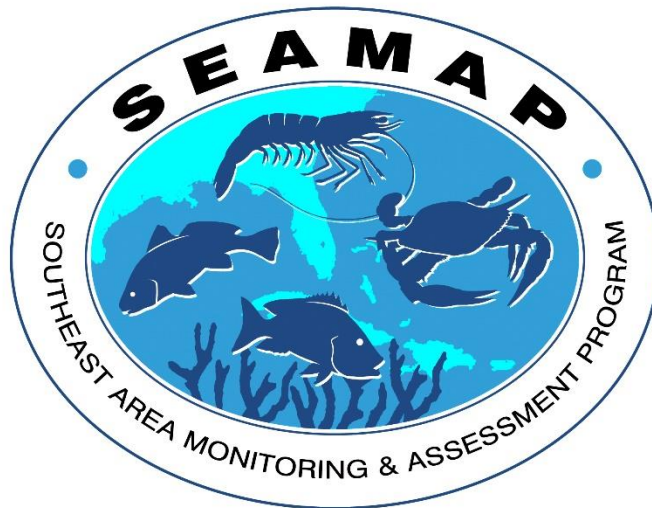# SEAMAP

Bottom Longline
Data Structures

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Introduction

The SEAMAP Data Management System (DMS) is a relational database of survey data containing information from the five Gulf States and National Marine Fisheries Service (NMFS). The surveys are conducted throughout the year following established protocols and methods.

This document provides detailed information on the data structures used to store survey results.

List of Tables

1. Cruises – Specific information on a survey. Type of survey and dates.

2. Station_Data – Information on sampling locations during a survey.

3. Catch_Data – Information on Biological catch at a specific survey station.

Detailed Table Descriptions

Cruises

Cruise Record

Field Name	Field Type
Cruise_Id	INTEGER Primary Key
Cruise_Start	Date (DD-MM-YYYY)
Cruise_End	Date (DD-MM-YYYY)
Cruise_Source	CHAR(2)
Cruise_Title	CHAR(50)
Cruise_Vessel	CHAR(10)
Cruise_Type	CHAR(2)

Field Descriptions – Cruises:

--Cruise_Id is a unique integer assigned for each entry.

--Cruise_Start contains the date the first station for that survey was sampled.

--Cruise_End contains the date the last station for that survey was sampled.

--Cruise_Source is a two digit code for the source (SEAMAP Partner) that collected the data.

--Cruise_Title contains a descriptive title for the survey

--Cruise_Vessel contains text string representing survey vessel number. In some cases multiple vessel numbers may be appended to form content if multiple vessels utilized during survey.

--Cruise_Type – Two character field typically contains string "BL" for Bottom longline surveys.

Station_Data

Station_Data Record

Field Name	Field Type
SID	INTEGER Primary Key
CID	INTEGER
DATE	Date (DD-MM-YYYY)
VESSEL_NO	CHAR(255)
SOURCE	CHAR(2)
SEAMAPSTATION	CHAR(255)
ENV_LAT	DECIMAL(8,2)
ENV_LON	DECIMAL(8,2)
SECCHI	DECIMAL(4,2)
DEPTH	DECIMAL(5,2)
TIMEENV	INTEGER(4)
TEMPSUR	DECIMAL(4,2)
TEMPMID	DECIMAL(4,2)
TEMPBOT	DECIMAL(4,2)
SALSUR	DECIMAL(4,2)
SALMID	DECIMAL(4,2)
SALBOT	DECIMAL(4,2)
DOSUR	DECIMAL(4,2)
DOMID	DECIMAL(4,2)
DOBOT	DECIMAL(4,2)
HF1LAT	DECIMAL(8,5)
HF1LON	DECIMAL(8,5)
HF1STIME	INTEGER(4)
HF1ETIME	INTEGER(4)
HF1DEPTH	DECIMAL(5,2)
HF2LAT	DECIMAL(8,5)
HF2LON	DECIMAL(8,5)
HF2STime	INTEGER(4)
HF2ETIME	INTEGER(4)
HF2DEPTH	DECIMAL(5,2)
TIMESOAK	INTEGER(4)
GEARCODE	CHAR(255)
HOOKSIZE	CHAR(255)
OPCODE	CHAR(2)
COMMENT	CHAR(255)

Field Descriptions – Station_Data:

SID Unique integer for each Station_Data record.

CID Unique integer for each entry in CRUISES record.

DATE (date in MM/DD/YYYY format)

VESSEL_NO (text field with name of vessel or SEAMAP number if vessel has a SEAMAP number)

SOURCE (FL, AL, MS, LA, TX, or US)

SEAMAPSTATION (A concatenation of the six digit date, BL and station number for the day) – station 2 on March 16, 2012 would have a SEAMAP Station Number of 031612BL02

ENV_LAT (Enter vessel position when collecting environmental data in degrees, minutes, and hundredths of minutes, observing indicated decimals and entering trailing zeros)

ENV_LON (Enter vessel position when collecting environmental data in degrees, minutes, and hundredths of minutes, observing indicated decimals and entering trailing zeros – make sure that all values are negative in the Gulf of Mexico)

SECCHI (depth in meters of the Secchi depth – record to 1 decimal point)

DEPTH (depth in meters of where the environmental data was sampled – record to 1 decimal point)

TIMEENV (military time for start of the collection of environmental data) HHMM

TEMPSUR (temperature in degrees Celsius taken at the water's surface – record to 1 decimal point)

TEMPMID (temperature in degrees Celsius taken at the water's middle depth– record to 1 decimal point)

TEMPBOT (temperature in degrees Celsius taken at the water's maximum depth – record to 1 decimal point)

SALSUR (salinity in psu measured to 1 decimal point)

SALMID (salinity in psu measured to 1 decimal point)

SALBOT (salinity in psu measured to 1 decimal point)

DOSUR (dissolved oxygen (mg/L) measured to 1 decimal point)

DOMID (dissolved oxygen (mg/L) measured to 1 decimal point)

DOBOT (dissolved oxygen (mg/L) measured to 1 decimal point)

HF1LAT (Enter latitude position of starting High Flyer in degrees, minutes, and hundredths of minutes, observing indicated decimals and entering trailing zeros)

HF1LON (Enter longitude position of starting High Flyer in degrees, minutes, and hundredths of minutes, observing indicated decimals and entering trailing zeros – make sure that all values are negative in the Gulf of Mexico)

HF1STIME (military time for deployment of the starting High Flyer)

HF1ETIME (military time for retrieval of the starting High Flyer)

HF1Depth (depth in meters of the starting High Flyer)

<u>HF2LAT</u> (Enter latitude position of ending High Flyer in degrees, minutes, and hundredths of minutes, observing indicated decimals and entering trailing zeros)

<u>HF2LON</u> (Enter longitude position of ending High Flyer in degrees, minutes, and hundredths of minutes, observing indicated decimals and entering trailing zeros – make sure that all values are negative in the Gulf of Mexico)

<u>HF2STIME</u> (military time for deployment of the ending High Flyer)

<u>HF2ETIME</u> (military time for retrieval of the ending High Flyer)

<u>HF2DEPTH</u> (depth in meters of the ending High Flyer)

<u>TIMESOAK</u> (minutes that the line fished for HF2STIME – HF1ETIME)

<u>GEARCODE</u> (see Appendix 1 for a list of gear codes, multiple gears can be used with each one separated by a comma)

<u>HOOKSIZE </u>(Size of the hooks used on the bottom longline)

<u>COMMENT</u> (any comments about the station or environmental records)

Catch_Data
Catch_Data Record

Field Name	Field Type
CDID	INTEGER Primary Key
CID	INTEGER
SID	INTEGER
SEAMAPSTATION	CHAR(255)
SAMPLEID	CHAR(255_
GENUS	CHAR(255_
SPECIES	CHAR(255_
BIOCODE	CHAR(255)
SEX	CHAR(255)
PCL	DOUBLE(15_
SL	DOUBLE(15)
FL	DOUBLE(15)
TL	DOUBLE(15)
DW	DOUBLE(15)
WGT	DECIMAL(6,2)
RELCOND	CHAR(1)
FISHID	CHAR(255)
SAMPLES	CHAR(255)
TAGNUMBER	CHAR(50)
COMMENT	CHAR(255)

Field Descriptions – Catch_Data:

CDID Unique integer for each Catch Data record

CID is a unique integer assigned for each entry in CRUISES table

SID is a unique integer assigned for each entry in Station_Data table.

SEAMAPSTATION (use the station number from the station record – this is the primary key to link the catch data to the station and environmental record)

GENUS (genus id)

SPECIES (species id)

BIOCODE (taken from the SEAMAP biocode list)

SEX (M = male, F = female, U = undetermined, or N = not examined – can be filled in later for teleost fish or immediately for elasmobranchs)

PCL (pre caudal length in mm, sharks only)

SL (standard length in mm)

FL (fork length in mm)

TL (stretch total length in mm)

DW (disc width for rays or carapace width turtles in mm)

WGT (recorded in kg)

RELCOND (Release condition of the fish) See Appendix 2 below for release condition codes

TAGNUMBER (Include the tag number here if the fish was tagged for mark and recapture purposes)

FISHID (identifier for each fish – start with the source code from above followed by a three digit number that increases sequentially in the form AL002 for the second fish caught by Alabama)

SAMPLES (list any biological samples that were taken – otoliths, gut contents, gonads, etc.)

COMMENT (other samples taken or other events associated with the catch record)

Appendix 1: Gear Codes

CODE GEAR TYPE

*T	TRAWL, STAR	MO	PLANKTON, MOCNESS
01	COMBINATION--SS+CC	MQ	MARQUESETTE
02	COMBINATION--SS+PR	MS	TRANSMISSIVITY
03	COMBINATION--CC+PR	MT	TRAWL, MIDWATER
04	COMBINATION--SS+CC+PR	NN	PLANKTON, SINGLE NEUSTON OR NEKTON
05	COMBINATION--FM+SS	NS	NETSONDE
06	COMBINATION--FM+SS+PR	OB	LONGLINE, OFF-BOTTOM
07	COMBINATION--FM+PR	OD	ODOMETER
A	ASSORTED	OF	OVERFLIGHT
AC	BIOSONICS ACOUSTIC SYSTEM	OH	OXYGEN, TITRATION, HACH KIT
BB	TRAWL, BIB	OI	OXYGEN, SENSOR, IN SITU
BC	BOTTLE CAST	OO	OXYGEN, SENSOR, ON DECK
BG	BATHYTHERMOGRAPH (CTD, STD)	OR	OYSTER RAKE
BL	LONGLINE , BOTTOM	OW	OXYGEN, TITRATION, WINKLER
BS	SEINE, BEACH	OX	OXYGEN, SENSOR, CTD
BT	TRAWL, BEAM	OY	OXYGEN, SENSOR, YSI
CA	CHLOROPHYLL, EXTRACTION	PN	PLANKTON, GENERAL (BONGO, ETC.)
CC	CAMERA, CLOSED CIRCUIT TELEVISION	PR	PROFILER, 3.5 KHZ SUB-BOTTOM
		PS	SEINE, PURSE
CD	DREDGE, CLAM	PT	TRAWL, SCALLOP
CM	CURRENT DOPPLER	QD	DREDGE, QUAHOG
CR	CORAL REEF MODUAL	RE	SALINITY, REFRACTOMETER
CS	CONTINUOUS FLOW SYSTEM	RF	RECORDING FATHOMETER
CT	TRAP, CRAB	RG	PLANKTON, RING NET
DL	DEEP LINE	RL	TAG RELEASE
DN	PLANKTON, DOUBLE NEUSTON	RN	ROUND NET
OR	NEKTON	RR	ROD AND REEL
DR	SURFACE DRIFTER	RS	TRAWL, NON-STANDARD
DV	DIVING	RT	ROTENONE
EF	TRAWL, FISH, EXPERIMENTAL	RV	REMOTELY OPERATED VEHICLE (ROV)
ES	TRAWL, SHRIMP, EXPERIMENTAL	S5	TRAWL, MONGOOSE
FD	TRAWL, FISH DEFLECTOR	S6	TRAWL MONGOOSE
FE	TRAWL, FISH EXCLUDER	SA	SALINITY, AUTOSAL
FL	FLUORESCENCE, CONTINUOUS FLOW SYSTEM	SB	SALINITY, BECKMAN RS5
		SC	CAMERA, STILL
FM	FATHOMETER	SD	DREDGE, SCALLOP
FP	FISH PUMP	SE	SECCHI DISC
FT	TRAWL, FISH	SF	SALINITY, CONTINUOUS FLOW SYSTEM
FX	FLUORESCENCE, IN SITU	SH	TRAWL, SHUMAN
GN	GILL NET	SI	SALINITY, SENSOR, IN SITU

GR	BOTTOM GRAB OR CORE SAMPLER	SL	SALINITY, BENCH TOP/LABORATORY
HL	HANDLINE	SJ	SQUID JIG
HO	TRAWL, HIGH OPENING BOTTOM	SM	TRAWL, STANDARD MONGOOSE
IT	TRAP, ICHTHYOPLANKTON, ILLUMINATED	SN	TRAWL, SEPARATOR
		SO	SONAR
JP	JACKPOLE	SS	SONAR, SIDE SCAN
KP	LONGLINE, KALI POLE	ST	TRAWL, SHRIMP
KT	TRAWL, WING	SX	SALINITY, CTD
LL	LONGLINE, SURFACE	SY	SALINITY,YSI
LN	LIFT NET	T3	TEMPERATURE SCS
LP	SEINE, LAMPARA	TA	TEMPERATURE, CONTINUOUS FLOW SYSTEM
LR	TRAP, LOBSTER, REED	TB	TEMPERATURE, BECKMAN RS5
LT	NIGHT LIGHT	TC	TEMPERATURE, CTD
LW	TRAP, LOBSTER, WIRE	TD	DREDGE, TUMBLER
MC	CAMERA, MOVIE	TE	TRAWL, TURTLE EXCLUDER
ML	MISCELLANEOUS- DETAIL IN COMMENTS	TF	TEMPERATURE, FLUKE
		TG	TROLLING GEAR
MN	MICROPEKTON	TH	TEMPERATURE, THERMOMETER

TI	TEMPERATURE, SENSOR, IN SITU
TM	TEMPERATURE, BUCKET
TN	TRAWL, TRY NET
TO	TEMPERATURE, SENSOR, ON DECK
TR	TRAP, FISH
TS	SEINE, PURSE, TURTLE
TT	TRAWL, TWIN
TU	PLANKTON, TUCKER TRAWL
TV	TRAP VIDEO
TY	TEMPERATURE, YSI
UD	DREDGE, UNSPECIFIED
VC	CAMERA, VIDEO
VD	VERTICAL DRIFTLINE
VJ	VISUAL OBSERVATION
VL	VERTICAL LONGLINE
V2	VERTICAL LONGLINE WHERE EACH FISH IS IDENTIFIED TO HOOK
VP	VERTICAL PROFILE
WI	WEATHER INSTRUMENT
WT	TRAP, LOBSTER, WOOD
XB	EXPENDABLE BATHYTHERMOGRAPH (XBT)

SEAMAP Examples of Gear Code Use

For Salinity - Reading obtained by CTD: BG, SX

For Oxygen - Reading obtained by CTD: BG, OX

Sample obtained from bottle cast for titration by the Winkler method BC, OW

For Temperature - Reading obtained by CTD: BG, TC

Scenario Example -

Procedures at a SEAMAP station included a CTD profile, a Secchi disc reading, a bottle cast for water samples, a sediment grab, and a bottom longline.

BG, BC, TC, SX, SE, OX, CA, GR, and BL

Highlighted gear codes are ones that are typically used during the Vertical Line Survey. Other gear codes may be used, but typically you will use the highlighted gear codes.

Appendix 2: Release Condition Table

Release Condition Code	Description
1	Swim Burst
2	Strong Swimming
3	Sluggish Swimming
4	Float/Sink
A	Status upon capture - Alive (body movmements or nictatating eyelid reacts when tapped near eye)
D	Status upon capture - Dead (not moving and non-responsive)
K	Kept
P	Predation
X	Released Dead – No longer used