Stream of consciousness, in order of appearance.

August 8, 2023

* I prepped four tags in Tana to take for mission 1 (Ambositra) (I brought everything else with just in case)
  + 2 solar for Pteropus
    - 58563
    - 58566
  + 2 battery for Eidolon
* I used Bella’s method, with a few thoughts on how to improve it
  + Perhaps put the wetsuit tape on after you’ve cut the leather down to size (and glued neoprene) in order to wrap the top and bottom edge to reduce hard edges
  + The glue seems to work well on the leather, but not as well on the wetsuit tape. Make sure that the tag sits entirely below the wetsuit tape
  + I used additional thread (taped) on the top hole, but not the communication holes, mainly because I didn’t want to put glue on that area bc it might mess with communications
* We are currently in Ambositra, because we didn’t have enough LN to go north. Here, we are likely to get Pteropus (over a few days), and are going to scout and potentially get Eidolon as well.
  + Trying for one male one female Pteropus
* Programming!!
  + BATTERY
    - Mike let me know that our battery tags are PinPoint ArgosP 240, which I can use to estimate lifespan
    - Using the life estimator software…
      * 5 fixes per day will give me 35-59 days of data
      * 4 fixes per day will give me 43-71 days of data
        + \*\*4 seems like the minimum I’d want to do.. right? One during the day, then three during foraging to see where they go. I need to be really precise about these then.

Maybe I can alternate the time every day? For example, schedule 1: day, 8pm, 12pm, 4am

Schedule 2: day, 10pm, 2am

\*custom schedule based on activity we see for bats? We are going to scope out Pteropus tonight to figure out

* + SOLAR
    - Understandably, these last a loooooooot longer. Which makes the use of the same collar somewhat suspicious perhaps. Maybe with eidolon I’ll try a single thread, and with Pteropus do a bunch? But they are guaranteed to fall off and if the tags stay on longer than they transmit that’s just the situation. It’s still ethical.
    - They can take up to 21 fixes in the first year, then a reduction after that. But that’s good case scenario—Mike recommends programming far fewer fixes per day and maybe setting different rules for different years.
  + Tonight, I’ll decide what the programming should be and test it overnight

August 9, 2023

* We put up the Pteropus net today, so I need to program the gps decives and test them overnight.

Based on the information I have, here’s my plan for the solar tags. I can take 15 fixes per day for the first year, 10 for the second year, 5 for the third year. (though there’s no way it’ll make it until the third year, maybe even the second, maybe even the third).

Here’s my proposed fixes:

YEAR 1

|  |  |  |
| --- | --- | --- |
| **Fix #** | **Time (Madagascar)** | **Time (GTM)** |
| 1 | 12 | 9 |
| 2 | 18 | 15 |
| 3 | 19 | 16 |
| 4 | 20 | 17 |
| 5 | 21 | 18 |
| 6 | 22 | 19 |
| 7 | 23 | 20 |
| 8 | 0 | 21 |
| 9 | 1 | 22 |
| 10 | 2 | 23 |
| 11 | 3 | 0 |
| 12 | 4 | 1 |
| 13 | 5 | 2 |
| 14 | 6 | 3 |
| 15 | 7 | 4 |

YEAR 2

|  |  |  |
| --- | --- | --- |
| **Fix #** | **Time (Madagascar)** | **Time (GTM)** |
| 1 | 12 | 9 |
| 2 | 18 | 15 |
| 3 | 20 | 17 |
| 4 | 22 | 19 |
| 5 | 0 | 21 |
| 6 | 1 | 22 |
| 7 | 2 | 23 |
| 8 | 4 | 1 |
| 9 | 6 | 3 |
| 10 | 7 | 4 |

YEAR 3

|  |  |  |
| --- | --- | --- |
| **Fix #** | **Time (Madagascar)** | **Time (GTM)** |
| 1 | 12 | 9 |
| 2 | 18 | 15 |
| 3 | 21 | 18 |
| 4 | 24 | 21 |
| 5 | 3 | 0 |
| 6 | 6 | 3 |

Scheduled saved as ‘Pteropus-Solar-OFFICIAL’ on PC under GPS SCHEDULES

* Added the program and activated the tags. Now I test overnight and see what happens! Tomorrow I will check that the data can be found on the Argos website, and then I will erase and recharge the tags for deployment right before adding them.

\*\*\*I FORGOT that you are supposed to keep them far apart when you activate them. They were side by side once activated for approx. 5 minutes. I guess I’ll just see what’s going on online when they transit. Fuck……..

August 11, 2023

Testing out the programming.

1. download data from Argos (do you have to do this every 20 days or else it’s lost?)
2. convert data using Lotek software
3. export from Lotek to use in movebank or google earth or something else

IT WORKED! I have to process the data on the PC but then I can export as a csv or anything else.

\*\*I’ll need to figure out what my download schedule is, and develop a pipeline for data upload to MoveBank.

In the meantime, I’m confident to put the tags out. On a side note, when I plugged one of the solar ones it was still fully charged! That means the solar is working great. The other needed some charge—looking at it now to see how much it is.

TLDR: ALL SYSTEMS GO !

* we caught a large male Pteropus that was large enough for the tag
* but it had a broken wing tip (the bone was sticking out) and so I aborted the tag. We are going to be here for a few more days and that was just the first day that the net was up. I am confident that we will catch more.

August 12, 2023

First tagging experience.

* Tagged a large male Pteropus
* Put tag on after all other processing
* Took approx. 20 mins to attach tag, but this will likely shorten over time, fed the bat banana during tag placement to placate.
* +collar was long enough, trimmed off approx. 1.5 inch
* -holes were awkwardly done. Be more precise in the future.
* -might have attached too loose, but trying it out by keeping the bat in the garraba for a few hours and feeding banana. So far, it does not appear bothered by the tag at all.
* Cut soluable thread into two pieces, then used double thick length to go through a few holes, somewhat haphazardly, and tied off with a bunch of knots. Used both pieces of thread.
* ?could superglue the knots if they don’t feel secure or if tag falls off
* -next time bring 2x soluable thread to allow for re-dos of each bat
* -potentially employ a self-tightening knot to be more efficient and secure. Whip stitch? Or trucker’s knot?
* +used foreceps to pull thread through and to tie knots. Worked well (because angelo did it).
* -somewhat difficult to do without anesthesizing the bats. Only worked because angelo and saninto are really good at handling bats.
* \*\*I don’t think it’s flapping at all, i.e. creating pressure on the bat’s neck. It’s holding its structure, it’s just the way the bat has its head oriented that makes it stick out.

Improvements

* Wider gussetts
* Thinner leather on thicker neoprene
* Self-tightening knot – or superglue on knot
* More regular holes

August 23, 2023 – SECOND FIELD MISSION BEGINS

* Lessons learned
  + Well, the tag appears to have fallen off after a few days. Bummer. There seem to be four potential reasons for this
    - 1. Bat died - unlikely
    - 2. Tag detached from collar – unlikely
    - 3. Collar slipped over head – possible
    - 4. Knots came undone – possible
  + We aren’t able to get to the tag before putting these ones out (Angelo is going to go next week to try and recover it), so we don’t know exactly what happened. I think it is most likely that it was 3 or 4.
  + SO, we’re going to combat both 3 and 4 when we put out the next tags.
    - 3 – secure collar more tightly than before
    - 4 – superglue the knots shut/try a different knot
      * The thread is soluble still so this isn’t unethical.
* And because we’ve been here for two weeks and have 1 (somewhat failed) tag out, I’m going to make an executive decision that we’re going to just try to get tags on any bat that we can.
  + **To that end, I’m targeting 4 bats here at Analambotaka,** especially because the other sites that we have planned aren’t as reliable of catches. And we have to be here for three days anyways so might as well to be more time efficient. PLUS, we have the most virus information about these bats so can link them to other ideas more easily.
  + So we have three full days here to catch 4 Pteropus. I feel pretty confident.
* Finally, I had some **research thoughts**:
  + Even if we tag only a handful of roosts, we can still say things about metapopulation dynamics in the entire area
    - We can overlay the gps movement data on top of known roosts to see where they overlap. We’ll then know if bats are visiting other roosts, which may indicate that those bats visit the roost we tagged at. In other words, there’s a TON of value in knowing where other roosts are in combination with the gps data.
    - There’s obvious implications for assumptions about viral transfer in this scenario.
  + So I’m feeling good about putting 4 out at Analambotaka! If it is one big metapopulation, then we have a shot at capturing those dynamics even if we don’t tag all subpopulations (assuming equal mixing, which is what the models will likely assume anyways)
* Also, not research related, but without sunshine I’m sort of screwed for power here with my two laptops. Will need to minimize usage.

August 26, 2023

Review of Analambotaka

* Only 3/9 caught bats were taggable (big enough) but all were males. Decided to only tag two
* Mostly because A) we want females and B) we aren’t sure that they move much so it could be a waste to use the tags all on the same site.
* \*\*a better tactic is to keep the tags we don’t deploy and to have the field team put them out at a later date to get another site or females.
  + But looking at the data, we saw that the bats seem to be roosting elsewhere, which is a great sign!
* Overall, went well.
* We fitted the collars more tightly, and glued them shut.

August 28, 2023

* Programming battery tags
* As per notes from above…
  + 4 fixes per day will give me 43-71 days of data
    - \*\*4 seems like the minimum I’d want to do.. right? One during the day, then three during foraging to see where they go. I need to be really precise about these then.
      * Maybe I can alternate the time every day? For example, schedule 1: day, 8pm, 12pm, 4am
      * Schedule 2: day, 10pm, 2am
      * \*custom schedule based on activity we see for bats? We are going to scope out Pteropus tonight to figure out

Schedule 1

|  |  |  |
| --- | --- | --- |
| **Fix #** | **Time (Madagascar)** | **Time (GTM)** |
| 1 | 12 | 9 |
| 2 | 20 | 18 |
| 3 | 23 | 20 |
| 4 | 2 | 23 |
| 5 | 5 | 2 |

Sept 7th, 2023

* Tagging at Marotsipohy, so far one male but it was too small. Putting up another net.
* Had a talk with Bella about pivoting in the field and she supported the decision to just try to get tags out wherever we can instead of trying to get an even split of males and females. She validated me that this is hard and reviewers can be damned if they complain about uneven sample sizes.