

Wednesday, April 13 – The Grand Finale – Johnny Wise

We anchored off of Cabo San Jose for the night, and in the morning I was relieved to learn I would not be asked to stow the 70 meters of chain that were let out (I have been stowing the chain as it's hauled in every day, and it's a rather awkward and uncomfortable task). Skipping the first part of my daily ritual, I set to gathering supplies for my sunrise whale watch – filling my water bottle, downing a cup of coffee, a small breakfast, then donning the harness, radio, binoculars, snack bag, and finally the crow's nest chair (which is a cushioned board suspended from the rail and mast by a few pieces of rope). Pops reminded me on the way up that we basically had half a day to find and biopsy whales – we had to be at the port by 4 pm to pick up Oona for her to drive the boat in to dock, that meant 7 hours total. Find the whales quickly.

After an uneventful watch, I descended the mast and resumed my searching on top of the pilot house with Carlos. As we searched together, we discussed similarities and differences between graduate school in USA vs Mexico (he is in the final year of his PhD), reflected on the trip we have been experiencing together, and speculated what we might see today – if we saw anything. On several occasions we spotted the dorsal fins of animals we hoped would be whales – each time feeling slightly disappointed to realize they were dolphins or sharks (rough life, right?). Carlos asked me about the research we would be doing with these samples.

Our plan initially was to collect the biopsies and compare contaminant levels from this trip to those observed 15 years ago. Only there was one major hurdle we were facing with this approach – all the whales biopsied on the previous voyage were sperm whales, and we had not seen any on this trip (in fact, they aren't usually in the Sea of Cortez until May). I admitted it made the comparison more difficult – but pointed out that many of the species we had biopsied this year are the same species we biopsied in other areas between 2010-2012, and so we could come up with a nice geographical comparison of these species across seas. To briefly recap – we have biopsied humpback, fin, and minke whales from the Gulf of Maine, and Bryde's, pilot, and sperm whales from the Gulf of Mexico. From this trip, we biopsied 13 fin, 6 humpback, 1 minke, 1 Bryde's, 3 pilot, and 1 blue whale – so, for the fin and humpback whales we have a good number of individuals

for comparison and statistical analysis. I also pointed out that for all these species we already have established cell cultures, and we can dose these cells with various concentrations of any given contaminant to figure out what levels are harmful – for our research, what levels break DNA. Hence, by combining the observations of contaminant levels in the tissue of the whales and our cell culture studies, we can produce a robust assessment of the pollution these whales are affected by and further determine how dangerous these levels of pollution are to the genetic health of the whales – an approach that no one else is doing for marine mammals (as far as we know).

After sharing this with him, I also pointed out to Carlos that the voyage was not yet over – there was still time to find sperm whales! He laughed, shaking his head, saying, “no way man. This isn’t the right season for them.” I smiled, shrugged, and gave him my ‘you-never-know’ look, and said, “I’d be happy with just 5 biopsies from sperm whales.” Then left the pilot house to get a more filling breakfast, and to take over for helm watch. After his whale watch was done, Mark joined me in the pilot house for watch and we both agreed that we would find whales at lunch – that just seemed to be the way things worked – so I teased Shannon about speeding up getting lunch ready so we could find the whales sooner!

Helm watch ended at 11 am, when Sean took over. At which point I resumed searching from on top the pilot house with Carlos. We spotted more dolphin and shark dorsal fins, and then, after another 20 or 30 minutes, Carlos pointed out a group of whale blows about a kilometer or two away – it looked to be at least 6 whales. The wind was steady at 10-15 knots, and the blows were small, meaning they were incredibly difficult to see at such a large distance, but Carlos has the sharpest eyes for spotting whales I’ve ever encountered – I have prided myself with having the best ability for spotting whales on our previous trips, but he totally trumps mine. Without seeing the whale blows, I reported to Sean (on the helm) where they were and he adjusted our course. We had our lunch whales!

As we made our course to the whales, I soon spotted them as well. Still too far away for me to head to the bowsprit and get ready for action. Carlos and I began to speculate what they might be. The blows were too small to be humpback, and they appeared to be remaining pretty much in the same location. There were too many too close together to be blue or fin whales. “Maybe pilot whales,” was Carlos’s first guess – nah, the blows were too big for them. Then, “maybe killer whales” – nah, we would be able to see their

dorsal fins with the binoculars, plus they don't stay in one spot very long. Then, "perhaps false killer whales..." – I have no experience with them, but he didn't seem convinced. I smiled and looked at him, "maybe sperm whales?!?" Again he laughed and said no way – they wouldn't be in the area for another month.

When the time came, I moved to the bowsprit. Mark was in the crow's nest again, Rick joined me in the bow – both of us with crossbows in hand, excited for our last hoorah. And gradually, the rest of the crew joined us. The whales were still too far away to clearly identify, in part due to the medium-sized waves that kept them mostly below the surface and our boat in constant motion. Then I heard the lunch bell from Shannon – guess that'll have to wait! The whales were about 300 meters away when I spotted another large body looming just below the surface about 50 meters from us. I eagerly shouted back to redirect and pointed to the body – a small, round dorsal was protruding from the water's surface – a sperm whale! But no, as we got closer it became clear that it was a massive whale shark! A spectacle we would have to pass up for the pod of whales. We redirected back to our original course. The whales had ceased their blows and were apparently diving, or at least just below the surface. A large hammerhead (dwarfed by the recent vision of the whale shark) swam ahead of us as we continued to make our way to where the whales were last sighted. Then Mark shouted, "SPERM WHALE TEN O'CLOCK!!!!" I looked just in time to see a large area of whitewater – apparently it had just half-breached. Beside myself with excitement and giddy as a schoolboy, I continued to watch in that direction along with everyone else. Ten or twenty seconds later, we saw the surface of the water break close to the whitewater, and the massive dark grey form of a bull sperm whale emerged from the water in a full breach straight out of the water, spun slightly and opened its jaw before landing back in the water. None of us could believe our eyes! Then, as if to say 'hello', the whale's tail went straight up out of the water and remained there for a couple seconds before falling back into the water in a big splash.



It was a pod of 7 sperm whales – what seemed like 1 bull male and a harem of females. Over the course of the next hour, we followed closely to the whales (which weren't in a hurry to get anywhere and weren't diving deep), and were able to collect 2 biopsies from 4 attempts. That left us with 2 arrows in the boat, so we turned around to scoop up our samples. Again, the wind was strong, and by the time we got to our first couple arrows,

the life jacket we used as a visual aid had been blown far away from the arrows. It took us a long time to find them again, but we did! By now the whales were again 500 meters away from us, but a small whale watching boat was staying with them, giving us an easy aid to get back to them. By the time I had finished processing the two samples, half the crew was able to eat lunch, and we were back with the whales – my lunch would have to wait!

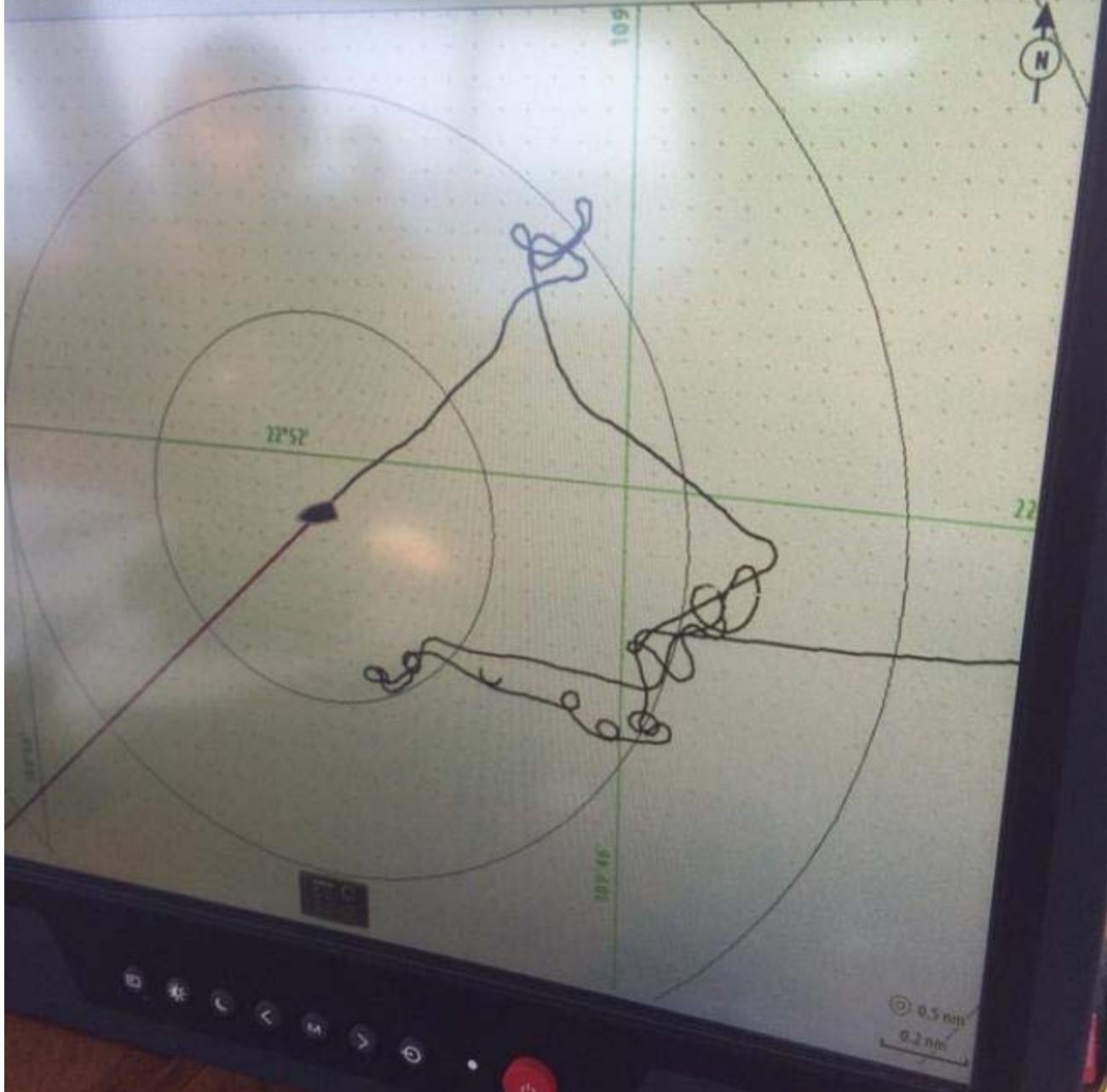


With fewer hours left of our voyage than fingers on my hand, we returned to the pod of sperm whales. Acting Captain Mike pointed out to me that we didn't have much time left and would have one or two attempts left before we would have to head to port for Captain Oona and docking. I nodded my consent and passed along the news to Mark and Rick – we each understood that meant this was our last chance, and we had to step up our game. Focus, aim, focus, wait, shoot as soon as we get a window of opportunity. The whales weren't diving deep and hence weren't exposing much of their back, and to make matters more difficult – the waves were large and rolling (note the photo of me in the bowsprit aiming while going over a wave). We succeeded in getting 2 more biopsies and were told to stand down. I set my crossbow aside and prepared for the next two samples. Mark remained in the bow, waiting for one last chance while we collected the arrows and remained there as we were heading in to port. After processing the sample, I joined him for about 20 minutes before admitting it was the end. And a good end it was.



I returned to the pilot house to Mike's big furry smile – Captain Oona had just texted to say her bus was delayed, and we had more time. With a twinkle in my eye I asked him to return to where we last saw the sperm whales and he gladly turned about while I returned to the bow. With renewed energy the team filled the deck in search of the sperm whales – we weren't ready for this dream to be done yet! From the beginning I said I wanted a minimum of 5 sperm whales – we had 4. It wasn't difficult for Mike to figure out where we last saw them (see the photo of the computer screen showing our track while with the sperm whales). And with all hands on deck, we were sure to spot them quickly – sure enough we did! (though it took nearly 30 minutes to get back there) Again, we would only have a couple passes at trying to biopsy them, and as we already had 4, we wanted to try and collect biopsies from the remaining 3. We ended with exactly the minimum I wanted – 5 sperm whales. That would give us a good number for statistical analysis and good comparison to previous years/other regions.

7 T POS N 22°51.845' W 109°46.910' DEPTH --- m TIME 14:01



And so our journey ends – with 29 biopsied whales of 7 different species. Way more success than any of us dreamed of!

Attached are some photos of these sperm whales – a couple breaches, photos of them next to the boat, and logging at the surface.

Thank you everyone for your support before, during, and after this trip – we could not have achieved such success without it. Our next steps are to get the permits in order to bring the biopsies back to the states – this will take a few months, and the samples will remain with Carlos until then. After that we will screen them for a range of metals, then compare the results to the previous voyage in the Sea of Cortez as well as other areas we've biopsied (Gulfs of Maine and Mexico). We are very excited for the results and the papers we can produce from these data!

Thank you, and happy sailing!

Johnny