

Brent Roman Sorted By Project

706005 - eDNA Grass Carp Sandusky

- Cobbled together a travel router for use in solar powered JobBox (Week 10)
- Tested new reagent tracking code by simulating Kevan's missions (Week 12)
 - Discovered bug where "quick" mode was skipping sampling syringe strokes (Week 12)
- Updated ESPwaldo to latest ESPlinux (Week 12)
- Switched over from separate router to plugging cellular modem directly into ESPs ARM processor (Week 13)
- Investigated why sample volumes are low – seems just to be due to turbidity. (Week 17)
- Help Kevan alter mission sampling schedule on the fly (two per day and sunrise+1hr and +2hr) (Week 18)
- Worked with Kevan to add ability to change sampling schedule while mission runs. (Week 19)
- Updated Daily mission framework to allow changing start time of next phase (Week 23)
- Tweaked sampling schedule again (Week 24)
- Supported deployment of ESPgordon and ESPwaldo at Snake River (Week 28)
- Scott Jensen and Jim Birch ESPgordon and ESPwaldo on the Snake River in Montana. First samples looking good. (Week 29)

708143 - ECOHAB - Andy Allen

- Worked with Bill Ussler to have ESP produce an SPR results summary (Week 17)
- Updated firmware for the ECOHAB ESPs. Discovered an intermittent crash bug in the new Gateway firmware. Reverted back to an earlier version. Will have to investigate later. (Week 18)
- Added support for new "Toxicant" valve to send bleach out ESP's exhaust port. (Week 18)
- Worked with Ussler, Kieft and Rueda to design and implement a method of summarizing SPR runs on the ESP in a form suitable for uploading acoustically. (Week 18)
- Worked with team to ready MV1 (Week 19)
- Ussler reports code for evaluating SPR results in real-time seems to be working (Week 23)

708146 - Saildrone

- Visited to install ESP test "brain" and verify satcomms are working (Week 17)
- Working with Doug and Scott to build a watertight ESP "brain" to ride along on next week sea trial (Week 17)
- Worked with Saildrone to conform to their Ethernet connector standard (Week 17)
- Installed ESP brain to ride along on Surveyor's shakedown cruise this week. (Week 18)
 - Surveyor was supposed to leave Monday, but seems to still be in port. (Week 18)
- Just got stable satcomms to the "brain box" left on Surveyor yesterday. (Week 19)
- Surveyor still in Alameda. ESPmv3 loaded and ready for it to depart. (Week 23)
- Got comms back. Reduced console baud rate to 9600. Surveyor still in port at Alameda. (Week 24)
- Surveyor still in port at Alameda (Week 25)

708165 - NOAA-MERHAB

- Shipped Step a dongle so NOAA Fisheries can update their 2G ESP's gateway firmware (Week 13)
 - Before upcoming May deployment. (Week 13)
- Ongoing support of NWFSC's upcoming deployments (Week 17)
- Fixed bug that arose due to firmware update that added Ah sensor (Week 17)
 - Old real.log file was confusing the dumplog utility (Week 17)
- Supporting Stephanie Moore as she preps their two ESPs for deployment (Week 18)
- ESPeddie deployed off La Push, WA (Week 18)

- ESPeddie still deployed off La Push, WA. Working perfectly. (Week 19)
- Discovered that external pump flow rate is not being reported correctly by can (Week 23)
 - But it is correct in the logs (alerted NOAA so we can replicate in their lab) (Week 23)
- They have one more sample and not much battery energy left (Week 25)
- Lots of support of Stephanie Moore's deployments of ESPfriday and ESPeddie of La Push, WA (Week 29)
- ESPfriday's forearm actuator is failing – probably mechanical slippage (Week 34)
- Patched with hacks to rehome Forearm after any failure (Week 34)
- Seems to be working again, for now. (Week 34)
- A couple odd software glitches marred an otherwise excellent 9-wk deployment (Week 41)
 - Plan to look into them when we have ESPfriday back in the NOAA Fisheries lab (Week 41)
- Investigating transient failures due to trying to step back in time a few tenths of seconds. (Week 44)
- Review materials for their 2023 season (Week 45)
- Supported Nadia's visit to NOAA Fisheries Seattle to convert 2 ESPs to short pucks (Week 47)
- Contributing my little bits to their new proposal document (Week 51)

708175 - CIMAS eAUV III

708179 - Saildrone AK

- Discovered that IP packet MTU must be reduced to from 1420 to 1376 bytes (Week 28)
 - Why suddenly now? (Week 28)
- Half way to AK. We've not tried taking a sample yet. (Week 29)
- Rogue DHCP server was confusing ESP, so disabled DHCP client. (Week 34)
- ESPserver's banIP service erroneously blocked Surveyor's Iridium IP (Week 34)
 - Todd Ruston helped temporarily disabled banIP (Week 34)
- It's back and looks good. Working with Preston to replicate some transient failures we saw during the transit. Suspect these were due to sudden pitching or rolling of Surveyor in storms. (Week 44)
- Worked with Chris Preston to enable scheduling of samples every other day or week, etc. (Week 47)
- Helped Preston and Nadia diagnose MV3 failure on Surveyor (Week 48)
- Sampler has been working well on Surveyor, which is returning to Alameda shortly. (Week 50)
- Surveyor returned from Mendocino Monday. (Week 51)
 - Could not replicate problems we had with bubbles in intake last time. (Week 51)

901205 - SURF Center

- Rewrote ESP 3G "core" Elf microcontroller firmware to allow remote reflashing. (Week 3)
- Helping with initial cleaning and chemistry tests on ESPbetty. (Week 3)
- Participating in evaluating thermal design tradeoffs for "Function" 3G cartridges (Week 3)
- Supporting Nadia in her efforts to bring up ESPhonu, ESPbetty and ESPwaldo (Week 4)
- Testing up updated ESP3G firmware looked good, until I discovered a flakey crash bug :- (Week 4)
 - Now appears that was caused by assuming chips had 2x the RAM they actually do. (Week 4)
 - Testing continues ... (Week 4)
 - New firmware framework allows for remote code updates. (Week 4)
- Found and fixed old bug in 3G ESP firmware that was causing it to crash occasionally after recent code simplification. (Week 5)
 - Bug was causing a thread to be woken prematurely. (Week 5)
- Helped Nadia test and debug Gripper issues on ESPbetty. (Week 5)
- Working on adding the ability to track reagent use to better estimate volumes required for 2G missions. (Week 5)
- Working on code to track volume of reagents consumed and waste produced (Week 6)
 - Implemented method returning reagent bag connected to specified syringe (Week 6)
- Adding reagent volume tracking to core ESP Ruby software (Week 7)

- Participated in initial telecon regarding ESPs on IBM's "Mayflower" autonomous boat (Week 7)
- Completed new fluid volume tracking module for ESP 2G (Week 8)
 - Working with science types to verify estimate volumes are accurate (Week 8)
- Added ability to track fluids into and out of 2G pucks (Week 10)
- Added ability to simulate pressure in fluid containers (Week 10)
- Worked with Kevan to test fluid tracking against WCR protocol on ESPwaldo (Week 10)
- Added feature where SPR stays "on" for 10 minutes after any protocol error for Ussler (Week 12)
- After numerous position errors, determined that Honu had been reassembled (Week 12)
 - Worked with Ussler to tweak syringe positions for the new build (Week 12)
- Working toward enabling in-situ updates of ESP 3G's STM32 gateway microcontroller (Week 13)
 - Goal is to allow complete remote firmware updates of ESP (Week 13)
- ESP 2G training course to start in mid-May (Week 13)
- Rescued another old MacBook Pro from the dumpster (Week 13)
- 2 stepper motor connectors had ripped off Elf boards on ESPtower (Week 17)
 - disassembled, replaced damaged boards, updated all firmware (Week 17)
- Frustrated by MBARI-Staff network's WiFi flakiness. (Week 18)
- Had to revert to older ESP gateway firmware after discovering weird crash bug in version that includes ability to be reflashed in place. Bummer. (Week 19)
- Finished last of the seven 2hr ESP training sessions via Zoom (Week 23)
- Google disabled Gmail login for ESPs yesterday (Week 23)
 - Disabled user chosen passwords for 3rd-party apps (Week 23)
 - Switched to one of their generated passwords (Week 23)
- Working with Scott Jensen on microcontroller for new ESP sampler. Ordered a couple protoboards. (Week 24)
- Evaluating various RTOS's for ESP sampler. Leaning towards RIOT (Week 24)
- Finally Switched from 32-bit to 64-bit Linux (Week 25)
- Choose embedded Open Source OS "RIOT" for new ESP Sampler development (Week 25)
- Playing with STM32 Nucleo dev board (Week 25)
- Convinced Function to remove the divot from the cartridge backing plate (Week 25)
- Supported Nadia in her ongoing struggle to make cartridge heating sufficiently uniform (Week 28)
- Supporting Nadia in her efforts to measure the thermal properties of the new cartridges (Week 29)
- Working with Preston and Jensen to diagnose myriad electrical problems on ESPmv1 (Week 40)
 - Ended up replacing almost all boards (Week 40)
- Found and fixed firmware bug preventing in situ updates when ≥ 5 elves on I2C bus. (Week 40)
 - I2C clock was being momentarily pulled up by elves as they booted. (Week 40)
- Added facility to periodically pause sampling to retare pressure sensor (Week 40)
 - To cope with mv1 sensor's significant drift (Week 40)
- Mad scramble to deploy ESPmv1 for CANON resulted in replacing most of its electronics (Week 41)
 - Trouble with its Intake valve early on has mysteriously corrected itself. We'll see... (Week 41)
- Looking into a couple odd, minor, transitory bugs that occurred during this season's deployments (Week 42)
- Meet with crew to discuss "Readi-Net" (Week 44)
- Much of the trouble I'd been having with ESP gateway firmware rewrite appears to have been due to early serial interrupts from Linux host during gateway initialization. Latest version seems solid. Bill Ussler is set to test it. (Week 44)
- Continued testing with updated ESP 3G firmware looks good (Week 45)
- Preston discovered bug in Ruby event schedule caused by pressing Control-C (Week 45)
 - At a very inopportune time. (Week 45)
 - Added Exception deferral to better manage this (Week 45)
- Creating stress tester for the Ruby event scheduler (Week 45)
- Participated in NOAA GLERL telecon to discuss how to support their 2G ESPs better (Week 48)
- Helped Nadia re-installed ESP into Saildrone Surveyor (Week 49)
- Met with Birch, Gomes and Jensen to discuss ESP sampler project kickoff (Week 49)
- Still working with NOAA GLERL to replicate their ESP comms failures (Week 49)

- Trouble with NOAA GLERL recent deployments appears to be due to cell comms failure (Week 50)
 - My current theory is that a wire in the telebuoy tether broke. (Week 50)
- Helping Nadia bring up a couple new ESP 3G portable units (Week 51)
- Added convenient methods to derive wiring tables from software network configuration (Week 51)
- Participated in call with Bad Wolf software consulting on REDI-net implementation (Week 51)

901913 - WetWiFi

- Extended equipment loan through end of February (Week 3)
- Verified BadWolf video encoder can act as FTP server (Week 3)
- First test deployment with LRAUV and Waveglider scheduled for next week (Week 3)
- Got commitment to extend project funding through early 2022 (Week 4)
- Still waiting on LRAUV availability – maybe next week ? (Week 4)
- Transmitted video from LRAUV to Waveglider in MBARI test tank. (Week 5)
- Deployed Waveglider Hansen and LRAUV Tethys to Portuguese Ridge (Week 5)
 - Successfully streamed 640x480 15fps color video from Tethys 60meters below Hansen!! (Week 5)
 - Biggest challenge is keeping LRAUV within the 120 degree cones of the H150's acoustic transducers. (Week 5)
 - OceanComm claims the modems max range is 300m. We'd like to verify this. (Week 5)
- First test deployment last Thursday produced real-time video streams from 90 meters (Week 6)
 - Only a minute or so as a time because Waveglider and AUV were not tracking (Week 6)
- Returned modems to Oceancomm for firmware update and log evaluation (Week 6)
- Next try, with tracking, tentatively scheduled for late March (Week 6)
- Met with Brett, Chris Wahl and Brian Kieft to schedule next test deployment for mid-June (Week 19)
- Wrote 1st draft of abstract for project extension. (Week 19)
- OceanComm sent me their updated lease agreement. (Week 23)
 - Still negotiating the "special conditions" therein. (Week 23)
- Planned deployment last week canceled. (Week 24)
- Finally got pricing for OceanComm's subscription model (Week 24)
- Continuing to work on next year's proposal. (Week 24)
- Postponed next test until November/December (Week 25)
- Wrote and submitted proposal (Week 28)
- Wahl and Hobson established we have vehicles for test in early December. (Week 40)
- Lined up LRAUV and Waveglider for test after Thanksgiving (Week 41)
- Got approval to pay Oceancomm in 2022 so we could get modems by then (Week 41)
- Confirming with Oceancomm that they can, indeed, deliver in time. (Week 41)
- Still on track for a test deployment of Video Streaming from LRAUV in early December. (Week 42)
 - Oceancomm claims they will deliver modems before end of November (Week 42)
- Load agreements in place, money allocated, Vehicles supposedly available for early December test. Fingers crossed... (Week 44)
- Used gstreamer to make LRAUV video feed available on the MBARI web (Week 47)
- Received pair of H150 modems and arranged payment of annual leasing fee (Week 48)
- Failed at getting them to run in a bucket or large lab basin 😞 (Week 48)
- Managed to get reliable video transfer in the test tank with very careful positioning of transducers. (Week 48)
- Streamed video between pair of H150 modems in Test Tank (Week 49)
- Worked with Hobson and Wahl to arrange LRAUV and Waveglider (Week 49)
 - Test deployment scheduled for 12/9/22 – 12/12/22 (Week 49)
- First sea trial did not go well. LRAUV's mass shifter jammed and Oceancomm modems could not transfer more than a couple pings. Waveglider did manage to track LRAUV. (Week 50)
- Shipped modems back to OceanComm for analysis of internal logs (Week 50)
- When modems are returned, I will test them by deploying off a pier. (Week 50)
- OceanComm has the modems again (Week 51)

- They say logging failure was caused by a bad SDcard in one of the modems (Week 51)
- They are replacing and shipping them back (Week 51)

DQ1971 - PCM/HAB Lake Erie

- Working with Preston and Ussler diagnose sampling trouble on ESPhonu (Week 34)

Out of Office

- Jury Duty at SC Court since Monday
- Thanked and Excuses from Jury Duty last Friday afternoon.
- July 21 through roughly August 21
- June 19th
- July 26 through roughly August 26
- Sept 6 through roughly Sept 16
- March 8-15 visiting my dad in Sarasota, FL

Overhead

- Finally switching my Linux development environment from 32 to 64-bits. (Week 24)
- Contributed series of patches to get Armbian up and running on tiny \$30 IOT Linux boards (<https://www.armbian.com/rockpi-s/>) (Week 42)