

901502 - Ocean Soundscape

Week 51

1. Danelle Cline
 - a. Continued work on the real-time workflow. Integrated PBP simple API for creating hybrid millidecade netCDF for visualization with algorithm outputs.
2. Duane Edgington
 - a. Applying the very recently released model [orcAI](#) to selected Soundscape archive recordings. This is a keras/tensorflow single species detector, with output well integrated with Audacity. I am running on Nvidia DGX-Spark very effectively. Processing a month of recordings from April 2018, which is our test for Orca, dolphins, baleen whales, and background to assess specificity and accuracy. So far, performance is encouraging...

Week 50

1. Duane Edgington
 - a. Back from a weeklong Acoustic Society of America meeting. Highlights were DAS applied to passive acoustic monitoring of biological signals on the OOI cable out of Seattle, Baleen whale PAM and tagging, Dolphin sound analysis via machine learning.
2. Brent Jones
 - a. Create new VM with IS since gizmo can no longer run matlab R2022b needed for Triton processing

Week 48

1. Danelle Cline
 - a. Working on real time workflow. Reviewed with John and now have an optimized flow design for hourly reporting. Expect to finish that next week.
2. Brent Jones
 - a. meetings

Week 47

1. Duane Edgington
 - a. Looking into update of [Pacific Sound notebooks](#) to be compatible with current version of Colab and tensorflow. Focusing first on [blue whale A call](#) . So far so good, have basic update completed to tensorflow 2.19.0 and python 3.12.12
2. Brent Jones
 - a. meetings

Week 46

1. Danelle Cline
 - a. Deployed [Google Humpback whale model](#) to Triton in preparation for real-time workflow
2. Duane Edgington
 - a. Exploring update to [PacificSoundClassifyBlueA.ipynb](#) machine learning model / notebook to classify blue whale A calls.

Week 45

1. Duane Edgington
 - a. I have tensorflow and tensorflow_hub successfully integrated with cuda on my new Nvidia DGX-Spark system. I used it to run an end to end full workflow for data preparation and analysis and visualization (through Google Kaggle multi-species whale model) of a month of MARS Pacific Soundscape data (02/2018). GPU processing time of 3hr 5 min for one month of full resolution data, analyzed at 5 sec intervals.
 - b. Team meeting.
2. Brent Jones
 - a. Deploy WW. Diagnose telemetry issues
3. Carlos Rueda
 - a. PBP now 1.8.6 ([PyPI](#); [standalone releases](#)).

Week 44

1. Duane Edgington
 - a. Applying new Nvidia DGX-spark system to Google Multi-species-whale-detection model inferencing MARS Pacific Ocean Sound Recordings. So far, so good.
2. Carlos Rueda
 - a. PBP: Branch merged and official 1.8.5 released.
 - b. Jupyter@gizo updated.
 - c. Did adjustments so `pbp meta-gen --help` does not take several seconds to respond.

Week 43

1. Carlos Rueda
 - a. New PBP standalone distributions (for macOS, Linux, and Windows), with initial but satisfactory (internal) testing so far. The main goal is to facilitate use by users that are not very technical, not even needing to have python, conda, pip, or other dependency management tools installed.

Week 42

1. Danelle Cline

- a. Supporting intern efforts on topic modeling, PBP doc updates, and migrated inference Triton server to Maximilian for testing real-time workflow.
- 2. Duane Edgington
 - a. Project meeting with team Oct 16
 - b. Working session with John Ryan on google multi-species whale model comparison with energy band models. Project planning.
- 3. Brent Jones
 - a. Wire walker recovered
 - b. Supporting transfer of Triton click detect software capability to collaborator
- 4. Carlos Rueda
 - a. Group meeting.

Week 41

- 1. Danelle Cline
 - a. Zoom with Franny to discuss progress on unit labeling and topic modeling
 - b. Working on near realtime ML pipeline, some PBP support
- 2. Duane Edgington
 - a. Team meeting Oct. 9.
- 3. Carlos Rueda
 - a. Meetings
 - b. PBP: GitHub workflow for basic installation verification on macOS, Linux, Windows.

Week 40

- 1. Carlos Rueda
 - a. mbari-pbp 1.8.2 with new features as well as significant internal refactoring and code cleanup.

Week 39

- 1. Carlos Rueda
 - a. Work on mbari-pbp package, new features, and internal code reorganization to facilitate maintainability and enhancement.

Week 38

- 1. Duane Edgington
 - a. Data analysis meeting with John Ryan 9/16/2025
 - b. Wrote python program to help analyze scores for each of the 7 species, 12 classes analyzed by the model produced by Kaggle Google Multispecies Whale model applied to MBARI PAM sound data. Modeled after the data analysis tools John Ryan uses in Matlab to look at model output (class score distribution)

histogram - linear and log, class score scatter plot as a Time Series, class score Box plot, class score 1 hour mean Times series, summary statistics).

- c. Processed 6 months of archive data (Spring 2018, Fall 2020) and analyzed. Each month represents about 4000 audio archive files, and the model generates 0.5 million model scores per class at 5 second resolution for the month.
2. Carlos Rueda
 - a. Looking into enabling a new use case for [mbari-pbp](#).

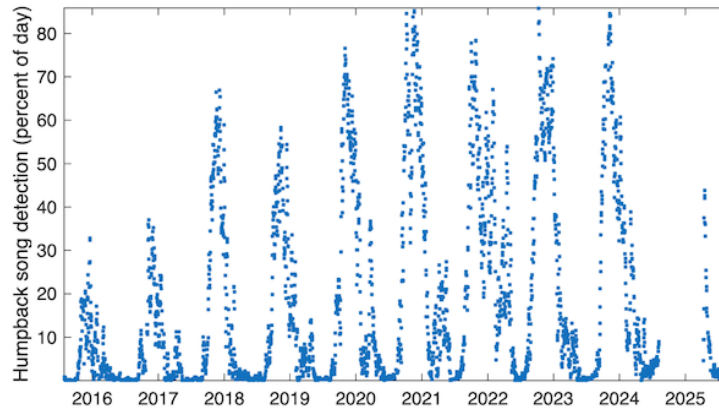
Week 37

1. Danelle Cline
 - a. Deployed near realtime resampled wav files with ZMQ messaging for downstream ML pipeline
 - b. Team meeting to discuss summer intern collaboration next steps
 - c. Some rsync maintenance on EOL Centos7 machine. Need to replace this VM.
2. Duane Edgington
 - a. Project team meeting
 - b. Continued work testing Google Kaggle multispecies whale model. Processed month of 2020 October for scores of 4 classification targets, to compare with previously run models against that month's archive.
 - c. Enabled workstation Olivia as a GPU-enabled (for tensorflow) model inference and processing platform (Soundscape's Gizo VM is often very heavily loaded, and is not GPU enabled). Mounts to Thallasa PAM archive and Analysis shares added by IS, and tested.
3. Brent Jones
 - a. Running Triton click detection on all of 2018. Taking forever!

Week 36

1. Duane Edgington
 - a. Phase 1 response work
 - b. Team meeting to go over John's analysis of the 1 month of 5 sec resolution google multispecies-whale model scores that I prepared for him
 - c. Looking at my code to process audios, run the google multispecies-whale model, and process the model output for analysis, to look for improved efficiency/run-time, possible speed-up with GPU (and/or triton inference server), possible speed-up with batching.
2. Carlos Rueda

- a. Humpback song detection scores completed until 2025-08-24. John generated this plot of the complete time series for quick inspection:



- b. Part of the above score generation was done with the use of GPU on doris. I put together some notes [here](#).
- c. Reviewed revisions to paper led by NOAA (Carrie Wall).

Week 35

1. Danelle Cline
 - a. Configured [Triton inference server](#) deployment of Google multispecies whale model for evaluation as part of a near real-time processing pipeline. Pretty straightforward.
 - b. Finished modifications for resampling as needed for downstream processing [MARS PR2](#)
 - c. Submitted help ticket for clock sync support on new recording computer
2. Duane Edgington
 - a. Completed python programs and bash scripts to process one month of [Pacific Sounds MARS](#) raw files (4320 10 min files) through the [Google multispecies whale model](#).
 - b. Ran model with 518,400 5 sec sound chunks; collected output scores in json format files, one per 5 sec file.
 - c. Completed programs to process json files to expanded csv files, and to epoch time, Orca scores only csv files for John Ryan's verification workflow.
 - d. Completed program to alternatively output UTC time, Orca scores csv files in case leap-second-drift in epoch time interferes with verification workflow.
 - e. Team meeting 8/27
 - f. Detailed evaluation of orca score results planned to start next week.
 - g. Worked on 2026 phase 1 feedback response.
3. Brent Jones
 - a. Recovered failed wire walker. Diagnosed with leaking seacon bulkhead. Replaced, rebuilt, redeployed

Week 34

1. Duane Edgington
 - a. With assistance/inspiration from Carlos humpback song repo (thanks!) ported code for preparing files, processing directories, and running the Google Kaggle multi-species whale model to the Ocean Soundscape VM/server "gizo". Set up a github repository. Verifying model runs against my colab GPU-enabled standard runs. Should be ready to process a month of recordings soon...
2. Carlos Rueda
 - a. Running NOAA/Google humpback song detection model to get the scores for all days starting 2022 until 2025-07. Scores for 2015–2021 have been in place but it was about time to start catching up with the new scores.

Week 33

1. Duane Edgington
 - a. Leveraging [Carlos work on scripts to automate production of audio products from Pacific Sound data](#) to automate production of resampled 24kHz data, and feeding 5 sec sound segments to google kaggle multispecies whale model. Working on 32cpu virtual machine gizo.shore.mbari.org
 - b. Team meeting Aug 13
 - c. Intern meetings.
2. Brent Jones
 - a. Re running Triton software to detect clicks
3. Carlos Rueda
 - a. [mbari-pbp 1.7.4](#) with a regression fix and other adjustments. Jupyter@gizo updated as well.

Week 32

1. Danelle Cline
 - a. Support summer intern model hyperparameter sweeps
 - b. PBP support and manual AWS opendata sync for Hawaii collaborator
2. Duane Edgington
 - a. Evaluating [google kaggle whale multi-species model](#) on 5 sec audio segments from selected [10 min MARS MBARI Pacific Ocean Sound Recordings](#) audio files. Scoring for presence/absence of Orca call in each 5 second segment vs model sigmoid confidence scores. So far, very good correlation between ground truth (as I hear it and see in MEL spectrogram) vs model confidence score.
 - b. Gearing up for large runs against MARS audio archive
 - c. Discussed application to embedded LRAUV with Danelle.
3. Brent Jones
 - a. Initial port of MBARI HMB code to NVIDIA Orin

Week 31

1. Duane Edgington
 - a. Encouraging results detecting Orca calls with high precision using sigmoid probability for binary classification using google kaggle multi-species whale model as detector. Sigmoid probability calculation (vs softmax) eliminates the False Positive excess that softmax was producing. Scaling my code to allow running lots of 10 min Pacific Sound 256kHz MARS files through this updated workflow.
 - b. Team meetings.
 - c. Intern meeting.
2. Carlos Rueda
 - a. mbari-pbp is now [1.7.3](#).
 - b. pbp-jupyter now with a more recent [quay.io/jupyter/minimal-notebook](#) image, as well as with the latest mbari-pbp package in installation on [gizo](#).

Week 30

1. Duane Edgington
 - a. Reviewing suggestions from google-kaggle multispecies whale model developer Matt Harvey regarding our issues using that model to screen for calls in the MBARI MARS soundscape dataset.
 - b. Intern meeting

Week 29

1. Duane Edgington
 - a. Building MEL spectrograms, and chunking second clips of MARS Pacific Ocean Sound recordings
2. Brent Jones
 - a. Processing MARS hydroP for odontocete clicks using UCSD's Triton software
3. Carlos Rueda
 - a. PBP software development / documentation; Python assistance.

Week 28

1. Danelle Cline
 - a. Proposal work
 - b. Reviewed PR to add support for REASA metadata to PBP. Successful contribution from the sound community!
 - c. Intern meeting
2. Duane Edgington
 - a. Proposal work
 - b. Continued debugging of google kaggle multi-species whale model

Week 27

1. Danelle Cline
 - a. Team meeting & proposal work
 - b. Intern mentoring meeting and support for Humpback olive phrase work

Week 26

1. Danelle Cline
 - a. Intern mentoring weekly meeting and modifications to [topic modeling](#) code to support Franny's project. Addressing many questions. Humpback Topic Modeling for olive humpback phrase
 - b. Addressed PBP issue #78
2. Duane Edgington
 - a. Intern Fanny Oppenheimer weekly meeting.
 - b. Proposal 2025 work

Week 25

1. Duane Edgington
 - a. Welcome Intern Fanny Oppenheimer! Team discussions.
2. Carlos Rueda
 - a. Minor PBP code maintenance.
 - b. Worked with IS to have an unexpected mount issue fixed on [gizo](#)

Week 24

1. Duane Edgington
 - a. Project planning meeting with intern Fanny Oppenheimer
 - b. Looking into pcen (per channel energy normalization) of data input to kaggle google multi-species whale model, as alternative to the denoising/normalization I have been applying.
2. Carlos Rueda
 - a. PBP software maintenance
 - b. Group meeting with intern, Franny O.

Week 22

1. Duane Edgington
 - a. Preparing for summer intern Franny Oppenheimer
 - b. Looking at alternatives to Google Kaggle multi-species whale model.

Week 21

1. Danelle Cline

- a. Soundcape recording is running steady now after some adjustments to the network settings to allow for longer timeouts

Week 20

- 1. Duane Edgington
 - a. Continued eval of Google Kaggle multi-species whale model. Next step is to try tuning denoising the resampled 24kHz data – a simple denoising is removing too much signal and not yielding good classification results.
 - b. Experimenting with R in preparation for summer intern work.
- 2. Brent Jones
 - a. Instituted real time data processing and plotting. Now served on gizo.mbari.org
 - b. meetings

Week 19

- 1. Danelle Cline
 - a. Debugging issues with recording drop-outs. IS and MARS staff are actively involved in the investigation as the errors are network related.
 - b. Email notification is broken on cetacean.
- 2. Duane Edgington
 - a. Continued work on applying Google Kaggle multi-species whale model to resampled MARS data. I am seeing too many false positives. Tried 10 min files, 1 min chunks, 5 sec chunks... Experimenting with denoising the resampled MARS data to see if the “noise” is causing the model to misclassify.
 - b. Exploring application of fine-tuning Google Kaggle multi-species whale model to enable WhaleSafe near-real-time PAM detections of Blue, Fin, Humpback whales.

Week 17

- 1. Danelle Cline
 - a. Hydrophone deployed. This was a major upgrade with a new (refurbished) hydrophone, new recording computer, new node, upgraded tripod, upgraded shore side code and network storage (thalassa). The only thing left untouched was the streaming Shoutcast server. Stream is up and running on Amazon Alexa and shoutcast. Few recording resets are concerning; one due to network timeout and another Windows patches.
 - b. Team meeting

Week 16

- 1. Brent Jones
 - a. Final Wire Walker prep

Week 15

1. Duane Edgington
 - a. Continued work evaluating performance of google kaggle multi-species whale model against MARS Pacific Ocean Sound Recordings
2. Brent Jones
 - a. Prepping Wire Walker for deployment next week

Week 14

1. Danelle Cline
 - a. Worked on prepping the recording machine for hydrophone deployment next Thursday. Many thanks for all the teamwork on this, especially Andrew McCann, Bryan Touryan-Schaefer, and Adriana. Firewall issues resolved and Windows setup for ssh/rsync. Tested file transfer using Microsoft windows subsystem (wsl) from MARS to MBARI which was fast.
 - b. Migrating code from Bitbucket to Github
 - c. PBP maintenance
 - d. Summer intern discussions
2. Duane Edgington
 - a. Continued work evaluating google kaggle multi-species whale model against our MARS Pacific Ocean Sound recordings. Ready to run some RAW audio files with known detections (blue whale, etc)
 - b. Zoom interview with 2 top intern candidates

Week 13

1. Duane Edgington
 - a. Continued work evaluating google kaggle multi-species whale model against our MARS Pacific Ocean Sound recordings
2. Carlos Rueda
 - a. Implemented pre-commit for PBP

Week 12

1. Danelle Cline
 - a. Evaluated many intern applications and met with team to discuss
 - b. Migrated data mounts to new application server Thalassa
 - c. PBP bug fix in soundtrap XML
2. Duane Edgington
 - a. Largely automated the processing of MARS 256kHz 10 min raw pacific ocean sound recordings to resampled and normalized 24kHz audio files, for automated processing with google kaggle multi-species whale model. Spectrograms of resampled audio files look very clean and in accordance with the original raw files. Evaluating results of test runs of the model.
 - b. Reviewed ~40 intern applications and discussed with team

3. Brent Jones
 - a. Investigating click duration calc from Sam's work
4. Carlos Rueda
 - a. Internship applications review/pre-selection
 - b. More [PBP API documentation](#)

Week 11

1. Brent Jones
 - a. Investigate umap clustering for clicks
 - b. meetings

Week 10

1. Danelle Cline
 - a. Testing a collaborators approach to scaled processing using PBP+Dask+PyHydrophone. Works! Now we can process 32 days in 4 minutes on gizo.shore.mbari.org. Thanks to Carlos and John for the teamwork, and our collaborator Clea Parcerisas for sharing.
2. Duane Edgington
 - a. Team meeting
 - b. Continued work on automating processing of MARS raw 256kHz 10 min audio segments to 24kHz downsampled 10 min audio segments, using 2 stage decimation followed by 1 stage resampling. Colab
 - c. Processed 16 segments through kaggle google multi-species whale classification model. Analyzing results. Colab
 - d. Gaining expertise in visually identifying orca calls in 10 min spectrograms generated by the automated processing pipeline.

Week 9

1. Duane Edgington
 - a. Settled on a 3-stage resampling strategy for downsampling MARS raw audio from 256KHz to 24kHz. The ~10% frequency energy shift I see in the 25.6kHz to 24kHz resampling is an outstanding issue that I will need to resolve in due course.
 - b. Teleconference with Paul McGill on audio downsampling. Useful discussion.
 - c. Running a set of resampled 24kHz audios through the kaggle google multi-species whale model, and then listening to files to judge the quality of the model predictions.
 - d. Reviewing slides from the International Symposium on Orcas, which was terrific.
2. Brent Jones
 - a. Prelim prep of Wire Walker for Mar deployment

Week 8

1. Danelle Cline
 - a. Fixed [PBP issue for Soundtrap recorders](#)
2. Duane Edgington
 - a. Continued work on MARS 256kHz data downsampling to 24kHz.
 - b. Attending International Symposium on Orcas, and workshops on Acoustics, Photo-ID, and North Atlantic Orcas. Lots of fascinating, relevant presentations!
3. Carlos Rueda
 - a. Met with Danelle to discuss PBP status.
 - b. Brent J. and I met Laela Sayigh (WHOI) over zoom to talk about her work on dolphin communication and share some of the work we have been doing in the soundscape project.

Week 7

1. Danelle Cline
 - a. PBP job agent and Dask execution for speed-up of Soundtrap hydrophones
2. Duane Edgington
 - a. Continued work decimating/adjusting 256kHz RAW MARS 10 minute audio files to 24kHz. There is a frequency shift in the SoX decimated files (to 24kHz) that I am trying to understand and then eliminate.
 - b. Worked on batch processing of RAW files to decimated/normalized/offset-removed files

Week 6

1. Danelle Cline
 - a. Team meeting and kick-off discussion with LRAUV and OceanSonics about integration of ICListen recorder for near real-time detection/classification+recording. Google model on Kaggle may be a good candidate for this deployment as it uses the EfficientDet model architecture, specifically, efdet0 which is lightweight and should run ok on a NVIDIA Jetson Nano.
2. Duane Edgington
 - a. Team meeting Jan 29. Presented status on google Kaggle multispecies-whale model runs. Lots of good questions on results and processing details.
 - b. Decimating 256kHz Raw MARS audio to 24kHz for google Kaggle multispecies-whale model using the Yanwu Zhang and Paul McGill code. Decimation results in a time smearing that I need to discuss with them and John Ryan. Spectrograms look good.
3. Brent Jones
 - a. Completed processing of all clicks
 - b. Generating stats on clicks detected
4. Carlos Rueda

- a. Group meeting with European collaborators, who are contributing additions to PBP.

Week 5

1. Danelle Cline
 - a. Discussion about PBP quality flag enhancements. [Issue #56](#)
2. Duane Edgington
 - a. Colab Jupyter Notebook code completed to decimate/zero-offset/normalize 256kHz raw MARS audio files (10 minutes each) to 24kHz, as input to Google Kaggle multispecies-whale detector model
 - b. Running notebook to verify model and mine for orca calls in MARS data
3. Brent Jones
 - a. Spun up windows server and processed 2022. Working on 2023
 - b. meetings

Week 4

1. Danelle Cline
 - a. Modified PBP quality flag notebook to demonstrate compressed .nc with added flag
 - b. Team meeting
 - c. Opened GitHub issue on quality flag
2. Duane Edgington
 - a. Attended [Orcasound summit](#)
 - b. Returning to processing MARS raw data to [kaggle google multispecies-whale model](#)
 - c. Planning to run Orcasound public curated data through google multispecies-whale-model as sanity check
 - d. Looking at [Orca Symposium February](#)
3. Brent Jones
 - a. Spinning up code on a windows server
 - b. Click processing
4. Carlos Rueda
 - a. PLOS paper accepted, yay! (many thanks and congrats to John R. et al!)

Week 3

1. Danelle Cline
 - a. Team meeting
 - b. Minor work on PBP; add license and doc changes. Reading pbp-agent docs in prep to evaluate feature to merge
2. Duane Edgington
 - a. Team meeting 1/15
 - b. Orcasound meeting Saturday 1/18 (virtual)

3. Brent Jones
 - a. Beginning processing for 2022. Some problems associated with titan
4. Carlos Rueda
 - a. Group meeting

Week 2

1. Duane Edgington
 - a. Discuss [NatureLM-audio](#), [BEATs](#), [Whisper](#) with Danelle
2. Carlos Rueda
 - a. Security related adjustments in pbp-jupyter.

Week 1

1. Carlos Rueda
 - a. Adjusted release workflow with a final step to [delete uploaded](#) artifacts; as a safety net, also set `retention-days: 1` for the upload step.