Gulf of Mexico Shrimp Fishery Electronic Logbook Data

History

The electronic logbook is a simple time-stamped global positioning system (GPS) unit that records and stores a vessel’s location at 10-minute time intervals. An algorithm computes vessel speed between points and activity based on that speed. Since 2007, federally permitted Gulf of Mexico shrimp fishers have been required to participate in the ELB program if selected.

Prior to 2014, the program was administered by LGL Ecological Research Associates, Inc. This initial ELB program, which operated from 2004 until 2013, required that each vessel be met at the dock to retrieve a computer chip (SD card) from the ELB unit. In 2014, NMFS took over administration of the program and 3G cellular capabilities were integrated into the ELB unit (hence, cELB or cellular ELB), so that data automatically uploaded to a server when the vessel was within non-roaming cellular range. This capability reduced handling costs and eliminated the need for a technician to meet returning vessels to remove and program the memory card, and put the data in the analysts' hands more quickly.

However, as technology advanced, the 3G component of the cellular ELB became obsolete. The units continue to collect data as long as it is powered up, but stopped transmitting data via cellular service as of December 31, 2020. With the assistance of the shrimp industry and the Gulf Council, NOAA Fisheries is exploring options for replacement of the 3G cellular electronic logbooks. Meanwhile, NOAA Fisheries is working directly with program participants to retrieve SD cards and provide new SD cards to swap the data card chips from these units.

Initially 500 permits were selected in 2014 to participate in the cELB program (an additional 10 vessels had been equipped with units in 2013 for testing/comparison purposes). An additional 100 pemits were selected in 2018. In January 2022, 454 participants were sent SD cards to swap out for data retrieval.

Data Products

There are a multitude of data products produced by the algorithm that processes the data retrieved from the ELB units. Many of the “effort” files created after the data has been matched to landings do not have the spatial resolution that would be very useful for any type of suitability analysis (no GPS coordinates—just a statistical and depth zone).

The following files are the most useful and have the best spatial resolution:

1. boxnum.csv. This file holds a record for each observation (after the first) with location, date and time, and an indication of the assumed activity for the record (t,T,h,H,s,S), based on the net vessel speed between the last two records.

|  |  |
| --- | --- |
| SPEED RANGE (KNOTS) | ACTIVITY |
| < 1.0 | H |
| 1.0<2.0 | h |
| 2.0<3.8 | Trawling |
| 3.8<5.0 | s |
| >5.0 | S |

1. boxnumgeo.csv. This file holds records that represent each tow that was detected during the time the box was installed. This is the electronic equivalent of the Captain’s manual logbook. It includes date, time, location (latitude and longitude in decimal degrees), and duration of the trawl. There is an additional field to indicate which NMFS statistical area / depth zone the tow originated in. The file is created by spatially joining the file with a shapefile containing the NMFS statistical area / depth zone polygons.

|  |  |
| --- | --- |
| FIELD | DESCRIPTION |
| box | cELB box ID |
| vnumber | Vessel ID |
| yr | tow start year |
| mon | tow start month |
| day | tow start day |
| hr | tow star hour |
| min | tow start minute |
| slat | tow start latitude |
| slon | tow start longitude |
| elat | tow end latitude |
| elon | tow end longitude |
| towsecs | duration of tow in seconds |
| szdz | Stat zone/Depth zone |

Caveats

* Data in the files described above have not been matched with landings data. It is possible that a vessel has been selected to carry a ELB but is engaging in activities other than shrimping. If that vessel is traveling at speeds which are the same as those classified as towing, it will appear as if the vessel is fishing. (Data that is matched to landings is based on a trip—not individual tows).
* The ELB data from most of 2005 were largely limited to the Texas geographic region.
* There may be a lack of data in 2013 due to the transition between the original ELB program and the cellular program (many of the SD cards may not have been retrieved).
* The "T" code is the trawling speed, HOWEVER.....this raw data goes through an algorithm that lumps the different activity codes into trawling or not, so a few random "T" codes don't really mean that a particular location marked with that code was actually part of a trawl and there may be some of the other codes that do get included as being part of the actual trawl.
* There is not an output of the data after it goes through that algorithm to tell you which records were considered part of the tow and which ones were not.

References

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