

CEPF Final Project Completion Report

Instructions to grantees: please complete all fields, and respond to all questions, below.

Organization Legal Name	<i>Turtle Survival Alliance</i>
Project Title	Building a Comprehensive Chelonian Conservation Program in Myanmar
CEPF GEM No.	
Date of Report	30 April 2016
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CEPF Region: Indo-Burma

Strategic Direction: 1. Safeguard priority globally threatened species by mitigating major threats.

Grant Amount: \$60,000

Project Dates: 1 October 2014 to 31 December 2015

1. Implementation Partners for this Project (*list each partner and explain how they were involved in the project*)

Wildlife Conservation Society – provided logistic, budgetary, and technical support for the project as well as key personnel. The latter participated in all aspects of the project, including field work and implementation.

Myanmar Forest Department – directly supported the project by reviewing plans and issuing the necessary permits. FD personnel also participated in turtle conservation projects, including field surveys, assessments of potential reintroduction sites, maintaining assurance colonies, and pre- and post-release monitoring of reintroduced turtles.

National University of Singapore – conducted genetic testing to identify relatedness and estimate population size of *Batagur trivittata*. NUS personnel also participated in some community awareness programs.

Yangon University (Zoology Department) – graduate students and faculty conducted range-wide survey of *Morenia ocellata* and gathered life history data on this imperiled species.

Conservation Impacts

2. Describe how your project has contributed to the implementation of the CEPF ecosystem profile.

Our project addressed Strategic Direction 1 in the CEPF Ecosystem Profile (safeguard priority globally threatened species by mitigating major threats). Specifically, our project positively impacted *Geochelone platynota*, *Batagur trivittata*, and *Morenia ocellata*, all of which are considered CEPF Priority Species and endemic to Myanmar. This was accomplished by scaling up successful pilot projects for restoring wild populations of *G. platynota* at Shwe Settaw Wildlife sanctuary and *B. trivittata* in the upper Chindwin River. Although the former effort was temporarily suspended (see below), reintroduction of captive-bred tortoises is expected to proceed as planned within the coming months. Once established, the reintroduced *G. platynota* at Shwe Settaw Wildlife Sanctuary will constitute the second such population in Myanmar. The release of 60 head-started *B. trivittata* into the Chindwin River and a tributary stream (Nam Thalet Chung) during 2015 bolstered the surviving population of wild turtles, which at the time was thought to number < 10 sexually mature turtles. Importantly, it is highly likely that one of the released males successfully copulated with a wild female, producing the first viable clutch of eggs since 2013. These eggs are currently being incubated at a secure site and hatchlings will be head-started for eventual release. We are also adapting these successful pilot models developed for *G. platynota* and *B. trivittata*, to other species such as *Morenia ocellata*. We are now establishing a head-starting program for *Morenia ocellata* to better understand husbandry requirements and produce offspring for release. Initial results are encouraging, particularly given that *M. ocellata* has not previously been maintained or propagated in captivity. These efforts are timely, for our range-wide survey for *M. ocellata* has high-lighted the urgent need for focused conservation efforts targeting this heavily exploited species.

3. Summarize the overall results/impact of your project

Our project has made great strides in the conservation of two of the worlds most threatened species of chelonians (*Geochelone platynota* and *Batagur trivittata*) and another imperiled species (*Morenia ocellata*) that until now has received little conservation attention. Although, the planned reintroduction of *G. platynota* at Shwe Settaw Wildlife Sanctuary was side-lined by unforeseen events at another wildlife sanctuary (see below), we have no doubt that at some point in the near future, this objective will be fulfilled. Importantly, spurred by our efforts, *G. platynota* reintroductions are gaining momentum elsewhere in Myanmar and the ultimate objective of establishing this species at every protected area within its historical distribution now seems within reach. Conservation efforts for *Batagur trivittata* provided much useful data and experience that will guide future reintroductions of river turtles both here and elsewhere. Moreover, the release of young male *B. trivittata* in 2015 resulted in the first production of viable eggs by a wild female (<10 remain in wild) since 2014. Finally, conservation attention is now focused on *Morenia ocellata*, an endemic species of which virtually nothing is known that is being heavily and unsustainably exploited for the international wildlife trade.

Planned Long-term Impacts - 3+ years (as stated in the approved proposal)

List each long-term impact from Grant Writer proposal

The planned long-term impacts listed in our proposal are as follows:

- Successful reintroduction of head-started tortoises (*Geochelone platynota*) at Shwe Settaw Wildlife Sanctuary (SSWS) results in a second ecologically functional population of *Geochelone platynota* in the dry zone landscape.
- Successful reintroduction of head-started *Batagur trivittata* results in greatly increased population recovery trajectory as young turtles mature and enter the pool of breeding adults.
- Proven reintroduction methodologies used for both *Geochelone platynota* and *Batagur trivittata* extended to other critically endangered chelonians in Myanmar and elsewhere in the world.
- Increased legal protection, more focused conservation efforts, and viable captive assurance colonies results from a life history study and population survey of *Morenia ocellata*.

4. Actual progress toward long-term impacts at completion

***Geochelone platynota* reintroduction at Shwe Settaw Wildlife Sanctuary (SSWS)** – the reintroduction of head-started tortoises was postponed by the Myanmar Forest Department following the theft of 188 star tortoises from a similar project at Minzontaung Wildlife Sanctuary during September-October 2015. The Forest Department asked the reintroduction efforts be put on hold pending completion of an investigation into internal security procedures. Initially this review was slated for completion by late 2015 and we expected to proceed with the reintroduction at SSWS in early 2016. However, as of 25 April 2016, permission has still not yet been received for continuing with the release. Tortoises ear-marked for release are being housed in large outdoor enclosures at SSWS. These tortoises began depositing clutches in October 2015 and egg laying is expected to continue through late May 2016. These unexpected results demonstrate that many of the head-started tortoises are sexually mature and we therefore expect reproduction in the wild will occur as soon after the tortoises are liberated. Given successful reproduction and high survival of reintroduced tortoises, we fully expect to have a reproducing population of *G. platynota* established at SSWS within the next 3-5 years.).

***Batagur trivittata* release** - Sixty head-started *B. trivittata* were released in the upper Chindwin River and Nam Thalet Chaung (tributary stream of Chindwin). We expect at least five years - but perhaps less - will be required before the surviving turtles begin to nest and population begins to recover. Moreover, a young but sexually mature male apparently copulated with one of the remaining (< 10) wild females and a viable clutch of eggs was produced in March 2016. These are the first viable eggs collected from the wild population since 2013 (note; a single viable egg was collected in 2014). At least four of the released turtles fell victim to fishing nets, suggesting mortality from this source will present a challenge to future reintroductions. Additionally, the project was plagued by failure of VHF radio transmitters used to monitor post-release movements of a subset (= 30) of reintroduced turtles. Nonetheless, our monitoring indicated turtles range widely after release. We expect the surviving turtles to augment the very small remnant wild population in the Chindwin River.

Extend proven reintroduction methodologies to endangered chelonians in Myanmar and elsewhere - Our preliminary results have been presented at several international

conferences in the United States and Thailand. Furthermore, a manuscript detailing our highly successful captive-breeding and head-starting program for *Geochelone platynota* is currently in preparation with submission to a peer-reviewed journal expected by July 2016. Because post-release monitoring of *B. trivittata* will continue for another year (dependent on battery life of transmitters), dissemination of the results would be premature at this point (expected within next 1-2 years.). Almost nothing is known about successful strategies for river turtle reintroductions; thus our results represent a potentially important contribution to the field.

***Morenia ocellata* conservation** - Life history data gleaned during our study of *Morenia ocellata* is being incorporated into a nascent captive-propagation program that will eventually produce offspring for release into suitably protected natural habitat. A large pond has been secured at a Buddhist retreat center in Bago and facilities to house an assurance colony are currently under construction. Additionally, a monastery in Hpaan (Kayin State) with a large population of *Morenia ocellata* has requested assistance from TSA/WCS to improve husbandry with the objective of producing hatchlings for head-starting; initially, offspring will be released in a large wetland adjacent to the monastery. We expect this overture to lead to a long-term collaboration with the monastery. Once husbandry protocols are developed (nothing is known about maintaining these turtles in captivity), the two planned assurance colonies have the potential to produce large numbers of offspring, which ultimately will be used to restore depleted populations in other areas. Conservation efforts are also being strengthened at two wildlife sanctuaries (Mo Ingyi and Meinmhlá Kyun) known to harbor *Morenia ocellata*. A chelonian survey of Meinmhlá Kyun Wildlife Sanctuary is planned for late 2016.

Planned Short-term Impacts - 1 to 3 years (as stated in the approved proposal)

List each short-term impact from Grant Writer proposal

Below are listed the short-term impacts as stated in our proposal:

- Group of free-living *Geochelone platynota* in Shwe Settaw Wildlife Sanctuary results in the second reintroduced population established within a protected area of Myanmar.
- Successful reintroduction of head-started *Batagur trivittata* significantly augments the existing wild population (<10 adult females).
- Future conservation action prioritized on the basis of life history study and population assessment of *Morenia ocellata*.

5. Actual progress toward short-term impacts at completion

Reintroduction of *G. platynota* at Shwe Settaw Wildlife Sanctuary – Our efforts at Shwe Settaw and Minzontaung Wildlife Sanctuaries demonstrates that reintroduction is a feasible conservation strategy for *Geochelone platynota* that can be extended to other protected areas in the dry zone. However, as explained above, efforts at SSWS were derailed by events beyond our control with release of the tortoises postponed until mid-2016. That said, a cadre of Forest Department staff and Community Conservation Volunteers are trained and in place, the assurance colony was upgraded, and numbers of offspring are currently being produced. Furthermore, three 1.0 ha pre-release "acclimation pens" and

staff quarters have been constructed at the release area within SSWS. Finally, an on-going conservation education and outreach program continues in 36 agricultural villages adjacent to SSWS. Building support among communities adjacent to SSWS is crucial for the eventual success of this project.

Reintroduction of *Batagur trivittata* -Lessons learned from first reintroduction of head-started *Batagur trivittata* in Myanmar provide information useful for future river turtle reintroductions in Myanmar and elsewhere. The reintroduction was conducted >1 year ago, and to date (late April 2016) the results have been mixed. Initially, the turtles remained in the release area, but dispersal began as water levels rose at the onset of the wet season. Our efforts to monitor the released turtles were hampered by malfunctioning VHF radio telemetry equipment (see below). Four reintroduced turtles are known to have drowned after becoming entangled in fishing gear. However, most are thought to still survive based on repeated sightings of basking turtles by program staff and area villagers. Released turtles have dispersed widely, with some being found over 20 km from the release site. With one exception, telemetered turtles have dispersed from Nam Thalet Chaung and moved into the main channel of the Chindwin River. Our results suggest that large rivers are the preferred habitat, and Nam Thalet Chaung may be an unsuitable site for future reintroduction attempts.

***Morenia ocellata* conservation priorities** - We are currently working with the Forest Department to enhance turtle-specific conservation measures at Mo Ingyi and Meinmhlá Kyun wildlife sanctuaries, the only protected areas known to harbor populations of *Morenia ocellata*. A chelonian survey of the latter area is planned for late 2016. Moreover, life history data (particularly information on diet) gleaned during this study is being incorporated into development of a captive assurance colony of *M. ocellata*. This assurance colony will be established using turtles obtained from ponds at Buddhist pagodas. Two large ponds at a Buddhist retreat center near Bago have been fenced and will soon host a breeding colony of *M. ocellata*.

6. Describe the success or challenges of the project toward achieving its short-term and long-term impact objectives

We encountered several challenges towards achieving the long- and short-term goals of the project. Foremost was the theft of 188 *G. platynota* awaiting release as part of a similar reintroduction project at Minzontaung Wildlife Sanctuary. In the wake of this incident, the Forest Department temporarily suspended the planned *G. platynota* reintroduction at Shwe Settaw Wildlife Sanctuary until an internal security review could be completed (at least one of the perpetrators is thought to be a Forest Department staff). Completion of the review was expected in late 2015 or early 2016. However, the investigation has not been completed and although tortoises have been ear-marked for release, permission has yet to be granted for us to transfer these to the pre-release acclimation pens. We fully expect to resume this project within the next 1-2 months. A second challenge concerned the poor performance of the VHF radio telemetry equipment used to monitor post-release dispersal and survival of *B. trivittata* released into the Chindwin River and Nam Thalet Chaung. Many of the transmitters completely failed in the first three months following release, making it difficult to effectively evaluate the reintroduction. This was partly overcome by collating reports of turtle observations by fishermen, villagers, and project personnel. Future

releases will likely be better served by using sonic rather than radio-telemetry. Finally, reintroduced *B. trivittata* dispersed more widely than expected, which coupled with malfunctioning equipment, made monitoring extremely challenging. Nonetheless, monitoring continues on the Chindwin River (with one exception, turtles released into Nam Thalet Chaung moved downstream into the Chindwin River).

7. Were there any unexpected impacts (positive or negative)?

The major unexpected impact that resulted from our project was to generate a great deal of local and national interest in the conservation of Myanmar's endangered turtles. A number of news stories were published in the national press describing the *G. platynota* and *B. trivittata* reintroductions, threats faced by turtles in Myanmar, and the need to conserve turtles as part of the national biodiversity heritage. Additionally, the release ceremonies that accompanied the *B. trivittata* reintroductions in Chindwin River and Nam Thalet Chaung focused local attention on the project, generated a great deal of goodwill, and helped establish a network of informal turtle observers in the release area. These "citizen scientists" regularly inform project personnel of turtle sightings, incidental capture in fisheries gear, and evidence of nesting.

Project Components and Products/Deliverables

Component 1 (as stated in the approved proposal)

List each component and product/deliverable from Grant Writer

Component 1: Reintroduction of Geochelone platynota at Shwe Settaw Wildlife Sanctuary (SSWS).

- 1.1. Report detailing surveys of pre- and post-program conservation awareness and attitudes among target villages.
- 1.2. At least one "Conservation Volunteer" recruited from each of the 36 villages adjacent to the sanctuary.
- 1.3. Conduct "donation ceremony" with local Buddhist monks whereby tortoises are symbolically donated to the monks after being blessed.
- 1.4. At least 12 SSWS rangers trained in tortoise husbandry and biology, and radio-telemetry and field research techniques.
- 1.5. 150 (75 males and 75 females) subadult *G. platynota* selected from assurance colonies at Lawkanandar, Minzontaung, and Shwe Settaw wildlife sanctuaries, tattooed with Buddhist iconography, screened for infectious diseases, and transferred to holding pens at release site.
- 1.6. Report summarizing project prior to release and detailing health and activity of 150 subadult tortoises in holding pens.

1.7. Population of free-living headstarted tortoises in SSWS. Final report includes an assessment of post-release survival and dispersal of tortoises monitored with radio-telemetry.

8. Describe the results from Component 1 and each product/deliverable

1.1. Pre-program surveys on conservation awareness and attitudes were completed in the 36 rural villages surrounding Shwe Settaw Wildlife Sanctuary (SSWS). Because reintroduction of tortoises was postponed (see above), post-release surveys have yet to be undertaken. Post-program surveys will be conducted after tortoises have been released in SSWS. Conservation awareness programs are continuing in these villages.

1.2. "Community Conservation Volunteers" (CCV) were recruited from each of the 36 target villages surrounding SSWS. 21 CCVs participated in a training workshop held at SSWS in June 2015. CCV's learned basic turtle biology and identification skills, became familiar with Myanmar's turtle fauna, and received training in GPS, orienteering, and radio-telemetry methods. CCVs are currently involved with on-going education programs in surrounding villages.

1.3. The donation ceremony will be conducted when the tortoises are transferred from the assurance colony to the three acclimation pens constructed in the sanctuary. Transfer has been delayed to an as yet unspecified date at request of Forest Department following the theft of tortoises from another wildlife sanctuary. This situation is explained in detail elsewhere in this report.

1.4. This training workshop was conducted in June 2015. Rangers received training alongside CCV's with whom they'll be working. Attendees received training in turtle identification and biology, husbandry of star tortoises, field and research techniques, and GPS and radio-telemetry.

1.5. Tortoises for reintroduction at SSWS have been selected from other assurance colonies, screened for infectious diseases, tattooed with a permanent number and Buddhist iconography, and implanted with microchips. Tortoises have yet to be transferred to the acclimation pens and remain housed in assurance colony at SSWS. We expect the Forest Department to grant permission for moving the tortoises to the acclimation pens in mid-2016.

1.6. Because the planned reintroduction was postponed by the Forest Department, no tortoises were transferred to the holding pens. This report will be completed once the reintroduction is allowed to proceed.

1.7. This report will be completed after the released tortoises have become established in the wild.

Component 2 (as stated in the approved proposal)

List each component and product/deliverable from Grant Writer

Component 2: Reintroduction of *Batagur trivittata* in the upper Chindwin River and Nam Thalet Chaung.

- 2.1. Ten personnel (five per site) trained to monitor reintroduced *B. trivittata* at each release site.
- 2.2. Sixty headstarted *B. trivittata* from the assurance colony at Yadanabon Zoo (Mandalay), screened for infectious diseases, micro-chipped, and transported to reintroduction sites at Limpha Village and Nam Thalet Chaung; VHF transmitters attached to 20 turtles.
- 2.3. Thirty headstarted *B. trivittata* released at each reintroduction site (Chindwin River and Nam Thalet Chaung); 15 turtles released shortly after arrival at site, while 15 more held in pens for 30 days before being liberated.
- 2.4. Post-release movements determined for five headstarted turtles in each treatment (hard- and soft-release).

9. Describe the results from Component 2 and each product/deliverable

- 2.1. Ten individuals were trained to monitor reintroduced *Batagur trivittata* in Nam Thalet Chaung and the Chindwin River. These individuals are now involved with monitoring of the reintroduced turtles at both sites. Turtles released into Nam Thalet Chaung have dispersed into the main channel of the Chindwin River near Htamanthi; consequently, monitoring efforts were refocused on this river.
- 2.2. Sixty head-started *B. trivittata* were selected from the assurance colony at the Yadanabon Zoo and screened for infectious diseases in early January 2015. These turtles were then transported by road and riverboat to our basecamp in Limpha Village on the upper Chindwin River. VHF transmitters were attached to 30 turtles, 10 more turtles than we initially proposed. Shortly thereafter (early February 2015), turtles were transferred to the pre-release acclimation pens constructed along the Chindwin River and Nam Thalet Chaung.
- 2.3. Thirty head-started *Batagur trivittata* were released in the Chindwin River and Nam Thalet Chaung in February and early March 2015. As per the original plan, 15 turtles were released at each site without undergoing a pre-release holding period (i.e., hard release). Fifteen other turtles were held in pens at each site for about 30 days and then liberated (i.e., soft-release). To date, 60 head-started turtles have been released at the two sites.
- 2.4. Post-release monitoring is being conducted for 15 head-started turtles in each treatment (hard and soft-release) at two sites (total = 30 turtles). Attempts were made to relocate each turtle every week. However, monitoring efforts have been hampered by failure of VHF radio transmitters. Consequently, field staffs have developed a network of informal observers who report opportunistic sightings of basking or swimming turtles. To date, four turtles are known to have died, two at each site (Chindwin River and Nam Thalet Chaung). With one exception, mortality was attributed to drowning in fishing nets. Initially, reintroduced turtles remained within 1-2 km of the initial release point. However, wet season dispersal was extensive, with some turtles moving almost 30 km upstream. With a

single exception, all of the telemetered turtles in Nam Thalet Chaung have dispersed downstream into the Chindwin River.

Component 3 (as stated in the approved proposal)

List each component and product/deliverable from Grant Writer

Component 3: Conservation status and natural history of *Morenia ocellata*.

3.1. Assessment of conservation status and geographic distribution of *Morenia ocellata* in Myanmar.

3.2. Field study to provide a better understanding of *Morenia ocellata* life history (e.g., diet, reproductive biology, habitat use and preferences, and population attributes).

3.3. Assurance colony of *Morenia ocellata* established using turtles confiscated from illegal wildlife traffickers.

10. Describe the results from Component 3 and each product/deliverable

3.1. Assessment completed: Field surveys in Ayeyarwady and Tanintharyi Divisions indicate that *Morenia ocellata* populations are being heavily impacted by harvesting for illegal sale to wildlife traffickers. Most turtles that enter the wildlife trade appear to originate from Ayeyarwady Delta region.

3.2. This activity received several setbacks when Forest Department staffs trained to conduct this research were unexpectedly transferred to other wildlife sanctuaries. Nonetheless, student and faculty researchers working with the support of TSA have collected a considerable body of life history data. These data are currently being analyzed and a manuscript is being prepared for submission to a peer-reviewed scientific journal. Given that almost nothing is known concerning this endemic species (even its geographic distribution remains ill-defined), our manuscript represents a significant scientific contribution.

3.3. Enclosures to house an assurance colony of *Morenia ocellata* are currently under construction at a Buddhist Retreat Center near Bago. Founder stock for the colony includes turtles obtained from other pagoda ponds and a small number confiscated from illegal wildlife traffickers by the Forest Department. Furthermore, a small Buddhist pagoda in Hpaan has agreed to provide eggs for incubation and head-starting for release into nearby wetlands. This novel approach of using pagoda pond turtles for conservation will get underway during the nesting season in mid-2016. A caretaker with an interest in turtles is being trained to conduct the day-to-day operations of this program.

Component 4 (as stated in the approved proposal)

List each component and product/deliverable from Grant Writer

Our project contained only three components.

11. Describe the results from Component 4 and each product/deliverable

Not applicable

12. If you did not complete any component or deliverable, how did this affect the overall impact of the project?

The reintroduction of *Geochelone platynota* at Shwe Settaw Wildlife Sanctuary was postponed indefinitely due to the theft of tortoises from our other reintroduction effort at Minzontaung Wildlife Sanctuary. The Myanmar Forest Department forced us to halt all star tortoise reintroduction programs pending the outcome of an investigation into security procedures, which was completed in late 2015. Although tortoises are now awaiting transfer to pre-release acclimation pens at SSWS, permission to continue the release has yet to be granted by the Forest Department. Permission is expected within the coming months, and the reintroduction will proceed as planned. Owing to this unexpected turn of events, we have been unable to complete the deliverable as stated in our proposal. This has lessened the conservation impact of our project, but should be viewed as a delay rather than a crippling setback.

Reintroduction of *Batagur trivittata* in Chindwin River and Nam Thalet Chaung went as planned. However, post-release monitoring was hampered by transmitter failure on numerous turtles. Additionally, wet season dispersal was much greater than anticipated, requiring lengthy river trips to relocate released turtles. Sample sizes (both the number of telemetered turtles and relocations) are less than expected, but nonetheless sufficient to provide statistically robust estimates of post-release dispersal and allow us to evaluate the efficacy of the hard- versus soft-release strategies for reintroducing river turtles. Evaluation of these strategies will have conservation implications for future efforts with *B. trivittata* in Myanmar as well as river turtle reintroductions in other countries.

13. Please describe and submit any tools, products, or methodologies that resulted from this project or contributed to the results

CEPF Global Monitoring Data

Respond to the questions and complete the tables below. If a question is not relevant to your project, please make an entry of 0 (zero) or n/a (not applicable).

14. Did your organization complete the CEPF Civil Society Tracking Tool (CSTT) at the beginning and end of your project? Yes/No

NO

If yes, please be sure to submit the final CSTT tool to CEPF if you haven't already done so.

15. List any vulnerable, endangered, or critically endangered species conserved due to your project

- Burmese Star Tortoise (*Geochelone platynota*)

- Burmese Roofed Turtle (*Batagur trivittata*)
- Burmese Eyed Turtle (*Morenia ocellata*)

Hectares Under Improved Management

Project Results	Hectares*	Comments
16. Did your project strengthen the management of an existing protected area?		List the name of each protected area
17. Did your project create a new protected area or expand an existing protected area?		List the name of each protected area, the date of proclamation, and the type of proclamation (e.g., legal declaration, community agreement, stewardship agreement)
18. Did your project strengthen the management of a key biodiversity area named in the CEPF Ecosystem Profile (hectares may be the same as questions above)		List the name of each key biodiversity area
19. Did your project improve the management of a production landscape for biodiversity conservation		List the name or describe the location of the production landscape

* Include total hectares from project inception to completion

20. In relation to the two questions above on protected areas, did your project complete a Management Effectiveness Tracking Tool (METT), or facilitate the completion of a METT by protected area authorities? If so, complete the table below. (Note that there will often be more than one METT for an individual protected area.)

Protected area	Date of METT	Composite METT Score	Date of METT	Composite METT Score	Date of METT	Composite METT Score

21. List the name of any corridor (named in the Ecosystem Profile) in which you worked and how you contributed to its improved management, if applicable.

Direct Beneficiaries: Training and Education

Did your project provide training or education for . . .	Male	Female	Total	Brief Description

22. Adults for community leadership or resource management positions	45		45 Individuals trained to serve as community conservation volunteers for <i>G. platynota</i> reintroduction; Forest Department rangers and staff trained at Shwe Settaw Wildlife Sanctuary; individuals trained to serve as field technicians for <i>Batagur trivittata</i> reintroductions.
23. Adults for livelihoods or increased income			
24. School-aged children			
25. Other			100 Local and district officials, and villagers attended release ceremonies and concomitant educational presentations outlining objectives of <i>B. trivittata</i> project and importance of river turtle conservation.

26. List the name and approximate population size of any “community” that benefited from the project.

Community name, surrounding district, surrounding province, country ***Population size***

Limpha Village (Sagaing Division, Myanmar) ca. 150

Lessons Learned

28. Describe any lessons learned during the design and implementation of the project, as well as any related to organizational development and capacity building. Consider lessons that would inform projects designed or implemented by your organization or others, as well as lessons that might be considered by the global conservation community

Several important lessons have been learned during this project. First, our surveys of conservation awareness and attitudes in villages adjacent to SSWS suggest a greater willingness to participate in conservation activities than we initially assumed. This is an encouraging result that bodes well for reintroduction efforts at other wildlife sanctuaries in Myanmar and will influence how we approach village-level conservation education in the future. Second, post-release monitoring of reintroduced *Batagur trivittata* indicates monofilament fishing nets, especially along Nam Thalet Chaung may pose a greater threat than we initially thought. We are currently attempting to devise methods to reduce the threat from this fishing gear. Wet season dispersal of reintroduced *Batagur trivittata* was much greater than anticipated. In the future, longer pre-release acclimation periods may be implemented in an attempt to engender a greater degree of site fidelity. That said, penning periods are constrained by the annual rise in water levels that accompanies the annual monsoon. Given the large number of VHF transmitters that apparently failed (basking turtles were observed with attached transmitters that were not emitting a signal attesting to equipment failure rather than mortality of turtles), our future reintroductions will rely on sonic telemetry for post-release monitoring. Although expensive, sonic telemetry units are more reliable and signals can be located at a greater distance than the VHF transmitters currently in use.

29. Project Design Process (*aspects of the project design that contributed to its success/shortcomings*)

One of the mainstays of our turtle conservation projects is the involvement of local personnel as Community Conservation Volunteers (CCVs) and field technicians. CCV's provide an invaluable link with local communities, an especially important consideration where illegal activities might be involved (e.g., poaching released Star Tortoises). Additionally, CCVs keep local communities informed about the objectives and progress of turtle conservation efforts, and in turn provide information back to the project. For example, local field technicians learned of two *B. trivittata* mortalities from personal friends among the fishing community and reported this information back to the project. Without this network of personal relationships, it is doubtful the fate of the two turtles would have ever been determined. Also, the monetary reward received by CCVs and field technicians for participating in conservation activities tends to incentivize the continued success of conservation efforts. And not to be over-looked is the pride CCVs seem to take in being part of something larger and obviously important. Being a CCV appears to elevate an individual's standing in village society. Local ecological knowledge (LEK) is also essential to the success of the project. Most notably, the nest and egg locating skills of a father-son team in Limpha is critical for our egg collection and head-starting efforts involving *B. trivittata* on the Chindwin River. Finally, local people bring valuable skill sets to the project; e.g., boat handling skills, construction, etc. These skills are often lacking in more educated individuals recruited as project managers and administrators. Based on these experiences, our future conservation efforts will therefore continue to rely heavily on the participation of local people.

30. Project Implementation (*aspects of the project execution that contributed to its success/shortcomings*)

See question above

31. Describe any other lessons learned relevant to the conservation community

Several aspects of our project are relevant to the larger conservation community. First, our project demonstrates the successful integration of *ex-* and *in-situ* methodologies in turtle conservation. In particular, our project demonstrates the value of captive assurance colonies in staving off the near-certain extinction of imperiled chelonians and producing large numbers of offspring for release. Given the long lifespan of most species of turtles, these results have been achieved in a relatively brief period of time (about 10 years). Second, our "soft-release" of *G. platynota* and *B. trivittata* are demonstrating the value of a pre-release confinement period for instilling site fidelity in reintroduced turtles. Third, as described above, our project demonstrates the advantages of incorporating local personal into various aspects of the project. The model of turtle conservation we have developed and continue to refine in Myanmar, is certainly transferable to other conservation projects in developing countries.

Sustainability / Replication

32. Summarize the success or challenges in ensuring the project will be sustained or replicated

Obtaining funding for turtles has long proved challenging in comparison to larger, "charismatic megafauna". Nonetheless, there is a growing awareness among donors of the imperiled status of turtles as a group, and their importance to biodiversity conservation. TSA/WCS has been able to use the projects described herein to leverage additional funding to continue this important work.

33. Summarize any unplanned activities that are likely to result in increased sustainability or replicability

Safeguards

34. If not listed as a separate Project Component and described above, summarize the implementation of any required action related to social, environmental, or pest management safeguards

Additional Comments/Recommendations

35. Use this space to provide any further comments or recommendations in relation to your project or CEPF

Additional Funding

36. Provide details of any additional funding that supported this project and any funding secured for the project, organization, or the region, as a result of CEPF investment

Donor	Type of Funding*	Amount	Notes

** Categorize the type of funding as:*

- A Project Co-Financing (other donors or your organization contribute to the direct costs of this project)*
- B Grantee and Partner Leveraging (other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF funded project)*
- C Regional/Portfolio Leveraging (other donors make large investments in a region because of CEPF investment or successes related to this project)*

Information Sharing and CEPF Policy

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned, and results. Final project completion reports are made available on our Web site, www.cepf.net, and publicized in our newsletter and other communications.

Please include your full contact details below:

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