

902004 - Planktivore

Week 51

1. Thom Maughan
 - a. Year end budget
 - b. Pcb fab and assembly

Week 50

1. Thom Maughan
 - a. Board design updates, fab and assembly packages
 - b. Year end budgets
 - c. Coming up to speed on plankton identification and recommendations by committees.

Week 49

1. Thom Maughan
 - a. Updating board designs to unify firmware / pin muxing between Planktivore v1 and v2. Planktivore v1 will have the faster strobes which will enable 1m/s (up from 0.25 m/s)
 - b. Fab packages, boms, etc.

Week 48

1. Brent Jones
 - a. Debugging issues with clock sync between ptvr and lrauv
2. Thom Maughan
 - a. Rebuilt Planktivore v1 and with help from Aaron S. got it tested and delivered to the Durkin lab for two days of 100m deployments.
 - b. Working on hardware updates.
 - c. Budgets and labor.

Week 47

1. Paul Roberts
 - a. RIMS integration

Week 46

1. Brent Jones
 - a. Investigating clock problems. Figured out we need a time server on LRAUV
2. Denis Klimov
 - a. We are consolidating parts and tools for Fluume in the ESB building this week.

Week 45

1. Duane Edgington
 - a. Data handling and model building discussion.
2. Thom Maughan
 - a. 2nd Planktivore deployment Oct 24-27. Water was quite clear based on observation and EcoPUCK. Looks like we recorded 1+ million rois.

- b. Improved watch standing and understanding LRAUV commands.
- c. Attended plankton image / data management meeting hosted by Henry Ruhl. It is apparent we have a resource gap in 2024 for providing automated plankton identification. We are working to align with other efforts. Taxonomist(s) who can identify plankton is a critical role.
- 3. Paul Roberts
 - a. Data management and RIMS integration

Week 44

- 1. Brent Jones
 - a. Supported planktivore LRAUV deployment. ROI's were received onshore!!! Diagnosing possible outages somewhere in the slate or LCM arenas.

Week 43

- 1. Thom Maughan
 - a. LRAUV Ahi + Planktivore prep and deployment on Tuesday afternoon.
 - b. Watch standing, discussions. Water is very clear.
- 2. Paul Roberts
 - a. Second field deployment on LRAUV Ahi

Week 42

- 1. Brent Jones
 - a. Getting planktivore to send back real time ROI counts to the dash
- 2. Thom Maughan
 - a. Scrubbed plans for deployment this week. Will try again next week.
- 3. Paul Roberts
 - a. First deployment on Ahi

Week 41

- 1. Thom Maughan
 - a. Milestone: deployment of Planktivore on LRAUV Ahi. Ironed out a few wrinkles and then had a clean 12 hour mission with 1+ Million plankton images!!! Many thanks to the LRAUV team for the support and guidance,

Week 40

- 1. Brent Jones
 - a. Modifying to send LCM roi avg counts back via dash
- 2. Thom Maughan
 - a. Planktivore on LRAUV Ahi deployment on Tuesday 3 Oct 2023 after a push by Chris W and Aaron S. Observed ground fault diagnosis which turned out to be a flooded compass. Planktivore was clean on ground faults. LRAUV team efforts greatly appreciated.
 - b. Gathered lessons learned.
 - c. LRAUV operator training.
 - d. Debugging hdd issues on DeepRip
- 3. Paul Roberts
 - a. First deployment on LRAUV Ahi

Week 38

- 1. Brent Jones

- a. Final testing for integration on ahi
2. Thom Maughan
 - a. Prep for LRAUV deployment. Fault found with the battery charging module. The small component size on the board, footprint, and soldering / hand assembly are suspects in the case.
 - b. Battery charger removed from test deployment. Housing has been sealed and Planktivore tested and wheeled into LRAUV lab
 - c. LRAUV Ahi checkout is complete and housing assembly is next step. Once the LRAUV housing is in place we will attach Planktivore.
 - d. Air weight and estimate on water weight indicate we need far more foam than originally designed. Working with Aaron. Hoping to get into the test tank this week.
3. Paul Roberts
 - a. LRAUV deployment

Week 37

1. Thom Maughan
 - a. Finalizing battery backup testing, troubleshooting a problem with one of the strobes. Found ROHS soldering problem on one board and a board that failed.
2. Paul Roberts
 - a. preparing for LRAUV deployment

Week 36

1. Thom Maughan
 - a. Working on abstract for ocean sciences in Feb.
 - b. Bench test has been running for days. Plan is for housing to be closed this week and Planktivore V2 to be relocated to LRAUV lab.
 - c. Reviewing the deep brs battery design and battery safety checklist.
2. Paul Roberts
 - a. integration on LRAUV

Week 35

1. Duane Edgington
 - a. Proposal response discussions
2. Brent Jones
 - a. Diagnosing and fixing network issues between LRAUV and planktivore
3. Thom Maughan
 - a. Disassembled Planktivore V2.
 - b. ChargR testing. Hand assembled board failed. Paul built another set. Ran several charge / discharge cycles. Mounted ChargR, battery bracket and battery.
 - c. Added ethernet switch
 - d. Testing with a plan to button up housing on Thursday. Working towards a mid-Sep deployment.
4. Paul Roberts
 - a. V2 battery integration

Week 34

1. Thom Maughan
 - a. Working towards mid-Sept deployment. Plankti-shell was delivered and fit test surfaced minor issues. Brett had Stan do a fast turnaround fix.
 - b. Aaron replaced 3d printed (fragile) brackets with metal. Aaron also prep'd and pressure tested the deep brs housing. I'm in progress on battery safety checklist on Craig O's battery module.

- c. Battery ChargR board testing. One works, the other worked for a short time then failed. More testing on the one that works.
- d. Opened Planktivore V2 housing for adding ChargR, Li-on battery pack and fixing a wire.

Week 33

- 1. Thom Maughan
 - a. Both Planktivore V1 and V2 passed the pressure test in Port Hueneme.
 - b. LED board hardware design updated and ready to send out for fab.
 - c. Planktivore+Ahi GoToSea weekly meeting setup - goal is mid-Sep deployment
 - d. Received the 'Plankti-Shell' from Elkhorn, looks good. Will test fit when paint is fully cured.
 - e. Met with Jim Barry regarding next years Coral deployment. The request is early in the year so am working to eval the state of the Deep BRS battery.

Week 32

- 1. Denis Klimov
 - a. We are moving Fluume assembly and associated parts to ESB.
- 2. Thom Maughan
 - a. Pressure test of Planktivore V1 and V2 on 9 Aug.
 - b. Working thru supplier issues with payload clam shell nose cone. Stan is sending pictures and has handed it off to the painter.
 - c. Aiming for a mid-September planktivore deployment

Week 31

- 1. Thom Maughan
 - a. Opened housing and removed Xavier and optics benches, Aaron prep'd planktivore V1 and V2 for pressure test planned Aug 8.
 - b. Working with Brett on clamshell nose cone for Ahi. Schedule from Elkhorn has been slipping and have worked with Stan on next delivery date. Aiming for Planktivore v2 on Ahi in mid-Sep.
 - c. Open house prep. Many thanks to Paul for the excellent posters and for Lael, Jonah Gomes, Paul and Denis for staffing the booth and tear down.

Week 30

- 1. Thom Maughan
 - a. Aaron has assembled the 2nd housing for pressure test on Aug. 8.
 - b. Reviewed Jon's pressure transducer 'add on'. Submit for fab should be in the next day or so with 6 week shop turnaround.
 - c. Paul has started processing on Durkin Lab deployment data. Planktivore V1 will be disassembled, tight tolerance face plates installed, filled with golf balls for pressure test along with Planktivore V2.

Week 29

- 1. Jon Erickson
 - a. Finished the Nose shell design, in fab.
- 2. Thom Maughan
 - a. Project management, budget, one on one meetings to discuss plans.
 - b. LRAUV nose shell is delayed. Elkhorn is indicating 'next week'.
 - c. Met with Brett regarding Ahi.
 - d. Prep'd Planktivore V1 for Durkin lab deployment on 7/19. Next step is data processing.
 - e. Pressure test for Planktivore V1 and V2 schedule is in place for Aug 8,9.

- f. Prep for 'Club Plankton' booth at open house.

Week 28

1. Duane Edgington
 - a. Proposal work
2. Paul Roberts
 - a. Proposal submission

Week 26

1. Thom Maughan
 - a. Recovered mooring June 15 after 3 days. Stella spot tracker went off line (low batteries).
 - b. Data copy is large. Found an issue with the array of 16TB drives where copy fails. Investigating.
 - c. 27 million ROI's in the dataset!

Week 25

1. Paul Roberts
 - a. Deeprip setup
 - b. 3D printer setup

Week 23

1. Thom Maughan
 - a. Prep, test and deploy Planktivore v2 on temporary mooring. Aaron did a great job on the design and fabrication of the mooring - well done!
 - b. Mooring recovery planned for Friday

Week 22

1. Paul Roberts
 - a. 2024 proposal planning

Week 21

1. Thom Maughan
 - a. Mooring prep
 - b. Project budget and planning
 - c. Abstract prep and presentation for 2024
2. Paul Roberts
 - a. Abstract presentation and processing data from paragon deployment

Week 20

1. Thom Maughan
 - a. Prep Planktivore V1 for use by Durkin lab off Paragon in the coming weeks. Held training for Crissy at the test tank.
 - b. Opportunistic training deployment of Planktivore v1 on Tuesday May 16. CPF recovery, fishing for anchovy, 10 minute dip of Planktivore v1 + Noot.
2. Paul Roberts
 - a. Abstract submission

Week 19

1. Thom Maughan
 - a. Working with Araon on mooring deployment. Sent Mandy our Sanctuary permit details and have prepared notice to mariners message, thanks to Brian K for the template and to Jared for the guidelines.
 - b. Preparing Plantivore V1 for training Crissy Hufford in prep for use by Durkin lab on Paragon May 22,23
 - c. Requesting additional time for Denis to help with bench setup and strobe tuning
 - d. Board bullets
2. Paul Roberts
 - a. Abstract preparation

Week 18

1. Jon Erickson
 - a. Finishing parts for second unit. Completed design for Pressure sensor adaptor.
2. Thom Maughan
 - a. Working with Aaron on Mooring for Planktivore deployment near power buoy.
 - b. Proposal abstract, talking to potential stakeholders for 2024 Planktivore

Week 17

1. Brent Jones
 - a. Helped deploy and recover planktivore 2x from the paragon
2. Thom Maughan
 - a. 38 minute deployment near Wirewalker on Thursday 20th, at 5m depth, Paragon drifting. 700K+ images
 - b. 39 minute deployment near Wirewalker on Tues 25th, 230k+images, yoyo 4 times at approx. 1m/sec to 70m for half, then steady at depth for the other half.
 - c. CANON meetings. Science use case is following the vertical migration from 250m. Galene/Chiton will be used as it covers the larger organism size range.
 - d. Working plans to get on an alternate LRAUV ahead of proposal season to demonstrate use of Planktivore on a science relevant scenario (long shot). This is adding work when resource is stretched thin.
 - e. Preparing Planktivore v1 to be used by Collen's group off Paragon on May 21,22.
3. Paul Roberts
 - a. Supporting deployment efforts and data processing

Week 16

1. Jon Erickson
 - a. Is at sea... now we're modifying (feature creep).
2. Paul Roberts
 - a. Firmware updates to camera controller
 - b. Support for field deployments

Week 15

1. Thom Maughan
 - a. Weekly report has been missed for several weeks - here's the backlog.
 - b. Aaron ordered 600m of line for Paragon EcoHAB deployment.
 - c. Aaron is designing and fabricating bracket for Noot battery pack.

- d. Jose and James have provided first class and timely support for electronics assembly. Hand building boards with subminiature parts designed for automated assembly is challenging! Jose has approval to purchase a reflow oven which will be great moving forward.
- e. Denis has a reflow setup and was able to resolve our solder challenges in very timely fashion.
- f. Camera controller is firing the strobes but we've not yet measured light/electrical output. The new v2.4 strobe energy board was delayed by the vendor and we are working thru how to use v2.3. Looks like best path is to modify the microscope endcap.
- g. Denis and Thom attempted to assemble the microscope chassis into the housings, mechanical issues were found and we have a plan to address those on Mon/Tues modulo multi-tasking on other projects. The interference problems will require some minor rework of the optical chassis.
- h. Brent / Paul successfully tested XavierNX software with the LRAUV and lcm.
- i. Paul has a prelim algorithm for automated detection of pseudo-nitzchia
- j. Paul is working on housing assembly and providing valuable assistance with mechanical, electrical, optics and software.
- k. EcoHAB Paragon PN (pseudo-nit) sampling is our first deployment goal. 600m of line is inbound expected friday, Aaron has design and is fabricating bracketry and protective measures.
- l. Optical chassis fit issues are on track to be resolved in the next day or so with lower profile screws and some of Denis's craftsmanship. Once we have the chassis installed, we'll be able to machine the microscope endcaps for the v2.3 energy boards. Pressure testing the machined endcaps is tbd, and dependent on Paragon access. Jon E is on vacation and we'll assess the risk next week.
- m. Strobe pulse current measurement is not done yet but hopefully today as Thom is taking vacation Wed - Sun in Dallas...
- n. Camera controller electronics is tested.
- o. Software for the camera controller has some work but mostly it's removal of the board bringup code.
- p. LRAUV Galene integration is being worked and the syntactic foam status will be updated after Jon is back.
- q. Final assembly is moving forward, with issues popping up and thankfully being readily addressed by a capable team. There is a rework needed on the Camera Controller to enable the Console rs232 port, but other than that, it's ready for integration.
- r. Jon is back from vacation and has the machined syntactic foam and is working the 3D printed 'foil' that goes on the end of the microscope tubes.
- s. EcoHAB Paragon PN sampling readiness this week is our goal.
- t. Aaron has received 600m of line and is working on the spool.
- u. Aaron has designed and is finishing up the Noot battery bracket. Note: we do not have a pressure transducer for depth measurement at this time.
- v. Brent and Paul have the XavierNX software setup and tested and Brent is replicating for use on Fluum and spare. XavierNX hardware is painfully expensive and difficult to find.
- w. Paul finished Camera Controller board testing and it was wired up to the bulkhead connectors and XavierNX and running all weekend (burnin).
- x. Denis, Paul and Jon worked thru mechanical fit issues and as of Monday these are all fixed thru the miracle of 3D printing and a touch of machining on the endcap.
- y. Working on integrating the strobe/camera integration with Camera Controller and XavierNX, Thom, Denis and Paul found an electrical issue (VarVo at 11.3v is hitting short circuit protection at startup), the fix is to increase the value of a current limiting resistor. These are on order and due to arrive on Wed.
- z. Jon is working on second rev of the 3D printed hydro foil.
- aa. Fluum progress has been halted and final assembly will happen after we finish priority tasks. We will operate Plantivore v2 at 2usec pulse for first test off Paragon

- bb. Planktivore is assembled (11 Apr 2023 at 7:12pm) and is running overnight 'soak' tests. 11 Apr test stopped, but likely due to loose cable and/or windows update.
- cc. Wed 12 Apr 6:07pm test is running on Noot battery supply. Minor mechanical alignment issue, but images are looking good.
- dd. First deployment will be off Paragon, hopefully by Apr 14 if all goes well.

- 2. Paul Roberts
 - a. V2 assembly and testing for EcoHAB

Week 14

- 1. Paul Roberts
 - a. Planktivore V2 assembly and testing for EcoHAB
 - b. Planktivore V2 pn detector dataset creation and training models

Week 13

- 1. Denis Klimov
 - a. We are encountering mechanical fit issues with strobe assemblies, due to the stack of tolerances and multiple boards and components. We are hoping to resolve those issues fairly soon, at least partially, allowing upcoming deployment.
- 2. Paul Roberts
 - a. Compute Chassis assembly
 - b. Strobe electronics mounting
 - c. Pseudo-nitzschia ROI detector

Week 12

- 1. Brent Jones
 - a. Continuing build of planktivore cpu for LRAUV. Installed cameras. Got the backseat helper app running so can take advantage of existing clean shutdown procedures
- 2. Denis Klimov
 - a. Fluum is in a stage of final touches with fasteners update, plus it needs an 4" acrylic straight pipe (Aaron), aluminum lock plate (Roman) for the drain plug, and shelve(s). Flume had been moved to the wet lab so we could ramp up prepping for the water test while outstanding mechanics is being worked on.
- 3. Thom Maughan
 - a. Housing pressure test ~300m. Passed. Aaron and Jared went out at 3:30pm on Friday, above and beyond expectations. Much appreciated.
 - b. Camera controller board bringup. No design errors found, but worked through a number of pcb assembly challenges due to fine pitch surface mount parts.. Handbuilt vs automated assembly discussions with Jose / Paul / Denis. Jose has approval to purchase a reflow oven for future projects which should solve the problems.
 - c. Software updates for Camera Controller
 - d. Battery charger board assembly. Many thanks to Denis for the help with reflow and soldering.
 - e. Mar 22 was our goal to have all assembled and tested. Were running several days behind but no blocking issues. Assembly of electronics into chassis is starting.
 - f. Working on strobe assembly and wire harness.
 - g. The updated strobe energy board v2.4 modified to fit the housing has been in fab at the pcb house since Mar 6, it is expected next week. Testing and integration is moving forward with the previous version of the board.
 - h. Meeting with Brett H to go over EcoHAB which starts April 3rd. Paragon deployment of battery powered Planktivore v2 will be our first outing.

- i. Weekly engineering meeting
- 4. Paul Roberts
 - a. LRAUV software integration

Week 11

- 1. Duane Edgington
 - a. Team meeting
- 2. Brent Jones
 - a. Building second planktivore controller. Integrating software from Eyeris LRAUV

Week 10

- 1. Duane Edgington
 - a. Weekly meeting
- 2. Brent Jones
 - a. Building jetson for testing planktivore code
- 3. Thom Maughan
 - a.
- 4. Paul Roberts
 - a. Migration and consolidation of planktivore V1 and Chiton code for LRAUV integration

Week 9

- 1. Jon Erickson
 - a. Fitting the circuit boards in an already existing housing.
- 2. Brent Jones
 - a. meeting
- 3. Denis Klimov
 - a. We are making good progress reinforcing and straightening out the Fluume mechanical and piping structures, both as it turned out, sugged under the load in initial tests (with Aaron). Once reinforcement/ straightening are successful, we are to proceed with a final assembly of lifters, table, optical breadboards, and the aquarium
- 4. Thom Maughan
 - a. All pcb's in fab / assembly for strobe and camera control.
 - b. Bringup on Camera control started
- 5. Paul Roberts
 - a. Planning meetings for april deployments

Week 8

- 1. Duane Edgington
 - a. Team meeting Feb 22.
- 2. Jon Erickson
 - a. Still doing assembly on the optics. Waiting on the strobe circuit boards and connectors.
- 3. Brent Jones
 - a. meeting
- 4. Paul Roberts
 - a. Planning LRAUV integration and software migration from Chiton to Planktivore

Week 7

- 1. Duane Edgington

- a. Reviewed kickoff presentation materials.
2. Thom Maughan
 - a. Kitting parts, cam ctrl is ready for assembly. The remaining boards should get here by next week.
 - b. Found a way to lower the ESR on the Strobe Energy board. Finished the design change and layout. Will work housing fitment with Jon before sending out for fab.
 - c. Planktivore kickoff meeting. Also, weekly Planktivore engineering meeting.
3. Paul Roberts
 - a. Kickoff meeting

Week 6

1. Duane Edgington
 - a. Weekly engineering meetings started Feb 8 2023. First team goal is ECOHAB deployment on LRAUV in April.
 - b. Stakeholder meeting planned for Feb 14.
2. Thom Maughan
 - a. Several week catchup weekly (big push on electronics design and fab):
 - b. Camera Controller design complete, base board out for fab, delivery next week.
 - c. Power modules are also out for fab. Buck-boost bringup is complete
 - d. Strobe energy and Strobe variable voltage supply boards out for fab, delivery next week.
 - e. Preparing kits for Indec
 - f. Scheduled Tech resource for assembly of bringup board for each next week. Used the google calendar, thanks Jose for helping me get up and running.
3. Paul Roberts
 - a. Engineering meeting
 - b. Review of camera controller

Week 5

1. Duane Edgington
 - a. Meeting postponed
2. Paul Roberts
 - a. Review of system controller

Week 4

1. Paul Roberts
 - a. Review of controller design

Week 2

1. Jon Erickson
 - a. Chassis assembly. Optics assembly.

Week 1

1. Thom Maughan
 - a. Reviewed and weighed housings - the shop has done a great job.
 - b. Project management
 - c. Camera controller design and layout.