Expansion results are stored in the MySQL database tables G\_BBS\_EXP and G\_BBS\_SPC. G\_BBS\_EXP has fields describing the expansion stratum, available data, and expanded values. G\_BBS\_SPC has fields describing the catch and market activity for individual species. Following are short descriptions of each field, along with the formulas used to compute the fields when applicable. Expansion strata are specified by YEAR, TYPE\_OF\_DAY, FISHERY\_TYPE, PORT\_FK or SURVEY\_ZONE\_FK, and METHOD\_FK. In the formulas, the following variables are used:

|  |  |  |
| --- | --- | --- |
| **Description** | **Variable** | **Range** |
| Boat log sample day for the current stratum | d | [1, D] |
| Boat log entry for the current stratum from G\_BBS\_BLDT | b | [1, B] |
| Trailer count entry for the current stratum from G\_BBS\_IWC | t | [1, T] |
| Interview for the current stratum from G\_BBS\_INT. Any pooled interviews are also included. | i | [1, I] |
| Species catch entry for the current species in the current stratum from G\_BBS\_CATCH | c | [1, C] |
| Species caught in the current stratum | s | [1, S] |

**Fields in G\_BBS\_EXP**

**EXP\_PK**: The private key associated with a particular stratum expansion. Consists of 18 characters of the form PyyyyqqmmmmsssDDCP, determined as:

* P: A single capital letter for PERIOD\_TYPE
* yyyy: The four digits for YEAR
* qq: Two digits for QUARTER, with leading zeros if necessary
* mmmm: Four digits for METHOD\_FK, with leading zeros if necessary
* sss: Three digits for SURVEY\_ZONE\_FK, with leading zeros if necessary
* DD: Two capital letters for TYPE\_OF\_DAY
* C: A single capital letter for FISHERY\_TYPE
* P: A single letter for PROCESS\_TYPE

**PERIOD\_TYPE**: The time span of the expansion, with the only option being “Y” for annual.

**YEAR**: The four digit year of the expansion.

**QUARTER**: The quarter of the expansion, with the only option being “1” for an annual expansion.

**TYPE\_OF\_DAY**: The type of day of the expansion, either “WD” for weekday or “WE” for weekend/holiday.

**PROCESS\_TYPE**: The source of interview data for the expansion, either “G” for actual interviews or “R” for reference values.

**FISHERY\_TYPE**: The charter status of the expansion, either “C” for charter or “N” for non-charter.

**PORT\_FK**: The database key corresponding to the port of the expansion, with likely values of:

* 1 = Agana Boat Basin
* 2 = Agat Marina
* 3 = Merizo Pier

**SURVEY\_ZONE\_FK**: The database key corresponding to the survey zone of the expansion, with likely values of:

* 21 = Merizo Pier
* 22 = Agana Boat Basin
* 23 = Agat Marina
* 24 = Other Ports (activity outside of the three main ports, as detected by trailer counts during participation runs); note that before 1989 Agana Boat Basin was the only sampled port and from 1989 to 1994 Agana Boat Basin and Merizo Pier were the only sampled ports

**METHOD\_FK**: The database key corresponding to the method key of the expansion, with likely values of:

* 1 = Trolling
* 2 = Bottom
* 3 = Atulai Night Light
* 4 = Mix Spearfishing
* 5 = Spear/Snorkel
* 6 = Spear/SCUBA
* 7 = Longline
* 8 = Ika Shibi

**SYS\_CREATE\_TIME**:

**SYS\_MODIFY\_TIME**:

**HASH**:

**NUM\_CALENDAR\_DAYS**: The total number of days within the expansion period. Computed using data from G\_DAYS based on the stratum determined by YEAR. Based on the value of TYPE\_OF\_DAY, either the field NUM\_WD (for TYPE\_OF\_DAY = “WD”) or NUM\_WE (for TYPE\_OF\_DAY = “WE”) will be summed across the appropriate entries.

**NUM\_SAMPLE\_DAYS**: The number of boat log sampling days within the expansion period. Computed using data from G\_BBS\_SMPDY based on the stratum determined by YEAR, TYPE\_OF\_DAY, and PORT\_FK. The number of remaining entries is then used. For non-sampled ports (SURVEY\_ZONE\_FK = 24), this is the maximum of NUM\_SAMPLE\_DAYS for the strata of the same type of day and with Agat Marina or Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**NUM\_KN\_METHOD\_TRIP**: The number of boat log entries for the current stratum (excluding METHOD\_FK) where the fishing method was known. This is zero for non-sampled ports (SURVEY\_ZONE\_FK = 24), but for other ports is computed as:

where I[…] is an indicator function that returns 1 if … is true and 0 otherwise.

**NUM\_UNKN\_METHOD\_TRIP**: The number of boat log entries for the current stratum (excluding METHOD\_FK) where the fishing method was unknown. This is zero for non-sampled ports (SURVEY\_ZONE\_FK = 24), but for other ports is computed as:

where I[…] is an indicator function that returns 1 if … is true and 0 otherwise.

**NUM\_KN\_FISHED\_TRIP**: The number of boat log entries for the current stratum (excluding METHOD\_FK) where it was known whether the trip was for fishing. This is zero for non-sampled ports (SURVEY\_ZONE\_FK = 24), but for other ports is computed as:

where I[…] is an indicator function that returns 1 if … is true and 0 otherwise.

**NUM\_UNKN\_FISHED\_TRIP**: The number of boat log entries for the current stratum (excluding METHOD\_FK) where it was unknown whether the trip was for fishing. This is zero for non-sampled ports (SURVEY\_ZONE\_FK = 24), but for other ports is computed as:

where I[…] is an indicator function that returns 1 if … is true and 0 otherwise.

**NUM\_TRIP**: The number of boat log entries for the current stratum. This is zero for non-sampled ports (SURVEY\_ZONE\_FK = 24), but for other ports is computed as:

**NUM\_INTERVIEW**: The number of interviews collected for the current stratum, excluding pooled interviews. For non-sampled ports (SURVEY\_ZONE\_FK = 24), this includes interviews from both Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**NUM\_INTERVIEW\_POOLED**: The number of interviews available for the current stratum, computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**NUM\_DAYS\_FISHED**: The total number of fishing days represented by interviews collected for the current stratum. Computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**SUM\_FISHER**: The total number of fishers represented on interviews for the current stratum. Computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**SUM\_FISHER2**: The sum of squares of the number of fishers represented on interviews for the current stratum. Computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**AVG\_FISHER**: The average number of fishers represented on interviews for the current stratum. Computed as:

**VAR\_AVG\_FISHER**: The variance of the number of fishers represented on interviews for the current stratum. Computed as:

**SUM\_HOUR**: The total number of fishing hours represented on interviews for the current stratum. Computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**SUM\_HOUR2**: The sum of squares of the number of fishing hours represented on interviews for the current stratum. Computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**AVG\_HOUR**: The average number of fishing hours represented on interviews for the current stratum. Computed as:

**VAR\_AVG\_HOUR**: The variance of the number of fishing hours represented on interviews for the current stratum. Computed as:

**SUM\_FISHER\_HOUR**: The total number of fisher hours represented on interviews for the current stratum. Computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**SUM\_FISHER\_HOUR2**: The sum of squares of the number of fisher hours represented on interviews for the current stratum. Computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**AVG\_FISHER\_HOUR**: The average number of fisher hours represented on interviews for the current stratum. Computed as:

**VAR\_AVG\_FISHER\_HOUR**: The variance of the number of fisher hours represented on interviews for the current stratum. Computed as:

**SUM\_GEAR**: The total number of fishing gears represented on interviews for the current stratum. Computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**SUM\_GEAR2**: The sum of squares of the number of fishing gears represented on interviews for the current stratum. Computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**AVG\_GEAR**: The average number of fishing gears represented on interviews for the current stratum. Computed as:

**VAR\_AVG\_GEAR**: The variance of the number of fishing gears represented on interviews for the current stratum. Computed as:

**SUM\_EST\_TRIP**: The estimated total number of trips on sampling days for the current stratum. For non-sampled ports (SURVEY\_ZONE\_FK = 24), this is computed as:

Where b includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995. For other ports this is computed as:

where A1 is the adjustment factor to account for trips where it was unknown whether the trip was for fishing, computed as:

A2 is the adjustment factor to account for fishing trips with unknown fishing methods, computed as:

P1 is the estimated proportion of all daily fishing activity that is detected during sampling shifts on a given sampling day. The reciprocal of P1 is used to adjust for this undetected fishing activity. P1 is retrieved from G\_BBS\_P1 based on the stratum determined by YEAR, PORT\_FK, and METHOD\_FK. Based on the value of FISHERY\_TYPE, either the field CHARTER\_P1 (for FISHERY\_TYPE = “C”) or NON\_CHARTER\_P1 (for FISHERY\_TYPE = “N”) will be used. If a value is not available in G\_BBS\_P1, default values for non-charter fishing are given as 0.98 for Agana Boat Basin, 0.95 for Agat Marina, and 0.8 for Merizo Pier. Any other default values are assumed to be 1. For non-sampled ports (SURVEY\_ZONE\_FK = 24), this is the average of P1 for the strata of the same method and charter status and with Agat Marina or Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

And P2 is the adjustment factor to account for trips outside of the three sampled ports, computed as:

Or the appropriate representative port(s) for years prior to 1995.

**SUM\_EST\_TRIP2**: The sum of the estimated square number of trips, aggregated by sample date. For non-sampled ports (SURVEY\_ZONE\_FK = 24), this is computed as:

Where b includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995. For other ports this is computed as:

where A1 is the adjustment factor to account for trips where it was unknown whether the trip was for fishing, computed as:

A2 is the adjustment factor to account for fishing trips with unknown fishing methods, computed as:

P1 is the estimated proportion of all daily fishing activity that is detected during sampling shifts on a given sampling day. The reciprocal of P1 is used to adjust for this undetected fishing activity. P1 is retrieved from G\_BBS\_P1 based on the stratum determined by YEAR, PORT\_FK, and METHOD\_FK. Based on the value of FISHERY\_TYPE, either the field CHARTER\_P1 (for FISHERY\_TYPE = “C”) or NON\_CHARTER\_P1 (for FISHERY\_TYPE = “N”) will be used. If a value is not available in G\_BBS\_P1, default values for non-charter fishing are given as 0.98 for Agana Boat Basin, 0.95 for Agat Marina, and 0.8 for Merizo Pier. Any other default values are assumed to be 1. For non-sampled ports (SURVEY\_ZONE\_FK = 24), this is the average of P1 for the strata of the same method and charter status and with Agat Marina or Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

And P2 is the adjustment factor to account for trips outside of the three sampled ports, computed as:

Or the appropriate representative port(s) for years prior to 1995

**AVG\_EST\_TRIP**: The average estimated number of trips on sampling days for the current stratum. Computed as:

**VAR\_EST\_TRIP**: The variance of the estimated number of trips across sampling days for the current stratum. Computed as:

**STD\_EST\_TRIP**: The coefficient of variation of the average number of trips per sampling days for the current stratum. Computed as:

**CPUE\_TRIP**: The average catch-per-trip from interviews for the current stratum. Measured in kg/trip and computed as:

**VAR\_CPUE\_TRIP**: The variance of the catch-per-trip from interviews for the current stratum. Measured in (kg/trip)2 and computed as:

**STD\_CPUE\_TRIP**: The coefficient of variation of the catch-per-trip from interviews for the current stratum. Measured in kg/trip and computed as:

**CPUE\_HOUR**: The average catch-per-hour from interviews for the current stratum. Measured in kg/hr and computed as:

**VAR\_CPUE\_HOUR**: The variance of the catch-per-hour from interviews for the current stratum. Measured in (kg/hr)2 and computed as:

where:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**STD\_CPUE\_HOUR**: The coefficient of variation of the catch-per-hour from interviews for the current stratum. Measured in kg/hr and computed as:

**CPUE\_GEAR**: The average catch-per-gear from interviews for the current stratum. Measured in kg/gear and computed as:

**VAR\_CPUE\_GEAR**: The variance of the catch-per-gear from interviews for the current stratum. Measured in (kg/gear)2 and computed as:

where:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**STD\_CPUE\_GEAR**: The coefficient of variation of the catch-per-gear from interviews for the current stratum. Measured in kg/gear and computed as:

**CPUE\_FISHER\_HOUR**: The average catch-per-fisher-hour from interviews for the current stratum. Measured in kg/(fisher \* hour) and computed as:

**VAR\_CPUE\_FISHER\_HOUR**: The variance of the catch-per-fisher-hour from interviews for the current stratum. Measured in (kg/(fisher \* hour))2 and computed as:

Where:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**STD\_CPUE\_FISHER\_HOUR**: The coefficient of variation of the catch-per-fisher-hour from interviews for the current stratum. Measured in kg/(fisher \* hour) and computed as:

**EXP\_TRIP**: The expanded number of trips for the current stratum. Computed as:

**VAR\_EXP\_TRIP**: The variance of the expanded number of trips for the current stratum. Computed as:

**STD\_EXP\_TRIP**: The coefficient of variation of the expanded number of trips for the current stratum. Computed as:

**EXP\_HOUR**: The expanded number of fishing hours for the current stratum. Measured in hours and computed as:

**VAR\_EXP\_HOUR**: The variance of the expanded number of fishing hours for the current stratum. Measured in hour2 and computed as:

**STD\_EXP\_HOUR**: The coefficient of variation of the expanded number of fishing hours for the current stratum. Measured in hours and computed as:

**EXP\_FISHER**: The expanded number of fishers for the current stratum. Computed as:

**VAR\_EXP\_FISHER**: The variance of the expanded number of fishers for the current stratum. Computed as:

**STD\_EXP\_FISHER**: The coefficient of variation of the expanded number of fishers for the current stratum. Computed as:

**EXP\_FISHER\_HOUR**: The expanded number of fisher-hours for the current stratum. Measured in fisher \* hour and computed as:

**VAR\_EXP\_FISHER\_HOUR**: The variance of the expanded number of fisher-hours for the current stratum. Measured in (fisher \* hour)2 and computed as:

**STD\_EXP\_FISHER\_HOUR**: The coefficient of variation of the expanded number of fisher-hours for the current stratum. Measured in fisher \* hour and computed as:

**EXP\_GEAR**: The expanded number of fishing gears for the current stratum. Computed as:

**VAR\_EXP\_GEAR**: The variance of the expanded number of fishing gears for the current stratum. Computed as:

**STD\_EXP\_GEAR**: The coefficient of variation of the expanded number of fishing gears for the current stratum. Computed as:

**EXP\_TOT\_LBS**: The expanded catch for the current stratum. Measured in kg and computed as:

**SUM\_TOT\_LBS**: The total catch represented on interviews for the current stratum. Measured in kg and computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**SUM\_TOT\_LBS2**: The sum of squares of the catch represented on interviews for the current stratum. Measured in kg2 and computed as:

For non-sampled ports (SURVEY\_ZONE\_FK = 24), i includes Agat Marina and Merizo Pier, or the appropriate representative port(s) for years prior to 1995.

**VAR\_EXP\_TOT\_LBS**: The variance of the expanded catch for the current stratum. Measured in kg2 and computed as:

**STD\_EXP\_TOT\_LBS**: The coefficient of variation of the expanded catch for the current stratum. Measured in kg and computed as:

**Fields in G\_BBS\_SPC**

**SPC\_PK**: The private key associated with a particular species catch expansion. Consists of 23 characters of the form PyyyyqqmmmmsssnnnnnDDCP, determined as:

* P: A single capital letter for PERIOD\_TYPE
* yyyy: The four digits for YEAR
* qq: Two digits for QUARTER, with leading zeros if necessary
* mmmm: Four digits for METHOD\_FK, with leading zeros if necessary
* sss: Three digits for SURVEY\_ZONE\_FK, with leading zeros if necessary
* nnnnn: Five digits for SPECIES\_FK, with leading zeros if necessary
* DD: Two capital letters for TYPE\_OF\_DAY
* C: A single capital letter for FISHERY\_TYPE
* P: A single letter for PROCESS\_TYPE

**EXP\_FK**: The foreign key associated with a particular stratum expansion. Consists of 18 characters of the form PyyyyqqmmmmsssDDCP, determined as:

* P: A single capital letter for PERIOD\_TYPE
* yyyy: The four digits for YEAR
* qq: Two digits for QUARTER, with leading zeros if necessary
* mmmm: Four digits for METHOD\_FK, with leading zeros if necessary
* sss: Three digits for SURVEY\_ZONE\_FK, with leading zeros if necessary
* DD: Two capital letters for TYPE\_OF\_DAY
* C: A single capital letter for FISHERY\_TYPE
* P: A single letter for PROCESS\_TYPE

**SPECIES\_FK**: The foreign key associated with a particular species.

**NUM\_INTERVIEW**: The number of interviews of the current stratum that included catch of the current species. Computed as:

**LBS\_CAUGHT**: The estimated expanded catch for the current species in the current stratum. Measured in kg and computed as:

**LBS\_SOLD**:

**NUM\_KEPT**: The number of specimens of the current species that were recorded in interviews of the current stratum. Computed as:

**PRICE\_LB**: The average price per pound of the current species in the current stratum. Measured in dollars per pound and computed as:

**SYS\_CREATE\_TIME**:

**SYS\_MODIFY\_TIME**:

**HASH**: