CA Reefs and CA Platforms Fish Survey Data Formatting

UCSB Marine Science Institute fish surveys

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Tables used:

- names_fishcodes
- tbl_FISH
- tbl_DIVE
- tbl_TRANSECT
- tbl_HABITAT

Tables exported directly to a temporary file geodatabase.

tbl_DIVE

- separated into two tables: tbl_DIVE_rigs and tbl_DIVE_reefs based on nat_rig field (value either “rig” or “natural reef”)
- 31 of 445 records in the tbl_DIVE_reefs table had null values for coordinates (most of these list “demo_dive” or “failed_dive” in the purpose field). Locations for these records could not be generated.
- 414 reef locations created from tbl_DIVE_reefs, keeping only the following fields: dive, day, month, year, location, site, project, region, Lat_DD, and Long_DD (all fields will still be retained in the final data table that will be associated to the reef location feature class).

- NAME field added to tbl_DIVE_rigs and platform name values added to match those in the USGS Oil_Platforms_2002 feature class (renamed Oil_Platforms in the geodatabase).
- Platform coordinates added using values from USGS Oil_Platforms_2002 featureclass.

names_fishcode, tbl_FISH, tbl_HABITAT, tbl_TRANSECT, and tbl_DIVE (tbl_DIVE_reefs and tbl_DIVE_rigs).

- Some "fishcode" values in names_fishcodes and tbl_FISH were not uppercase. They were converted to all uppercase so that a join could be correctly applied.
- names_fishcode and tbl_FISH tables joined on "fishcode." Table exported as tbl_FISH_fishcodes.
- tbl_FISH_fishcodes joined to tbl_HABITAT on Patch_ID. Table exported as tbl_FISH_fishcodes_HABITAT. This is not a perfect join because 1270 Patch_IDs in tbl_HABITAT do not occur in tbl_FISH_fishcodes and 54,536 Patch_IDs in tbl_FISH_fishcodes are null. This results in the 1270 tbl_HABITAT records being dropped and 54,536 records in tbl_FISH_fishcodes_HABITAT with null values for the joined tbl_HABITAT fields.
- tbl_TRANSECT: dive_trn_seg (Dive-Transect-Segment) field created by concatenating values from those fields. The combination of these three values is a unique identifier for records in tbl_HABITAT, allowing for a join. The values were concatenated using the Field Calculator—ensuring that the same format was used as in tbl_HABITAT's dv0tx0seg field with Transect and Segment values 1-9 including a "0" (i.e. 01, 02, 03, etc.).
- tbl_HABITAT: dv0tx0seg (Dive-Transect-Segment) field contained 54,536 null values. Field Calculator used to add the correct concatenated values.
- tbl_TRANSECT joined to tbl_FISH_fishcodes_HABITAT on dive_trn_seg (23 dive_trn_seg values were not present in tbl_FISH_fishcodes_HABITAT resulting in those records being dropped during the join). Table exported as tbl_FISH_fishcodes_HABITAT_TRANSECT.
- Relates were performed from the dive tables (reefs and rigs) to tbl_FISH_fishcodes_HABITAT_TRANSECT to find only the records related to each for a join. 159,639 records related to reefs, 53,558 records related to rigs (out of 213,197 total).
- Associated records with reefs exported as tbl_FISH_fishcodes_HABITAT_TRANSECTS_Reefs. Associated records with rigs exported as tbl_FISH_fishcodes_HABITAT_TRANSECTS_Rigs.
- tbl_FISH_fishcodes_HABITAT_TRANSECTS_Reefs joined with tbl_DIVE_reefs. Table exported as Reefs_data.
- tbl_FISH_fishcodes_HABITAT_TRANSECTS_Rigs joined with tbl_DIVE_rigs. Table exported as Platforms_data.
- Duplicate fields in Reefs_data and Reefs_Locations deleted.
- Reefs_data table and Reefs_Locations exported to geodatabase. Relationship Class between Reefs_locations and Reefs_data on Dive ID created.
- Platforms_data exported to geodatabase. Relationship Class between Platforms and Platforms_data on Name created.

Reefs_data:
This is the final, flat file table that includes data from names_fishcode, tbl_FISH, tbl_HABITAT, tbl_TRANSECT, tbl_DIVE (reef records only).

- It is associated with the Reef_Locations point feature class using a relationship class in the geodatabase based on Dive ID.
- This table is provided in a raw format, without summary.

Platforms_data:
This is the final, flat file table that includes data from names_fishcode, tbl_FISH, tbl_HABITAT, tbl_TRANSECT, tbl_DIVE (rigs records only).

- It is associated with the Platforms point feature class using a relationship class in the geodatabase based on Platform name.
- This table is provided in a raw format, without summary.

Field Definitions

dive: Dive identifier code. Dive number is a 4 digit number, corresponding to Delta's actual completed dives. Dive number is written on videotapes.
transect: The transect number (constrained to be >= 0 And <= 10 Or = 777 Or = 888): 777 = is for cowcod seen/counted on the right hand side of the sub. Between transects during that dive; similarly, 888 = cowcod on left hand side of sub.
segment: Because breaks occur during the transect, SEGMENT was added to enter the start and end times of each break during the transect.
realtime: The time the fish was encountered along the transect. Time is observed visually on the video footage.
fishcode: To constrain fish species to these existing predetermined FISH species codes.
size_class: Species code (new 6 character max. code).
freq: Number of fish of that species and size_class present for that realtime.
measure: Calculated by converting time to daily seconds (realtime * 86400 seconds) corresponds to measure in habitat, ctd, and transect files.
dist_to_cowcod: Distance from sub to the cowcod in feet, 99999 means that no distance could be determined but cowcod present.
id_qual: Default = 1 good identification of the species, otherwise 2 = questionable id, 3 = poor id.
handheld_cam: 0/1 (no/yes): cell is checked if observation was made using the handheld video camera, default is no.
to_verify: 0/1 (no/yes): this cell can be checked to denote that the fish species or size_class identification requires verification (ie. needs to be viewed by another observer).
Fcomments: Comments on fish.
depth: Depth in meters at which fish occurred.
entrysequence: Automatically generated upon data entry, denotes order in which records were entered, and can be useful in error checking.
off_transect: Within traditional 2 meter transect limits, this would equal yes for cowcod seen >2 meters away during CCA line surveys, and cowcod seen between transects.

temperature: Temperature (degrees Celsius) from CTD at time and location of fish sighting.
CTD_roundmeasure: Rounded conductivity-temperature-depth value.
Weight: Weight of fish in grams as calculated by the formula aL^b using values in the table tbl_fish_weights.
Scientific_Name: FISH scientific names.
Common_Name: FISH common names.
sp_sub_gp: FISH unofficial grouping used to lump species for data analyses.
species_grp: FISH unofficial grouping used to lump species for data analyses.
Family: FISH family association.
MAX_SP_SIZE: FISH rounded maximum size (nearest 5 cm) for each species (NB: default is set at 200cm). Constrains max size for each species during data entry: based on the query [qry_fish_maxsize].
Real_max_sz: FISH Maximum published size (cm) for each species (NB: default is set at 200cm).
Love_code: Milton Love's FISH SPECIES CODES (pre 2002).
Yok_code: Mary Yoklavich's FISH SPECIES CODES (pre 2002).
Hecta_codes: HECETA BANK FISH SPECIES CODES (CURRENT).
Number: HECETA BANK FISH.
TaxonID: HECETA BANK FISH.
Acronymn: HECETA BANK FISH.
dv0tx0seg: Concatenate dive, transect, and segment with zeroes to separate them to create a unique segment identifier to be used in ETgeowizard as an identifier.
patch_start: Start time of habitat patch.
patch_end: End time of habitat patch.
bottom_Type: Two-letter code for substrate—first code is 50 - 80% cover, second code is 20 - 50% cover. G = gravel 2 - 4 mm (G. Greene). R = ridge - high rugosity. B = boulders > 25.5 cm. C = cobble 6.5 - 25.5 cm. P = pebble 2 – 6.5 cm. S = sand. M = mud. F = flat rock – low rugosity. X = pause in tx (not used for UCSB). Z = end of tx (not used for UCSB). T = pinnacle (large vertical relief, connected to other rock).
relief_1: For each habitat patch, a primary relief code is assigned which reflects the predominant relief (50 – 80%) of the patch. 1 = flat (0 – 5%). 2 = low (5-30°). 3 = high (>30°).
relief_2: Secondary relief code represents 20 – 50% of patch. 1 = flat (0 – 5%). 2 = low (5-30°). 3 = high (>30°).
patch_length: Patch length in meters.
patch_start_depth: Depth at start of habitat patch.
patch_end_depth: Depth at end of habitat patch.
from_measure: Used for GIS; linear referencing value, in seconds of day (86400 * starttime).
to_measure: Used for GIS; linear referencing value, in seconds of day (86400 * endtime).
Percent_cover: not used.
encrust_org: not used.
Comments: General comments.
MAmend_comment: Amended comments.
Snook_NOTES: Linda Snook's comments.
Patch_ID: Corresponds to patch in tbl_HABITAT that the fish was seen on.
from_roundmeasure: Rounded from_measure value.
to_roundmeasure: Rounded to_measure value.
starttime: The time the transect segment started. Time is stamped visually on the video footage.
endtime: The time the transect segment ended. Time is stamped visually on the video footage.
transect_type: Type of transect (e.g. natural reef, rig base, rig midwater, seep).

Tcomments: Comments on transect (e.g. visibility, tape problems, etc.)
tx_length_est_method: Method used to estimate segment length e.g. laser lengths.
depth_at_start_m: Depth in meters at beginning of segment-entered from tape or dive log.
depth_at_end_m: Depth in meters at end of segment-entered from tape or dive log.
segment_length_m: Transect segment length in meters, calculated in ArcGIS; based on 5-point moving average smoothed trackline derived from navigation data; NOT a SUM of Habitat Patch Segments!
trip_leg: The CCA survey was divided into 4 trip legs (leg1 = 8-17th October) Port Day 18th Oct (leg2 = 19-28th October) Port Day 29th Oct (leg3 = 1-4th Nov) Port Day 7 Nov (leg4 = demo_dives 5-6th Nov).
day: Day of the month (i.e. 1..31).
month: Month of the year (i.e. 1..12).
year: Year (e.g. 2002).
location: Geographic location (e.g. 'CCA'=cowcod conservation area; 'Island', 'Coast').
site: Site designation (e.g. 'Tanner', 'Cortez, etc..).
grid_: Grid identification**.**
nat_rig: "natural" or "rig" (NB: For the cowcod survey the default setting has been set to 'natural').
purpose: Reason for dives (e.g. 'fishcounts', 'geology', 'photos').
observer: The scientist recording the data (e.g. Mary Yoklavich, Milton Love etc..).
pilot: On driving delta_sub (e.g. Dave Slater, Chris Ijames, Jo Lilly).
LAT_degrees: Degrees latitude at start of 1st transect.
LAT_minutes: Decimal minutes latitude at start of 1st transect.
LONG_degrees: Degrees longitude at start of 1st transect.
LONG_minutes: Decimal minutes longitude at start of 1st transect.
remarks: General comments on dive.
grab_sample: Indicate whether an invert_sample or rock_sample was taken 'rock' or 'invert'.
Project: CCA = 2002 Cowcod closure area (NMFS/UCSB) survey data. Rigs = UCSB ongoing surveys of oil platforms and natural reefs.
region: Name of the region (e.g. Outer Banks, SNI_Potato_Bank).
NAME: Platform name (Platform_data only).
LAT_Min_con: LAT decimal minutes value converted to decimal degrees.
LONG_Min_con: LONG decimal minutes value converted to decimal degrees.
Lat_DD: Latitude coordinates of 1st transect in decimal degrees.
Long_DD: Longitude coordinates of 1st transect in decimal degrees.
PLAT_LAT_DD: Latitude coordinates of platform in decimal degrees (Platform_data only).
PLAT_LONG_DD: Longitude coordinates of platform in decimal degrees (Platform_data only).