2015 Trip Report – Baly Bay

Andrea Currylow, 21 February -- 23 March, 2015

Ampijoroa: Angelo and I left Tana toward Ampijoroa on 21 February. After arriving, we stayed one day and sampled 26 animals (11M, 10F, 5SA). Some of those "adults" were recently moved from the "sub-adult" enclosures to the breeding enclosures! They were hatched in the 1990's. We did full workups on these animals (sampling blood, nasal flushes, cloacal swabs, buccal swabs, urine, and feces if available) and took duplicate samples of cloacal and buccal swabs for Durrell's backup. All animals appeared in good health with the exception light weights of two females (AY3035F and AY3037F; they were a bit lighter than expected compared to their previous weights). Although, it might be worthwhile to look at the laying records for these two – perhaps they had just nested. The temperature logger in the female's nesting enclosure was lost sometime since my visit last year, and I was not able to get into the quarantine to check on the others before heading to the field. At this time, Ernest reported that this year had the largest hatchling batches (n = 85) ever!

Figure 1. Ernest with his ladies in Ampijoroa.

After visiting the field sites in Baly Bay (see reports below), we returned to Ampijoroa and sampled again (10M, 11F, 10SA). Most of the second round of sampling involved the animals in quarantine. We did full work-ups for these animals so that they can be cleared from the quarantine location if the results come back favorable. Unfortunately, the humidity datalogger in the quarantine enclosure appears to have failed sometime since my visit in 2014. However, the temperature logger remained and was downloaded.

Sada: Angelo collected a large group of people for transects, while I headed out with Fidy and the rest of the regular patrolmen (Pipa, Fada, & Antariki) to train them to track in Fidy's absence. Fidy has been hired by Durrell to conduct and manage tracking at Beaboaly, and has moved to that site. At Sada, It was time to change the original transmitters as their batteries were due to expire this month. Many of the original transmitters were those that have been hacked off by poachers over the years, while the remainder (n = 5) were deployed a year or more later, so they still have battery life left (see Appendix 1). We replaced those that we could, but found that some had already expired. Despite this, we were able to find animals on which to deploy eight of the 10 new, 4-year transmitters. We still need to deploy the last two 4-year transmitters on males, and tasked the trackers to find a couple so they could be glued on ASAP.

Figure 2. Our "solar-powered" camp at Sada.

As previously reported, the sub-adult animal that we were tracking at the site (AY0258J; the one we deployed a transmitter on with Lesly Stahl), was poached and recovered in a confiscation in Ivato last year (see "*Baly Bay Trip Report for Jun/July 2014*"). It is currently in Durrell's care and is awaiting transfer to Ampijoroa. The animal we replaced it with (AY0266J) at Sada for tracking is now also missing. Yet, we were able to find another sub-adult (AY0265J) to again replace and keep up monitoring this age class. However, this age class is still very much a rarity in the field. We see a distinct absence of small sub-adults, despite a preponderance of adults and hatchlings. As previously reported, it is our (my and Angelo's) supposition that these are the animals favored by poachers and so are selected out of the population.

During the surveys, we found a female nesting (AY0061F). We waited for her to finish the nest and walk away before both sampling her and deploying an iButton in the nest. I carefully excavated the surface of the nest to discover that she had laid at least three eggs at approximately 7–10 cm deep (Fig. 3). I re-covered the nest once I placed the iButton inside. Before we had a chance to leave the area, we found three juveniles in an adjacent bush cluster. They ranged in size from 54-64 SCL and had 2–3 growth rings. This gives us some pretty strong evidence that this particular location is a preferred nesting ground, and hopefully the iButton and future visits can help us elucidate why/which the conditions are favorable.

Figure 3. Nest found at Cape Sada with iButton placed inside.

We had Fidy transfer his equipment to the new tracking teams in Sada, but there are some issues with the equipment. The gear has spent a few years now under harsh conditions, and even though Fidy takes very good care of the equipment, some has broken and needs to be replaced; namely, the solar panel and GPSs. We asked the team to try to make do in the meantime, charging things when they get the chance to go to Soalala and using some of the older GPSs. I explain more about the data below in the "General Notes."

Figure 4. Lots of rain made the 10+ km hikes… interesting. Everyone remained in good spirits, however.

Soalala/Betainalika: After staying in Soalala to meet with MNP and the Chef Cantonnement, and to go shopping for the needed supplies for the next leg of the trip, we headed to Betainalika. We began surveys and tracker training. – Rain (Fig. 4) – Fidy came along with us to ensure the new trackers understood how to properly collect the data (but see *General Notes* below) and explain any potential problems in their own dialect. Three men have been identified as new, alternating trackers at this site (Sogoly, Levelo, and Bezanolahy), one of which (Sogoly) worked with Laura Smith when she surveyed here! We signed over all the brand new equipment to the trackers after Fidy finished training.

Figure 5. Fidy shows the new trackers (Sogoly, Levelo, & Bezanolahy) his technique.

During tracking, I exchanged the old transmitters with new 4-year transmitters and Angelo conducted surveys. We only have three animals at this site (2M, 1SA), and we want to bring that number up to 10 tracked.

However, I didn't get much of a chance to work at the site as I had liquid nitrogen issues (as seemingly is per usual) and had to leave the site to head to Beabolaly where solar power could keep a small, 12-volt freezer going. Angelo remained at Betainalika with the crews for another few days to survey before joining me in Beabolaly. Unfortunately, his crew only found one new adult male for tracking, and one hatchling. We still have no females at this site, only the three males and one sub-adult. Angelo will return to the site in April after I depart from Baly Bay this season to continue surveys.

Beabolaly: I arrived several days before Angelo, but a nearby cyclone kept me inside on the computer. Angelo had much of the animal processing equipment with his crew in Betainalika, and the measuring equipment at Beabolaly is too worn to be used for accurate measurements and needs replacing. It took a couple days for the small freezer to freeze the samples, and we kept running out of solar power since there was persistent cloud cover and rain. Purchasing a back-up generator would be an option if there might be another need for constant power in the future. Finally, a few days later we were able to get together and into the field with Fidy tracking. However, we found that Fidy requires further training before he will be capable of managing the field monitoring project for the released animals.

We found there to be many persistent problems that were noted from previous visits. Seeing Fidy's frustration, I put a bit more effort into identifying the problems and trying to rectify them; something I had steered away from in the past as not to step on Henri's toes. However, what I discovered about the management of the project reflects that there may be a fundamental lack of

Figure 6. Disembodied transmitter (with GPS for scale) found while tracking at Beabolaly.

understanding of the nuances of telemetry operations. I have discussed the issues that I discovered with Lance and Angelo, so will not bog down this report with the details. Suffice it to say that Fidy was not yet equipped to handle higher-level project management issues such as determining appropriate transmitter frequencies to order and distribute to avoid signal overlap. I made an effort to ensure he wouldn't encounter similar problems at Sada, and so he was not previously trained on how to deal with the issues. I spent some time with Angelo and Fidy to explain how best to move forward with the project and rectify these problems while avoiding more in the future. If Fidy is to enter and evaluate data or make schedules, he needs to be equipped with a laptop, trained, and placed in charge of updating the checklist of animals, GPS localities, and frequencies. He is collecting GPS coordinates, habitat data, and behavior for each sighting but this information remains only in his notebook.

The fire that burned in the area in December did not greatly impact the site, but was probably much larger than the reported 222 ha. We found several tortoises using the recent burned area, perhaps taking advantage of the new growth as forage (and there was a lot of it!). The fire breaks that were cut were obviously inadequate to have stopped a fire (they were generally much too narrow, allowing fire to cross either due to high winds or over vegetation which easily spanned the breadth overhead; Fig. 7) and consequently, both sides were burned in nearly every location where the fire had reached. It would be worth the effort to work with MNP to create a fire management plan with regular controlled burns, broad maintained firebreaks, and selective cutting like those management plans that are implemented in National Parks across the US.

Figure 7. Example "fire break" in Beabealy habitat.

It should be stated that I am concerned about the success of the site; it seems as though it is unknown if many of the released animals remain in the area. Durrell's records show that 15 animals have failed transmitters and were not recorded in 2014. Yet an animal was found deceased on May 30, 2014 in an advanced state of decay (bones disarticulated and scattered) that was unknown to be missing. Considering this, the terrain, vegetation density, labor involved in finding even tracked animals, and obvious lack of distant patrols at the site (overgrown and tangled vegetation), past records are suspect. A major effort is required to improve the

monitoring at the site. An additional concern I have is that the area could be being poached. The number of hatchlings found is beginning to decline since we discovered so many being produced just a couple years ago (see "*Baly Bay Trip Report for April/May, 2013*"; there were 2 in 2012, 13 in 2013, then only 7 & 3 in 2014 & 2015). We also discovered evidence of trespassers by cut paths in areas not visited by the site guardians while we attempted to track some animals (also which are no longer tracked). Six of the 11 animals I was looking for (those with iButtons) didn't have the proper or working transmitters, and so are of unknown fate. It seems as though many of the issues previously explained as small issues being fixed, are more systemic. The site still obviously has great potential but needs attention, and caution should be applied with any data analyses from previous years.

Figure 8. Fidy training our new tracker, Maro, in Andranolava.

Figure 9. New trackers, Maro and Bosa, at Andranolava.

Andranolava: This is the southern portion of the westernmost site, where we brought new equipment to establish tracking by the guardians. We had only two animals with transmitters already (1F, 1SA) at the site, and aimed to deploy at least eight more transmitters. Angelo gathered the largest survey crew we have ever had, at 17 guys plus myself! We spent four days surveying and tracking, but found only a single additional animal that was already engraved. Angelo is working on an index to compare this with previous efforts, but this preliminary result is quite disappointing as the site is part of the

Figure 10. Still finding baby tortoises in Antsahamena.

largest habitat remaining for the species. It is pretty evident from the lack of tortoises, inadequate number of patrolman for such a large area, and some trespassing sign (cut vegetation), that this site has been heavily poached. The people at the village that we generally trust were surprised to hear of the lack of tortoises. We decided to go ahead and give the guardians, Maro and Bosa, the gear to track the three animals, but we do worry that the efforts and equipment is wasted at the site. All three transmitters deployed at the site are now new, four-year transmitters, and we still have several more to deploy there (left with Angelo in Soalala) if the tortoises for them are ever found.

Antsahamena/Ambatomainty "black rock": We arrived from the previous site late, and so were not able to get word to the village for survey help the following day. Therefore, we decided to hike the seven kilometers to the village the next morning to gather help and to track the single animal that inhabits an area another five kilometers further out in that same direction (AY1302M). Angelo and I again split up; he, surveying with a larger crew and me, tracking with Fidy, Herilala of MNP, and the two regular CLP/guardians, Sadrago and Hosegna. We did not find the distant animal – the transmitter was not emitting any signal from any location we searched, but the battery does not expire until November 2016. Based on that, the sign we found, and the word of the villagers, we decided this animal probably had its transmitter hacked off like those at Sada and Beheta in 2013/14 or perhaps it had been poached out of the area. Besides that animal, there are eight more tracked at the site. The CLP guardians have had the tracking gear for several months and appear to be quite

proficient at tracking; however, they have not been tracking very regularly (only once every couple months) and should up the frequency (to 1–3 times a week). Fidy helped out by tuning frequencies and giving some tracking advice with which he is now an expert☺. We had to replace the transmitters on two other tracked tortoises due to some sort of transmitter problem, but all went well and the animals can be tracked until next April (2016) when a couple of their transmitter batteries will expire (see Appendix 1).

Beheta: Due to the delays we encountered during this trip, we were not able to revisit Beheta. We received reports that there have been several animals (n = 5) with hacked off transmitters, but the reports are inconsistent and we are unsure of the exact number of animals, which animals, or if they are simply lost due to non-responsive transmitters. The best data I have are the last tracking data from Fidy's visit in October 2014 where only five males remained of the nine. Three of those original nine were due to have their transmitters replaced this spring, so if they remain, will/have expire(d). However, Fidy was sent to the site the day of my departure from the Baly Bay area (24 March 2015) to engrave a recently found sub-adult (the age class we are majorly missing from all populations). We sent him off with tracking gear to train the new trackers (since Fidy will no longer have time to consistently work at the site) and several new transmitters. He will report back with the number of animals being tracked at the site, and Angelo will revisit the site in April to follow up.

Figure 11. Fidy training new trackers.

General Notes: The numbers of tortoises we are now tracking are listed by site in Table 1 (see also Appendix 1 for a detailed list and transmitter expiration dates). Also shown in the table are the numbers of tortoises previously reported as tracked in November of 2013 (see report: "*Baly Bay – Fall 2013 Trip Summary*").

Table 1. The six Ploughshare sites in Baly Bay, updated number of tortoises being tracked in each demographic at each site, the number of environmental iButton temperature loggers remaining at each site. Numbers in parentheticals are those previously reported in Nov 2013.

Site	Males	Females	Juv/Sub-adults	Environ-mental iBs
Beheta*	? (3)	? (4)	0 (0)	4 (4)
Cape Sada	6 (5)	7 (5)	1 (1)	7 (7)
Betainalika	3 (2)	0 (0)	1 (0)	3 (3)
Andranolava	1 (0)	1 (1)	1 (1)	2 (2)
Antsahamena	5 (2)	4 (3)	0 (0)	3 (3)
Beaboaly**	1 (2)	4 (2)	0 (6)	1 (6)
Totals:	16? (14)	16? (15)	3 (8)	20 (25)

* Due to the delays this trip, we were not able to revisit this site. We received reports that there have been several animals with hacked off transmitters, but the reports are inconsistent.

**some of the sexes have been updated since the tortoises are morphologically developing.

One issue the trackers are having is that the solar panel and battery charger are not designed to work year-round in this tropical sun, so have failed. This problem is occurring at Sada and Antsahamena, and we can expect it to happen now at the other sites. Solar technology is now just becoming more widespread in Madagascar, and I propose to purchase robust replacement equipment locally to save on shipping and fine-grade equipment costs.

It is worth noting that the pay rates are outdated. The pay for daily survey help is a mere pittance (5,000 Ar) compared to what they can make in a single night fishing (~30,000 Ar), and we only find the help we need because there are a few people in every village willing to "donate" a little time and to eat the free food we provide. The regular CLP patrolmen are also only paid 5,000Ar plus 1,050 for rice per day. Almost needless to say, the work we get from our help is both slow and extremely limited.

As for the new trackers, all will be collecting the same data that I had been requesting from Fidy for my dissertation, but this level of detail is no longer necessary, I think. We could work to come up with new, easier datasheets to make sure the guys are still visiting the animals and doing the work, but without such particular fuss and subjectivity. Again, the pay scale should also be updated. Since some of the

Figure 12. Fidy removing an expired transmitter to epoxy on a new, 4-year transmitter.

animals move extreme distances in that rough terrain, I think tracking those should be worth more than the easy animals or more densely populated areas. I ask trackers to get 2–3 locations per animal per week during the wet season, and 2–4 locations per month during the dry season. I have been paying about 850 Ar (~$0.40) per tracking event (I actually pay per completed datasheet which includes 16 re-locations), and have seen that (at least at my sites in the south) when the trackers have very many animals, they "give up" on tracking the hard ones and just concentrate on reaching the quota with the easy ones. Breaking the payment structure down by a tracking event on a quota system might make more sense. Perhaps implementing a graded pay scale to allow us to keep all the animals monitored and get more consistent data. I propose to think about each tracked animal's location in relation to the guard huts and animal ranging patterns and assign each of the tortoises an individual "tracking event value."

At every site, we again noted much bush pig sign. In Sada, our entire camping area was tilled up by the pigs. I can't help but wonder if the pig situation may be why we are not seeing many hatchlings in Beaboaly anymore.

It was a great, productive trip! I wish I could have made it to Beheta, but am sure Angelo will make up for my absence. We still have a lot of work ahead of us, but we're building a sturdy base and relationships with locals. Thank you very much for your help and support!!

Appendix 1. Table of tortoises by site and their transmitter expiration dates as of March 2015.

Site	Tortoise ID	Transmitter Expiration Date	Notes
Andranolava	1308M	Mar-19	
Andranolava	1297F	Mar-19	
Andranolava	1298SA	Mar-19	
Antsahamena	1302M	Nov-16	missing
Antsahamena	1011M	Dec-16	
Antsahamena	1023F	Nov-16	
Antsahamena	1100F	Apr-16	
Antsahamena	1162/1165M	Dec-16	
Antsahamena	1300M	Apr-16	
Antsahamena	1301F	Apr-16	
Antsahamena	1306F	Mar-19	
Antsahamena	1206M	Mar-19	
Beaboaly	3108F	??	missing
Beaboaly	3132F	??	missing
Beaboaly	3135M	??	missing
Beaboaly	3163SA	??	missing
Beaboaly	3297SA	??	missing
Beaboaly	3104F	??	removed iButton
Beaboaly	3109F	??	removed iButton
Beaboaly	3133M	??	removed iButton
Beaboaly	3147F	??	removed iButton
Beaboaly	3295F	??	removed iButton
Beaboaly	3095M	??	unknown frequency - removed iButton
Beheta	0520M	Apr-16	last tracked in November 2014
Beheta	0524F	Jan-15	last tracked in November 2014
Beheta	0547M	Nov-16	last tracked in November 2014
Beheta	0567F	Jan-15	last tracked in November 2014
Beheta	0505F	Jan-15	missing as of Nov 2014
Beheta	0521M	Apr-16	missing as of Nov 2014
Beheta	0530M	Apr-16	missing as of Nov 2014
Beheta	0541F	Apr-16	missing as of Nov 2014
Beheta	0549M	Nov-16	missing as of Nov 2014
Betainalika	1310M	Mar-19	
Betainalika	1102M	Mar-19	
Betainalika	1177M	Mar-19	
Betainalika	1296SA	Mar-19	
Sada	0018F	hacked	
Sada	0043F	hacked	
Sada	0052M	hacked	

Site	Tortoise ID	Transmitter Expiration Date	Notes
Sada	0082F	hacked	
Sada	0258SA	hacked	
Sada	0007M	Feb-15	missing as of Feb 2015
Sada	0012F	Feb-15	missing as of Feb 2015
Sada	0266SA	Feb-15	missing as of Nov 2014
Sada	0014F	May-16	
Sada	0050M	May-16	
Sada	0059M	May-16	
Sada	0076M	Feb-19	
Sada	0047M	Nov-16	
Sada	0006F	Oct-16	
Sada	0001F	Feb-19	
Sada	0002F	Feb-19	
Sada	0010F	Feb-19	
Sada	0058M	Feb-19	
Sada	0265SA	Feb-19	
Sada	0003F	Feb-19	
Sada	0060F	Feb-19	
Sada	0106M	Feb-19	