



NOAA
FISHERIES

SEFHIER

Better Data, Better Management

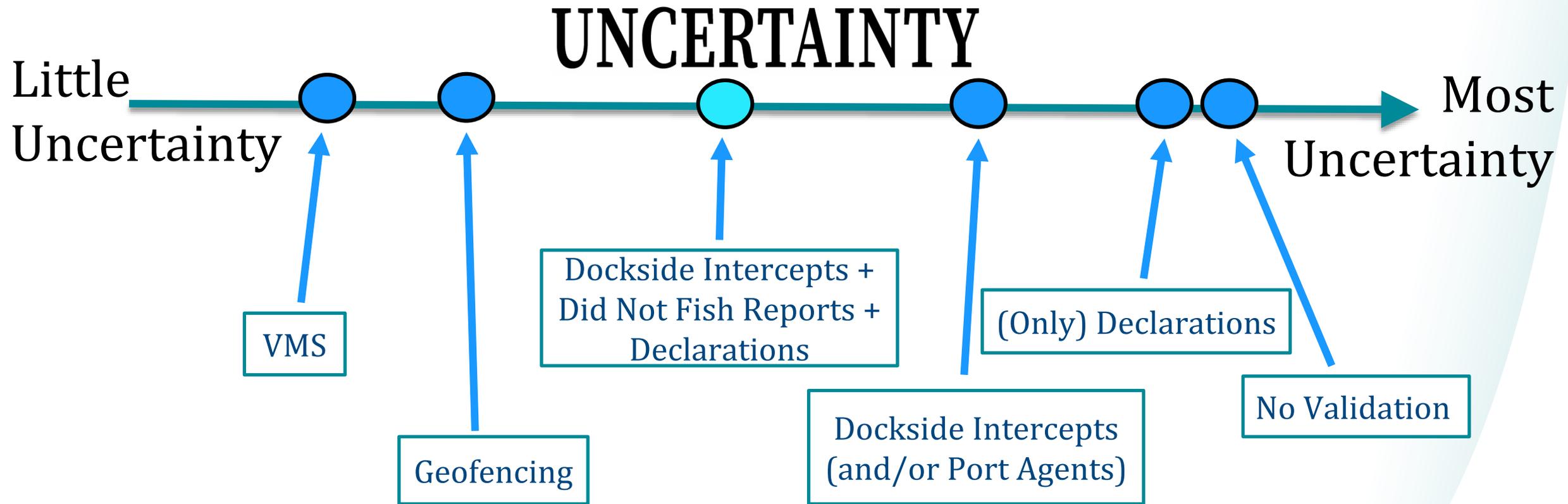
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Why Do We Need Trip Validation To Use The SEFHIER Data?

- Trip Validation – a method to estimate the amount of misreporting or non-reporting, in self-reported logbook data (i.e., allows us to estimate the amount of uncertainty, or error, in the data)
- Uncertainty – measured along a scale or continuum; where too much uncertainty makes final estimates of catch and effort unreliable



Measuring Uncertainty In Non-Reporting: Are They Latent Permits Or Not Reporting?



Dockside Intercepts (Or Port Agents) To Estimate Non-Reporting

➤ Dockside intercepts (or port agents) can be used to estimate non-reported trips, assuming there is a sufficient intercept to trip ratio

- The intercepts could also be used to estimate mis- and non-reported landings, and they provide an opportunity for biological data collection (measurements of length and weight)
- Dockside intercepts are more uncertain than VMS or geofencing though, because of the low sample size of intercepts to trips per day (i.e., boots on the ground is resource intensive)
- You can reduce the uncertainty in the estimate of non-reporting by increasing the ratio of intercepts to trips, adding a Did Not Fish (DNF) report requirement (i.e., DNFs provide rapid accounting of latent permits), and by maintaining the declaration requirement (aids enforcement)
- NOAA Fisheries already had a validation survey for the Gulf SEFHIER program; so **rapid re-implementation** is possible (if funds exist)



➤ Concerns?

- Expensive; if NOAA Fisheries doesn't have funding for dockside intercepts then there is no trip validation component to the program

Active vs Passive (Trip) Self-Validation



- ❖ **Active self-validation** – requires someone to manually do something (example: press button to start, or send a declaration to tell us your taking a trip)
- ❖ You can't rely on active self-validation to estimate non-reporting (if they are choosing to not report, they are unlikely to choose to “press the button”)

- ❖ **Passive self-validation** – no action needed, passively working in the background (examples: VMS or geofencing)
- ❖ You can rely on passive self-validation to estimate non-reporting



Declarations To Estimate Non-Reporting

➤ Declarations alone would not capture enough of the uncertainty to estimate non-reporting

- Requires someone to actively report
- However, declarations are important for other aspects of trip validation:
 - ❖ Alert the Office of Law Enforcement (OLE) when to meet a vessel at the dock
 - ❖ Inform OLE (in real time) what a vessel is actively doing, and provide trip documentation (or lack thereof)
 - ❖ Allow for automated compliance tracking in the SEFHIER data collection system

➤ Additional Considerations

- Combined with geofencing, declarations should be required for every for-hire fishing trip and any trip past the geofence
 - ❖ Without a declaration to inform a vessel's intended activity beyond a geofence, compliance & enforcement would be hindered

Edit

Trip Details / Declaration

Vessel

Gulf Vessel x

Tom Swann x

Is fishing intended?

No Yes

Trip Type

Charterboat x

Trip Start (EDT)

06/24/2024 11:12 AM

Estimated Trip End (EDT)

06/24/2024 01:12 PM

Landing Location

1035 DAVIS LANE x

OMB Control No. 0648-0016,

CONTINUE

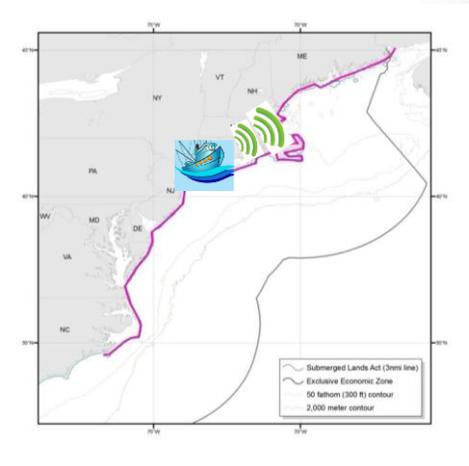
<https://www.bluefindata.com/>

Using Geofencing For Trip Validation: How Does It Work & What Are Some Options?

- Geofencing requires a device that passively tracks positions at a specified frequency (e.g. every 2 hours)
 - The device *must position regularly* in order to know whether the vessel has passed the geofence
 - Can specify the positioning frequency, but increasing the interval increases the uncertainty in capturing a trip
 - Example: if the positioning interval is every 6 hours, and the VMS positions just before it passes a geofence then it won't position again for another 6 hours; we may miss a trip, if the vessel returns before the next position occurs (i.e., within 6 hours)

- Examples for geofencing:

1. Modify existing VMS units: off the shelf solution = rapid implementation
2. AIS with Geofencing: off the shelf solution = rapid implementation
3. Develop a GPS tracking phone app: needs research, development, testing
4. Adapt the existing, land-based GPS tracking technology: needs research, development, testing



<https://www.fisheries.noaa.gov/resource/map/vessel-monitoring-system-demarcation-line>

1. Modify SEFHIER VMS Units



❖ Pros?

- ✓ Reduced positioning intervals might provide a service fee cost savings
- ✓ Many Gulf for-hire constituents already bought a VMS (its on hand), and some want to continue using their VMS (dual commercial permitted vessel have to), therefore its cost/resource effective
- ✓ NOAA has a VMS reimbursement program in place (susceptible to funding)
- ✓ Cellular or satellite options already exist (satellite may work better in remote areas)
- ✓ We've already type-approved units for SEFHIER + have a data transmission pathway from vendor to NOAA established = **rapid implementation**

❖ Cons?

- “VMS” has a negative stigma, a burden/cost to the constituent, and the agency would need to determine the privacy burden/impact
- Requires continuous tracking (must be powered on and operational 24/7), and must position frequently enough to capture up to 3 trips per day (so needs to position about every 3 hours)

❖ Alternative (less rapid) approaches that would limit the positional data that NMFS receives:

- NOAA Fisheries could reject positional data that are outside of an established geofence
- Adapt National VMS Standards; to allow for devices that only transmit inside geofence



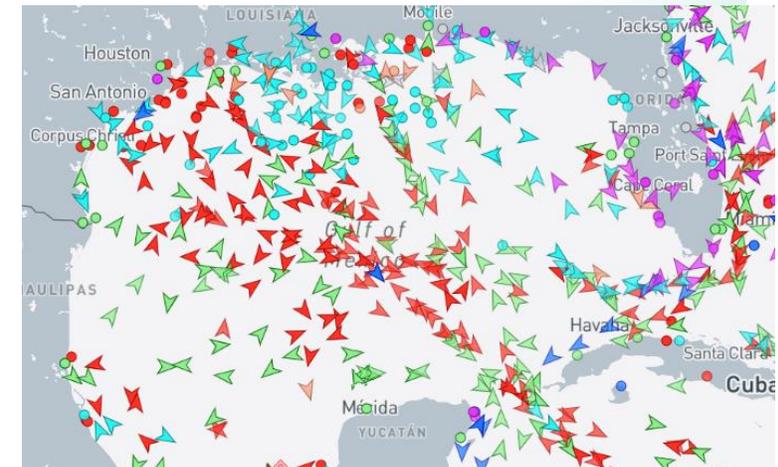
2. AIS with Geofencing

❖ Pros?

- ✓ Many AIS transceivers already on the market & available for purchase at boating stores (prices vary, but many AIS transceivers available between \$570-1400)
 - Example 1: [em-track](#), [available at The Outdoor Store](#)
 - Example 2: [Garmin AIS 800](#), [available at the GPS store](#)
 - Example 3: [Cortex AIS device](#), [available at West Marine](#)
- ✓ Functions like VMS, by [tracking vessel position](#), but works off of VHF (potential cost savings for constituents)
- ✓ Equivalent to VMS, but without the “VMS” stigma

❖ Cons?

- Requires continuous tracking (must be powered on and operational 24/7), and must position frequently enough to capture up to 3 trips per day
- **AIS data are publicly available** (e.g. [marinetraffic.com](#))
- Data pathway: AIS positional data currently go to the Department of Transportation, not NOAA Fisheries
- Would need field testing & type approval



<https://www.marinetraffic.com/en/ais/home/centerx:-87.2/centery:28.2/zoom:5>

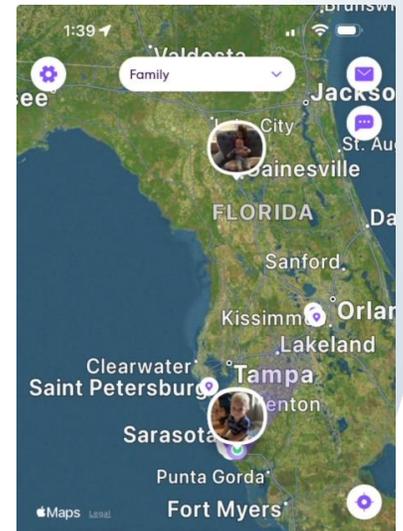
3. Develop GPS Tracking Phone App

❖ Pros?

- ✓ Works off cell phone service (no additional vendor service fees)
- ✓ App is “free” to industry (cost of cellular service - but already need this to use software reporting apps)
- ✓ Technology is out there, it just needs to be adapted to work for SEFHIER (to only alert NMFS when vessel passes geofence)
- ✓ <https://www.starlink.com/> service an option, for those in remote areas
- ✓ Equivalent to VMS, but without the “VMS” stigma

❖ Cons?

- Requires continuous tracking (must be powered on and operational 24/7), and must position frequently enough to capture up to 3 trips per day
- **App can be easily deleted by user; limited/unreliable ways to regulate or enforce**
- Technology is not ready; requires research, time to develop software & create the data flow/storage, and time for field testing/type-approval
- No existing funding to develop this technology



Example app: Life360

4. Adapt Existing GPS Tracking Technology

❖ Pros?

- ✓ Transportation and shipping industry has developed technology to track vehicles/equipment and packages in the field; technology is out there, it just needs to be adapted to work for SEFHIER (to only alert NOAA when vessel passes a geofence)
- ✓ Equivalent to VMS, but without the “VMS” stigma

❖ Cons?

- Requires continuous tracking (must be powered on and operational 24/7), and must position frequently enough to capture up to 3 trips per day
- Technology is not ready; requires research, time to develop software & create the data flow/storage, and time for field testing/type-approval
- No existing funding to adapt this technology



Example: [Samsara](#)

Summary: Trip Validation Options to Estimate Non-Reporting?

UNCERTAINTY

Most Uncertainty

Little Uncertainty

1. No Trip Validation:

- ❖ Estimates have too much uncertainty, therefore data can not be used in management/stock assessment

2. Dockside Intercepts to Validate Trips:

- ❖ **Accounts for an acceptable level of the uncertainty in the data, to estimate non- and mis-reporting (assuming an appropriate ratio of intercepts to trips exists)**
- ❖ Already had a validation program for Gulf SEFHIER; possibility of rapid re-implementation
- ❖ Reduce uncertainty in estimates of non-reporting by increasing the ratio of intercepts to trips, adding a Did Not Fish requirement (rapid accounting of latent permits), and a declaration (improve enforcement capabilities); also estimate misreported landings & collect length data
- ❖ Risk = costly for the agency; may not have, or could lose funding

3. Using Geofencing to Self-Validate Trips:

- ❖ Lots of options - some options will take time and money to research, develop & test; may prove to be nonviable in the end (e.g. P-Sea WindPlot, with Shrimp)

-- THE END --

Questions???



Thank you!!