Oyster/Oyster Reef Indicator Quantile Report

SEACAR Analysis

Last compiled on 20 June, 2024

Contents

Overview

Purpose

The purpose of the indicator quantiles is to flag records that are "unusual" relative to all of the data in the DDI for a given indicator in order to facilitate QA/QC. They are not used to filter any of the data for SEACAR analyses, and the presence of a LowerQuantile or UpperQuantile flag on a DDI record alone does not necessarily indicate there is any issue with the record (neither does the absence of a LowerQuantile or UpperQuantile flag necessarily mean that a data record is correct).

Relevant file locations

Current values can be found in the "LowQuantile" and "HighQuantile" columns of the "Ref_Parameters" worksheet.

The R script described below and the output file can be found in the *FloridaSEACAR IndicatorQuantiles* repository on GitHub:

- https://github.com/FloridaSEACAR/IndicatorQuantiles

Process steps

IQ_Report_Render.R & IQ_Report.Rmd

1. The *IQ_Report_Render.R* script lists all files in a given directory and filters it to a list of DDI exports to evaluate considering a list of parameters to skip (user-defined).

2. User sets the desired upper and lower quantile thresholds, as well as a number of standard deviations away from the mean to use for the calculations.

3. User sets the string value(s) in the DDI exports that should be considered as NA values.

4. The remainder of the script loops through the file list, returning the values listed below and binding them together by row into a single Excel spreadsheet that is saved to the User's working directory.

5. For each habitat included in the User's working directory a PDF report will be created in the "output" folder using *IQ_Report.Rmd*, which provides an overview of questionable / flagged values.

6. In addition to the PDF reports, each habitat will provide a .txt data output file in the "output/data" folder containing questionable values.

Summary

The following quantile thresholds are used for flagging "questionable" values:

- Lower quantile: **0.001**
- Upper quantile: **0.999**

The following parameters are being excluded from this analysis:

Included Indicators and Parameters and the files used in this analysis:

All_Oyster_Parameters-2024-Jun-11.txt

Indicator: Density

- Density
- Number of Oysters Counted - Dead(NA)
- Number of Oysters Counted - Dead(0.0625)
- Number of Oysters Counted - Dead(0.1)
- Number of Oysters Counted - Dead(0.25)
- Number of Oysters Counted - Dead(1)
- Number of Oysters Counted - Live(NA)
- Number of Oysters Counted - Live(0.0625)
- Number of Oysters Counted - Live(0.1)
- Number of Oysters Counted - Live(0.25)
- Number of Oysters Counted - Live(1)
- Number of Oysters Counted - Total(NA)
- Number of Oysters Counted - Total(0.0625)
- Number of Oysters Counted - Total(0.1)
- Number of Oysters Counted - Total(0.25)
- Number of Oysters Counted - Total(1)
- Reef Height

Indicator: Percent Live

- Percent Live

Indicator: Size Class

- Shell Height(NA)
- Shell Height(0.0625)
- Shell Height(0.1)
- Shell Height(0.25)
- Shell Height(0.33)
- Shell Height(1)

Summary Tables

q_low: Value corresponding to the qval_low quantile for the parameter in the DDI export.

q_high: Value corresponding to the qval_high quantile for the parameter in the DDI export.

mean: Mean value for the parameter in the DDI export.

n_tot: Total number of records in the DDI export for the parameter.

n_q_low: Number of records in the DDI export that are below q_low for the parameter.

n_q_high: Number of records in the DDI export that are above q_high for the parameter.

pct_flagged: Proportion of total records in the DDI export for the parameter which have been flagged as above q_high, or below q_low.

Indicator: **Density**

Indicator: **Percent Live**

Indicator: **Size Class**

Table 1: Indicator Quantile Overview

ParameterName	q low	q high	mean	n tot	n q low	n q high	pct flagged
Shell Height	8.25	134.69	40.41	30568	31	31	0.20
Shell Height	1.60	125.50	35.56	85718	81	84	0.19
Shell Height	4.06	79.94	23.98	1060	2	2	0.38
Shell Height	2.00	106.00	38.68	426618	240	426	0.16
Shell Height	11.56	76.32	37.05	592	1	1	0.34
Shell Height	0.00	114.37	30.11	811	0	1	0.12

Low Quantile

Indicator: Density

There are no *Low* Quantile Flagged Values for Density

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Dead(NA)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Dead(0.0625)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Dead(0.1)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Dead(0.25)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Dead(1)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Live(NA)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Live(0.0625)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Live(0.1)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Live(0.25)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Live(1)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Total(NA)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Total(0.0625)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Total(0.1)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Total(0.25)

There are no *Low* Quantile Flagged Values for Number of Oysters Counted - Total(1)

There are no *Low* Quantile Flagged Values for Reef Height

Indicator: Percent Live

There are no *Low* Quantile Flagged Values for Percent Live

Indicator: Size Class

There are no *Low* Quantile Flagged Values for Shell Height(NA)

There are no *Low* Quantile Flagged Values for Shell Height(0.0625)

There are no *Low* Quantile Flagged Values for Shell Height(0.1)

There are no *Low* Quantile Flagged Values for Shell Height(0.25)

There are no *Low* Quantile Flagged Values for Shell Height(0.33)

There are no *Low* Quantile Flagged Values for Shell Height(1)

High Quantile

Indicator: Density

There are no *High* Quantile Flagged Values for Density

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Dead(NA)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Dead(0.0625)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Dead(0.1)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Dead(0.25)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Dead(1)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Live(NA)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Live(0.0625)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Live(0.1)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Live(0.25)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Live(1)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Total(NA)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Total(0.0625)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Total(0.1)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Total(0.25)

There are no *High* Quantile Flagged Values for Number of Oysters Counted - Total(1)

There are no *High* Quantile Flagged Values for Reef Height

Indicator: Percent Live

There are no *High* Quantile Flagged Values for Percent Live

Indicator: Size Class

There are no *High* Quantile Flagged Values for Shell Height(NA)

There are no *High* Quantile Flagged Values for Shell Height(0.0625)

There are no *High* Quantile Flagged Values for Shell Height(0.1)

There are no *High* Quantile Flagged Values for Shell Height(0.25)

There are no *High* Quantile Flagged Values for Shell Height(0.33)

There are no *High* Quantile Flagged Values for Shell Height(1)

QAQC Quantile Flag Check

- n_high is the amount of data above the quantile value.
- n_high_flagged is the amount of data above the quantile value AND containing proper SEACAR-QAQCFlag of 17Q (ResultValue above quantile value).
- n_low is the amount of data below the quantile value.

- n_low_flagged is the amount of data below the quantile value AND containing proper SEACAR-QAQCFlag of 16Q (ResultValue below quantile value).

- If everything is in order, these values should be the same. Any discrepancies therein should be fastidiously noted.

ParameterName	n high	n high flagged	n low	n low flagged
Number of Oysters Counted - Dead	7	6	0	0
Number of Oysters Counted - Live	8	5	0	0
Number of Oysters Counted - Total	8	7	0	0
Shell Height	545	545	355	325

Entries where ResultValue is above or below quantile, but expected SEACAR_QAQCFlagCode is not being applied

Table 2: SEACAR QAQC Flag Code discrepancies

RowID	ProgramID	ParameterName	ResultValue	SEACAR_QAQCFlagCode	q_subset
662057	4014	Number of Oysters Counted - Dead	168.00	19Q	high
639654	4014	Number of Oysters Counted - Live	457.00	19Q	high
549611	4014	Number of Oysters Counted - Total	584.00	19Q	high
625541	5017	Number of Oysters Counted - Live	193.00	19Q	high
235342	5035	Shell Height	7.00	19Q	low
235343	5035	Shell Height	8.00	19Q	low
294962	5035	Shell Height	8.00	19Q	low
296924	5035	Shell Height	8.00	19Q	low
297422	5035	Shell Height	7.00	19Q	low
297423	5035	Shell Height	7.00	19Q	low
301751	5035	Shell Height	7.00	19Q	low
301753	5035	Shell Height	4.00	19Q	low
312372	5035	Shell Height	8.00	19Q	low
316862	5035	Shell Height	8.00	19Q	low
318679	5035	Shell Height	6.00	19Q	low
322127	5035	Shell Height	8.00	19Q	low
353589	5035	Shell Height	7.00	19Q	low
398451	5035	Shell Height	7.42	19Q	low
398530	5035	Shell Height	6.58	19Q	low
415238	5035	Shell Height	8.06	19Q	low
430677	5035	Shell Height	6.86	19Q	low
430716	5035	Shell Height	7.51	19Q	low
430719	5035	Shell Height	4.47	19Q	low
448400	5035	Shell Height	7.17	19Q	low
459757	5035	Shell Height	6.00	19Q	low
465097	5035	Shell Height	7.55	19Q	low
503588	5035	Shell Height	7.93	19Q	low
504317	5035	Shell Height	8.02	19Q	low
506363	5035	Shell Height	8.15	19Q	low
533596	5035	Shell Height	7.00	19Q	low
533928	5035	Shell Height	4.00	19Q	low
534795	5035	Shell Height	7.00	19Q	low
628101	5035	Shell Height	6.00	19Q	low
632655	5035	Shell Height	7.70	19Q	low
543400	5075	Number of Oysters Counted - Live	222.00	19Q	high

- 19Q - Low threshold defined only - not below