Division of Marine Fisheries
CRFL Funding Data Delivery Specifications
January 2012

Purpose:

The purpose of this document is to specify minimum content and procedures for
submitting all data and supporting reference materials for research projects funded under
the Coastal Recreational Fishing License Marine Endowment Fund (CRFL). The goal is
to ensure all the research data collected is directly and readily available to the Division of
Marine Fisheries for analysis while insuring future availability and correct interpretation
by archiving funding data in a maintained system.

Background:

The approved procedures for funding from the North Carolina Marine Resources Fund
and the North Carolina Marine Resources Endowment Fund specifies that each project
shall "provide a written plan describing how all data, analyses, models, etc. generated
from the project will be made available to the DMF. The plan shall include the format in
which data will be submitted. It also specifies, "goal of the final project report is to
disseminate findings, results and end products of projects. A percentage of the final
payment may be withheld until the applicant satisfactorily meets all approved project
objectives and modifications, including submission of reports and delivery of data.
Failure to deliver data to the division in a format with appropriate documentation to be
used by the scientific community at the time completion of the final report shall
automatically require repayment to the fund(s)." A condition of the CRFL grant contract
award states the grant's data delivery shall adhere to the specifications contained within
this document.
The report and data will receive technical review from the contract technical monitor.

CRFL funding proposals, reports, and research data are subject to the N. C. Public
Records Act (N.C.G.S. § 132-1 et seq).

Data Specifications:

1) Provide data in the simplest non-summarized form as delimited text (.txt or .cvs)
   file. See Appendix A for an example
2) If multiple data tables (or records), provide a description of the tables
   relationships (data schema), including the key linkage fields. See Appendix B for
   an example.
3) Provide a data dictionary for every field that includes: field name, field length,
   units, value limits, field content description including all codes and corresponding
   meaning. See Appendix C for an example.

4) GIS data sets generated by the project must be supplied as part of the deliverables. Metadata must accompany the data sets. The datasets are to be in simple easily transported form using the conventional geographic coordinate system.
5) An electronic copy (.pdf) of the final report.

Recipient is accountable for delivering the above items to the grant technical monitor at the time specified in the grant award.

Submittal Process:

Funding awarded to applicants will be administered by the DMF. Funding recipients will submit reports and data as specified in the award letter to the DMF Administrative Services Office. DMF Administrative Services Office will coordinate an initial assessment of the final report and delivered data to ensure completeness in terms of reporting and data delivery requirements. The report and data will receive technical review from the grant technical monitor. Upon making the determination that the report and data delivery are complete, DMF staff will recommend final disbursement to the Fisheries Director.

Applicant's questions or concerns on data delivery specifications should be directed to CRFL Project Coordinator at (252) 808-8004.

Appendix A Example .txt delimited data file (Areef.txt)

Control1, project, year, month, day, location, stemp, btemp, depth, gear, species, spstaus,colnum, freq,leng

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Appendix B. Example Description of data relationships

The Project Database consists of a hierarchical set of 128 byte ASCII records that detail various fishery biological data collected under the funded grant.

The hierarchical set of 128 byte ASCII (text) records that make up the Database currently consists of seven record types:

Record Type 1	Environmental Data
Record Type 8	Fishing Gear Data
Record Type 2	Replicate Data[1]
Record Type 3	Species Data
Record Type 4	Individual Fish Data
Record Type 5	Individual Fish Age Data
Record Type 9	Individual Fish Tag Recapture Data
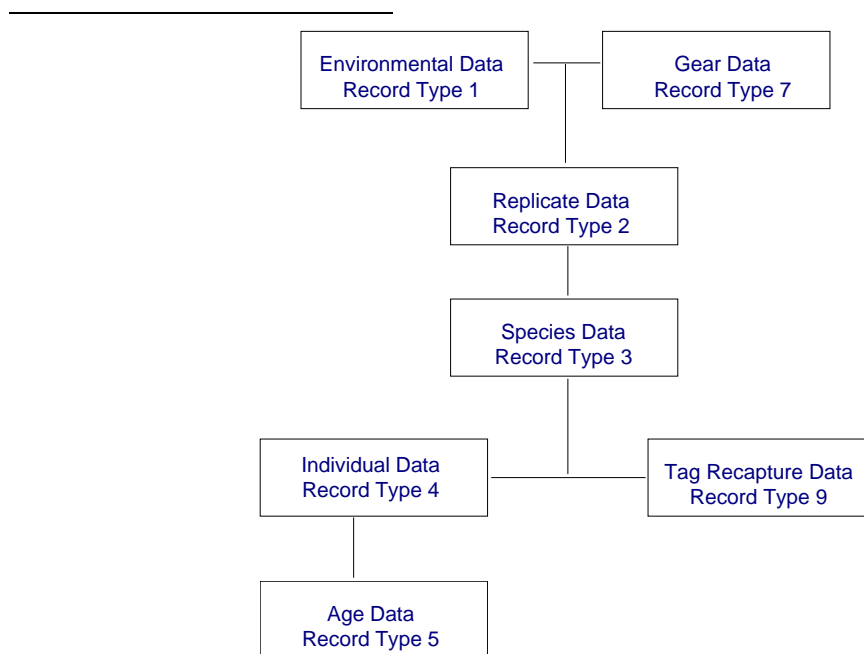
From a record structure perspective, Record Type 1 points to Record Type 2. Record Type 2 points to Record Type 3 and Record Type 3 points to Record Type 4. Record Type 8 is logically an extension of Record Type 1 and similarly Record Types 5 and 9 are extensions of Record Type 4.

The relationship between records is established with key fields that exist within the record. The control (key) information is the combination of fields that is unique to a collection and the records contained in that collection. It is these fields that enable several records from a collection to be linked. Information contained on a given record type applies to all following records in the hierarchy. Key fields for the database record type take the form shown below.

Format and Position of Key Information Fields in the Database

Key Information Field	Number of bytes	Position to the first
RECORD TYPE	1	1
SEQUENCE NUMBER	7	2- 8
REPLICATE NUMBER	2	9- 10
SPECIES CODE	10	11- 12
SPECIES STATUS	1	21
LINE NUMBER	3	22- 24

Record types 1 and 8 contain the overall collection data such as location, environmental parameters and collection effort information. Each record type is given a SEQUENCE NUMBER which is prefixed by the last two digits of the collection year (e.g. 9700001.) This constitutes the second field of the key information and appears in the same position on each record type associated with that collection. The first field of the key information identifies the RECORD TYPE.

The second record type contains replicate information. More than one replicate (record type 2) may be associated with an Environmental and Station Record. Within a collection, Replicate Records are numbered from 01 and increased sequentially by one. Replicate 00 is reserved for special use such as bait fish caught but not sampled. The REPLICATE NUMBERS are the third field of the key information. All record types other than 1 and 8 have replicate identification.

Species Records, record type 3, contain information on a given species or size class of a species collected in a replicate sample. The total number and weight collected, sampled and subsampled are indicated. A phylogenetic ten digit SPECIES code developed by the National Oceanographic Data Center (1981) and a one digit code indicating the SPECIES STATUS (size class) constitute the fourth and fifth fields of the key information. All record types 3 - 5, and 9 give a SPECIES and SPECIES STATUS identification.

Individual and Annulus Records, record types 4 and 5, give information on an, individual (s) of a species. Individual Records give information on size, age, reproductive stage, etc. of an individual member of a species. Each record type 4 is a given a number; these LINE NUMBERS are the last field of the key information. If an individual is aged and distance to annulus measurements are taken, Annulus Records,

record type 5, contain these measurements. The key field LINE NUMBER, which also appears on the record type 5, is used to link the two records for the same individual, i.e. they have the same LINE NUMBER.

Tag Recapture Records, record type 9, contain data for every tagged individual that has been recaptured. Such data are RECAPTURE DATE, LOCATION, GEAR, etc. Each tag Recapture Record is stored with the collection in which that tagged individual was released. Each record type 9 of a collection is LINE numbered sequentially. The corresponding record type 4 is located by using the TAG NUMBER field which present in both records.

Appendix C Example of a data dictionary

Rec. Type	Column #	Field Name	Units	Limits	Mandatory (M) vs. Desired (D)	Comments
I	2-8	Sequence Number	N/A	N/A	M	Unique number for each collection.
	25-27	Program	N/A	N/A	M	140
	28-33	Date	N/A	N/A	M	Date sampled (YY-MM-DD).
	34-38	Station	N/A	N/A	M	Artificial Reef Number
	39-48	Starting Location	N/A	N/A	M	See Appendix B1 of the coding manual.
	54-57	Time Gear Ended Fishing	Hours & Minutes	0-2400	M	Time gear ended fishing.
	58-61	Duration	Minutes	1-99	M	Time span of sampling period.
	62-64	Gear # 1	N/A	421, 430, 434	M	421 = Floatline 430 = Bottomline 434 = Trolling
	65-68	Gear Parameter #1	Feet	N/A	M	421 = Depth of Hooks 434 = Depth of Hooks
I	69-72	Gear Parameter #2	N/A	1, 2, 3, 4	M .	Lines fished: float line = 1 or 2 if gear = 421 bottom fishing = 1,2,3,or 4 if gear = 430 trolling = 1 or 2 if gear = 434
	73-76	Gear Parameter #3	N/A	2	M	Mandatory if gear 430 = 2

Rec. Type	Column #	Field Name	Units	Limits	Mandatory (M) vs. Desired (D)	Comments
	80	Bottom Composition	N/A	1-9	M	Type of material:
						A = Dome J = Reef Balls
						B = Cube Units K = Old Can
						C = Pipe Units L = New Can
						D = Train Car Rock M = Natural
						E = Concrete Rubble
						F = Tires
						G = Vessel < 100'
						H = Vessel > 100'
						I = Other
	82-84	Depth	Meters	N/A	M	Coded with an assumed decimal.
I	85-87	Air Temperature	EC	0-40	D	
	88-90	Surface Temperature	C	0-40	M	
	91-93	Bottom Temperature	C	0-40	D	
	94-96	Surface Salinity	N/A	000-450	D	
	97-99	Bottom Salinity	N/A	000-450	D	

Rec. Type	Column #	Field Name	Units	Limits	Mandatory (M) vs. Desired (D)	Comments
	100-103	Variable Field # 1	Minutes	0000-2400	M	Time gear began fishing
	104-106	Surface D.O.	N/A	000-150	D	
	107-109	Bottom D.O.	N/A	000-150	D	
	112	Weather Element	N/A	1-9	D	1. clear skies 2. one-quarter cover (25%) 3. one-half cover (50%) 4. three-quarter cover (75%) 5. one hundred percent cover 6. haze 7. fog 8. precipitation 9. snow
	117	Wind Direction	N/A	1-8	D	1 = N 2 = NE 3 = E 4 = SE 5 = S 6 = SW 7 = W 8 = NW
	118-119	Wind Speed	Knots	0-50	D	Wind speed
	120	Current Direction			D	
I	121-122	Current Speed	Knots	00-15	D	
	123	Water Level	N/A	A-Z	D	See Appendix E - Sea State in manual.
	126-127	Number of Replicates	N/A	N/A	M	Must correspond to total number of Record Type II s.