

## 20-mm Database Readme.txt

Created by L.Damon on 11/27/2017. Updated by T. Tempel on 8/12/2020.

Since 1995 the CDFW has annually conducted the 20-mm Survey for larval and juvenile Delta Smelt. The raw data collected from this survey is housed in an Access database and is publicly released via an FTP site. The database structure changed prior to the start of data collection in 2017, and all subsequent data has been stored in the new format (20-mm\_New.mdb). An additional modification was made to the database structure prior to the start of data collection in 2020.

This readme.txt file summarizes the 2017 and 2020 structure changes and provides guidance for accessing data. Data for all years (1995-2020) is now in the new structure.

### Database Modification, 2020

A single modification was made to the database in 2020. This modification was made to alleviate internal issues with entering the data. The modification also serves to streamline the database. In the modified database, the LabSample table has been removed; the FishSample and ZooSample tables are now directly linked to the Gear table.

### Database Modification, 2017

The intent of changing the database structure was to reduce redundant data and thus reduce the size of the database. Much of the data was repeated throughout the tables (e.g., Date, Station, Tow) and after two decades these repeated fields made the database unnecessarily large. Removing these redundant fields results in a database of a more manageable size and allows more efficient querying.

The 20-mm environmental, fish, and zooplankton data was previously housed in 6 main data tables: Water Info, Tow Info, Catch, Lengths, Zooplankton, and Zoo Catch (Figure 1). These tables were linked via a unique Date/Station/Tow combination, which forced the primary key to be 3 fields. The other tables in the previous version of the database are lookup tables: 20mm Stations, Fish Codes, Meter Corrections, and Zoo Codes.

In the new 20-mm database, environmental, fish, and zooplankton data are housed in 9 main data tables: Survey, Station, Tow, Gear, LabSample, FishSample, FishLength, ZooSample, ZooCount (Figure 2). The lookup tables are the same, except for two added tables: GearCodes, which is used to differentiate between fish and zooplankton tows in the Gear table, and SampleCode, which flags records from the LabSample table that are erroneous due to sampling or processing (Valid vs. Invalid).

The new tables, fields and associated descriptions are all included in the DataFileFormat\_New.doc document, available on the FTP site. The field names of all the new tables are in Figure 3. The old field names are listed in Table 1 along with their new name and location.

Please contact Trishelle Tempel ([trishelle.tempel@wildlife.ca.gov](mailto:trishelle.tempel@wildlife.ca.gov)) if you have questions about the new database or if you want to provide feedback on ways we can make the transition easier.

Table 1. Names of fields and tables from 20-mm Database format prior to 2017, and their new names and associated tables.

| Old Field Name   | Old Table   | New Field Name         | New Table  | Notes  |
|------------------|-------------|------------------------|------------|--|
| Survey           | Water Info  | Survey                 | Survey     |  |
| Date             | Water Info  | SampleDate             | Survey     |  |
| Station          | Water Info  | Station                | Station    |  |
| Temp             | Water Info  | Temp                   | Station    |  |
| Top EC           | Water Info  | TopEC                  | Station    |  |
| Bottom EC        | Water Info  | BottomEC               | Station    |  |
| Secchi           | Water Info  | Secchi                 | Station    |  |
| Turbidity        | Water Info  | Turbidity              | Station    |  |
| Latitude         | Water Info  | LatDeg, LatMin, LatSec | Station    | Split into 3 fields: LatDeg, LatMin, LatSec            |
| Longitude        | Water Info  | LonDeg, LonMin, LonSec | Station    | Split into 3 fields: LonDeg, LonMin, LonSec            |
| Comments         | Water Info  | Comments               | Survey     |  |
| Date             | Tow Info    |                        |            | Redundant field removed from multiple tables           |
| Station          | Tow Info    |                        |            | Redundant field removed from multiple tables           |
| Tow              | Tow Info    | TowNum                 | Tow        |  |
| Time             | Tow Info    | TowTime                | Tow        |  |
| Tide             | Tow Info    | Tide                   | Tow        |  |
| Bottom Depth     | Tow Info    | BottomDepth            | Tow        |  |
| Cable Out        | Tow Info    | CableOut               | Tow        |  |
| Duration         | Tow Info    | Duration               | Tow        |  |
| Net Meter Serial | Tow Info    | MeterSerial            | Tow        | GearCode used to differentiate between net or CB value |
| Net Meter Start  | Tow Info    | MeterStart             | Tow        | GearCode used to differentiate between net or CB value |
| Net Meter End    | Tow Info    | MeterEnd               | Tow        | GearCode used to differentiate between net or CB value |
| Net Meter Check  | Tow Info    | MeterCheck             | Tow        | GearCode used to differentiate between net or CB value |
| CB Meter Serial  | Tow Info    | MeterSerial            | Tow        | GearCode used to differentiate between net or CB value |
| CB Meter Start   | Tow Info    | MeterStart             | Tow        | GearCode used to differentiate between net or CB value |
| CB Meter End     | Tow Info    | MeterEnd               | Tow        | GearCode used to differentiate between net or CB value |
| CB Meter Check   | Tow Info    | MeterCheck             | Tow        | GearCode used to differentiate between net or CB value |
| Comments         | Tow Info    | Comments               | Station    |  |
| Date             | Catch       |                        |            | Redundant field removed from multiple tables           |
| Station          | Catch       |                        |            | Redundant field removed from multiple tables           |
| Tow              | Catch       |                        |            | Redundant field removed from multiple tables           |
| Fish Code        | Catch       | FishCode               | FishSample |  |
| Catch            | Catch       | Catch                  | FishSample |  |
| 1/4 Subsampled   | Catch       |                        |            | Removed  |
| 1/2 Subsampled   | Catch       |                        |            | Removed  |
| Date             | Length      |                        |            | Redundant field removed from multiple tables           |
| Station          | Length      |                        |            | Redundant field removed from multiple tables           |
| Tow              | Length      |                        |            | Redundant field removed from multiple tables           |
| Fish Code        | Length      |                        |            | Redundant field removed from multiple tables           |
| Length           | Length      | Length                 | FishLength |  |
| entry order      | Length      |                        |            | Removed  |
| Date             | Zooplankton |                        |            | Redundant field removed from multiple tables           |
| Station          | Zooplankton |                        |            | Redundant field removed from multiple tables           |
| CellNumber       | Zooplankton | CellNumber             | ZooCount   |  |
| Dilution         | Zooplankton | Dilution               | ZooSample  |  |
| Cells            | Zooplankton | CellNumber             | ZooCount   | Combined into one field with CellNumber                |
| Total            | Zooplankton |                        |            | Calculated field; removed                              |
| Zoo Comments     | Zooplankton | Comments               | LabSample  |  |
| Ider             | Zooplankton | Processor              | LabSample  |  |
| Scope No         | Zooplankton |                        |            | Removed  |
| Proc Date        | Zooplankton |                        |            | Removed  |
| Date             | Zoo Catch   |                        |            | Redundant field removed from multiple tables           |
| Station          | Zoo Catch   |                        |            | Redundant field removed from multiple tables           |
| CellNumber       | Zoo Catch   |                        |            | Redundant field removed from multiple tables           |
| ZooCode          | Zoo Catch   | ZooCode                | ZooCount   |  |
| Count            | Zoo Catch   | ZooCount               | ZooCount   |  |



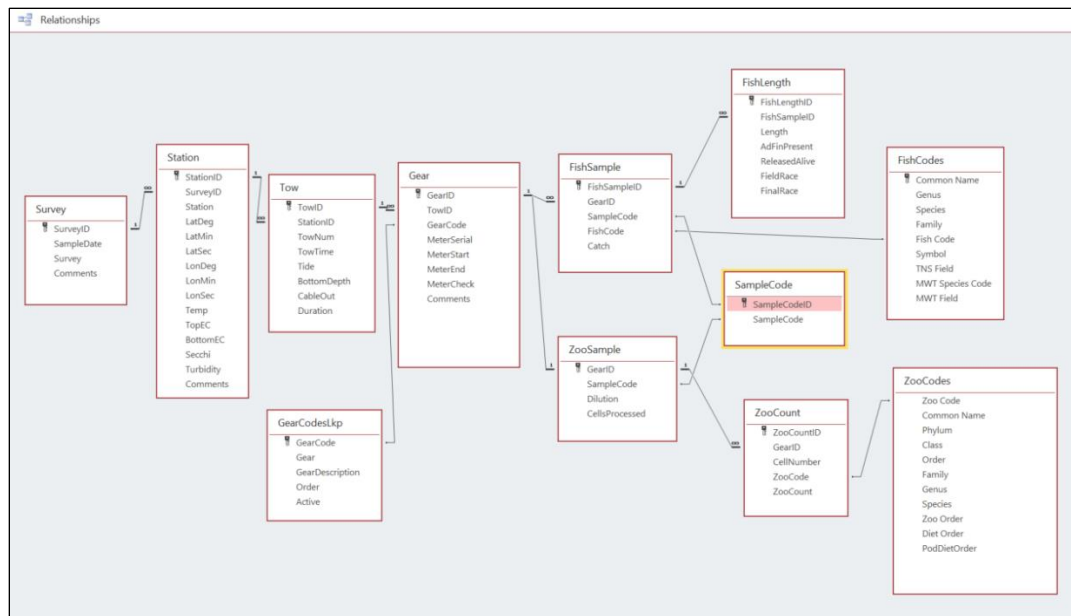


Figure 3. Structure of post-2019 database.

Survey

| Field Name | Data Type  |
|------------|------------|
| SurveyID   | AutoNumber |
| SampleDate | Date/Time  |
| Survey     | Number     |
| Comments   | Long Text  |

Field Properties

General

Lookup

|            |                     |
|------------|---------------------|
| Field Size | Long Integer        |
| New Values | Increment           |
| Format     |                     |
| Caption    |                     |
| Indexed    | Yes (No Duplicates) |
| Text Align | General             |

A field name can be up to 64 characters long.

Station

| Field Name | Data Type  | Description (Optional) |
|------------|------------|------------------------|
| StationID  | AutoNumber |                        |
| SurveyID   | Number     |                        |
| Station    | Number     |                        |
| LatDeg     | Short Text |                        |
| LatMin     | Short Text |                        |
| LatSec     | Short Text |                        |
| LonDeg     | Short Text |                        |
| LonMin     | Short Text |                        |
| LonSec     | Short Text |                        |
| Temp       | Number     |                        |
| TopEC      | Number     |                        |
| BottomEC   | Number     |                        |
| Secchi     | Number     |                        |
| Turbidity  | Number     |                        |
| Comments   | Long Text  |                        |

Field Properties

General

Lookup

|            |                     |
|------------|---------------------|
| Field Size | Long Integer        |
| New Values | Increment           |
| Format     |                     |
| Caption    |                     |
| Indexed    | Yes (No Duplicates) |
| Text Align | General             |

A field name can be up to 64 characters long.

Tow

| Field Name  | Data Type  |
|-------------|------------|
| TowID       | AutoNumber |
| StationID   | Number     |
| TowNum      | Number     |
| TowTime     | Date/Time  |
| Tide        | Short Text |
| BottomDepth | Number     |
| CableOut    | Number     |
| Duration    | Number     |

Field Properties

General

Lookup

|            |                     |
|------------|---------------------|
| Field Size | Long Integer        |
| New Values | Increment           |
| Format     |                     |
| Caption    |                     |
| Indexed    | Yes (No Duplicates) |
| Text Align | General             |

A field name can be up to 64 characters long.

Gear

| Field Name  | Data Type  |
|-------------|------------|
| GearID      | AutoNumber |
| TowID       | Number     |
| GearCode    | Number     |
| MeterSerial | Number     |
| MeterStart  | Number     |
| MeterEnd    | Number     |
| MeterCheck  | Number     |
| Comments    | Long Text  |

Field Properties

General

Lookup

|            |                     |
|------------|---------------------|
| Field Size | Long Integer        |
| New Values | Increment           |
| Format     |                     |
| Caption    |                     |
| Indexed    | Yes (No Duplicates) |
| Text Align | General             |

A field name can be up to 64 characters long.

| FishSample       |                     |
|------------------|---------------------|
| Field Name       | Data Type           |
| FishSampleID     | AutoNumber          |
| GearID           | Number              |
| SampleCode       | Number              |
| FishCode         | Number              |
| Catch            | Number              |
| Field Properties |                     |
| General          | Lookup              |
| Field Size       | Long Integer        |
| New Values       | Increment           |
| Format           |                     |
| Caption          |                     |
| Indexed          | Yes (No Duplicates) |
| Text Align       | General             |

| FishLength       |               |
|------------------|---------------|
| Field Name       | Data Type     |
| FishLengthID     | AutoNumber    |
| FishSampleID     | Number        |
| Length           | Number        |
| AdFinPresent     | Yes/No        |
| ReleasedAlive    | Yes/No        |
| FieldRace        | Short Text    |
| FinalRace        | Short Text    |
| Field Properties |               |
| General          | Lookup        |
| Field Size       | Long Integer  |
| New Values       | Increment     |
| Format           |               |
| Caption          |               |
| Indexed          | Yes (No Dupli |
| Text Align       | General       |

A field name can be

| ZooSample        |           |
|------------------|-----------|
| Field Name       | Data Type |
| GearID           | Number    |
| SampleCode       | Number    |
| Dilution         | Number    |
| CellsProcessed   | Number    |
| Field Properties |           |
| General          | Lookup    |
| Field Size       |           |
| Format           |           |
| Decimal Places   |           |
| Input Mask       |           |
| Caption          |           |
| Default Value    |           |
| Validation Rule  |           |
| Validation Text  |           |
| Required         |           |
| Indexed          |           |
| Text Align       |           |

A field name can be up to 64 characters including spaces. Press F1 for help

| ZooCount         |            |
|------------------|------------|
| Field Name       | Data Type  |
| ZooCountID       | AutoNumber |
| GearID           | Number     |
| CellNumber       | Number     |
| ZooCode          | Number     |
| ZooCount         | Number     |
| Field Properties |            |
| General          | Lookup     |
| Field Size       |            |
| New Values       |            |
| Format           |            |
| Caption          |            |
| Indexed          |            |
| Text Align       |            |

A field name can be up to 64 characters

Figure 3. Design view of all the main data tables from the new (post-2019) 20-mm database.