# Consideration of data loggers to monitor gillnet soak durations
September 2023

Previous research ([Matzen et al. 2015](#))

Data logger technology

- Developed to monitor and enforce trawl durations
- Detects when a tow has exceeded a specified threshold
- Takes depth measurement every 30 seconds
- "Alarm" event recorded in file when tow duration exceeded
- LED blinks every 4 sec to confirm the unit is operational
- LED can also indicate if alarm event has triggered
- Welded to trawl door in a housing made of polypropylene and stainless pipe clamps
- Tamper-evident seal placed in bolt; indicates if nut has been loosened to access the unit
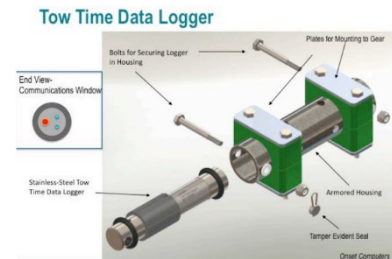
Results

- Deployed on 9 trawl vessels with 7 different target species
- Tested short- and long-term deployments
- 954 hauls recorded over 897 days
- Battery lasted multiple years (longest deployment >3 yrs)
- Depth readings were tested dockside and found to be accurate
- Tow duration verified in study where tow times were kept in haul log and determined consistent
- Stored ~ 3 months of haul data
- No failure due to shock or vibration
- Only issue was pressure sensor clogged with silt substrate on deep deployments (~200 m). Corrected by installing a filter through the pressure access holes.

New research - second generation data logger

Specifications

- Measure time the unit is submerged below a specified depth
- Tamper resistant and tamper evident (physical unit and data)
- Expanded data storage (one year at a sampling rate of once every 30 seconds when submerged)
- Operate on iOS and potentially a limited number of android platforms
- Battery life of at least one year
- Means (alert) by which enforcement can determine if duration has been exceeded
- Unique serial number on the logger and the data recorded
- Final cost <1K per unit

Preliminary information for discussion purposes only

Next steps
- Request proposals to develop logger with new technology
- Then will partner with trawl vessels to test the operational feasibility
- Once feasibility testing is complete, evaluate for potential management application

Items to be determined
- Location
  - Logger does not record location of the haul
  - Exploring options for linking logger data to location data:
    - Stand-alone GPS
    - Linking to AIS, VMS, or VTR

- Data collection and transfer
  - Exploring options:
    - On board wireless transfer to tablet/phone
    - On board transfer to tablet/phone using a shuttle (previously tested in Matzen et al.)
    - Autonomous data upload to cloud database via cellular or satellite
  - Once collection and transfer are determined, need to clarify how exceedances are reviewed

Applicability to gillnet fisheries
- Likely work for gillnet fisheries
- Would likely need to redesign the housing
- Consideration of the number of loggers required per net and/or string
- Consideration of whether there could be issues with transferring data from multiple loggers
- Ideally develop one technological approach/database across applications (e.g., trawl, gillnet, other) to reduce confusion and streamline data handling