

Saltwater Inc.
Electronic Monitoring

ELECTRONIC MONITORING VIDEO REVIEW PROTOCOL
ALASKA TRAWL FISHERY
C/D Season 2020



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Overview

This protocol is designed to guide the review of data collected by EM systems for the 2020 Western Gulf of Alaska Trawl EFP Program. The protocol is adapted from those used by onboard observers in the North Pacific Groundfish Observer Program for trawl fishing vessels with recommendations from NMFS. These protocols have been designed with observer data fields in mind.

Methods

Saltwater EM systems are installed on trawl fishing vessels and tender vessels in Alaska. Data is collected on removable Hard Drives (HDD). Hard drives will be collected from both trawl c/v's and tender vessels, and sent to Saltwater's Anchorage office for review, analysis, and archiving. Each HDD may contain up to three trips; however, improper drive procedure or project management decisions may lead to drives containing more trips. Data from each trip is reviewed and recorded separately.

The first step in the review process is to determine what data is on the HDD (# of trips, start and end date of each trip) and whether the data set for each trip is complete. The performance of the EM system will be assessed by running a System Performance Check (SPC). The SPC has a separate protocol, but System Performance Checks is a preliminary scan for hardware or system issues run on each HDD. This information is utilized to find any system related issue as quickly as possible and flag them for immediate repairs.

During review, information about the total number of gear retrievals and discard information will be collected for each trip.

SWI's in house Workflow and SPC logs will be maintained in tracking HDD processing, system issues, and data review. Summary reports of the reviewed data will be recorded to a database maintained by Saltwater; data from the database is available for upload to NMFS.



Process Overview

Process Checklist

1. Data tracking and storage.
2. System Performance Check (SPC).
3. Refer to vessel VMP for approved camera views and discard control points.
4. Mark trip start and trip end in the review program.
5. Mark all sets and gear retrievals (hauls) for the trip in the review program.
6. Mark the offload for the trip in the review program.
7. Sample entirety of hauls for discarded species/events.
8. Spot check for compliance verification and discarded species/events outside of hauls.
9. Mark image quality issues, data quality issues, and sensor gaps in the timeline.
10. Check data table entries for errors.
11. Update Workflow log and complete Feedback Form for the vessel.

Data Tracking and Storage

Saltwater's EM system collects and records video and sensor data on encrypted hard drives. The HDDs are sent by skippers to Saltwater's main office in Anchorage. Upon arrival, data (raw and non - annotated) is uploaded to a local dedicated Network Attached Server (NAS). The received hard drives comprise a "dataset" that may include one or more trips. During the reception and review process, the following information about the data must be recorded.

Hard Drive Information- As each new HDD is delivered, update the "Hard Drive Tracking" sheet of the Data Workflow Spreadsheet with the following information:

1. Dataset ID- The unique dataset identification tag for the drive(s) received. This is generated as YYMMDD_VESSELNAME_VID
2. Vessel Information- Vessel Name and ADF&G permit number
3. Drive Serial- Serial number of the HDD received
4. Reception Date- The date the drive was received
5. Processed Date - The date the drive was processed
6. Processor Initials- Initials for the personnel that processed the data
7. Location of data set on NAS.
8. Drive Data Size- Size on disk in GB
9. SWI Trip Number- based on the arrival sequence of the drives
10. ODDS Trip Number- Catcher Vessels only



EM System Details






The EM system consists of:

1. **Main EM computer** located in the wheelhouse where the vessel operator monitors cameras and can verify system operations.
2. **GPS antenna** on the mast or top of the wheelhouse.
3. **Three cameras:**
 - a. **“Processing 1”**: located on the port side of the vessel that operates 24/7 after being triggered by the vessel leaving port and reaching a speed of 3.5 knots. This view shows the hatch cover and the back deck to monitor for compliance and offload and will record at a low resolution (640x360@5fps) for the entire trip unless triggered by fishing activity.
 - b. **“Hauling 1”**: located on the starboard side of the vessel that shows the back deck and discard areas. This camera is triggered by the rotation sensor.
 - c. **“Processing 2”**: located on the mast to monitor retrieval and codend issues. This camera is triggered by the rotation sensor.
4. **Rotation sensor**, generally located on the trawl winch and activated when the trawl doors are lowered or raised.
5. **Hydraulic pressure sensor** is generally plumbed into the “power beyond” to the aft net reel.

Software Notes

Once a dataset is opened in the software, the reviewer may notice some colored shapes present throughout the timeline. If a shape is clicked on, the shape will become highlighted in blue and the definition will appear in the lower left corner of the timeline. These actions will be used to verify that a vessel completed a system test as well as to monitor events during the trip.

The definitions are:

-  Hard Shut down
-  System test performed
-  Trip End
-  Manual record begin
-  Manual record end



Review and Creating Events

The rest of this protocol discusses and defines the data events that are created during the review of pollock trawl trips. Not all events such as the Marine Mammal, Bird Sightings and Interactions, and MARPOL will be created for each trip. Events such as Trip Duration, Sets, Hauls, Offloads, and Discard events will be created for each trip when applicable. Follow this protocol in filling out the associated forms for all created events. Please contact the review supervisor with any questions or comments.



Trip Duration Event

The first step in the review process is to record Trip Data. This will need to be completed by the reviewer for each trip on the HDD. A “**ODDS Trip**” is defined as when the vessel first leaves port, to when the vessel arrives at a dock in port or arrives at a tender to offload. (This “**ODDS Trip**” may cover multiple days, and the vessel may return to port but not offload their catch, or overnight in another port). Even though these may appear to be individual trips, they should be encompassed under the same “**ODDS Trip**” duration event until the vessel has arrived at a port or tender to offload. Begin the trip on the timeline when the vessel leaves port and end the trip when the vessel returns to port to offload, which may be to a shoreside plant or a tender vessel. End the trip when the vessel is finally at the plant dock or tied up to the tender and will not be moving to any other docks before offloading. For example: some vessels may tie up in a slip while they wait and then move to the plant to actually offload. In this example, the trip would not end until they moved over to the plant dock. **In the instance that a vessel ties up to the final dock or tender but there is a delay in the start of the offload (pump is onboard but not actively pumping fish), mark the offload when they actually start pumping fish and extend the trip end to meet the offload start.** Complete the following data fields:

- **SWI TRIP NUMBER:** Unique numerical ID assigned to each trip sequentially at Saltwater inc. This can be found in the Workflow log under the Hard Drive Tracking tab.
- **ODDS TRIP NUMBER- For C/V's Only:** The unique trip number assigned through the ODDS application. This number is provided via the ODDS email system and is verified with the submission of the trip's data and paperwork by the vessel. The reviewer will verify the ODDS number corresponds with the trip.
*Leave blank for tender vessels.
- **VESSEL:** Use drop down menu to select the Vessel name and ID.
- **BEGIN PORT:** Select from the drop down menu. ***If not listed or if a trip begins after a gap, select “Other” and list the port under Reviewer Notes.*** Some vessels will begin their trip at a tender vessel, select “Tender” as the beginning port.
- **END PORT:** Use the drop down menu to select the port where the vessel offloaded their catch. For some vessels, the end of their trip will be delivered to a tender vessel. When this occurs, select “Tender” for the End Port. ***If the End Port is not listed in the drop down menu or the trip data ends prior to the end of the trip, select “Other” and comment under Reviewer Notes.***



- **TRIP STATUS-** This section is not an assessment of system performance and if there are gaps in the data during the trip (gps drops out or there are power losses during the trip).
 - **1: Complete Trip:** System was turned on prior to leaving port and left on for the duration of the trip and through offload.
 - **2: Partial Trip- Monitoring Complete:** System was turned on after leaving port but prior to fishing, and remained on through the end of the offload.
 - **3: Partial Trip- Monitoring Incomplete:** System was turned on after fishing began; tender was in the process of accepting a delivery, or turned off after fishing but prior to landing and offloading.
 - **4: Unknown- USE NOTES!:** Something happened outside of the previously defined categories. Provide notes explaining the situation.

- **REVIEW PROTOCOL: Defaults to tender or CV depending on the type of trip being reviewed.**
 - WGOA Version 1.0- Compliance Census for CV trips
 - WGOA Version 1.0- Tender Monitoring for Tender trips

- **REVIEWER:** Use the dropdown menu to select your name.

- **REVIEW START DATE TIME:** This field auto populates when the trip is created, assuming review begins immediately. If not, date and time can be changed manually. Note that this is in UTC **(8 hours ahead of Alaska Daylight Time)**.

- **TIME LOST AT SEA:** Time lost is any time something unexpected occurs while at sea that changes the ability of the vessel to fish and it has to spend time waiting or repairing something they otherwise wouldn't have done. Time at anchor waiting to offload or to go out to fish is not time lost at sea. Time at anchor due to weather is time lost at sea, but this may be difficult to assess via EM data. Select the appropriate reason for time lost. If no time was lost while fishing, leave this field blank.
 - **Mechanical:** Broken boat or fishing gear.
 - **Weather**
 - **Crew (accident or other problem)**
 - **USCG Stoppage:** Coast guard stops vessel and/or boards vessel.
 - **Marine mammal interaction/predation**
 - **Other:** Use the notes section for a description

- **AMOUNT OF TIME LOST AT SEA:** Record to the nearest hour the amount of time the vessel lost time at sea if applicable. This field will default to 0 hrs.



- **REVIEWER NOTES:** Record any information about the fishing trip itself (e.g. Camera 2 got knocked out of focus during haul 2 and was out of focus for the rest of the trip, or the crew was consistently standing in front of the deck camera making it difficult to see fish processing on deck.)
- **REVIEW TOTAL TIME:** Record the total amount of time, in minutes, that it took to complete the trip review. This will be entered once the review is completed. **Reviewers will need to keep track of when they start and end the review of each haul. All time spent reviewing hauls, monitoring compliance, data checks..etc will be summed and included in this total time.**



Gear Sets - C/V's Only

The number of sets must be counted and marked. A set is defined as when the net goes into the water and ends when the gear cables begin winding and the crew comes on deck to bring the net on board.

Marking a Set

Double right click on the timeline at the beginning point (when the net goes into the water; use rotation sensor data and cameras to verify) and double right click again at the end point (when the gear cables begin winding, there is rotation data indicating gear being hauled followed by an increase in the pressure data). Note that some vessels do not have rotation sensors.

- **DETECTION METHOD:** Select the appropriate box(es). The template is set up with pressure, video, and rotation as the default.
 - **Pressure**
 - **Video**
 - **Rotation**
 - **Auto-Detection-** (software marked the gear retrieval event for you).

- **Notes:** Add in any details pertinent to the setting event.



Gear Retrievals/Hauls - C/V's Only

The number of hauls or gear retrievals must be counted and marked. A gear retrieval (haul) is defined as when the gear cables begin winding and crew comes on deck to bring the net on board, and ends when all the gear is back on deck and fish are in the hold and/or the crew has finished processing/handling the catch.

Mark a Gear Retrieval

Double right click on the timeline at the begin point (when the gear cables begin winding and there is a change in rotation followed by an increase in pressure.) and double right click again at the end point (all gear is out of the water, fish are in the hold and/or the crew has finished processing the catch) to create a haul duration event. **What does finishing processing the catch mean? Crew is no longer handling the catch. It is not uncommon for vessel crews to dump the codend, stow part of the catch, reset the gear, and then finish stowing the rest of the catch from the haul. The end of the haul should be marked after the crew has finished resetting the gear, and stowing the rest of the catch.** It is possible to mark a gear retrieval or haul solely based on the sensor data; a drop in speed, a change in rotation, and an increase in hydraulic pressure for a period of time indicates a gear retrieval. The map can also be used as reference; fishing activity is indicated by an orange line on the map.

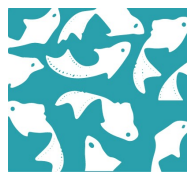
****Be aware that trawl boats will often raise and lower their net in the water column and/or raise the gear to turn the vessel while fishing. This behavior will momentarily create a change in rotation, but only last a short period of time. Be sure you are not marking those instances as a haul.**

Sampling Method

Reviewers are monitoring compliance to ensure all retained catch is delivered to the plant/tender and annotating any discards that are made during the trip or offload. You will be able to watch hauling events faster than real-time-- usually 4-8x--to watch catch handling. Complete the following fields for gear retrievals within a trip:

- **DETECTION METHOD:** Select the appropriate box(es). The template is set up with pressure, video, and rotation as the default.
 - **Pressure**
 - **Video**
 - **Rotation**
 - **Auto-Detection-** (software marked the gear retrieval event for you).

- **SAMPLED?**
 - **No**
 - **Yes**



- **Unsampleable - skipped:** If you cannot sample the haul for any reason, select the corresponding data quality code(s) to indicate why the haul could not be sampled and add notes if there is detail that cannot be captured with the selected code(s). An example of an unsampleable haul would be a haul without any video.

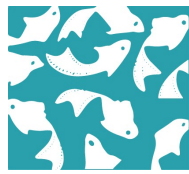
- **IMAGE QUALITY.** Select if any of the following affected image quality during the haul. **Appendix B for examples.**
 - **17-Banding/Scrambling/False Color:** Color is off, bands appear, or image is distorted.
 - **16-Blank/White Screen:** Color is lost from video.
 - **23-Condensation:** Accumulation of moisture on the inside of the lens, usually foggy.
 - **18- Dirty Cameras:** Image quality is degraded by buildup on the lens.
 - **20-Glare:** Can be caused by sunlight penetrating the lens or light reflecting off deck or gear.
 - **50-Night lighting:** Are deck lights on for some or all of the video.
 - **24-Obstruction:** An object is *temporarily* blocking the camera view. Example: crew moved the boom and it's blocking the view of the deck. *Use "poor camera angles" if this is a permanent problem.
 - **19- Out of Focus:** Image is not clear or focused on unintended spaces, not due to water or salt.
 - **14-Poor Camera Angles:** Camera angles do not cover fishing activity properly. Example: camera may be angled too far down to where the back of the deck is not encompassed in the view at all.
 - **22- Water Spots:** Water that accumulates on the outside of the lens due to rain, spray, snow, hoses, etc.

- **DATA QUALITY:** Select if any of the following affected the data quality for the haul. ***If you marked that your ID was affected on any species discarded within a haul or estimating a discard was affected, you will need to mark a reason here.***
 - **13-Crew Handling:** Crew sorted catch but may have blocked the view in such a way that all catch could not be seen (back to the camera or catch taken out of view)
 - **3- Gaps in Video:** Problems with video gaps affected **marking** data. Don't use this if there is just a video gap that doesn't affect marking data elements.
 - **15- Image Quality:** Problems in image quality affect data quality.

- **VIDEO GAPS:** Select if any of the following occurs during a haul.



- **3-Gap(s) in video data:** If there are gaps in the video. One or more cameras cut in and out during the gear retrieval and sorting.
- **5-Video starts after haul start:** The video starts after the winches begin rotating and the net is starting to be retrieved, *but all of the catch is viewed coming on board.*
- **6-Video ends before all catch is onboard (catch handling):** Video ends before the codend is brought onboard.
- **4-Video ends before all fish are stowed/crew are done handling the haul:** If all of the catch has been viewed coming onboard (entire codend is on deck) but the video ends before the crew is *done handling catch*. This is mainly to assess whether the system is recording for enough time post-haul. Do not mark this if:
 - Vessel is carrying a deckload into port to offload
 - Crew leaves some catch in the trawl alley and leaves the deck to go inside- they are done handling the catch at that point. Compliance monitoring will fill in the gaps between hauls.
- **VIDEO COMPLETE?**
 - **Yes:** There are no gaps in the video for all of the gear processing and catch handling events.
 - **No:** Video is not complete for the haul. If the video is not complete, select a code above explaining why.
- **CATCH COMPLETE?**
 - **Yes:** Catch is complete if all catch could be accounted for during gear processing (entire codend came up) even if the final disposition may not be known.
 - **No:** All of the catch could not be accounted for during gear processing.
- **GEAR PERFORMANCE:** “No Problems” is the default option, but any of the following events can affect fishing activity and must be documented.
 - **No problem**
 - **A crab pot was in the haul**
 - **Net hung up:** The net hung up on some obstacle and the vessel had to haul back.
 - **Trawl net or codend lost**
 - **Net Ripped**
 - **Other Problem:** Document problem in the notes section.
 - **Fishing Duration Affected:** The deployment and retrieval times do not reflect true fishing times.



- **NOTES:** Use this field for anything of note that cannot be covered in the above fields or needs explanation. Be precise in order to eliminate misinterpretation.
- **REVIEW TIME FOR HAUL:** Amount of time the reviewer spent (to the nearest minute) reviewing the video imagery and recording catch.



Delivery Verification - Tender Vessels only

The number of pollock deliveries must be counted and marked. A delivery is defined as when a vessel ties up to the tender vessel to deliver their catch, and ends when all the catch is now on the tender (in the tanks). There may be instances where the tender vessel transfers the catch it received from a catcher vessel(s) to another tender that will shuttle that catch back to a plant for offload. That transfer will be considered an offload when reviewing the data from the tender transferring catch to the shuttle vessel and will be considered a delivery when reviewing the data from the shuttle receiving the catch.

Mark a Delivery Verification

Use video data to verify deliveries. Double right click on the timeline at the beginning point (when the delivering vessel ties to the tender) and double right click again at the end point (when all of the catch has been transferred to the tender and processed) to create a delivery verification duration event.

TEMPORARY NOTE: Tender vessels should not be accepting multiple deliveries at one time. Deliveries should be occurring one at a time. In the instance of multiple boats tied up to a tender vessel to offload, mark the second offload when the pump makes it onto the boat or if already on the boat, when the pump starts moving. This is an attempt to not mark overlapping deliveries. We're working with vessels to improve the indication of completing deliveries and then starting a new one. Please note the issue on your feedback form so we can ensure vessels are improving their delivery reception.

Sampling Method

Reviewers are monitoring for compliance to ensure all retained catch is delivered to the tender and then on to the plant. Full review will be done for any deliveries made to the tender vessel and the offload of the tender. Please refer to the compliance monitoring section of this document for information on compliance sampling.

- **DETECTION METHOD:** Select the appropriate box(es). The template is set up with video as the default.
 - **Pressure**
 - **Video**
 - **Rotation**
 - **Auto-Detection**-(software marked the gear retrieval event for you)



- **SAMPLED?**
 - **No**
 - **Yes**
 - **Unsampleable-skipped:** If you cannot sample the delivery for any reason, select the corresponding data quality code(s) to indicate why the delivery could not be sampled and add notes if there is detail that cannot be captured with the selected code(s). An example of an unsampleable delivery would be a delivery verification without any video.

- **DELIVERING VESSEL:** Select the name of the vessel delivering from the drop down menu. If the vessel delivering to the tender is not listed, select “Other Vessel” and type in the name in the notes section.

- **IMAGE QUALITY:** Select if any of the following affected image quality during the delivery. **Appendix B for examples.**
 - **17-Banding/Scrambling/False Color:** Color is off, bands appear, or image is distorted.
 - **16-Blank/White Screen:** Color is lost from video.
 - **23-Condensation:** Accumulation of moisture on the inside of the lens, usually foggy.
 - **18- Dirty Cameras:** Image quality is degraded by buildup on the lens.
 - **20-Glare:** Can be caused by sunlight penetrating the lens or light reflecting off deck or gear.
 - **50-Night lighting:** Are deck lights on for some or all of the video.
 - **24-Obstruction:** An object is *temporarily* blocking the camera view. Example: crew moved the boom and it’s blocking the view of the deck. *Use “poor camera angles” if this is a permanent problem.
 - **19- Out of Focus:** Image is not clear or focused on unintended spaces, not due to water or salt.
 - **14-Poor Camera Angles:** Camera angles do not cover fishing activity properly. Example: camera may be angled too far down to where the back of the deck is not encompassed in the view at all.
 - **22- Water Spots:** Water that accumulates on the outside of the lens due to rain, spray, snow, hoses, etc.

- **DATA QUALITY:** Select if any of the following affected the data quality for the delivery.
 - **3- Gap(s) in Video:** Problems with video gaps affected data.
 - **15- Image Quality:** Problems in image quality affect data quality.



- **13-Crew Handling:** Crew sorted catch but may have blocked the view in such a way that all catch could not be seen (back to the camera or catch taken out of view).

- **VIDEO GAPS:** Select if any of the following occurs during a delivery.
 - **3-Gap(s) in video data.** If there are gaps in the video. One or more cameras cut in and out during the delivery.
 - **5-Video starts after delivery starts:** The video starts after the hose is in the tank but all of the catch is viewed coming on board.
 - **6-Video ends before delivery is complete:** Video ends before all of the catch has been offloaded onto the tender vessel.
 - **4-Video ends before all fish are stowed:** If all of the catch has been viewed coming onboard the tender vessel (delivered) but the video ends before the catch is stowed in tanks.
 - If some catch has not been stowed before the next delivery, and there are no video gaps before the next delivery, select video completeness “Yes” and comment that some of the catch was not stowed before the next delivery began.

- **VIDEO COMPLETE?**
 - **Yes:** There are no gaps in the video for all of the delivery and catch handling events.
 - **No:** Video is not complete for the delivery. If the video is not complete select a code above explaining why.

- **CATCH COMPLETE?**
 - **Yes:** Catch is complete if all catch could be accounted for during the delivery and stowage of catch even if the final disposition may not be known.
 - **No:** All of the catch could not be accounted for during the delivery.

- **NOTES:** Use this field for anything of note that cannot be covered in the above fields or needs explanation. Be precise in order to eliminate misinterpretation.

- **REVIEW TIME FOR DELIVERY:** Amount of time the reviewer spent (to the nearest minute) reviewing the video imagery and creating events.



Discarded Species

The main purpose of this program is to verify all salmon were retained on board to offload, and that vessel operators are documenting the catch they discard. Most, if not all catch will go directly into the tanks for delivery. A discarded species annotation will be created for discarded catch. This annotation is reserved for known quantities of discarded catch such as sharks or salmon.

Large volumes of discarded catch will be recorded as a duration event. *If the crew is cleaning the net/deck or catch is falling from the gear/being knocked off during set/retrieval, use a duration event unless there is only one to three catch items. Typically these events have numerous piece counts that are difficult to count accurately and an estimated weight is more useful.* SWI recognizes this will create non-speciated discard data. ****Note: If you see a salmon being discarded, it should always have it's own discard event!!!!****

Note: Any marine mammals, parts of marine mammals, or large inorganic objects (crab pots, large boulders, large garbage, pieces of line, tree branches...etc.) should not be recorded as a discarded species event. If appropriate, mark a marine mammal interaction or a potential MARPOL violation (garbage) for these types of discards.

SPECIES: Enter the species code according to the NMFS Observer Sampling Manual and group guidelines below, and verify by checking the name following the code. **To jump back to species code 1, hit the Home key on the keyboard.** Always double check this field as it will auto fill to the last species that was marked or viewed. The [NMFS Species Identification Manual](#), [Rockfish Guide](#), and [Saltwater's "Fish-ionary"](#) are good references for identifying Alaska species.

- Whenever possible, enter the species to the *lowest* identifiable taxonomic level. **(REQUIRED)**. There may be occasions when the flatfish unidentified, roundfish unidentified, skate unidentified, rockfish unidentified, sculpin unidentified, and fish unidentified codes need to be used.
- Record any whole fish, fish head/lips or parts with an individual catch item annotation and the corresponding disposition. If possible, identify the partial fish to species with a comment "partial fish".

IDENTIFICATION

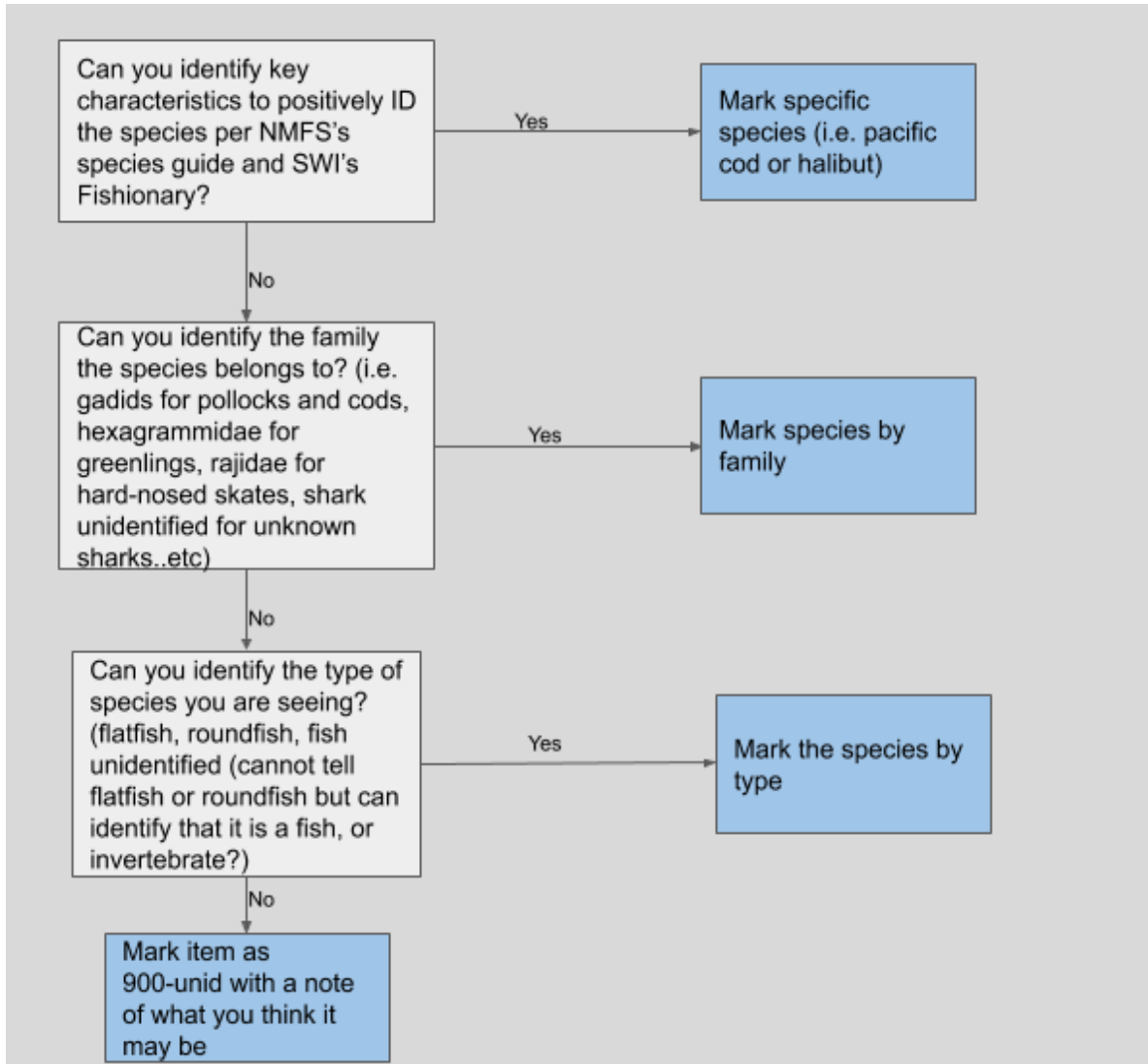
- **Skates**
 - **Raja:** The two Raja skate species that may be encountered are relatively easy to differentiate from each other and the Bathyraja group. Because of this, the Raja skates may be identified to species.
 - **95-Longnose skate**
 - **94-Big skate**
 - If unable to differentiate Big Skate and Longnose Skate, select *Raja* spp., **167- "Stiff Snout Skate"**.



- All the other skate species fall into the *Bathyraja* sp. group, **159- “Soft Snout Skate”**.
- If the *Bathyraja* skates cannot be differentiated from *Raja* skates then select **90-Skate unidentified**.
- **Sculpins:** There are two sculpin species groups and one sculpin species that can be identified.
 - **418-Irish Lord unidentified** (this group includes Yellow, Red, Brown, and Longfin Irish Lord, as well as Butterfly Sculpin).
 - **440-Myoxocephalus** unidentified (this group includes Great, Warty, and Plain Sculpin).
 - **402-Bigmouth Sculpin**
 - **400-Sculpin unidentified:** If the sculpin does not fall into one of these categories, you must select 400-sculpin unidentified.
- **Kamchatka/Arrowtooth Flounder Complex**
 - Kamchatka and Arrowtooth Flounder are too similar in appearance to be identified to species on the line. For this group, individuals are selected as **149-Kamchatka/Arrowtooth unidentified**.
- **Northern/Southern Rock Sole Complex**
 - Northern and Southern Rock Sole are too similar in appearance to be identified to species on the line. For this group, individuals are selected as **104-Rock Sole unidentified**.
- **Tanner Crab and King Crab Complex**
 - Individuals within the Tanner crab group and King crab group are too similar in appearance to be identified to species. For these two groupings, individuals are recorded by their respective group.
 - **3-Tanner Crab unidentified**
 - **2-King Crab unidentified**
- **Rockfish**
 - Rockfish should be identified to the taxonomic level of confidence. If a rockfish cannot confidently be identified to the species level, and it does not fall into an established FMA Rockfish group code (i.e. Shortraker/Rougheye or Thornyhead unidentified), it should be annotated as **300- Rockfish unidentified**.
 - **Shortraker /Rougheye Rockfish Complex:** Shortraker Rockfish and Rougheye Rockfish are too similar in appearance to be identified to species and **must** be recorded as **354-Shortraker/Rougheye unidentified**.



- **Corals**
 - All coral must be identified to **32-Coral unidentified** except sea pens/ sea whips which are recorded with
 - **58- sea pens/whips.** Record each instance of coral on a hook as a single individual.
- **Use this flowchart to determine what level to record a catch item as:**





- **PIECE COUNT:** Enter if the value is known, *not an estimate*. ***If you have a pile of mixed catch being discarded, do not estimate the number of fish, instead create an innumerable discard duration event with an estimated weight instead. See next page for details.***
 - Note: If pieces and parts of an organism are discarded, mark a piece count of 1 and in the notes section of this form, add PAP (Pieces and Parts).

- **DISPOSITION:** Record the disposition of the catch. For this project we are only focused on documenting discarded catch. ***Mark the catch when the disposition is determined.*** For example, if cod is pulled from the trawl alley but left on deck for a while before used for personal consumption, mark this disposition when the discard is occurring (i.e. filleting the cod or when cod is taken out of view).
 - **18- Intentional Discard:** *Includes any operational or crew-related discard.* Examples include:
 - Catch pulled from tank or deckload at offload and thrown overboard including misc./inverts (kelp, seawhips, jellyfish).
 - A large item or organism that is too large for the tank is pulled from the trawl alley or codend (shark, marine mammal, etc.).
 - Any catch kept for personal consumption is considered an intentional discard as it is not delivered to the plant or tender.
 - Salmon pulled from the catch and discarded over the side or kicked off the stern.
 - Net/Deck cleaning
 - Catch falling from fishing gear during retrieval and sets (after fishing has occurred). This includes catch swept off by net setting or chains as well.
 - **For the first set of a trip**, do not mark catch that falls during setting since these fish were caught on another trip. Starting on the second set, mark all catch that is discarded during setting.

 - **19- Unintentional Discard:** *Includes unavoidable discards that are not related to normal operations or crew actions.* Any unavoidable discard of catch resulting from an event that is beyond the control of the vessel operator or crew provided that the estimated weight of all discarded species, the tow number, and reason for discarding are recorded in the logbook. Events beyond the control of the vessel include:
 - Safety/Stability
 - The opening of a blow-out panel because the catch is otherwise too large to bring up the vessel's stern ramp
 - Net bleeds/venting of an overfull codend
 - Discards due to mechanical failure



- Fish washing off deck or out of scuppers solely due to water/waves.
- **8- Unknown:** Reviewer is unable to determine the fate of the organism/catch.
 - Catch is taken out of view of the camera and disposition cannot be verified.
 - Any catch left on deck at the end of a trip/offload that cannot be verified as discarded such as salmon sharks or skates pulled from the tank at offload.
- **CATCH CONDITION:** Assess the condition of the catch.
 - **General:** Catch is released from the codend without any signs of predation or damage caused by the crew or gear.
 - **Damaged:** Catch is visibly damaged by crew/gear handling (smashed, torn apart, or mutilated by crew).
 - Crew cuts the caudal fin of a shark to discard from the vessel.
 - **Depredated:** Catch is visibly damaged in such a way that suggests predation.
- **ID Affected?:** Note whether or not your ID of species was affected by system issues, image quality or crew handling. If you select this, a Data Quality reason needs to be marked at the haul level! **Do not use this if you just can't tell what a discard is!**
 - **No**
 - **Yes**

ID is considered to be affected when the reviewer normally could speciate but is not able to speciate the catch item due to issues with image quality, crew handling, system problems...etc. An example of affected ID, is when a water spot is positioned on the camera where this fish is located and the reviewer has to ID the catch to a higher classification group. *The reviewer should not say their ID is affected if they are simply coding the catch according to NMFS ID rules (All soft-snout skates should be coded as a soft-snout skate, even if the reviewer feels confident they know the species) or if they simply are not sure what the catch item is.* This data helps us quantitatively track the amount of catch that was affected during the haul which can be tied to the data quality codes such as image quality or crew catch handling that were marked at the gear level.

- **BIRD PRESENTED?:** If a bird is brought up in the gear, annotate as usual (species, disposition). Record whether it was held to the camera for an extended presentation: (Y/N).
 - **Yes:** The wings are spread and there is a full view of the bird (front and back).



- **No:** The bird is not presented to the camera (no spreading of the wings, showing feet, or showing beak).

Save a picture of the bird to the appropriate Google Drive folder. Name the picture as:
VesselName_ODDSNumber_HaulNumber_SpeciesID(_# for multiple birds of the same species, if only one bird is caught # is not necessary).

Ex: BoatyMcBoatFace_99999_1_GullUnid

- **NOTES:** Record anything of interest/unusual or information that might help others. Be very explicit as to not leave room for misinterpretation. Examples of discarded species notes:
 - Fish heads, partial fish
 - If the reviewer is unsure of ID, make a note for verification.



Innumerable Discard Duration Events

If mixed catch and/or the piece count is not known for what is being discarded, create a duration event from the beginning of the discard to the end of the event. If the crew is cleaning/picking the net/deck or catch is falling from the gear/being knocked off during set/retrieval, mark as an innumerable discard duration event unless there is only one to three catch items total discarded during that entire period. This excludes sharks, prohibits (salmon, halibut, etc.), and birds. **Typically these events have numerous piece counts that are difficult to count accurately and an estimated weight is more useful.** SWI recognizes this will create non-speciated discard data. ****Note: If you see a salmon being discarded, it should always have a separate discard event, so it can be flagged in the data.**** Complete the following fields for the duration event:

- **DISCARD TYPE**

- **18- Intentional Discard:** *Includes any operational or crew-related discard.*

Examples:

- Catch pulled from tank or deckload at offload and thrown overboard including misc./inverts (kelp, seawhips, jellyfish).
 - A large item or organism that is too large for the tank is pulled from the trawl alley or codend (shark, marine mammal, etc.).
 - Any catch kept for personal consumption is considered an intentional discard as it is not delivered to the plant or tender.
 - Salmon pulled from the catch and discarded over the side or kicked off the stern.
 - Net/Deck cleaning
 - Catch falling from fishing gear during retrieval and sets (after fishing has occurred). This includes catch swept off by net setting or chains as well.
 - **For the first set of a trip,** do not mark catch that falls during setting since these fish were caught on another trip. Starting on the second set, mark all catch that is discarded during setting.
- **19- Unintentional Discard:** Unavoidable discard of catch resulting from an event that is beyond the control of the vessel operator or crew provided that the estimated weight of all discarded species, the tow number, and reason for discarding are recorded in the logbook. Events beyond the control of the vessel include:
 - Safety/Stability
 - the opening of a blow-out panel because the catch is otherwise too large to bring up the vessel's stern ramp
 - net bleeds/venting of an overfull codend
 - discards due to mechanical failure.
 - Catch washed off the deck by waves.



- **8 - Unknown:** Reviewer is unable to determine the fate of the organism/catch.
 - Catch is taken out of view of the camera and disposition cannot be verified
 - Any catch left on deck at the end of a trip/offload that cannot be verified as discarded such as a pile of fish after emptying the holds.
- **WEIGHT (lbs):** Make a visual estimate of the amount of catch discarded (lbs). Any marine mammals, parts of marine mammals, or large inorganic objects (crab pots, large boulders, large garbage) should not be included in a discard event and their estimated weights should not be included in this field. Discard estimates should only take a few moments once you have identified and reviewed the event.

Tips on estimating innumerable discards:

1. Visual cues- how many baskets would that discard fit in? A full sampling basket of pollock weighs between 40-45 kg (~80-90 lbs).
 2. Ripped nets and Partial codend dumps
 - a. Use reference marks when possible or use your best judgment.
 - b. Information on codend capacity will be provided to you if available in the Data Workflow tab of the 1905 Data Workflow Log. It is also listed on the vessel's logbook.
- **NOTES:** Record anything of interest/unusual or information that might help others. Be very explicit as to not leave room for misinterpretation.



Offload

As well as reviewing a trip(s) within a data set, the reviewer will be monitoring offloads to verify that all catch from the tanks are delivered to the plant (C/V and Tender Trips). An offload begins when the pump is brought onto the vessel and begins pumping catch. The end of an offload is marked when the pumps have been removed from the vessel *and the delivery is complete*. The crew may begin flooding the tanks or cover the tanks with hatches. **Per the EFP, all offloads must be completed at a single location and not split between multiple shoreside processors or tender vessels. Please alert the reviewer supervisor if this occurs, and document the situation on the feedback form.**

Marking an Offload

Double right click on the timeline at the begin point (when the vessel has returned to port from a trip and is now tied to the pump or dock) and double right click again at the end point (all fish appear to have been pumped from the tanks, pumps have been taken off the boat, and the tanks have been covered up). Reviewers will be monitoring the entire offload to verify that all catch is delivered to the plant. Complete the following fields for the offload:

- **TRIP NUMBER:** Unique numerical id assigned to each trip sequentially Saltwater inc.
- **DECKLOAD:** Indicate whether or not the vessel arrived back to port or at a tender with a deckload.
 - No
 - Yes
 - Unknown
- **TENDER OFFLOAD:** Did the vessel offload to a tender vessel?
 - No
 - Yes
 - Unknown
- **TENDER VESSEL:** If the offload happened at a tender and the reviewer is able to identify the tender vessel, select the name of the tender vessel the offload was made to. If the name of the tender cannot be identified, select “Unknown”.
- **IMAGE QUALITY:** Select if any of the following affected image quality during the haul. **Appendix B for examples.**
 - **17-Banding/Scrambling/False Color:** Color is off, bands appear, or image is distorted.
 - **16-Blank/White Screen:** Color is lost from video.
 - **23-Condensation:** Accumulation of moisture on the inside of the lens, usually foggy.
 - **18- Dirty Cameras:** Image quality is degraded by buildup on the lens.



- **20-Glare:** Can be caused by sunlight penetrating the lens or light reflecting off deck or gear.
 - **50-Night lighting:** Are deck lights on for some or all of the video.
 - **24-Obstruction:** An object is *temporarily* blocking the camera view. Example: crew moved the boom and it's blocking the view of the deck. *Use "poor camera angles" if this is a permanent problem.
 - **19- Out of Focus:** Image is not clear or focused on unintended spaces, not due to water or salt.
 - **14-Poor Camera Angles:** Camera angles do not cover fishing activity properly. Example: camera may be angled too far down to where the back of the deck is not encompassed in the view at all.
 - **22- Water Spots:** Water that accumulates on the outside of the lens due to rain, spray, snow, hoses, etc.
- **DATA QUALITY:** Select if any of the following affected the data quality for the haul. Data affected includes only species ID or discard estimations affected. If video is missing, that will be captured in the video gaps sections and video complete field.
 - **15- Image Quality:** Problems in image quality affect data quality.
 - **13-Crew Handling:** Crew sorted catch but may have blocked the view in such a way that all catch could not be seen (back to the camera or catch taken out of view).
 - **3- Gap(s) in Video:** Problems with video gaps affected data.
 - **VIDEO GAPS:** Select if any of the following occurs during a haul.
 - **3-Gap(s) in video data:** If there are gaps in the video. One or more cameras cut out during the offload.
 - **5-Video starts after offload start:** The video starts after the pump is in the tank or deckload.
 - **6-Video ends before all catch is offloaded:** Video ends before all of the catch has been pumped from the tanks.
 - **VIDEO COMPLETE?:**
 - **Yes:** There are no gaps in the video for the offload.
 - **No:** Video is not complete for the offload. If the video is not complete select a code above explaining why.
 - **CATCH COMPLETE?:**
 - **Yes:** all catch could be accounted for.
 - **No:** all catch could not be accounted for.
 - **NOTES:** Use this field for anything of note that cannot be covered in the above fields or needs explanation. Be precise in order to eliminate misinterpretation.



- **REVIEW TIME FOR OFFLOAD:** Amount of time the reviewer spent (to the nearest minute) reviewing the video imagery and recording catch.



Marine Mammals

Create a duration event if a marine mammal is seen feeding on catch, interacting with the vessel, entangled in gear, or there was a marine mammal mortality. A new interaction should be recorded with the species when there is evidence of a marine mammal interaction. If you believe the same dead animal was caught in the gear more than once, record it each time and indicate in the notes section why you believe it to be the same animal. Complete the appropriate fields for a marine mammal interaction. If marine mammal harassment is observed, document the incident in the MM interaction form, on the feedback form, and alert your review supervisor.

- **SPECIES:** Select the marine mammal code for the identified marine mammal. [The guide to Marine Mammals of Alaska](#) is a great resource. If the reviewer is not sure of the species, select the appropriate marine mammal group you are confident identifying it to (Otariid, Phocid, Pinniped, or Cetacean). If the reviewer cannot identify the animal to a group, select “Unidentified Mammal”.
- **NUMBER OF ANIMALS IN INTERACTION:** The number of animals involved in the interaction.
- **TYPE OF MARINE MAMMAL INTERACTION:** Select the type of interaction the marine mammal had with the vessel such as feeding on catch, deterrence, entangled in gear, etc. **If there is a marine mammal interaction that occurs while the animal is on board the vessel, record the non-boarding interaction (higher priority) as the interaction type and note in the comments section that this interaction occurred while the marine mammal was on the vessel. If a marine mammal boards the vessel and then starts feeding on catch, the interaction code would be feeding on catch and the notes would comment that this catch feeding occurred on the vessel.**
 - **1- Deterrence Used:** Marine mammal was deterred or a deterrence was attempted. Log this interaction using this code even if deterrence was not successful. For more information on [Steller Sea Lion deterrence](#) please refer to the link.
 - **2- Entangled in Gear (Not Trailing Gear):** A marine mammal was captured by the fishing gear and the animal was released/escaped without fishing gear attached.
 - **3- Entangled in Gear (Trailing Gear):** A marine mammal was captured by the fishing gear and the animal was released/escaped alive with some fishing gear attached.
 - **4- Killed By Gear:** A marine mammal was captured and died due to interactions with the fishing gear.
 - **5- Killed By Propeller:** A marine mammal hit the propeller and died.



- **6- Previously dead:** A marine mammal was captured by the fishing gear and was dead prior to coming into contact with the vessel or fishing gear.
 - **7- Lethal removal (Trailing Gear):** Vessel personnel killed a marine mammal entangled in fishing gear, but death was not due entirely to the entanglement. Gear was observed attached to the animal after the animal was removed from the gear.
 - **8- Lethal removal (Not Trailing Gear):** Vessel personnel killed a marine mammal entangled in fishing gear, but death was not due entirely to that entanglement. No gear was observed trailing from the animal after the animal was removed from the gear.
 - **9- Boarded Vessel:** A marine mammal boarded the vessel on its own volition. If the MM is part of another interaction at the same time (feeding on catch, deterrence used...etc), mark that code instead.
 - **10- Feeding on Catch (Not Yet Landed):** A marine mammal was observed feeding on catch not yet Landed.
 - **11- Other:** Interaction occurred that is not included in the list of interaction codes.
 - **12- Unknown:** The vessel or vessel personnel had some interaction with a marine mammal, but the observer did not directly view the interaction and/or ascertain what the interaction was.
 - **13- Feeding on Discarded Catch:** A marine mammal was observed feeding on discarded catch.
 - **14- Human intentionally feeding Marine Mammal:** Humans intentionally taking catch and feeding marine mammal(s). Please describe in the notes section.
- **DETERRENCE CODE:** Fill in this field only for interactions involving marine mammal deterrence, interaction code 1. Refer to the following list for the code that is most appropriate. If the interaction was not one of deterrence, leave this field blank.
 - **1- Seal Bombs:** Any explosive device used to frighten marine mammals away from the catch.
 - **2- Pole Gaff:** Using the long pole (typically used by crewman to gaff drop-of catch) to scare marine mammals either by direct contact or by hitting the water.
 - **3- Skiff:** Any use of a skiff to attempt to frighten a marine mammal.
 - **4- Acoustical device:** Any electronic acoustical device designed to frighten or annoy marine mammals.
 - **5- Yelling:** Crew yelling at marine mammals in order to frighten them away from the catch.
 - **6- Making noise by any other method:** Any method, other than yelling, of making noise to annoy or frighten marine mammals away from the catch.



- **7- Other:** Any other means, not listed above, of deterring marine mammals. Include instances when the vessel changed fishing behavior, such as “bagging of ” gear on a longliner. Document the method or occurrence in your logbook
- **8- Unknown:** If a deterrence method was used but its exact nature is unknown.
- **9- N/A**

- **DETERRENCE SUCCESSFUL-** Fill in this field only for interactions involving marine mammal deterrence, interaction code 1. Otherwise leave this field blank.
 - **Yes:** If you observed that the deterrence worked to deter marine mammals away from the catch
 - **No:** If you observed the deterrence was unsuccessful.
 - **Unknown:** If you are unsure as to the success of the deterrence method.
 - **N/A**

- **FOOD SPECIES:** Fill in this field only if you have a marine mammal feeding on catch, *interaction code 10*. Otherwise leave this field blank.

- **CONDITION CODE:** Record the condition of the mammal based on the outcome of the interaction. A live animal that has been lethally removed is to be considered a carcass, however, an injured animal released alive is considered alive even if you believe it may eventually die.
 - **1- Carcass, dead animal**
 - **2- Bones other than skull**
 - **3- Live animal**
 - **4- Skull**
 - **5- Skull and bones**
 - **6- Tusk/teeth (no skull)**
 - **7- Baleen only**
 - **9- Fur, flesh or skin**

- **SCREENSHOT TAKEN?-** Take a Screenshot of all marine mammals seen. If a screenshot is not taken, comment in the notes section. You should almost always have a screenshot but sometimes image quality or the interaction doesn't lend to a decent view. In these cases, you can select “no” and make a note of why you couldn't get a screenshot.
 - **Yes**
 - **No**

NOTES: Use this section to describe any part of the interaction that could not be indicated by the fields above such as identifying characteristics of the marine mammal, anything unusual about the interaction , or why a screenshot(s) were not taken.



Save a picture of the Marine Mammal to the appropriate Drive folder (1905). Name the picture as: VesselName_ODDSNumber_HaulNumber_SpeciesID(_# for multiple marine mammals of the same species, if only one mammal is involved # is not necessary). Example: BoatyMcBoatFace_99999_1_SpermWhale

Document and report any marine mammal harassment to your review supervisor if observed.



Bird Interactions or Species of Interest Sightings

Create a duration event if a bird is seen interacting with the vessel (e.g. bird storm, striking the third wire, crew maiming/killing) or if a species of interest is seen. Do not mark that fulmars, gulls..etc are feeding on discards. A new interaction should be recorded for each event of a sea bird interaction. If species of interest are seen, they are to be marked as well and note what the bird(s) were doing. These species include: short-tailed albatross, red-legged kittiwake, steller's eider, spectacled eider, marbled murrelet, and kittlitz's murrelet. Complete the appropriate fields for a sea bird interaction.

- **SPECIES:** Select the correct code from the Alaska species list. If you are unsure of the exact species involved in the interaction, select the correct grouping.
- **NUMBER OF BIRDS:** Enter the number of birds seen in the interaction. The review program will default to one, change the number if the count is higher.
- **COUNT TYPE:** Select whether it's an exact count or if the count was estimated.
 - **Exact**
 - **Estimate**
- **INTERACTION DESCRIPTION:** Select the type of interaction or sighting observed.
 - **1- Sighting:** Bird was observed on or near the vessel, but did not interact with the gear.
 - **2- Third Wire, Paravane, or Warp Cable Contact:** Bird came into contact with the third wire, paravane or warp cable.
 - **3- Rig Strike:** Bird made contact with vessel's rigging, excluding third wire, paravane, or warp cable interactions.
 - **4- Bird Storm:** A flock of birds strike the vessel, gantry or stack; then land on deck. A bird storm may include a rig strike.
 - **5- RE Deterrent:** Bird interacted with the deterrent measure/device. RE is an acronym for "Regarding."
 - **6- Land on Vessel:** Bird landed on the vessel, but not part of a bird storm.
 - **7- Oiled Bird:** Bird was oiled at sea. Does not include birds that were oiled when it contacted something on the vessel.
 - **8- Gear Interaction:** The bird made some sort of contact or interacted with the gear. This does not include third wire or warp cable interactions.
 - **9- Feeding on Bait**
 - **10- Discard Feeding:** Bird was feeding on discarded fish or offal.
 - **11- Foraging, Not Bait:** Bird was foraging/feeding near the vessel, but not feeding on the bait.
 - **12- Following:** Bird was following or resting near the vessel.
 - **13- Harassment by Crew:** Bird was harassed by a crewman. Harassment includes throwing objects, or other nonlethal deterrent methods.
 - **14- Killing by Crew:** Bird was intentionally or unintentionally killed by a crewman and is not gear related.



- **15- Maimed by Crew:** Bird was wounded by a crewman and is not gear related (i.e. bird is injured when gaffed by the rollerman).

- **INTERACTION OUTCOME:** Select the outcome of the interaction/sighting.
 - **1- Hooked:** The bird was hooked and retrieved on the gear or was accidentally snagged by a loose hook. A bird does not have to be killed to be hooked.
 - **2- Injuries:** The bird was injured during the event
 - **3- Flew Off:** The bird flew off or left the immediate area of the interaction. This is a common outcome for sightings.
 - **4- Released to Water:** Any bird that was removed from the vessel or gear and returned to the water. This could be a bird that was involved in a bird storm.
 - **5- Released, Flew Off:** Any bird that was removed from the vessel or gear and released over board. Upon release, the bird flew off.
 - **6- Died**
 - **7- Carcass Salvaged:** The bird died and the whole specimen was saved. (Not common in EM)
 - **8- Ended Observing/Went out of Camera View:** The bird could no longer be seen with the EM cameras.
 - **9- Not Applicable:** None of the above outcomes apply.

- **BIRD LOCATION:** Select where the bird is at during the interaction or sighting.
 - **1- Air**
 - **2- Water**
 - **3- Boat**
 - **4- Land**
 - **5- In Gear**
 - **6- Not Applicable**
 - **7- On Debris or Object**

- **WEATHER:** Select the appropriate weather at the time of the event.
 - **1- Sun**
 - **2- Clouds**
 - **3- Rain**
 - **4- Fog**
 - **5- Snow**
 - **6- Variable**



- **VESSEL ACTIVITY:** Select the appropriate vessel activity that was happening at the time of the bird event.
 - **1- Traveling**
 - **2- Setting**
 - **3- Offloading**
 - **4- Fishing**
 - **5- Processing**
 - **6- Resting**
 - **7- Not Applicable**

- **NOTES:** Use this section to describe any part of the interaction that could not be indicated by the fields above such as identifying characteristics of the sea bird, anything unusual about the interaction , or why a screenshot(s) were not taken.

Save a picture of the Seabird interaction or species of interest sighting to the appropriate Drive folder (1707, 1808, 1809). Name the picture as:

VesselName_ODDSNumber_HaulNumber_SpeciesID(_# for multiple seabirds of the same species, if only one bird is involved # is not necessary). Example:

BoatyMcBoatFace_99999_1_Short-TailedAlbatross



Compliance Monitoring

For the C/D season, we will be processing all trips using the Human Detector (HD) tool. The detector will mark the probability of humans on deck in order to help find events between hauls. During the marking of gear for the trip the reviewer will determine whether the trip has good image quality and assess the HD performance.

The reviewer will assess the completeness of the file, check for egregious oddities (minimal flagging or oversaturation of flagging), and/or for example, when marking a haul, a known time when humans are consistently on deck, does the HD identify them? If the trip passes these initial tests, the reviewer will use the HD protocol. If the trip does not pass these initial tests, the reviewer will use the alternate protocol.

HD Protocol

1. If the HD indicates a person on deck outside of hauls, once catch is already on board, the reviewer will spot check the video at the point in time. (The HD will be calibrated to flag events when there is an 85% or greater chance of people being on deck.) The reviewer will verify the presence of a person on deck and monitor their behavior. If behavior appears to be out of compliance with program requirements (for example, playing with salmon), continue watching until action ceases.
 - a. If no human is present, move forward in compliance review.
 - b. If crew behavior is compliant with program requirements (for example, smoking a cigarette), move forward in compliance review.
2. If there are fish on deck outside of a haul and the HD **does not** indicate people on deck, the reviewer will spot checks approximately every 15 minutes.
 - a. If a reviewer notices catch has been skewed or appears to have gone missing in between checks, the reviewer will jump back in time to determine what occurred.
3. The reviewer will annotate any discards observed during these spot checks per the protocol.

***Most spot checks will be less than 1 min, unless the reviewer notices actions that need further monitoring.**

Alternate Protocol

1. If no catch is on deck or the deckload is secured, the reviewer will spot check 2 times per hour, outside of hauls. Try to space these out to ~every 30 min.
 - a. If no human is present, move forward in compliance review.
 - b. If crew behavior is compliant with program requirements (for example, smoking a cigarette), move forward in compliance review.
2. If unsecured catch is on deck outside of a haul, the reviewer will spot check every 15 minutes.

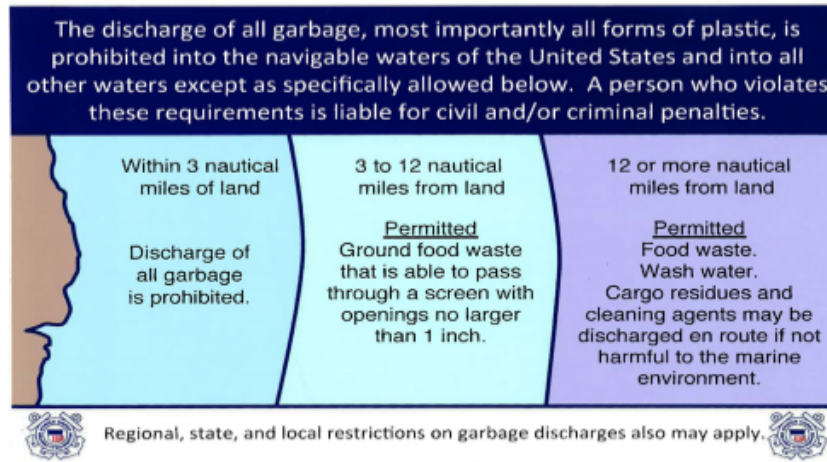


- a. If a reviewer notices catch has been skewed or appears to have gone missing in between checks, the reviewer will jump back in time to determine what occurred.
3. The reviewer will annotate any discards observed during these spot checks per the protocol.

***Most spot checks will be less than 1 min, unless the reviewer notices actions that need further monitoring**



MARPOL



MARPOL regulations are in place to limit pollution that originates on ships. One of the additional things you will look for during a trip is any possible violations to MARPOL. If you notice any of the following actions or observe another possible violation, use the MARPOL form within the software to document it. The form is a duration event and is created by right clicking at the beginning of the event and dragging the box to the end of the event. Within the form fill in the type of potential MARPOL violation and then include details of the event in the box.

- **EVENT TYPE**
 - **1-Oil/Petroleum Product Discharge:** sheen in the water, crew dumping petroleum products...etc
 - **2-Garbage Discharge:** any garbage being thrown overboard. Refer to the placard above for specific allowances but for the most part, no garbage (besides some food waste) should be thrown overboard.
 - **3-HAZMAT:** any hazardous material being discarded such as ammonia. This will be difficult if not impossible to identify through EM but if you notice a discard within this category, mark the event.
 - **4-Gear:** Any fishing gear discarded.
 - **5-Other:** Use the notes field to describe.
- **Details of MARPOL Event:** Include all pertinent details. What was discarded or what did you notice? This box will need to be filled in for every MARPOL event you mark.



Notes/Annotations

Reviewers can create a duration event to note anything that is not categorized within “Gap” parameters or other data forms, but this should be used as *rarely* because it is **unstructured data**. Double right-click to mark the start of the duration and double right-click at the end of the event duration. Enter any information about the event in the Notes field. As this is only a Notes field, so be as detailed as possible. If you find there is an event that cannot be captured through other forms, please inform your review supervisor.



Gaps

The Review Software marks a time gap in the data using a red box/outline (the absence of sensor data-power loss). To verify that the gap is correctly marked, the reviewer will need to double-right click the mouse at a time during the “gap” and verify there is no video.

Create a gap duration event when the review software has flagged a time gap in the data with a red box and if you notice a particular sensor (GPS, pressure, rotation, and/or video) is missing or is erroneous. Select one or more of the gap codes listed below to best describe the data gap. Use the notes field to indicate what data might be missing, how it affected your sampling scheme, etc. Placement of start and end of gaps should precisely encapsulate the problem, which requires special attention to the type of problem. **See Appendix C for Examples.**

- **GAP TYPE**

- **7- No data from 1 or more cameras:** Video data is missing, but sensor data is present. (Ex. deck camera drop out). Please refer to the video gap flowchart for a special instance about the stern camera and data affected.
- **26- GPS Issue:** GPS is missing, inaccurate or is not continuous (GPS data may be spotty or cut in and out for minutes at a time). ***If there is more than one GPS issue (inaccurate peak, missing GPS, cutting in and out, etc.) within 10 minutes of a previous GPS issue, encompass all GPS issues into one gap marking.***
- **51- Hydraulic Sensor Data Problems:** Hydraulic pressure sensor is missing or irregular.
- **54- Rotation Sensor Data Problems:** Sensor data is missing or present but data is irregular.
 - The rotation sensor data may appear backwards in the timeline, if this happens, a gap does not need to be created if there are no issues with the sensor or data; however, a jira ticket will need to be created to alert technicians so the sensor can be adjusted allowing the data to no longer appear backwards in the timeline.
- **52- Power Loss:** Power loss/cut to the EM system.
- **28- Installation or Software Error:** Diagnosis will have to be determined by EM Technicians (Ex. Video does not continue after rotation triggers the cameras) ***Confirm with technician or supervisor.*
- **39- Hard drive swap:** Vessel swaps their hard drive during a trip, which shuts down the system. Vessel should cease fishing activity while swapping hard drives. ***Confirm with technician or supervisor.*



- **40- Hard drive full:** Hard drive storage is at capacity, and the dataset may end abruptly. ****Confirm with technician or supervisor.**

- **NOTES:** Add comments for the gap event if necessary to help explain the issue.

- **DATA AFFECTED?** Select from below whether your data was affected by the gap marked. **Depending on the type, length and location in the trip of the gap, it may or may not affect your data. Use the provided flow charts (Appendix D) to determine if this is yes or no.**
 - **Yes:** **Refer to flowcharts ([Appendix D](#))
 - **No:** **Refer to flowcharts ([Appendix D](#))



Completing a Trip Review

Upon completion of a trip the reviewer should take the following steps to finalize their review.

1. **Data Check.** Verify data has been entered correctly by opening the Data Tables (Data -> View Data Tables) and checking them against the information submitted in the timeline. Look for misentered species codes, or a disposition with the wrong species.
2. **Total Review Time.** Once checked the reviewer should open the Trip form and add their Total Review Time (see Trip section).
3. **Data Export.** After completing the checks and adding the review time the data will be exported by clicking the Data menu and clicking Data Export. This will be saved in the working directory. If storing Exports from remote reviewers, create a new folder with the following naming scheme: **“MMDD Export”**.
4. **Backup data.** Create a copy of the review_data_event.sqlite3 within the trip folder. Create a new folder in the trip file, name it “backup sqlite,” paste the backup file and add “_bak” to the end of the file name. Ex: review_event_data_bak.sqlite3. If a remote reviewer, this will be done in the Anchorage office.
5. **Workflow log Update.** The information in the Data Workflow log must be updated. Refer to the [Workflow Log Instructions](#) for detailed information.
6. **Upload all relevant screenshots to the 1905 Drive folder.** This includes screenshots of:
 - a. Marine Mammals
 - b. Birds
7. **Locate the Trip Logbook.** For each logbook, assess the following and include feedback on the feedback form to the vessel:
 - a. Are all the fields filled out/ circled?
 - b. Do the fishing times seem to match? ***Remember that the timeline is UTC vs AKST on the logbooks!!***
 - c. Did they list all of the discards? Did we see those discards in review? For example, did EM see a shark but it wasn't logged? Did EM see a net bleed but no discards were reported? ***Do not compare or change your estimates!!***
8. **Complete Feedback Form:** Go to [Feedback Forms](#). Make a copy of “2020-Feedback Form-Trawl”. Double click the copy and rename it **“Vessel_ODDS number_SWI”**. Complete the trip fields at the top using the SPC and Workflow Logs and fill in the feedback form using the “Key” sheet located within the file.
 - a. For each criterion, rate the performance and add comments if needed.
 - b. For any criteria listed as “Good” or “Needs Work” add suggestions for improvement or explain why current practices impede the review process. Note relevant images.



- c. This is also an opportunity to provide positive feedback; let them know if they excel in a particular area.
 - d. Provide screenshots and number them or provide a comment with the screenshot at the end of the review form. Pictures will help them understand those “Needs Work” criteria in addition to the comments.
 - i. We have received feedback from multiple vessels that they like receiving screenshots with their feedback form. Whether it is illustrating issues or an entertaining photo of their crew. Make sure you take some for them! Thank you!!!!
 - e. Move completed form into the “Finished” folder and notify the supervisor in charge of vessel correspondence.
9. **Jira tickets:** Go to [Jira](#) and create a ticket for system issues during the trip. You’ll want to create a ticket for any system gaps that affected your data as well as any other issues you may notice such as:
- a. Rotation sensor reading backwards (sets read as hauls and vice versa)
 - b. Camera consistently overexposing the deck (not caused by sun glare)
 - c. Hydraulic issues throughout the trip.
 - d. If you are unsure if what you observed is an issue, contact your supervisor for further instructions. Before filling out any ticket, verify that a ticket has not already been made for the same issue on the vessel. **See the “[Creating a Ticket in Jira](#)” document for a step-by-step guide on how to create and submit the ticket:
10. **Verify that the vessel has updated review pictures saved in the 1905 folder.** File pathway is: 1905-Storage & Review → Bird, MM, Shark, & Vessel Camera View Photos → [Catcher Vessel Camera Views During Fishing Activity for VMPs](#). **For TENDER vessels:** 1905-Storage & Review → Bird, MM, Shark, & Vessel Camera View Photos → [Tender Vessel Camera Views During Deliveries](#). There should be a screenshot of each camera view **during fishing operations**. If there is NOT an updated set of pictures for the year, then take screenshots and add them in. Camera view screenshots should be named as: **Vessel Name_hauling or processing_1 or 2**
11. Trips will then enter into the QA/QC pool and be queried, audited. When uploading your data export folder to the appropriate weekly QA/QC folder, name the folder using the two digit month/day received with the vessel name: **MMDD_Vessel Name**. *If there is more than one drive with the same received date*, use **MMDD_Vessel Name_Last4ofdriveserial#**. EX: 0908_Cape St. Elias_MEPD & 0908_Cape St. Elias_MEV6. See [QA/QC Process](#) for details.