SEASONAL LENGTH:WEIGHT RELATIONSHIPS OF THE FISH SPECIES CAUGHT BY FISHERIES AND OCEANS CANADA MARITIMES REGION ECOSYSTEM SURVEYS FROM 2001-2014 AND DEEP WATER SPECIES FROM 2001-2017

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Les numéros 1 à 25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer. Les numéros 26-160 ont été publiés à titre de Rapports statistiques du Service des pêches et de la mer, ministère des Pêches et de l'Environnement. Le nom de la série a été modifié à partir du numéro 161.

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ABSTRACT

Noble, V.R., and Clark, D. S., 2019. Seasonal length:weight relationships of the fish species caught by Fisheries and Oceans Canada Maritimes Region Ecosystem Surveys from 2001-2014 and deep water species from 2001-2017. Can. Data Rep. Fish. Aquat. Sci.1292: iv + 43 p.

Fisheries and Oceans Canada Maritimes Region has conducted annual ecosystem surveys of the Scotian Shelf, Bay of Fundy, and Georges Bank since 1970. These surveys are the primary data source for monitoring trends in fish and invertebrate species distribution, abundance, and biological condition in the Maritimes Region. Since 2014, all catch and biological data are entered at sea using the Ecosystem Survey Entry software system, which was developed to aid in the automation of the data entry process. An error message is generated during data entry if the observed weight of a specimen at-length differs from the predicted weight-at-length by more than 25%. This is intended to reduce data entry errors due to typographic errors, incorrect measurement and/or units used. Fish species Length:Weight Relationships (LWR) are an important tool to aid in data collection quality control at sea. We use regression coefficients, intercept (*a)* and slope (*b)*, calculated from previous years seasonal surveys to predict the weight from the length of a fish. This report presents the regression coefficients of fish species caught and measured during 2001-2014 (and 2001-2017 for deep water species) in the Maritimes Region.

RÉSUMÉ

Noble, V.R., and Clark, D. S., 2019. Seasonal length:weight relationships of the fish species caught by Fisheries and Oceans Canada Maritimes Region Ecosystem Surveys from 2001-2014 and deep water species from 2001-2017. Can. Data Rep. Fish. Aquat. Sci.1292: iv + 43 p.

Depuis 1970, le personnel de la région des Maritimes de Pêches et Océans Canada effectue chaque année des relevés de l'écosystème de la plate-forme Néo-Écossaise, de la baie de Fundy et du banc de Georges. Ces relevés constituent la principale source de données pour la surveillance des tendances en ce qui a trait à la répartition des espèces de poissons et d'invertébrés, à leur abondance et aux conditions biologiques dans la région des Maritimes. Depuis 2014, les données liées aux captures et les données biologiques sont toutes saisies en mer à l'aide du logiciel Ecosystem Survey Entry, qui a été mis au point pour faciliter l'automatisation du processus de saisie des données. Un message d'erreur est généré lors de la saisie des données si le poids observé d'un spécimen par rapport à sa taille diffère de plus de 25 % de celui prévu. Cette mesure vise à réduire les erreurs de saisie de données dues à des erreurs typographiques, à des mesures incorrectes ou aux unités utilisées. Les rapports longueur/poids des espèces de poissons sont un outil important pour faciliter le contrôle de la qualité de la collecte des données en mer. Nous utilisons les coefficients de régression, ordonnée à l'origine (*a)* et pente (*b)*, calculés à partir des relevés saisonniers des années précédentes pour prédire le poids en fonction de la longueur d'un poisson. Ce rapport présente les coefficients de régression pour les espèces de poissons capturés et mesurés de 2001 à 2014 (et 2001-2017 pour les espèces d'eau profonde) dans la région des Maritimes.

BACKGROUND

Fisheries and Oceans Canada (DFO) has conducted annual summer ecosystem survey of the Scotian Shelf and Bay of Fundy since 1970 (Figure 1) in Northwest Atlantic Fisheries Organization (NAFO) Divisions 4VWX . The March (winter) 4VsW survey, with spatial coverage selected to provide indices of abundance for 4VsW cod, was conducted from 1986-2010 and covered most of NAFO Divisions 4VsW (Figure 2). The Maritimes Region of DFO has also conducted a winter Ecosystem Survey on Georges Bank in the NAFO Division 5Z using a standardized protocol since 1987 (Figure 1). These surveys are the primary data source for monitoring trends in fish and invertebrate species distribution, abundance, and biological condition in the Maritimes Region (e.g., DFO 2017, 2018).

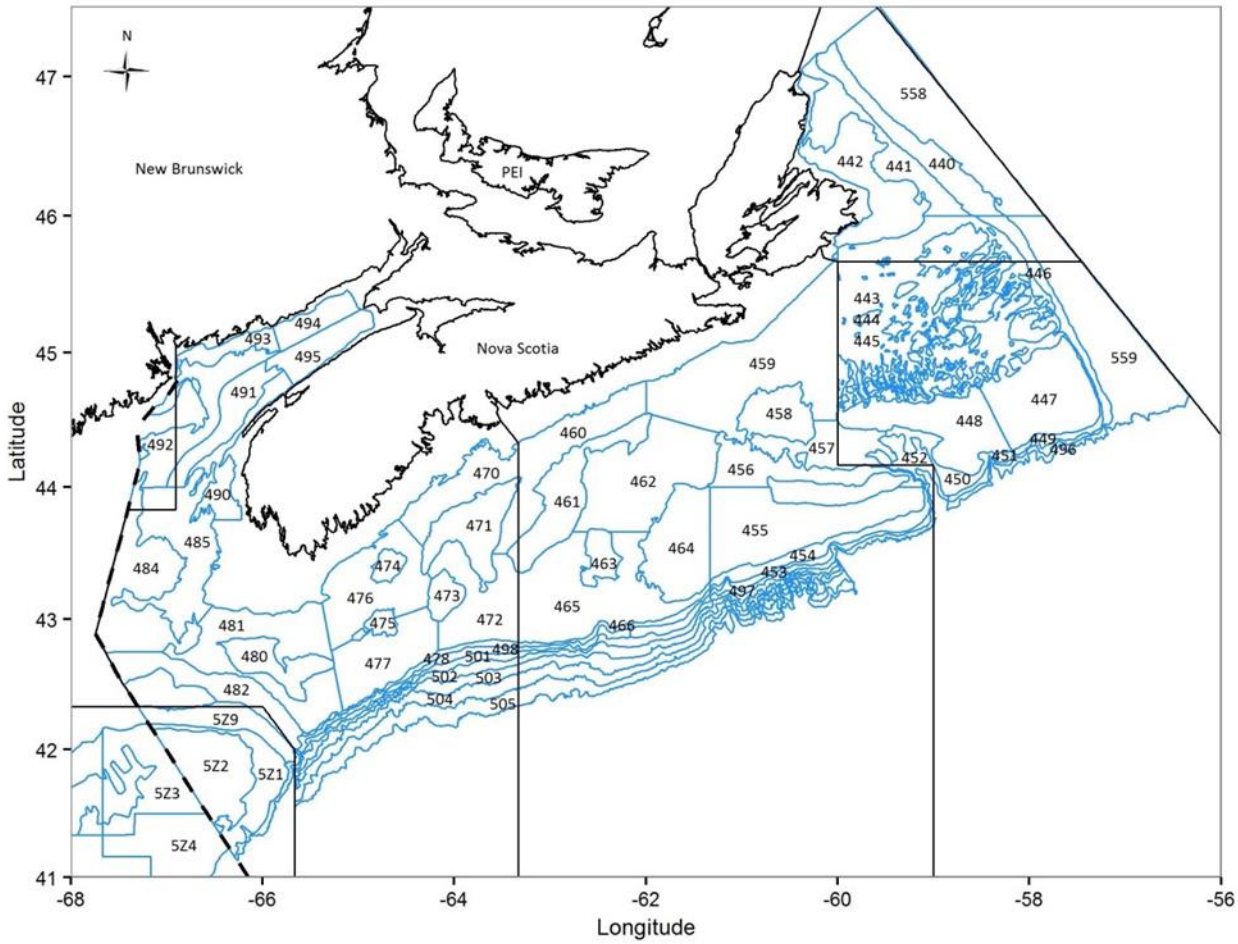

Figure 1. Ecosystem Survey strata areas surveyed off the Scotian Shelf, Bay of Fundy and Georges Bank.

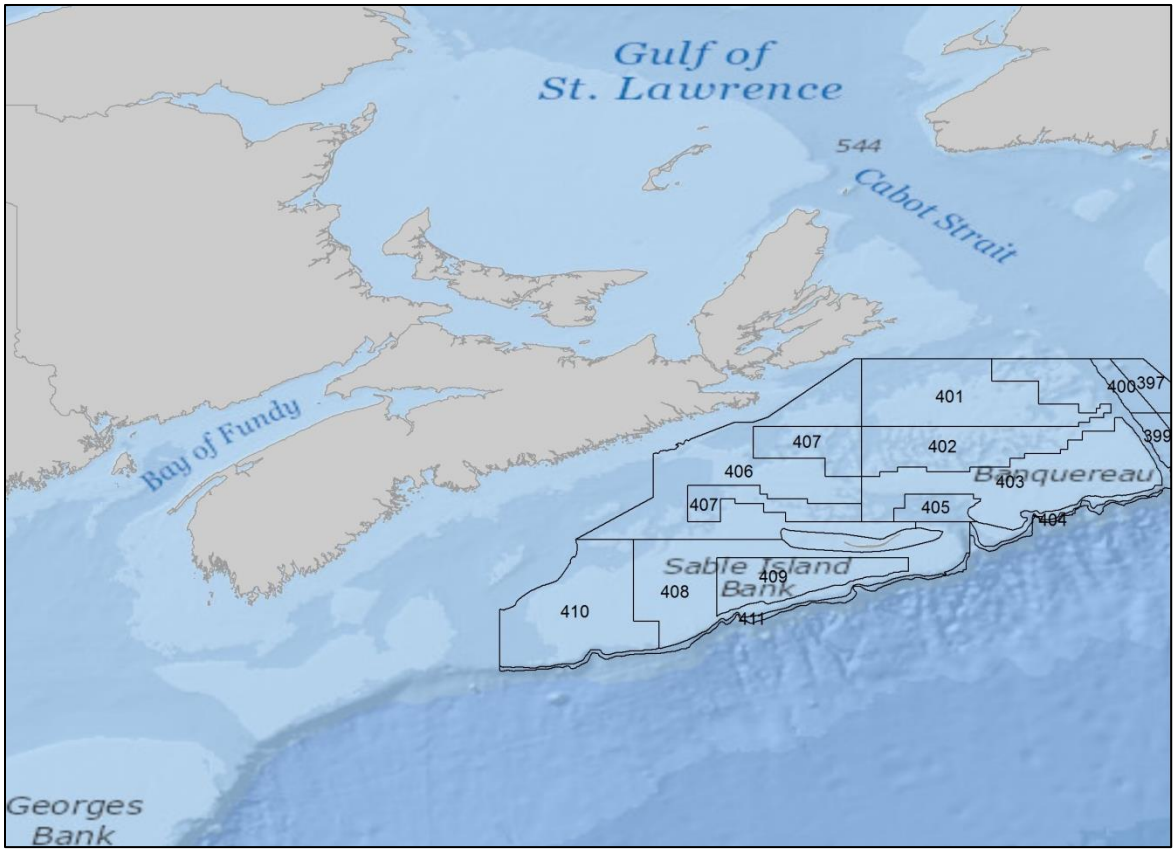

Figure 2. Ecosystem Survey strata areas surveyed off the Scotian Shelf during the March (winter) 4VsW survey.

The Ecosystem Survey Entry software system (ESE; Ecosystem Surveys Entry User Guide 14, January 2017) was developed for the Maritimes Region Ecosystem Surveys, to aid in the automation of the data entry process while at sea. Length:Weight Relationships (LWR) differ between species of fish depending on body shape, and within a species depending on condition of the individual fish. Individual fish within the population can vary in body condition seasonally, yearly and between the sexes. Using linear regressions of the LWR, we determine the regression coefficients, (*b*) slope and (*a*) intercept, for each fish species caught in the DFO summer 4VWX (strata 440-503), winter Georges Bank (strata area 5Z), and March (winter) 4VsW (strata 396-411) Ecosystem Surveys (See Figures 1 and 2). We created a regression coefficients table for each species depending on survey season, summer (4VWX survey) and winter (Georges Bank and 4VsW combined), that can easily be entered into the ESE before these two yearly surveys are conducted. These coefficients are used to predict the weight of a fish from its length. The ESE will return an error message if the weight-at-length differs from the predicted weight-at-length by more than a given percentage (25% is frequently used). This is intended to reduce human error during the data entry process, and improve data reliability.

QUANTITATIVE METHODS

Fish LWR were calculated using the exponential relationship: $W = a \times L^{b}$ (Ricker 1968), where W is total weight (g) and L is length (cm or mm). Regression coefficients, intercept (*a*) and slope (*b*), were estimated using linear regression through logarithmic transformation; $\log(W) = \log(a) + b \cdot \log(L)$. The slope (*b*) of the LWR represents the body condition of the sample population

and is affected by factors such as age, sex, season, spawning state, food availability, temperature, and fishing gear used (Ricker 1973).

Here we use species LWR as an important tool to aid in data collection quality control at sea. We use regression coefficients, *a* and *b*, calculated from previous years survey results to predict the weight from the length of the fish. At sea, if the weight of that fish differs from the predicted weight for that length by more than a specified percentage (error) the ESE will generate an error message to prompt a measurement re-evaluation.

More generally, fish biologists will use the LWR to predict the weight from the length of a fish, which is then used for computing the biomass of a sample of fish from the length-frequency of that sample. One can also compare LWR from fisheries independent surveys to targeted catches from the fisheries.

A log transformed LW linear regression was conducted for individual species in summer and winter seasons using available data from DFO's Summer (June – Aug 4VWX 5YZ) and Winter (Feb-Apr 4VsWX and 5Z) between 2001 and 2014 to determine each species regression coefficients by season. For simplicity, we first pooled seasons together to see how the log transformed LW linear regression fit the data. If the regression model had an r^2 of >0.9 and/or sample size was limited, separate regressions by season were not necessary for that species, for the purpose of at-sea ESE error checking.

When there were body size differences between seasons/surveys for a species apparent in the LWR plots, and sufficient data were available, a log transformed LW linear regression for the subset of data from the summer season and for the winter season were produced separately. The intercept (*a)* and slope (*b)* coefficients for the regression that fit the survey data best (based on r^2) for that season were chosen to be the coefficients that will be entered into the ESE for future surveys.

For species that did not have enough data for this time period, species were re-evaluated over a longer time scale between 2001 and 2017. This was required for deep water species and rarer species (see section "Deep sea species and rare species (summer 2001-2017)" for LWR plots.) Species that had a sample size of <10 were included in the table, but the corresponding figures are not included due to low precision of the LWR coefficients and small sample sizes.

Below, we show LWR plots of sexually dimorphic species, species from deep water (>750 m) and rare species. These plots display model fit for the uncommon species and were also used to locate outliers/data entry errors for species where identification errors are a potential concern).

Haddock LWR were performed for data collected between 2012 -2016, as body condition has changed in recent years compared to prior years (Figure 3).

Spiny Dogfish and Silver Hake LWR were calculated based on sex and survey season, as survey season alone did not fit the data well due to sexual dimorphism of these species (Figures 4-12). The number of observed weights that differed from predicted by > 25% for a given length was greatly reduced by dividing the data by season and sex.

For redfish, LWR were calculated by season, but grouping separately by sex did not improve the precision of the LWR coefficients, or reduce the number of observations which differed from predicted by > 25%. The outliers were primarily females. Redfish are in spawning state at the time of the summer survey and female weight is highly variable since some are gravid and some have already spawned; this makes predicting weight from length imprecise.

RESULTS

Length:Weight Regression coefficients, intercept (a) and slope (b), for each fish species and sex (when appropriate) in the Maritimes Region from 2001-2014 (unless 2001-2017 is specified) are included in the following tables (Table 1., Table 2.). Other information that is included in the tables are species code, what survey the coefficients will be used for in the future, measurement units, maximum length of fish caught during the survey analysis period, the fit of the regression line (r^2), and the surveys used in the analysis.

Figures show the Length:Weight Relationship of sexually dimorphic species, species from deep water (>750 m) and rare species separated by season. The solid line in the plots represents the Length:Weight regression for each species caught 2001-2014 (unless 2001-2017 is specified). The dashed line represents 25% error bounds of the LWR.

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TABLES

*Table 1. Length:Weight Regression coefficients, intercept (a) and slope (b), for each species and sex (when appropriate) in the Maritimes Region from 2001-2014 (unless 2001-2017 is specified). Other information that is included is species code (see Appendix for corresponding species names used by the Maritimes Region), what survey the coefficients will be used for and measurement units, maximum length of fish caught during that survey period, the fit of the regression line (r^2), and the surveys used in the analysis. (*all means all available data was used for the analysis as sample size was small.)*

Common Name	Code	Season	n	Length Weight *a* Male	Length Weight *b* Male	Length Weight *a* Female	Length Weight *b* Female	Length Weight *a* Unspecified	Length Weight *b* Unspecified	Max Length	Length Units	Weight Units	r^2	Surveys pooled for analysis
SILVER HAKE	14	Winter	2083,2583, 1487	0.00327	3.189	0.00348	3.168	0.00611	2.961	44	cm	g	0.97 0.98 0.90	4VsW/ Georges
SILVER HAKE	14	Summer	7856,11396, 1487	0.00315	3.228	0.00251	3.301	0.00611	2.961	60	cm	g	0.97 0.98 0.90	Summer
SPINY DOGFISH	220	Winter	489, 455	0.00392	2.970	0.00242	3.111	NA	NA	85, 97	cm	g	0.99 0.99	4VsW/ Georges
SPINY DOGFISH	220	Summer	5376, 3150	0.00394	3.000	0.00147	3.250	NA	NA	90, 99	cm	g	0.95 0.97	Summer

*Table 2. Length:Weight Regression coefficients, intercept (a) and slope (b), for each species in the Maritimes Region from 2001-2014 (unless 2001-2017 is specified). Other information that is included is species code (see Appendix for corresponding species names used by the Maritimes Region), what survey the coefficients will be used for, measurement units, maximum length of fish caught during that survey period, the fit of the regression line (r^2), and the surveys used in the analysis for the coefficients. (*All: means all available data was used for the analysis as sample size was small. When there was no data for a particular season the coefficients from the season with data will be used for both seasons)*

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
COD (ATLANTIC)	10	Winter	8897	0.00507	3.144	122	cm	g	0.99	4VsW/ Georges
COD (ATLANTIC)	10	Summer	7980	0.00689	3.076	121	cm	g	0.99	Summer
HADDOCK	11	Winter	3334	0.00718	3.071	72	cm	g	0.99	4VsW/ Georges 2012-2016
HADDOCK	11	Summer	5846	0.00849	3.034	69	cm	g	0.99	Summer 2012-2016
WHITE HAKE	12	Winter	1620	0.00269	3.259	83	cm	g	0.99	4VsW/ Georges
WHITE HAKE	12	Summer	6417	0.00346	3.209	124	cm	g	0.99	Summer
SQUIRREL/RED HAKE	13	Winter	1399	0.00356	3.142	49	cm	g	0.99	4VsW/ Georges
SQUIRREL/RED HAKE	13	Summer	3640	0.00286	3.227	56	cm	g	0.99	Summer
CUSK	15	Winter	24	0.00240	3.352	66	cm	g	0.99	4VsW/ Georges
CUSK	15	Summer	165	0.00435	3.205	79	cm	g	0.99	Summer
POLLOCK	16	Winter	1456	0.00868	3.031	98	cm	g	0.99	4VsW/ Georges
POLLOCK	16	Summer	4504	0.00860	3.055	102	cm	g	0.99	Summer
TOMCOD (ATLANTIC)	17	Summer Winter	196	0.00966	2.923	29	cm	g	0.96	Summer
OFF-SHORE HAKE	19	Winter	36	0.00218	3.320	66	cm	g	0.98	4VsW/ Georges
OFF-SHORE HAKE	19	Summer	97	0.00198	3.368	65	cm	g	0.98	Summer
REDFISH (UNSEPARATED)	23	Winter	3719	0.00936	3.124	48	cm	g	0.99	4VsW/ Georges
REDFISH (UNSEPARATED)	23	Summer	18389	0.01057	3.114	61	cm	g	0.99	Summer
HALIBUT (ATLANTIC)	30	Winter	414	0.00452	3.203	173	cm	g	0.99	4VsW/ Georges
HALIBUT (ATLANTIC)	30	Summer	1433	0.00405	3.241	182	cm	g	0.99	Summer
TURBOT, GREENLAND HALIBUT	31	Winter	1636	0.00316	3.260	76	cm	g	0.99	4VsW/ Georges
TURBOT, GREENLAND HALIBUT	31	Summer	3401	0.00350	3.245	74	cm	g	0.99	Summer

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
BLACK SWALLOWER	39	Summer Winter	14	0.02587	2.386	25	cm	g	0.86	Summer 01-17
AMERICAN PLAICE	40	Winter	7994	0.00355	3.221	60	cm	g	0.99	4VsW/ Georges
AMERICAN PLAICE	40	Summer	21577	0.00400	3.195	59	cm	g	0.99	Summer
WITCH FLOUNDER	41	Winter	3529	0.00299	3.176	50	cm	g	0.98	4VsW/ Georges
WITCH FLOUNDER	41	Summer	9404	0.00249	3.249	57	cm	g	0.99	Summer
YELLOWTAIL FLOUNDER	42	Winter	9612	0.00446	3.170	54	cm	g	0.98	4VsW/ Georges
YELLOWTAIL FLOUNDER	42	Summer	12575	0.00749	3.018	44	cm	g	0.98	Summer
WINTER FLOUNDER	43	Winter	624	0.00762	3.117	60	cm	g	0.99	4VsW/ Georges
WINTER FLOUNDER	43	Summer	6904	0.01017	3.036	53	cm	g	0.98	Summer
GULF STREAM FLOUNDER	44	Winter	173	0.00954	2.877	18	cm	g	0.91	4VsW/ Georges
GULF STREAM FLOUNDER	44	Summer	230	0.00683	3.018	17	cm	g	0.93	Summer
STRIPED ATLANTIC WOLFFISH	50	Winter	119	0.00668	3.052	109	cm	g	0.99	4VsW/ Georges
STRIPED ATLANTIC WOLFFISH	50	Summer	1227	0.00786	3.022	109	cm	g	0.99	Summer
SPOTTED WOLFFISH	51	Winter	3	0.13816	2.315	77	cm	g	0.99	4VsW/ Georges
SPOTTED WOLFFISH	51	Summer	7	0.00412	3.234	97	cm	g	0.99	Summer
NORTHERN WOLFFISH	52	Winter	6	0.01394	2.904	58	cm	g	0.99	*All
NORTHERN WOLFFISH	52	Summer	4	0.01263	2.928	53	cm	g	1.00	Summer
SHAD AMERICAN	61	Winter	202	0.00446	3.272	53	cm	g	0.99	4VsW/ Georges
SHAD AMERICAN	61	Summer	658	0.00744	3.145	56	cm	g	0.96	Summer
ALEWIFE	62	Winter	1186	0.00502	3.269	32	cm	g	0.98	4VsW/ Georges
ALEWIFE	62	Summer	1688	0.01163	2.994	30	cm	g	0.95	Summer
RAINBOW SMELT	63	Winter	49	0.00059	3.882	21	cm	g	0.89	*All
RAINBOW SMELT	63	Summer	48	0.00059	3.882	21	cm	g	0.89	Summer
CAPELIN	64	Winter	777	0.00234	3.282	20	cm	g	0.90	4VsW/ Georges
CAPELIN	64	Summer	659	0.00318	3.172	19	cm	g	0.90	Summer
SALMON (ATLANTIC)	65	Summer/Winter	2	0.00022	3.923	60	cm	g	1.00	Summer
MACKEREL (ATLANTIC)	70	Winter	1440	0.00304	3.324	40	cm	g	0.98	4VsW/ Georges
MACKEREL (ATLANTIC)	70	Summer	566	0.00300	3.365	38	cm	g	0.96	Summer
SPOTTED HAKE	111	Winter Summer	9	0.00750	3.009	28	cm	g	0.90	4VsW/ Georges
LONGFIN HAKE	112	Winter	602	0.00268	3.205	45	cm	g	0.97	4VsW/ Georges

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
LONGFIN HAKE	112	Summer	1186	0.00395	3.105	41	cm	g	0.98	Summer
BLUE ANTIMORA/ HAKE	113	Summer Winter	116	0.00118	3.486	55	cm	g	0.99	Summer 01-17
FOURBEARD ROCKLING	114	Winter	174	0.00335	3.095	29	cm	g	0.95	4VsW/ Georges
FOURBEARD ROCKLING	114	Summer	529	0.00254	3.188	38	cm	g	0.97	Summer
THREEBEARD ROCKLING	115	Winter	16	0.00202	3.252	26	cm	g	0.98	*All
THREEBEARD ROCKLING	115	Summer	13	0.00188	3.284	26	cm	g	0.99	Summer
GREENLAND COD	118	Summer Winter	6	0.01121	3.014	47	cm	g	0.99	Summer
CUNNER	122	Winter	85	0.00727	3.223	46	cm	g	0.99	4VsW/ Georges
CUNNER	122	Summer	38	0.02044	2.905	38	cm	g	0.96	Summer
ROSEFISH (BLACK BELLY)	123	Winter	273	0.01156	3.111	34	cm	g	0.99	4VsW/ Georges
ROSEFISH (BLACK BELLY)	123	Summer	1540	0.01289	3.085	40	cm	g	0.99	Summer
MIRROR LANTERNFISH	138	Summer Winter	16	0.03475	2.593	17	cm	g	0.86	Summer 01-17
SUMMER FLOUNDER	141	Winter	41	0.00295	3.324	75	cm	g	0.98	4VsW/ Georges
SUMMER FLOUNDER	141	Summer	12	0.0024	3.340	50	cm	g	0.99	Summer
FOURSPOT FLOUNDER	142	Winter	659	0.00265	3.311	47	cm	g	0.97	4VsW/ Georges
FOURSPOT FLOUNDER	142	Summer	73	0.00194	3.419	52	cm	g	0.98	Summer
BRILL/ WINDOWPANE	143	Winter	2066	0.01043	3.010	40	cm	g	0.98	4VsW/ Georges
BRILL/ WINDOWPANE	143	Summer	109	0.01629	2.853	36	cm	g	0.94	Summer
LAMPANYCTUS MACDONALDI	146	Winter	105	0.00343	3.272	17	cm	g	0.91	*All 01-17
LAMPANYCTUS MACDONALDI	146	Summer	103	0.00338	3.277	17	cm	g	0.90	Summer 01-17
LONGNOSE GREENEYE	149	Winter	11	0.03120	2.319	17	cm	g	0.71	4VsW/ Georges
LONGNOSE GREENEYE	149	Summer	44	0.00820	2.932	24	cm	g	0.94	Summer
LANTERNFISH (NS)	150	Summer	289	0.07270	1.999	15	cm	g	0.67	Summer 01-17
LANTERNFISH (NS)	150	Winter	123	0.20009	1.386	14	cm	g	0.51	4VsW/ Georges 01-17
LANTERNFISH	152	Winter	19	0.32464	1.193	10	cm	g	0.46	*All 01-17
LANTERNFISH	152	Summer	18	0.32752	1.188	10	cm	g	0.45	Summer 01-17
LONGTOOTH ANGLEMOUTH	155	Summer Winter	28	0.00354	2.952	25	cm	g	0.97	Summer 01-17
SHORT-NOSE GREENEYE	156	Summer	57	0.00382	3.276	19	cm	g	0.90	Summer 01-17
SHORT-NOSE GREENEYE	156	Winter	24	0.01219	2.712	12	cm	g	0.86	4VsW/ Georges 01-17

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
GLACIER LANTERNFISH	157	Summer Winter	80	0.20931	1.444	10	cm	g	0.41	Summer 01-17
MULLER'S PEARLSIDES	158	Summer	9	1.14357	0.357	8	cm	g	0.39	Summer 01-17
MULLER'S PEARLSIDES	158	Winter	20	3.32520	-0.182	7	cm	g	0.01	4VsW/ Georges 01-17
BOA DRAGONFISH	159	Summer	670	0.00107	3.112	35	cm	g	0.89	Summer 01-17
BOA DRAGONFISH	159	Winter	10	0.00041	3.429	26	cm	g	0.92	4VsW/ Georges 01-17
ARGENTINE (ATLANTIC)	160	Winter	135	0.00198	3.413	48	cm	g	0.99	4VsW/ Georges
ARGENTINE (ATLANTIC)	160	Summer	462	0.00387	3.237	45	cm	g	0.98	Summer
LANTERNFISH, HORNED	163	Winter	14	0.02232	2.478	13	cm	g	0.73	*All 01-17
LANTERNFISH, HORNED	163	Summer	13	0.0212	2.501	13	cm	g	0.72	Summer 01-17
MENHADEN (ATLANTIC)	164	Summer Winter	2	0.01052	3.053	30	cm	g	1.00	Summer 01-17
BLUEBACK HERRING	165	Summer	48	0.00355	3.356	29	cm	g	0.98	*All
BLUEBACK HERRING	165	Winter	43	0.00371	3.340	29	cm	g	0.98	4VsW/ Georges
VIPERFISH	169	Winter	156	0.00120	3.187	32	cm	g	0.89	*All 01-17
VIPERFISH	169	Summer	154	0.00120	3.186	32	cm	g	0.89	Summer 01-17
GOITRE BLACKSMELT	176	Summer Winter	70	0.00570	3.156	22	cm	g	0.85	Summer 01-17
SPOTTED LANTERNFISH	180	Summer Winter	29	0.01657	2.701	14	cm	g	0.88	Summer 01-17
LANTERNFISH KROYER'S	182	Summer Winter	23	0.00673	3.037	17	cm	g	0.93	Summer 01-17
MORAS	194	Summer Winter	4	0.01334	2.805	44	cm	g	1.00	Summer 01-17
BARNDOOR SKATE	200	Winter	406	0.00280	3.121	120	cm	g	0.99	4VsW/ Georges
BARNDOOR SKATE	200	Summer	160	0.00156	3.291	135	cm	g	0.98	Summer
THORNY SKATE	201	Winter	2687	0.00766	3.043	80	cm	g	0.99	4VsW/ Georges
THORNY SKATE	201	Summer	4098	0.00693	3.090	101	cm	g	0.99	Summer
SMOOTH SKATE	202	Winter	502	0.00357	3.060	61	cm	g	0.98	4VsW/ Georges
SMOOTH SKATE	202	Summer	1119	0.00408	3.032	72	cm	g	0.99	Summer
LITTLE SKATE	203	Winter	3527	0.00425	3.087	57	cm	g	0.98	4VsW/ Georges
LITTLE SKATE	203	Summer	1468	0.00297	3.189	57	cm	g	0.98	Summer

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
WINTER SKATE	204	Winter	6723	0.00319	3.174	103	cm	g	0.99	4VsW/ Georges
WINTER SKATE	204	Summer	2311	0.00244	3.254	95	cm	g	0.99	Summer
ROUND SKATE	207	Summer	9	0.00266	3.160	47	cm	g	0.99	*All
ROUND SKATE	207	Winter	8	0.00262	3.166	47	cm	g	0.99	4VsW/ Georges
SKATES (NS)	211	Winter	8	0.00436	3.124	53	cm	g	0.95	*All
SKATES (NS)	211	Summer	6	0.00181	3.390	53	cm	g	0.99	Summer
ATLANTIC TORPEDO	216	Winter	4	0.14585	2.502	100	cm	g	0.90	4VsW/ Georges 01-17
ATLANTIC TORPEDO	216	Summer	4	0.05371	2.753	105	cm	g	1.00	Summer 01-17
BLACK DOGFISH	221	Winter	780	0.00398	3.039	64	cm	g	0.99	4VsW/ Georges
BLACK DOGFISH	221	Summer	46	0.00360	3.075	57	cm	g	0.98	Summer
SMOOTH DOGFISH	222	Winter Summer	46	0.00121	3.213	105	cm	g	0.89	4VsW/ Georges 01-17
PORTUGUESE SHARK	223	Summer Winter	138	0.00212	3.289	96	cm	g	0.94	Summer 01-17
ROUGH SAGRE	224	Summer Winter	118	0.00180	3.278	68	cm	g	0.95	Summer 01-17
NOTOSCOPELUS SP.	227	Summer Winter	14	0.01338	2.768	16	cm	g	0.96	Summer 01-17
SEA LAMPREY	240	Winter	53	0.00123	3.181	34	cm	g	0.93	4VsW/ Georges
SEA LAMPREY	240	Summer	7	0.00644	2.697	33	cm	g	0.93	Summer
NORTHERN HAGFISH	241	Winter	203	0.00516	2.535	57	cm	g	0.84	4VsW/ Georges
NORTHERN HAGFISH	241	Summer	724	0.01085	2.331	59	cm	g	0.84	Summer
LAMPANYCTUS SP.	252	Summer Winter	12	0.00120	3.686	17	cm	g	0.95	Summer 01-17
BENTHOSEMA SP.	286	Summer Winter	4	0.03590	2.365	10	cm	g	0.85	Summer 01-17
CERATOSCOPELUS SP.	293	Summer Winter	2	0.0004	4.371	9	cm	g	1.00	Summer
LONGHORN SCULPIN	300	Winter	4577	0.00878	3.038	41	cm	g	0.98	4VsW/ Georges
LONGHORN SCULPIN	300	Summer	5928	0.00732	3.105	42	cm	g	0.98	Summer
SHORTHORN SCULPIN	301	Winter	32	0.00962	3.072	37	cm	g	0.98	4VsW/ Georges
SHORTHORN SCULPIN	301	Summer	114	0.01036	3.112	46	cm	g	0.99	Summer
ARCTIC STAGHORN SCULPIN	302	Winter	23	0.01043	3.041	23	cm	g	0.99	*All
ARCTIC STAGHORN SCULPIN	302	Summer	21	0.01177	3.002	23	cm	g	0.99	Summer

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
GRUBBY OR LITTLE SCULPIN	303	Winter	33	0.05326	2.191	12	cm	g	0.77	4VsW/ Georges
GRUBBY OR LITTLE SCULPIN	303	Summer	56	0.08006	2.088	16	cm	g	0.80	Summer
MAILED SCULPIN	304	Winter	528	0.01439	2.660	16	cm	g	0.86	4VsW/ Georges
MAILED SCULPIN	304	Summer	993	0.00772	2.965	17	cm	g	0.89	Summer
NYBELIN S SCULPIN	305	Summer Winter	3	0.01374	2.852	14	cm	g	0.98	Summer
SNOWFLAKE HOOKEAR SCULPIN	306	Winter	12	0.08588	1.949	8	cm	g	0.73	4VsW/ Georges
SNOWFLAKE HOOKEAR SCULPIN	306	Summer	99	0.05210	2.241	11	cm	g	0.81	Summer
POLAR SCULPIN	307	Winter	10	0.00714	3.447	17	cm	g	0.95	4VsW/ Georges
POLAR SCULPIN	307	Summer	13	0.01773	3.089	21	cm	g	0.97	Summer
PALLID SCULPIN	308	Summer Winter	15	0.01152	3.119	45	cm	g	1.00	Summer 01-17
SCULPIN (NS)	309	Winter Summer	7	0.38230	1.073	8	cm	g	0.43	4VsW/ Georges
TWOHORN SCULPIN	313	Winter	6	0.01257	3.072	11	cm	g	0.97	4VsW/ Georges
TWOHORN SCULPIN	313	Summer	8	0.03323	2.410	9	cm	g	0.56	Summer
SPATULATE SCULPIN	314	Winter	18	0.07184	2.053	9	cm	g	0.81	4VsW/ Georges
SPATULATE SCULPIN	314	Summer	23	0.01044	2.972	12	cm	g	0.88	Summer
RIBBED SCULPIN	317	Summer Winter	25	0.00374	3.321	17	cm	g	0.96	Summer
SEA RAVEN	320	Winter	1589	0.01084	3.137	63	cm	g	0.97	4VsW/Georges
SEA RAVEN	320	Summer	3051	0.00920	3.190	65	cm	g	0.97	Summer
HOOKEAR SCULPIN (NS)	323	Winter	64	0.14367	1.697	10	cm	g	0.50	4VsW/ Georges
HOOKEAR SCULPIN (NS)	323	Summer	79	0.13942	1.740	9	cm	g	0.62	Summer
NORTHERN, COMMON SEA ROBIN	330	Winter Summer	26	0.01124	2.866	17	cm	g	0.94	4VsW/ Georges 01-17
ARMORED SEA ROBIN	331	Summer	15	0.01997	2.716	31	cm	g	0.82	*All
ARMORED SEA ROBIN	331	Winter	13	0.01795	2.751	31	cm	g	0.83	4VsW/ Georges
ALLIGATORFISH	340	Winter	248	0.09390	1.418	17	cm	g	0.38	4VsW/ Georges
ALLIGATORFISH	340	Summer	698	0.04222	1.724	16	cm	g	0.53	Summer
ATLANTIC SEA POACHER	350	Winter	216	0.00264	3.062	23	cm	g	0.91	4VsW/ Georges
ATLANTIC SEA POACHER	350	Summer	334	0.00415	2.890	23	cm	g	0.93	Summer
POLYIPNUS SP.	376	Summer Winter	4	1.00370	0.651	6	cm	g	0.92	Summer 01-17

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
DEEPBODY BOARFISH	384	Summer	7	0.04400	2.867	12	cm	g	0.92	*All 01-17
DEEPBODY BOARFISH	384	Winter	6	0.03935	2.916	12	cm	g	0.92	4VsW/ Georges 01-17
MONKFISH, GOOSEFISH, ANGLER	400	Winter	249	0.02628	2.873	84	cm	g	0.98	4VsW/ Georges
MONKFISH, GOOSEFISH, ANGLER	400	Summer	879	0.02605	2.872	81	cm	g	0.98	Summer
ROUGHNOSE GRENADIER	412	Summer	11	0.00057	3.542	52	cm	g	0.97	Summer 01-17
EELS, CUTTHROAT (NS)	455	Summer Winter	17	0.00546	2.419	43	cm	g	0.76	Summer 01-17
NOTOSCOPELUS CAUDISPINOSUS	478	Summer Winter	4	0.00114	3.817	14	cm	g	0.97	Summer 01-17
LUMPFISH	501	Winter	85	0.04764	3.006	50	cm	g	0.98	4VsW/ Georges
LUMPFISH	501	Summer	112	0.05693	2.981	52	cm	g	0.99	Summer
ATLANTIC SPINY LUMPSUCKER	502	Winter	56	0.06009	3.049	9	cm	g	0.93	4VsW/ Georges
ATLANTIC SPINY LUMPSUCKER	502	Summer	173	0.09278	2.802	11	cm	g	0.91	Summer
ATLANTIC SEASNAIL	503	Winter	56	0.01638	2.875	14	cm	g	0.91	4VsW/ Georges
ATLANTIC SEASNAIL	503	Summer	7	0.0111	3.122	13	cm	g	0.94	Summer
SEASNAIL, GELATINOUS	505	Winter	23	0.06532	2.040	13	cm	g	0.74	4VsW/ Georges
SEASNAIL, GELATINOUS	505	Summer	15	0.01418	2.965	17	cm	g	0.91	Summer
SEASNAIL, DUSKY	512	Winter	37	0.01506	2.887	16	cm	g	0.85	4VsW/ Georges
SEASNAIL, DUSKY	512	Summer	25	0.01018	3.132	34	cm	g	0.98	Summer
SEA TADPOLE	520	Winter	13	0.03348	2.591	13	cm	g	0.89	4VsW/ Georges
SEA TADPOLE	520	Summer	7	0.02586	2.627	11	cm	g	0.93	Summer
BATHYLAGUS BERICOIDES	526	Summer Winter	24	0.02661	2.788	14	cm	g	0.93	Summer 01-17
MELAMPHAEIDAE	558	Summer Winter	5	0.05439	2.109	17	cm	g	0.97	Summer 01-17
BLACKMOUTH BASS	576	Summer	8	0.01786	2.751	12	cm	g	0.95	Summer 01-17
BLACKMOUTH BASS	576	Winter	15	0.06556	2.019	9	cm	g	0.57	4VsW/ Georges 01-17
SCOPELOSAURUS LEPIDUS	588	Summer Winter	14	0.01279	2.647	38	cm	g	0.74	Summer 01-17
GREENEYES (NS)	593	Winter	12	0.00499	3.204	12	cm	g	0.92	*All
GREENEYES (NS)	593	Summer	11	0.00786	3.013	12	cm	g	0.91	Summer

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
SMOOTHHEAD, AGASSIZ'S	594	Summer Winter	295	0.00306	3.314	52	cm	g	0.97	Summer 01-17
RED DORY	595	Summer Winter	5	0.01177	3.214	16	cm	g	0.94	Summer 01-17
AMERICAN EEL	600	Winter Summer	6	0.00074	3.139	43	cm	g	0.95	4VsW/ Georges
SNUBNOSE EEL, SLIME EEL	601	Winter	104	0.00037	3.437	62	cm	g	0.94	*All 01-17
SNUBNOSE EEL, SLIME EEL	601	Summer	103	0.00046	3.379	62	cm	g	0.94	Summer 01-17
GRAY'S CUTTHROAT EEL	602	Summer	840	0.00045	3.134	70	cm	g	0.92	Summer 01-17
GRAY'S CUTTHROAT EEL	602	Winter	10	0.00106	2.926	60	cm	g	0.82	4VsW/ Georges 01-17
WOLF EELPOUT	603	Winter	22	0.00010	4.198	20	cm	g	0.87	*All
WOLF EELPOUT	603	Summer	20	0.00010	4.203	20	cm	g	0.87	Summer
SNIPE EEL	604	Winter	308	0.00035	2.463	104	cm	g	0.66	*All 01-17
SNIPE EEL	604	Summer	302	0.00027	2.516	104	cm	g	0.67	Summer 01-17
DUCKBILL OCEANIC EEL	607	Summer Winter	10	0.00018	3.315	41	cm	g	0.98	Summer 01-17
CONGER EEL	608	Winter Summer	3	0.00014	3.600	68	cm	g	1.00	4VsW/ Georges 01-17
NORTHERN SAND LANCE	610	Winter	1129	0.00445	2.716	28	cm	g	0.88	4VsW/ Georges
NORTHERN SAND LANCE	610	Summer	3549	0.00321	2.883	28	cm	g	0.92	Summer
DERICHTHYS SERPENTINUS	612	Summer Winter	7	0.00076	3.011	29	cm	g	0.52	Summer 01-17
STOUT SAWPALATE	613	Summer Winter	185	0.000002	4.129	69	cm	g	0.93	Summer 01-17
PELICAN GULPER	614	Summer Winter	13	0.00016	3.287	46	cm	g	0.88	Summer 01-17
FISH DOCTOR	616	Winter	12	0.00409	2.837	27	cm	g	0.97	*All
FISH DOCTOR	616	Summer	9	0.00271	2.959	27	cm	g	0.98	Summer
COMMON WOLF EEL	617	Winter	13	0.00928	2.378	25	cm	g	0.90	*All 01-17
COMMON WOLF EEL	617	Summer	10	0.00777	2.462	25	cm	g	0.96	Summer 01-17
EELPOUT, NEWFOUNDLAND	619	Winter	36	0.00227	3.132	63	cm	g	0.97	4VsW/ Georges
EELPOUT, NEWFOUNDLAND	619	Summer	157	0.00262	3.153	64	cm	g	0.95	Summer
LAVAL'S EELPOUT	620	Winter	36	0.00337	3.109	47	cm	g	0.99	4VsW/ Georges
LAVAL'S EELPOUT	620	Summer	163	0.00203	3.169	59	cm	g	0.95	Summer
SNAKE BLENNY	622	Winter	104	0.01139	2.222	46	cm	g	0.87	4VsW/ Georges
SNAKE BLENNY	622	Summer	837	0.01787	2.114	47	cm	g	0.89	Summer

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
DAUBED SHANNY	623	Winter	500	0.00799	2.543	22	cm	g	0.78	4VsW/ Georges
DAUBED SHANNY	623	Summer	1013	0.00473	2.782	35	cm	g	0.84	Summer
RADIATED SHANNY	625	Winter	14	0.02294	2.527	19	cm	g	0.84	4VsW/ Georges
RADIATED SHANNY	625	Summer	175	0.00768	2.973	22	cm	g	0.94	Summer
4-LINE SNAKE BLENNY	626	Winter	25	0.00715	3.016	22	cm	g	0.96	*All
4-LINE SNAKE BLENNY	626	Summer	16	0.00236	3.403	22	cm	g	0.95	Summer
PALE EELPOUT	627	Winter Summer	8	0.00275	2.997	22	cm	g	0.97	4VsW/ Georges
WRYMOUTH	630	Winter	11	0.00144	3.079	77	cm	g	0.99	4VsW/ Georges
WRYMOUTH	630	Summer	58	0.00127	3.127	87	cm	g	0.99	Summer
SLENDER EELBLENNY	631	Winter	3	0.40447	0.916	21	cm	g	0.27	*All
SLENDER EELBLENNY	631	Summer	2	2.63083	0.321	21	cm	g	1.00	Summer
STOUT EELBLENNY	632	Summer Winter	13	0.05712	1.808	15	cm	g	0.79	Summer 01-17
BANDED GUNNEL	633	Summer	4	0.00136	3.209	19	cm	g	0.91	*All 01-17
BANDED GUNNEL	633	Winter	3	0.00085	3.404	19	cm	g	0.98	4VsW/ Georges 01-17
DRAGONETS	635	Summer Winter	11	0.02697	2.457	23	cm	g	0.98	Summer 01-17
SPOTFIN DRAGONET	637	Winter	22	0.04453	2.289	22	cm	g	0.90	*All 01-17
SPOTFIN DRAGONET	637	Summer	13	0.02709	2.461	22	cm	g	0.80	Summer 01-17
OCEAN POUT	640	Winter	299	0.00167	3.221	85	cm	g	0.99	4VsW/ Georges
OCEAN POUT	640	Summer	889	0.00189	3.228	78	cm	g	0.99	Summer
ATLANTIC SOFT POUT	646	Winter	26	0.00691	2.634	14	cm	g	0.65	4VsW/ Georges
ATLANTIC SOFT POUT	646	Summer	34	0.20523	1.087	17	cm	g	0.14	Summer
SHORTTAILED EELPOUT(VAHL)	647	Winter	533	0.00354	2.964	47	cm	g	0.96	4VsW/ Georges
SHORTTAILED EELPOUT(VAHL)	647	Summer	1099	0.00237	3.111	59	cm	g	0.97	Summer
CUSK-EELS INCLUDES BROTULIDAE F.	649	Summer Winter	11	0.01573	2.606	38	cm	g	0.99	Summer 01-17
FAWN CUSK EEL	650	Summer	13	0.00178	3.075	30	cm	g	0.90	Summer 01-17
FAWN CUSK EEL	650	Winter	90	0.00373	2.838	32	cm	g	0.89	4VsW/ Georges 01-17
ATLANTIC SILVER HATCHETFISH	700	Summer winter	11	0.33329	1.435	10	cm	g	0.64	Summer 01-17
BUTTERFISH	701	Winter	358	0.00959	3.245	21	cm	g	0.96	4VsW/ Georges

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
BUTTERFISH	701	Summer	356	0.00852	3.304	23	cm	g	0.97	Summer
NORTHERN PIPEFISH	702	Winter Summer	7	0.00151	2.566	27	cm	g	0.90	4VsW/ Georges 01-17
AMERICAN JOHN DORY	704	Summer	109	0.0356	2.686	48	cm	g	0.99	Summer 01-17
AMERICAN JOHN DORY	704	Winter	19	0.03558	2.708	47	cm	g	0.99	4VsW/ Georges 01-17
POLYIPNUS ASTEROIDES	708	Summer Winter	5	0.08533	1.965	8	cm	g	1.00	Summer 01-17
DUCKBILL BARRACUDINA	711	Winter	85	0.00053	3.512	45	cm	g	0.94	*All 01-17
DUCKBILL BARRACUDINA	711	Summer	83	0.00055	3.501	45	cm	g	0.94	Summer 01-17
WHITE BARRACUDINA	712	Summer	720	0.00092	3.116	29	cm	g	0.92	Summer 01-17
WHITE BARRACUDINA	712	Winter	30	0.00136	2.952	25	cm	g	0.88	4VsW 01-17
SIMONYI'S FROSTFISH	714	Summer Winter	21	0.00001	3.908	54	cm	g	0.95	Summer 01-17
STRAIGHTLINE DRAGONFISH	716	Summer Winter	24	0.0037	3.065	26	cm	g	0.89	Summer 01-17
ATLANTIC SAURY, NEEDLEFISH	720	Summer Winter	10	0.01954	2.302	20	cm	g	0.47	Summer
BAIRDS SMOOTHEAD	724	Summer Winter	28	0.00812	3.002	79	cm	g	0.95	Summer 01-17
ATLANTIC GYMNAST	725	Summer Winter	16	0.00158	3.628	17	cm	g	0.91	Summer 01-17
OMOSUDIS LOWEI	729	Summer Winter	4	0.00695	2.912	28	cm	g	0.98	Summer 01-17
DAGGERTOOTH	732	Summer Winter	4	0.00001	3.908	56	cm	g	1.00	Summer 01-17
SHORTSPINE TAPIRFISH	739	Summer Winter	3	0.00021	3.567	80	cm	g	0.98	Summer 01-17
SPINY EEL	740	Winter	14	0.00034	3.459	86	cm	g	0.96	*All 01-17
SPINY EEL	740	Summer	12	0.00068	3.289	86	cm	g	0.96	Summer 01-17
HATCHETFISH	741	Winter	18	0.086	2.12	13	cm	g	0.87	*All 01-17
HATCHETFISH	741	Summer	16	0.09929	2.059	13	cm	g	0.87	Summer 01-17
ATLANTIC BATFISH	742	Winter	10	1.31346	1.408	18	cm	g	0.74	*All 01-17
ATLANTIC BATFISH	742	Summer	9	1.51434	1.337	18	cm	g	0.73	Summer 01-17
AMERICAN BARRELFISH	743	Summer Winter	9	0.01832	2.967	27	cm	g	0.99	Summer
DRAGONFISH UNIDENTIFIED	756	Winter Summer	3	2.91232	0.048	16	cm	g	0.00	4VsW/ Georges

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
PIPEFISH UNIDEN.	759	Winter Summer	3	0.00000	4.966	25	cm	g	0.25	4VsW/ Georges
BEARDFISH	771	Winter	7	0.00429	3.623	15	cm	g	1.00	*All 01-17
BEARDFISH	771	Summer	6	0.00431	3.622	15	cm	g	1.00	Summer 01-17
OGREFISH	774	Summer Winter	7	0.10832	2.422	15	cm	g	0.38	Summer 01-17
THORNY TINSELFISH	777	Summer Winter	6	0.07864	2.388	10	cm	g	0.77	Summer 01-17
BLACK SCABBARDFISH	784	Summer Winter	3	0.00000	5.052	89	cm	g	0.31	Summer 01-17
BEANS BLUEBACK	795	Summer Winter	70	0.01508	2.946	15	cm	g	0.87	Summer 01-17
TONGUEFISH	805	Winter	21	0.01608	2.674	13	cm	g	0.51	*All 01-17
TONGUEFISH	805	Summer	18	0.00541	3.137	10	cm	g	0.58	Summer 01-17
MYCTOPHIFORMES	811	Summer Winter	7	0.02456	2.676	9	cm	g	0.86	Summer 01-17
BATHYSAURUS FEROX	814	Summer Winter	6	0.00061	3.504	53	cm	g	1.00	Summer 01-17
TONGUE FISH	816	Summer	27	0.01837	2.62	13	cm	g	0.72	Summer 01-17
TONGUE FISH	816	Winter	15	0.02077	2.508	10	cm	g	0.54	4VsW/ Georges 01-17
BATFISH, SPINY	844	Summer Winter	2	0.05090	2.539	12	cm	g	1.00	Summer 01-17
DICROLENE INTRONIGER	862	Summer Winter	24	0.00379	3.027	38	cm	g	0.95	Summer 01-17
BATHYPTEROIS QUADRIFILIS	863	Summer Winter	5	0.00068	3.819	16	cm	g	1.00	Summer 01-17
ALDROVANDIA PHALACRA	865	Summer Winter	43	0.00191	2.698	47	cm	g	0.87	Summer 01-17
SPOTTED TINSELFISH	866	Summer Winter	3	0.05821	2.450	8	cm	g	0.99	*All 01-17
HOOKEAR SCULPIN, ATL.	880	Winter	44	0.06890	2.094	9	cm	g	0.69	4VsW/ Georges
HOOKEAR SCULPIN, ATL.	880	Summer	275	0.05686	2.198	18	cm	g	0.75	Summer
GONOSTOMA BATHYPHILUM	883	Summer Winter	4	0.02825	2.155	15	cm	g	0.96	Summer 01-17
CHIASMODON SP.	909	Summer Winter	8	0.01716	2.480	15	cm	g	0.85	Summer 01-17
APRISTURUS LAURUSSONI	947	Summer Winter	14	0.00190	3.155	87	cm	g	0.99	Summer 01-17
SKATE, ROSETTE	967	Winter Summer	3	0.42782	1.785	40	cm	g	0.11	4VsW/ Georges
APRISTURUS SP.	983	Summer Winter	70	0.00339	3.010	86	cm	g	0.85	Summer 01-17

Common Name	Code	Season	n	Length Weight *a*	Length Weight *b*	Max Length	Length Units	Weight Units	r^2	Surveys Pooled for Analysis
HALOSAUROPSIS MACROCHIR	1028	Summer Winter	4	0.00203	2.679	50	cm	g	1.00	Summer 01-17
ALDROVANDIA AFFINIS	1030	Summer Winter	35	0.00408	2.464	45	cm	g	0.86	Summer 01-17
CORYPHAENOIDES SP	1064	Summer Winter	4	0.00558	2.751	21	cm	g	0.80	Summer 01-17
SILVER ROUGHY	1106	Summer Winter	5	0.03266	2.914	13	cm	g	0.93	Summer 01-17
Skate; LITTLE OR WINTER; Unspecified	1191	Summer	662	0.00341	3.146	43	cm	g	0.98	Summer 01-17
Skate; LITTLE OR WINTER; Unspecified	1191	Winter	902	0.00418	3.081	50	cm	g	0.98	4VsW/ Georges 01-17
GHOST CATSHARK	1264	Summer Winter	10	0.00029	3.608	82	cm	g	0.91	Summer 01-17

LENGTH:WEIGHT RELATIONSHIP (LWR) PLOTS

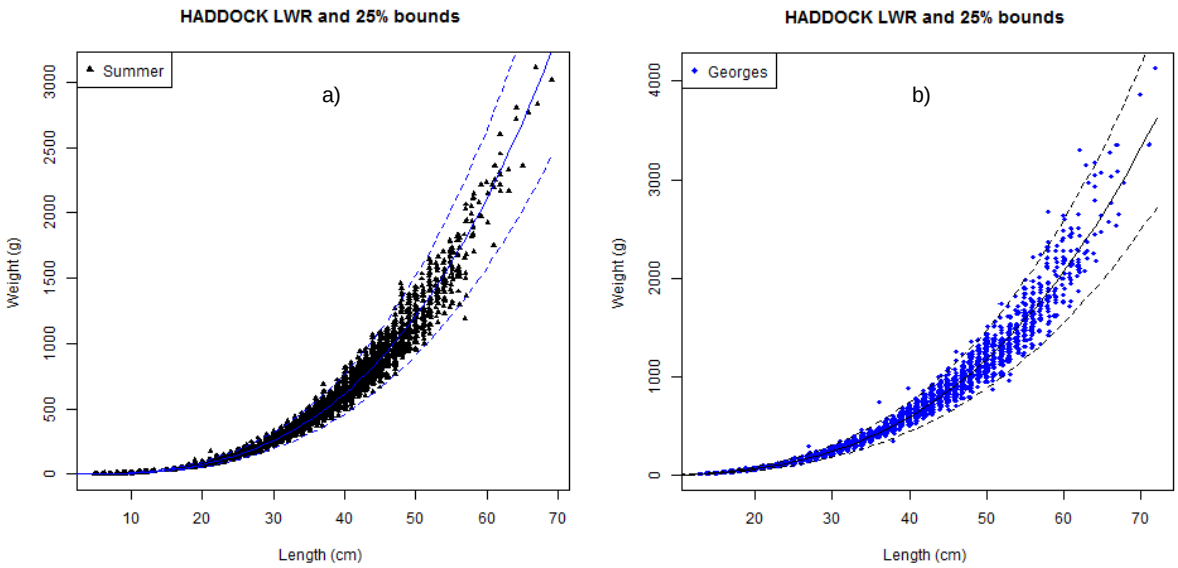

Figure 3. LWR for Haddock between 2012-2016 for (a) summer season and b (b) winter season.

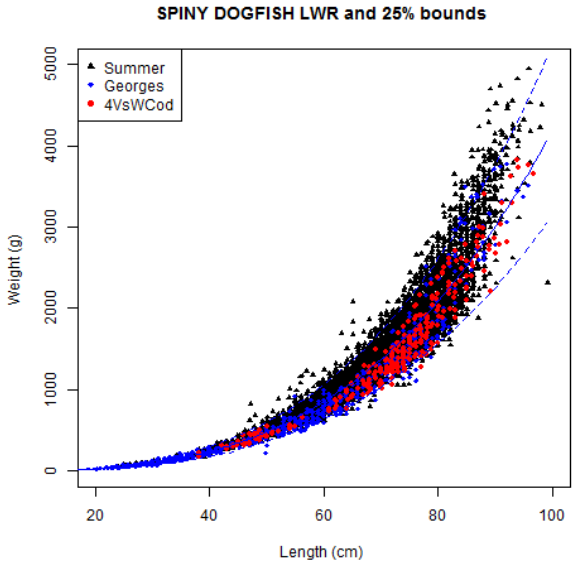

Figure 4. LWR for Spiny Dogfish caught in the three surveys combined between 2001-2017.

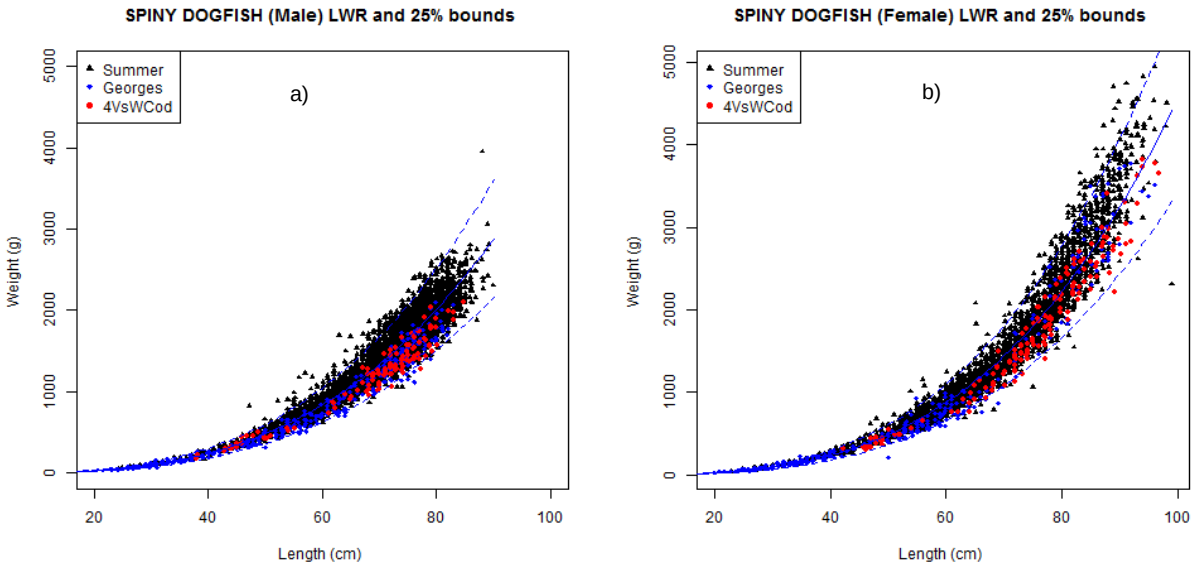

Figure 5. LWR (solid, blue line) for Spiny Dogfish caught in the three surveys between 2001-2017 a) males; b)b) females.

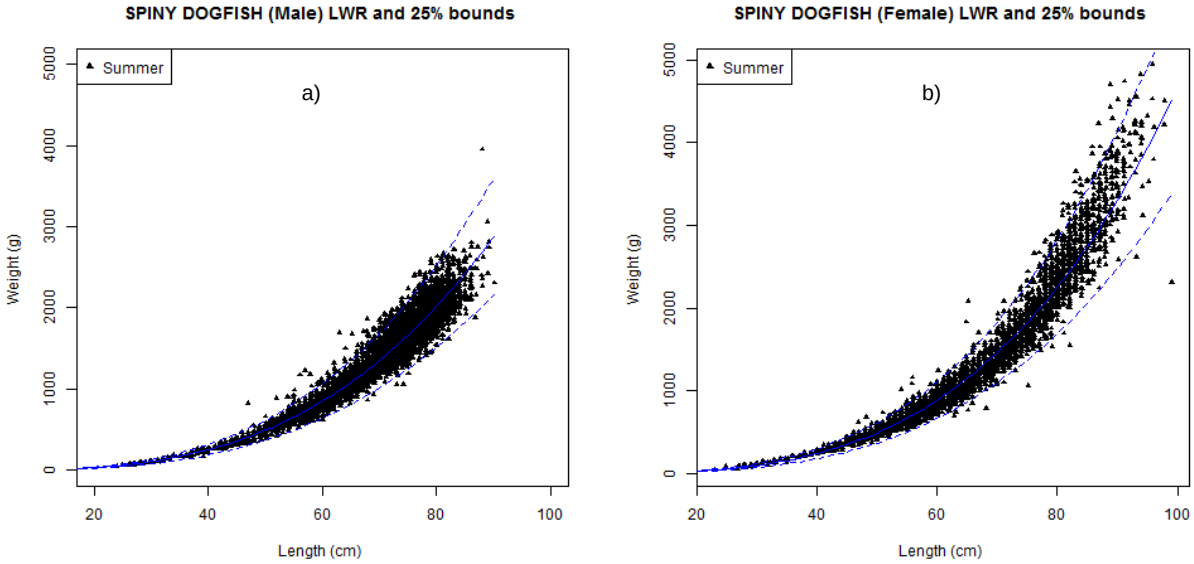

Figure 6. LWR (solid, blue line) for Spiny Dogfish caught in the summer surveys between 2001 and 2017, a) males b) females..

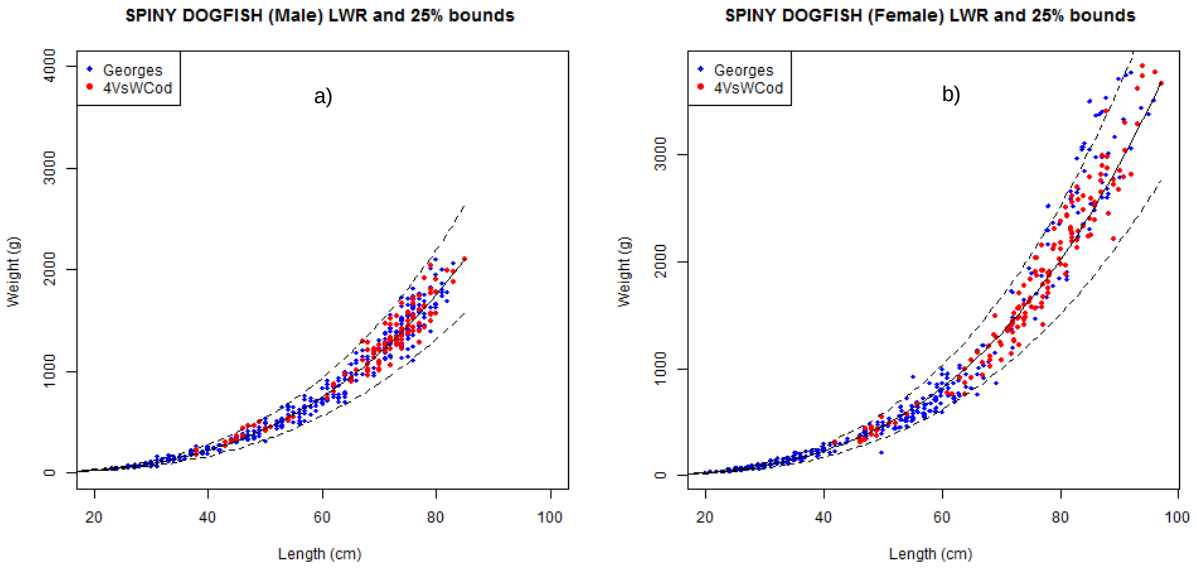

Figure 7. LWR (solid, black line) for Spiny Dogfish caught in Georges Bank and 4VsW surveys between 2001 and 2017, a) males b) females.

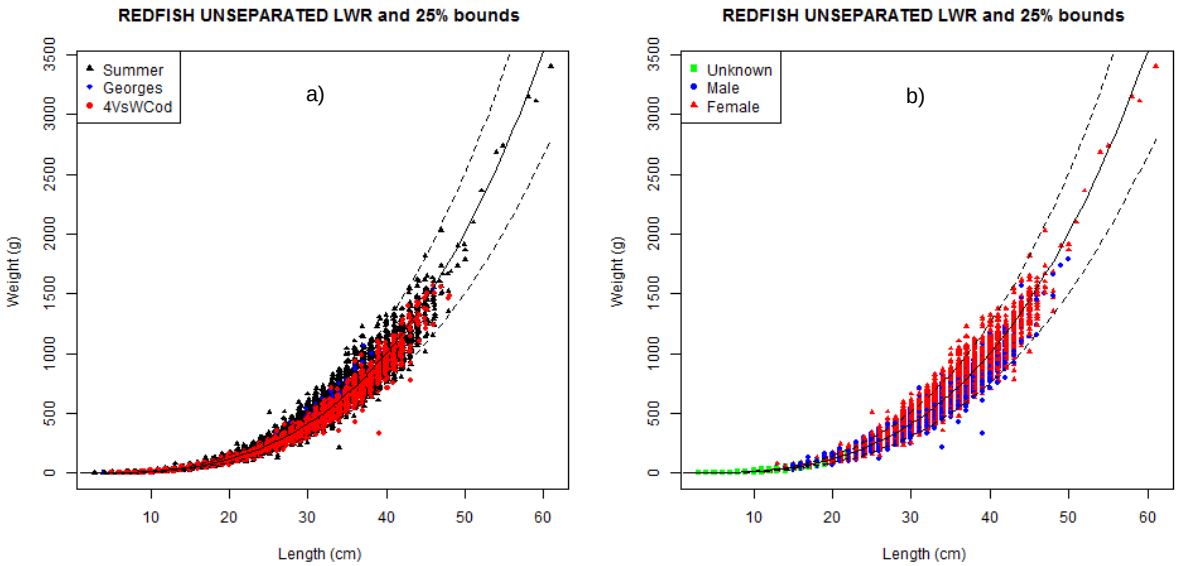

Figure 8. LWR of all Redfish caught in a) the three surveys combined between 2001 and 2017 and b) all redfish caught in the three surveys separated by sex.

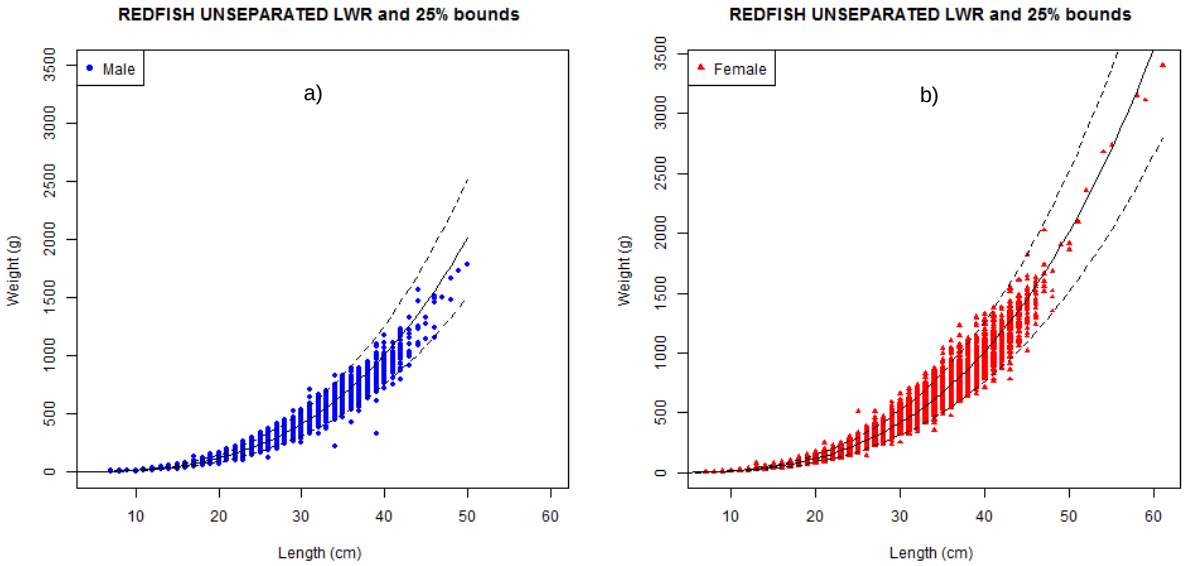

Figure 9. LWR of Redfish caught in the three surveys between 2001 and 2017, the black solid line represents the LWR of a) males and b) females.

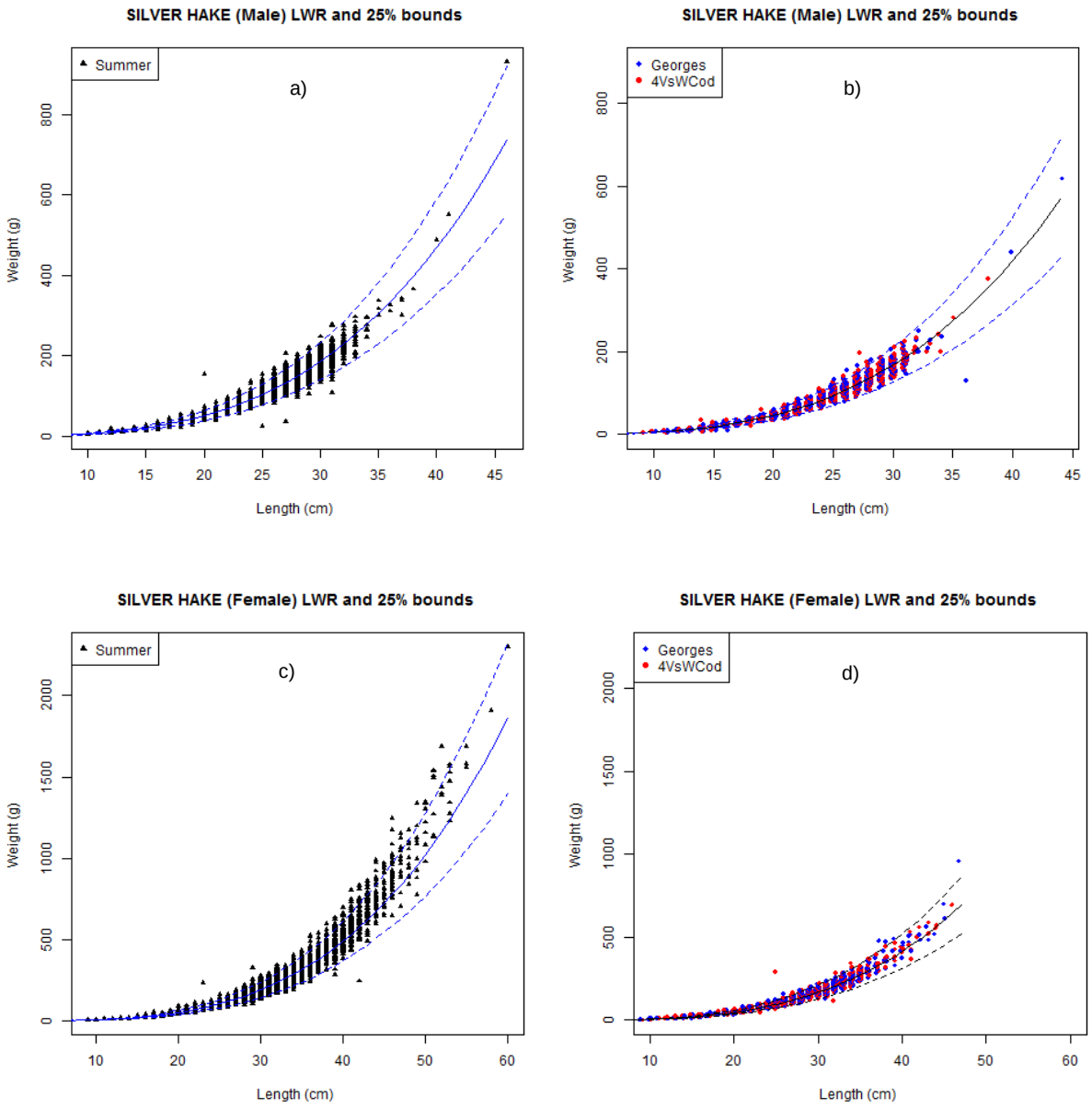

Figure 10. LWR (solid line) of Silver Hake caught in the three surveys between 2001 and 2014 a) males in the summer survey, b) males in the winter season, c) females in the summer season and d) females in the winter season.

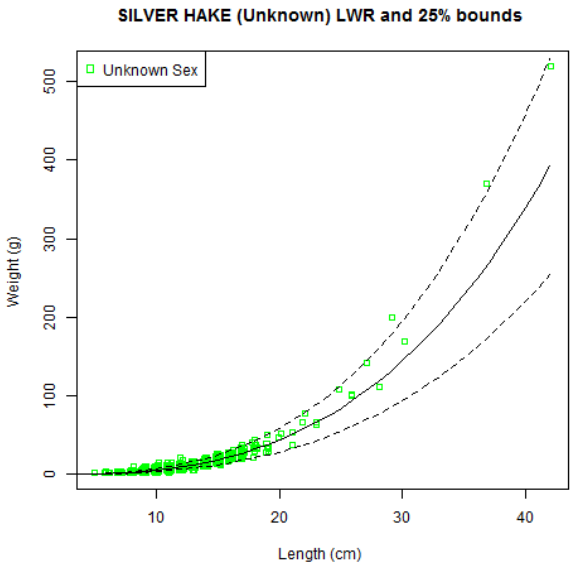

Figure 11. LWR (solid black line) of Silver Hake (of unknown sex) caught in the three surveys between 2001 and 2014.

DEEP SEA SPECIES AND RARE SPECIES (2001-2017)

The following figures show the LWR (solid, black line) of each deep sea or rarer species (n>10) caught between 2001-2017. Dashed line represents 25% error bounds of the LWR. (The summer 4VWX survey consistently has more deep strata area coverage and therefore many species only have data for the summer season).

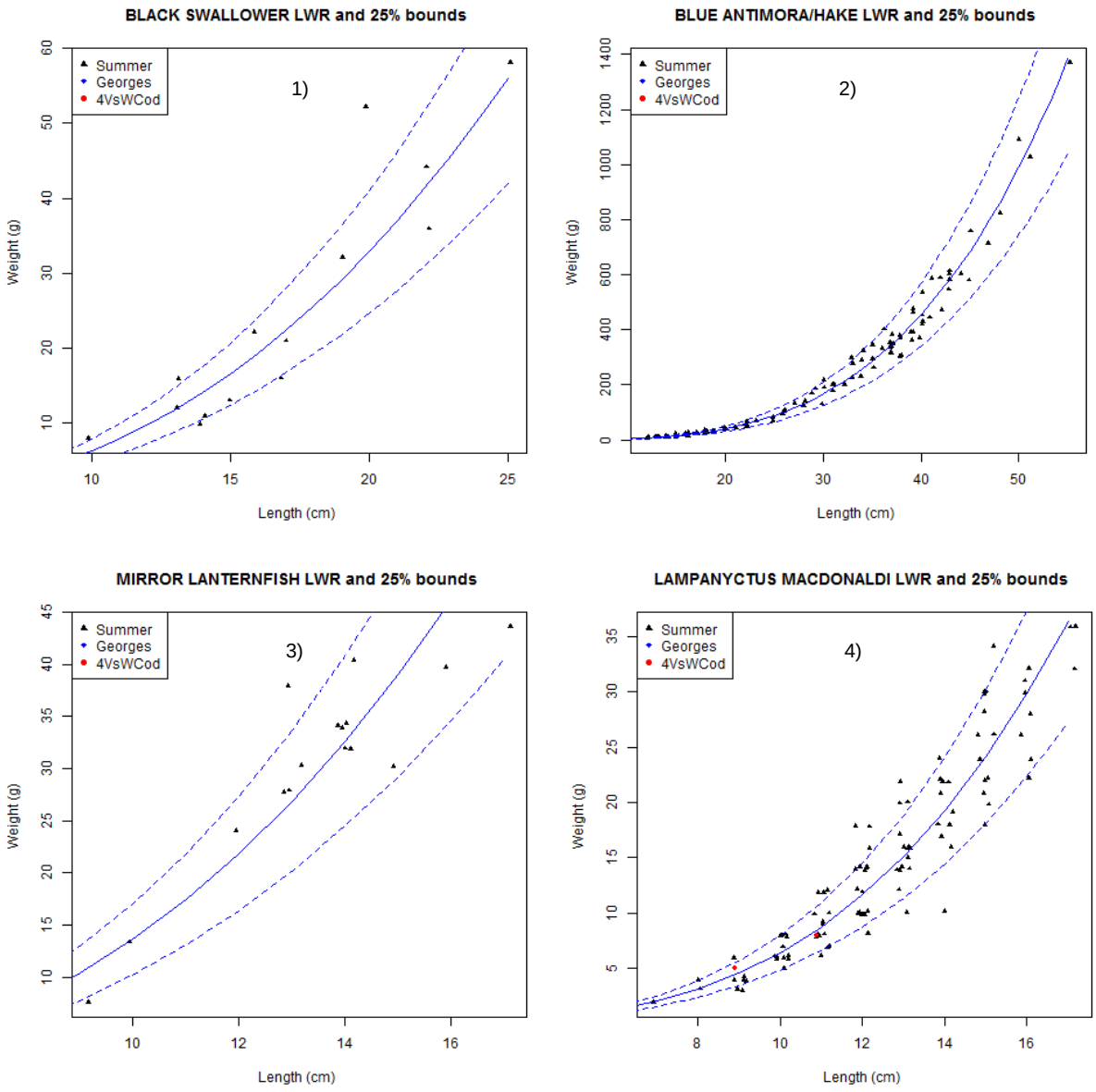

Figure 12. LWR (solid line) of Black Swallower (1), Blue Hake (2), Mirror Lanternfish (3), and Lampanyctus macdonaldi (4).

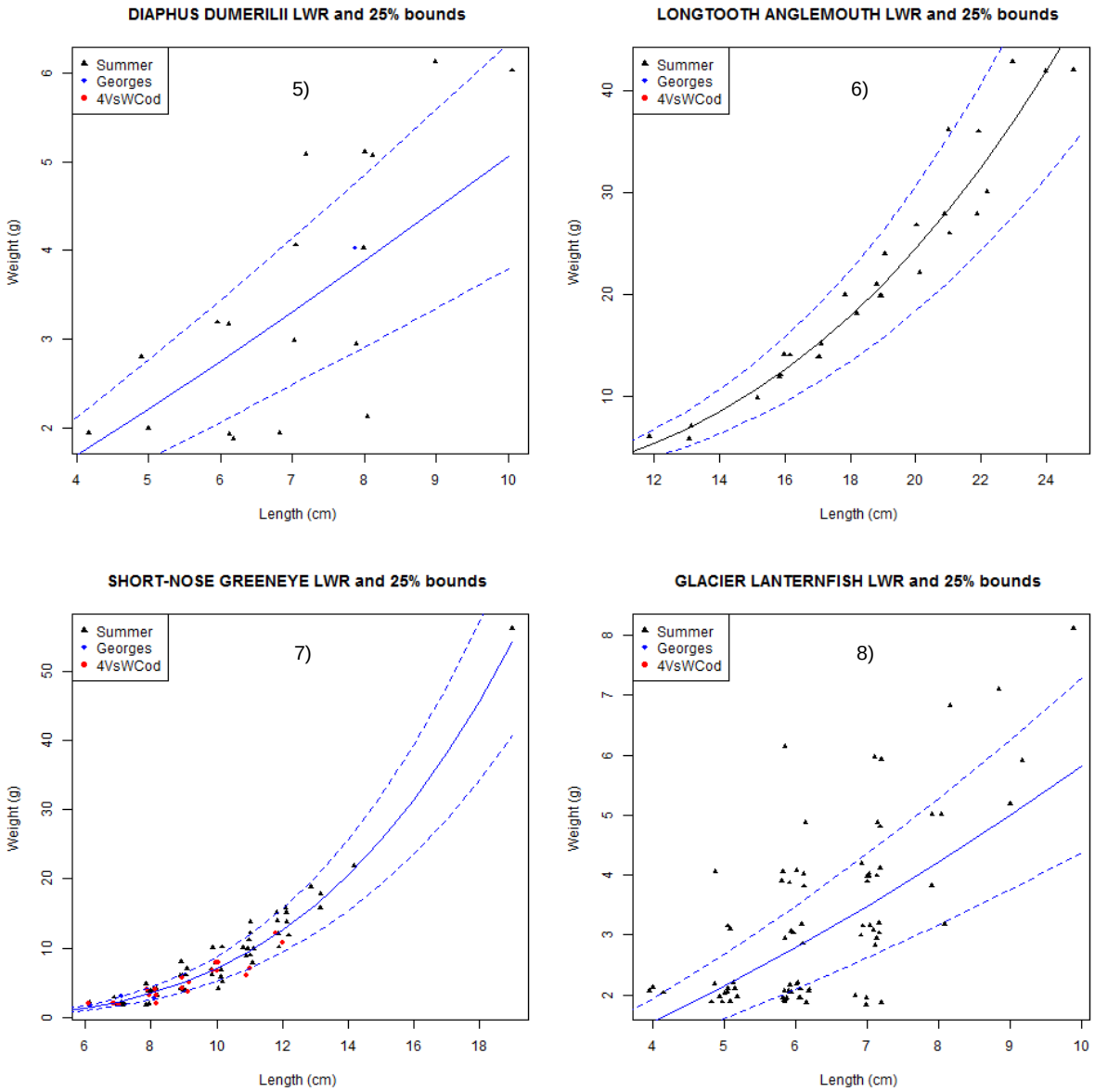

Figure 12 cont. LWR (solid line) of Diaphus dumerilii (5), Longtooth Anglemouth (6), Short-Nose Greeneye (7), and Glacier Lanternfish (8).

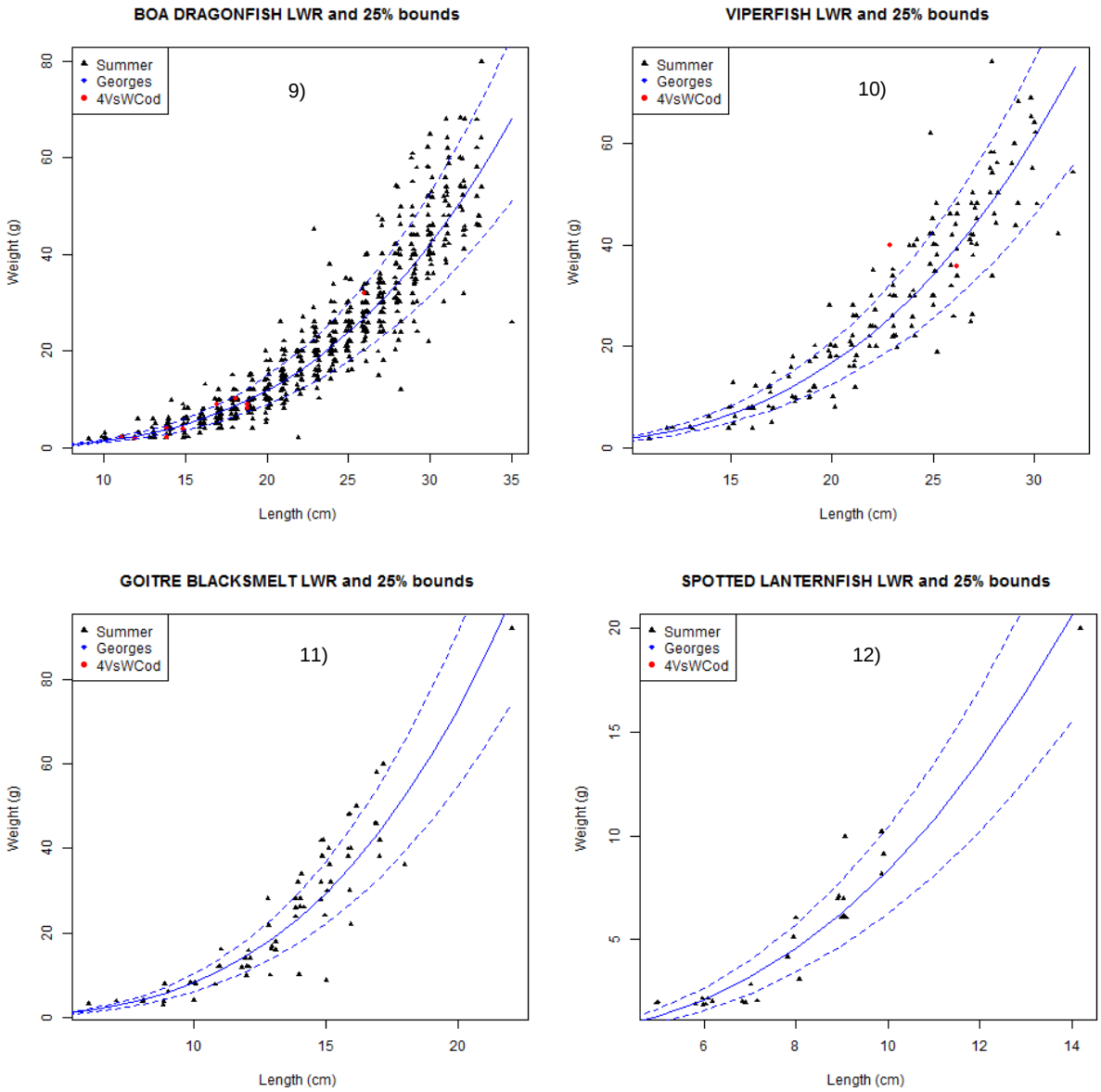

Figure 12 cont. LWR (solid line) of Boa Dragonfish (9), Viperfish (10), Goitre Blacksmelt (11), and Spotted Lanternfish (12).

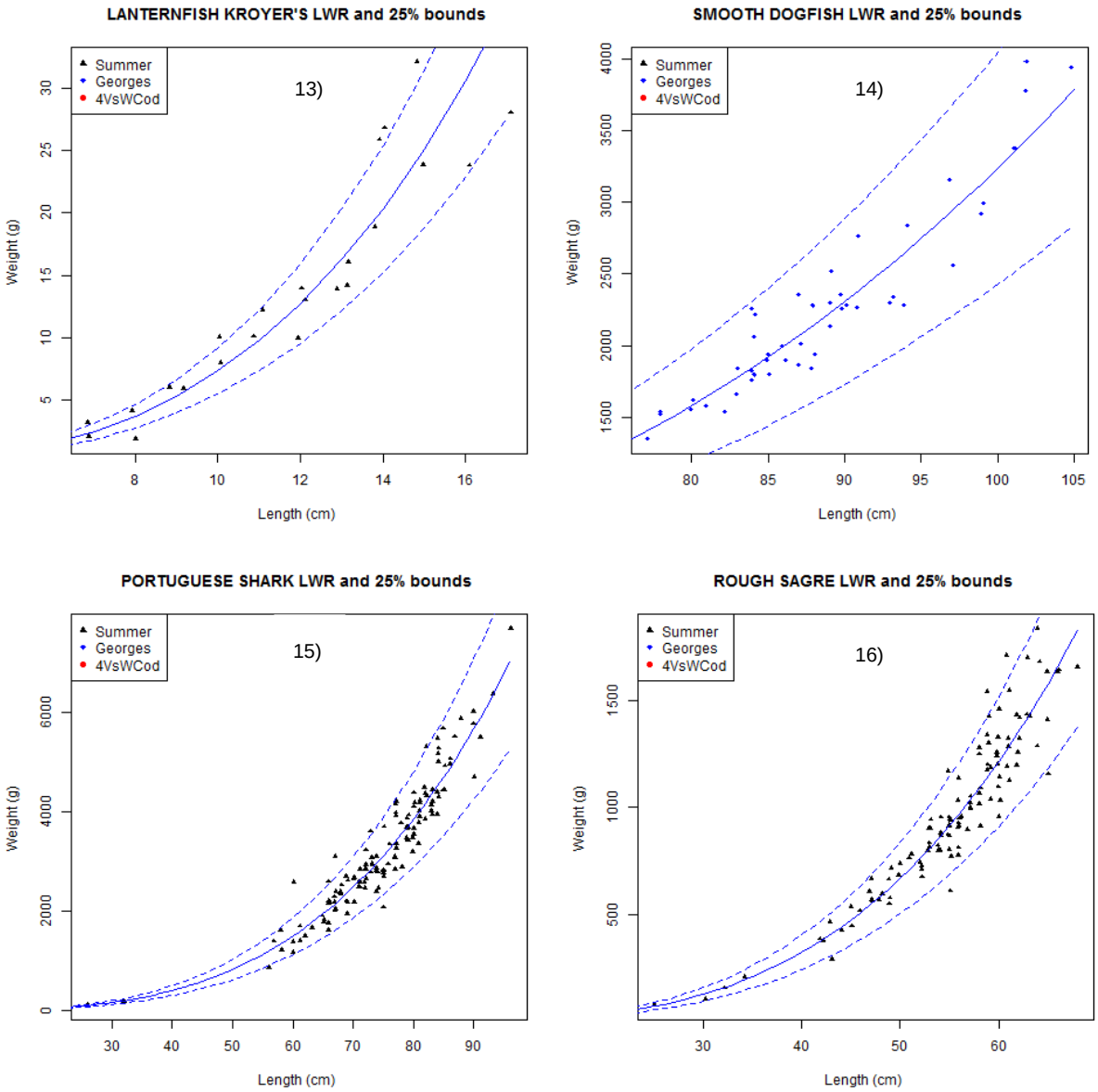

Figure 12 cont. LWR (solid line) of Kroyer's Lanternfish (13), Smooth Dogfish (14), Portuguese Shark (15), and Rough Sagre (16).

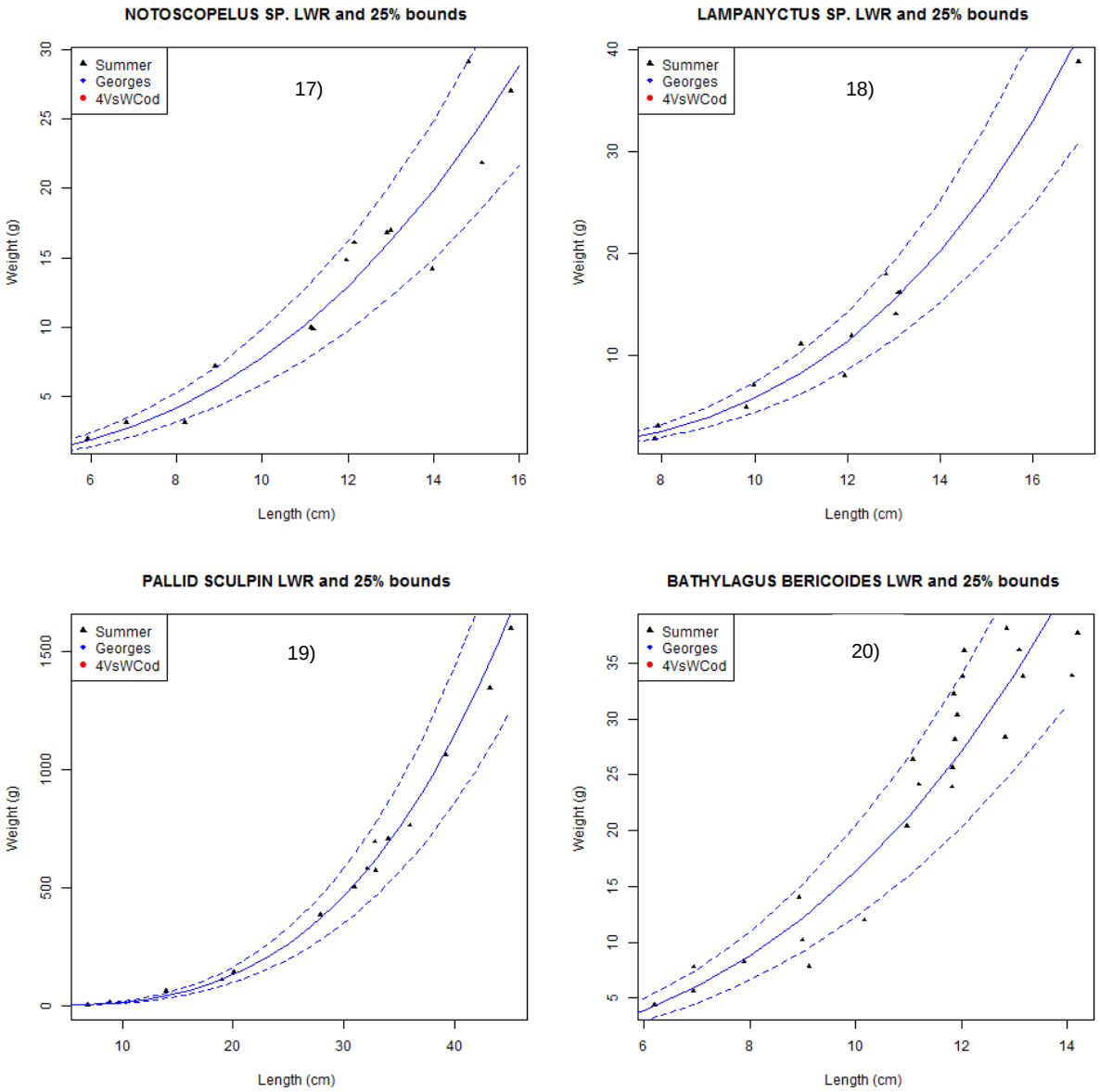

Figure 12 cont. LWR (solid line) of Notoscopelus sp. (17), Lampanyctus sp. (18), Pallid Sculpin (19), and Bathylagus bericoides (20).

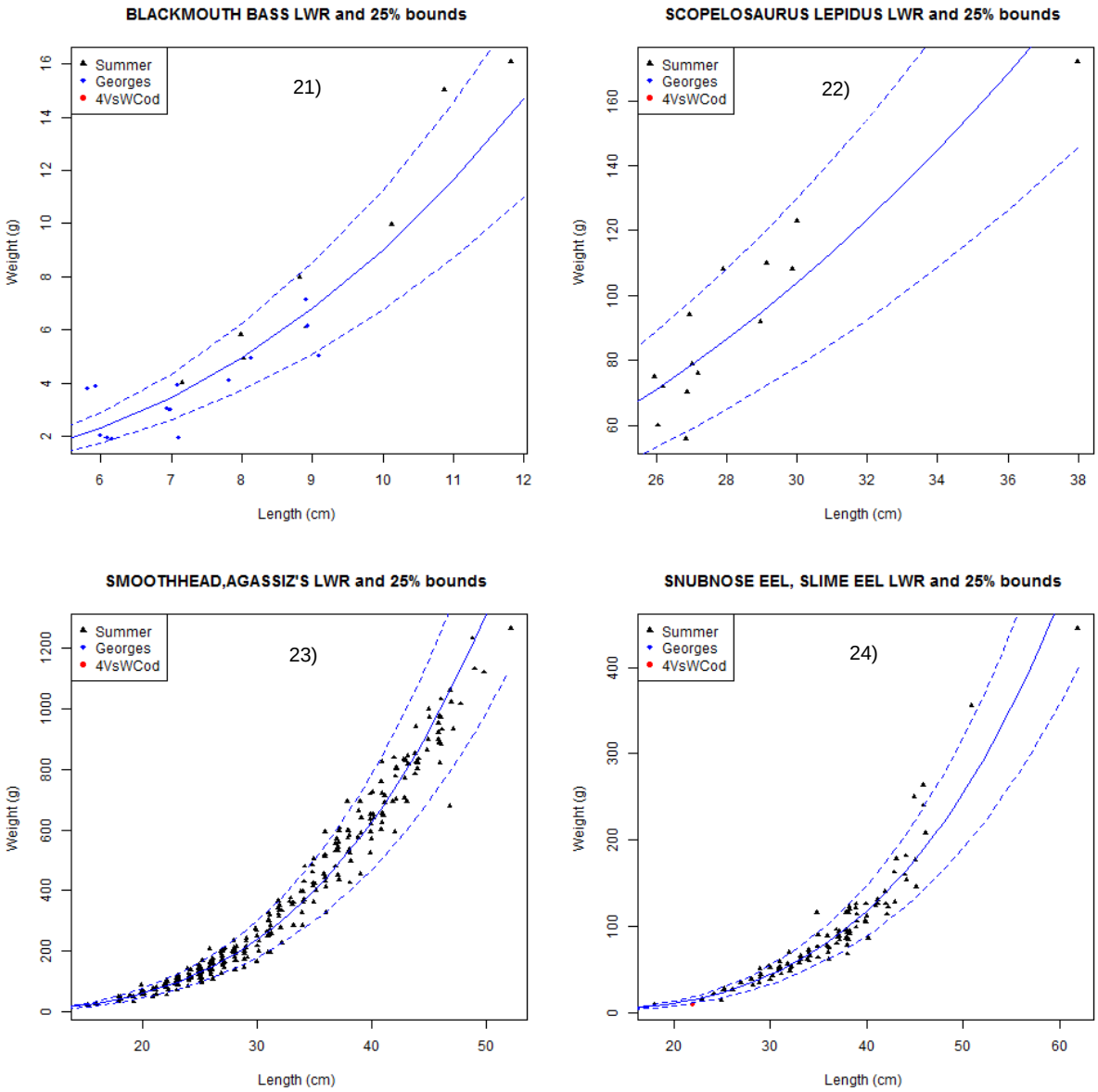

Figure 12 cont. LWR (solid line) of Blackmouth Bass (21), Scopelosaurus lepidus (22), Agassiz's Smoothhead (23), and Snubnose Eel (24).

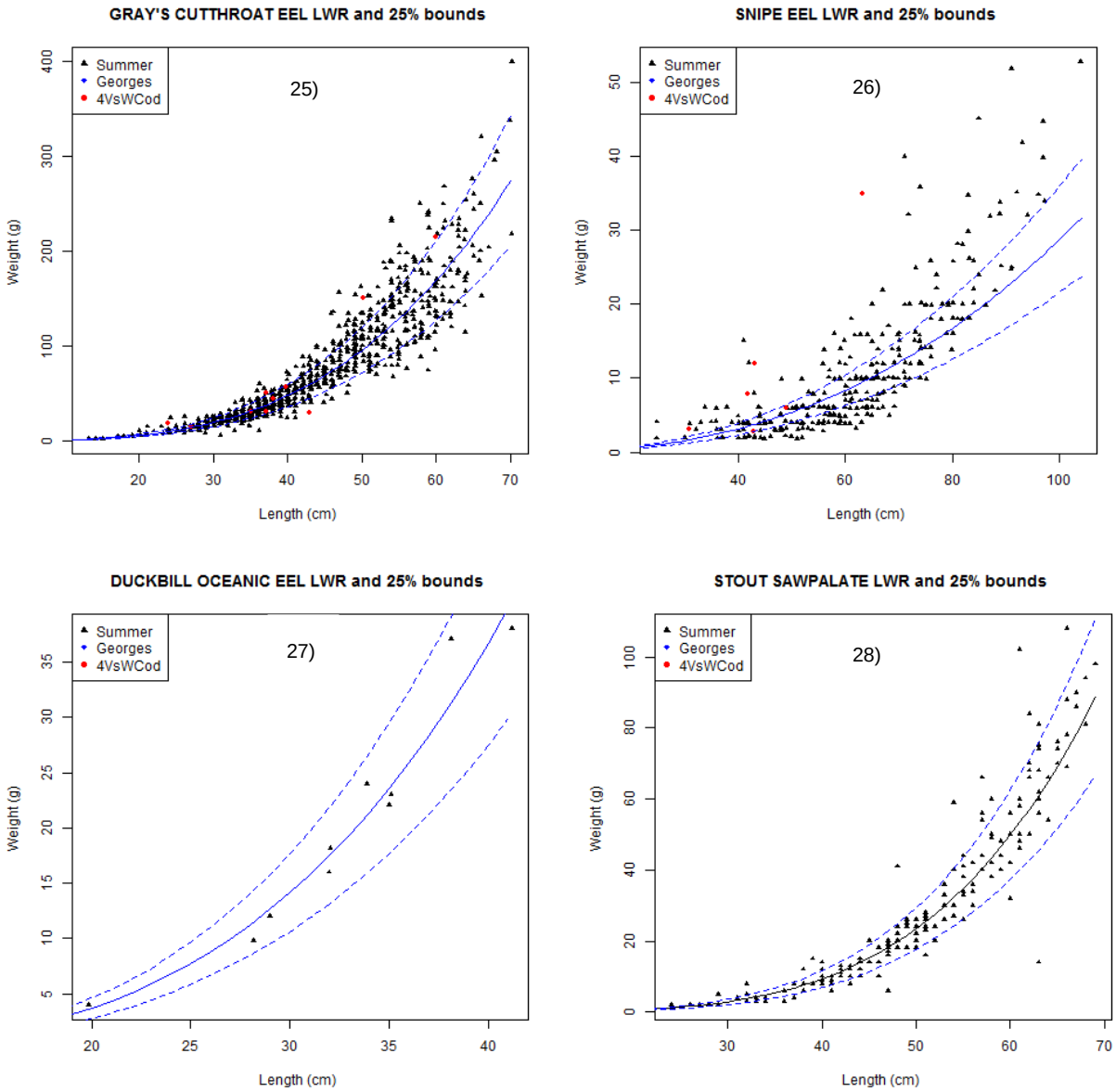

Figure 12 cont. LWR (solid line) of Gray's Cutthroat Eel (25), Snipe Eel (26), Duckbill Oceanic Eel (27), and Stout Sawpalate (28).

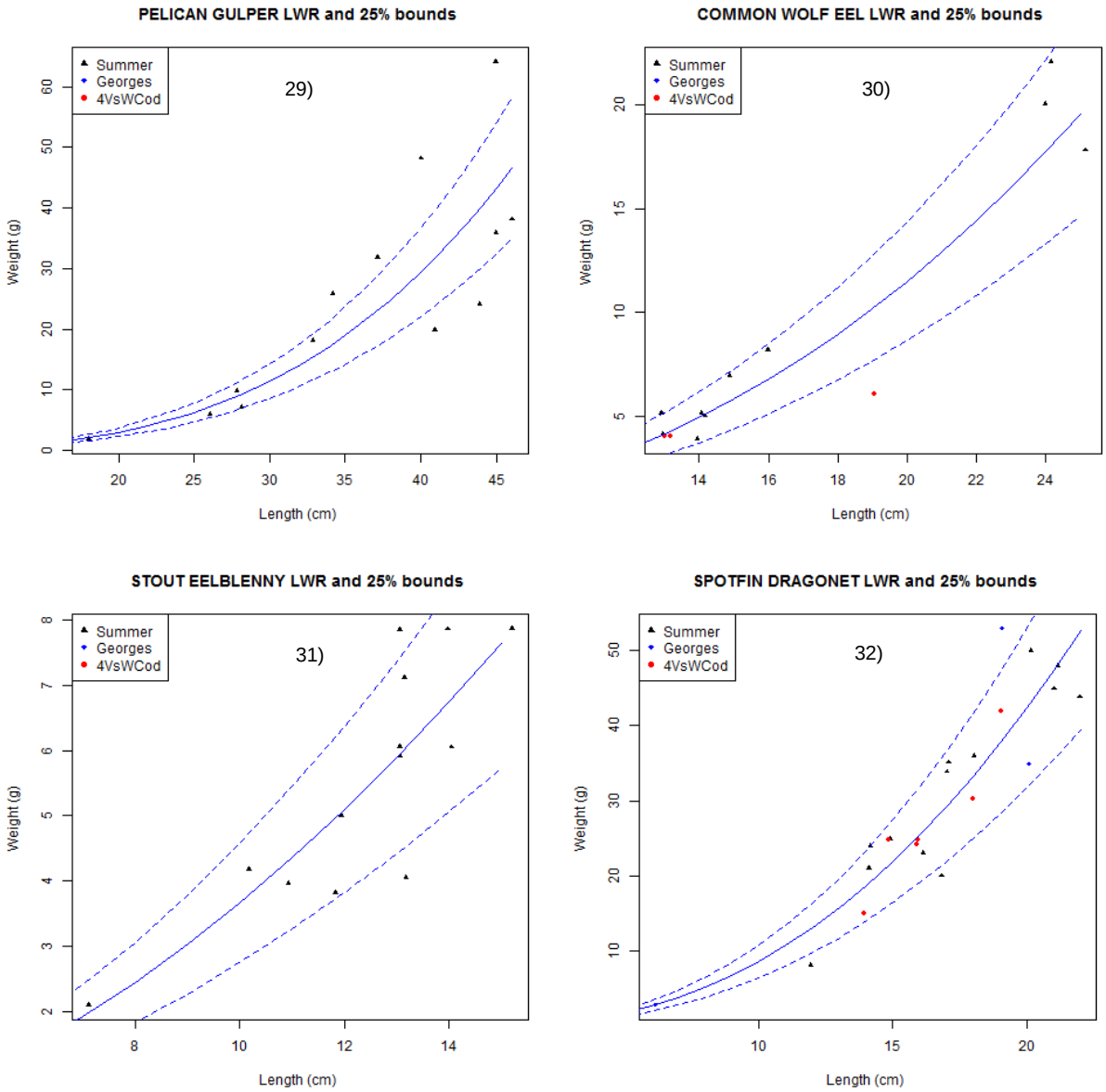

Figure 12 cont. LWR (solid line) of Pelican Gulper (29), Common Wolf Eel (30), Stout Eelblenny (31), and Spotfin Dragonet (32)

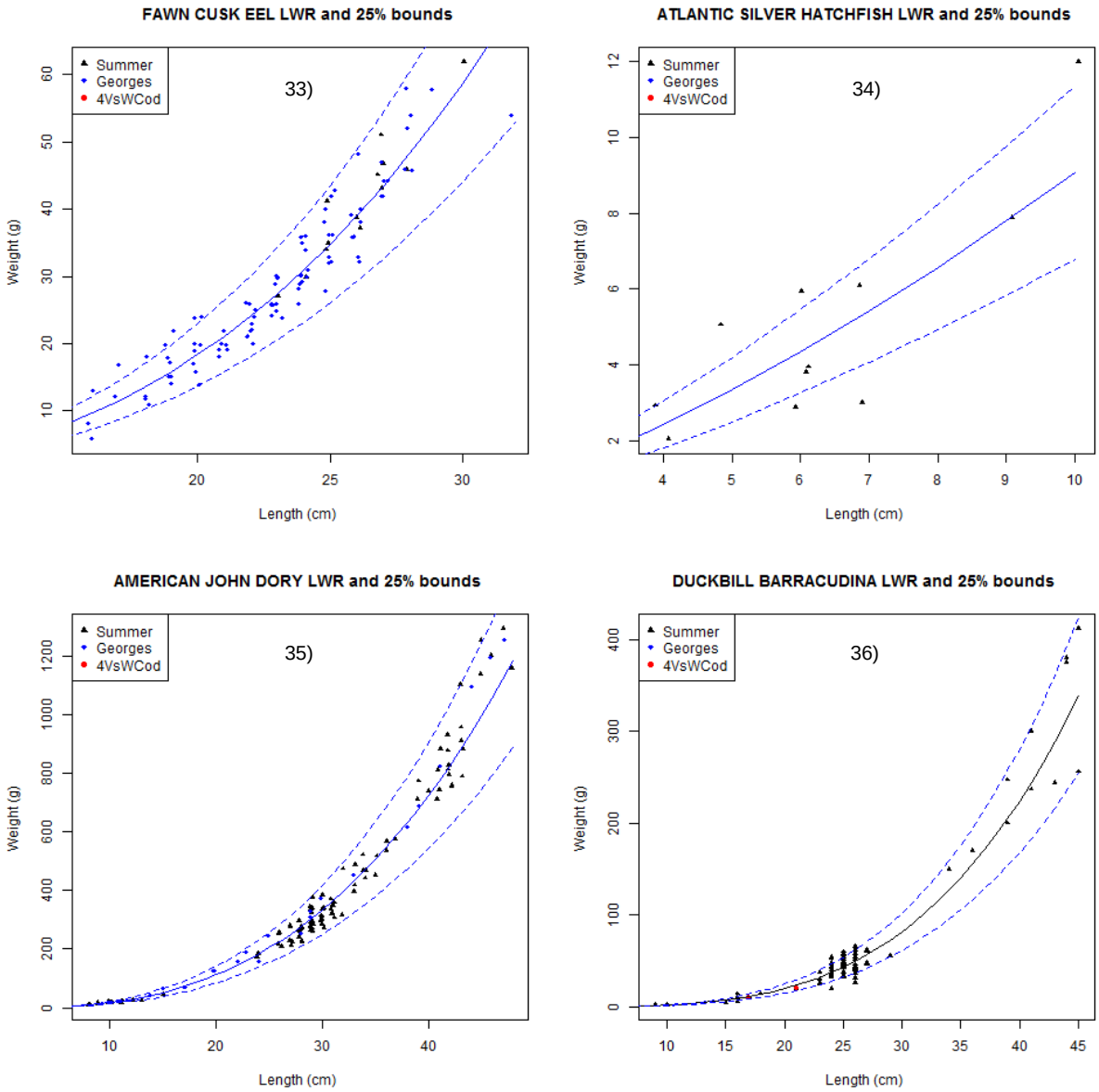

Figure 12 cont. LWR (solid line) of Fawn Cusk Eel (33), Atlantic Silver Hatchetfish (34), American John Dory (35), and Duckbill Barracudina (36).

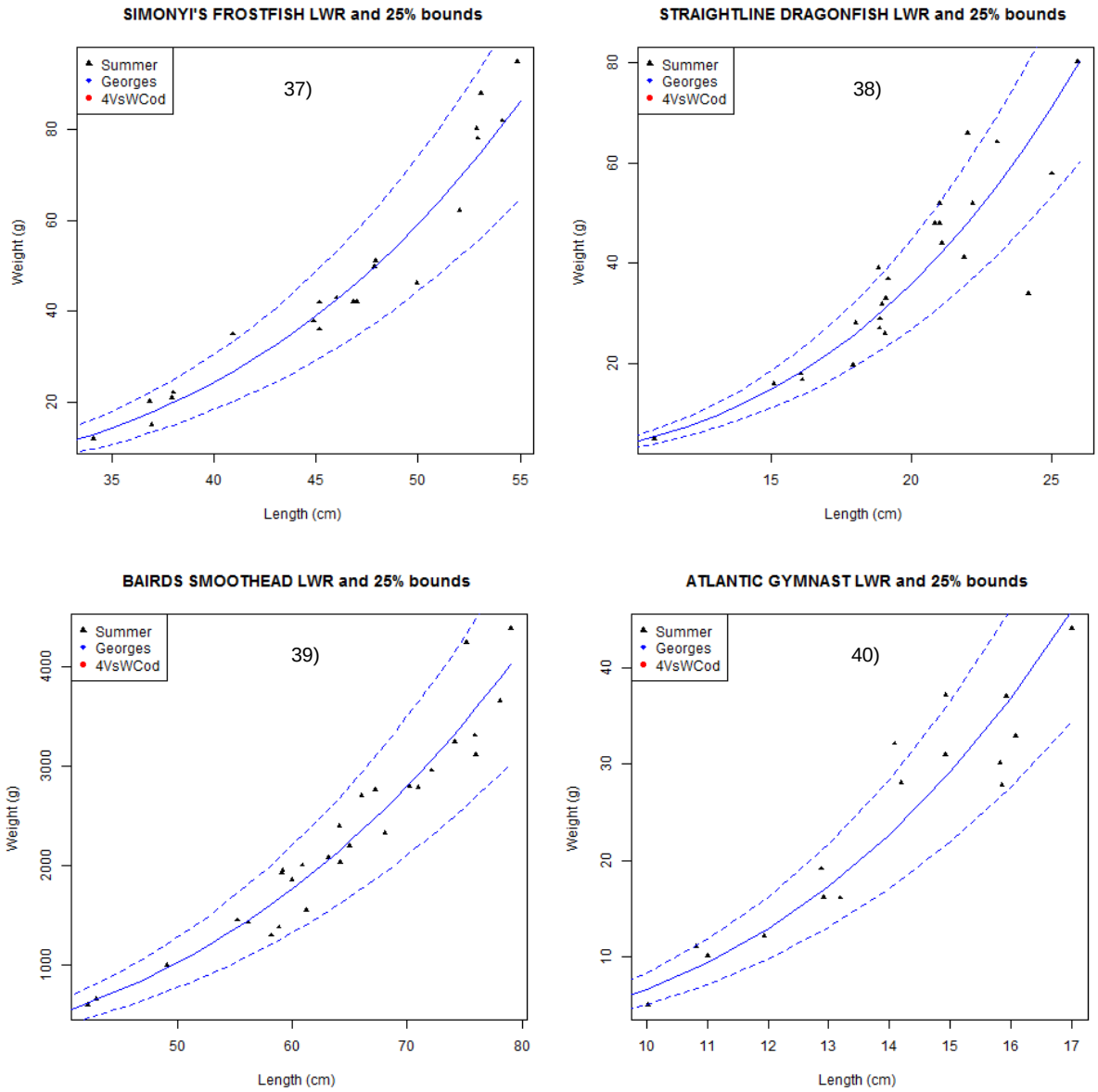

Figure 12 cont. LWR (solid line) of Simonyi's Frostfish (37), Straightline Dragonfish (38), Baird's Smoothhead (39) and Atlantic Gymnast (40).

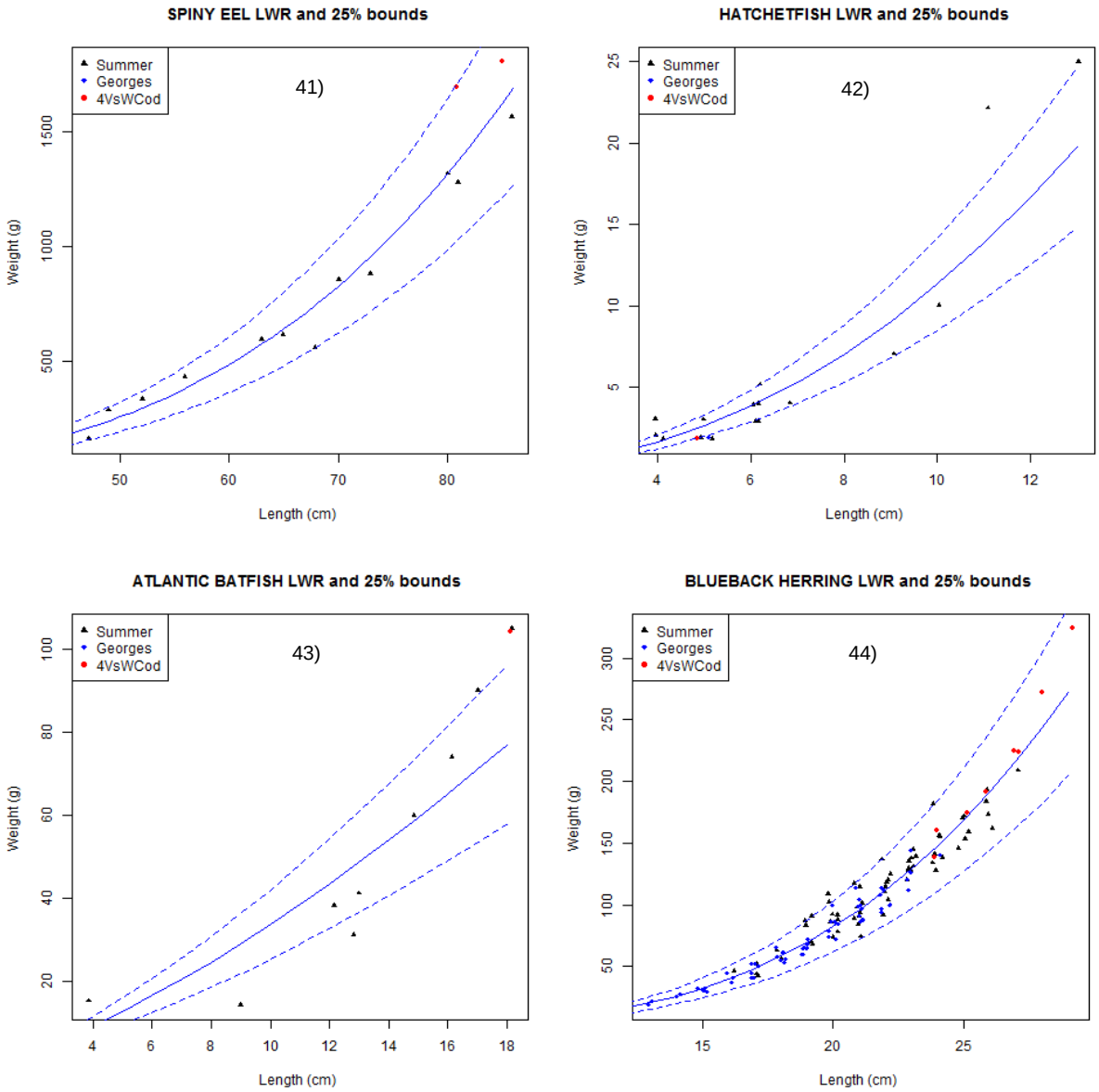

Figure 12 cont. LWR (solid line) of Spiny Eel (41), Hatchetfish (42), Atlantic Batfish (43), and Blueback Herring (44).

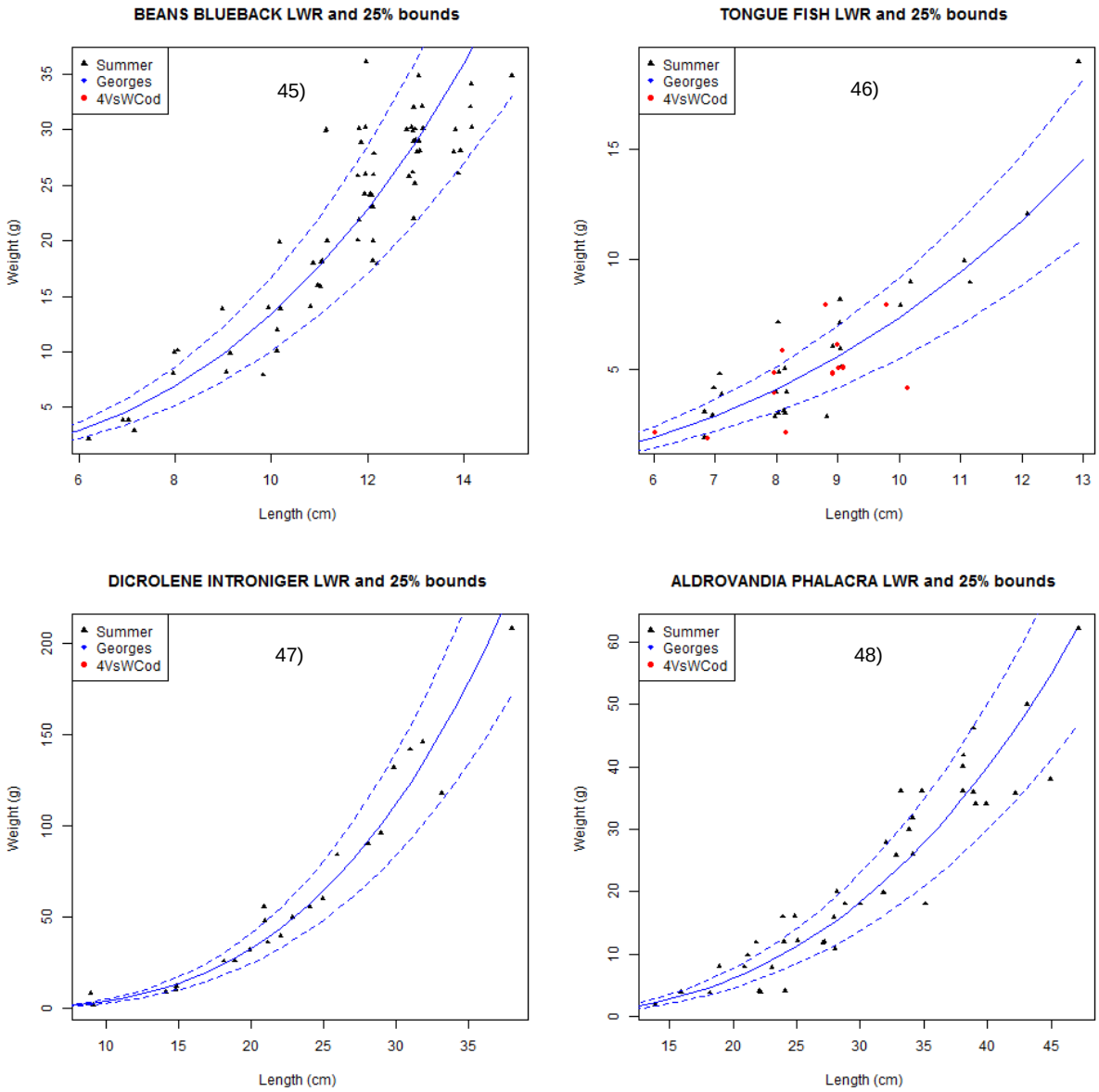

Figure 12 cont. LWR (solid line) of Beans Blueback (45), Tongue Fish (46), Dicrolene introniger (47), and Aldrovandia phalacra (48).

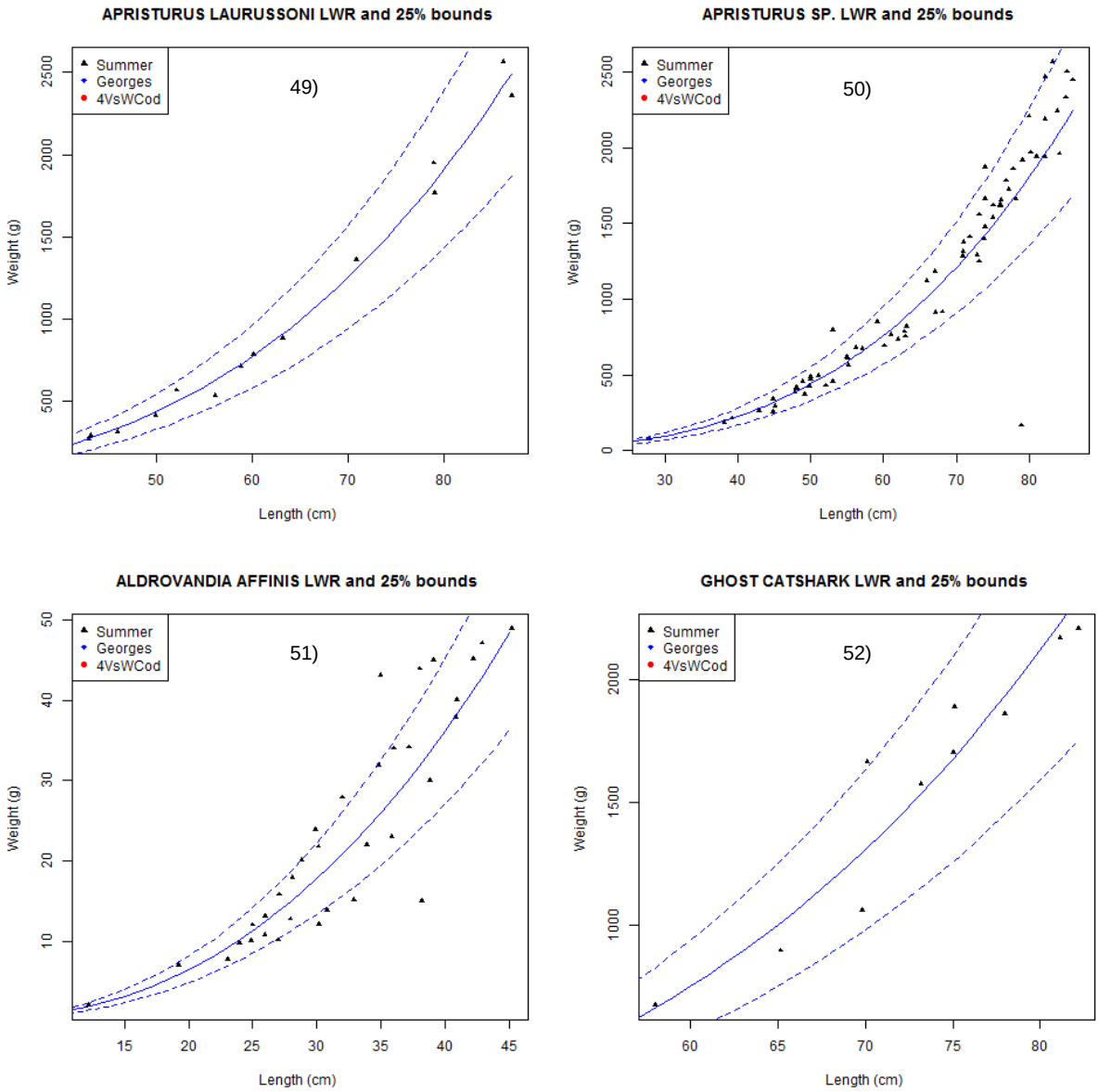

Figure 12 cont. LWR (solid line) of Apristurus laurussoni (49), Apristurus sp. (50), Aldrovandia affinis (51), and Ghost Catshark (52).

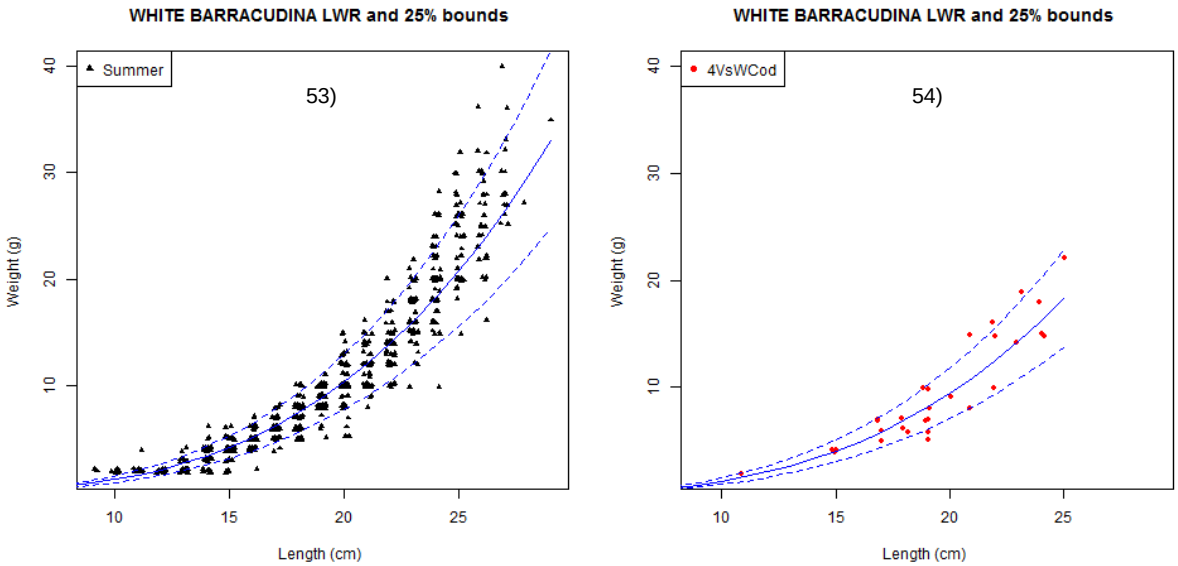

Figure 12 cont. LWR (solid line) of White Barracudina in the summer (53), and White Barracudina in the winter (54).

APPENDIX

Appendix 1. Scientific names and codes of the groundfish species caught in the Maritimes Region.

Scientific Name	TSN Code	Rank	Common Name	RV Survey Code	Accepted Author
Gadus morhua	164712	Species	COD (ATLANTIC)	10	(Linnaeus, 1758)
Melanogrammus aeglefinus	164744	Species	HADDOCK	11	(Linnaeus, 1758)
Urophycis tenuis	164732	Species	WHITE HAKE	12	(Mitchill, 1814)
Urophycis chuss	164730	Species	SQUIRREL OR RED HAKE	13	(Walbaum, 1792)
Merluccius bilinearis	164791	Species	SILVER HAKE	14	(Mitchill, 1814)
Brosme brosme	164740	Species	CUSK	15	(Ascanius, 1772)
Pollachius virens	164727	Species	POLLOCK	16	(Linnaeus, 1758)
Microgadus tomcod	164720	Species	TOMCOD(ATLANTIC)	17	(Walbaum, 1792)
Merluccius albidus	164793	Species	OFF-SHORE HAKE	19	(Mitchill, 1818)
Serranus scriba	167862	Species	REDFISH	20	(Linnaeus, 1758)
Sebastes	166705	Genus	REDFISH UNSEPARATED	23	(Cuvier, 1829)
Hippoglossus hippoglossus	172933	Species	HALIBUT (ATLANTIC)	30	(Linnaeus, 1758)
Reinhardtius hippoglossoides	172930	Species	TURBOT, GREENLAND HALIBUT	31	(Walbaum, 1792)
Chiasmodon niger	171086	Species	BLACK SWALLOWER	39	(Johnson, 1864)
Hippoglossoides platessoides	172877	Species	AMERICAN PLAICE	40	(Fabricius, 1780)

Scientific Name	TSN Code	Rank	Common Name	RV Survey Code	Accepted Author
Glyptocephalus cynoglossus	172873	Species	WITCH FLOUNDER	41	(Linnaeus, 1758)
Limanda ferruginea	172909	Species	YELLOWTAIL FLOUNDER	42	(Storer, 1839)
Pseudopleuronectes americanus	172905	Species	WINTER FLOUNDER	43	(Walbaum, 1792)
Citharichthys arctifrons	172719	Species	GULF STREAM FLOUNDER	44	(Goode, 1880)
Anarhichas lupus	171341	Species	STRIPED ATLANTIC WOLFFISH	50	(Linnaeus, 1758)
Anarhichas minor	171342	Species	SPOTTED WOLFFISH	51	(Olafsen, 1772)
Anarhichas denticulatus	550561	Species	NORTHERN WOLFFISH	52	(Krøyer, 1845)
Clupea harengus	161722	Species	HERRING (ATLANTIC)	60	(Linnaeus, 1758)
Alosa sapidissima	161702	Species	SHAD AMERICAN	61	(Wilson, 1811)
Alosa pseudoharengus	161706	Species	ALEWIFE	62	(Wilson, 1811)
Osmerus mordax	162041	Species	RAINBOW SMELT	63	(Mitchill, 1814)
Mallotus villosus	162035	Species	CAPELIN	64	(Müller, 1776)
Salmo salar	161996	Species	SALMON (ATLANTIC)	65	(Linnaeus, 1758)
Scomber scombrus	172414	Species	MACKEREL (ATLANTIC)	70	(Linnaeus, 1758)
Urophycis regia	164731	Species	SPOTTED HAKE	111	(Walbaum, 1792)
Phycis chesteri	164734	Species	LONGFIN HAKE	112	(Goode and Bean, 1878)
Antimora rostrata	164672	Species	BLUE ANTIMORA/HAKE	113	(Günther, 1878)
Enchelyopus cimbrius	164748	Species	FOURBEARD ROCKLING	114	(Linnaeus, 1766)
Gaidropsarus ensis	164769	Species	THREEBEARD ROCKLING	115	(Reinhardt, 1837)
Gadus ogac	164717	Species	GREENLAND COD	118	(Richardson, 1836)
Tautogolabrus adspersus	170481	Species	CUNNER	122	(Walbaum, 1792)
Helicolenus dactylopterus	166787	Species	ROSEFISH (BLACK BELLY)	123	(Delaroche, 1809)
Lampadena speculigera	162708	Species	MIRROR LANTERNFISH	138	(Goode and Bean, 1896)
Paralichthys dentatus	172735	Species	SUMMER FLOUNDER	141	(Linnaeus, 1766)
Hippoglossina oblonga	172783	Species	FOURSPOT FLOUNDER	142	(Mitchill, 1815)
Scophthalmus aquosus	172746	Species	BRILL/ WINDOWPANE	143	(Mitchill, 1815)
Lampanyctus macdonaldi	162647	Species	LAMPANYCTUS MACDONALDI	146	(Goode and Bean, 1896)
Lampanyctus pusillus	162645	Species	LAMPANYCTUS PUSILLUS	147	(Johnson, 1890)
Parasudis truculenta	162435	Species	LONGNOSE GREENEYE	149	(Goode and Bean, 1896)
Myctophidae	162575	Family	LANTERNFISH (Not specified)	150	NA
Diaphus dumerilii	623874	Species	LANTERNFISH	152	(Bleeker, 1856)
Gonostoma elongatum	162185	Species	LONGTOOTH ANGLEMOUTH	155	(Günther, 1878)
Chlorophthalmus agassizi	162430	Species	SHORT-NOSE GREENEYE	156	(Bonaparte, 1840)

Scientific Name	TSN Code	Rank	Common Name	RV Survey Code	Accepted Author
Benthosema glaciale	162680	Species	GLACIER LANTERNFISH	157	(Reinhardt, 1837)
Maurolicus muelleri	162187	Species	MULLER'S PEARLSIDES	158	(Gmelin, 1789)
Stomias boa	162292	Species	BOA DRAGONFISH	159	(Risso, 1810)
Argentina silus	162064	Species	ARGENTINE(ATLANTIC)	160	(Ascanius, 1775)
Ceratoscopelus maderensis	162578	Species	LANTERNFISH,HORNED	163	(Lowe, 1839)
Brevoortia tyrannus	161732	Species	MENHADEN(ATLANTIC)	164	(Latrobe, 1802)
Alosa aestivalis	161703	Species	BLUEBACK HERRING	165	(Mitchill, 1814)
Chauliodus sloani	162281	Species	VIPERFISH	169	(Bloch and Schneider, 1801)
Bathylagus euryops	162091	Species	GOITRE BLACKSMELT	176	(Goode and Bean, 1896)
Myctophum punctatum	162723	Species	SPOTTED LANTERNFISH	180	(Rafinesque, 1810)
Notoscopelus kroeyeri	162661	Species	LANTERNFISH KROYER'S	182	(Malm, 1861)
Moridae	164670	Family	MORAS	194	(Moreau, 1881)
Dipturus laevis	564139	Species	BARNDOOR SKATE	200	(Mitchill, 1818)
Amblyraja radiata	564149	Species	THORNY SKATE	201	(Donovan, 1808)
Malacoraja senta	564151	Species	SMOOTH SKATE	202	(Garman, 1885)
Leucoraja erinacea	564130	Species	LITTLE SKATE	203	(Mitchill, 1825)
Leucoraja ocellata	564145	Species	WINTER SKATE	204	(Mitchill, 1815)
Rajella fyllae	564135	Species	ROUND SKATE	207	(Lütken, 1887)
Rajidae	160845	Family	SKATES (Not specified)	211	(Blainville, 1816)
Torpedo nobiliana	160834	Species	ATLANTIC TORPEDO	216	(Bonaparte, 1835)
Squalus acanthias	160617	Species	SPINY DOGFISH	220	(Linnaeus, 1758)
Centroscyllium fabricii	160703	Species	BLACK DOGFISH	221	(Reinhardt, 1825)
Mustelus canis	160230	Species	SMOOTH DOGFISH	222	(Mitchill, 1815)
Centroscymnus coelolepis	160724	Species	PORTUGUESE SHARK	223	(Barbosa du Bocage and Brito Capello, 1864)
Etmopterus princeps	160659	Species	ROUGH SAGRE	224	(Collett, 1904)
Notoscopelus	162653	Genus	NOTOSCOPELUS SP.	227	(Günther, 1864)
Petromyzon marinus	159722	Species	SEA LAMPREY	240	(Linnaeus, 1758)
Myxine glutinosa	159772	Species	NORTHERN HAGFISH	241	(Linnaeus, 1758)
Harriotta raleighana	161029	Species	LONGNOSE CHIMERA	247	(Goode and Bean, 1895)
Rhinochimaera atlantica	161027	Species	KNIFENOSE CHIMERA	248	(Holt and Byrne, 1909)
Lampanyctus	162632	Genus	LAMPANYCTUS SP.	252	(Bonaparte, 1840)
Benthosema	162679	Genus	BENTHOSEMA SP.	286	(Goode and Bean, 1896)
Ceratoscopelus	162576	Genus	CERATOSCOPELUS SP.	293	(Günther, 1864)
Myoxocephalus octodecemspinosus	167320	Species	LONGHORN SCULPIN	300	(Mitchill, 1814)
Myoxocephalus scorpius	167318	Species	SHORTHORN SCULPIN	301	(Linnaeus, 1758)
Gymnocanthus tricuspis	167275	Species	ARCTIC STAGHORN SCULPIN	302	(Reinhardt, 1830)
Myoxocephalus aenaeus	167321	Species	GRUBBY OR LITTLE SCULPIN	303	(Mitchill, 1814)

Scientific Name	TSN Code	Rank	Common Name	RV Survey Code	Accepted Author
Triglops murrayi	167375	Species	MAILED SCULPIN	304	(Günther, 1888)
Triglops nybelini	167376	Species	NYBELIN S SCULPIN	305	(Jensen, 1944)
Artediellus uncinatus	167207	Species	SNOWFLAKE HOOKEAR SCULPIN	306	(Reinhardt, 1834)
Cottunculus microps	167408	Species	POLAR SCULPIN	307	(Collett, 1875)
Cottunculus thomsonii	643682	Species	PALLID SCULPIN	308	(Günther, 1882)
Triglops	167368	Genus	SCULPIN (not specified)	309	(Reinhardt, 1830)
Icelus bicornis	167188	Species	TWOHORN SCULPIN	313	(Reinhardt, 1840)
Icelus spatula	167192	Species	SPATULATE SCULPIN	314	(Gilbert and Burke, 1912)
Triglops pingelii	644643	Species	RIBBED SCULPIN	317	(Reinhardt, 1837)
Hemitripterus americanus	167289	Species	SEA RAVEN	320	(Gmelin, 1789)
Artediellus	167201	Genus	HOOKEAR SCULPIN unspecified	323	(Jordan, 1885)
Triglidae	166972	Family	SEAROBINS	329	NA
Prionotus carolinus	166974	Species	NORTHERN, COMMON SEAROBIN	330	(Linnaeus, 1771)
Peristedion miniatum	167010	Species	ARMORED SEA ROBIN	331	(Goode, 1880)
Aspidophoroides monopterygius	167439	Species	ALLIGATORFISH	340	(Bloch, 1786)
Leptagonus decagonus	167478	Species	ATLANTIC SEA POACHER	350	(Bloch and Schneider, 1801)
Polyipnus	162222	Genus	POLYIPNUS SP.	376	(Günther, 1887)
Antigonia capros	166311	Species	DEEPBODY BOARFISH	384	(Lowe, 1843)
Lophius americanus	164499	Species	MONKFISH, GOOSEFISH ,ANGLER	400	(Valenciennes in Cuvier and Valenciennes, 1837)
Trachyrincus murrayi	165419	Species	ROUGHNOSE GRENADIER	412	(Günther, 1887)
Synaphobranchidae	161578	Family	EELS, CUTTHROAT	455	NA
Notoscopelus caudispinosus	162657	Species	NOTOSCOPELUS CAUDISPINOSUS	478	(Johnson, 1863)
Cyclopterus lumpus	167612	Species	LUMPFISH	501	(Linnaeus, 1758)
Eumicrotremus spinosus	167545	Species	ATLANTIC SPINY LUMPSUCKER	502	(Fabricius in Müller, 1776)
Liparis atlanticus	167576	Species	ATLANTIC SEASNAIL	503	(Jordan and Evermann, 1898)
Liparis fabricii	550548	Species	SEASNAIL,GELATINOUS	505	(Krøyer, 1847)
Liparis gibbus	167561	Species	SEASNAIL,DUSKY	512	(Bean, 1881)
Careproctus reinhardti	167522	Species	SEA TADPOLE	520	(Krøyer, 1862)
Melanolagus bericoides	623332	Species	BATHYLAGUS BERICOIDES	526	(Borodin, 1929)
Melamphaeidae	166092	Family	MELAMPHAEIDAE	558	(Gill, 1893)
Synagrops bella	168335	Species	BLACKMOUTH BASS	576	(Goode and Bean, 1896)
Scopelosaurus lepidus	162573	Species	SCOPELOSAURUS LEPIDUS	588	(Krefft and Maul, 1955)
Chlorophthalmidae	162427	Family	GREENEYES unspecified	593	NA
Alepocephalus agassizii	623687	Species	SMOOTHHEAD, AGASSIZ'S	594	(Goode and Bean, 1883)

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Cyttopsis rosea	166280	Species	RED DORY	595	(Lowe, 1843)
Anguilla rostrata	161127	Species	AMERICAN EEL	600	(Lesueur, 1817)
Simenchelys parasitica	161594	Species	SNUBNOSE EEL, SLIME EEL	601	(Gill in Goode and Bean, 1879)
Synaphobranchus kaupii	635794	Species	GRAY'S CUTTHROATEEL	602	(Johnson, 1862)
Lycenchelys verrillii	631024	Species	WOLF EELPOUT	603	(Goode and Bean, 1877)
Nemichthys scolopaceus	161624	Species	SNIPE EEL	604	(Richardson, 1848)
Nessorhamphus ingolfianus	161322	Species	DUCKBILL OCEANIC EEL	607	(Schmidt, 1912)
Conger oceanicus	161326	Species	CONGER EEL	608	(Mitchill, 1818)
Ammodytes dubius	171674	Species	NORTHERN SAND LANCE	610	(Reinhardt, 1837)
Derichthys serpentinus	161601	Species	DERICHTHYS SERPENTINUS	612	(Gill, 1884)
Serrivomer beanii	635762	Species	STOUT SAWPALATE	613	(Gill and Ryder, 1883)
Eurypharynx pelecanoides	161653	Species	PELICAN GULPER	614	(Vaillant, 1882)
Gymnelus viridis	631028	Species	FISH DOCTOR	616	(Fabricius, 1780)
Lycenchelys paxillus	165248	Species	COMMON WOLFEEL	617	(Goode and Bean, 1879)
Lycodes terraenovae	630981	Species	EELPOUT,NEWFOUNDLAND	619	(Collett, 1896)
Lycodes lavalaei	165276	Species	LAVAL'S EELPOUT	620	(Vladykov and Tremblay, 1936)
Lumpenus lampretaeformis	631023	Species	SNAKE BLENNY	622	(Walbaum, 1792)
Leptoclinus maculatus	171603	Species	DAUBED SHANNY	623	(Fries, 1838)
Ulvaria subbifurcata	171616	Species	RADIATED SHANNY	625	(Storer, 1839)
Eumesogrammus praecisus	171601	Species	4-LINE SNAKE BLENNY	626	(Krøyer, 1836)
Lycodes pallidus	165277	Species	PALE EELPOUT	627	(Collett, 1879)
Cryptacanthodes maculatus	171609	Species	WRYMOUTH	630	(Storer, 1839)
Lumpenus fabricii	631020	Species	SLENDER EELBLENNY	631	(Reinhardt, 1836)
Anisarchus medius	171620	Species	STOUT EELBLENNY	632	(Reinhardt, 1837)
Pholis fasciata	171639	Species	BANDED GUNNEL	633	(Bloch and Schneider, 1801)
Callionymidae	171691	Family	DRAGONETS	635	NA
Foetorepus agassizii	642555	Species	SPOTFIN DRAGONET	637	(Goode and Bean in Agassiz, 1888)
Zoarces americanus	630979	Species	OCEAN POUT	640	(Bloch and Schneider, 1801)
Melanostigma atlanticum	165296	Species	ATLANTIC SOFT POUT	646	(Koefoed, 1952)
Lycodes vahlii	165284	Species	SHORTTAILED EELPOUT(VAHL)	647	(Reinhardt, 1831)
Ophidiidae	164807	Family	CUSK-EELS INCLUDES BROTULIDAE F.	649	NA
Lepophidium profundorum	164831	Species	FAWN CUSK EEL	650	(Gill, 1863)
Argyropelecus aculeatus	162215	Species	ATLANTIC SILVER HATCHETFISH	700	(Valenciennes in Cuvier and Valenciennes, 1850)

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Peprilus triacanthus	172567	Species	BUTTERFISH	701	(Peck, 1804)
Syngnathus fuscus	166451	Species	NORTHERN PIPEFISH	702	Storer, 1839
Zenopsis conchifera	166284	Species	AMERICAN JOHN DORY	704	(Lowe, 1852)
Polyipnus asteroides	162223	Species	POLYIPNUS ASTEROIDES	708	Schultz, 1938
Magnisudis atlantica	644691	Species	DUCKBILL BARRACUDINA	711	(Krøyer, 1868)
Arctozenus risso	644687	Species	WHITE BARRACUDINA	712	(Bonaparte, 1840)
Benthodesmus simonyi	172380	Species	SIMONYI'S FROSTFISH	714	(Steindachner, 1891)
Borostomias antarcticus	182869	Species	STRAIGHTLINE DRAGONFISH	716	(Lönnberg, 1905)
Scomberesox saurus	165612	Species	ATLANTIC SAURY or,NEEDLEFISH	720	(Walbaum, 1792)
Alepocephalus bairdii	162315	Species	BAIRDS SMOOTHEAD	724	(Goode and Bean, 1879)
Xenodermichthys copei	162340	Species	ATLANTIC GYMNAST	725	(Gill, 1884)
Omosudis lowii	644694	Species	OMOSUDIS LOWEI	729	(Günther, 1887)
Anotopterus pharao	162534	Species	DAGGERTOOTH	732	(Zugmayer, 1911)
Polyacanthonotus rissoanus	161685	Species	SHORTSPINE TAPIRFISH	739	(De Filippi & Verany, 1857)
Notacanthus chemnitzii	161690	Species	SPINY EEL	740	(Bloch, 1788)
Sternoptychidae	162212	Family	HATCHETFISH	741	NA
Dibranchus atlanticus	164589	Species	ATLANTIC BATFISH	742	(Peters, 1876)
Hyperoglyphe perciformis	172512	Species	AMERICAN BARRELFISH	743	(Mitchill, 1818)
Gonostomatidae	162163	Family	ANGLEMOUTH	745	NA
Conocara salmonea	162328	Species	SLICKHEAD	749	(Gill & Townsend, 1897)
Stomias	162286	Genus	DRAGONFISH	756	(Cuvier, 1816)
Syngnathus	166444	Genus	UNIDENTIFIED PIPEFISH UNIDEN.	759	(Linnaeus, 1758)
Polymixia lowei	166126	Species	BEARDFISH	771	(Günther, 1859)
Anoplogaster cornuta	166152	Species	OGREFISH	774	(Cuvier and Valenciennes,1833)
Grammicolepis brachiusculus	166298	Species	THORNY TINSELFISH	777	(Poey, 1873)
Aphanopus carbo	172389	Species	BLACK SCABBARDFISH	784	(Lowe, 1839)
Scopelogadus beanii	166116	Species	BEANS BLUEBACK	795	(Günther, 1887)
Symphurus	173061	Genus	TONGUEFISH	805	(Rafinesque, 1810)
Myctophiformes	162368	Order	MYCTOPHIFORMES	811	NA
Bathysaurus ferox	162782	Species	BATHYSAURUS FEROX	814	(Günther, 1878)
Symphurus diomedeanus	616664	Species	TONGUE FISH	816	(Goode and Bean, 1885)
Dicrolene introniger	622857	Species	DICROLENE INTRONIGER	862	(Goode and Bean, 1883)
Bathypterois quadrifilis	162444	Species	BATHYPTEROIS QUADRIFILIS	863	(Günther, 1878)
Aldrovandia phalacra	161664	Species	ALDROVANDIA PHALACRA	865	(Vaillant, 1888)
Xenolepidichthys dalgleishi	166302	Species	XENOLEPIDICHTHYS DALGLEISHI	866	(Gilchrist, 1922)

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Artediellus atlanticus	167208	Species	HOOKEAR SCULPIN,ATL.	880	(Jordan and Evermann, 1898)
Gonostoma bathyphilum	162184	Species	GONOSTOMA BATHYPHILUM	883	(Vaillant in Filhol, 1884)
Chiasmodon	171085	Genus	CHIASMODON SP.	909	(Johnson, 1864)
Apristurus laurussonii	159992	Species	APRISTURUS LAURUSSONI	947	(Saemundsson, 1922)
Leucoraja garmani	564136	Species	SKATE, ROSETTE	967	(Whitley, 1939)
Apristurus	159987	Genus	APRISTURUS SP.	983	(Garman, 1913)
Hoplostethus mediterraneus	166140	Species	SILVER ROUGHY	1106	(Cuvier and Valenciennes, 1829)
Halosauropsis macrochir	161672	Species	HALOSAUROPSIS MACROCHIR	1028	(Günther, 1878)
Aldrovandia affinis	161660	Species	ALDROVANDIA AFFINIS	1030	(Günther, 1877)
Coryphaenoides	165333	Genus	CORYPHAENOIDES SP	1064	(Gunner, 1765)
Leucoraja	564037	Genus	LITTLE OR WINTER; Unspecified	1191	(Malm, 1877)
Apristurus manis	160014	Species	GHOST CATSHARK	1264	(Springer, 1979)