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Harmonized NAFO Observer Program Data System Proposal

by

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STACTIC requested Scientific Council (STACREC) to define scientific requirements for the Pilot observer program in a harmonized format. An ad hoc Working Group of Scientific Council on Observer Data Harmonization (hereon referred to as the SC Observer WG) worked inter-sessionally to prepare draft collection forms and associated documentation. The result, a series of 4 forms based on a harmonization of existing formats was presented to STACTIC in Sep. 1999 (STACTIC WP 99/12). These forms were designed to capture the basic information as required for assessing removals from stocks in the regulatory area.

STACTIC subsequently requested that Scientific Council produce a data description (codes, variable definitions) for the forms presented to STACTIC in Sep. 1999 ("Detailed instructions on the completion of these field sheets must accompany the form to ensure uniform and accurate record taking. This would include code specifications based on NAFO standards"). STACTIC also indicated The NAFO Observer Working Group met in June 2000 to review the progress of this work.

At this WG session, two independent initiatives were reported to the SC Observer WG, June 2000:

1) Canada reported that on their own initiative, a database was created to capture NAFO observer data, from 1998 to date. This historic information was available only in paper form and thus was previously essentially unusable. The format used in the design of this database was consistent with the forms/formats provided to STACTIC in the fall of 1999 (STACTIC WP99/12). Thus the data description and database structure is consistent with the format previously (reviewed) accepted by STACTIC..

2) The EU presented a separate form set, a Catch Tracking system that was designed by EU NAFO inspectors. This system was designed with broader objectives: to capture not only scientific (catch and effort) data recorded by fisheries observers but also at sea and land oriented compliance (inspection of landing and gear) to track catch records both at sea and on land. Thus, this system exceeds the mandate of the STACTIC request to Scientific Council (the capture of scientific data collected by fishery observers at sea). As well, the EU system does not include a Length Frequency form for the capture of fish sizes.

The forms, data description and database format are contained in Appendix A

A comparison of the EU Catch Tracking system with the one formulated by the SC Observer WG indicated a high degree of overlap with respect to "scientific" variables captured. There are also several components contained in the EU system not in the not in the NAFO WG forms. These comprise either summary reports (not data capture but rather forms for reporting calculated summarized output based on data collected from other forms) or non-scientific

components. These non-scientific or summary forms are: Results of Landing Inspection, Results of Gear Inspection, Skipper Data and Weekly Summary.

The (scientific) variables in the UE form set not included in the SC Observer forms are listed in Table 1. These variables were incorporated into the SC Observer Forms shown in Appendix A. As well, one "scientific" component of the EU system not currently captured by the NAFO WG system is a Conversion Factor table. Considering that one (of several) methods for estimating the retained component of the catch is to convert estimated product in the hold to a round weight. This estimate can then be added to estimates of discards to derive total catch live weight. Thus, although an intermediate stage in estimation of the "bottom line", live weight, it is worthwhile to capture this information to help document how the catch was estimated. The EU table labeled Conversion Factors containing the variables Species, Presentation (Product), Size (Conversion Factor) and Master Conversion Factor has been included as a data form in the harmonized system.

Scientific Council recognized that the development of harmonized data collection forms and protocols, while important, is only the first step. For this information to be usable, it must be available in the form of a properly structured relational database including input, storage and output elements to accommodate the data elements listed above. It should be structured with the appropriate links and should provide timely access of the information to users.

As such, Canada's database noted above, in Access format and designed around the SC WG forms consequently captures all data on those forms (with the exception of the "EU variables" that can be appended to the appropriate database tables). The data description of the harmonized forms, an integral part of this database is also listed in Append A. All categorical variables in this data description will comprise NAFO codes also listed in Appendix A. Numerical data are formatted to fit all possible input.

Thus, it is proposed that NAFO adapt the database developed by Canada as the NAFO Observer Program database and that variables from the EU system not contained in the SC Observer WG forms be incorporated into that system as illustrated in Appendix A. Also, STACTIC may wish to consider the other components of the EU catch tracking system as a tool set for monitoring catches to the point of landing.

If this proposal is acceptable, then a manual describing how to estimate catches, measure fish and fill out the scientific forms needs to be devised.

Table 1 - Variables contained in the EU forms not contained in the NAFO SC WG forms.

SC Obs. WG Forms with Missing EU Variables	EU Form Variables not On the SC Obs. forms
Vessel Information	**NAFO Landing Report**
N	Date Trip Stated
N	Date Trip Ended
N	Activity in NRA
N	Date Entry into NRA
N	Date Exit from NRA
N	Other Area visited
N	Country of Landing
N	Port of Landing
N	NAFO Contracting Party
Catch and Effort (Effort)	**Catch and Effort Data**
- no differences	
Catch & Effort (Catch Info)	**Catch – Observer Estimation**
N	Presentation
N	Conversion Factor
N	Process Weight
N	Undersized
N	Method of estimation
N	Haul
N	Production line
N	Observation Level
Fishing Gear (Otter Trawl)	**Otter Trawl Details**
N	Date measurement
Fishing Gear (Longline)	**Longline Details**
N	Date Measurement
Fishing Gear (Gillnets)	**Gillnet Details**
N	Date Measurement
N	Avg. Net Height

These variables have been added to the to the forms in App. A.

Appendix A

NAFO Scientific Council WG data forms and (Canadian proposed) database specifications

Data elements considered important to Scientific Council are as follows. New elements are denoted by (*).

1) Table – Catch Effort

Name	Type	Size
Trip_Number (Unique_Mission_Number)	Text	20
Set_Number	Number (Integer)	2
Gear_Number	Number (Integer)	2
Gear_Type	Text	20
Date	Date/Time	8
NAFO_Division	Text	10
Lat_Start	Text	10
Lat_Stop	Text	10
Long_Start	Text	10
Long_Stop	Text	10
Comments	Memo	-
Depth_Start	Number (Long)	4
Depth_Stop	Number (Long)	4
Effort_Units	Number (Long)	4
Time_Start	Number (Long)	4
Time_Stop	Number (Long)	4
Check_data	Yes/No	1
Directed_Species	Text	50
Total_Catch	Number (Long)	4

Relationships

Catch Effort	Catch Info
BatchNo	BatchNo
Trip_Number	Trip_Number
Set_Number	Set_Number

Attributes: Not Enforced
DisplayControl: One-To-Many

Vessel Information	Catch Effort
BatchNo	BatchNo
Trip_Number	Trip_Number

2) Table: Catch Information

Name	Type	Size
pk_id	Number (Long)	4
BatchNo	Text	50
Description:	Batch number of input data A001JB, A - type of data, 001 - number, JB - initials of data entry person	
Trip_Number (Unique_Mission_Number)	Text	50
Set_Number	Number (Integer)	2
Species	Text	50
Code	Text	50
Kept_Wt	Number (Long)	4
Discard_Wt	Number (Long)	4
Product_Weight	Number (long)	4
Product	Text	
Check_data	Yes/No	1
Description:	if yes then this data should be rechecked due to possible data discrepency	
Gear_damage	Number (Long)	4

Relationships

Catch Effort	Catch Info
BatchNo	BatchNo
Trip_Number	Trip_Number

3) Table: FG_Gillnets

Name	Type	Size
Trip_Number (Unique_Mission_Number)	Text	20
Gear_Number	Number (Integer)	2
Gear_Type	Text	50
Mesh_Size	Number (Double)	8
Total_Nets	Number (Integer)	2
Mesh_Material	Text	30
Avg_Net_Length	Number (Double)	8
Date_Measurement	Date	
Check_data	Yes/No	1
Description:	if yes then this data should be rechecked due to possible data discrepency	

Relationships

Vessel Information	FG_Gillnets
BatchNo	BatchNo
Trip_Number	Trip_Number

3) Table: FG_Longline

Name	Type	Size
Trip_Number (Unique_Mission_Number)	Text	20
Gear_Number	Number (Integer)	2
Gear_Type	Text	50
Number_Strings	Number (Integer)	2
Hook_Type	Text	20
Avg_Hooks_String	Number (Double)	8
Hook_Size	Number (Integer)	2
Avg_Hook_Length	Number (Double)	8
Date_Measurement	Date	
Check_data	Yes/No	1

Relationships

Vessel Information	FG_Longline
BatchNo	BatchNo
Trip_Number	Trip_Number

4) Table: FG_Otter_Trawl

Name	Type	Size
Trip_Number (Unique_Mission_Number)	Text	20
Gear_Number	Number (Integer)	2
Number_Vertical_Straps	Number (Integer)	2
Gear_Type	Text	10
Vert_Strap_Spacing	Number (Double)	8
Attachments	Text	50
Date_Measurement	Date	
Number_Horizontal_Straps	Number (Integer)	2
Mesh_Material	Text	30
Horz_Strap_Spacing	Number (Double)	8
Grate_Bar_Spacing	Number (Double)	8
Topside_Chafer_Type	Text	20
Trawl_Wings_High	Number (Double)	8
Trawl_Wings_Low	Number (Double)	8
Trawl_Wings_Avg	Number (Double)	8
Trawl_Wings_Mesh_Type	Text	20
Trawl_Body_High	Number (Double)	8
Trawl_Body_Low	Number (Double)	8
Trawl_Body_Avg	Number (Double)	8
Trawl_Body_Mesh_Type	Text	20
Trawl_LenPiece_High	Number (Double)	8
Trawl_LenPiece_Low	Number (Double)	8
Trawl_LenPiece_Avg	Number (Double)	8
Trawl_LenPiece_Mesh_Type	Text	20
Trawl_Codend_High	Number (Double)	8
Trawl_Codend_Low	Number (Double)	8
Trawl_Codend_Avg	Number (Double)	8
Trawl_Codend_Mesh_Type	Text	20
Check_data	Yes/No	1

Relationships

Vessel Information	FG_Otter_Trawl
BatchNo	BatchNo
Trip_Number	Trip_Number

5) Table: Vessel Information

Name	Type	Size
Trip_Number (Unique_Mission_Number)	Text	20
Observer_Name	Text	40
Vessel_Name	Text	40
Side_Number	Text	30
Vessel_Country	Text	25
Vessel_Call_Sign	Text	30
Vessel_Home_Port	Text	50
Vessel_Owner	Text	50
Vessel_Operator	Text	50
Master_Name	Text	50
Number_of_Crew	Text	30
Vessel_Length	Number (Single)	4
Gross_Tonnage	Number (Single)	4
Vessel_Type	Text	20
Engine_Power	Number (Single)	4
Frozen_Capacity_M	Number (Double)	8
Frozen_Capacity_T	Number (Double)	8
Fishmeal_Capacity_M	Number (Double)	8
Fishmeal_Capacity_T	Number (Double)	8
Other_Capacity_M	Number (Double)	8
Other_Capacity_T	Number (Double)	8
TotalHold_Capacity_M	Number (Double)	8
TotalHold_Capacity_T	Number (Double)	8
Trip_Date_Started	Date	
Trip_Date_Ended	Date	
Activity_in_NRA	Date	
Date_Entry_Into_NRA	Date	
Date_Exit_from_NRA	Date	
Other_Areas_Visited	Text	
Country_of_Landing	Text	
Port_of_Landing	Text	
NAFO_Contracting_Party	Text	
Vessel Comments	Memo	-
Check_Data	Yes/No	1

Relationships

Vessel Information	Catch Effort
BatchNo	BatchNo
Trip_Number	Trip_Number

Vessel Information	FG_Gillnets
BatchNo	BatchNo
Trip_Number	Trip_Number

Vessel Information	FG_Longline
BatchNo	BatchNo
Trip_Number	Trip_Number

Vessel Information	FG_Otter_Trawl
BatchNo	BatchNo
Trip_Number	Trip_Number

6) Table – Conversion Factors

Name	Type	Size
Trip_Number (Unique_Mission_Number)		
Species	Text	20
Product	Text	8
Conversion_Factor	Number (lLong)	4
Master_Conversion_Factor	Number (Long)	
Method_of_Estimation	Text	
Size	Number (Long)	
Check_Data	Yes/No	1

Relationships

Conversion Factors	Catch
Product	Product
Trip_Number	Trip_Number

Numeric code	Area (alpha)	Numeric code	Area (alpha)	Numeric code	Area (alpha)
1	0A	34	3N	53	5ZW
2	0B	35	3O	54	5Z
9	0NK	36	3PN	55	5ZC
11	1A	37	3PS	56	5ZU
12	1B	38	3P	59	5NK
13	1C	39	3NK	61	6A
14	1D	41	4R	62	6B
15	1E	42	4S	63	6C
16	1F	43	4T	64	6D
19	1NK	44	4VN	65	6E
21	2G	45	4VS	66	6F
22	2H	46	4W	67	6G
23	2J	47	4X	68	6H
29	2NK	48	4V	69	6NK
31	3K	49	4NK	70	Outside
32	3L	51	5Y	74	Not
33	3M	52	5ZE	75	Unknown

Numeric Code	Alpha Code	Country
1	BGR	Bulgaria
2	CAN-MQ	Canada Maritimes & Quebec
3	CAN-N	Canada Newfoundland
4	CUB	Cuba
5	FRO	Faroe Islands
6	GRL	Denmark Greenland
7	E/DNK	Denmark Mainland
8	E/FRA-M	France Mainland
9	FRA-SP	France St. Pierre et Miquelon
10	E/DEU	Federal Republic of Germany
11	DDR	German Democratic Republic
12	ISL	Iceland
13	E/ITA	Italy
14	JPN	Japan
15	NOR	Norway
16	POL	Poland
17	E/PRT	Portugal
18	ROM	Romania
19	E/ESP	Spain
20	SUN	Union Soviet Socialist Republics
21	E/GBR	United Kingdom
22	USA	United States of Americia
23	ISR(NC)	Israel
24	E/IRL	Ireland
25	KOR	South Korea
26	MEX(NC)	Mexico
27	CAN-M	Canada Maritimes
28	CAN-Q	Canada Quebec
29	FRA	France Combined
30	E/NLD	Netherlands
31	LVA	Latvia
32	EST	Estonia
33	LTU	Lithuania
34	RUS	Russia
35	E/BEL	Belgium
36	VEN(NC)	Venezuela
37	HND(NC)	Honduras
38	EU	European Union
39	CAN	Canada
40	CAN-C&A	Canada Central & Arctic
41	UKR	Ukraine
E/ denotes country belongs to the European Union		
(NC) Non-Contracting Party		

Num Code	Alpha Code	Common Name
1	COD	Atlantic cod
2	HAD	Haddock
3	RED	Atlantic redfishes
4	HKS	Silver hake
5	HKR	Red hake
6	POK	Pollock (saithe)
10	PLA	American plaice
11	WIT	Witch flounder
12	YEL	Yellowtail flounder
13	GHL	Greenland halibut
14	FLW	Winter flounder
15	FLS	Summer flounder
16	HAL	Atlantic halibut
19	FLX	Flatfishes (NS)
20	RNG	Roundnose grenadier
21	HKW	White hake
22	CAT	Wolffishes (catfishes)
23	USK	Cusk (tusk)
24	GRC	Greenland cod
29	GRO	Groundfish (NS)
30	HER	Atlantic herring
31	MAC	Atlantic mackerel
32	BUT	Atlantic butterfish
40	MHA	Atlantic menhaden
41	SWO	Swordfish
42	TUN	Tuna
43	SAU	Atlantic saury
49	PEL	Pelagic fish (NS)
50	ALE	Alewife
51	ARG	Atlantic argentines
52	CAP	Capelin
53	SHX	Sharks (NS)
54	SKA	Skates (NS)
55	SAL	Atlantic salmon
56	DGX	Dogfish
58	ALF	Alfonsinos
59	FIN	Finfishes (NS)
70	LBA	American lobster
71	CRA	Crabs
72	PAN	Shrimps
79	CRU	Marine Crustaceans (NS)
80	SCA	Sea scallops
81	SQU	Squids
87	MOL	Marine molluscs (NS)
89	INV	Marine invertebrates (NS)
91	URC	Sea urchins
97	SWX	Seaweeds
99	MIX	Mixed species

Num Code	Common name	Long common name	Scientific name	Alpa code	#
1	HOURS FISHED	HOURS FISHED			
2	DAYS FISHED	DAYS FISHED			
3	DAYS ON GROUND	DAYS ON GROUND			
101	COD	ATLANTIC COD	GADUS MORHUA	COD	1
102	HADDOCK	HADDOCK	MELANOGRAMMUS AEGLEFINUS	HAD	1
103	REDFISHES	ATLANTIC REDFISHES (NS)	SEBASTES SP.	RED	1
104	SILVER HAKE	SILVER HAKE	MERLUCCIUS BILINEARIS	HKS	1
105	RED HAKE	RED HAKE	UROPHYCIS CHUSS	HKR	1
106	POLLOCK	POLLOCK (SAITHE)	POLLACHIUS VIRENS	POK	1
108	G REDFISH	GOLDEN REDFISH	SEBASTES MARINUS	REG	1
109	B REDFISH	BEAKED REDFISH	SEBASTES MENTELLA	REB	1
112	A PLAICE	AMERICAN PLAICE	HIPPOGLOSSOIDES PLATESSOIDES	PLA	1
114	WITCH	WITCH FLOUNDER	GLYPTOCEPHALUS CYNOGLOSSUS	WIT	1
116	YELLOWTAIL	YELLOWTAIL FLOUNDER	LIMANDA FERRUGINEA	YEL	1
118	G HALIBUT	GREENLAND HALIBUT	REINHARDTIUS HIPPOGLOSSOIDES	GHL	1
120	A HALIBUT	ATLANTIC HALIBUT	HIPPOGLOSSUS HIPPOGLOSSUS	HAL	1
122	WINTER FLO.	WINTER FLOUNDER	PSEUDOPLEURONECTES AMERICANUS	FLW	1
124	SUMMER FLO.	SUMMER FLOUNDER	PARALICHTHYS DENTATUS	FLS	1
125	WINDOWPANE	WINDOWPANE FLOUNDER	SCOPHTHALMUS AQUOSUS	FLD	1
129	FLATFISH (NS)	FLATFISHES (NS)	PLEURONECTIFORMES	FLX	1
132	ANGLER	AMERICAN ANGLER	LOPHIUS AMERICANUS	ANG	1
136	SEAROBINS	ATLANTIC SEAROBINS	PRIONOTUS SP.	SRA	1
138	TOMCOD	ATLANTIC TOMCOD	MICROGADUS TOMCOD	TOM	1
139	BLUE ANTIMORA	BLUE ANTIMORA	ANTIMORA ROSTRATA	ANT	1
140	BLUE WHITING	BLUE WHITING (POUTASSOU)	MICROMESISTIUS POUTASSOU	WHB	1
142	CUNNER	CUNNER	TAUTOGOLABRUS ADSPERSUS	CUN	1
144	CUSK	CUSK (TUSK)	BROSME BROSME	USK	1
148	G COD	GREENLAND COD	GADUS OGAC	GRC	1
151	BLUE LING	BLUE LING	MOLVA DYPTERYGIA	BLI	1
152	LING	LING	MOLVA MOLVA	LIN	1
154	LUMPFISH	LUMPFISH (LUMPSUCKER)	CYCLOPTERUS LUMPUS	LUM	1
158	N KINGFISH	NORTHERN KINGFISH	MENTICIRRHUS SAXATILIS	KGF	1
160	N PUFFER	NORTHERN PUFFER	SPHOEROIDES MACULATUS	PUF	1
162	EELPOUTS	EELPOUTS (NS)	LYCODES SP.	ELZ	1
164	OCEAN POUT	OCEAN POUT	MACROZOARCES AMERICANUS	OPT	1
166	POLAR COD	POLAR COD	BOREOGADUS SAIDA	POC	1
168	R GRENADIER	ROUNDNOSE GRENADIER	CORYPHAENOIDES RUPESTRIS	RNG	1
169	RH GRENADIER	ROUGHHEAD GRENADIER	MACROURUS BERGLAX	RHG	1
172	SANDEELS	SANDEELS (SANDLANCES)	AMMODYTES SP.	SAN	1
174	SCULPINS	SCULPINS (NS)	MYOXOCEPHALUS SP.	SCU	1
176	SCUP	SCUP	STENOTOMUS CHRYSOPS	SCP	1
180	TAUTOG	TAUTOG	TAUTOGA ONITIS	TAU	1
182	TILEFISH	TILEFISH	LOPHOLATILUS CHAMAELEONTICEPS	TIL	1
186	WHITE HAKE	WHITE HAKE	UROPHYCIS TENUIS	HKW	1
188	WOLFFISHES	WOLFFISHES (NS)	ANARHICHAS SP.	CAT	1
189	A WOLFFISH	ATLANTIC WOLFFISH	ANARHICHAS LUPUS	CAA	1
190	S WOLFFISH	SPOTTED WOLFFISH	ANARHICHAS MINOR	CAS	1
199	GROUNDFISH (NS)	GROUNDFISHES (NS)	...	GRO	1
202	HERRING	ATLANTIC HERRING	CLUPEA HARENGUS	HER	2
204	MACKEREL	ATLANTIC MACKEREL	SCOMBER SCOMBRUS	MAC	2
212	BUTTERFISH	ATLANTIC BUTTERFISH	PEPRILUS TRIACANTHUS	BUT	2
216	MENHADEN	ATLANTIC MENHADEN	BREVOORTIA TYRANNUS	MHA	2
220	SAURY	ATLANTIC SAURY	SCOMBERESOX SAURUS	SAU	2
224	BAY ANCHOVY	BAY ANCHOVY	ANCHOA MITCHILLI	ANB	2
228	BLUEFISH	BLUEFISH	POMATOMUS SALTATRIX	BLU	2
232	CREVALLE	CREVALLE JACK	CARANX HIPPOS	CVJ	2
236	FRIGATE TUNA	FRIGATE TUNA	AUXIS THAZARD	FRI	2
240	K MACKEREL	KING MACKEREL	SCOMBEROMORUS CAVALLA	KGM	2
244	S MACKEREL	ATLANTIC SPANISH MACKEREL	SCOMBEROMORUS MACULATUS	SSM	2
252	SAILFISH	SAILFISH	ISTIOPHORUS PLATYPTERUS	SAI	2
256	WHITE MARLIN	ATLANTIC WHITE MARLIN	TETRAPTURUS ALBIDUS	WHM	2

260	BLUE MARLIN	ATLANTIC BLUE MARLIN	MAKAIRA NIGRICANS	BUM	2
264	SWORDFISH	SWORDFISH	XIPHIAS GLADIUS	SWO	2
272	ALBACORE TUNA	ALBACORE TUNA	THUNNUS ALALUNGA	ALB	2
274	BONITO	ATLANTIC BONITO	SARDA SARDA	BON	2
276	LITTLE TUNNY	LITTLE TUNNY	EUTHYNNUS ALLETTERATUS	LTA	2
278	BIGEYE TUNA	BIGEYE TUNA	THUNNUS OBESUS	BET	2
280	BLUEFIN TUNA	NORTHERN BLUEFIN TUNA	THUNNUS THYNNUS	BFT	2
282	SKIPJACK	SKIPJACK TUNA	KATSUWONUS PELAMIS	SKJ	2
284	YELLOWFIN	YELLOWFIN TUNA	THUNNUS ALBACARES	YFT	2
289	TUNAS (NS)	TUNAS (NS)	SCOMBRIDAE	TUN	2
299	PELAGICS (NS)	PELAGIC FISHES (NS)	...	PEL	2
302	ALEWIFE	ALEWIFE	ALOSA PSEUDOHARENGUS	ALE	3
304	AMBERJACKS	AMBERJACKS (NS)	SERIOLA SP.	AMX	3
306	CONGER	AMERICAN CONGER	CONGER OCEANICUS	COA	3
308	A EEL	AMERICAN EEL	ANGUILLA ROSTRATA	ELA	3
309	HAGEFISH	ATLANTIC HAGEFISH	MYXINE GLUTINOSA	MYG	3
310	A SHAD	AMERICAN SHAD	ALOSA SAPIDISSIMA	SHA	3
312	ARGENTINES	ARGENTINES (NS)	ARGENTINA SP.	ARG	3
314	A CROAKER	ATLANTIC CROAKER	MICROPOGONIAS UNDULATUS	CKA	3
316	A NEEDLEFISH	ATLANTIC NEEDLEFISH	STRONGYLURA MARINA	NFA	3
318	A SALMON	ATLANTIC SALMON	SALMO SALAR	SAL	3
320	A SILVERSIDE	ATLANTIC SILVERSIDE	MENIDIA MENIDIA	SSA	3
322	THR HERRING	ATLANTIC THREAD HERRING	OPISTHONEMA OGLINUM	THA	3
326	SLICKHEAD	BAIRD'S SLICKHEAD	ALEPOCEPHALUS BAIRDII	ALC	3
330	BLACK DRUM	BLACK DRUM	POGONIAS CROMIS	BDM	3
332	B SEABASS	BLACK SEABASS	CENTROPRISTIS STRIATA	BSB	3
334	BLUEBACK	BLUEBACK SHAD	ALOSA AESTIVALIS	BBH	3
340	CAPELIN	CAPELIN	MALLOTUS VILLOSUS	CAP	3
342	CHARS	CHARS (NS)	SALVELINUS SP.	CHR	3
344	COBIA	COBIA	RACHYCENTRON CANADUM	CBA	3
346	C POMPANO	COMMON (FLORIDA) POMPANO	TRACHINOTUS CAROLINUS	POM	3
354	G SHAD	AMERICAN GIZZARD SHAD	DOROSOMA CEPEDIANUM	SHG	3
356	GRUNTS	GRUNTS (NS)	POMADASYIDAE	GRX	3
360	H SHAD	HICKORY SHAD	ALOSA MEDIOCRIS	SHH	3
365	LAMPFISHES	LAMPFISHES (NS)	NOTOSCOPELUS SP.	LAX	3
370	MULLETS	MULLETS (NS)	MUGILIDAE	MUL	3
380	HARVESTFISH	N ATLANTIC HARVESTFISH	PEPRILUS ALEPIDOTUS (=PARU)	HVF	3
390	PIGFISH	PIGFISH	ORTHOPRISTIS CHRYSOPTERA	PIG	3
400	SMELT	RAINBOW SMELT	OSMERUS MORDAX	SMR	3
402	RED DRUM	RED DRUM	SCIAENOPS OCELLATUS	RDM	3
404	RED PORGY	RED PORGY	PAGRUS PAGRUS	RPG	3
406	ROUGH SCAD	ROUGH SCAD	TRACHURUS LATHAMI	RSC	3
410	SAND PERCH	SAND PERCH	DIPLECTRUM FORMOSUM	PES	3
412	SHEEPSHEAD	SHEEPSHEAD	ARCHOSARGUS PROBATOCEPHALUS	SPH	3
414	SPOT CROAKER	SPOT CROAKER	LEIOSTOMUS XANTHURUS	SPT	3
416	S WEAKFISH	SPOTTED WEAKFISH	CYNOSCION NEBULOSUS	SWF	3
418	SQUETEAGUE	SQUETEAGUE (GRAY WEAKFISH)	CYNOSCION REGALIS	STG	3
420	STRIPED BASS	STRIPED BASS	MORONE SAXATILIS	STB	3
422	STURGEONS	STURGEONS (NS)	ACIPENSERIDAE	STU	3
430	TARPON	TARPON	TARPON (=MEGALOPS) ATLANTICUS	TAR	3
432	TROUTS	TROUTS (NS)	SALMO SP.	TRO	3
440	WHITE PERCH	WHITE PERCH	MORONE AMERICANA	PEW	3
442	ALFONSINOS	ALFONSINOS (NS)	BERYX SP.	ALF	3
452	S DOGFISH	SPINY (=PICKED) DOGFISH	SQUALUS ACANTHIAS	DGS	3
459	DOGFISHES	DOGFISHES (NS)	SQUALIDAE	DGX	3
462	PORBEAGLE	PORBEAGLE	LAMNA NASUS	POR	3
469	LARGE SHARKS	LARGE SHARKS (NS)	SQUALIFORMES	SHX	3
479	SKATES	SKATES (NS)	RAJA SP.	SKA	3
499	FINFISH (NS)	FINFISHES (NS)	...	FIN	3
502	LONGFIN SQUID	LONGFIN SQUID	LOLIGO PEALEI	SQL	5
504	SHORTFIN SQUID	SHORTFIN SQUID	ILLEX ILLECEBROSUS	SQI	5
509	SQUIDS (NS)	SQUIDS (NS)	LOLIGINIDAE, OMMASTREPHIDAE	SQU	5
512	RAZOR CLAM	ATLANTIC RAZOR CLAM	ENSIS DIRECTUS	CLR	5
514	HARD CLAM	HARD CLAM	MERCENARIA MERCENARIA	CLH	5

516	OCEAN QUAHOG	OCEAN QUAHOG	ARCTICA ISLANDICA	CLQ	5
518	SOFT CLAM	SOFT CLAM	MYA ARENARIA	CLS	5
520	SURF CLAM	SURF CLAM	SPISULA SOLIDISSIMA	CLB	5
525	STIMPSON CLAM	STIMPSON SURF CLAM	SPISULA POLYNYMA	CLT	5
529	CLAMS (NS)	CLAMS (NS)	BIVALVIA	CLX	5
532	BAY SCALLOP	BAY SCALLOP	ARGOPECTEN IRRADIANS	SCB	5
534	CALICO SCALLOP	CALICO SCALLOP	ARGOPECTEN GIBBUS	SCC	5
535	ICELAND SCALLOP	ICELANDIC SCALLOP	CHLAMYS ISLANDICA	ISC	5
536	SEA SCALLOP	SEA SCALLOP	PLACOPECTEN MAGELLANICUS	SCA	5
539	SCALLOPS (NS)	SCALLOPS (NS)	PECTINIDAE	SCX	5
542	OYSTER	AMERICAN CUPPED OYSTER	CRASSOSTREA VIRGINICA	OYA	5
552	BLUE MUSSEL	BLUE MUSSEL	MYTILUS EDULIS	MUS	5
562	WHELKS	WHELKS (NS)	BUSYCON SP.	WHX	5
564	PERIWINKLES	PERIWINKLES (NS)	LITTORINA SP.	PER	5
589	MOLLUSCS (NS)	MARINE MOLLUSCS (NS)	MOLLUSCA	MOL	5
602	ROCK CRAB	ATLANTIC ROCK CRAB	CANCER IRRORATUS	CRK	5
604	BLUE CRAB	BLUE CRAB	CALLINECTES SAPIDUS	CRB	5
606	GREEN CRAB	GREEN CRAB	CARCINUS MAENAS	CRG	5
608	JONAH CRAB	JONAH CRAB	CANCER BOREALIS	CRJ	5
610	QUEEN CRAB	QUEEN CRAB	CHIONOECETES OPILIO	CRQ	5
612	RED CRAB	RED CRAB	GERYON QUINQUEDENS	CRR	5
614	STONE CRAB	STONE KING CRAB	LITHODES MAIA	KCT	5
619	CRABS (NS)	MARINE CRABS (NS)	REPTANTIA	CRA	5
622	LOBSTER	AMERICAN LOBSTER	HOMARUS AMERICANUS	LBA	5
632	N PRAWN	NORTHERN PRAWN	PANDALUS BOREALIS	PRA	5
633	AESOP SHRIMP	AESOP SHRIMP	PANDALUS MONTAGUI	AES	5
638	PENAEUS SHRIMPS	PENAEUS SHRIMPS (NS)	PENAEUS SP.	PEN	5
639	SHRIMPS (NS)	PINK (=PANDALID) SHRIMPS	PANDALUS SP.	PAN	5
649	CRUSTACEANS (NS)	MARINE CRUSTACEANS (NS)	CRUSTACEA	CRU	5
652	SEA URCHIN	SEA URCHIN	STRONGYLOCENTROTUS SP.	URC	5
669	WORMS (NS)	MARINE WORMS (NS)	POLYCHAETA	WOR	5
672	HORSESHOE CRAB	HORSESHOE CRAB	LIMULUS POLYPHEMUS	HSC	5
699	INVERT. (NS)	MARINE INVERTEBRATES (NS)	INVERTEBRATA	INV	5
702	BROWN SEAWEEDS	BROWN SEAWEEDS	PHAEOPHYCEAE	SWB	6
704	RED SEAWEEDS	RED SEAWEEDS	RHODOPHYCEAE	SWR	6
709	SEAWEEDS (NS)	SEAWEEDS (NS)	ALGAE	SWX	6
464	SHORTFIN MAKO	SHORTFIN MAKO SHARK	ISURUS OXYRINCHUS	SMA	3
470	SHARPNOSE SHARK	ATLANTIC SHARPNOSE SHARK	RHIZOPRIONODON TERRAENOVAE	RHT	3
472	BLACK DOGFISH	BLACK DOGFISH	CENTROSCYLLIUM FABRICII	CFB	3
473	BOREAL SHARK	BOREAL (GREENLAND) SHARK	SOMNIOUSUS MICROCEPHALUS	GSK	3
474	BASKING SHARK	BASKING SHARK	CETORHINUS MAXIMUS	BSK	3
480	LITTLE SKATE	LITTLE SKATE	RAJA ERINACEA	RJD	3
484	BARNDOOR SKATE	BARNDOOR SKATE	RAJA LAEVIS	RJL	3
487	WINTER SKATE	WINTER SKATE	RAJA OCELLATA	RJT	3
488	THORNY SKATE	THORNY SKATE (STARRY RAY)	RAJA RADIATA	RJR	3
489	SMOOTH SKATE	SMOOTH SKATE	RAJA SENTA	RJS	3
490	SPINYTAIL SKATE	SPINYTAIL (SPINETAIL RAY)	RAJA (BATHYRAJA) SPINICAUDA	RJQ	3

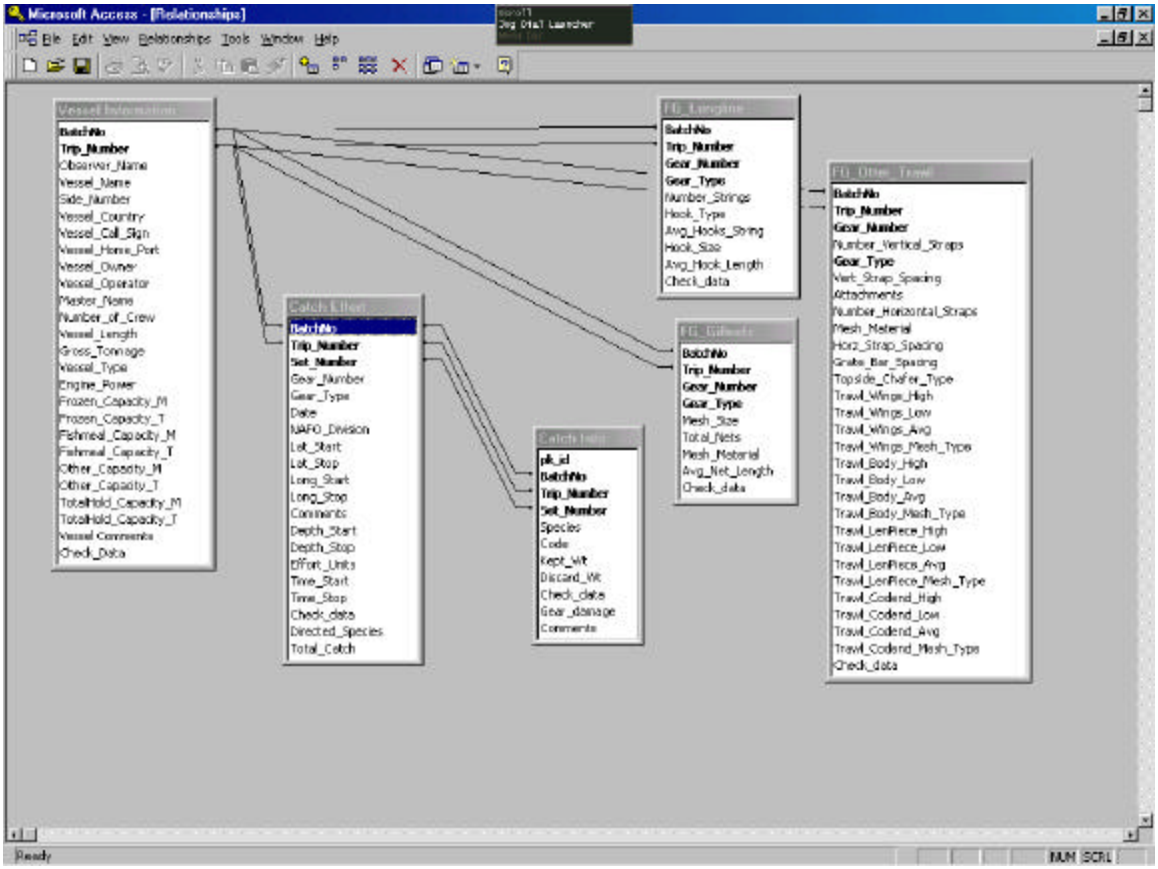
Num Code	Alpha Code	Gear
8	OTB*	Bottom otter trawl (charters)
9	OTM*	Midwater trawl (charters)
10	OTB	Bottom otter trawl (side or stern not specified)
11	OTB-1	Bottom otter trawl (side)
12	OTB-2	Bottom otter trawl (stern)
13	OTM	Midwater trawl (side or stern not specified)
14	OTM-1	Midwater trawl (side)
15	OTM-2	Midwater trawl (stern)
16	PTB	Bottom pair trawl (2 boats)
17	PTM	Midwater pair trawl (2 boats)
18	TBB	Beam trawl
19	OTS	Otter shrimp twin trawl
20	SDN*	Danish seine (charters)
21	SDN	Danish seine
22	SSC	Scottish seine
23	SPR	Pair seine (2 boats)
24	SB	Beach seine (shut off = bar seine)
30	PS*	Purse seine (charters)
31	PS	Purse seine
39	GN*	Gillnets (charters)
40	GN	Gillnets (not specified)
41	GNS	Set gillnets
42	GND	Drift gillnets
49	LL*	Longlines (charters)
50	LL	Longlines (not specified)
51	LLS	Set lines (bottom or near bottom longlines)
52	LLD	Drift lines (drifting longlines)
53	LHP	Handlines (including pole & jig)
54	LTL	Troll lines
55	LHM	Mechanized squid jigger
56	LHM*	Mechanized squid jigger (charters)
58	LDV	Dory vessel line gears
60	FIX	Traps (not specified)
61	FPN	Uncovered pound nets (cod & herring traps etc.)
62	FPO	covered pots (lobster & crab etc.) and fyke nets
63	FWR	Weirs
70	DRB*	Dredge (charters)
71	DRB	Dredge (boat)
72	DRH	Dredge (hand)
81	HAR	Harpoons
90	MIS	Other known gears not covered by the above
98	NK*	Gears not known (charter)
99	NK	Gears not known or not specified

Month
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC

NAFO Observer Program Database Structure

The Access database consists of 6 linked tables based on the 4 forms designed by the Scientific Council WG and presented to STACTIC in Sept 1999. It uses NAFO codes and is designed to capture set and catch and effort information collected by NAFO observers on a set by set basis. A series of reports have been designed to report on the information contained in the database but these reports can be easily modified and are not inclusive.

A table has not yet been designed to capture the length frequency or conversion factor information.



NAFO Fisheries Observer Program

CATCH & EFFORT	Obs. Or Log:	Trip Number:

Set #:	Gear #:	Gear Type:	Method of Estimation	Date: (yyyymmdd)

EFFORT INFORMATION		START (gear on bottom)	END (gear off bottom)
NAFO Div:	Lat.		
Effort Units:	Long.		
Comments:	Depth (m) fishing		
	Time (UTC)		

CATCH INFORMATION	TOTAL CATCH (round in kg):

Species	Code	**Dir or Bycat**	Kept Wt.	Discard Wt.	Product Wt.	Product

CONVERSION FACTORS	Trip Number:

Species	Product	Size	**Master Conv Factor**

VESSEL INFORMATION	Trip Number:
Observer Name:	
Vessel Name:	

VESSEL IDENTIFICATION	
Side Number:	Country:
Call Sign:	Home Port:

VESSEL OWNER/OPERATORS	
Vessel Owner:	Vessel Operator:
Master Name:	Number of Crew:

VESSEL SPECIFICATIONS		
Length (m):	Gross Tonnage:	
Vessel Type:	Engine Power: HP	
Frozen Hold Capacity:	m^3	t
Fishmeal Hold Capacity:	m^3	t
Other Hold Capacity:	m^3	t
TOTAL HOLD CAPACITY:	m^3	t

TRIP SPECIFICATIONS		
Date Started:	Date Ended:	NAFO Contracting Party:
Date Entry into NRA	Date Exit from NRA	Activity in NRA:
Country of Landing:	Port of Landing:	Other Area visited:
Comments:		

FISHING GEAR – OTTER TRAWL	Trip Number:

Date Measured:

Gear Number:		Number Vertical Straps:	
Gear Type:		Vert. Strap Spacing (m):	
Attachments:		No. Horizontal Straps:	
Mesh Material:		Horiz.Strap Spacing (m):	
Grate Bar Spacing (mm)		Topside Chafer Type:	

MESH SIZES (mm)						
TRAWL PART	High	Low	Avg.		Mesh Type:	
Wings:						
Body:						
Len. Piece:						
Codend:						

FISHING GEAR – LONGLINE

Date Measured:

Gear Number:		Number of Strings:	
Hook Type:		Avg. # Hooks/String:	
Hook Size (mm):		Avg. String Length:	

FISHING GEAR – GILLNETS

Date Measured:

Gear Number:		Mesh Size:	
Total # Nets:		Mesh Material:	
Avg. Net Length:			

LENGTH FREQUENCY	Trip Number:

Species Code:		Set Number:	
Sample Type:		Measure Type	
Meas. Convention		Total Measured:	
Sample Wt. (kg):		Catch Weight:	
Gear Type:		Gear Number:	

sex ◯ sex ◯

	Tally	#		Tally	#
0			0		
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
0			0		
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
0			0		
1			1		
2			2		
3			3		
4			4		
5			5		
6			6		
7			7		
8			8		
9			9		
0			0		
1			1		
2			2		
3			3		
4			4		
5			5		