during the past quarter.

During the April meeting we had visitors from the DENR CENRO Roxas. The CENRO officials expressed their wish that KFI would extend its habitat conservation efforts to Barangay Mendoza and Barangay Antonino, which bound the Dumarao Protected Area to the east. To further stress the need of protecting the remaining forest of barangay Mendoza, a barangay resolution requesting financial and technical assistance was submitted to KFI. We explained that funds are limited but that we would study the option of expanding our conservation efforts to Mendoza.

It was also during the April meeting that members had expressed the wish to walk around the PA to become familiarized with the boundary. A meeting to do so was set for 9 May 2015.

During the April meeting we were also able to solve a long-lasting issue caused by a farmer who had claimed to possess land within the protected area. Years prior to the establishment of the protected area the farmer had occupied a part of timber land where he converted the forest into a slash and burn farm. Now that this land is part of the protected area he wanted to be compensated. The official from DENR-CENRO clarified that he has no rights - to the contrary it is illegal to cut forest and invade timber land. Hence, if he would insist to be compensated, a case under the Forestry Code would be filed against him.

WPU student Vanessa Abrina presented the results of her thesis entitled “Diversity of Anurans in the newly declared Lower Ilian-Ilian-Masaya 1-Maharlika Protected Watershed Area, in Barangay Dumarao, Roxas, Palawan, Philippines”. Her classmate Michelle Torren who was not able to attend submitted instead a softbound copy of her study entitled “Species composition and abundance of freshwater crabs in Bangue Streams, Dumarao Protected Watershed Area, Barangay Dumarao, Palawan”. Both studies confirm the importance of the protected area as habitat for threatened species. Vanessa identified nine frog species, three of which are threatened under IUCN and six are endemic to Palawan. Michelle found four species of freshwater crabs of which two are endemic to Palawan while the other two are presumably undescribed species. Vanessa and Michelle won with their theses the 2<sup>nd</sup> and 3<sup>rd</sup> prize, respectively during the Science Forum of WPU. Vanessa also presented her results during the April meeting of the Philippine Biodiversity Symposium organized by the Wildlife Conservation Society of the Philippines. Members of the protected area management board enjoyed the presentation and were amazed by the diversity of frogs in the area. They were all proud of Vanessa whose family is resident of Dumarao.

Highlight of the July meeting was the announcement that funding for reforestation and river bank rehabilitation had been secured from the Federal Ministry for Economic Collaboration and Development of Germany. Part of this funding will be used to reforest denuded and restore altered areas within the PA in order to restore the capacity of the area as watershed. Another portion of the funding will be used to in a pilot project to stabilize the banks of Barbacan River.

The board members listened with concern to the report of the wardens about alleged turtle trade in one of the northern sitios near the boundary to Taytay. This was complemented by Sabine’s report about the June confiscation of 3,831 Palawan Forest Turtles in Southern Palawan. The chairman affirmed the support of the PWAMB as well as the LGU of Dumarao for any needed rescue or monitoring activities. Sabine expressed her gratitude for Dumarao’s exceptional conservation efforts of the Palawan Forest Turtle.

Focus of the October meeting was the report of all member offices. The Wildlife Enforcement Officers reported that they had settled an issue wherein a farmer from the neighboring barangay Mendoza had extended his slash and burn farm beyond the boundary of the protected area. WEOs had set an inspection visit. A team composed of the barangay chairman from Mendoza, village police, WEOs, barangay officials from Dumarao, and the farmer visited the area in September. It was confirmed that certain part of the slash and burn farm was in fact within the premises of the protected area. They refrained though from making a complaint since the farm was in an area where the boundary of the protected area was difficult to delineate. It was agreed that the farmer will just harvest his crops and then evacuate the area. It was further agreed to plant a bio-fence that will indicate the boundary of the protected area.



Sabine explained where the banks of Barbacan River need to be stabilized to avoid further erosion. Cutting of riverine vegetation and quarrying are the main reasons for river bank erosion and flood of adjacent areas. For the Palawan Forest Turtle, river bank erosion leads to habitat loss since the turtles spend the day in dens in the river bank. Likewise they use shaded areas along the river for nesting. Deforestation of such areas can lead to reproduction failure. Although the Barbacan River is outside the Protected Area its rehabilitation is of concern for the PAMB members.



**Figure 55: Sabine presented the 2014 highlights of project implementation (left). Adoption of PA at the municipal level was discussed with Hon. Mayor Sabando (right).**



**Figure 56: During the July meeting the board discussed which PA areas are priorities for reforestation activities.**



**Figure 57: Village councillor Gabo explained during the October meeting where the boundary of the PA was violated by a farmer (left). Sabine explains where the banks of Barbacan River need to be stabilized to avoid further erosion (right).**



## 8) Continue the wardening scheme for the protected area

We conducted a total of six monitoring visits (20 February, 22 March, 11 May, 20 July, 7 October and 7 November) in 2015 (Fig. 58). During the February monitoring visits we conducted the 3<sup>rd</sup> Bakoko or Turtle Day under the theme “Importance of Protected Areas” in Dumarao. It was attended by students from the various elementary schools in Dumarao. Highlight was the Quiz Bee competition in which 12 teams competed (Fig. 59). In March, current and former Head of Field Programmes of NEZS-Chester Zoo visited the project site (Fig. 60). We also conducted a wardens meeting and performance appraisal with wardens and staff in Puerto Princesa City on 9 February 2015.



**Figure 58:** The July wardens’ meeting was held in the field house (left) and the October monitoring visit and wardens’ and staff meeting was held at the nursery (right).



**Figure 59:** Quiz Bee competition during the Bakoko Day on 20 February 2015 (left). Quiz Bee winning team (right).



**Figure 60: Wardens, staff and funders from NEZS with PA signboard (left). Wardens and staff studying the map to identify boundaries and critical areas (right).**

In addition to the daily patrolling work of the wardens, they assessed the 21 Biodiversity Monitoring Stations (BMS) thrice per month (Fig. 61). During BMS, wardens stay 10min at each station and take note of wildlife heard, seen or smelled, and on any human activity seen or heard in the vicinity. We make sure that monitoring covers early morning as well as afternoon hours when wildlife and potential intruders are expected to be more active.

We are happy to inform that based on the monitoring of the wardens, biodiversity of wildlife in the protected area increased or became easier to spot. Especially species like the Palawan Bearded Pig, Long-tailed Macaque, Blue-headed Racket-tail, Blue Paradise Flycatcher, Palawan Hill Myna, Palawan Peacock Pheasant, Tabon Scrub fowl and Palawan Hornbill are regularly seen nowadays. It is understood that wardens take special note on the occurrence of the Palawan Forest Turtle and its eggs.

Wardens also investigate illegal wildlife collection and trade beyond the boundary of the PA and Dumarao. In April/May they kept an alleged turtle collector in Sitio Linapawan near the boundary to the Taytay under surveillance. Seeking for support, KFI had reported the trade observations to the law enforcement arm of PCSDS. A month later, on 18 June, 3,831 Palawan Forest Turtle were confiscated in Southern Palawan. This was the largest ever confiscation of a critically endangered freshwater turtle. We presume that the turtles from Linapawan were part of the confiscation.





**Figure 61: Wardens use binoculars during patrolling (left). Warden Gerry during the afternoon BMS assessment.**

We are proud to inform that the number of illegal activities observed in and even around the protected area has decreased significantly. Although several different illegal activities had been observed (burning, carabao traces, charcoal making, cutting of timber/cut timber, destruction of BMS signboard, destruction of PA signboard, honey collection, kaingin near PA, kaingin inside PA, littering, signs of intrusion of people, rattan collection, salvage lumber collection, use or sound of chainsaw, sound of shotgun, and wildlife collection including traps) most were just observed once and the total number was with 18 much lower compared to 2014 (Tab. 4).

**Table 4: Number of illegal activities observed in and near the PA in 2014 and 2015.**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2014	6	4	12	5	3	1	0	4	0	2	1	13	51
2015	1	8	0	3	0	1	0	1	2	2	0	0	18

The most serious offense was the burning by a slash-and-burn farmer from the neighboring barangay Mendoza in March (Fig. 62). The burning covered part of the PA near its boundary where the latter is not easily identifiable. At the near-by BMS 4 and 5 the signboards had been repeatedly destroyed, presumably by the same farmer. The issue was finally settled in October and we hope that with planting a bio-fence around the PA, intrusion will stop in the future.



**Figure 62: The slash-and-burn farm of Mr. Ponce de Leon covers parts of the Protected Area (left). DENR-CENRO Roxas assessed damage caused by kaingin outside the PA (right).**

In 2015, we added phenology to the monthly duty of the wardens. Wardens take note on the status of 20 selected tree species (Fig. 63). Special reference is given to food providing trees and/or those that are for reforestation. They take note whether trees are in the vegetative stage or flower or fruiting and if seedlings are available.





**Figure 63: Phenology trees are marked with paint for easy location (left). Some of the trees are too high to see with the naked eye whether they are flowering or fruiting (right).**

The wardens are also members of the Technical Working Group that meets monthly to discuss issues related to the PA. Minutes of the TWG are forwarded to the PAMB (Fig. 64). In November, wardens were invited to a WEO conference by PCSDS. Two representatives attended (Fig. 64).



**Figure 64: Meeting of TWG (left). WEO conference held at the PCSD Training Center (right).**

From 17 to 19 of December KFI held a refresher course for all KFI wardens (Fig. 65). This was a unique opportunity for all wardens to meet, to learn about the different project sites, duties, to learn new techniques and to refresh knowledge. The training was attended by 56 people composed of wardens, staff and KFI management (Fig. 65).



**Figure 65: KFI's refresher training for wardens was held in PPC.**

After Indira and Sabine had given an overview, highlights and prospects for 2016 of PCCP and PFTCP respectively, field coordinators presented highlight for their respective field sites. In role plays, wardens presented case studies which were then discussed by layers

from ELAC. They also discussed the issuance of affidavits and other processes. In smaller groups, wardens practiced the use of calipers, binoculars, GPS, GBH tape and other equipment. The activity was followed by fieldtrip with bird watching, frogging, and vegetation analysis in Irawan (Fig.66). We also had a trainer from the Red Cross to teach wardens and staff basic First Aid (Fig. 66). Prior to the end of the refresher training and the start of the Christmas Party, wardens conducted a self-appraisal.



**Figure 66: Fred Diaz explaining the use of GBH tape and how to estimate canopy cover (left). Wardens practicing 1<sup>st</sup> Aid (right).**

#### **9) Continue the conduct of research on species and habitat conditions in Dumarao**

The 2015 mark-recaptures surveys to monitor the population size trends in the buffer zone area and in the core zone of the PA in Dumarao, Roxas were conducted from 18 Nov. to 2 December 2015 in the buffer zone and from 8 to 22 January 2016 in the core zone. The November survey was done by two new turtle researcher that had been recruited during the “turtle crisis” in June. They were trained at site by Field Operations Officer Genelle Lagrada and the wardens (Fig. 67). The January survey was done by two out-of-school youth who had shown interest in working with the project. They had been trained in December and then conducted the survey in the core zone from 7-21 January 2016 (Fig. 67).

The surveys found the population size in the buffer zone stable but in the core zone lower compared to previous years. The January survey in the core zone found only 29 individuals and the population size estimated was 33.



**Figure 67: Kyle and Jovie were assisted by Genelle and the wardens in setting up the traps (left). Alvin and Norman, locals from Dumarao conducted the January survey (right).**



In line with the observed erosion of the banks of Barbacan River in the project site in Dumarao, Roxas (Fig. 68), we felt the need to monitor the resident Palawan Forest Turtle population. Our last sampling in the area dated back February 2012 (Schoppe and Acosta 2015). Hence we conducted a 7-day-trapping survey. We caught a total of 23 Palawan Forest Turtles during the survey. The duration of the survey was not long enough to estimate the population size with the Schumacher-Eschmeyer (Krebs 1998) method. Therefore we intend to conduct a mark-recapture study that last at least 14 days in 2016.



**Figure 68: The banks of Barbacan River are barren or if much have some bamboo shrubs; all natural vegetation has been removed over the years leading to erosion (left). Diverlie teaching locals how to conduct a turtle mark-recapture study (right).**

#### **11) Publications, reports, conferences attended**

- ABRINA, V.M.F .2014. Diversity and abundance of anurans in Banguie Stream, Barangay Dumarao, Roxas, Palawan, Philippines. Undergraduate Thesis, BS Aquatic Biology, Western Philippines University-Puerto Princesa Campus, Puerto Princesa City, Palawan, Philippines.
- Acosta, D., Jose, E.D., Castro, L.S., Esuma, R., Cervancia, M. and S. Schoppe, 2015. What limits the distribution of the critically endangered Palawan Forest Turtle *Siebenrockiella leytensis*? Poster presentation, 24<sup>th</sup> Annual Philippine Biodiversity Symposium, University of Eastern Philippines, Catarman, Northern Samar, Philippines, 14-17 April 2015.
- Devanadera, N., de Guzman, V. and S. Schoppe, 2015. The Palawan Turtle Rescue. Turtle Survival Alliance, p. 46-48.
- Schoppe, S. 2015. Critical Habitat Management on Dumaran Island, Palawan (Year 2). Narrative Final Report to PTFCF, KFI, Puerto Princesa City, Palawan, Philippines, 48pp.
- Schoppe, S. 2015. Immediate rescue measures of confiscated critically endangered Palawan Forest Turtles. Narrative Final Report to PTFCF, KFI, Puerto Princesa City, Palawan, Philippines, 17pp.
- Schoppe, S., 2015. Die Philippinische Waldschildkröte – 10 Jahre nach ihrer Wiederentdeckung. ZGAP Mitteilungen, 1: 14-17.
- Schoppe, S. and D. Acosta, 2015. Conservation of the Palawan Forest Turtle *Siebenrockiella leytensis*– a holistic approach. Poster presentation, 24<sup>th</sup> Annual Philippine Biodiversity Symposium, University of Eastern Philippines, Catarman, Northern Samar, Philippines, 14-17 April 2015.



- Schoppe and Acosta 2015. In-situ conservation of repatriated and wild populations of *Siebenrockiella leytenensis* through the establishment of a protected area. Unpublished final report to Kadoorie, Katala Foundation Inc., PFTCP, PPC, Palawan, 31pp.
- Schoppe, S. and D. Acosta, 2015. Populations of the critically endangered Palawan Forest Turtle *Siebenrockiella leytenensis* continue decreasing – results of long term studies. Oral presentation, 24<sup>th</sup> Annual Philippine Biodiversity Symposium, University of Eastern Philippines, Catarman, Northern Samar, Philippines, 14-17 April 2015.
- Schoppe, S and D. Alvarado, 2015. Conservation needs of the Palawan Pangolin *Manis culionensis* – Phase I. Final Scientific and Financial report to WRS. April 2015, 30pp.
- Schoppe, S. & D. Alvarado, 2015. Conservation needs of the Palawan Pangolin *Manis culionensis* – Phase II (Extension) – Final scientific and financial report submitted to WRS, May 2015, 36pp.
- Schoppe, S. & D. Alvarado, 2015. Movements of the Palawan Pangolin *Manis culionensis* – Interim report submitted to WRS, Dec 2015, 13pp.
- Schoppe, S., Acosta, A. & G. Lagrada, 2015. Community-based conservation of the critically endangered Palawan Forest Turtle *Siebenrockiella leytenensis* and its habitats in Roxas, Palawan – Counterpart Funding. Final Technical Report to ASFF/CI, KFI-PFTCP, Puerto Princesa City, Palawan, 42pp.
- Schoppe, S., Acosta, D., and G. Lagrada 2015. Community-based conservation of the critically endangered Palawan Forest Turtle *Siebenrockiella leytenensis* and its habitats in Roxas, Palawan. Final Technical and Financial Report to NEZS, KFI-PFTCP, Puerto Princesa City, Palawan, 45pp.
- Schoppe, S., Acosta, D. and A. Satioquia, 2015. Conservation breeding of *Siebenrockiella leytenensis* – Final scientific and financial report to WRS, KFI-PFTCP, Puerto Princesa City, Palawan, 30pp.
- Torren, M. 2015. Species Composition and Abundance of Freshwater Crabs in Bangue 174 Stream, Barangay Dumarao, Roxas, Palawan. Undergraduate Thesis, Bachelor of 175 Science in Aquatic Biology, Western Philippines University- Puerto Princesa 176 Campus, Puerto Princesa City, Palawan, Philippines.

## PFTCP Work Plan 2016

Please find the work plan for 2016 below.

[illegible]

• Habitat conservation and restoration in Dumarao												
• Compile wildlife confiscation records												
• Submit proposals for future research projects												
<b>Education and capacitating stakeholders of PFTCP on natural resource management and conservation; rehabilitation/restoration of species habitats, and environmental awareness by:</b>												
• Conducting environmental education on the status and threats of the Palawan Forest Turtle and other Palawan native species												
• Conduct IEC in Dumarao and Mendoza, Roxas												
• Disseminating information on Philippine freshwater turtles and related conservation / protection issues through multi media, including publications and distribution of research outputs/results generated from this undertaking;												
• Celebrate World Turtle Day												



