



# MYSTICETUS

## PROJECT MANAGER

## OPERATIONS GUIDE





**Last updated March 2025.**

<b><i>Introduction</i></b>	<b>3</b>
Glossary of Terms	5
<b><i>Getting Started</i></b>	<b>6</b>
Project Setup and Management	10
<b><i>Managing The Project Template</i></b>	<b>13</b>
Setting Project Variables and Lists	14
Named Lists, Observers, and Platform Data	15
Obs(ervation) Platforms	18
Observers - Defining crew members and their eye heights	19
Setting Project Specific Variables	20
Setting Default Variables	21
Saving Template Edits and Deploying to a Vessel Project	23
<b><i>GPS Tracking</i></b>	<b>24</b>
<b><i>Daily qa/QC Tasks</i></b>	<b>27</b>
Daily GPX file Review	27
Confirm and review Daily GPX file	28
GIS Analysis Tools	29
Run the Gis Analysis Tools	30
Project Manager's use of the GIS Analysis Tool	30
issues to look for in Daily Analysis Reports	31
Managing your Analysis Tools	32
GIS Analysis within Polygons	36
Merging Mysticetus Data files	37
Verify The Correct project	38
Open template & Import Data File	39
Open the Data File	39
combining multible Final Save data files	41
<b>QA/QC Procedures and pm sign off</b>	<b>43</b>
Introduction	43



## Mysticetus – Project Manager Operations Guide.

PM QA/QC procedures	43
High Level Analysis Checkpoints	43
Signing Off Daily Data	44
Final Data Sign Off	45
Oncloud Data flow dashboard	46
<b>Appendix – Common Errors And Checklists</b>	<b>48</b>
Common Errors	48
Setting Track Line Definitions	48
Effort tabs	58
Vessel Activity and Regulated Sources fields	59
Sighting tabs	60
Maps	60
Missing Media	61
Missing Tracks	61
Patching GPS track gaps using gpx file	62
Check Lists for the Project Manager	68
Check list for project start up:	68
Checklist for each new vessel at initial mobilization:	68
Check list for crew changes:	69
Project Manager Daily QA/QC Checklist	69

# INTRODUCTION

## Mysticetus Project Manager Operations Guide

Mysticetus LLC offers a comprehensive software solution for managing offshore mitigation efforts. Our integrated platform, Mysticetus OnBoard (Enterprise PSO and Crew), OnShore, and OnCloud, streamlines data collection, analysis, and reporting, enabling informed decision-making and minimizing operational downtime. Serving diverse clients, including construction, oil and gas, and wind farm developers, we also provide expert consulting through Mysticetus Professional Services. Our solutions meet the rigorous demands of both private and public sector contracts, ensuring regulatory compliance and promoting best environmental practices.

This guide equips Project Managers (PMs) with the procedures and best practices for successful data collection, quality assurance, and timely reporting using the Mysticetus software suite. PMs play a crucial role in ensuring accurate and complete project deliverables. This guide details key



## Mysticetus – Project Manager Operations Guide.

responsibilities, including project setup and management, daily quality control, data validation, daily data sign-off, and continuous improvement. Adherence to these guidelines will ensure high-quality, reliable data that meets project and regulatory requirements. This is a living document and will be updated regularly.

This guide covers key PM responsibilities, including:

- **Project Setup:** Defining project-specific variables, vessel configurations, observer details, and notification lists.
- **Daily Quality Control (QC):** Performing daily reviews of data, addressing data gaps and inconsistencies, and verifying GPS track uploads.
- **Data Validation:** Utilizing GIS analysis tools to identify and resolve data anomalies and ensure data integrity.
- **Final Sign-off:** Approving finalized daily data for reporting and regulatory submission.
- **Continuous Improvement:** Providing feedback to Lead Protected Species Observers (PSOs) and the Mysticetus team to enhance data quality and operational efficiency.

### Quality Data Pipeline

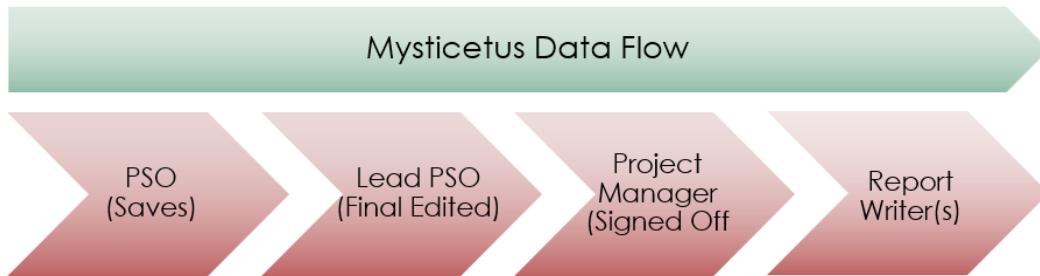


Figure 1 Mysticetus Data QA/QC Process

Daily file saves naming convention follows the Quality Data Pipeline above as:

**Saves -> Final Edit(s) -> Signed Off**

Mysticetus emphasizes a streamlined data flow process, starting with initial data collection by PSOs, followed by quality checks by Lead PSOs, and culminating in final review and approval by PMs. This process incorporates feedback mechanisms at each stage to ensure continuous improvement.

This guide also details the use of the OnCloud data flow dashboard, which provides real-time visibility into the data pipeline and facilitates proactive issue resolution. By adhering to the



## Mysticetus – Project Manager Operations Guide.

---

guidelines and procedures outlined in this document, PMs can ensure the delivery of high-quality, reliable data that meets project requirements and regulatory standards. This is a living document and will be updated regularly.

# GLOSSARY OF TERMS

Bft - Beaufort scale, a measure of sea state.

CPA - Closest Point of Approach, the minimum distance between a vessel and a marine mammal.

CRM - Coastal Relief Model, a type of map data used in Mysticetus.

Edited File – File save created by lead PSO after reviewing the final save and fixing errors and omissions found in the final save file. Multiple edited files can exist. Edit only the most recent.

Effort - Operational activities, such as visual observation or acoustic monitoring.

Final Save – The last save of a given operational day (only one final save per day) and is written during the shutdown and restart of Mysticetus.

GPX - a standard file format for sharing GPS data.

IHA - Incidental Harassment Authorization, a permit that allows for limited, unintentional disturbance of marine mammals during operations.

Lead PSO - The primary Protected Species Observer, responsible for overseeing data collection and initial quality checks.

Mitigation - Actions taken to reduce or avoid impacts on marine mammals.

MMSI number - Maritime Mobile Service Identity, a unique nine-digit number assigned to a vessel for electronic identification purposes.

Mysticetus OnBoard - Software platform for vessel-based data collection and sharing.

Mysticetus OnShore - Software platform for real-time monitoring and data integration from various sources.

Mysticetus OnCloud - Cloud-based platform for data aggregation, analysis, reporting, and visualization.

NVD: Night Vision Device - used for visual observations during nighttime hours.

PAM: Passive Acoustic Monitoring - a method of detecting marine mammals using underwater microphones.



## Mysticetus – Project Manager Operations Guide.

---

PM - Project Manager, responsible for data quality assurance.

Project – This encapsulates all configuration variables, data collection protocol, and collected data for a specific vessel, e.g., airplane, ship, land station, etc. Observers collect data in the designated project.

PSO - Protected Species Observer, collects data in the field.

QA - Quality Assurance, the process of ensuring data accuracy and reliability.

QC - Quality Control, the process of identifying and correcting data errors.

QA/QC - The combined processes of quality assurance and quality control.

RCS - Rich Communication Services - a messaging protocol used for text message alerts.

Saves - Refers to the incremental save files created by Mysticetus throughout the day.

Signed Off file – The final, validated data file approved by the Project Manager. This will be used to report to regulators operational compliance.

SMS: Short Message Service - another messaging protocol used for text message alerts.

Station ID - Unique identifier assigned to each user and their work in Mysticetus.

Takes - Instances of incidental harassment of marine mammals.

Template - A structured format for data collection and analysis in Mysticetus.

UTC - Coordinated Universal Time, the standard time used for data collection and timestamps.

Vis - Visual - often appended to a vessel name to indicate a visual observation platform.

# GETTING STARTED

These steps are to aid you when you are just starting a new project or a new role as a data reviewer. **This is completed once** on your PC.

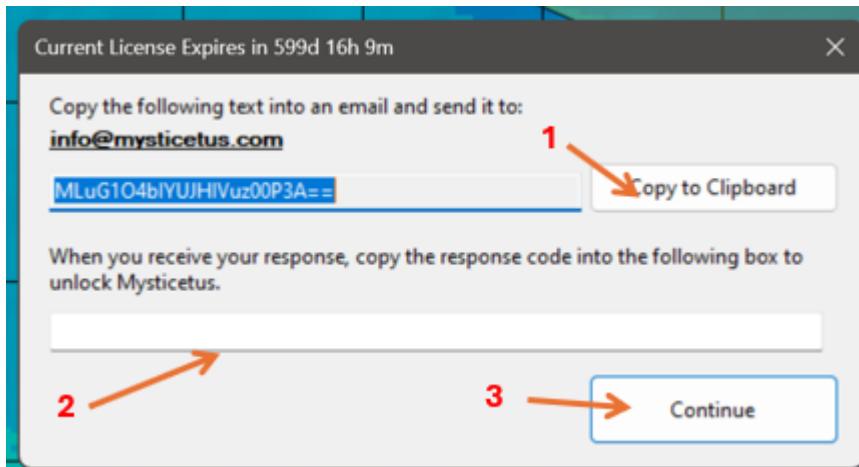
### 1. Obtain License Key:

Upon launching Mysticetus, you will be prompted for a license key.

- Copy the provided text and email it to [info@mysticetus.com](mailto:info@mysticetus.com).
- Paste the returned key into the application. Ensure you copy only the key itself, excluding any surrounding characters.
- Click Continue. If the Continue button does not appear, double-check your procedure. If the issue persists, email us, as the license key may occasionally be faulty.



## Mysticetus – Project Manager Operations Guide.



### 2. Set Your Station ID:

The Station ID links your identity to your work. Template changes, directories, and analysis reports associated with you will display this ID. This step is completed once per PC used for project management.

- Select Red Ball > Configure > System Options.
- Select the "This Machine" tab.
- Scroll to the Station ID field.
- Enter your full name. Spaces will be removed automatically.
- Select Done.

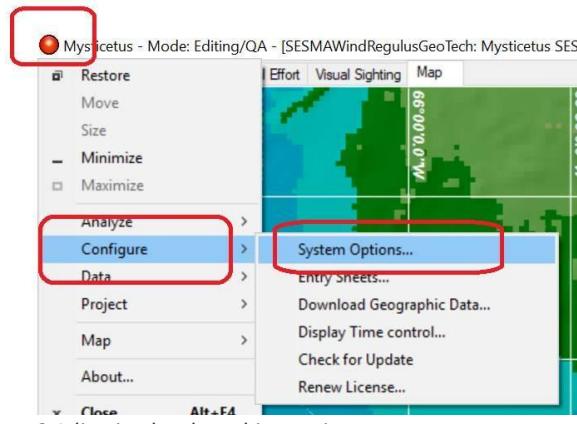


Figure 2 Adjusting local machine options



## Mysticetus – Project Manager Operations Guide.

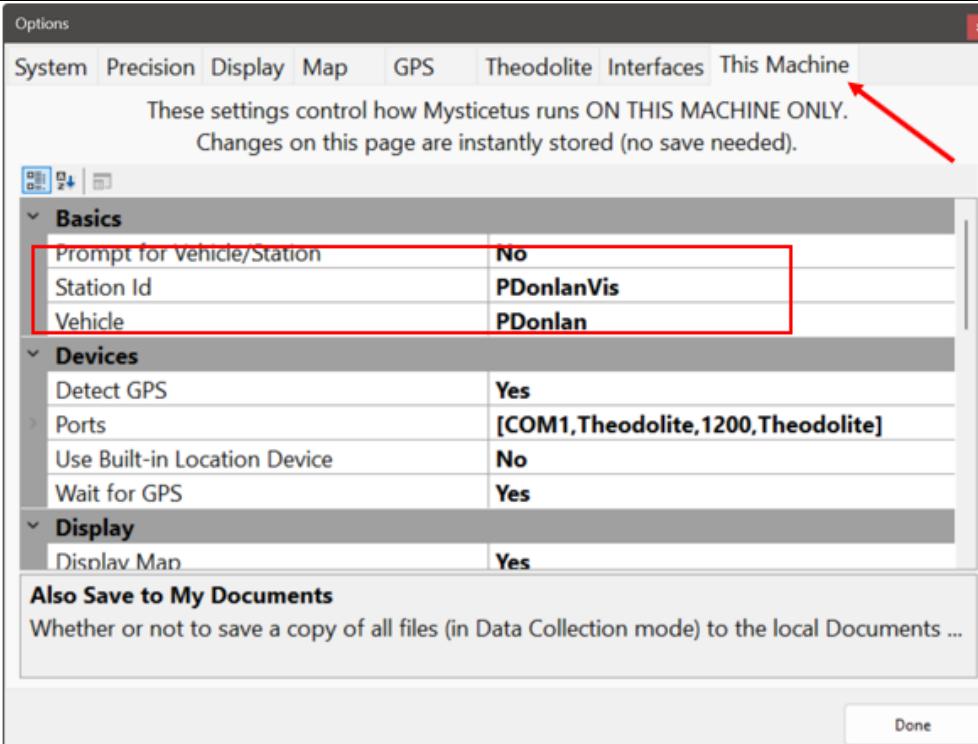


Figure 3 Setting Station ID and Vehicle

### 3. Other Local Settings for the Project Manager:

Configure these remaining settings under Red Ball > Configure > System Options > This Machine:

- **Check for update:** True.
- **Detect GPS:** False
- **Wait for GPS:** False
- **Sync Project on Startup:** True
- **Track GPS After Shutdown - Duration:** none.
- **Track GPS After Shutdown - Interval:** none.

When starting Mysticetus as a project manager you may be prompted to pick a vehicle, select the vehicle relevant to the project you're working on now. This ensures all file saves are properly attributed to that vehicle.



## Mysticetus – Project Manager Operations Guide.

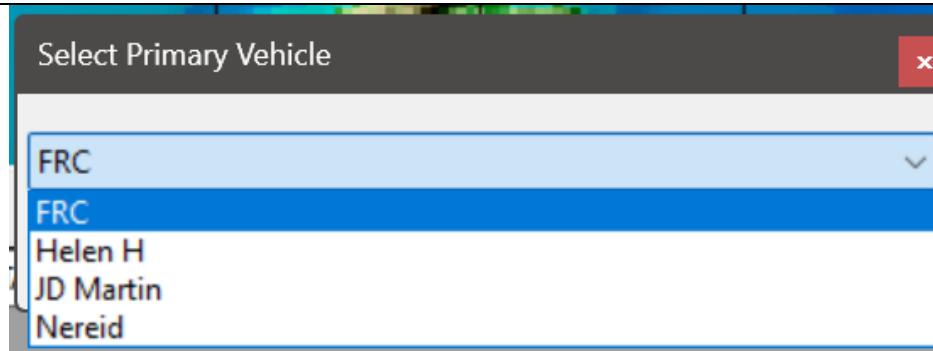


Figure 4 Selecting your primary vehicle.

## 4. Download maps

Before you can view Mysticetus map data you will need to download map files.

Open Mysticetus Editor.

- In Mysticetus Editor, go to Configure > Download Geographic Data.
- Select the necessary map files for your region (e.g., US Florida CRM, US Southeast CRM, US Northeast CRM for the East Coast).
- Click "Download Checked Items" and then "Done" after the download completes.

This is performed once for each computer running Mysticetus.

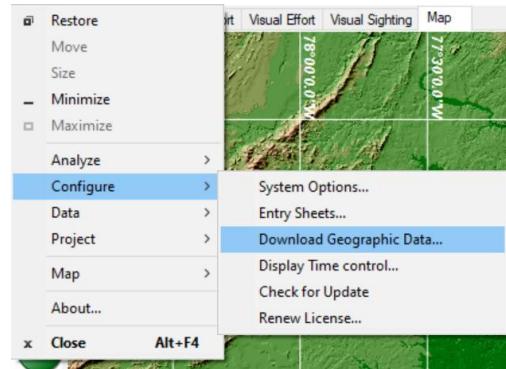


Figure 5 Installing maps

## 5. Subscribe to your projects

- In Mysticetus Editor, go to Project > Select Project.
- Click "Subscribe to new project."
- Enter the project name and password provided by Mysticetus.
  - Typically, you will have both a child and parent project names.
- Click "OK." Mysticetus will restart with the new project active.



## Mysticetus – Project Manager Operations Guide.

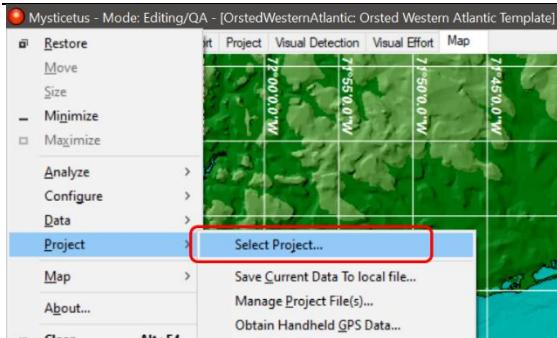


Figure 6 Adding a data collection project to Mysticetus

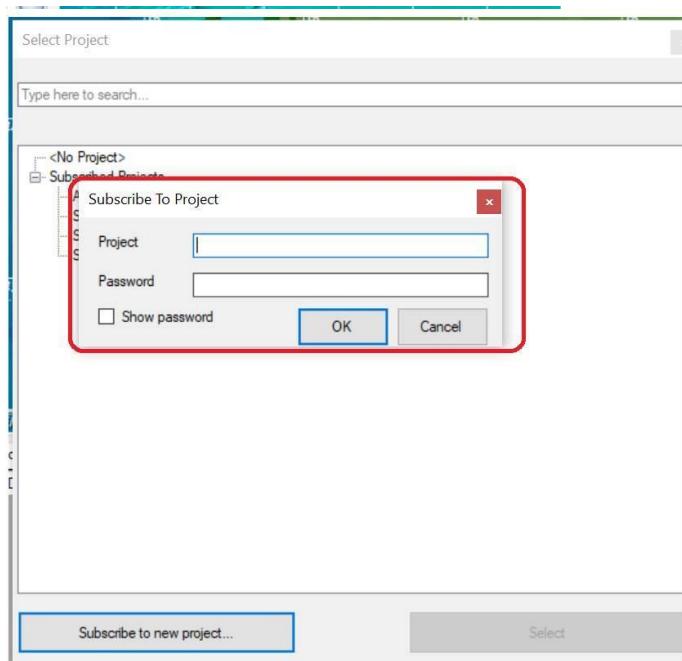


Figure 7 Joining a new project UI.

## PROJECT SETUP AND MANAGEMENT

Project setup is crucial for ensuring the smooth and efficient execution of offshore mitigation efforts. This section outlines the key steps involved in setting up a new project in Mysticetus.

### 1. File names

Each survey has a standard file naming syntax generated by Mysticetus. The filename includes the station id (typically vessel name plus Vis or PAM) and the date and time from the final timestamp in the file.



## Mysticetus – Project Manager Operations Guide.

As the file progresses through the QAQC process, each team member appends their initials to the filename. By the end of the process, the filename will appear as:

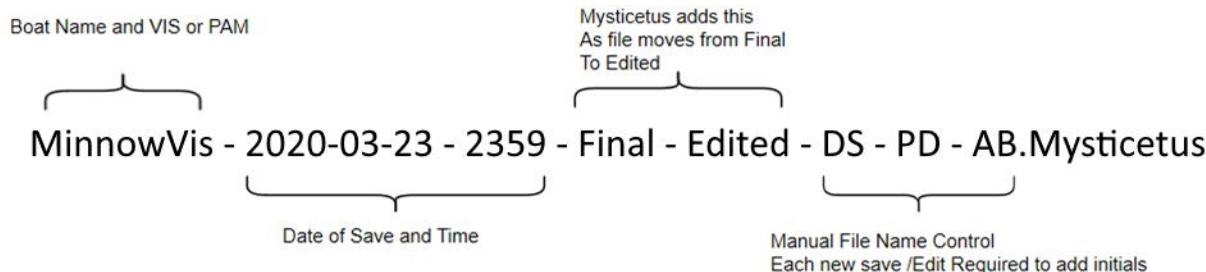


Figure 8 Example of file naming structure.

### 2. Project Initiation:

- **Gather Project Information:** Collect all necessary information about the project, including:
  - Energy developer name
  - Lease area details.
  - Vessel operator information
  - Vessel name and MMSI number
  - Operation type (e.g., construction, geophysical, geotechnical)
  - Estimated start date.
- **Inform Mysticetus:** Provide the project information gathered to the Mysticetus team. This allows us to initiate the project setup process and configure the necessary systems.

### 3. Template Configuration:

There are fundamental elements in the project template you must maintain through the project.

- **Access Parent Template:** Project Managers (PMs) will work within their Parent template. This template contains settings specific to the PSO provider and each vessel the PM is managing.
- **System Options:** Configure the following settings in the System Options menu (Red Ball > Configure > System Options):
  - **Alert Lists:** Define contact lists for critical event notifications (e.g., dead sightings, entanglements, injuries, North Atlantic Right Whale sightings, security alerts).



## Mysticetus – Project Manager Operations Guide.

---

Ensure these lists are up-to-date and include correct contact information for relevant personnel.

- **Observation Platforms:** Specify the height and location of each observation platform on the vessel. Provide precise measurements or refer to ship diagrams for accurate deck height above water. Include the type of optical device used (e.g., Fujinon 7x50 binoculars) and the reticle to degree conversion factor if applicable.
- **Observers:** Define each observer's name, eye height, and assigned vessel. This information, combined with observation platform data, ensures accurate sighting locations.
- **Project-Specific Variables:** Set default values for project-specific variables. Use ellipses (...) for required fields and "N/A" for optional fields.
- **Track Line Definitions:** Define track lines to visualize vessel activity on the map for all defined states. Use consistent track line colors; MediumSpringGreen is recommended – do not use red! Set track line width (2 is recommended).

### 4. Vessel Mobilization:

For each new vessel joining the project, perform the following steps:

- **Deploy Template:** Deploy the configured parent template to the specific vessel project (Local Project).
- **Vessel-Specific Variables:** Verify and adjust project-specific variables as needed for the individual vessel.
- **Deck Heights:** Confirm or set vessel deck heights where observers will work.
- **Optical Tools:** Define the optical tools observers will use.
- **Observer List:** Update the observer list with crew members and their eye heights.
- **Crew Training:** Arrange for observer crew training on Mysticetus OnBoard.

### 5. Crew Changes:

When crew changes occur, update the following:

- **Observer List:** Add new crew members and their eye heights. Move departing crew members to the unassigned list for future use.
- **Equipment:** Update for any new equipment in use.
- **Training:** Direct new observer crew members to review the PSO user guide and training video.
- **Communication:** Add new members to relevant communication channels.



## Mysticetus – Project Manager Operations Guide.

- **Notifications:** Verify that reports and alert notifications are configured correctly.

By following these project setup procedures, PMs can ensure that Mysticetus is correctly configured for their project, leading to high-quality, reliable data collection and efficient offshore mitigation efforts.

**6. Data Collection Time Periods:** Data is collected daily in 24-hour periods for 24/7 operations, or over the course of a single day for daylight-only operations. PSOs are responsible for ensuring the Mysticetus data collection application is closed at the end of a 24-hour period (or earlier if data collection is, for example, daylight only). The exception to this is if an observation day is shorter due to anchoring, docking, or leaving dock.

Data collection happens in UTC (computers are configured to run in UTC). Data collection stops and restarts at midnight UTC.

Mysticetus saves intermediary files throughout the day, typically at 2-hour intervals to the cloud and 3-minute intervals to in-field storage (e.g., SD cards in computers). Mysticetus then saves a Final file at the end of the data collection period. These files are automatically uploaded to the Mysticetus cloud. These files are a valuable source of information about what happened and when – useful to check if PSOs and Lead PSOs performed the appropriate QA tasks in the field.

# MANAGING THE PROJECT TEMPLATE

Project Managers are responsible for configuring project-specific settings within the Mysticetus template. This ensures data is collected consistently and accurately. Templates follow a hierarchical structure:

Energy Developer (Root) -> PSO Provider (Parent) -> Local Project (Child)

- **Energy Developer (Root):** This template defines the core data fields required by the energy developer to meet regulatory requirements. This template is managed by Mysticetus and should not be modified by Project Managers.
- **PSO Provider (Parent):** This template builds upon the root template and includes settings specific to the PSO provider and vessel, such as assigned personnel, vessel deck heights, and exclusion zones. Project Managers configure these settings.



## Mysticetus – Project Manager Operations Guide.

- **Local Project (Child):** This template is unique to each project and inherits settings from the parent template. It should not be edited directly. Changes are made to the parent template and then deployed to the child template.

Configuring the Parent Template:

**System Options:** Access system options via the red ball menu: Red Ball > Configure > System Options. Here, you will define critical alert contact lists, observation platform heights, observer details, and other project-specific variables. These settings are crucial for accurate data collection and timely notifications.

**Named Lists:** Define contact lists for critical event notifications (e.g., dead sightings, entanglements). Ensure these lists are up-to-date and include the correct contact information for relevant personnel. Accurate contact lists are essential for rapid response to critical events.

**Observation Platforms:** Specify the height and location of each observation platform on the vessel. This information is used for precise animal localization. Accurate platform heights are crucial for reliable distance calculations.

**Observers:** Define each observer's name, eye height, and assigned vessel. This information is combined with observation platform data to ensure accurate sighting locations. When observer comes off a project simply unassign them from vessels and Mysticetus will retain them for future assignment.

**Project Specific Variables:** Set default values for project-specific variables. Use ellipses (...) for required fields and "N/A" for optional fields. This helps streamline data entry for PSOs and ensures required data is collected.

**Track Line Definitions:** Define track lines to visualize vessel activity on the map. Consistent track line colors and widths improve map readability and help identify deviations from planned routes. Accurate track lines are essential for monitoring vessel activity and ensuring compliance with project requirements.

By following these steps, Project Managers can ensure the Mysticetus template is correctly configured for their project, leading to high-quality, reliable data.

## SETTING PROJECT VARIABLES AND LISTS

Once the PSO Provider parent project has been selected, most settings managed by PMs are found in the System Options. Click **Ball -> Configure -> System Options** as shown in the next figure:



## Mysticetus – Project Manager Operations Guide.

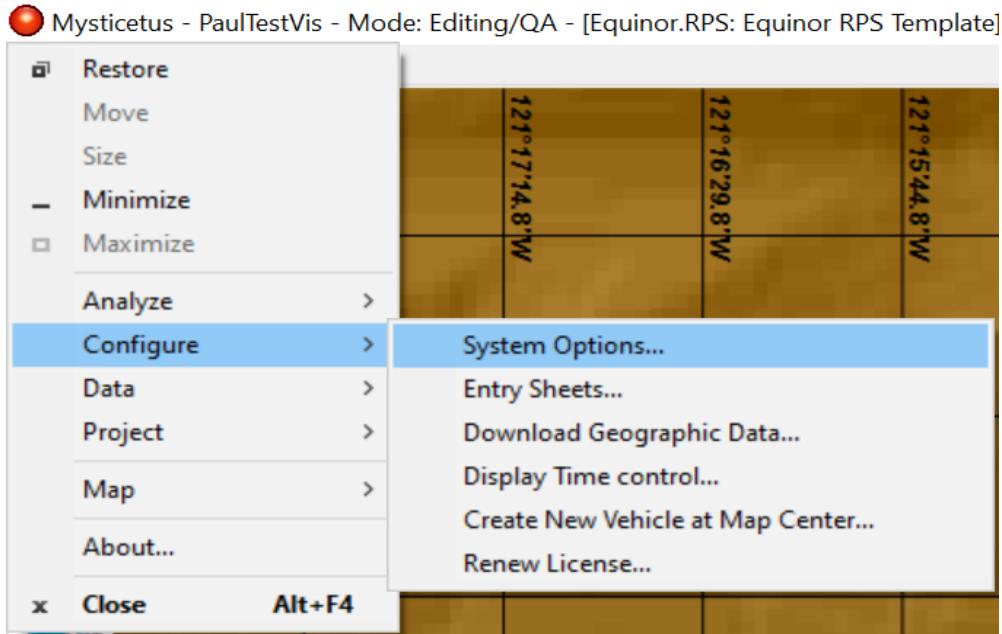


Figure 9 Configuring your template starts here.

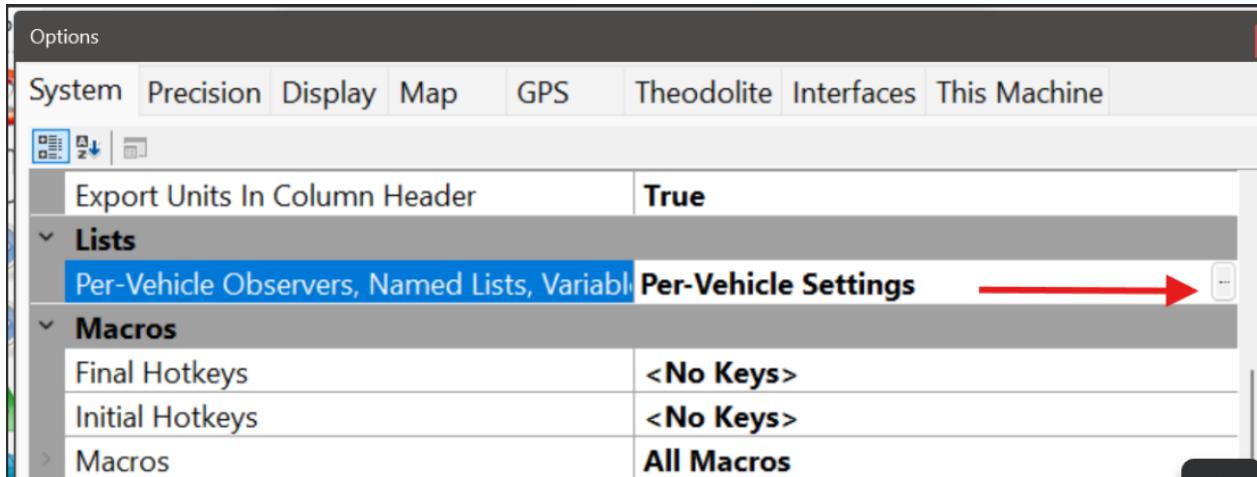


Figure 10 All named lists for all vessels are held here; PSO details, ship's deck heights, optical devices, etc.

# NAMED LISTS, OBSERVERS, AND PLATFORM DATA

**Named Lists** hold the definition of contact lists for critical event notifications. They consist of a mix of email aliases and user/phone numbers for text messages. These critical event lists are a



## Mysticetus – Project Manager Operations Guide.

vital component of starting the process of satisfying early alerting requirements for critical events as defined by the typical operator permit.

The screenshot shows a software interface titled "Per-Vehicle Settings". The left pane displays a hierarchical tree structure for a vessel named "Brasilis". The tree includes sections for "Dictionaries", "Field Modifiers", "Form Filters", "Lists", "Observers", and "Observation Platforms". Under "Lists", there are four entries: "DeadSightingAlertList", "InjuredAlertList", "NARWSightingAlertList", and "SecurityAlertList". Under "Observers", there are two entries: "Dave (1.71 m)" and "Paul (1.9 m)". Under "Observation Platforms", there are five entries: "RB-Bridge (Mysticetus Testing Vehicle) : 11.25 m : Uses Obs E", "RB-BridgeWing (Mysticetus Testing Vehicle) : 11.15 m : Uses Obs E", "RB-ForecastleDeck (Mysticetus Testing Vehicle) : 8.31 m : Uses Obs E", "Lasertech Trupulse 360 - Bridge (Mysticetus Testing Vehicle)", and "Newcon LRM3500 - Bridge (Mysticetus Testing Vehicle) : 13 m".

Figure 11 Lists, observers, and Observation Platform (optical device, location, location height above water) definitions for a typical vessel.

Typically, in the Western Atlantic the following lists must be created by the project manager. Actual list names may vary based upon the needs of the respective developers. Each list name shown below has its own unique properties around compliance and due to this are broken out as separate lists.

- Dead animal sighting alerts, DeadSightingAlertList (VesselName)
- Injured animal sighting alerts, EntanglementAlertList (VesselName)
- North Atlantic Right Whale sighting alerts, NARWSightingAlertList (VesselName)
- Security Alerts list, SecurityAlertList (VesselName)



## Mysticetus – Project Manager Operations Guide.

The first three lists should contain the names of people to be notified when these events happen, and typically include wind developer, vessel operator, and PSO provider personnel. Ask Mysticetus for help with the wind developer personnel who should be listed here if you do not know. We, typically, set the basic lists up and the PM must be sure they stay correct overtime.

The last list, Security Alerts list, is for HSE events that allow your PSO team to silently alert onshore personnel (the PM) of onboard HSE violations. It is triggered with the Life Preserver button:

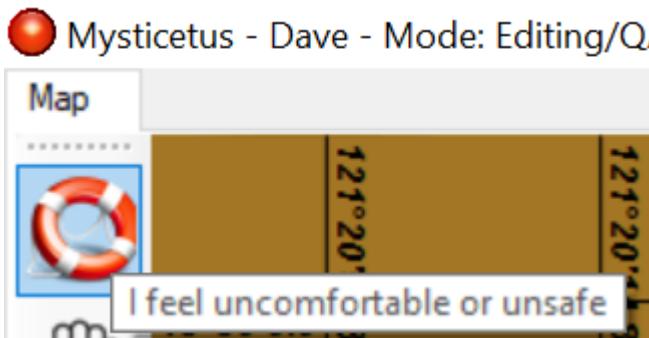


Figure 12 Initiating a silent alert to the PM.

Below you can see examples on how to enter email aliases and unique phone numbers for US based phones. The entries do not have to be ordered. Do not allow for line spaces between entries. If Mysticetus sees a space it will stop processing the rest of that list.



## Mysticetus – Project Manager Operations Guide.

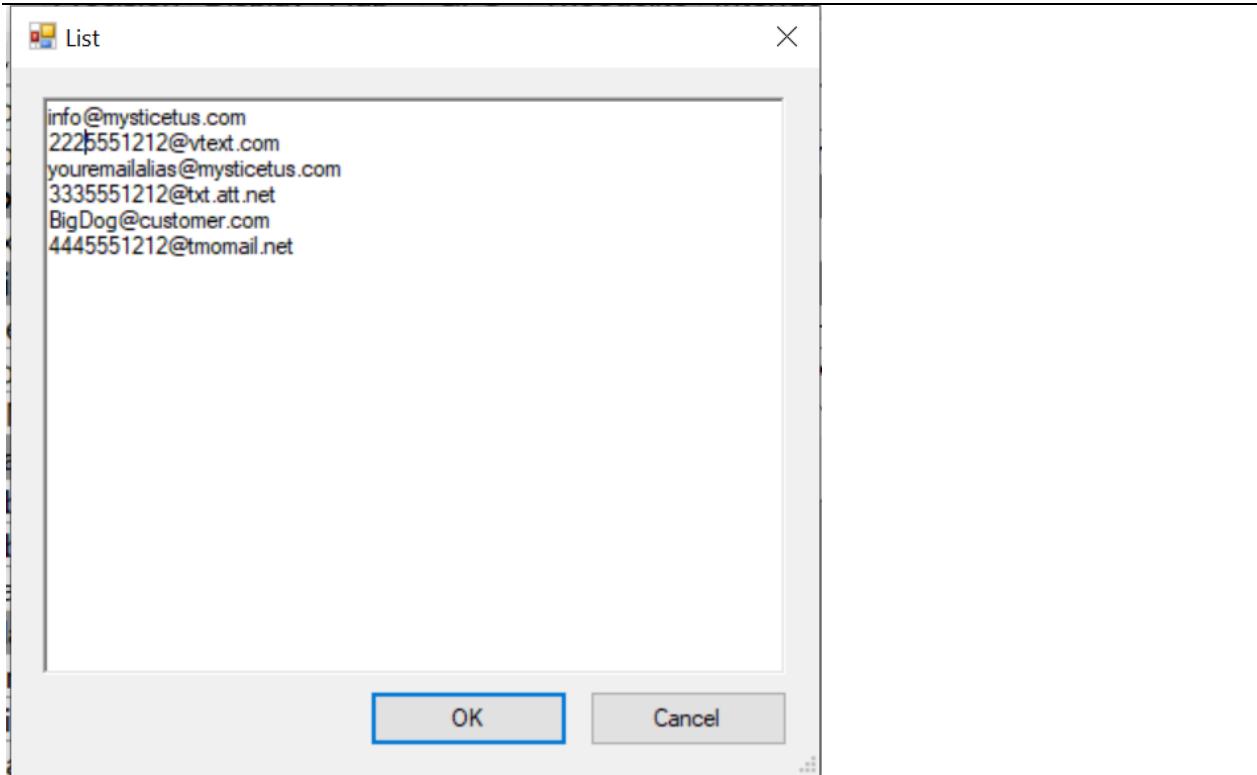


Figure 13 Alert list showing email and RCS/SMS addresses.

## OBS(ERVATION) PLATFORMS

Correct observation platform heights are critical to accurate animal localizations. These heights are most accurately obtained by actual measurement (drop a weighted tape measure). If that is not possible, ship diagrams are frequently available and provide a good estimate of deck height above water.

Observation Platform height will be added to PSO Eye Height for the relative viewing location onboard when determining distance to an animal based on reticle binoculars. This setting ‘trickles’ down from your parent template. Note that PSO’s tend to do their effort records with their unaided eye and their visual sightings with reticular binoculars.

Each location a PSO could observe from gets its own Observation Platform. The name should be the location and method (e.g., Bridge-Fujinon7x50). Enter the height (e.g. 4.2 m or 13.775 ft), most reticle binoculars have a reticle-to-degree conversion factor of 0.2779 and select the appropriate boat.

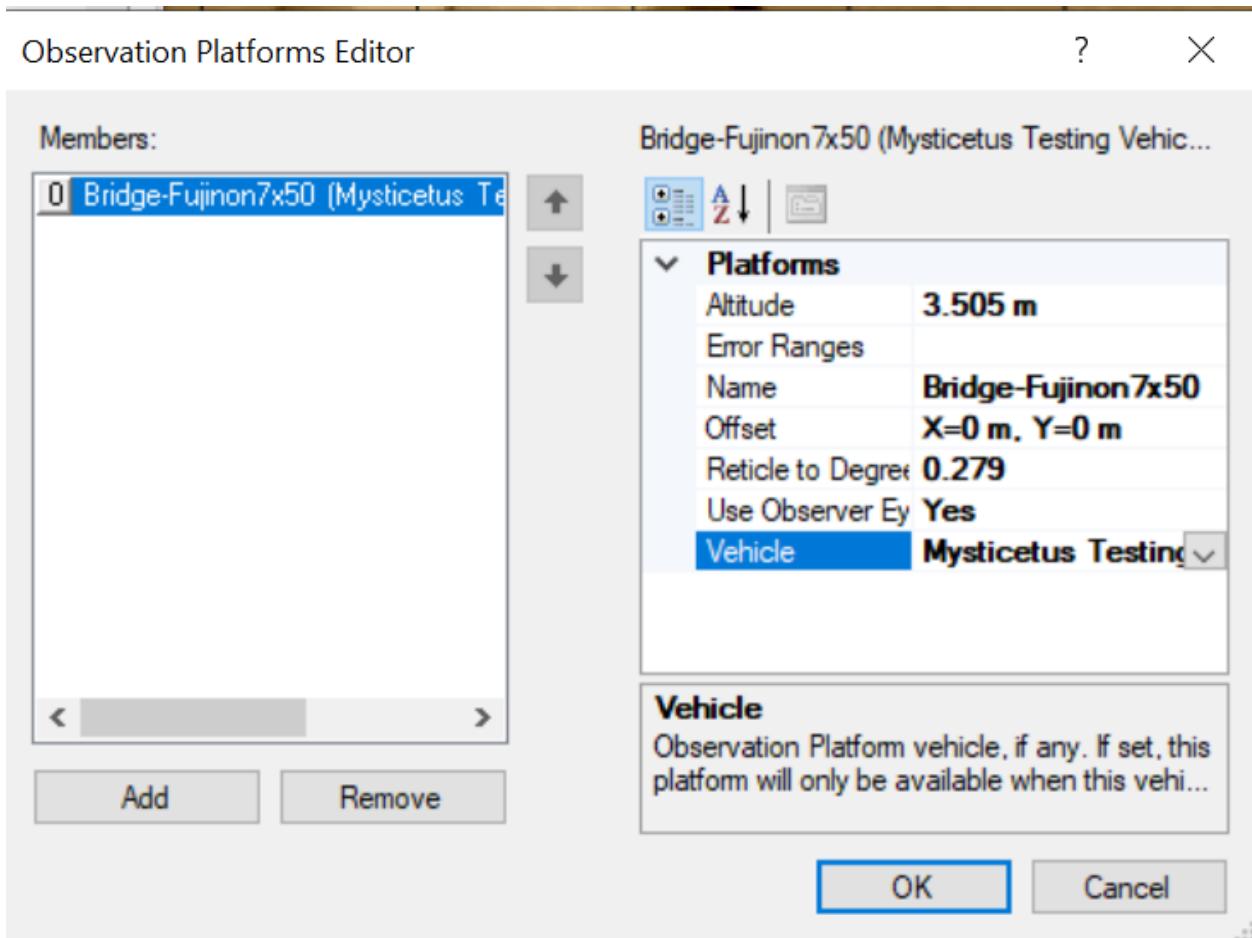


Figure 14 Adding optical devices, do not forget the Reticle to degrees conversion.

## OBSERVERS - DEFINING CREW MEMBERS AND THEIR EYE HEIGHTS

Each PSO needs to be defined in the Observers settings. Add the PSO and assign them to the correct boat:

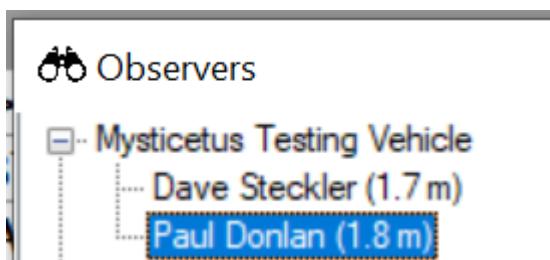


Figure 15 Defining PSOs and their eye height(s).



Click the Edit button to change vessel or eye height.

## Properties

The screenshot shows a software interface for managing project properties. At the top, there are icons for sorting (A-Z) and a refresh symbol. Below this, a section titled 'Observer' is expanded, showing the following data:

Eye Height	1.8 m
Name	Paul Donlan
Vehicle	Mysticetus Testing Vehicle

Figure 16 Assigning a PSO to a ship.

## SETTING PROJECT SPECIFIC VARIABLES

The project specific variables must be set via the project variable editor. These variable names are defined in your ‘Project’ tab for data collection. The variable names must match the variable names in your entry sheet. Highlighting a field in your entry sheet will show you the exact name of that variable. Not getting this correct is the most common source of errors.



## Mysticetus – Project Manager Operations Guide.

Variables Editor

	Variable	Value
▶	BOEM Lease	OCS-0487/0486
	IHA	2022-00041
	IR Equipment	Handheld IR, NVTS
	Nighttime Ops	Yes
	Number of PSOs	4
	PAM Equipment	Not Required
	Project Manager	[REDACTED]
	Project Name	[REDACTED]
	Project Type	Geophysical
	Remote Source	Deep Helder
	Survey Plan	SFW01
	Vessel Draft Meters	4.5 m
*		

OK      Cancel

Figure 17 Example of project variables required.

## SETTING DEFAULT VARIABLES

Environmental mitigation typically calls for a lot of data to be collected by the PSO's whose principal job is to keep their eyes on the water. In defining data variables for collection during an event, such as effort state or sighting, we know there are tradeoffs between "I want the PSOs to think about this field" vs the need to simplify as PSOs have a lot of stuff to enter just to meet the basic permit terms. Use of ellipses calls for an input field as a required input and will then cause a watch dog to "bark" when the entry is missing.

For variables that must be populated by the PSO's then set the Default Value to an ellipsis.

For variables that are "optional" put "N/A" as the Default Value for optional fields in the template to reduce PSO workload. In this example no watch dogs will respond.

To summarize.



## Mysticetus – Project Manager Operations Guide.

- 1) Setting a default value to ellipses tells Mysticetus the field(s) entry is required.
- 2) Setting a default value as N/A will result in the PSO needing to remember to fill in the field when applicable.

Note: This does not work with Date/Time fields.

Name	Type	Description
Low Count	Count	Lowest estimate of animals in this group
High Count	Count	Highest estimate of animals in this group
Best Count	Count	PSO's best estimate of the number of individuals for this record/row of data.
Pace	FixedList	Relative speed animal(s) is traveling. Select from Vigorous (creating large splashes or a wake; Moderate (cre...
Detection Cue	FixedList	"Clue" that tipped PSO off to presence of animal(s). Select best option from dropdown menu.
Initial Behavior	FixedList	Observed behavior of animal(s). Behavior 1 is for the first observed behavior. If a second behavior is observe...
Second Behavior	FixedList	A subsequent observed behavior if more than one behavior was observed during a detection. Select None if ...
Reaction	FixedList	A perceived change in behavior as a result of vessel or operations. Select None if no perceived reaction.
Mitigation Request	FixedList	If PSO or PAM Operator requested mitigation for this detection, enter the requested measure in this field. Sel...
Mitigation Response	FixedList	If PSO or PAM Operator requested mitigation, enter the mitigation that was implemented. Select Denied if m...
Time of Mitigation	DateTime	If detection resulted in a mitigation, edit to reflect the exact time of implementation. Enter NA if not applica...
Time of Entry into EZ	DateTime	If animal(s) entered its EZ, edit to reflect the time when first detected within EZ. Enter NA if not applicable.
Time of Exit from EZ	DateTime	If animal(s) confirmed departing its EZ, edit to reflect the time when confirmed outside EZ. Enter NA if not a...
Seconds in Active EZ	Count	If animal(s) observed within its ACTIVE Exclusion Zone (EZ, i.e., while regulated sources <200 kHz operationa...
Seconds in Inactive EZ	Count	If animal(s) observed within its INActive Exclusion Zone (EZ, i.e., while regulated sources <200 kHz are NOT o...
CPA to PSO	Distance	Closest Point of Approach to PSO in meters. Enter this CPA value in the row of data corresponding to the ob...

Figure 18 N/A is a default behavior. The danger is it can get overlooked when it should not be.

When the Default Value for fields are currently set to ellipses (...)

Auto-Time Others  
Column Style  
Default Value  
Export Format  
Fixed List

Default Value  
(Y) S... Segoe UI, 9pt  
N/A  
{ Export: False, Field: \*, Single Point: True, Boolean Format: YBlank, Cloud Field: No  
(MitigationR

Figure 19 Default here tells Mysticetus a value is required.

Mysticetus highlights in red as a "hint" that these need to be filled in:



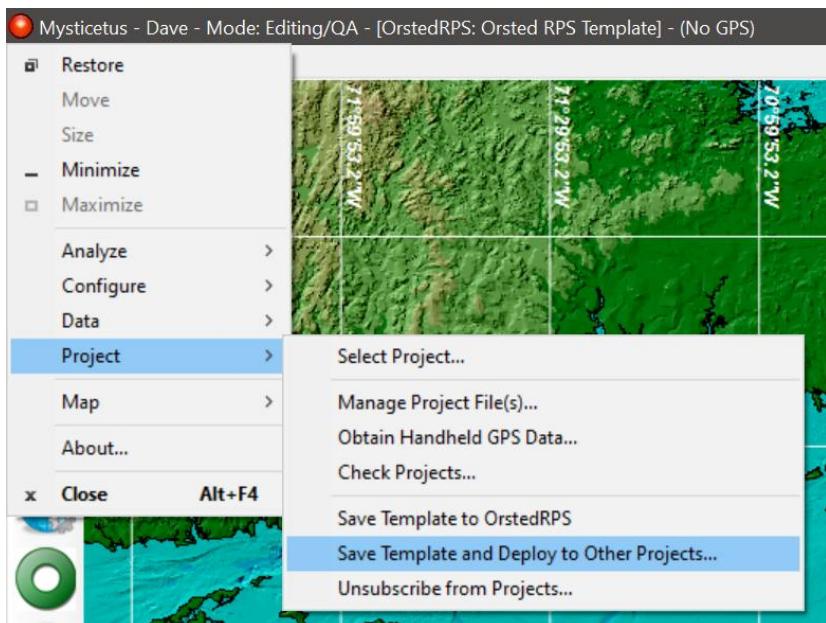
## Mysticetus – Project Manager Operations Guide.

Second Behavior	Reaction	Mitigation Request	Mitigation Response	Time of Mitigation
...	...	...	...	

Figure 20 Missing Fields that must be populated.

## SAVING TEMPLATE EDITS AND DEPLOYING TO A VESSEL PROJECT

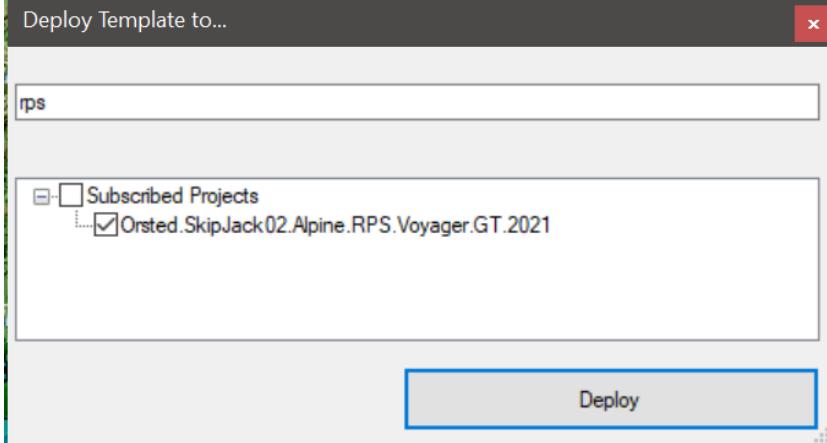
Choose: Project -> Save Template and Deploy to Other Projects:



Select the appropriate project and press Deploy.



## Mysticetus – Project Manager Operations Guide.



Exit the Mysticetus Editor application when finished (do not save on exit, the previous step did it for you).

The next time the Voyager PSO crew restarts their Mysticetus app onboard, it will pick up these changes assuming a healthy internet connection. The PSOs onboard will be signaled that an update is pending via the relevant watchdog.

## GPS TRACKING

Accurate GPS tracking is critical for data collection and requires dedicated discussion here. Without GPS tracking data your collected data is worthless!

There are two PSO GPS devices on each ship. The GlobalSat BU-353-S4 USB GPS or newer (aka “mushroom” or “hockey puck”) is plugged into the laptop. This GPS device automatically records GPS coordinates and stores the information in Mysticetus.



Figure 21 GlobalSat Hockey Puck (typical)

The second connection is a backup, handheld Garmin eTrex. Lead PSOs are responsible for uploading the track from the Garmin device daily and clearing the track off the Garmin. The data



## Mysticetus – Project Manager Operations Guide.

daily quality control section describes how to check the daily upload has occurred. This file is critical to backing up the primary GPS data in case of gaps or dropouts in coverage with the hockey puck.



Figure 22 Garmin eTrex (typical)

## DAILY DATA QUALITY CONTROL (QA/QC)

Daily QC is a crucial process performed by Project Managers (PMs) to ensure the accuracy, completeness, and reliability of the data collected by Protected Species Observers (PSOs). This involves a series of checks and procedures using the Mysticetus software suite. This process should be completed within 72 hours of the observation day.

### Key Steps in Daily QC:

1. **Confirm GPX File Upload and Analysis:** Verify that the Lead PSO has uploaded the GPX file from the handheld Garmin eTrex GPS device and has run an analysis report for the corresponding date. This can be confirmed in Mysticetus under Project -> Manage Project Files, then selecting the '+' under GPX and the vessel name. Check for common errors such as multi-day tracks (indicating a failure to clear the previous day's track) or missing files.
2. **Review Daily Mysticetus Data File:** Open the edited Mysticetus data file, which is the final QA/QC output from the Lead PSO. This file is named with the convention [Project Name][File Date and time]-[Final]-[Edited]-[Lead PSO's Initials].Mysticetus. If multiple edited files exist, choose the most recent one.
3. **Data Field Review:** Thoroughly review all data fields within the Mysticetus file. Ensure that all required fields are populated and that the data makes logical sense. Pay close attention to the following:
  - o **Blank Cells:** As of July 1, 2019, all data fields must have a value. If a blank cell exists, investigate and correct the issue, adding a note with your initials and an explanation of the correction. If a field should auto-populate from another tab, use the "Recalculate formulas for column" command.



## Mysticetus – Project Manager Operations Guide.

---

- **Mitigation Requests and Responses:** Every Mitigation Request must have a corresponding Mitigation Response.
  - **Species Identification:** Verify the accuracy of species identifications. Flag any unusual or unexpected species for further review.
  - **GPS Track Anomalies:** Examine the GPS track on the map for any unusual patterns or 'wild' deviations from the expected track line.
  - **Weather Data:** Check for any illogical or inconsistent weather combinations.
  - **Times:** Ensure times are consistent and accurate. Mysticetus uses the laptop's time zone, so ensure the laptop is set to UTC if required.
  - **Bearings and Headings:** Verify the accuracy of bearings and headings recorded for sightings.
  - **Reticles and Distances:** Check that reticle readings and calculated distances are appropriate.
  - **Night Checkbox:** Ensure the "Night" checkbox is accurately checked for all nighttime hours.
  - **Vessel Activity and Regulated Sources:** Confirm that the Vessel Activity, Mitigation Source Status (or Sound Source Status), Source Frequency (if applicable), and equipment checkboxes are consistent and logical. Refer to the notes for each effort row for clarification on active equipment.
  - **Sighting ID Format:** Sighting IDs should follow the format V-number (e.g., V32). Correct any deviations from this format.
  - **Missing Media:** If an Image Credit is listed, ensure the corresponding media is attached. If not, locate and attach the missing media.
4. **GIS Analysis Tool Verification and Review:** Confirm that the Lead PSO has run the GIS Analysis tools. Review the generated reports for any warnings or errors, particularly those related to missing GPS tracks or data gaps. Re-run the analysis if significant changes have been made to the data file.
  5. **PAM Data Integration (if applicable):** If Passive Acoustic Monitoring (PAM) data was collected, ensure that the PAM data file has been merged with the visual sighting data file. Recalculate any affected auto-filled columns.
  6. **Documentation:** Document any changes or corrections made to the data file in the Notes field, including your initials and a brief explanation.



## Mysticetus – Project Manager Operations Guide.

7. **Data Sign-off:** Once the PM has completed the data validation process and is satisfied with data quality, they perform the final sign-off. This involves saving the validated data file as a "Signed Off" file, indicating its readiness for reporting and regulatory submission. This "Signed Off" file represents the definitive dataset for the given operational day representing compliance.

## DAILY QA/QC TASKS

Before the PM gets their crack at the data, both the PSO (at the end of their shift) and the Lead PSO (at the end of the day) perform QA steps as outlined in *Mysticetus PSO and Lead PSO Operations Guide*.

This document addresses the PM's review of the day's data, including:

1. Look for blank cells (in general there should be no blank cells)
2. Ensure that every mitigation request has a subsequent mitigation response.
3. Check for unusual species.
4. Check for odd GPS tracks.
5. Check for unlikely/non-sensical weather combinations, etc.

Clarify any questions with the Lead PSO as soon as possible. You also must confirm that the GPX files are uploaded and the Lead PSO performed the daily reporting.

Any errors found by PMs are a “Training Opportunity” for Lead PSOs. Data coming off the boats should be nearly perfect by the time it reaches the PM. When that does not happen, engage the Lead PSO to figure out what happened and fix it for the future.

## DAILY GPX FILE REVIEW

The Lead PSO is responsible for ensuring that the detailed track file from the Garmin eTrex is uploaded to the Mysticetus cloud. (this is a single button push in the Mysticetus Editor on the boat.

The Garmin eTrex is a backup GPS device in the case of a failure with the primary GPS, track loss due to superstructure interference, etc. The data collected from the Garmin eTrex is used to ‘repair’ and ‘stitch’ together missing track information by the data analyst team and provide a back-up for any potential gaps in the GPS data collected by the GPS device connected directly to the laptop.

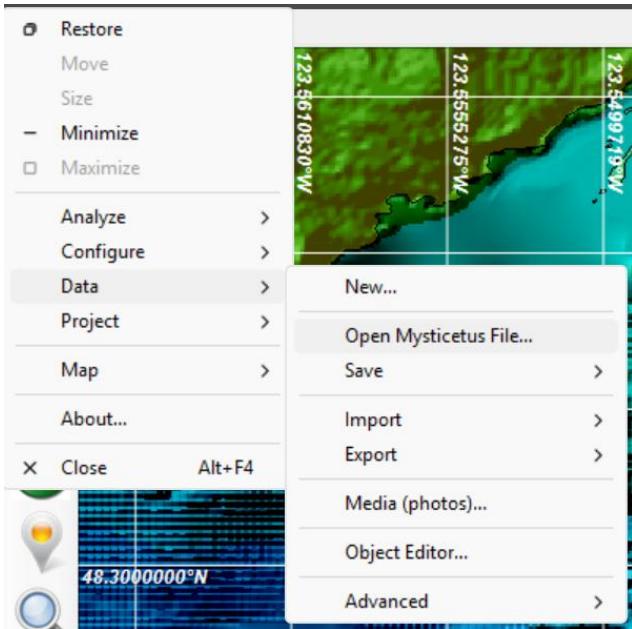


## Mysticetus – Project Manager Operations Guide.

### CONFIRM AND REVIEW DAILY GPX FILE

Confirm the Lead PSO has uploaded the GPX files from the hand-held Garmin Device.

To reach the listing of all data files follow these steps:



Select Red Ball -> Data -> Open Mysticetus file.

**Note: This allows you to view all the project files saved.**

To confirm the GPX files were uploaded to the CLOUD data storage select the + under GPX then the + for your Vessel and confirm the GPX files are there for the day. This can be done more quickly by viewing the OnCloud Data Flow Dashboard.

Mysticetus also displays the date and time range the Garmin collected data

There are two main errors to check for:

1. Failure to clear the GPS track after uploading the data the previous day. In this case the track will span multiple days. The tracks must be cleared daily after upload by lead PSO!
2. Failure to upload the file at all. In this case it will simply be missing.

The screenshot shows a hierarchical file structure. At the top level is 'HighlandEagleVs-2020-03-13-2359 - Final - Edited - LD'. Below it is a 'GPX' folder, which is further expanded to show individual GPX files for each day from December 27 to January 18, 2020. Each GPX file entry includes a timestamp indicating the specific day it was recorded.



## GIS ANALYSIS TOOLS

Mysticetus has a variety of standard analysis built in that display effort and sighting data and perform instant analysis over these data. These analyses are useful for spotting errors. Lead PSOs are instructed to run GIS analysis tools as part of their daily QAQC efforts.

As the project manager, this is the starting path in your daily QAQC efforts. You should verify the Lead PSO has indeed run these tools. This is accomplished in the **Project -> Manage Project Files** window.

Navigate to the **Analysis** folder and verify there is one for the day from the Lead PSO:

The screenshot shows a software interface titled "Manage". At the top is a search bar with placeholder text "Type here to search...". Below it is a file tree view. The tree starts with a root node, then branches into dates from 2020-02-12 to 2020-03-10. Under each date node, there is a single file entry. The file for 2020-02-18 is highlighted with a blue selection bar and labeled "Analysis - HighlandEagleVis-2020-02-18-2359.zip". At the bottom of the interface are two buttons: "Select All" on the left and "Download" on the right.

Check the box, download this file – Mysticetus will automatically open it in File Explorer for you. The contents will look like the following.



## Mysticetus – Project Manager Operations Guide.

There will be a number of CSVs containing analysis, as well as a Notes file. Check the Notes file for any communication from the Lead PSO.

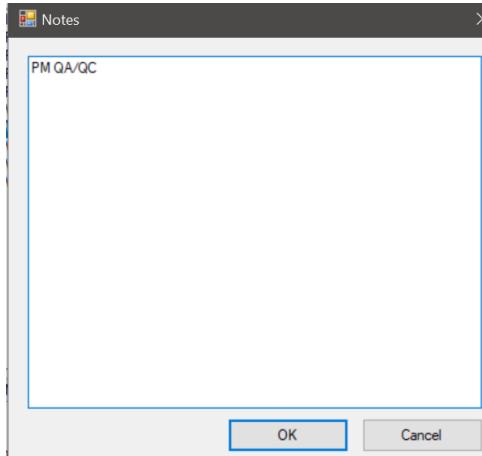
Then quickly scan through each of the CSVs in Excel (just double click) – the data in there should “make sense.” Effort totals should be appropriate, sightings should match expectations.

There should be no <Blank> or <No Data> Flags.

There should be no Missing Track flags.

## RUN THE GIS ANALYSIS TOOLS

You should run the GIS Analysis tools yourself. When prompted, indicate you are performing PM QA/QC:



Check that your results make sense, no <Blank> or Missing Track flags.

## PROJECT MANAGER'S USE OF THE GIS ANALYSIS TOOL

If there are several updates and changes during the QAQC process to the data file or if there are additional checks you want to make, you can run the GIS Analysis Tool as a last step of your review to ensure all issues are resolved.



## Mysticetus – Project Manager Operations Guide.

The template provides standard reports for the distinct types of detections and effort.

**NOTE:** If the primary GPS fails or starts late during data collection, you will see a message in the reports stating *Warning: No GPS Track found for vehicle 'SS Minnow' at effort times: 2018-08-12 00:00:00.1 EDT, 2018-08-12 00:36:09.6 EDT.*

If the time loss is significant, more than 5 minutes in a 24-hour period, this requires a fix by the data analyst team from the secondary GPS information (the Garmin eTrex GPX data files). These gaps must be filled using the GPX data the lead PSO uploaded.

Also, if the GPS track is missing for only the first effort entry, this means the PSOs started Mysticetus without waiting for a GPS signal – this is a teachable moment: talk with the lead PSO to make sure this doesn't happen (there is a big red flashing light in the center of their screen until the GPS has a fix, they should not be ignoring that).

### ISSUES TO LOOK FOR IN DAILY ANALYSIS REPORTS

The most common clue to a problem is a cell containing <blank> or <unknown>. These entries indicate a blank field in the Mysticetus file. There should be no blanks – this is an education opportunity for your PSOs.

Effort reports display distance and hours of effort. The total hours in an effort report should not exceed 24 hours.

If the report displays more than 24 hours, first confirm there is an OFF-Effort row at the end of the day. If the OFF-Effort row does exist and the effort report exceeds 24 hours – contact your data analyst to review the Vehicle Tracks and GPS data. The data file may have extra or duplicate tracks. If it slightly (a few minutes) exceeds 24 hours, this may be a slightly delayed restart of Mysticetus for the next day – **this is ok.**

Review the results from the LEAD PSO. Does the information in the analysis reports “Make Sense”? This is where your expertise and project requirements come in. These files are a summary of the day’s efforts. Looking for...

1. Missing & Incomplete data
2. Bft (Beaufort) ranges or time in certain values that do not make sense.
3. Animal sightings that do not make sense for the region.
4. Missing GPX track detail (at the top of the report).

A	B	C	D	E
1	Bft	Overall_Totals		
2	GPS Track coverage of effort: Complete			
3	2019-06-04 01:26:32.6 to 2019-06-04 03:55:52.5 UTC			
4				
5	Overall Le	36020.37		
6	3	8075.58		
7	4	27944.8		
8				
9	Overall Tir	8595598:33:27		
10	3	8595596:31:20		
11	4	2:02:08		
12				
13				

This is the TIME analysis test  
This likely is a file missing an OFF-Effort Row. time should be 24 hours or less (depending on the effort for the day)



## Mysticetus – Project Manager Operations Guide.

5. Overall time for visual effort that is greater than 24 hours. (this indicates either a missing OFF Effort row or PSOs did not shut down Mysticetus).
6. Overall time effort of less than 24 hours. Verify this makes sense. Did the Vessel dock and wasn't out for a 24-hour period or did the PSO crew shut down Mysticetus for the day prematurely?

Summary: The PM should **NOT** be finding errors. This is not a productive use of your time. 99.9% of errors should be caught and fixed on the boat. When a PM finds an error, this is an “educational opportunity” to teach the PSOs and their lead how to do it better.

It is expected that new projects and new PSOs will need a lot of coaching and instruction – the QA process is great for driving this discussion. After a week or so, PSOs should be generating nearly flawless data.

## MANAGING YOUR ANALYSIS TOOLS

*You can create your own set of analysis tools. You can remove them, modify their settings, or create all sorts of new ones. Do not forget to deploy any created tools (in Parent) to the individual boats so they are available for each vessel project.*

*You should consult with other interested members of your team before changing analysis settings and hence the analysis tools available to all your vessels operating for a developer's project (as per below).*

=====  
More Details  
=====

1. When running analysis, **you do not have to check all the boxes all the time**. Uncheck the ones you do not want to run at that moment.

Analysis

<input type="checkbox"/> PAM Effort at Night
<input checked="" type="checkbox"/> PAM Effort Detail
<input type="checkbox"/> PAM Effort Outside Lease Area
<input checked="" type="checkbox"/> Sightings Summary
<input type="checkbox"/> Visual Effort - Garden State, Skipjack
<input checked="" type="checkbox"/> Visual Effort at Night

The above example will only run "PAM Effort Detail", "Sightings Summary", and "Visual Effort at Night", using their settings at that moment in time.



## Mysticetus – Project Manager Operations Guide.

2. The set of available analysis tools is a compilation of:

(a) the "parent" Developer project, e.g., Ørsted, Equinor, Avangrid, etc., which has the following pre-configured analysis available to all PSO providers, should they choose to use them:

The screenshot shows a list of analysis tools under the 'Analysis' tab. The tools listed are: PAM Detections - All, PAM Effort - All, PAM Effort - Night, Sighting Details - All, Sighting Details - CPA inside 181, Sighting Details - CPA inside 500, Sighting Summary - All, Visual Effort - All, and Visual Effort - Night. The 'Visual Effort - Night' option is highlighted with a blue background.

(b) the ("child") **DeveloperVesselOperator** project, which has analysis tools and settings a PSO operator supporting that vessel operator cares about at this moment, which might be:

The screenshot shows a list of analysis tools under the 'Analysis' tab. The tools listed are: PAM Effort at Night, PAM Effort Detail, PAM Effort Outside Lease Area, Sightings Summary, Visual Effort - Garden State, Skip, and Visual Effort at Night. The 'PAM Effort at Night' option is highlighted with a blue background.

3. In your **DeveloperVesselOperator** project, you can **delete whatever you want** (and deploy it to the boat project).



## Mysticetus – Project Manager Operations Guide.

### Analysis

- PAM Effort at Night
- PAM Effort Detail
- PAM Effort Outside Lease Area
- Sightings Summary
- Visual Effort - Garden State, Skipjack
- Visual Effort at Night

New...

Remove

Report Start:

2000-01-01 00:00:00 PST

Re

31

4. You can **create new ones** in the **DeveloperVesselOperator** project that have whatever settings you want (and deploy to the boat project):



## Mysticetus – Project Manager Operations Guide.

Analysis

- PAM Effort at Night
- PAM Effort Detail
- PAM Effort Outside Lease Area
- Sightings Summary
- Visual Effort - Garden State, Ski
- Visual Effort at Night

**Analysis**

Analysis Description	Analys
Analysis Name	PAM E
Report Start:	2000-01-01 00:00:00.0 PST
Report End:	3000-01-01 00:00:00.0 PST
<b>Analyze...</b>	

### 5. You can modify any settings (and deploy):

<b>Analysis</b>	
Analysis Description	Look at me annoying my fellow Gardine peeps by changing stuff in here without talking to them
Analysis Name	PAM Effort at Night
End Time	3000-01-01 23:59:59.9 PST
<b>Polygons</b>	We doan need no steenkin polygons
Start Time	2000-01-01 00:00:00.0 PST
Total by Day	No
Use Polygons	No
<b>Effort</b>	
Effort Bucket Fields(s)	PAM Effort
Effort Sheet	Yo Wazzup
Effort Vehicle	Ocean Observer
<b>Restrictions</b>	
Close-To Range	N/A
Close-To Vehicle	
Effort Restrictions	Breaking Things Woo!Dill = Pickles
<b>Ignore States</b>	Off
Ignore States Cell	PAM Effort
<b>Stop State</b>	I have so mangled these settings. mwahahaha
Stop State Cell	Vessel Activity

=====

One can delete or change whatever in the Analysis tools. Or if you find issues (like it just hangs forever), please let us know to look. Or if something seems out of order in the Developer parent project, we can fix that too.



## Mysticetus – Project Manager Operations Guide.

These tools are there for you, the PSO provider. You can do what you want with them (settings, create, delete, etc.) in the **DeveloperVesselOperator** project, and you do not have to wait around for us to get to it. **Pro-Tip:** please read any errors that pop up. Generally, there is a typo or old setting that no longer applies - (i.e. wrong field or sheet name). The error message will tell you precisely what it is looking for and cannot find.

## GIS ANALYSIS WITHIN POLYGONS

We recently added an update to how ‘Use Polygons’ works. The problem is there are approximately 14 million (give or take, well too many anyway) polygons in a given template, and running the effort analysis over all of them can take an unacceptable number of hours or days.

So now you can specify which polygons you want to run against:

The screenshot shows a software interface for managing project tasks. On the left, there's a sidebar with icons for 'Area', '181', '500', and a blue bar. The main area has a header with 'A Z' and a search bar. Below is a table-like structure with sections and settings:

<b>Analysis</b>	
Analysis Description	Visual Effort - All
Analysis Name	Visual Effort - All
End Time	3000-01-01 23:59:59.9 UTC
> Polylons	
Start Time	2000-01-01 00:00:00.0 UTC
Total by Day	No
Use Polygons	Yes
<b>Effort</b>	
Effort Bucket Fields(s)	PSO 1,PSO 2,Effort Type 1,Effort Type 2
Effort Sheet	Visual Effort
Effort Vehicle	Ocean Researcher
<b>Restrictions</b>	
<b>Effort Bucket Fields(s)</b>	
Name of field(s) (comma separated) that specifies effort type buckets.	



## Mysticetus – Project Manager Operations Guide.

For example (separate polygon names with a comma)

The screenshot shows the 'Analysis' configuration window. On the left, there's a list of analysis types with 'Visual Effort - All' checked. The main panel shows the following settings:

Analysis Description	Visual Effort - All
Analysis Name	Visual Effort - All
End Time	3000-01-01 23:59:59.9 PST
Polygons	LeaseArea0500Only, LeaseArea0487Only
Start Time	2000-01-01 00:00:00.0 PST
Total by Day	No
Use Polygons	Yes

Below these are sections for 'Effort' and 'Restrictions'. Under 'Effort', it lists 'Effort Bucket Fields(s)', 'Effort Sheet', and 'Effort Vehicle'. Under 'Restrictions', it specifies the 'Start Time' as 'The analysis will only include values between Start Time and End Time.' At the bottom, there are 'Report Start' and 'Report End' fields set to '2000-01-01 00:00:00.0 PST' and '3000-01-01 00:00:00.0 PST' respectively. Buttons for 'New...' and 'Remove' are also visible.

This can still take a decent amount of time depending upon your computer (like two hours), with the gazillions (or so) of track marks in that aggregate. Mysticetus does in-or-out polygon detection on each track mark...that takes time even on fast computers. But it does not take all year.

If you want to further reduce the time, reduce the number of Bucket Fields - Mysticetus iterates through all track marks (each 24-hour day is ~16,000 track marks) times each bucket field times each polygon.

## MERGING MYSTICETUS DATA FILES

If the Mysticetus template has changed since the file you wish to QAQC was created, a real scenario – especially with data collected early in the project, you must import the Mysticetus file into the most current Mysticetus template.



## Mysticetus – Project Manager Operations Guide.

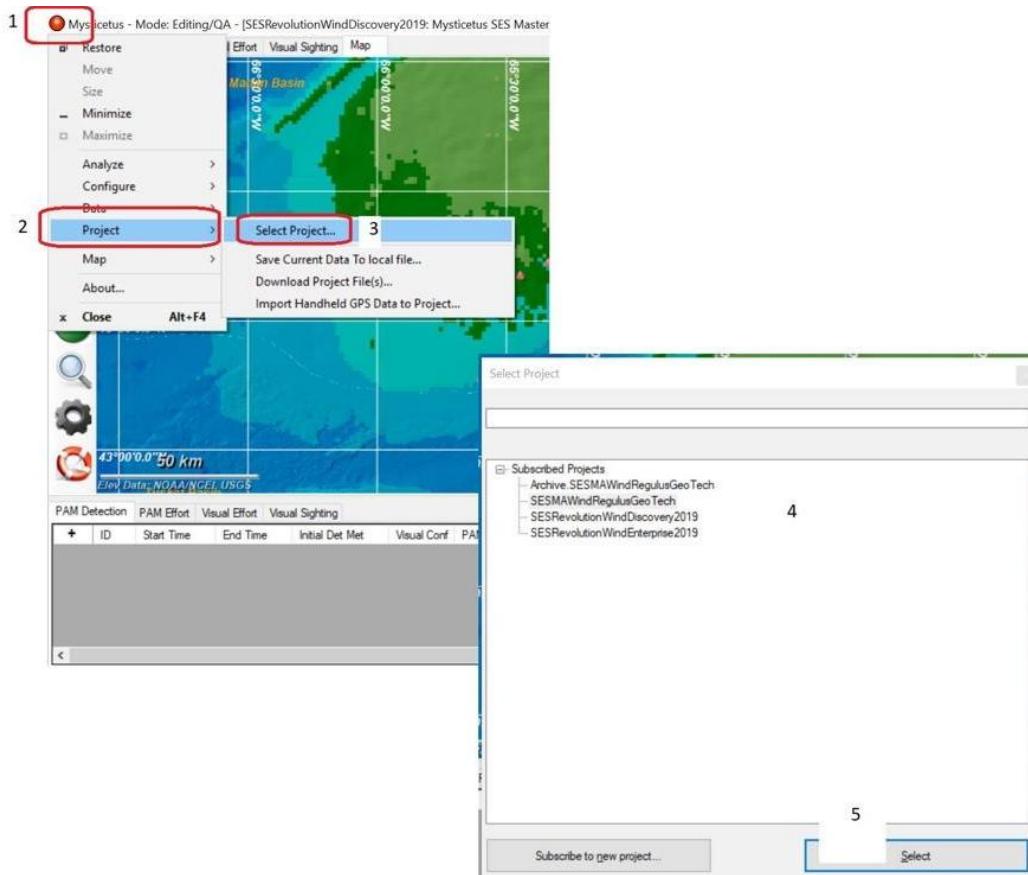
### VERIFY THE CORRECT PROJECT

These steps assume you have already subscribed to the project. If not see directions on adding a project.

1. Open Mysticetus Editor.

Select Red Ball (1) > Project (2) > Select Project (3). The Open dialog box will appear (4).

Select your project from under the Subscribed Projects heading within the dialog box and then the **Select Project** (5) button.

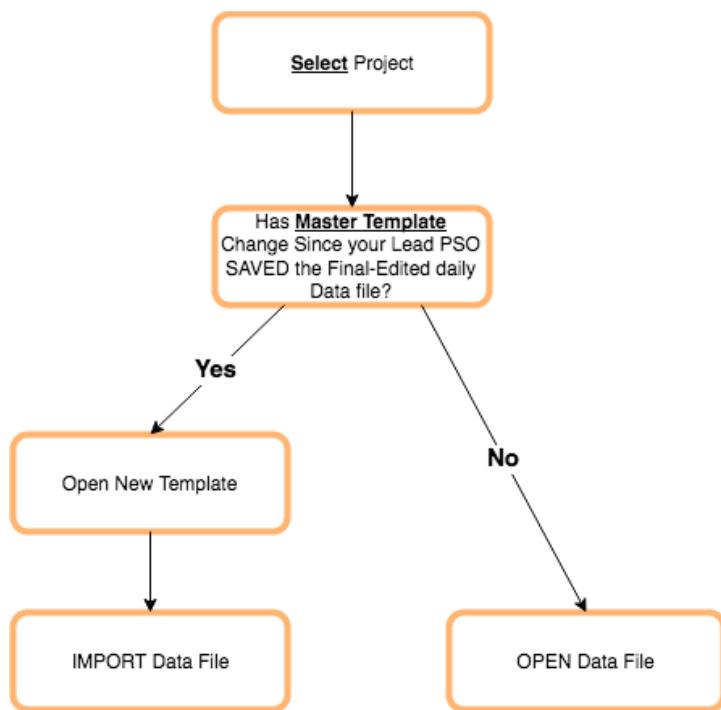




### OPEN TEMPLATE & IMPORT DATA FILE

If the Mysticetus template has changed since a file was created or this is your first-time running analysis, you must import the Mysticetus file into the most current Mysticetus template (because it has the most current definitions and GIS tools – the old file, from the old template does not contain these things).

1. Use Data > Import > From other Mysticetus file(s) to locate your file in the Edits directory.
2. Select your Mysticetus file and **Open**.



### OPEN THE DATA FILE

1. Go to the Mysticetus main menu to retrieve the final data file:

Red Ball -> **Data** -> **Open Mysticetus File**



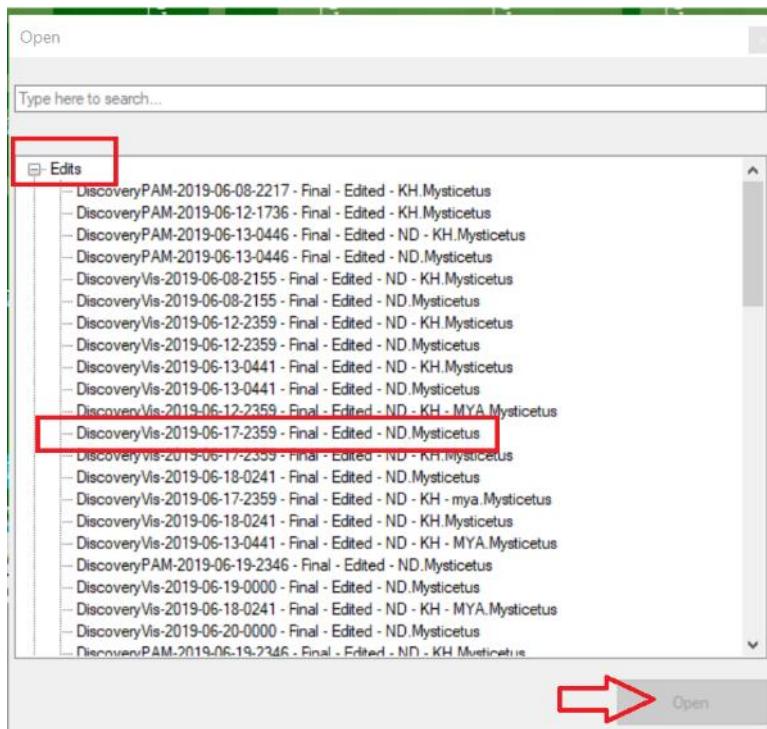
## Mysticetus – Project Manager Operations Guide.



Navigate to “EDITS” and select the Mysticetus file marked “FINAL-edited-{Lead PSO’s Initials}.” This is a manual procedure to indicate the stage the data files are in. Note: There could be times this is not accurate – if in doubt, check with your Lead PSO for the final data file for the day and correct the naming convention during your data file save.

For example: DiscoveryVIS-2019-06-17-2359-Final-Edited-ND.Mysticetus

Click “Open”



Perform the QA/QC effort.



## Mysticetus – Project Manager Operations Guide.

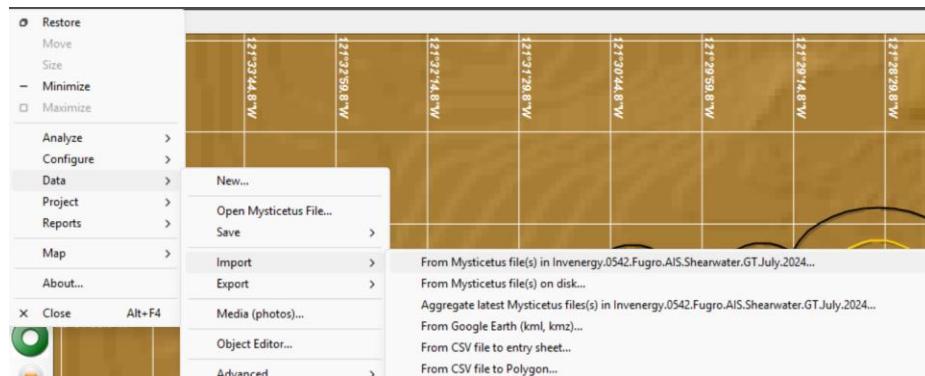
### COMBINING MULTIPLE FINAL SAVE DATA FILES

The most common reason for merging two (or more) Final Save data files is the case where the PSO team shut down Mysticetus with a final save then restarted it on the same data collection day creating in a second final save for a given UTC Day.

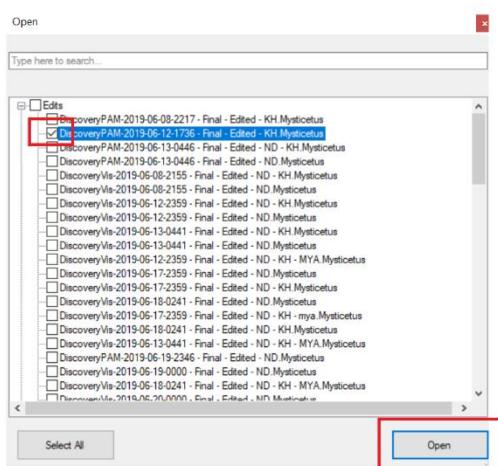
Another, less frequent, example is when PAM data collection is underway in conjunction with Visual sighting work – resulting in two different final save data files being created which then need to be merged for each data collection day by the project manager.

Either example these daily files need to be merged as part of the QA/QC process then saved as an edited file as discussed in this document.

1. Open the daily Visual file final saves. These files are typically named with the vessel name and "Vis" appended (e.g., *VesselNameVis-date-final*). These are the final save data files.



The **Open** dialog box appears.



Select the files to combine. Click **Open**. On the next screen Select **IMPORT**. Accept the default settings in this dialog box. There are times where you might want to add filename to sighting IDs to manage potential duplicate sightings IDs. This scenario is rare, but it can happen.



## Mysticetus – Project Manager Operations Guide.

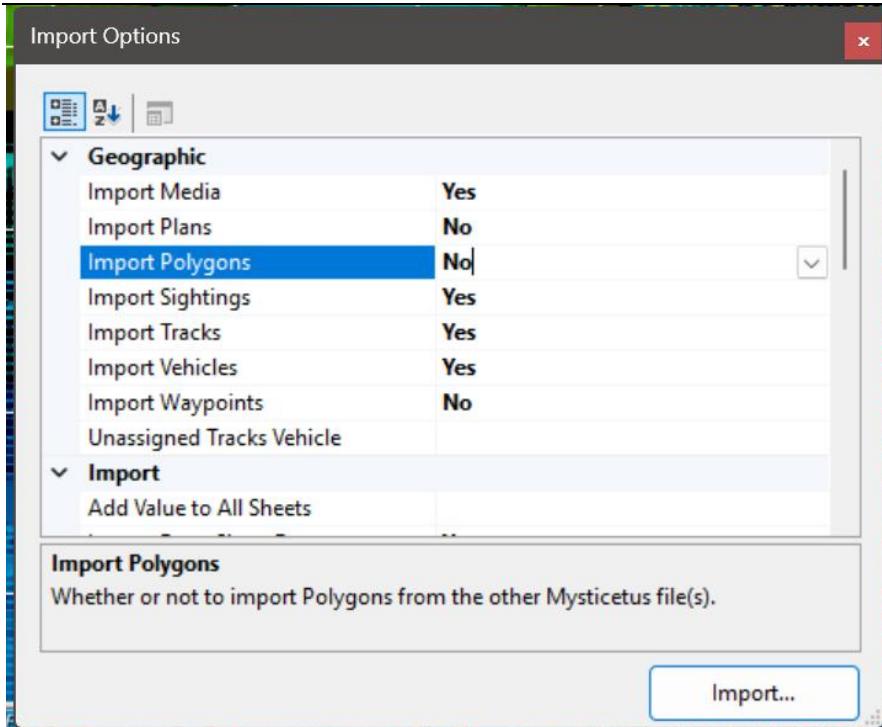


Figure 23 Import Options, stay with the default settings.

In the case of where PAM and visual effort data are collected separately, typical in this case, you will need to integrate PAM with visual Effort data files, you will need merge the files then to "recalculate the column.

- a) Mouse over the column
- b) Right click your mouse
- c) Select Recalculate formulas for Column.
- d) Repeat this for all columns that are auto filled and are missing data.

DMA Status	Vessel Activity	Source Freq	GPS Pos	Water Depth	Speed	Course
			Recalculate Formulas for Column	NaN	0 kts	0°
			Delete Rows Containing	NaN	0 kts	0°
			Delete Rows NOT Containing	0 kts	0°	
			43°40'34.0"N 65°26'42.5"W	0 kts	0°	
			43°40'34.0"N 65°26'42.5"W	0 kts	0°	
			43°40'34.0"N 65°26'42.5"W	0 kts	0°	
			43°40'34.0"N 65°26'42.5"W	0 kts	0°	

Some of the data values are referenced from the Visual Effort tab. When you combined the two data files; need to "recalculate" the formula for the column. Mouse over the column header -> Right Click your mouse and select recalculate formulas for column

Once the file merge is completed the QA/QC procedure can be followed.



# QA/QC PROCEDURES AND PM SIGN OFF

## INTRODUCTION

Data flow from daily, ongoing collection to final project manager (PM) sign off is designed to address the quality assurance and quality control procedures (QA/QC) that are increasingly common in the energy industry today. These processes are designed to address regulatory requirements and have become critical to addressing the terms of development permits common today.

Data flow, in summary, works along these lines:

**Active data collection -> Final end of day save -> lead PSO QA/QC -> PM QA/QC -> PM Sign Off**

Once the above tasks are completed the PM then must record any take events discussed below.

## PM QA/QC PROCEDURES

Data Procedures and checks are project specific. As the project manager, ***you are looking for information or data errors that do not make sense.*** Your expertise in the area and the project requirements is a critical step.

## HIGH LEVEL ANALYSIS CHECKPOINTS

1. Review of GIS Analysis tools for issues

Review data fields per the data dictionary and QAQC checks.

- a) Review all the fields, look for blank cells, ensure all data fields are complete. If not, put an explanation in the notes (example: equipment down, did not write down, etc.)

Below are a few common items to check.

- b) Read notes, fix typos.
- c) Review the sighting records and attach any photos from the day to the proper sighting.
- d) Make sure the “Night” box is checked for all nighttime hours.
- e) Make sure DP thrusters are checked for any time that the thrusters are on, or the correct equipment is noted as operating.
- f) Look for inconsistent times.
- g) Ensure that for every Mitigation request there is a Mitigation response.



## Mysticetus – Project Manager Operations Guide.

- h) Ensure sighting reports have the appropriate and correct data.
- i) Check that bearings and headings are entered correctly.
- j) Check that reticles and distances are appropriate.
- k) If time looks off, note that Mysticetus uses whatever time the laptop is set to run. For example, if times in Mysticetus need to be in UTC, set the laptop's time to UTC.

Review, looking for anomalies. Check for blanks; go back to the Mysticetus user interface and fill in any blank cells there.

Look at the map to check for odd vessel track lines.

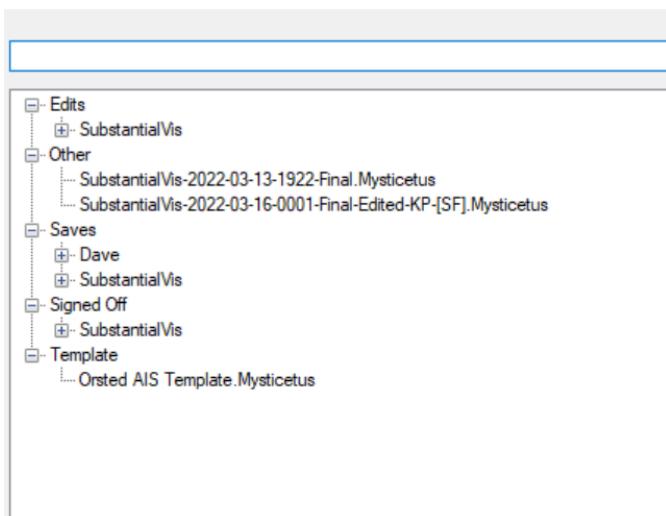
**Remember:** For any changes created by the PM or data analyst – a note must be added in the notes field with your initials stating the change.

## SIGNING OFF DAILY DATA

For 2021 and beyond the project manager must sign off the daily data within 72 hours of that day. The process for doing this is to open the edited file for that day. The edited file is essentially the final QA/QC file created by the Lead PSO as part of their end of day work. This is not the final save, but the resulting, edited file from the final save.

There are multiple files in the capturing and validating data for a given collection day. **Saves**, **Edits**, and **Signed Off** are of interest here and discussed below.

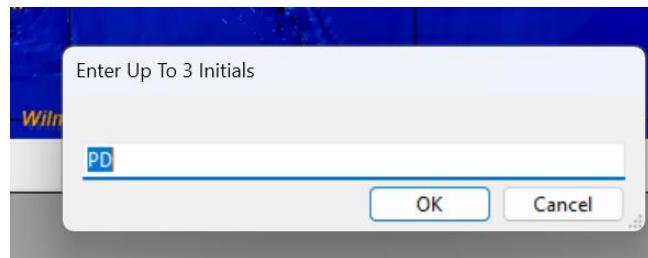
Open





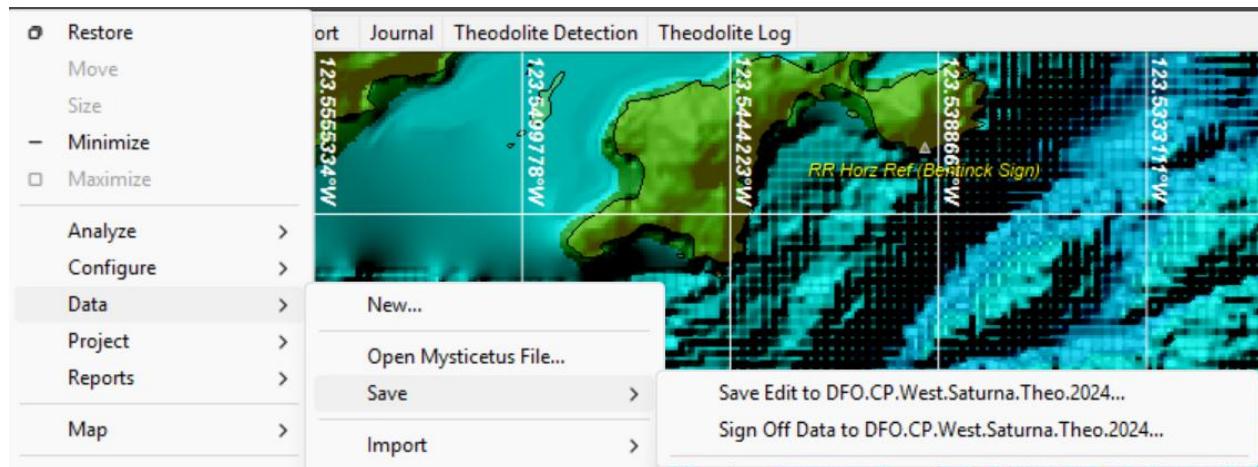
## Mysticetus – Project Manager Operations Guide.

**Saves** – this is where incremental saves and the final saves are stored. The Lead PSO will edit/validate the final save then they will ‘Save Edit to...’. Then enter your initials when prompted.



**Edits** – Is where the PSO’s QA/QC’d edited file is stored.

Mysticetus will complete the file name according to the defined convention while including the editor’s initials in the saved file name.



To sign off data the PM will **open the Final-Edited file**. Some things to check for:

- If the Final-Edited file is missing for the day of concern, reach out to your Lead PSO to finish this task or do it yourself. It really should be done by the lead PSO! **Note:** The absence of an expected file may be due to internet transmission delays on the boat.
- If there are multiple Final-Edited files, then open the latest save. To determine this, it will have multiple sets of initials. Open the file with the highest sets of initials – typically there is only one file.

## FINAL DATA SIGN OFF

Data sign off data is the process of providing the final review of daily data collected by your PSO team. The goal is to perform a final search of the Lead PSO’s edited data for omissions, corrections (such as verifying indicated takes), ensuring proper journal records are taken, etc.



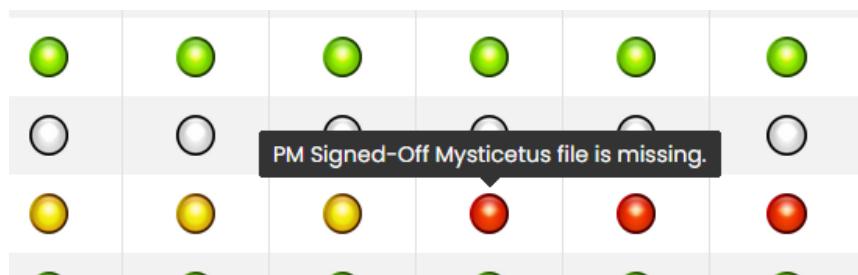
## ONCLOUD DATA FLOW DASHBOARD

Mysticetus OnCloud maintains a dashboard that tracks compliance with the data submission required to marshal customer data to OnCloud. Project managers will have access to this dashboard to monitor for completion of major data marshaling tasks.

Vehicle	Feb 13	Feb 12	Feb 11	Feb 10	Feb 09
[-] [REDACTED]	[Red]	[Yellow]	[Yellow]	[Yellow]	[Green]
└ Data Entry Complete	[Grey]	[Green]	[Green]	[Green]	[Green]
└ Daily Report Generated	[Grey]	[Green]	[Green]	[Green]	[Green]
└ PM Exposure Confirmation (IHA)	[Grey]	[White]	[White]	[White]	[Green]
└ PM Sign Off	[Grey]	[Yellow]	[Yellow]	[Yellow]	[Green]
└ GPS Coverage	[Grey]	[Green]	[Green]	[Green]	[Green]
└ GPX Upload	[Grey]	[Green]	[Green]	[Green]	[Green]

Figure 24 Mysticetus data flow dashboard.

Typical dashboard appearance of a live project and a Mysticetus test project. The colored balls give a status immediately. Green is good, yellow is pending, red needs follow up by the project manager.



Hovering mouse cursor over the concerned watchdog gives status.

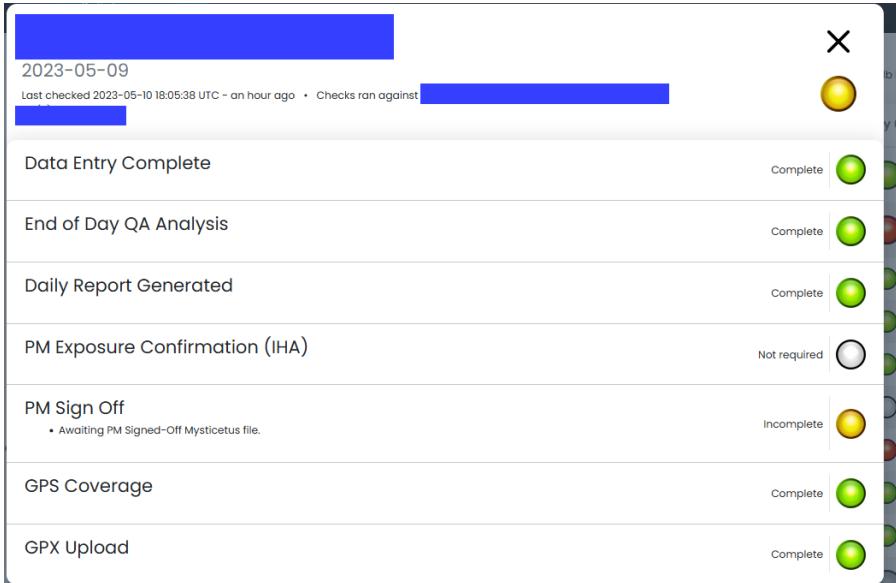


## Mysticetus – Project Manager Operations Guide.

### Legend

● - Watchdog Ok   ● - Watchdog(s) Concerned   ● - Data Pending   ● - No Data Collected   ● - Not Required

A legend is provided to define the meaning of the respective colored balls aka “Gumballs.”



Clicking on a gumball gives an expanded view of the day's status and the last filename that was processed by Mysticetus OnCloud.

### Defining the checks in OnCloud –

**Data Entry Complete** – This verifies a final, end of day save has been created by the PSO team.

**End of Day QA Analysis** - This verifies the lead PSO has run the Mysticetus Analysis tools to look for obvious mistakes in the data and that the lead PSO has reviewed the final save of the day then saved it off an ‘edited’ file.

**Daily report Generated** – This verifies that the lead PSO or project manager has run the daily report in Mysticetus OnCloud.

**PM Exposure Confirmation** – Verifies that the OnCloud IHA take tracker also referred to as the IHA suspected take tracker table is up to date for the given day.

**PM Sign Off** – Refers to the project manager reviewing the edited file for final corrections and has saved it as a ‘signed off’ file. This is the data the Offshore wind developer will hand off to the appropriate regulatory agencies as required by permit.

**GPS coverage** – looks for obvious holes in the GPS track. Gaps larger than about two minutes will require fix up by the project manager.



## Mysticetus – Project Manager Operations Guide.

**GPX upload** – Verifies the daily upload of the backup GPS data, with a GPX file extension, has been uploaded by the lead PSO. The GPX file is used by the project manager to fix any gaps in the collected data. This is a critical backup to data value.

# APPENDIX – COMMON ERRORS AND CHECKLISTS

## COMMON ERRORS

The following section is for common and reoccurring errors in the data files.

***Ensure that you document all changes you make to the file by adding your initials and an explanation in the Notes field.***

## SETTING TRACK LINE DEFINITIONS

**Note:** For commercial projects that Mysticetus is directly supporting the track lines will be defined by Mysticetus in the grandparent of the project hierarchy.

**Purpose of Track Lines:** Track lines visually represent a vessel's activity on the Mysticetus map, providing a clear record of its activities within a project. They are essential for:

- **Understanding Vessel Activity:** Provides an at a glance visual of where the vessel has been and doing, aiding in understanding operational activity.
- **Data Quality Control:** Track lines can reveal data gaps or anomalies, such as the vessel appearing on land or exhibiting unusual movement patterns. These anomalies can indicate issues with the GPS data that must be corrected.
- **Effort Analysis:** Track lines are used in conjunction with effort data to define vessel activity within specific zones or during certain operational states.

### Track Line States and Colors:

- **Green:** Indicates the vessel is *on effort*, meaning it is actively engaged in the designated operational activity (e.g., visual observation, acoustic monitoring).
- **Red:** Indicates the vessel is either *off effort* or in an *undefined state*. A red track line during active operations signifies an undefined state that needs remedy.



## Mysticetus – Project Manager Operations Guide.



Figure 25 Red track lines must be fixed!

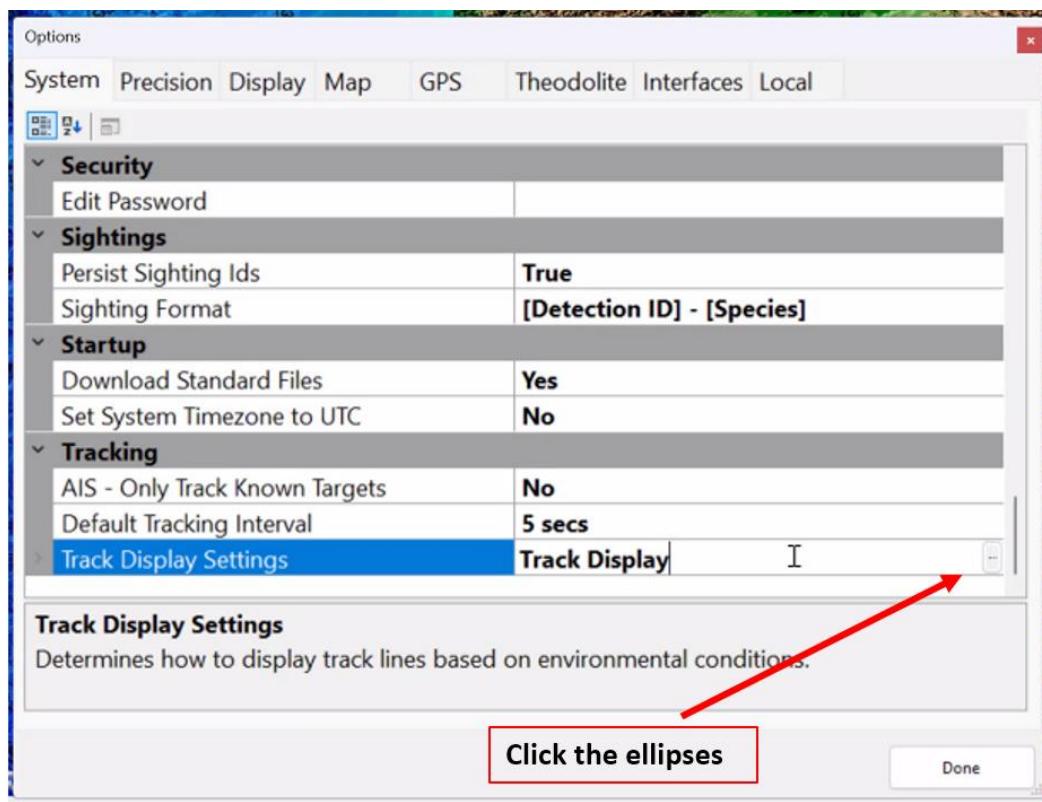


Figure 26 Setting track lines is found in Options System tab.



## Mysticetus – Project Manager Operations Guide.

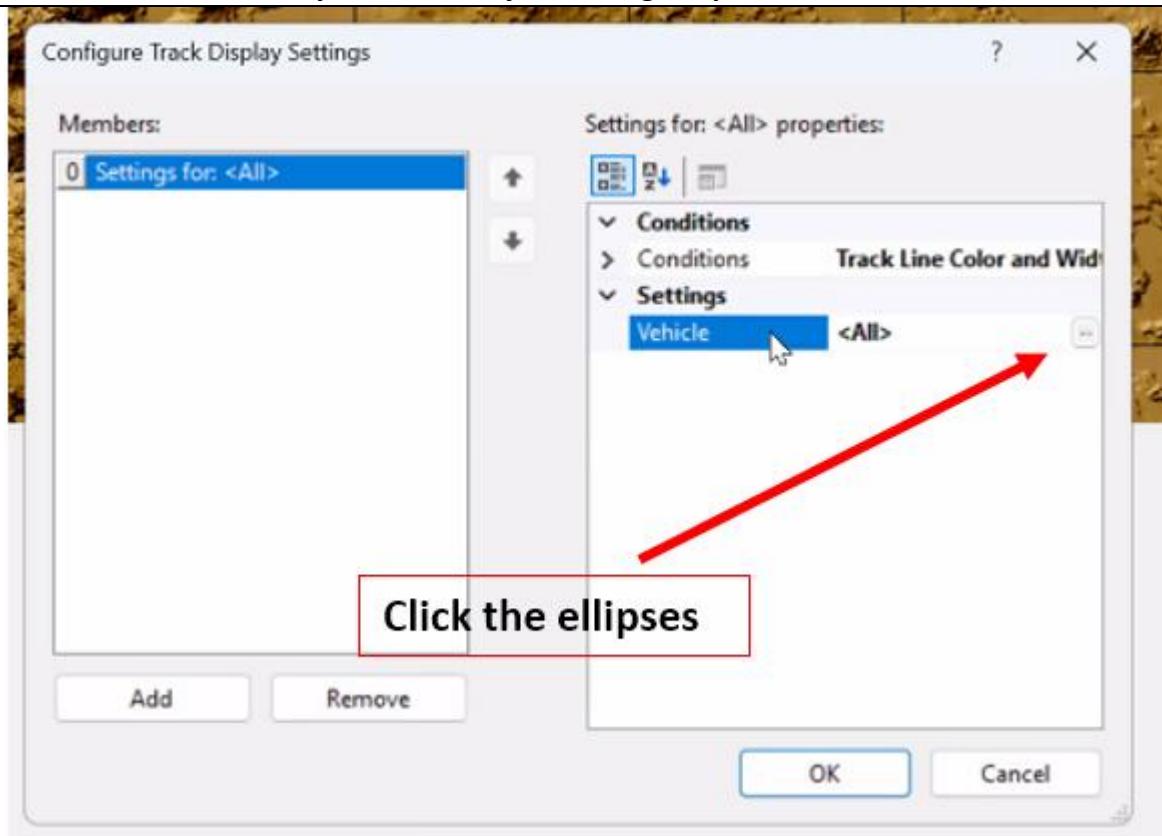


Figure 27 How to change vehicle to <All>

All comes from here after clicking ellipses to the right of Vehicle.

Using <All> sets track line definition for all ships for the parents. You can define individual ships, but this is not recommended.

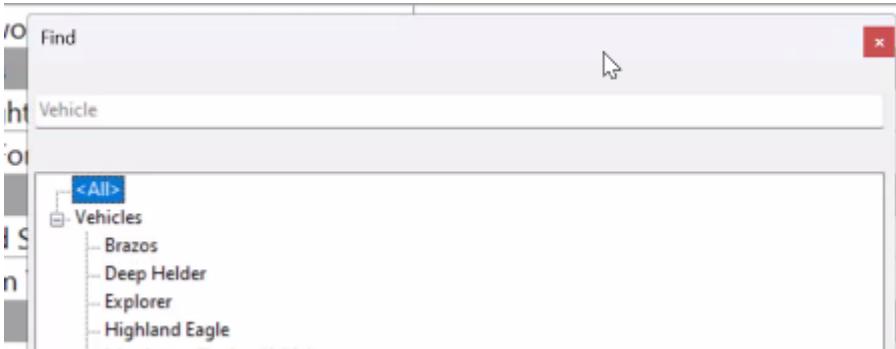


Figure 28 Highlight <All> then click 'Go'

Your next step is to verify and/or define all defined effort states in your template. There can be a lot or a few depending on how the template was set up by the template owner. This is done by clicking on the Conditions ellipses below.



## Mysticetus – Project Manager Operations Guide.

The screenshot shows the 'Configure Track Display Settings' dialog box overlaid on the main Project Manager interface. The dialog has a tree view on the right labeled 'Settings for: <All> properties'. A red arrow points to the ellipsis button next to 'Track Line Color and Width' under the 'Conditions' section. A red box highlights the text 'Click the ellipses'.

### Step 1 Click Add

The screenshot shows the 'Configure Track Display Conditions' dialog. On the left, there's a list of members: 'Visual Effort/Effort Type 1: NVD', 'Visual Effort/Effort Type 1: IR', 'Visual Effort/Effort Type 1: UE', 'Visual Effort/Effort Type 1: IR - Handheld', and 'Visual Effort/Effort Type 1: IR - Mounted'. A red box highlights the 'Add' button at the bottom left of the main dialog. On the right, there's a detailed view of 'Visual Effort/Effort Type 1: NVD properties' with a table showing settings like 'Color' (MediumSpringGreen), 'Condition' (NVD), 'Control Field' (Effort Type 1), and 'Width' (2). A red arrow points to the 'Add' button at the bottom left of this sub-dialog.



## Mysticetus – Project Manager Operations Guide.

Properties panel showing:

- Settings
- Sheet Name
- Track Control
  - Color: Transparent
  - Condition
  - Control Field
  - Width: 0

**Color**  
Color to set track segment when under the specified environmental conditions.

### Step 2 Set condition and Control Field.

Condition is the effort field such as UE or NVD or IR Camera, which is defined in your Visual effort variables. In this case we are setting UE. The Condition is very literal to how your template is setup. View your named list and use copy and paste commands.



## Mysticetus – Project Manager Operations Guide.

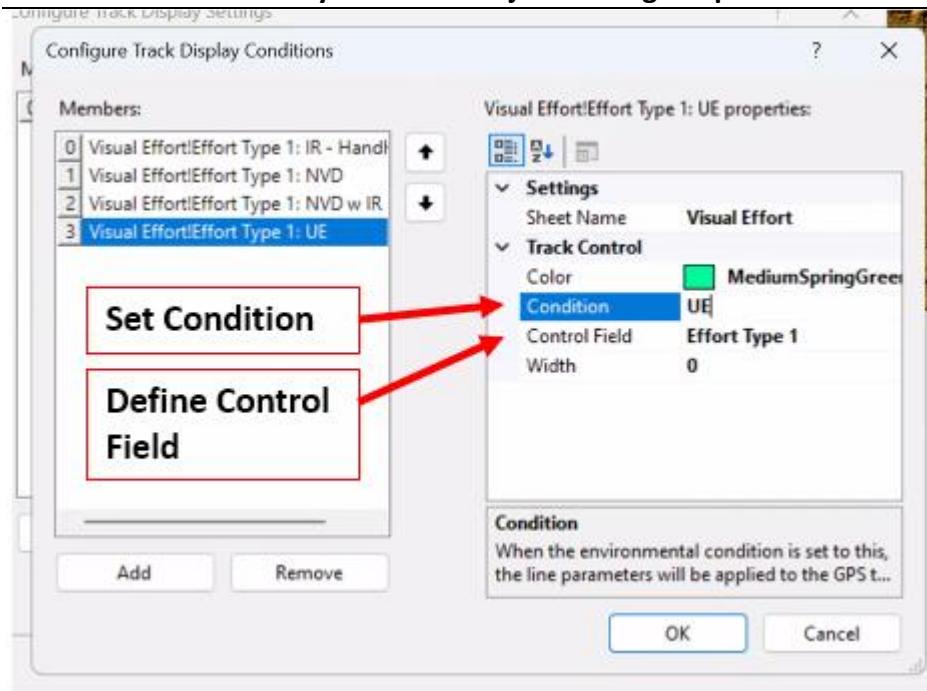


Figure 29 Think of this as the test against the control field.

“Effort Type 1” is the control field you have defined in your visual effort Entry Sheet. This test is literal. So, if Effort Type 1 is changed to Effort Types 1 (change to plural ‘s’) then you will need to update the control field in the configure track display conditions. We recommend using copy and paste for pasting in these names from the effort state as seen in the template effort type field.

**Step 3** change color by clicking ellipses to the right of color which will show the color picker UI.



## Mysticetus – Project Manager Operations Guide.

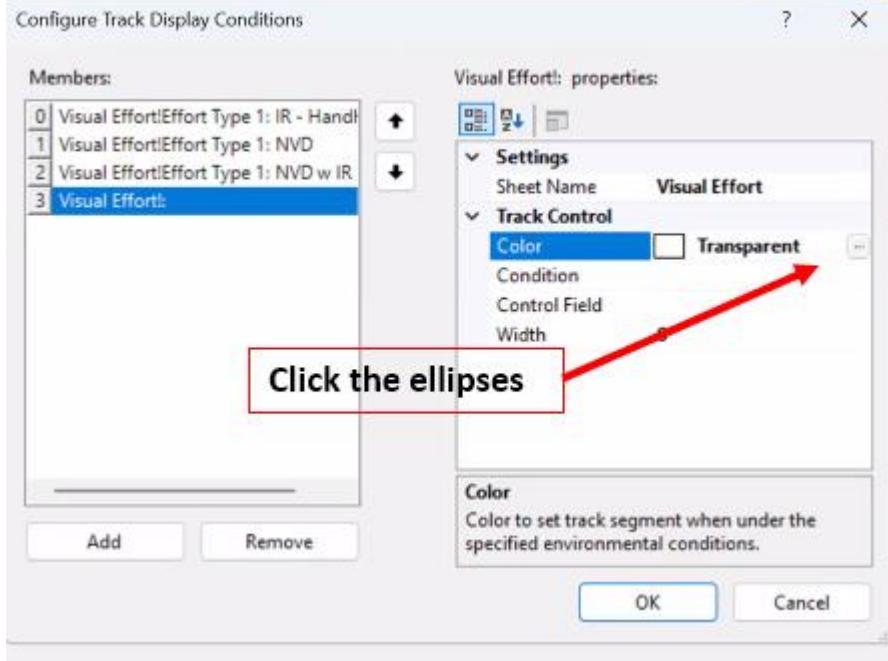


Figure 30 Click here to get to the color picker.

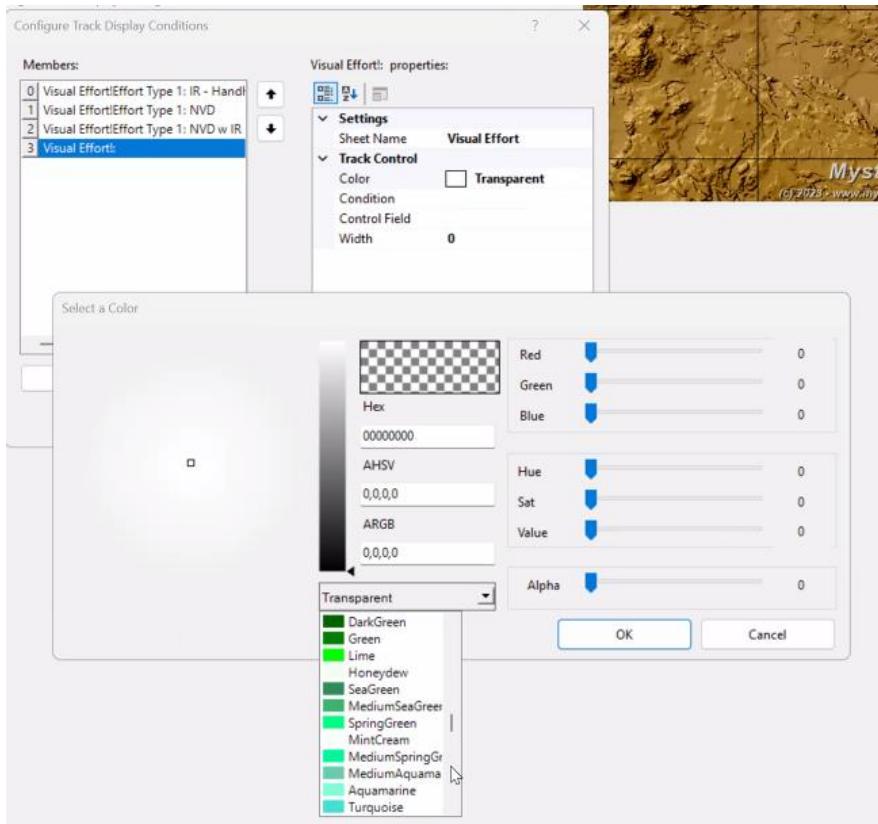


Figure 31 Selecting track line color.



## Mysticetus – Project Manager Operations Guide.

We use medium spring green. Select your color and click okay. Use the same color for all effort states unless there is specific need to have differentiation between states for visual auditing by your PSOs. The use of distinct colors is more commonly done in the research community.

**NOTE: Do not use Red for a track line color.**

**Step 5** Set (line) width to 2.

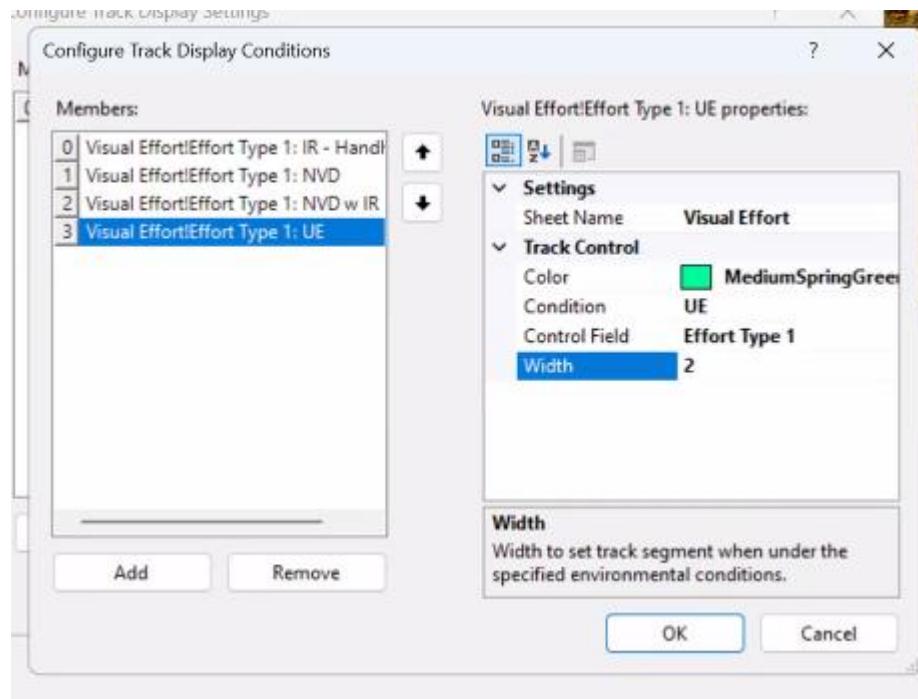


Figure 32 Set width of track lines.

Be very consistent with track colors.



## Mysticetus – Project Manager Operations Guide.

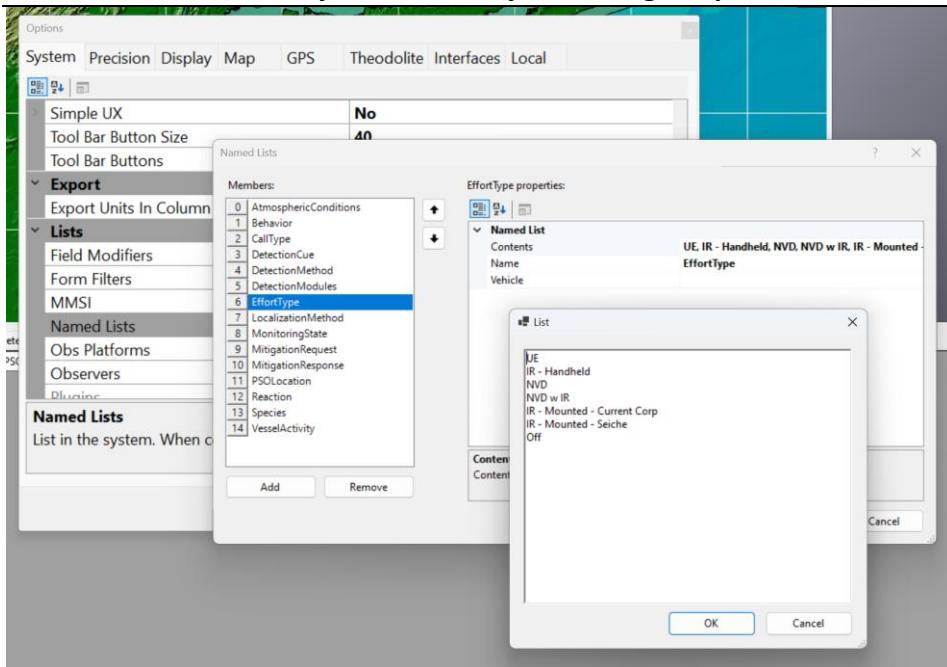


Figure 33 Named List of effort states.

Then save and deploy your template to all active projects.



Figure 34 Correct appearance of track lines.

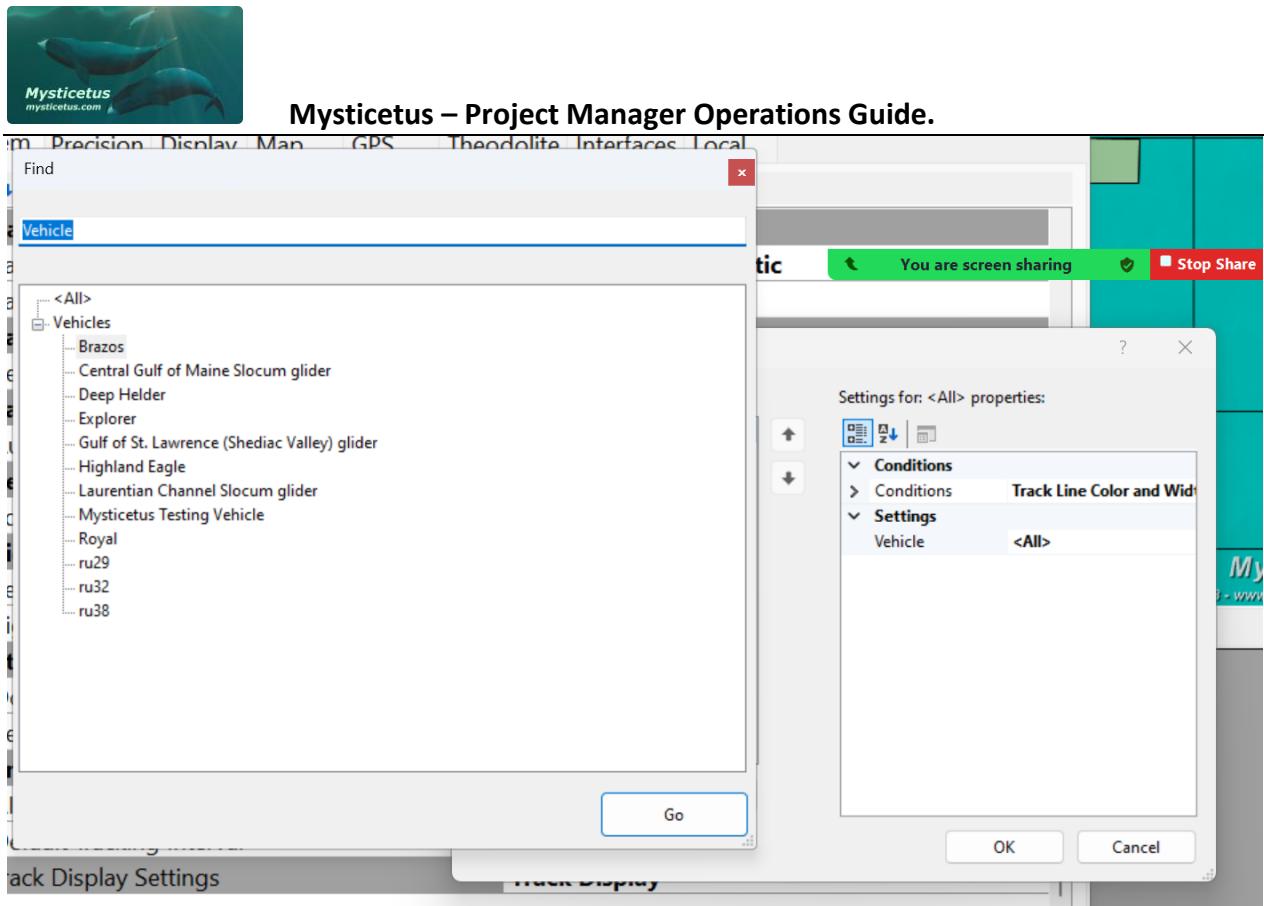
If you have older saves with red track lines you want to update load the final save or the edited file, whichever is the latest. This should be done before final signed off, but another signed off file can be created. Fix track line definitions and save the file appropriately. This should be caught and fixed prior to signing off the given day.



## Mysticetus – Project Manager Operations Guide.

The screenshot shows the Mysticetus Project Manager interface. The main window has a green header bar with the title "Mysticetus – Project Manager Operations Guide." Below the header is a toolbar with various icons. The main content area is titled "Options" and contains several sections: "Parent Project", "Safety", "Save", "Security", "Sightings", "Startup", "Tracking", and "Track Display Settings". The "Tracking" section is currently selected. A sub-menu titled "Track Display Settings" is open under "Tracking". Overlaid on the main window is a modal dialog box titled "Configure Track Display Settings". This dialog has two main sections: "Members:" on the left, which lists "Settings for: Brazos" (highlighted in blue), and "Settings for: Brazos properties:" on the right, which includes sections for "Conditions", "Conditions", and "Settings". Under "Settings", the "Vehicle" dropdown is set to "Brazos". At the bottom of the dialog are "OK" and "Cancel" buttons, and a "Done" button at the very bottom right.

And change vehicle to <All> by clicking on the all shown when you look at variables.



Then click go-> okay ->done. If you still see track lines that are red you have missed one.

## EFFORT TABS

### BLANK CELLS

Are there blank cells? All data fields must have a value. If your Lead PSO or yourself finds there is not a value that meets the situation, address with the overall Project management and Mysticetus teams.

If you have a blank cell that should auto-fill from another tab, mouse over the column heading and select **Recalculate formulas for column**. This command prompts Mysticetus to get that data and add it here.

### OFF EFFORT ROW

Mysticetus adds an off-effort row with the final save marking the end of that data collection day. If this row has been inadvertently deleted or one is missing during the day, then one needs to be added appropriately. This row signals Mysticetus to stop tracking time and distance. An *off-effort* row is a data row that has **Visual Effort** or whatever it might be referred to such **Effort Type 1** (depending on template design) set to **Off**.



## Mysticetus – Project Manager Operations Guide.

PAM Detection	PAM Effort	Visual Effort	Visual Sighting	Time	Night	PSO 1	PSO 2	Effort Type 1	Effort Type 2	Vessel Activity	Source Freq	PCPT	DP Thrusters	Sparker	SBP	USBL		
				2019-06-21 19:59:08.5 UTC	<input checked="" type="checkbox"/>	Matthew Flory	Ashley Schrader	UE		Equipment Test	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				2019-06-21 19:55:02.9 UTC	<input checked="" type="checkbox"/>	Neil Duffy	Ashley Schrader	UE		Equipment Test	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				2019-06-21 19:55:02.9 UTC	<input checked="" type="checkbox"/>	Tracy Petroske	Ashley Schrader	UE		Equipment Test	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				2019-06-21 20:59:14.7 UTC	<input checked="" type="checkbox"/>	Tracy Petroske	Ashley Schrader	UE		Equipment Test	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				2019-06-21 21:43:56.5 UTC	<input checked="" type="checkbox"/>	Tracy Petroske	Ashley Schrader	UE		Equipment Test	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				2019-06-21 21:43:56.5 UTC	<input checked="" type="checkbox"/>	Tracy Petroske	Ashley Schrader	UE		Relieving equipment	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				2019-06-21 21:43:56.5 UTC	<input checked="" type="checkbox"/>	Tracy Petroske	Ashley Schrader	UE		Equipment Test	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				2019-06-21 22:30:46.5 UTC	<input checked="" type="checkbox"/>	Tracy Petroske	Neil Duffy	UE		Deploying equipment	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				2019-06-21 22:30:46.5 UTC	<input checked="" type="checkbox"/>	Tracy Petroske	Neil Duffy	UE		Transit	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				2019-06-21 22:57:56.0 UTC	<input checked="" type="checkbox"/>	Tracy Petroske	Ashley Schrader	UE		Transit	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
				67	<input checked="" type="checkbox"/>	2019-06-21 23:59:12.0 UTC		Tracy Petroske	Ashley Schrader	Off	Off	Equipment Test	Below 200 kHz	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



For 24-hour surveys, Mysticetus requires a final file save to happen at midnight UTC or the end of the working day (UTC). This record is created when the Lead PSO or other PSO commits their final save.

The most common QAQC correction has been to add a missing *off effort* row. Ensure there are no blank fields in the *off-effort* row. This problem has been minimized recently. To fix a missing off effort row perform the below.

1. Select the Visual Effort tab.

Press Shift+Alt+Plus to add a new row and copy down all fields.

Set the time stamp correctly.

Change the Visual (or PAM) **Effort Type 1** to **Off**.

In the **Note** field, enter something like: "DS: Added off effort row."

### NIGHT

Ensure **Night** is checked between the hours of nautical twilight after sunset and nautical twilight before sunrise. Nautical twilight changes each day and differs by location. If the time stamps and the **Night** checkbox look *off*, use a sunrise/sunset calendar to check the times for that day and location. <https://sunrisesunset.com/predefined.asp> is a useful resource.

## VESSEL ACTIVITY AND REGULATED SOURCES FIELDS

Ensure **Vessel Activity**, **Mitigation Source Status** (or **Sound Source Status**), and checkboxes for specific equipment make sense as a group. Additionally, there may be a field for **Source Frequency**. Notes for each effort row may indicate which equipment is active.



## Mysticetus – Project Manager Operations Guide.

These fields are important as a group for the final report because we sort and restrict data based on these settings to provide charts, tables, and maps to show effort and sightings while distinct types of equipment are running.

## SIGHTING TABS

Common errors include:

1. Are sighting id numbers sequential? Do they contain simply 'V' number (e.g., "V32") instead of "My Awesome Visual Sighting 32" or "V32.1"? (PSOs sometimes think they are being creative, and instead are breaking downstream analysis)

Are there extra characters in the sighting id? For example, change from VIS91 to V91.

Are there any blank fields? (GIS Analysis is a huge help here – you do not have to scan every field to find things).

A **Mitigation Request** field should have a corresponding **Mitigation Response** field.

**Tip:** To see both “halves” of a row at the same time, select the sighting tab in both the top and bottom pane of the Mysticetus screen. In the bottom pane, scroll to the far end of the row, to display the “last half” of the record.

## MAPS

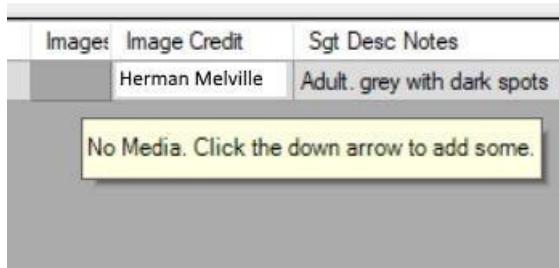
- Are the track lines the correct color?
  - On Effort = Green
  - Off Effort = Red
- Are there gaps in the line? (surveys started before July 2019 may have short gaps during lead PSO editing)
- Are there marine animals on land?

**Tip:** If your map appears empty, select the time stamp on any tab. Right-click to select **Position Vehicle at This Time**. Then select the **Toggle Follow Vehicle** control. The map will display your vessel's position at that time.



## MISSING MEDIA

If there is a name in the **Image Credit** field mouse over the **Images** cell icon and ensure the media is attached. If not, this message appears:



1. Locate the missing media by opening Mysticetus saves from earlier in the shift. Use the time stamp of the sighting as a guide.
2. Click in the **Images** cell. The **Media** dialog box appears.
3. Select the image(s) and use the **Save** button to save them to your local computer.
4. Re-open the edited Mysticetus file.
5. Click in the **Images** cell. The **Media** dialog box appears.

Use the **Add** button to add the graphics from your local directory to the sighting record.

Like all missing data, this is a teachable moment for your lead PSO. They should be doing this on the boat.

## MISSING TRACKS

If you see **Warning: No GPS Track ...** in an GIS Analysis Tools -> Effort Report or the report indicates a section of tracks is missing, there is a gap in the track details.

Rft	Overall Totals
	Warning: No GPS Track found for vehicle '(all)' at effort times: 2019-06-27 04:00:40.7 to 2019-06-28 04:00:15.6 UTC
Overall Le	12739.1
1	2000.64
2	7093.23
3	1773.77
4	1871.45
5	
Overall Tir	23:59:35
1	3:02:46
2	12:07:00
3	4:28:52
4	4:20:57

Figure 35 GIS analysis showing GPS track gaps

The data analyst team needs to quantify and summarize effort for the Final Report. If there is a gap in the GPS track for that day, it needs to be addressed. A gap in the track is common at the beginning of the day during a 24 hour a day



## Mysticetus – Project Manager Operations Guide.

survey when the PSO restarts Mysticetus. This gap is usually negligible. If the gap is significant (more than 15 minutes), you need to repair that gap. Mysticetus attempts to prevent these gaps, we have found these safe guards can be defeated at times.

A	B	C	D	E
1	Bfr	Overall Totals		
2	GPS Track coverage of effort: Complete			
3	2019-06-21 00:00:29.6 to 2019-06-21 23:59:12.0 UTC			
4				
5	Overall Le	164994.1		
5	2	38853.27		
7	3	35621.22		
3	4	49163.82		
3	5	41355.81		
0				
1	Overall Tir	23:58:42		
2	2	5:26:03		
3	3	6:07:55		
4	4	7:56:21		
5	5	4:28:24		
6				

Figure 36 GIS analysis showing proper GPS coverage.

## PATCHING GPS TRACK GAPS USING GPX FILE

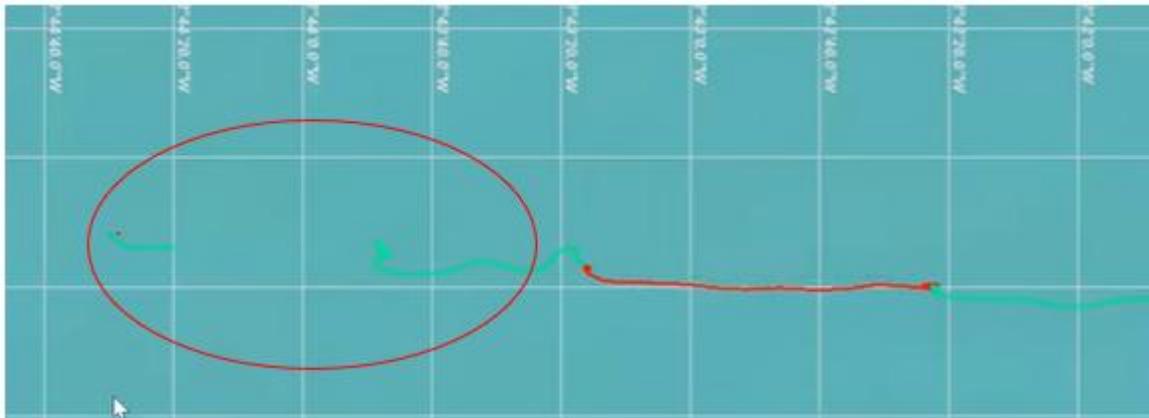


Figure 37 Track gap is circled. Red track is an undefined effort state discussed in this document.

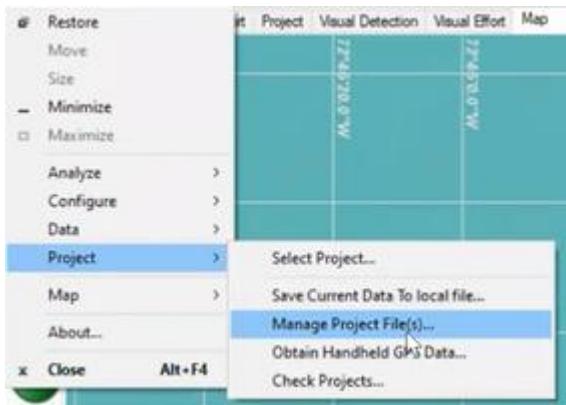
Things happen with sky coverage for the USB (hockey puck) GPS where gaps of track data are sufficiently large that the gap(s) need to be patched using the GPX file. This process is straight forward, but sufficiently complex that we recommend the project manager doing this work instead of the typically fatigued Lead PSO during their QA/QC process.

- 1) Set your PC to the time zone in which your project is operating – UTC always.
- 2) Open Mysticetus in Editor mode and open the edit file for the day where the gap has occurred.

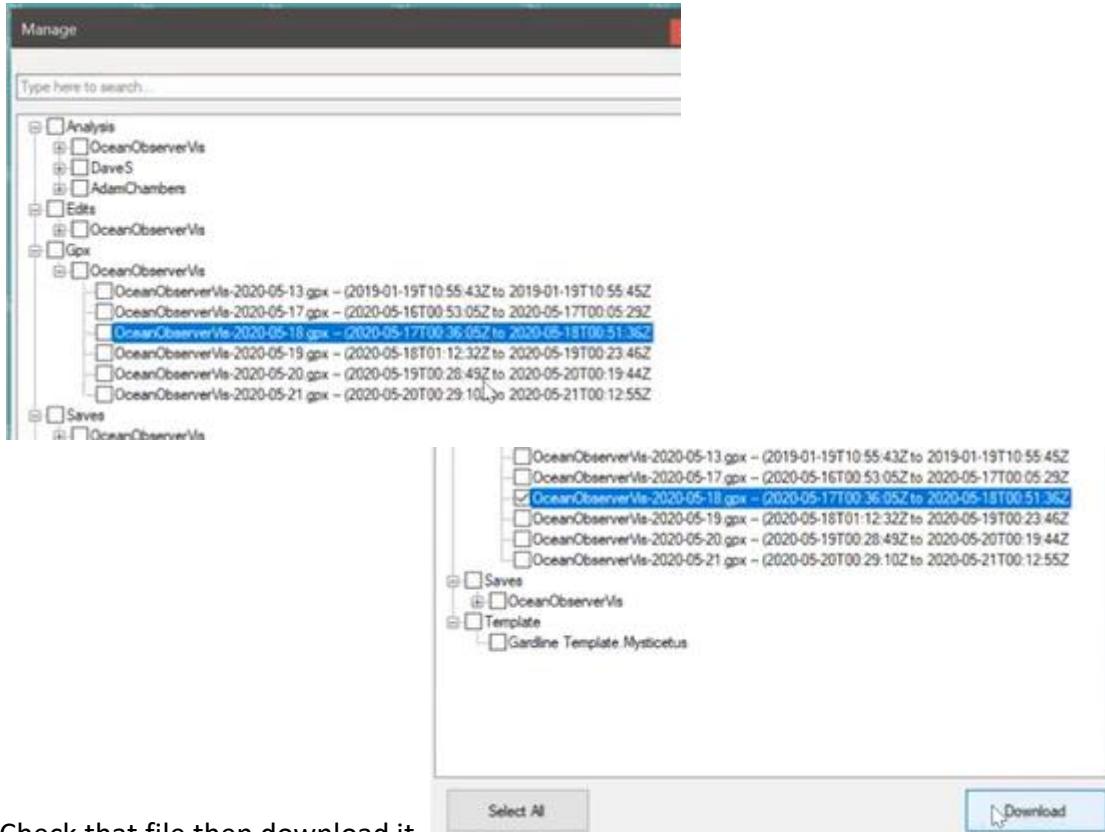


## Mysticetus – Project Manager Operations Guide.

- 3) Go into project->manage project files to access the day's GPX file



- 4) Select the GPX file for the same day.



- 5) Check that file then download it.
- 6) This puts the GPX file in your downloads folder on your computer.
- 7) You then need to understand where the gap first starts. Start the object editor so you can view the recorded track points of that day. You will see multiple vessel tracks for that day. In this example there are three tracks or to say it as two breaks in the vessel track data of interest. NOTE: gaps less than two minutes can be generally ignored unless something comes up requiring it to be patched too.



## Mysticetus – Project Manager Operations Guide.

The screenshot shows the 'Object Editor' window with a tree view. Under 'Vehicles', there are several entries: Horizon Geobay, Kommandor Sutan, Mysticetus Testing Vehicle, Ocean Observer, Ocean Researcher, and sibo18-20190717T1517. Under 'Tracks of Vehicles', there is one entry: 'Track (Ocean Observer) - Started at 2020-05-17 01:03:49.4 UTC'. This track has three recorded points.

- 8) The gap starts at the final track point for that record. Record that time stamp somehow such as using notepad or whatever works best for you.

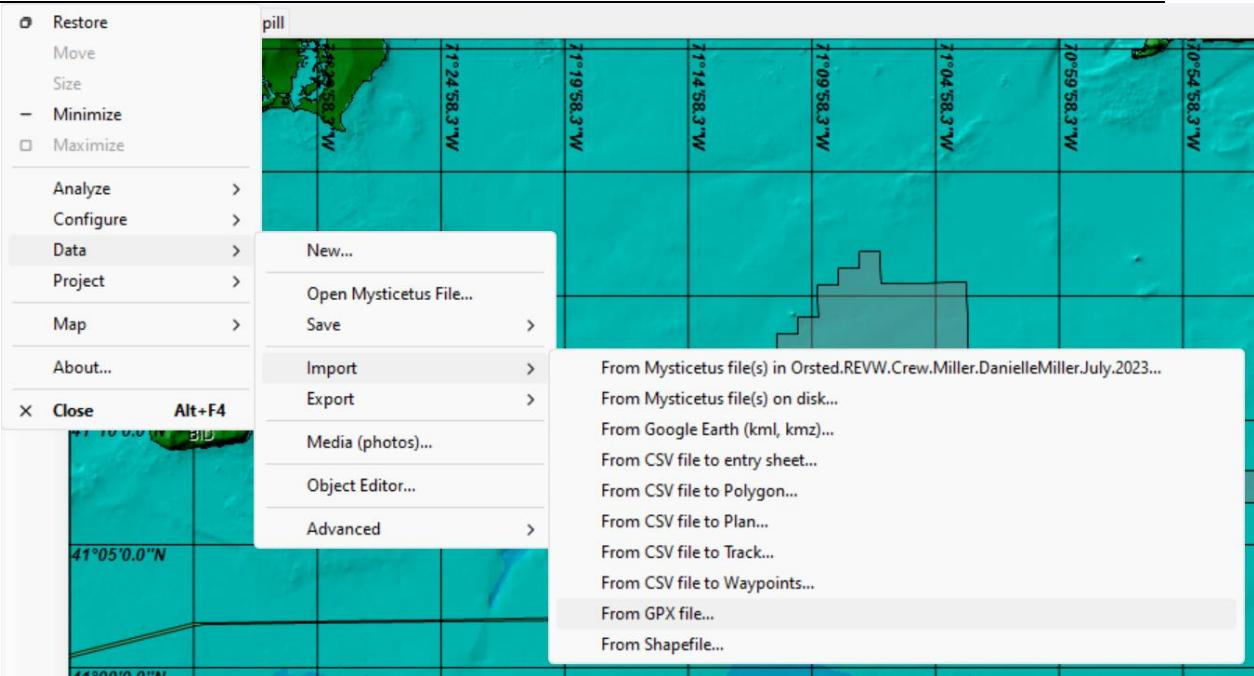
A screenshot of a data grid application showing a list of track records. The columns are labeled: Time, Location, Altitude, SOG, COG, Water Temp, and Water Depth. The data shows a series of points starting at 2020-05-17 01:22:26.1 UTC and ending at 2020-05-17 01:24:20.5 UTC. The 'Time' column shows the timestamp, 'Location' shows coordinates, 'Altitude' shows height, 'SOG' shows speed over ground, 'COG' shows course over ground, 'Water Temp' shows water temperature, and 'Water Depth' shows water depth. The last row, which is highlighted in blue, represents the final recorded point before the gap.

	Time	Location	Altitude	SOG	COG	Water Temp	Water Depth
154	2020-05-17 01:22:26.1 UTC	40°42'26.1" S	4.1 m	1.6 kts	095.5° T	N/A	N/A
155	2020-05-17 01:22:30.4 UTC	40°42'26.1" S	5.4 m	2 kts	097.7° T	N/A	N/A
156	2020-05-17 01:22:35.5 UTC	40°42'26.1" S	5.5 m	2.3 kts	097.6° T	N/A	N/A
157	2020-05-17 01:22:40.5 UTC	40°42'26.1" S	6.5 m	2.6 kts	093.8° T	N/A	N/A
158	2020-05-17 01:22:45.5 UTC	40°42'26.0" S	6.6 m	2.6 kts	091.5° T	N/A	N/A
159	2020-05-17 01:22:50.5 UTC	40°42'26.0" S	8 m	2.5 kts	089.2° T	N/A	N/A
160	2020-05-17 01:22:55.5 UTC	40°42'26.0" S	9.1 m	2.6 kts	087.3° T	N/A	N/A
161	2020-05-17 01:23:00.5 UTC	40°42'26.0" S	9.8 m	2.6 kts	091.5° T	N/A	N/A
162	2020-05-17 01:23:05.5 UTC	40°42'26.0" S	10.4 m	2.7 kts	089.9° T	N/A	N/A
163	2020-05-17 01:23:10.5 UTC	40°42'26.1" S	11.2 m	2.7 kts	089.6° T	N/A	N/A
164	2020-05-17 01:23:15.5 UTC	40°42'26.1" S	11.9 m	2.9 kts	085.9° T	N/A	N/A
165	2020-05-17 01:23:20.5 UTC	40°42'26.1" S	12.8 m	2.3 kts	082.8° T	N/A	N/A
166	2020-05-17 01:23:25.5 UTC	40°42'26.1" S	14.1 m	2.4 kts	088.1° T	N/A	N/A
167	2020-05-17 01:23:30.5 UTC	40°42'26.1" S	13.9 m	2.9 kts	086.9° T	N/A	N/A
168	2020-05-17 01:23:35.5 UTC	40°42'26.1" S	14.6 m	2.8 kts	080.1° T	N/A	N/A
169	2020-05-17 01:23:40.5 UTC	40°42'26.1" S	15.3 m	2.3 kts	088.3° T	N/A	N/A
170	2020-05-17 01:23:45.5 UTC	40°42'26.1" S	15.6 m	2.7 kts	094.9° T	N/A	N/A
171	2020-05-17 01:23:50.5 UTC	40°42'26.1" S	15.7 m	3.3 kts	082.8° T	N/A	N/A
172	2020-05-17 01:23:55.5 UTC	40°42'26.1" S	16.1 m	2.7 kts	084.1° T	N/A	N/A
173	2020-05-17 01:24:00.5 UTC	40°42'26.1" S	15.4 m	2.7 kts	087.8° T	N/A	N/A
174	2020-05-17 01:24:05.5 UTC	40°42'26.1" S	15.9 m	2.9 kts	080.9° T	N/A	N/A
175	2020-05-17 01:24:10.5 UTC	40°42'26.1" S	16.9 m	2.5 kts	087.1° T	N/A	N/A
176	2020-05-17 01:24:15.5 UTC	40°42'26.2" S	17.8 m	2.6 kts	082.3° T	N/A	N/A
177	2020-05-17 01:24:20.5 UTC	40°42'26.2" S	15.8 m	2.6 kts	090.8° T	N/A	N/A

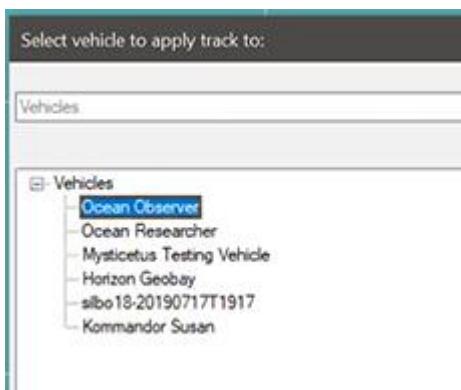
- 9) Then capture the time of the first data point in the next track record in the same fashion which represents the start of when track data was successfully recorded again.
- 10) Import the GPX file you downloaded per above guidance. It will be in the downloads directory.



## Mysticetus – Project Manager Operations Guide.



- 11) Then tell Mysticetus which vessel to apply the GPX file too via the “Select vehicle to apply track to” dialog. Select the correct vehicle from the list and click “Go” in the lower right hand corner of the dialog box.

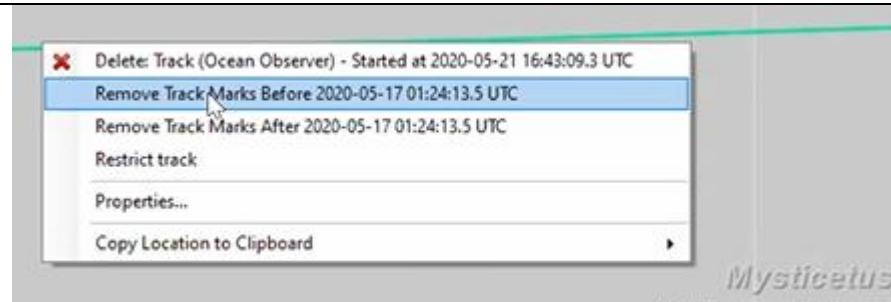


- 12) This will result in a lot of duplication of track data as the entire record was imported, not just for the section that requires the GPX track data spliced in. There are two ways to do this.

- a. Click on the track line, make sure you have clicked on the track line, then remove track before that point you have selected.



## Mysticetus – Project Manager Operations Guide.



- b. A more precise way to remove track data is through the object editor.

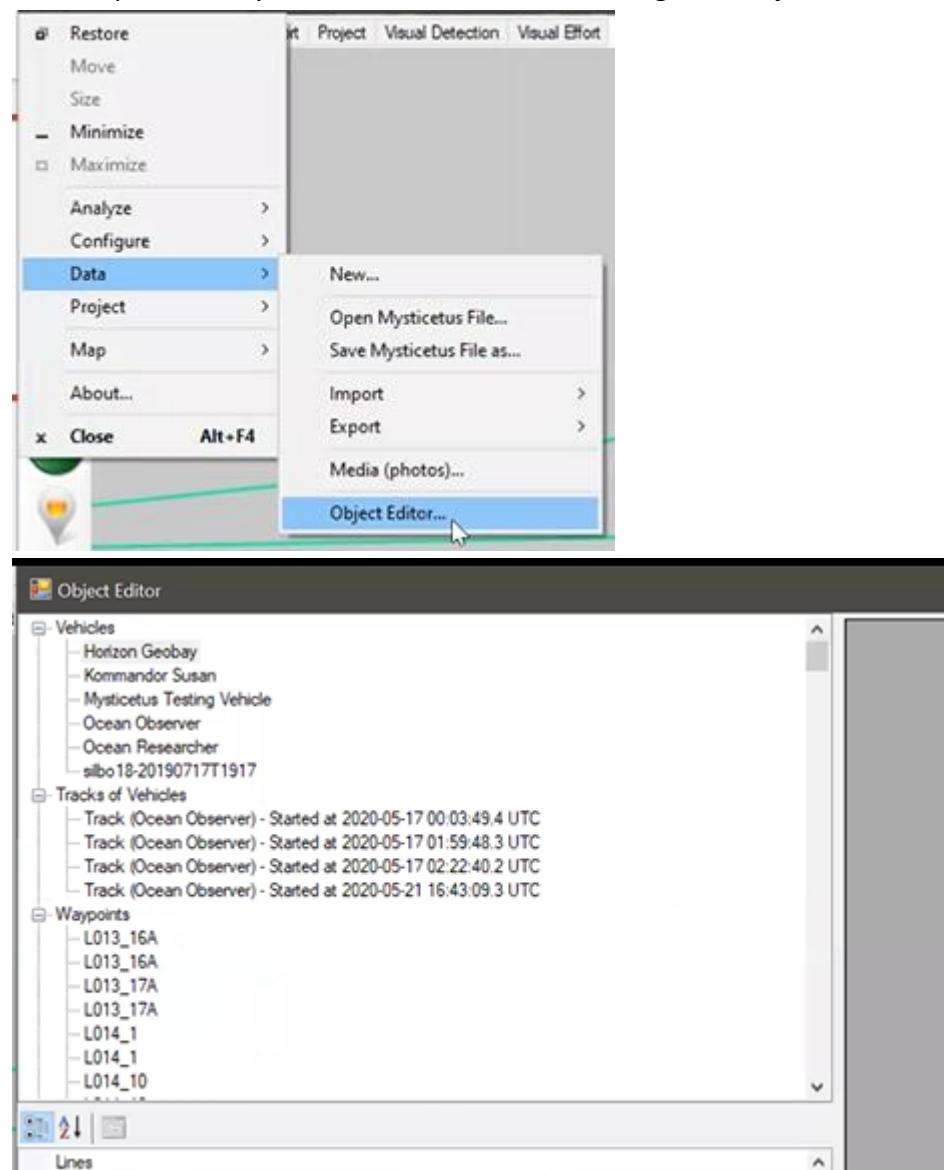


Figure 38 Object editor view of track data. The menu was maximized.

- c. You can see which track is the one you imported as its date is today's where you are splicing in the track data.



## Mysticetus – Project Manager Operations Guide.

- Tracks of Vehicles
  - Track (Ocean Observer) - Started at 2020-05-17 00:03:49.4 UTC
  - Track (Ocean Observer) - Started at 2020-05-17 01:59:48.3 UTC
  - Track (Ocean Observer) - Started at 2020-05-17 02:22:40.2 UTC
  - Track (Ocean Observer) - Started at 2020-05-21 16:43:09.3 UTC
- Waypoints
  - 1019 104

- d. Now you can delete all track points outside of the range required to stitch the track line gap. You can reference what needs to be deleted by your record of the start and end timepoints of your gap. Find the closest one and then highlight and delete those track points outside of the desired range. Use the delete key on your keyboard.

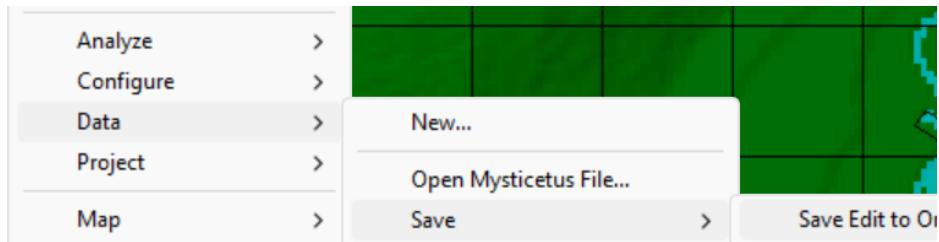
	Time	Location	Altitude	SOG	COG	Water Temp	Water Depth
121	2020-05-17 01:17:55.0 UTC	40°42'28.2"N	12.2 m	0 kts	088.7° T	0 C	0 m
122	2020-05-17 01:18:14.0 UTC	40°42'28.3"N	11.2 m	0.4 kts	051.3° T	0 C	0 m
123	2020-05-17 01:18:33.0 UTC	40°42'28.3"N	11.2 m	0.1 kts	078.1° T	0 C	0 m
124	2020-05-17 01:18:54.0 UTC	40°42'28.3"N	11.2 m	0.1 kts	061.8° T	0 C	0 m
125	2020-05-17 01:19:12.0 UTC	40°42'28.3"N	11.2 m	0 kts	159.2° T	0 C	0 m
126	2020-05-17 01:19:29.0 UTC	40°42'28.3"N	11.2 m	0 kts	309° T	0 C	0 m
127	2020-05-17 01:19:46.0 UTC	40°42'28.3"N	11.7 m	0 kts	315.3° T	0 C	0 m
128	2020-05-17 01:20:07.0 UTC	40°42'28.3"N	11.7 m	0.1 kts	152.9° T	0 C	0 m
129	2020-05-17 01:20:21.0 UTC	40°42'28.2"N	11.7 m	0.1 kts	119.3° T	0 C	0 m
130	2020-05-17 01:22:44.0 UTC	40°42'26.1"N	23.7 m	1.7 kts	122.4° T	0 C	0 m
131	2020-05-17 01:22:49.0 UTC	40°42'26.1"N	6.4 m	1.1 kts	090.4° T	0 C	0 m
132	2020-05-17 01:23:06.0 UTC	40°42'26.1"N	6.9 m	2.1 kts	093.1° T	0 C	0 m
133	2020-05-17 01:23:22.0 UTC	40°42'26.0"N	9.8 m	2.6 kts	093.6° T	0 C	0 m
134	2020-05-17 01:23:33.0 UTC	40°42'26.1"N	11.7 m	2.6 kts	086.6° T	0 C	0 m
135	2020-05-17 01:23:38.0 UTC	40°42'26.1"N	12.6 m	2.6 kts	078.8° T	0 C	0 m
136	2020-05-17 01:23:49.0 UTC	40°42'26.1"N	14.1 m	2.6 kts	094° T	0 C	0 m
137	2020-05-17 01:23:58.0 UTC	40°42'26.1"N	13.1 m	2.6 kts	064.8° T	0 C	0 m
138	2020-05-17 01:24:17.0 UTC	40°42'26.1"N	12.6 m	2.7 kts	088.6° T	0 C	0 m
139	2020-05-17 01:24:32.0 UTC	40°42'26.2"N	11.7 m	2.6 kts	087.6° T	0 C	0 m

- e. Remember to delete the points before the start of the gap along with the points after the gap. Mysticetus could take a little while to delete the points when there is a substantial number. You will note some small gaps after the fact. That is due to the fact Mysticetus is recalculating the track lines with the new data.



## Mysticetus – Project Manager Operations Guide.

- f. This is a suitable time to save your edited file as an edited file again.



- g. Now you can re-run your analysis and everything should be fine.

# CHECK LISTS FOR THE PROJECT MANAGER

## CHECK LIST FOR PROJECT START UP:

- Inform Mysticetus of new project including:
  - Energy developer.
  - Lease area.
  - Vessel operator.
  - Vessel name and its MMSI number.
  - Operation type; construction, geophysical, geotechnical, etc.
  - Estimated start date.
- Define email and text alert lists for required alerting as defined by Developer and Regulators as found in System Options.
  - Set Dead Sighting Alert list.
  - Entanglement Alert list.
  - Injured (animal) alert list.
  - NARW sighting alert list.
  - Report email recipient list.
  - Security alert recipient list.
- Inform Mysticetus of equipment shipping instructions and timeline.
- Set track line definitions.
- Work with Mysticetus and the developer to design required daily report formatting.
- Work with Mysticetus and the developer to define data collection requirements and template design.
- Download and set up Mysticetus for in-office use. Vessel specific equipment will be set up by Mysticetus prior to their shipping of leased equipment.

## CHECKLIST FOR EACH NEW VESSEL AT INITIAL MOBILIZATION:

- Set project specific variables.
- Set vessel deck heights where observers will work.
- Define optical tools observers will use such as Fujinon 7X50 binoculars.
- Define an initial list of observers and their eye heights.



## Mysticetus – Project Manager Operations Guide.

- Save and deploy updated template to specifically affected vessel projects.
- Arrange for observer crew training.

### CHECK LIST FOR CREW CHANGES:

- Define new crew members and their eye heights.
- Move current crew members to unassigned list for ready use when they return.
- Move predefined crew members from unassigned list to a particular vessel.
- Update for any new equipment in use.
- Point new observer crew members to review PSO user guide and training video.
- Add members to appropriate WhatsApp group or other means of communication.
- Verify reports and alert notifications are still correct.

### PROJECT MANAGER DAILY QA/QC CHECKLIST

#### I. Preliminary Checks (within 72 hours of observation day)

- **GPX File Confirmation:**
  - Verify Lead PSO uploaded handheld Garmin eTrex GPX file.
  - Verify analysis report run on corresponding date.
  - Check for multi-day tracks or missing files.
- **Mysticetus Data File Review:**
  - Open the most recent "Final-Edited-{Lead PSO Initials}" file.

#### II. Data Field Review

- **General:**
  - All required fields populated.
  - Does data make logical sense?
- **Specific Checks:**
  - No blank cells (if found, investigate, correct, add note with initials and explanation).
  - All Mitigation Requests have corresponding Mitigation Responses.
  - Species identifications accurate (flag unusual or unexpected species).
  - GPS track free of anomalies (unusual patterns, deviations).



## Mysticetus – Project Manager Operations Guide.

---

- Weather data is logical and consistent.
- Times consistent and accurate.
- Bearings and headings accurate.
- Reticles and distances are appropriate.
- "Night" checkbox accurately checked.
- Vessel Activity, Mitigation Source Status, Source Frequency, and equipment checkboxes consistent and logical.
- Sighting IDs in the correct format (V-number, e.g., V32).
- All listed media attached to sightings.

### III. GIS Analysis Tool Verification

- Confirm Lead PSO ran GIS Analysis tools.
- Review generated reports for warnings or errors (especially missing GPS tracks/data gaps).
- Re-run analysis if significant changes made to data file.
- Run analysis with PM QA/QC option selected.
- Check for blank or missing track flags.

### IV. PAM Data Integration (if applicable)

- PAM data file merged with visual sighting data file.
- Affected auto-filled columns recalculated.

### V. Documentation and Sign-off

- All changes/corrections documented in the Notes field (with initials and explanation).
- Save validated file as "Signed Off" file.

#### Additional Notes:

- This checklist is based on the Mysticetus Project Manager Operations Guide (February 2025). Refer to the guide for detailed instructions and specific project requirements.
- Communicate with Lead PSOs regarding any issues or training opportunities.
- For track line patching or other advanced procedures, refer to the relevant sections in the guide.



## Mysticetus – Project Manager Operations Guide.

---

- This information is proprietary to Mysticetus LLC and should be treated as such.

This checklist format should be easier to use for daily QA/QC procedures. Remember to consult the full guide for comprehensive information and context.