Northeast Fisheries Science Center Reference Document 98-02

A Report of the 24th Northeast Regional Stock Assessment Workshop

Proration of 1994-96 USA Commercial Landings of Atlantic Cod, Haddock, and Yellowtail Flounder to Unit Stock Areas

by

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Region
Northeast Fisheries Science Center
Woods Hole, Massachusetts

March 1998

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This report may be cited as: Wigley, S.; Terceiro, M.; DeLong, A.; Sosebee, K. 1998. Proration of 1994-96 USA commercial landings of Atlantic cod, haddock, and yellowtail flounder to unit stock areas. *Northeast Fish. Sci. Cent. Ref. Doc.* 98-02; 32 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026 USA.

This report is a product of the 24th Northeast Regional Stock Assessment Workshop (24th SAW). Proceedings and products of the 24th SAW are scheduled to be documented and released as issues of the *Northeast Fisheries Science Center Reference Document* series. Tentative titles for the 24th SAW are:

An alternative stock assessment analysis for Gulf of Maine Atlantic cod

Assessment of the Georges Bank Atlantic cod stock for 1997

Assessment of the Gulf of Maine Atlantic cod stock for 1997

Assessment of the Southern New England yellowtail flounder stock for 1997

Evaluation of vessel logbook data for discard and catch-per-unit-of-effort (CPUE) estimates

Proration of 1994-96 commercial landings of Atlantic cod, haddock, and yellowtail flounder

Report of the 24th Northeast Regional Stock Assessment Workshop (24th SAW): Public Review Workshop

Report of the 24th Northeast Regional Stock Assessment Workshop (24th SAW): Stock Assessment Review Committee (SARC) consensus summary of assessments

Stock assessment of Georges Bank yellowtail flounder for 1997

Ten-year projections of landings, spawning stock biomass, and recruitment for the five groundfish stocks considered at the 24th Northeast Regional Stock Assessment Workshop (24th SAW)

U.S. assessment of the Georges Bank haddock stock, 1997

Abstract

USA Commercial landings of cod, haddock, and yellowtail flounder were prorated using vessel trip report information, collected under the regional mandatory reporting system, to determine stock area landings for 1994, 1995 and 1996. Stock area landings in 1994, 1995 and 1996 are as follows: Gulf of Maine cod: 7877 mt, 6798 mt and 7194 mt, respectively; Georges Bank cod: 9893 mt, 6759 mt and 7020 mt, respectively; Georges Bank haddock: 218 mt, 218 mt and 313 mt, respectively; Georges Bank yellowtail flounder: 1588 mt, 292 mt, and 751 mt, respectively; and Southern New England yellowtail flounder: 225 mt, 187 mt, and 285 mt, respectively. These stock area landings are provisional pending a more complete audit of the vessel trip report data and until all of the 1996 landings data have been collected and finalized.

Introduction

Beginning in June 1994, the National Marine Fisheries Service/Northeast Region's data collection system was changed from a voluntary to a mandatory reporting system for USA fishermen and dealers who catch and buy groundfish species regulated by the Northeast Multispecies Fishery Management Plan. The mandatory reporting system consists of two components: 1) dealer reporting and 2) vessel trip reporting. Each component contains information needed for stock assessment analyses: the dealer reports contain total landings and landings broken down by market category, while the vessel trip report (VTR) contains information on area fished, kept and discarded portions of the catch, and fishing effort.

In order to conduct 1997 stock assessments for Gulf of Maine cod (Mayo 1997), Georges Bank cod (O'Brien 1997), Georges Bank haddock (Brown 1997), Georges Bank yellowtail flounder (Cadrin et al. 1997) and Southern New England yellowtail flounder (Overholtz et al. 1997), it was necessary to partition total USA landings for 1994-1996, the period encompassed by the mandatory data collection system, into landings by stock area. Furthermore, the derivation of catch-at-age matrices for each assessment required that stock area landings be allocated to appropriate market categories. To attain this information, the two components of the mandatory reporting system had to be linked.

This paper describes the data and methods used to determine 1994-1996 stock area landings by market category for Atlantic cod, haddock and yellowtail flounder using dealer and VTR data.

Background

An evaluation of the 1994 vessel trip report data collected under the mandatory system was undertaken in spring 1996 by the Northern Demersal and Coastal/Pelagic Working Groups of the Stock Assessment Workshop (SAW). Findings were reported to the 22nd SAW (See Appendix A for plenary report on Vessel Trip Report data). The Stock Assessment Review Committee (SARC) recommended that: 1) the data needed further auditing; 2) use of existing data for provisional assessment calculations should be "performed with extreme caution and full awareness of the problems in the database"; 3) analysis and design of the mandatory data collection system should be completed and implemented with consideration given to the following features: a) an unambiguous linking criterion for dealer, VTRs, sea sampling and effort monitoring databases; b) pre-audits of all submitted data to eliminate ambiguities and preserve the original integrity of the VTR information; and c) create user-friendly data collection forms with clear instructions for recording information; and 4) until long-range problems are resolved, immediate steps should be taken to improve the existing data collection process (NEFSC 1996).

Subsequent to the vessel trip report data evaluation, further auditing of the 1994 data was undertaken. Auditing procedures have continued, and are on-going for 1994 and 1995 data. Only pre-audits have been conducted on the VTR data for 1996 (for further details on the on-going audit procedures, see Power et al. 1997).

In the autumn of 1996, a proration scheme was developed using area proportions derived from VTRs to provide the Multispecies Monitoring Committee with stock area landings. Dealer reports were assumed to reflect the best estimate of total landings, and vessel trip reports were used as a subset of the dealer data. For this work, market category information was not needed, and thus the VTR data containing area fished could be used to calculate the proportion of landings from each stock using a proration scheme stratified by species, port group, gear group and month (Anon. 1996).

Data Sources

Dealer data

Species landings information is collected in both dealer and vessel components of the mandatory reporting system: 'kept' pounds are recorded in the VTR and 'landed' pounds are recorded in the dealer report. The VTR data represents about 79% of the cod, haddock and yellowtail flounder landed weight recorded in the dealer database over the 1994-1996 period (Table 1). It is assumed for the purposes of these analyses that the dealer data contain the most complete record of total landings, and that the VTR data are a subset. The dealer report contains, in addition to species landed and live pounds, information on market category, dated landed, vessel permit, gear type, port landed and price, as well as additional information.

All dealer report data for 1994, including state/canvas data, were available for cod, haddock and yellowtail flounder. Data were retrieved from the standard Oracle tables: *cfdets94*, *cfdett94* and *woraw94* maintained by Northeast Fisheries Science Center. Data collected in 1994 prior to June were collected under the voluntary system, and therefore did not need to be handled in the same fashion (i.e. no proration needed). The 1994 landings which had stock area information were not prorated, and were added to the portion of prorated landings after the proration was completed. Total commercial landings for 1995 were obtained from Oracle tables *woraw95all* and *conn95*, which contained federal and state/canvas data. Landings data from Connecticut are not classified by market category; therefore, these landings were assigned an unclassified market category code and the landed weight was converted to live weight using the standard conversion coefficients for each species. In addition, Connecticut landings do not contain date landed or vessel permit. For 1996, commercial landings were obtained from the Oracle table *woraw96tmp_nrc*. This data table contained only federal data collected and processed as of February 28, 1997. Thus, all data from the latter part of 1996 may not have been processed in time to be included in this analysis. No state/canvas data were available for 1996, and thus the 1996 landings data should be considered provisional until all dealer data have been collected and finalized.

A dealer report set was formed for each year to be used for the proration of landings. These data were explored and screened for errors. The following fields were explored: market category, month landed, day landed, port, gear type, and vessel permit.

Vessel trip report data

The VTR data are still undergoing auditing procedures at various levels of detail (Power et al. 1997). For this analysis, the Oracle tables *veslog94t, veslog94g, veslog94s, veslog95t, veslog95g, veslog95s, veslog96t, veslog96g, and veslog96s* for 1994, 1995 and 1996 were established which contained the best available data as of February 28, 1997. All VTR data should be considered provisional and thus all stock area landings resulting from analyses using the VTR data are subject to change. The VTR data contain information on area fished, kept and discarded portions of the catch, and effort information. It is uncertain whether 'kept' weight in the VTR data was recorded in live or landed pounds; both types are almost assuredly contained within the the VTR database.

A VTR data set was formed for each year. These data sets were then filtered for errors that pertained to landings information, and entries in fields that would be used in subsequent proration procedures. Fields screened included species code, kept pounds, month landed, day landed, vessel permit, port landed, and gear type used. Screening of the VTR data used in the proration analysis was part of a large scanning procedure conducted for several analyses including discard and effort analyses. For a complete list of VTR data exploration and screening procedures, see DeLong et al. (1997).

Matched data

In order to join the dealer report data with the VTR data, it was necessary to combine market category information reported by the dealers with the area fished data reported by the vessels. However, due to the lack of a unique linking criterion on each data component of the mandatory system, a dealer's 'transaction' and a vessel trip could not be directly associated. Using fields common to both components and fields which contain usable data (i.e. data values not null), an indirect link which best identified a unique dealer's transaction with a vessel's trip report was established to join the two data sets and match them. The indirect link consisted of the following fields: species, port landed, vessel permit, month and day landed. Thus, the needed information (market category landings and stock area) could be attained for assessment purposes.

Annual dealer report sets and annual VTR sets were reduced to eliminate data observations which had either month landed, day landed, port landed, vessel permit, or area fished equal to zero, since missing information in these fields would result in erroneous matches. These observations were eliminated from the annual sets, and matched subsets were subsequently created which were used for prorating the dealer report data. Due to the uncertainty of whether live weight or landed weight was recorded in the vessel trip report, the matched set contains both the weight recorded from the dealer report set as well as the 'kept' weight from the VTR. Figure 1 summarizes the data sets and the sequences of steps used to construct the matched sets.

Methods

Exploratory analyses of VTR data revealed that grouping of data was necessary to obtain a sufficient number of observations for the proration to be representative of annual landings patterns. The factors considered for grouping were: calendar quarter, market category, port, and gear groups. Historically, some market categories have been combined in the assessments of the three species. Market categories for cod are: 1) large ('whale', 'steaker' and 'large'); 2) market; 3) scrod ('snapper' and 'scrod'); and 4) unclassified ('unclassified round' and 'unclassified'). Haddock market categories are: 1) large; 2) scrod ('snapper' and 'scrod'); and 3) unclassified ('unclassified round' and 'unclassified').
Yellowtail flounder market categories were: 1) large; 2) small ('medium' and 'small'); and 3) unclassified.

Annual landings by port and stock area were analyzed; the results indicated that ports could be grouped to capture persistent port/area interactions over the entire time period. The six port groups established for cod and haddock were: 1) Portland and Gloucester; 2) all other Maine ports, all New Hampshire ports, Sandwich, Provincetown and all other ports in Massachusetts counties of Essex, Norfolk, Plymouth, and Suffolk except Boston and Gloucester; 3) Boston; 4) Chatham and Harwichport; 5) New Bedford and Nantucket; and 6) all other ports not listed above. The seven port groups established for yellowtail flounder were: 1) all Maine and New Hampshire ports, Sandwich, Provincetown, and ports in Massachusetts counties of Essex, Norfolk, Plymouth, and Suffolk except Boston and Gloucester; 2) Boston, Gloucester and Fairhaven; 3) New Bedford; 4) other Massachusetts ports in counties Barnstable, Bristol, and Dukes, and not already listed; 5) Newport, RI and all Connecticut ports; 6) Point Judith and all other Rhode Island ports except Newport; and 7) all other ports not listed above.

The following five gear groupings were used for cod and haddock: 1) unknown gear; 2) hook gear; 3) otter trawl gear; 4) gillnet gear; and 5) all other gears. The five gear groupings for yellowtail flounder are: 1) unknown gear; 2) otter trawl gear; 3) gillnet gear; 4) scallop dredge gear; and 5) all other gears.

For the proration analysis, six stock areas were defined for cod: 1) Gulf of Maine; 2) western Georges Bank; 3) eastern Georges Bank; 4) Area 500; 5) all other areas; and 6) unknown area. Five stock areas were used for haddock: 1) western Georges Bank; 2) eastern Georges Bank; 3) Area 500; 4) all other areas; and 5) unknown area. Six stock areas were established for yellowtail flounder: 1) Georges Bank; 2) Southern New England; 3) Area 500; 4) Area 520; 5) all other areas; and 6) unknown area. Statistical areas (3-digit) associated with each of these stock areas are listed in Appendix B.

After all data sets were formed, screened for errors and grouped, the data sets were compared. For each year and species, the dealer report sets were compared with the VTR data sets and with

the matched sets to validate the matched set with respect to the landings patterns observed in the 'parent' sets. The comparisons were performed at the same level of resolution at which the proration would be conducted, i.e. quarter, port group, gear group, stock area, and market category. These comparisons were qualitatively evaluated based upon the percentage of landings within the groups. Figure 1 identifies the comparisons used to validate the matched set with the dealer report set and the VTR set.

For each year, species, and trip in the matched set, the cross-products of the market category proportions from the dealer reports and the stock area proportions from the VTR data were calculated and applied to each trip's landed weight to apportion the trip catch by market category and stock area. Trip landed weights were then summed over the stratification level (i.e., market category, port group, gear group and quarter), and stock area proportions were derived. The stock area proportions in the matched set were based upon the landings weights in the dealer reports due to the uncertainty as to whether the landings reported in the vessel trip record set were expressed in live or landed weight. These stock area proportions were then applied to the dealer data to compute the total species landings by stock area, market category, port group, gear group, and quarter. Figure 1 illustrates the two data sets used in the proration procedure.

Dealer landings were assigned to an unknown stock area if there were no corresponding matched set data with which to prorate them. Prorated landings from unknown areas were subsequently re-distributed among known stock areas based upon the proportions of known stock area landings. Landings from Area 500 and Area 520 were re-distributed among stock areas which encompass those statistical areas. Re-distribution of prorated landings were performed by individual stock assessment scientists (cod: R. Mayo; haddock: R. Brown, and yellowtail flounder: S. Cadrin; personal communication).

Results

Cod

Total USA commercial cod landings in 1994 were 17,791 mt; 10,717 mt were reported under the mandatory reporting system, which required proration. Total USA commercial cod landings in 1995 and 1996 were 13,671 mt and 14,221 mt, respectively (Table 1). The 1996 landings are provisional pending state/canvas data. The annual cod landings reported in the VTR set represented 74% - 79% of the landings reported in the dealer report set (Table 1). Annual cod landings in the matched set ranged between 49% and 53% of the landings in the VTR set and were approximately 47% of the annual cod landings in the dealer report set (Table 1). The 1994-1996 cod landings patterns by quarter, gear, port, stock area and market category in the matched set generally reflected those patterns observed in the VTR and dealer report sets. Detailed comparisons of the cod landings by quarter, gear, port, stock area and market category are presented in Tables 2, 3, and 4 and Figures 2 and 3.

Haddock

Total USA commercial haddock landings in 1994 were 330 mt; 223 mt were reported under the mandatory reporting system, which required proration. Total USA commercial haddock landings in 1995 and 1996 were 410 mt and 570 mt, respectively (Table 1). The 1996 landings are provisional pending state/canvas data. The annual haddock landings reported in the VTR set ranged between 77% and 87% of the landings reported in the dealer report set (Table 1). Annual haddock landings in the matched set ranged between 44% and 53% of the landings in the VTR set and were approximately 44% of the annual haddock landings in the dealer report set (Table 1). The 1994-1996 haddock landings patterns by quarter, gear, port, stock area and market category in the matched set generally reflected those patterns observed in the VTR and dealer report sets. Detailed comparisons of the haddock landings by quarter, gear, port, stock area and market category are presented in Tables 5, 6, and 7 and Figures 4 and 5.

Yellowtail flounder

Total USA commercial yellowtail flounder landings in 1994 were 3,099 mt; 2,495 mt were reported under the mandatory reporting system which required proration. Total USA commercial yellowtail flounder landings in 1995 and 1996 were 1,929 mt and 2,343 mt, respectively (Table 1). The 1996 landings are provisional pending state/canvas data. The annual yellowtail flounder landings reported in the VTR set ranged between 87% and 97% of the landings reported in the dealer report set (Table 1). Annual yellowtail flounder landings in the matched set ranged between 39% and 45% of the landings in the VTR set and were approximately 39% of the annual yellowtail flounder landings in the dealer report set (Table 1). The 1994-1996 yellowtail flounder landings patterns by quarter, gear, port, stock area and market category in the matched set generally reflected those patterns observed in the VTR and dealer report sets. Detailed comparisons of the yellowtail flounder landings by quarter, gear, port, stock area and market category are presented in Tables 8, 9, and 10 and Figures 6 and 7.

Based upon the comparisons, the matched sets for cod, haddock and yellowtail flounder were judged to be representative of the landings patterns contained in the 'parent' sets, and were used for the proration. Prorated USA commercial landings by stock area for cod, haddock and yellowtail flounder during 1994-1996 are presented in Table 11. Stock area landings in 1994, 1995 and 1996 are as follows: Gulf of Maine cod landings were 7,877 mt, 6,798 mt and 7,194 mt, respectively; Georges Bank cod landings were 9,893 mt, 6,759 mt and 7,020 mt, respectively; Georges Bank haddock landings were 218 mt, 218 mt and 313 mt, respectively; Georges Bank yellowtail flounder landings were 1,588 mt, 292 mt, and 751 mt, respectively; and Southern New England yellowtail flounder landings were 225 mt, 187 mt, and 285 mt, respectively.

Prorated USA commercial landings by stock area and market category for each species are presented in Tables 12, 13 and 14. The prorated stock area landings should be considered provisional until data auditing is complete and the final 1996 landings are available.

Conclusions

Using the data sets and methods outlined in this proration scheme, approximately 46% of the landings reported in the vessel trip report data were utilized for the proration of USA commercial cod, haddock and yellowtail flounder landings. When re-design of the mandatory reporting system is completed, including establishing an unambiguous linking criterion, it is anticipated that a greater portion of VTR data will be utilized to prorate dealer reported landings. However, only when all dealer transactions have a one-to-one match in the VTR data will the need to prorate dealer landings cease.

Acknowledgments

We thank the staff of the Northeast Regional Office's Fishery Information Section for their efforts in providing the vessel trip data in a timely fashion; Patricia Hersey of the Northeast Fisheries Science Center's Data Management Support/Systems Development Unit for her assistance in the data structure of the vessel trip report data; Ralph Mayo for his guidance during the development of the proration methodology; and the members of the Northern and Southern Demersal Subcommittees for their constructive review of this work.

Literature Cited

Anonymous. 1996. Report of the Multispecies Monitoring Committee to the New England Fishery Management Council. December 1996. 138 p.

Brown, R. 1997. U.S.A. Assessment of the Georges Bank haddock stock, 1997. 24th Northeast Regional Stock Assessment Workshop. Working Paper Number C1.

Cadrin, S.X., W. Overholtz, and S.E. Wigley. 1997. Stock assessment of Georges Bank yellowtail flounder. 24th Northeast Regional Stock Assessment Workshop. Working paper number D1 .

DeLong, A., K. Sosebee, and S. Cadrin. 1997. Evaluation of vessel logbook data for discard and CPUE estimates. 24th Northeast Regional Stock Assessment Workshop. Working paper number Gen 5 .

Mayo, R.K. 1997. Assessment of the Gulf of Maine cod stock for 1997. 24th Northeast Regional Stock Assessment Workshop. Working paper number A1.

NEFSC. 1996. A report of the 22nd Northeast Regional Stock Assessment Workshop: Public Review Workshop. Northeast Fisheries Science Center Reference Document 96-16. 45 p.

O'Brien, L. 1997. Assessment of the Georges Bank cod stock for 1997. 24th Northeast Regional Stock Assessment Workshop. Working paper number B1.

Overholtz, W., S. Cadrin, and S. Wigley. 1997. Assessment of the Southern New England yellowtail flounder stock for 1997. 24th Northeast Regional Stock Assessment Workshop. Working paper number E1.

Power, G., K. Wilhelm, K. McGrath, T. Theriault, and P. Hersey. 1997. Commercial fisheries dependent data collection in the Northeast United States. 24th Northeast Regional Stock Assessment Workshop. Working paper number Gen 1.

Table 1. USA commercial landings (mt, live weight) of cod, haddock and yellowtail flounder landings from the dealer report data, the vessel trip report data and the matched set data, 1994-1996.

		Dealer Report Sets		Vessel Trip Report Sets		Matched Set[3]	
Species	Year[1]	All	Reduced[2]	All	Reduced[2]	VTR	Dealer
Cod	1994	10717.4	10694.5	7960.8	7751.6	4128.8	5027.9
	1995	13670.9	13576.8	10378.9	10092.7	5542.6	6659.3
	1996	14221.1	14196.8	11236.4	10975.8	5478.8	6652.6
Haddock	1994	222.9	222.2	170.6	164.4	88.0	99.8
	1995	410.4	409.2	314.0	301.8	165.9	185.6
	1996	570.3	569.6	497.2	485.5	217.7	240.6
Yellowtail Flounder	1994	2495.1	2490.8	2171.4	1925.7	892.1	952.2
	1995	1928.6	1916.5	1753.2	1716.6	789.9	789.8
	1996	2342.8	2339.1	2265.8	2221.0	900.4	906.6

[1] Values for 1994 represent the portion of landings which needed to be prorated (total 1994 cod landings were 17790.5 mt, haddock landings were 329.7 mt, and yellowtail flounder landings were 3098.7 mt). 1996 landings are provisional.

[2] Data sets were reduced by eliminating observations where port, vessel permit, month landed, day landed, or area equalled zero.

[3] Matched set is the joined set from the reduced dealer report set and the reduced vessel trip report set. This set contains both the dealer report recorded weight, and the 'kept' weight from the vessel trip report.

Table 2. 1994 USA commercial cod landings (mt, live weight and percent) from the dealer report data, the vessel trip report data, and the matched set, by quarter of year, gear group, port group, stock area and market category.

	Dealer Report				Vessel Trip Report				Matched Set[3]	
	All[1]		Reduced[2]		All		Reduced[2]			
	mt	%	mt	%	mt	%	mt	%	mt	%
Quarter										
1	4.5	0.0	4.5	0.0	6.7	0.1	6.7	0.1	.	.
2	3074.2	28.7	3067.5	28.7	2466.8	31.0	2389.0	30.8	1101.1	26.7
3	4016.5	37.5	4007.7	37.5	2875.8	36.1	2808.1	36.2	1617.2	39.2
4	3622.1	33.8	3614.7	33.8	2611.5	32.8	2547.9	32.9	1410.5	34.2
Total	10717.4	100.0	10694.5	100.0	7960.8	100.0	7751.6	100.0	4128.8	100.0
Gear Group[4]										
Unknown	2.0	0.0	2.0	0.0	208.0	2.6	179.3	2.3	81.4	2.0
Hook	939.7	8.8	938.6	8.8	789.5	9.9	773.5	10.0	306.6	7.4
Otter trawl	6024.6	56.2	6012.1	56.2	4525.8	56.9	4403.1	56.8	2133.0	51.7
Gillnet	3738.7	34.9	3729.5	34.9	2381.5	29.9	2340.5	30.2	1587.7	38.5
Other	12.4	0.1	12.3	0.1	56.0	0.7	55.3	0.7	20.1	0.5
Total	10717.4	100.0	10694.5	100.0	7960.8	100.0	7751.6	100.0	4128.8	100.0
Port Group[4]										
Portland	3628.0	33.9	3615.1	33.8	2614.9	32.8	2581.0	33.3	1375.9	33.3
Other Maine	1914.2	17.9	1908.9	17.8	1376.7	17.3	1367.0	17.6	800.7	19.4
Boston	786.0	7.3	786.0	7.3	612.4	7.7	594.3	7.7	383.1	9.3
Chatham	1846.5	17.2	1841.9	17.2	1175.0	14.8	1132.1	14.6	710.9	17.2
New Bedford	2429.1	22.7	2429.1	22.7	1968.6	24.7	1867.8	24.1	829.6	20.1
Other	113.6	1.1	113.6	1.1	213.2	2.7	209.5	2.7	28.6	0.7
Total	10717.4	100.0	10694.5	100.0	7960.8	100.0	7751.6	100.0	4128.8	100.0
Stock Areas[4]										
Gulf of Maine					3486.5	43.8	3485.3	45.0	1954.2	47.3
Georges Bank, west					3605.7	45.3	3601.8	46.5	1839.7	44.6
Georges Bank, east					631.1	7.9	631.1	8.1	324.9	7.9
Area 500					11.9	0.1	11.9	0.2	3.2	0.1
Other					225.6	2.8	21.6	0.3	6.9	0.2
Total					7960.8	100.0	7751.6	100.0	4128.8	100.0
Market Category[4]										
Large	2586.9	24.1	2580.3	24.1					1218.8	24.2
Market	5784.4	54.0	5773.7	54.0					2716.7	54.0
Scrod	2101.7	19.6	2097.7	19.6					964.8	19.2
Unclass.	244.4	2.3	242.9	2.3					127.5	2.5
Total	10717.4	100.0	10694.5	100.0					5027.9	100.0

[1] Values for 1994 represent the portion of landings which needed to be prorated (total 1994 cod landings were 17790.5 mt). 1996 landings are provisional.

[2] Data sets were reduced by eliminating observations where port, vessel permit, month landed, day landed, or area equalled zero. Matched set is the joined set from the reduced dealer report set and the reduced vessel trip report set. This set contains both the dealer report weight, and the 'kept' weight from the vessel trip report. Values for the matched set are 'kept' weight form the VTR data except for the market category comparison, which uses live weight from the dealer report.

[4] See Appendix B for details on gear groups, port groups, stock areas and market category.

Table 3. 1995 USA commercial cod landings (mt, live weight and percent) from the dealer report data, the vessel trip report data, and the matched set, by quarter of year, gear group, port group, stock area and market category.

	Dealer Report				Vessel Trip Report				Matched Set[2]	
	All		Reduced[1]		All		Reduced[1]			
	mt	%	mt	%	mt	%	mt	%	mt	%
Quarter										
Unknown	20.6	0.2	.	.	7.7	0.1	.	.	.	.
1	2474.9	18.1	2450.9	18.1	2209.6	21.3	2194.4	21.7	1109.3	20.0
2	4538.5	33.2	4516.2	33.3	3742.4	36.1	3666.5	36.3	2010.9	36.3
3	3907.4	28.6	3886.3	28.6	2959.7	28.5	2814.1	27.9	1674.7	30.2
4	2729.5	20.0	2723.6	20.1	1459.4	14.1	1417.8	14.0	747.7	13.5
Total	13670.9	100.0	13576.8	100.0	10378.9	100.0	10092.7	100.0	5542.6	100.0
Gear Groups[3]										
Unknown	25.7	0.2	14.9	0.1	150.6	1.5	129.7	1.3	50.6	0.9
Hook	1955.3	14.3	1944.0	14.3	1761.0	17.0	1722.8	17.1	918.9	16.6
Otter trawl	7288.6	53.3	7263.8	53.5	5366.3	51.7	5248.2	52.0	2646.3	47.7
Gillnet	4337.7	31.7	4311.3	31.8	2986.7	28.8	2887.6	28.6	1882.8	34.0
Other	63.6	0.5	42.8	0.3	114.3	1.1	104.5	1.0	44.1	0.8
Total	13670.9	100.0	13576.8	100.0	10378.9	100.0	10092.7	100.0	5542.6	100.0
Port Groups[3]										
Unknown	.	.	.	.	129.5	1.2	1.9	0.0	.	.
Portland	4972.0	36.4	4942.9	36.4	3461.5	33.4	3421.5	33.9	1951.7	35.2
Other Maine	2151.0	15.7	2150.4	15.8	1759.0	16.9	1751.4	17.4	909.6	16.4
Boston	1055.0	7.7	1055.0	7.8	916.4	8.8	911.1	9.0	566.5	10.2
Chatham	2662.7	19.5	2630.0	19.4	1911.8	18.4	1861.5	18.4	1382.4	24.9
New Bedford	2467.5	18.0	2467.5	18.2	1799.0	17.3	1750.9	17.3	621.1	11.2
All Others	362.7	2.7	331.1	2.4	401.6	3.9	394.5	3.9	111.3	2.0
Total	13670.9	100.0	13576.8	100.0	10378.9	100.0	10092.7	100.0	5542.6	100.0
Stock Areas[3]										
Gulf of Maine					5073.0	48.9	4966.6	49.2	2709.6	48.9
Georges Bank, west					4591.1	44.2	4555.7	45.1	2516.9	45.4
Georges Bank, east					494.0	4.8	493.5	4.9	265.9	4.8
Area 500					8.1	0.1	8.1	0.1	2.4	0.0
Other					212.8	2.1	68.9	0.7	47.7	0.9
Total					10378.9	100.0	10092.7	100.0	5542.6	100.0
Market Category[3]										
Large	3197.3	23.4	3175.3	23.4					1655.7	24.9
Market	6915.4	50.6	6890.8	50.8					3380.3	50.8
Scrod	3257.4	23.8	3241.6	23.9					1515.6	22.8
Unclass.	300.8	2.2	269.2	2.0					107.7	1.6
Total	13670.9	100.0	13576.8	100.0					6659.3	100.0

[1] Data sets were reduced by eliminating observations where port, vessel permit, month landed, day landed, or area equalled zero.
[2] Matched set is the joined set from the reduced dealer report set and the reduced vessel trip report set. This set contains both the dealer report weight, and the 'kept' weight from the vessel trip report. Values for the matched set are 'kept' weight form the VTR data except for the market category comparison, which uses live weight from the dealer report.
[3] See Appendix B for details on gear groups, port groups, stock areas and market category.

Table 4. 1996 USA commercial cod landings (mt, live weight and percent) from the dealer report data, the vessel trip report data, and the matched set, by quarter of year, gear group, port group, stock area and market category.

	Dealer Report				Vessel Trip Report				Matched Set[2]	
	All		Reduced[1]		All		Reduced[1]			
	mt	%	mt	%	mt	%	mt	%	mt	%
Quarter										
Unknown	.	.	.	.	30.5	0.3				
1	2445.2	17.2	2441.6	17.2	1961.9	17.5	1925.9	17.5	938.8	17.1
2	5703.9	40.1	5694.1	40.1	4433.9	39.5	4346.8	39.6	2046.4	37.4
3	3504.5	24.6	3497.5	24.6	2862.1	25.5	2792.6	25.4	1560.1	28.5
4	2567.5	18.1	2563.6	18.1	1948.0	17.3	1910.6	17.4	933.5	17.0
Total	14221.1	100.0	14196.8	100.0	11236.4	100.0	10975.8	100.0	5478.8	100.0
Gear Group[3]										
Unknown	3.9	0.0	3.9	0.0	267.5	2.4	262.1	2.4	102.8	1.9
Hook	1751.5	12.3	1746.1	12.3	1812.2	16.1	1749.9	15.9	784.1	14.3
Otter trawl	8065.1	56.7	8062.9	56.8	5879.2	52.3	5780.2	52.7	2570.1	46.9
Gillnet	4367.9	30.7	4352.3	30.7	3083.1	27.4	3000.2	27.3	1938.8	35.4
Other	32.7	0.2	31.6	0.2	194.5	1.7	183.4	1.7	83.0	1.5
Total	14221.1	100.0	14196.8	100.0	11236.4	100.0	10975.8	100.0	5478.8	100.0
Port Group[3]										
Unknown	.	.	.	.	120.2	1.1	.	.	.	.
Portland	4846.2	34.1	4838.5	34.1	3587.3	31.9	3544.2	32.3	1878.5	34.3
Other Maine	2157.7	15.2	2155.2	15.2	1794.1	16.0	1746.3	15.9	837.0	15.3
Boston	1447.8	10.2	1447.8	10.2	916.9	8.2	913.9	8.3	680.3	12.4
Chatham	2625.6	18.5	2611.4	18.4	2090.9	18.6	2061.9	18.8	1323.5	24.2
New Bedford	2877.6	20.2	2877.6	20.3	2319.5	20.6	2311.3	21.1	658.5	12.0
All others	266.3	1.9	266.3	1.9	407.5	3.6	398.2	3.6	101.0	1.8
Total	14221.1	100.0	14196.8	100.0	11236.4	100.0	10975.8	100.0	5478.8	100.0
Stock Areas[3]										
Gulf of Maine					5389.8	48.0	5301.3	48.3	2733.4	49.9
Georges Bank, west					5075.8	45.2	4980.1	45.4	2519.7	46.0
Georges Bank, east					653.3	5.8	650.9	5.9	209.6	3.8
Area 500					24.7	0.2	24.7	0.2	12.1	0.2
Other					92.8	0.8	18.8	0.2	4.0	0.1
Total					11236.4	100.0	10975.8	100.0	5478.8	100.0
Market Category[3]										
Large	2551.9	17.9	2544.6	17.9					1346.6	20.2
Market	8408.2	59.1	8395.5	59.1					3847.4	57.8
Scrod	3029.5	21.3	3025.7	21.3					1347.1	20.2
Unclass.	231.5	1.6	231.0	1.6					111.5	1.7
Total	14221.1	100.0	14196.8	100.0					6652.6	100.0

[1] Data sets were reduced by eliminating observations where port, vessel permit, month landed, day landed, or area equalled zero.

[2] Matched set is the joined set from the reduced dealer report set and the reduced vessel trip report set. This set contains both the dealer report weight, and the 'kept' weight from the vessel trip report. Values for the matched set are 'kept' weight form the VTR data except for the market category comparison, which uses live weight from the dealer report.

[3] See Appendix B for details on gear groups, port groups, stock areas and market category.

Table 5. 1994 USA commercial haddock landings (mt, live weight and percent) from the dealer report data, the vessel trip report data, and the matched set, by quarter of year, gear group, port group, stock area and market category.

	Dealer Report				Vessel Trip Report				Matched Set[3]	
	All[1]		Reduced[2]		All		Reduced[2]			
	mt	%	mt	%	mt	%	mt	%	mt	%
Quarter										
1	0.0	0.0	0.0	0.0	0.5	0.3	0.5	0.3	.	.
2	38.1	17.1	37.8	17.0	31.5	18.4	30.4	18.5	14.0	15.9
3	91.6	41.1	91.6	41.2	69.3	40.6	65.7	39.9	37.0	42.0
4	93.2	41.8	92.9	41.8	69.3	40.6	67.8	41.2	37.1	42.1
Total	222.9	100.0	222.2	100.0	170.6	100.0	164.4	100.0	88.0	100.0
Gear Group[4]										
Unknown	.	.	.	.	5.2	3.0	4.5	2.8	2.1	2.4
Hook	37.9	17.0	37.9	17.1	28.5	16.7	27.0	16.4	16.7	19.0
Otter trawl	154.6	69.4	154.1	69.3	113.8	66.7	110.3	67.1	54.6	62.0
Gillnet	30.3	13.6	30.2	13.6	19.4	11.4	18.8	11.5	13.7	15.6
Other	0.0	0.0	0.0	0.0	3.7	2.2	3.7	2.3	0.9	1.1
Total	222.9	100.0	222.2	100.0	170.6	100.0	164.4	100.0	88.0	100.0
Port Group[4]										
Portland	91.9	41.3	91.4	41.1	72.8	42.7	72.4	44.0	37.4	42.5
Other Maine	13.1	5.9	13.1	5.9	8.8	5.1	8.3	5.1	4.9	5.5
Boston	38.7	17.3	38.7	17.4	28.2	16.6	27.5	16.7	17.0	19.3
Chatham	34.1	15.3	34.1	15.3	24.9	14.6	23.2	14.1	15.4	17.5
New Bedford	42.4	19.0	42.4	19.1	33.0	19.4	30.1	18.3	12.5	14.2
Other	2.6	1.2	2.6	1.2	2.9	1.7	2.9	1.8	0.9	1.0
Total	222.9	100.0	222.2	100.0	170.6	100.0	164.4	100.0	88.0	100.0
Stock Area[4]										
Georges Bank, west					92.8	54.4	92.7	56.4	49.5	56.2
Georges Bank, east					16.0	9.4	15.9	9.7	9.2	10.4
Area 500					0.6	0.3	0.6	0.3	0.3	0.4
Other					61.3	35.9	55.3	33.6	29.0	33.0
Total					170.6	100.0	164.4	100.0	88.0	100.0
Market Category[4]										
Large	116.7	52.4	116.2	52.3					50.9	51.0
Scrod	104.2	46.8	104.1	46.8					48.3	48.4
Unclass.	1.9	0.9	1.9	0.9					0.7	0.7
Total	222.9	100.0	222.2	100.0					99.8	100.0

[1] Values of 1994 represent the portion of landings which needed to be prorated (total 1994 haddock landings were 329.7 mt). 1996 landings are provisional.

[2] Data sets were reduced by eliminating observations where port, vessel permit, month landed, day landed, or area equalled zero.

[3] Matched set is the joined set from the reduced dealer report set and the reduced vessel trip report set. This set contains both the dealer report weight, and the 'kept' weight from the vessel trip report. Values for the matched set are 'kept' weight form the VTR data except for the market category comparison, which uses live weight from the dealer report.

[4] See Appendix B for details on gear groups, port groups, stock areas and market category.

Table 6. 1995 USA commercial haddock landings (mt, live weight and percent) from the dealer report data, the vessel trip report data, and the matched set, by quarter of year, gear group, port group, stock area and market category.

	Dealer Report				Vessel Trip Report				Matched Set[2]	
	All		Reduced[1]		All		Reduced[1]			
	mt	%	mt	%	mt	%	mt	%	mt	%
Quarter										
Unknown	.	.	.	.	0.3	0.1	.	.	.	.
1	97.4	23.7	97.0	23.7	85.2	27.1	84.5	28.0	45.2	27.3
2	83.7	20.4	83.3	20.4	71.0	22.6	69.1	22.9	38.0	22.9
3	122.0	29.7	121.9	29.8	96.2	30.6	89.9	29.8	52.5	31.7
4	107.3	26.1	107.0	26.1	61.4	19.6	58.2	19.3	30.2	18.2
Total	410.4	100.0	409.2	100.0	314.0	100.0	301.8	100.0	165.9	100.0
Gear Groups[3]										
Unknown	0.5	0.1	0.5	0.1	4.9	1.6	4.3	1.4	1.2	0.7
Hook	95.3	23.2	95.0	23.2	76.3	24.3	74.4	24.6	52.9	31.9
Otter trawl	257.0	62.6	256.1	62.6	191.7	61.0	184.1	61.0	89.1	53.7
Gillnet	56.5	13.8	56.4	13.8	35.3	11.2	33.7	11.2	21.2	12.8
Other	1.1	0.3	1.1	0.3	5.9	1.9	5.3	1.8	1.5	0.9
Total	410.4	100.0	409.2	100.0	314.0	100.0	301.8	100.0	165.9	100.0
Port Groups[3]										
Unknown	.	.	.	.	4.0	1.3	0.2	0.1	.	.
Portland	187.6	45.7	186.7	45.6	132.4	42.2	130.4	43.2	73.4	44.2
Other Maine	30.0	7.3	30.0	7.3	23.2	7.4	22.4	7.4	11.4	6.8
Boston	58.9	14.3	58.9	14.4	48.7	15.5	47.4	15.7	28.4	17.1
Chatham	69.4	16.9	69.1	16.9	51.5	16.4	50.1	16.6	38.3	23.1
New Bedford	60.9	14.8	60.9	14.9	48.9	15.6	46.2	15.3	12.9	7.8
Other	3.7	0.9	3.7	0.9	5.5	1.7	5.0	1.7	1.6	1.0
Total	410.4	100.0	409.2	100.0	314.0	100.0	301.8	100.0	165.9	100.0
Stock Areas[3]										
Georges Bank, west					155.1	49.4	153.7	50.9	81.7	49.2
Georges Bank, east					13.2	4.2	13.1	4.3	8.2	5.0
Area 500					0.7	0.2	0.7	0.2	.	.
Other					145.1	46.2	134.3	44.5	76.0	45.8
Total					314.0	100.0	301.8	100.0	165.9	100.0
Market Category[3]										
Large	262.4	63.9	261.7	63.9					119.5	64.4
Scrod	143.8	35.0	143.3	35.0					64.7	34.8
Unclass.	4.2	1.0	4.2	1.0					1.5	0.8
Total	410.4	100.0	409.2	100.0					185.6	100.0

[1] Data sets were reduced by eliminating observations where port, vessel permit, month landed, day landed, or area equalled zero.

[2] Matched set is the joined set from the reduced dealer report set and the reduced vessel trip report set. This set contains both the dealer report weight, and the 'kept' weight from the vessel trip report. Values for the matched set are 'kept' weight form the VTR data except for the market category comparison, which uses live weight from the dealer report.

[3] See Appendix B for details on gear groups, port groups, stock areas and market category.

Table 7. 1996 USA commercial haddock landings (mt, live weight and percent) from the dealer report data, the vessel trip report data, and the matched set, by quarter of year, gear group, port group, stock area and market category.

	Dealer Report				Vessel Trip Report				Matched Set[2]	
	All		Reduced[1]		All		Reduced[1]			
	mt	%	mt	%	mt	%	mt	%	mt	%
Quarter										
Unknown	.	.	.	.	1.3	0.3				
1	96.3	16.9	96.2	16.9	78.7	15.8	76.8	15.8	32.5	14.9
2	101.1	17.7	101.0	17.7	83.1	16.7	81.4	16.8	36.2	16.6
3	199.8	35.0	199.7	35.1	190.8	38.4	186.1	38.3	84.0	38.6
4	173.1	30.4	172.7	30.3	143.3	28.8	141.2	29.1	64.9	29.8
Total	570.3	100.0	569.6	100.0	497.2	100.0	485.5	100.0	217.7	100.0
Gear Group[3]										
Unknown	0.4	0.1	0.4	0.1	18.0	3.6	17.7	3.6	8.5	3.9
Hook	103.9	18.2	103.5	18.2	107.0	21.5	103.3	21.3	55.0	25.3
Otter trawl	380.7	66.8	380.7	66.8	292.4	58.8	286.6	59.0	115.6	53.1
Gillnet	84.8	14.9	84.5	14.8	60.5	12.2	59.5	12.2	35.0	16.1
Other	0.5	0.1	0.5	0.1	19.2	3.9	18.5	3.8	3.7	1.7
Total	570.3	100.0	569.6	100.0	497.2	100.0	485.5	100.0	217.7	100.0
Port Group[3]										
Unknown	.	.	.	.	4.6	0.9	.	.	.	.
Portland	257.3	45.1	257.1	45.1	214.7	43.2	212.0	43.7	94.9	43.6
Other Maine	21.4	3.8	21.3	3.7	26.4	5.3	25.1	5.2	9.0	4.1
Boston	86.2	15.1	86.2	15.1	57.5	11.6	56.8	11.7	34.3	15.8
Chatham	92.2	16.2	91.8	16.1	87.4	17.6	85.8	17.7	54.3	24.9
New Bedford	108.0	18.9	108.0	19.0	91.4	18.4	90.9	18.7	22.7	10.4
Other	5.1	0.9	5.1	0.9	15.2	3.1	14.9	3.1	2.5	1.2
Total	570.3	100.0	569.6	100.0	497.2	100.0	485.5	100.0	217.7	100.0
Stock Area[3]										
Georges Bank, west					251.7	50.6	246.9	50.9	113.0	51.9
Georges Bank, east					20.8	4.2	20.8	4.3	8.8	4.0
Area 500					3.5	0.7	3.5	0.7	2.1	1.0
Other					221.2	44.5	214.2	44.1	93.8	43.1
Total					497.2	100.0	485.5	100.0	217.7	100.0
Market Category[3]										
Large	379.8	66.6	379.4	66.6					161.3	67.1
Small	184.5	32.4	184.2	32.3					76.5	31.8
Unclass.	5.9	1.0	5.9	1.0					2.8	1.2
Total	570.3	100.0	569.6	100.0					240.6	100.0

[1] Data sets were reduced by eliminating observations where port, vessel permit, month landed, day landed, or area equalled zero.

[2] Matched set is the joined set from the reduced dealer report set and the reduced vessel trip report set. This set contains both the dealer report weight, and the 'kept' weight from the vessel trip report. Values for the matched set are 'kept' weight form the VTR data except for the market category comparison, which uses live weight from the dealer report.

[3] See Appendix B for details on gear groups, port groups, stock areas and market category.

Table 8. 1994 USA commercial yellowtail flounder landings (mt, live weight and percent) from the dealer report data, the vessel trip report data, and the matched set, by quarter of year, gear group, port group, stock area and market category.

	Dealer Report				Vessel Trip Report				Matched Set[3]	
	All[1]		Reduced[2]		All		Reduced[2]			
	mt	%	mt	%	mt	%	mt	%	mt	%
Quarter										
1	0.1	0.0	0.1	0.0	0.7	0.0	0.7	0.0	.	.
2	339.6	13.6	337.9	13.6	246.1	11.3	200.1	10.4	66.5	7.5
3	1290.8	51.7	1288.5	51.7	1036.7	47.7	983.7	51.1	484.7	54.3
4	864.7	34.7	864.4	34.7	887.8	40.9	741.2	38.5	340.8	38.2
Total	2495.1	100.0	2490.8	100.0	2171.4	100.0	1925.7	100.0	892.1	100.0
Gear Group[4]										
Unknown	0.7	0.0	0.6	0.0	136.2	6.3	122.3	6.4	70.4	7.9
Otter trawl	2392.2	95.9	2388.0	95.9	1970.1	90.7	1738.9	90.3	791.5	88.7
Gillnet	57.5	2.3	57.4	2.3	33.8	1.6	33.7	1.8	17.2	1.9
Dredge	33.1	1.3	33.1	1.3	23.1	1.1	22.5	1.2	9.9	1.1
Other	11.6	0.5	11.6	0.5	8.3	0.4	8.2	0.4	3.0	0.3
Total	2495.1	100.0	2490.8	00.0	2171.4	100.0	1925.7	100.0	892.1	100.0
Port Group[4]										
Other Maine	228.8	9.2	225.1	9.0	197.4	9.1	196.7	10.2	108.7	12.2
Boston	214.9	8.6	214.2	8.6	333.8	15.4	185.3	9.6	104.9	11.8
New Bedford	1974.0	79.1	1974.0	79.3	1531.7	70.5	1436.7	74.6	655.7	73.5
Other MA	15.3	0.6	15.3	0.6	32.5	1.5	32.4	1.7	6.0	0.7
Newport, RI	19.7	0.8	19.7	0.8	50.8	2.3	50.5	2.6	3.3	0.4
Point Judith	41.3	1.7	41.3	1.7	21.5	1.0	21.0	1.1	13.2	1.5
Other	1.2	0.0	1.2	0.0	3.6	0.2	3.1	0.2	0.3	0.0
Total	2495.1	100.0	2490.8	100.0	2171.4	100.0	1925.7	100.0	892.1	100.0
Stock Area[4]										
Georges Bank					1155.9	53.2	1155.9	60.0	523.5	58.7
So. New England					105.7	4.9	105.0	5.5	40.2	4.5
Area 500					11.3	0.5	11.3	0.6	.	.
Area 520					5.9	0.3	5.9	0.3	5.0	0.6
Other					892.6	41.1	647.6	33.6	323.3	36.2
Total					2171.4	100.0	1925.7	100.0	892.1	100.0
Market Category[4]										
Large	1353.4	54.2	1353.2	54.3					478.6	50.3
Small	1095.1	43.9	1091.0	43.8					453.4	47.6
Unclass.	46.6	1.9	46.6	1.9					20.2	2.1
Total	2495.1	100.0	2490.8	100.0					952.2	100.0

[1] Values of 1994 represent the portion of landings which needed to be prorated (total 1994 yellowtail flounder landings were 3098.7 mt). 1996 landings are provisional.

[2] Data sets were reduced by eliminating observations where port, vessel permit, month landed, day landed, or area equalled zero.

[3] Matched set is the joined set from the reduced dealer report set and the reduced vessel trip report set. This set contains both the dealer report weight, and the 'kept' weight from the vessel trip report. Values for the matched set are 'kept' weight form the VTR data except for the market category comparison, which uses live weight from the dealer report.

[4] See Appendix B for details on gear groups, port groups, stock areas and market category.

Table 9. 1995 USA commercial yellowtail flounder landings (mt, live weight and percent) from the dealer report data, the vessel trip report data, and the matched set, by quarter of year, gear group, port group, stock area and market category.

	Dealer Report				Vessel Trip Report				Matched Set[2]	
	All		Reduced[1]		All		Reduced[1]			
	mt	%	mt	%	mt	%	mt	%	mt	%
Quarter										
Unknown	.	.	.	.	1.7	0.1	.	.	.	.
1	429.2	22.3	426.1	22.2	460.2	26.2	451.2	26.3	226.0	28.6
2	631.0	32.7	627.0	32.7	603.2	34.4	600.6	35.0	328.1	41.5
3	378.5	19.6	376.0	19.6	324.9	18.5	311.0	18.1	108.1	13.7
4	489.9	25.4	487.4	25.4	363.2	20.7	353.8	20.6	127.7	16.2
Total	1928.6	100.0	1916.5	100.0	1753.2	100.0	1716.6	100.0	789.9	100.0
Gear Group[3]										
Unknown	9.9	0.5	0.5	0.0	46.5	2.7	38.2	2.2	13.4	1.7
Otter trawl	1579.9	81.9	1577.6	82.3	1368.4	78.1	1344.3	78.3	571.8	72.4
Gillnet	285.9	14.8	285.6	14.9	259.9	14.8	259.1	15.1	165.3	20.9
Dredge	33.6	1.7	33.6	1.8	24.8	1.4	24.0	1.4	11.1	1.4
Other	19.3	1.0	19.0	1.0	53.6	3.1	50.9	3.0	28.4	3.6
Total	1928.6	100.0	1916.5	100.0	1753.2	100.0	1716.6	100.0	789.9	100.0
Port Groups[3]										
Unknown	.	.	.	.	8.5	0.5	0.9	0.1	.	.
Other Maine	423.9	22.0	423.5	22.1	460.1	26.2	458.3	26.7	259.4	32.8
Boston	429.4	22.3	427.3	22.3	338.3	19.3	337.4	19.7	220.4	27.9
New Bedford	945.7	49.0	945.7	49.3	811.3	46.3	785.8	45.8	249.4	31.6
Other MA	39.7	2.1	39.4	2.1	39.9	2.3	39.9	2.3	26.2	3.3
Newport,RI	17.7	0.9	8.3	0.4	15.7	0.9	15.6	0.9	1.7	0.2
Point Judith	43.8	2.3	43.8	2.3	50.7	2.9	50.4	2.9	27.1	3.4
Other	28.5	1.5	28.5	1.5	28.8	1.6	28.5	1.7	5.8	0.7
Total	1928.6	100.0	1916.5	100.0	1753.2	100.0	1716.6	100.0	789.9	100.0
Stock Areas[3]										
Georges Bank					309.0	17.6	308.9	18.0	85.2	10.8
Southern New England					164.4	9.4	162.3	9.5	67.3	8.5
Area 500					0.0	0.0	0.0	0.0	0.0	0.0
Area 520					1.2	0.1	1.2	0.1	0.1	0.0
Other					1278.6	72.9	1244.3	72.5	637.3	80.7
Total					1753.2	100.0	1716.6	100.0	789.9	100.0
Market Category[3]										
Large	906.0	47.0	905.0	47.2					354.1	44.8
Small	870.6	45.1	869.1	45.3					363.1	46.0
Unclass.	152.0	7.9	142.4	7.4					72.6	9.2
Total	1928.6	100.0	1916.5	100.0					789.8	100.0

[1] Data sets were reduced by eliminating observations where port, vessel permit, month landed, day landed, or area equalled zero.

[2] Matched set is the joined set from the reduced dealer report set and the reduced vessel trip report set. This set contains both the dealer report weight, and the 'kept' weight from the vessel trip report. Values for the matched set are 'kept' weight form the VTR data except for the market category comparison, which uses live weight from the dealer report.

[3] See Appendix B for details on gear groups, port groups, stock areas and market category.

Table 10. 1996 USA commercial yellowtail flounder landings (mt, live weight and percent) from the dealer report data, the vessel trip report data, and the matched set, by quarter of year, gear group, port group, stock area and market category.

	Dealer Report				Vessel Trip Report				Matched Set[2]	
	All		Reduced[1]		All		Reduced[1]			
	mt	%	mt	%	mt	%	mt	%	mt	%
Quarter										
Unknown	.	.	.	.	4.8	0.2				
1	607.1	25.9	606.7	25.9	603.9	26.7	598.0	26.9	217.8	24.2
2	841.7	35.9	838.8	35.9	805.4	35.5	789.8	35.6	371.9	41.3
3	311.5	13.3	311.3	13.3	312.3	13.8	304.7	13.7	114.9	12.8
4	582.5	24.9	582.4	24.9	539.4	23.8	528.5	23.8	195.8	21.7
Total	2342.8	100.0	2339.1	100.0	2265.8	100.0	2221.0	100.0	900.4	100.0
Gear Group[3]										
Unknown	3.1	0.1	3.1	0.1	68.1	3.0	65.3	2.9	17.0	1.9
Otter Trawl	2030.1	86.7	2028.6	86.7	1820.3	80.3	1787.6	80.5	671.2	74.5
Gillnet	262.8	11.2	260.9	11.2	282.4	12.5	277.9	12.5	173.3	19.2
Dredge	33.1	1.4	33.1	1.4	35.1	1.6	33.3	1.5	12.4	1.4
Other	13.7	0.6	13.4	0.6	59.8	2.6	56.9	2.6	26.6	3.0
Total	2342.8	100.0	2339.1	100.0	2265.8	100.0	2221.0	100.0	900.4	100.0
Port Group[3]										
Unknown	.	.	.	.	22.8	1.0	.	.	.	.
Other Maine	380.7	16.2	379.3	16.2	435.7	19.2	428.0	19.3	243.3	27.0
Boston	408.6	17.4	406.3	17.4	359.7	15.9	357.8	16.1	230.0	25.5
New Bedford	1252.3	53.5	1252.3	53.5	1126.3	49.7	1121.3	50.5	333.7	37.1
Other MA	36.1	1.5	36.1	1.5	22.4	1.0	22.2	1.0	9.0	1.0
Newport, RI	19.7	0.8	19.7	0.8	59.7	2.6	57.1	2.6	7.6	0.8
Point Judith	130.8	5.6	130.8	5.6	116.0	5.1	115.9	5.2	54.5	6.1
Other	114.7	4.9	114.7	4.9	123.1	5.4	118.8	5.3	22.2	2.5
Total	2342.8	100.0	2339.1	100.0	2265.8	100.0	2221.0	100.0	900.4	100.0
Stock Areas[3]										
Georges Bank					706.7	31.2	702.5	31.6	202.7	22.5
Southern New England					294.1	13.0	288.5	13.0	97.6	10.8
Area 500					0.7	0.0	0.7	0.0	.	.
Area 520					11.5	0.5	11.5	0.5	3.3	0.4
Other					1252.8	55.3	1217.7	54.8	596.8	66.3
Total					2265.8	100.0	2221.0	100.0	900.4	100.0
Market Category[3]										
Large	1088.5	46.5	1087.6	46.5					365.6	40.3
Small	1056.6	45.1	1053.9	45.1					468.5	51.7
Unclass.	197.7	8.4	197.6	8.4					72.4	8.0
Total	2342.8	100.0	2339.1	100.0					906.6	100.0

Data sets were reduced by eliminating observations where port, vessel permit, month landed, day landed, or area equalled zero.

[2] Matched set is the joined set from the reduced dealer report set and the reduced vessel trip report set. This set contains both the dealer report weight, and the 'kept' weight from the vessel trip report. Values for the matched set are 'kept' weight form the VTR data except for the market category comparison, which uses live weight from the dealer report.

[3] See Appendix B for details on gear groups, port groups, stock areas and market category.

Table 11. Prorated USA commercial landings (mt, live weight) by species and stock area for cod, haddock and yellowtail flounder during 1994-1996. **Bold-faced** stock areas were derived by re-distributing landings from unknown areas and Area 500/Area 520. Georges Bank stock area landings are the sum of values for Georges Bank, east and Georges Bank west. Bold-faced stock areas were derived by individual stock assessment scientists (cod: R. Mayo; haddock: R. Brown; and yellowtail flounder: S. Cadrin; personal communication)

		YEAR		
Species	Stock Area[1]	1994	1995	1996
Cod	Gulf of Maine	7865.7	6764.6	7173.9
	Georges Bank, west	8651.5	6064.0	6229.3
	Georges Bank, east	1226.9	662.0	771.4
	Area 500	8.7	6.2	24.8
	Other	20.8	113.8	7.5
	Unknown	17.0	60.4	14.3
	Total	17790.5	13670.9	14221.1
	Gulf of Maine	**7877.0**	**6797.7**	**7193.6**
	Georges Bank	**9892.6**	**6758.9**	**7019.9**
Haddock	Georges Bank, west	184.2	194.0	275.4
	Georges Bank, east	32.6	21.2	35.3
	Area 500	0.7	.	3.2
	Other	110.8	189.8	255.1
	Unknown	1.4	5.4	1.3
	Total	329.7	410.4	570.3
	Georges Bank	**218.2**	**218.1**	**313.1**
Yellowtail Flounder	Georges Bank	1576.9	289.6	744.3
	Southern New England	223.5	185.2	283.2
	Area 500	.	0.0	.
	Area 520	13.2	0.6	8.6
	Other	1278.7	1438.0	1296.4
	Unknown	6.4	15.3	10.2
	Total	3098.7	1928.6	2342.8
	Georges Bank	**1588.5**	**292.1**	**751.3**
	Southern New England	**224.6**	**186.5**	**285.2**

[1] See Appendix B for statistical areas associated with stock areas.
1996 landing are provisional.

Table 12. Prorated USA commercial cod landings (mt, live weight) by market category and stock area for 1994-1996.

Year	Stock Area[1]	Market Category				
		Large	Market	Scrod	Unclass.	Total
1994	Gulf of Maine	1899.6	4260.9	1434.4	270.7	7865.7
	Georges Bank, west	2361.1	4350.0	1730.7	209.7	8651.5
	Georges Bank ,east	244.7	684.7	295.8	1.7	1226.9
	Area 500	2.0	5.1	1.5	.	8.7
	Other	5.7	12.5	2.6	.	20.8
	Unknown	1.3	3.2	1.9	10.6	17.0
	Total	4514.4	9316.5	3466.9	492.7	17790.5
1995	Gulf of Maine	1406.4	3583.5	1582.8	191.9	6764.6
	Georges Bank, west	1541.3	2911.6	1539.5	71.5	6064.0
	Georges Bank, east	210.5	337.3	111.6	2.7	662.0
	Area 500	0.7	3.6	2.0	.	6.2
	Other	25.1	68.5	20.1	.	113.8
	Unknown	13.3	10.9	1.4	34.8	60.4
	Total	3197.3	6915.4	3257.4	300.8	13670.9
1996	Gulf of Maine	948.2	4388.0	1665.6	172.0	7173.9
	Georges Bank, west	1464.9	3504.0	1207.6	52.9	6229.3
	Georges Bank, east	129.8	490.6	150.9	0.0	771.4
	Area 500	6.2	16.6	1.9	.	24.8
	Other	1.9	4.9	0.8	.	7.5
	Unknown	0.9	4.2	2.8	6.5	14.3
	Total	2551.9	8408.2	3029.5	231.5	14221.1

[1] See Appendix B for statistical areas associated with cod stock areas.
1996 landings are provisional.

Table 13. Prorated USA commercial haddock landings (mt, live weight) by market category and stock area for 1994-1996.

Year	Stock Area[1]	Market Category			
		Large	Scrod	Unclass.	Total
1994	Georges Bank, west	91.6	91.0	1.6	184.2
	Georges Bank, east	21.6	10.9	.	32.6
	Area 500	0.7	.	.	0.7
	Other	65.5	44.3	1.0	110.8
	Unknown	0.8	0.5	0.1	1.4
	Total	180.2	146.8	2.7	329.7
1995	Georges Bank, west	120.5	72.9	0.6	194.0
	Georges Bank, east	15.2	4.6	1.4	21.2
	Other	123.5	65.2	1.1	189.8
	Unknown	3.2	1.1	1.2	5.4
	Total	262.4	143.8	4.2	410.4
1996	Georges Bank, west	196.5	77.6	1.3	275.4
	Georges Bank, east	27.9	5.5	1.9	35.3
	Area 500	2.3	1.0	.	3.2
	Other	152.3	100.3	2.5	255.1
	Unknown	0.8	0.2	0.3	1.3
	Total	379.8	184.5	5.9	570.3

[1] See Appendix B for statistical areas associated with haddock stock areas: 1996 landings are provisional.

Table 14. Prorated USA commercial yellowtail flounder landings (mt, live weight) by market category and stock area for 1994-1996.

Year	Stock Area[1]	Market Category			
		Large	Small	Unclass.	Total
1994	Georges Bank	870.9	700.3	5.7	1576.9
	So. New England	104.7	115.7	3.1	223.5
	Area 500	.	.	.	.
	Area 520	5.7	7.5	.	13.2
	Other	608.2	496.1	174.4	1278.7
	Unknown	1.2	1.7	3.5	6.4
	Total	1590.7	1321.3	186.7	3098.7
1995	Georges Bank	157.2	130.5	1.9	289.6
	So. New England	69.5	93.8	21.9	185.2
	Area 500	0.0	0.0	.	0.0
	Area 520	0.1	0.5	.	0.6
	Other	676.7	643.7	117.6	1438.0
	Unknown	2.5	2.1	10.6	15.3
	Total	906.0	870.6	152.0	1928.6
1996	Georges Bank	467.9	272.3	4.1	744.3
	So. New England	82.9	181.4	18.9	283.2
	Area 500	6.0	2.7	.	8.6
	Area 520	.	.	.	.
	Other	527.0	597.9	171.4	1296.4
	Unknown	4.6	2.3	3.3	10.2
	Total	1088.5	1056.6	197.7	2342.8

[1] See Appendix B for statistical area associated with yellowtail flounder stock areas. 1996 landings are provisional.

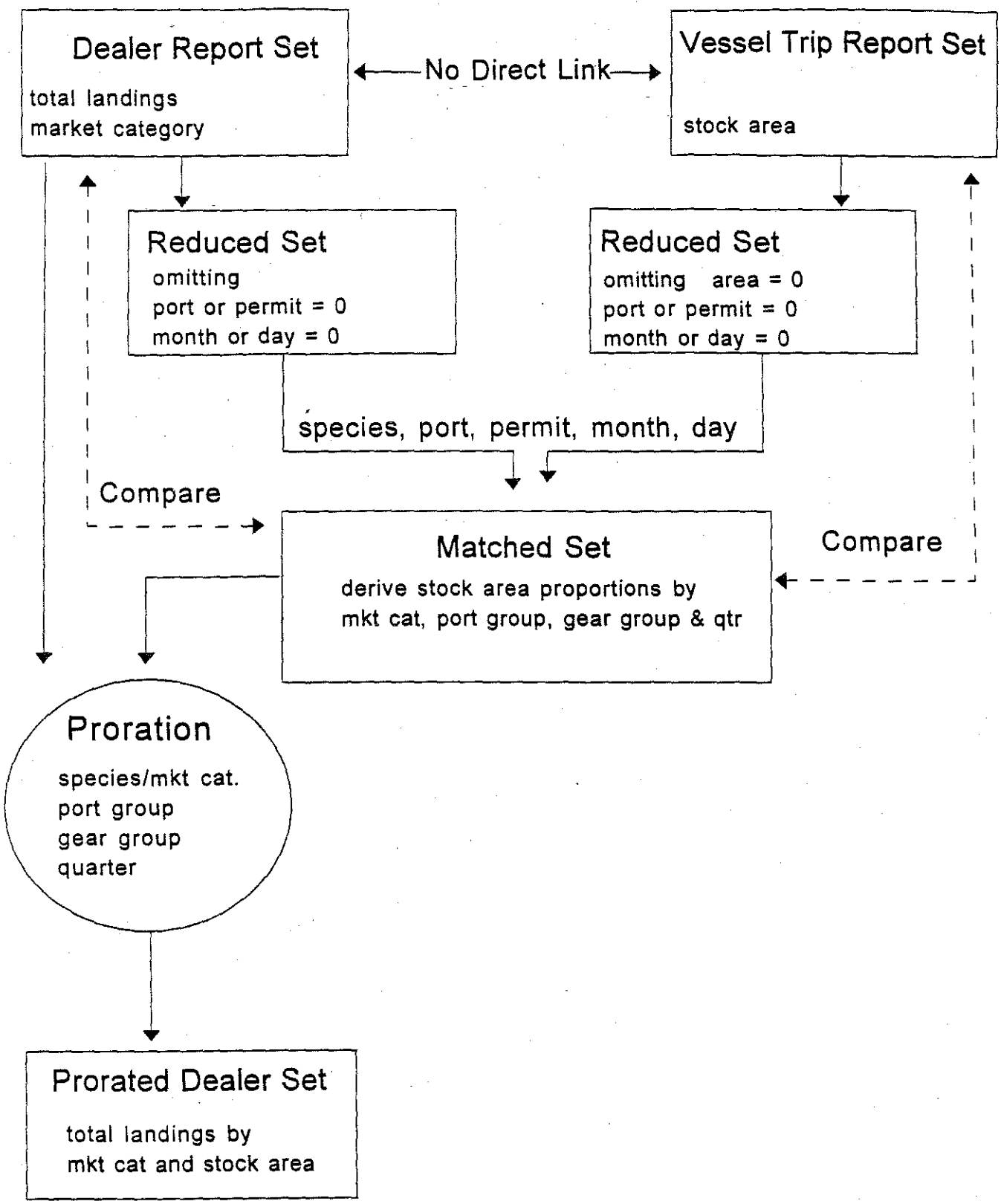

Figure 1. Diagram identifying data sets used in the proration of USA commercial landings for cod, haddock and yellowtail flounder during 1994-1996.

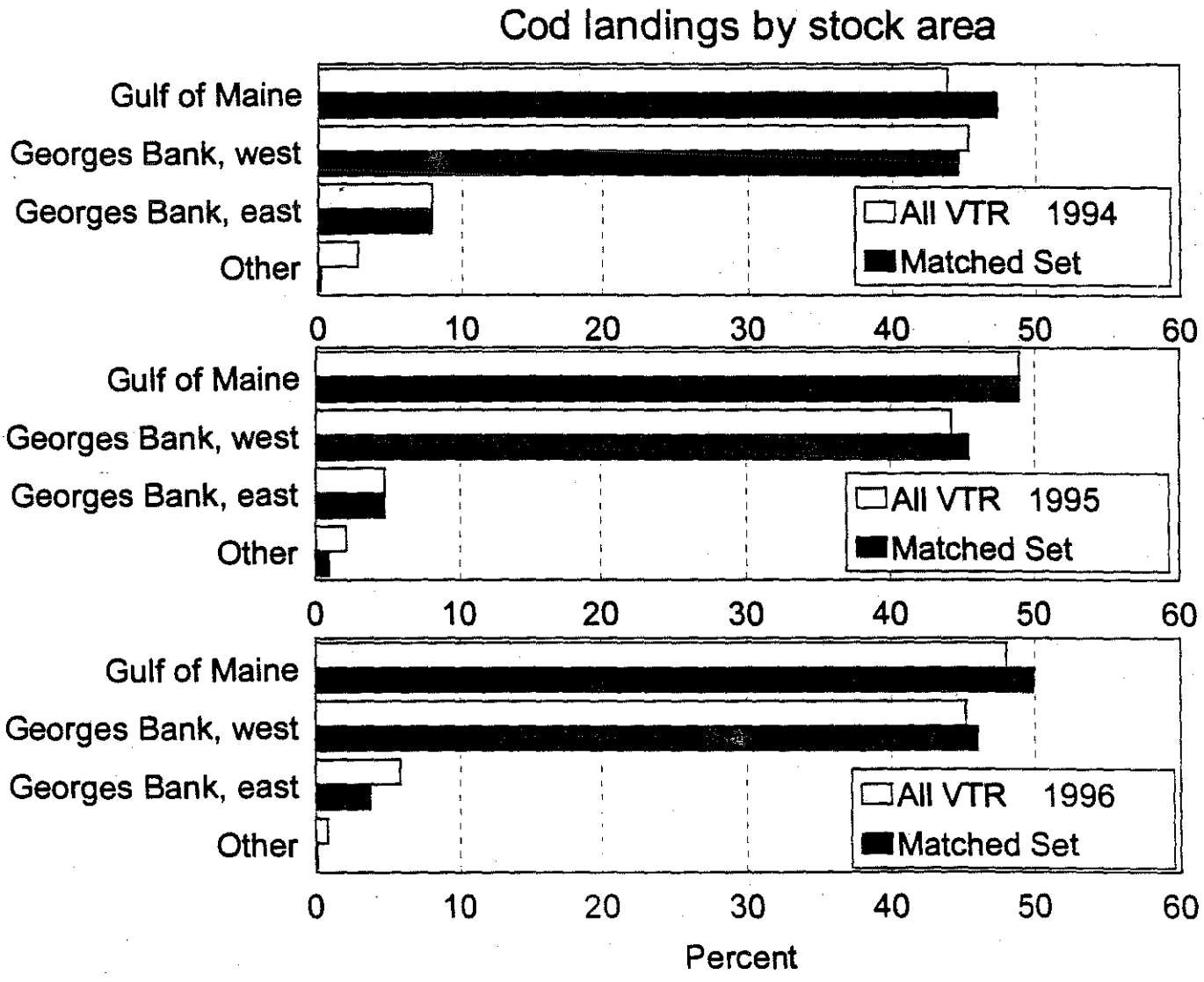

Figure 2. Comparison of USA commercial cod landings by stock areas (percent) between the vessel trip report data and the matched set data for 1994-1996.

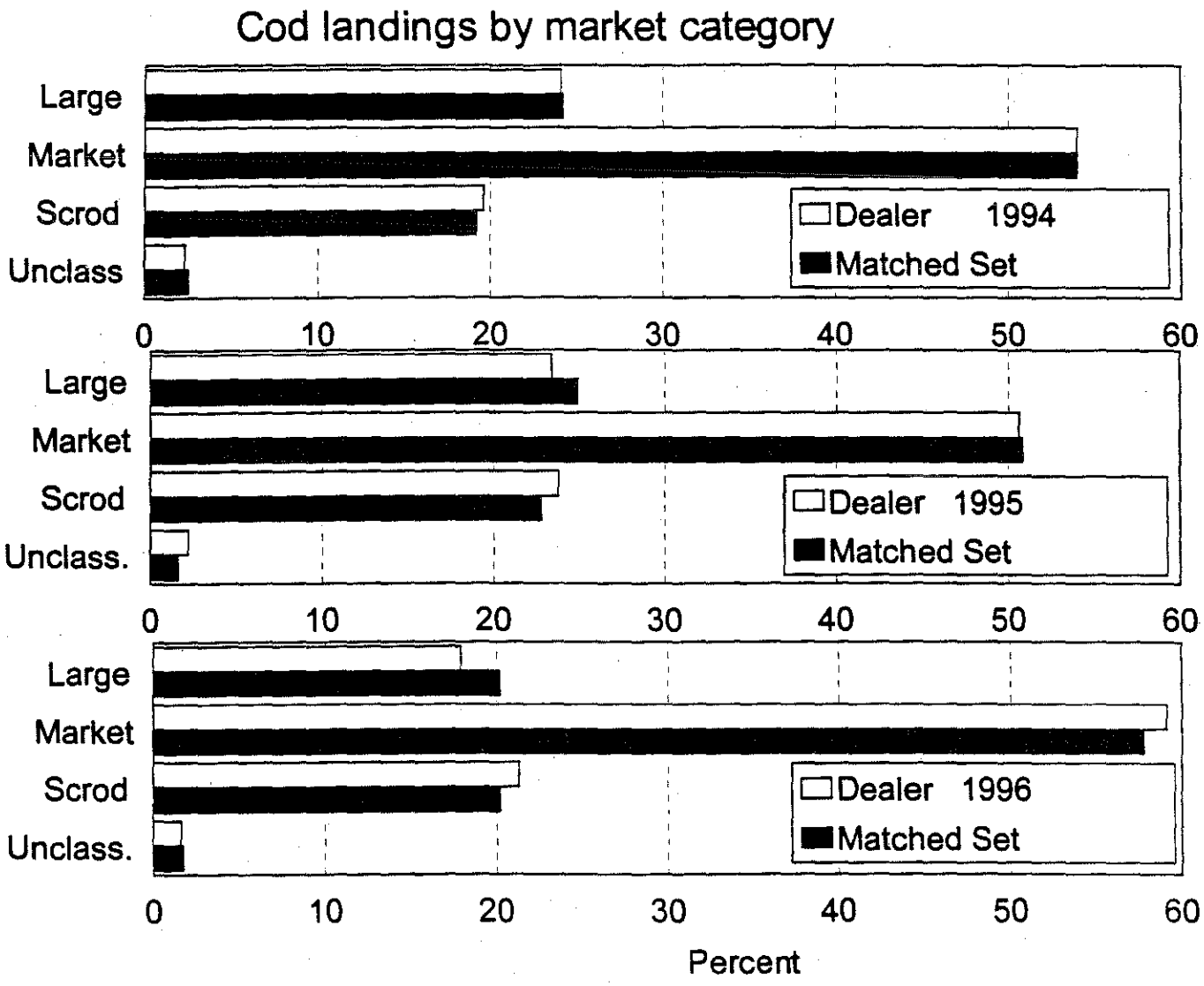

Figure 3. Comparison of USA commercial cod landings by market category (percent) between the dealer report data and the matched set data for 1994-1996.

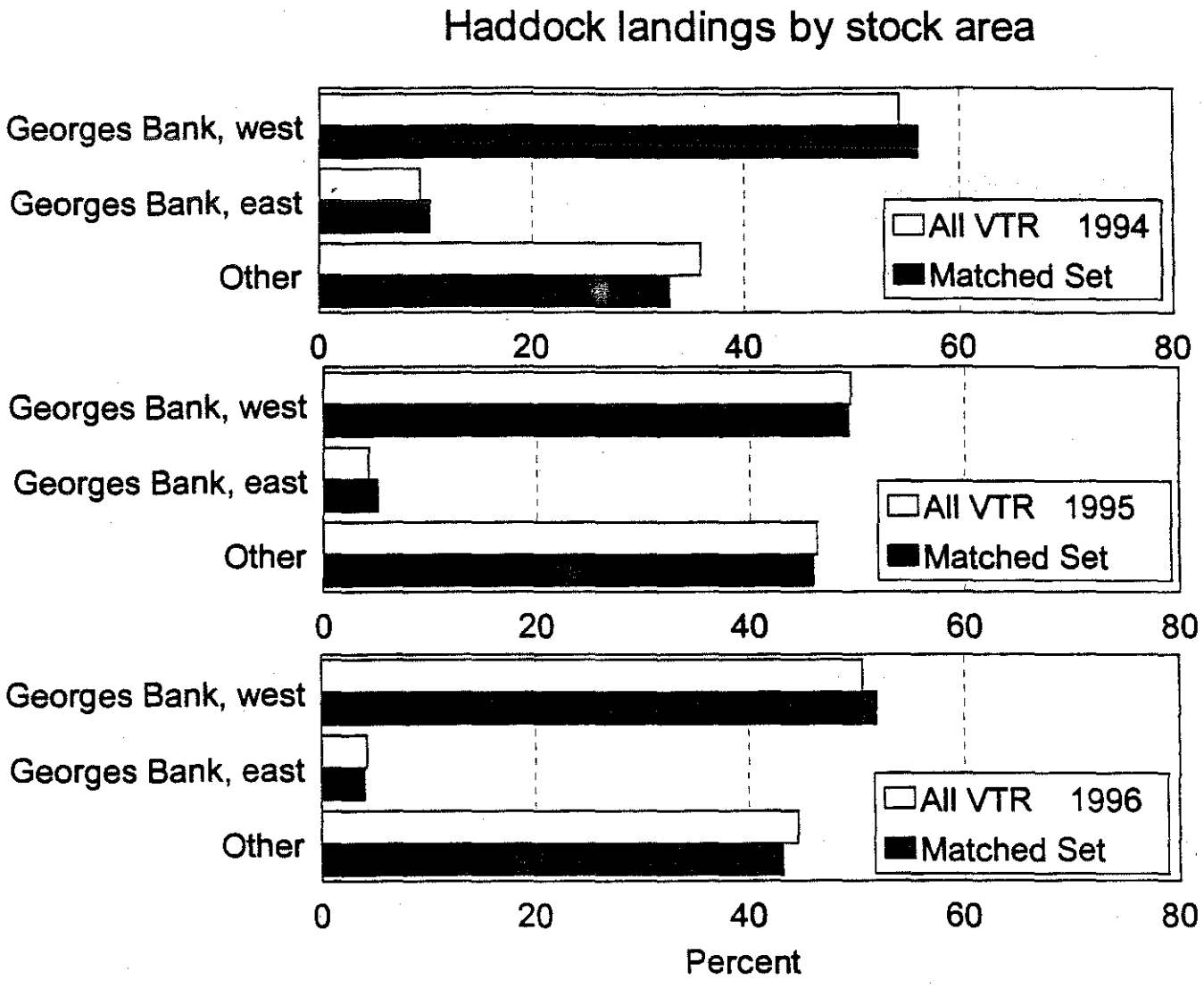

Figure 4. Comparison of USA commercial haddock landings by stock areas (percent) between the vessel trip report data and the matched set data for 1994-1996.

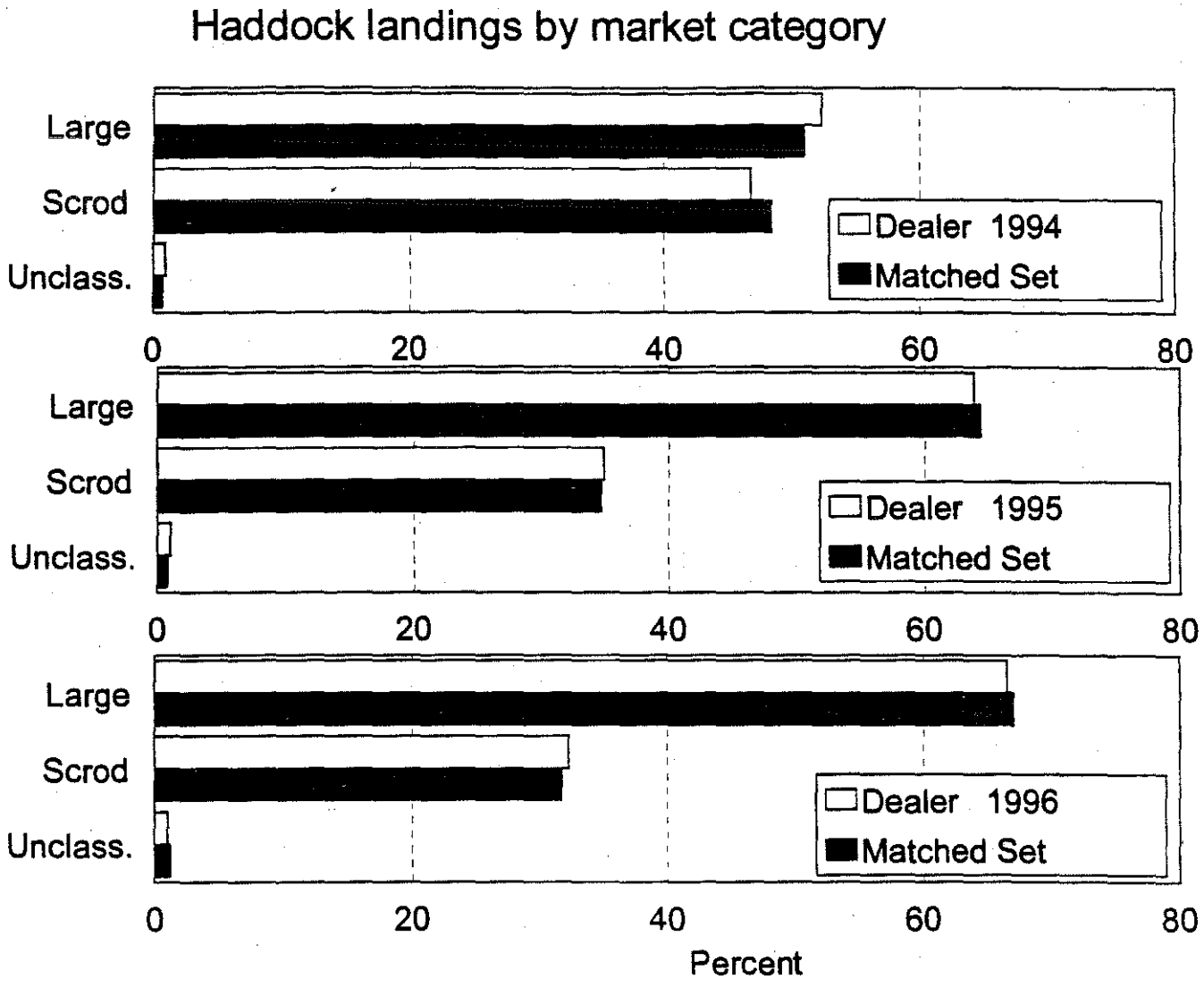

Figure 5. Comparison of USA commercial haddock landings by market category (percent) between the dealer report data and the matched set data for 1994-1996.

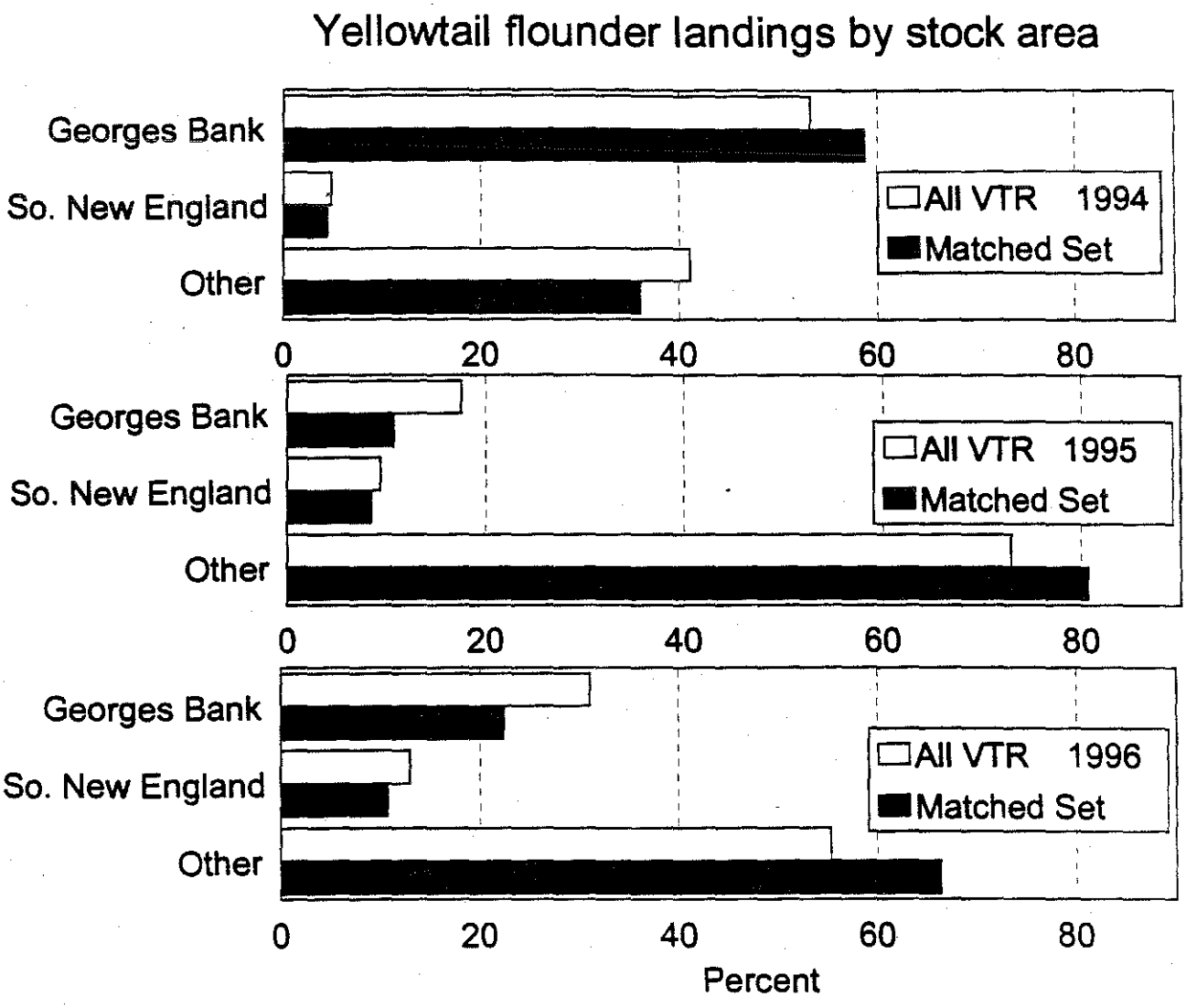

Figure 6. Comparison of USA commercial yellowtail flounder landings by stock areas (percent) between the vessel trip report data and the matched set data for 1994-1996.

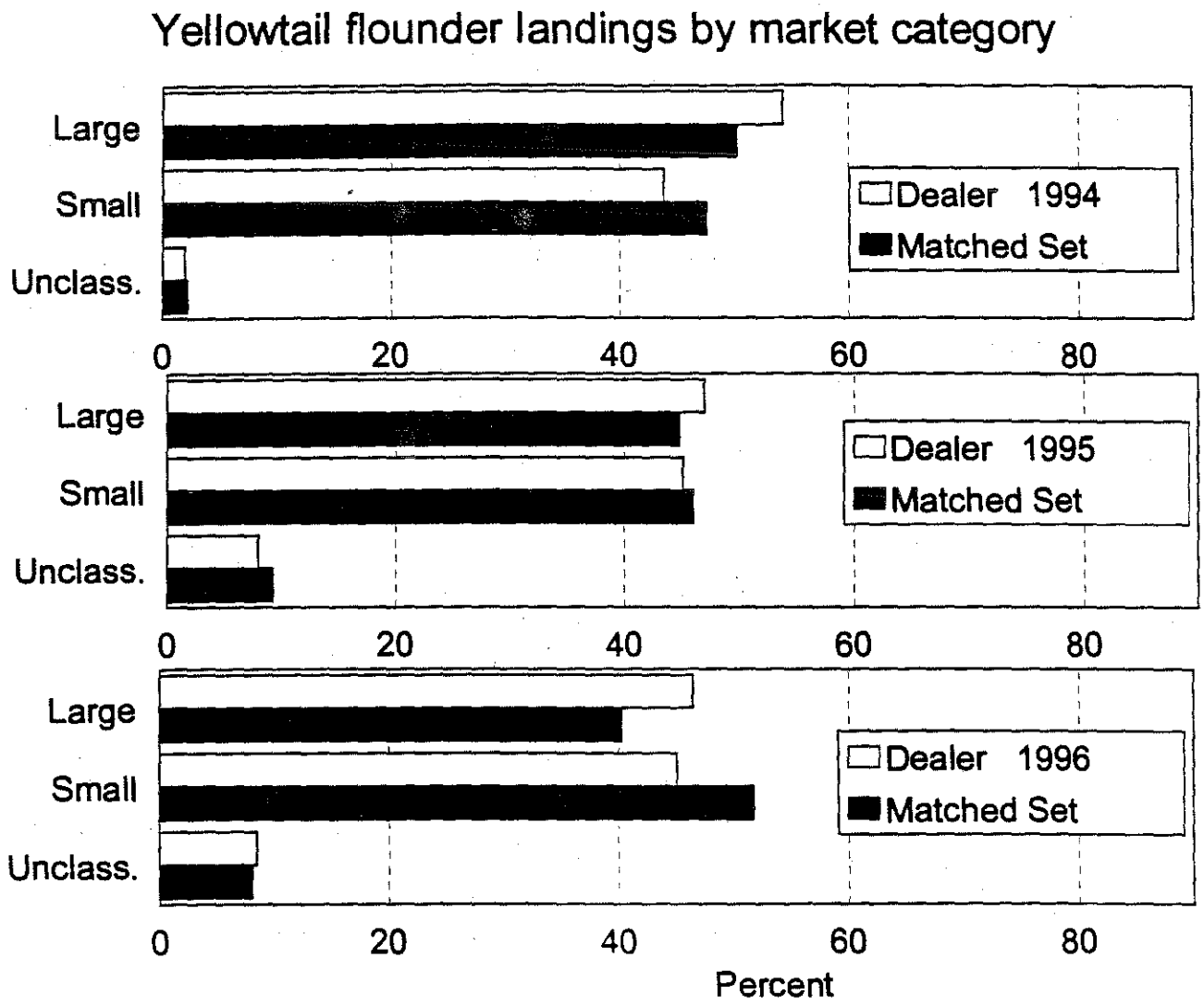

Figure 7. Comparison of USA commercial yellowtail flounder landings by market category (percent) between the dealer report data and the matched set for 1994-1996.

Appendix A. Advisory Report for the 1994 Vessel Trip Report data taken from the Report of the 22nd Northeast Regional Stock Assessment Workshop (pages 10-11). Northeast Fisheries Science Center Reference Document 96-16.

A. ANALYSIS OF 1994 FISHING VESSEL LOGBOOK DATA ADVISORY REPORT

Commercial Fishery Data Collection Program: The vessel trip report (VTR) system became effective in April 1994 for vessels landing summer flounder, and in June 1994 for vessels landing multispecies groundfish or sea scallops. The VTR data are important to stock assessments because key information such as location, gear, and effort, previously collected by port agents, are no longer available in the dealer database.

The current data collection procedures and database structure of the recently implemented (1994) mandatory vessel and dealer reporting systems were not designed in a coordinated manner to meet multiple scientific and management needs. Most of the vessel trip report logbooks were not screened and verified to standardize the data as set out in the database design and, therefore, a substantial number of serious errors remain in the database, and the database is not likely to accurately reflect the information content of the original logs. Thus, it was not possible to provide a comprehensive evaluation as specified in the terms of reference.

Information in logbooks was compared with other sources. Specific analyses examined spatial distribution of landings and effort and correspondence between logbook information, sea sample trips, and dealer transaction reports. Data from 85% of the 1994 logbook submissions were available for analysis. Overall, comparisons between individual records in the database and their corresponding logbook pages suggest that a considerable amount of useful information is contained in the logbook entries which has not been accurately represented in the database. Despite the presence of incorrect information in many of the data fields, for those records where catch, effort, and position information is recoverable, data appear usable for undertaking priority assessment-related tasks.

Management Advice: The SARC considers the collection of commercial fishery statistics in a systematic and scientifically sound manner to be of highest priority. However, the large number of discrepancies between the information content of the submitted logbooks and the representation of these data in the database is a matter of serious concern. The SARC, therefore, recommends that immediate attention be given to both short-term problems with the 1994-1996 data and the development of long-term solutions to problems of sampling design and database management.

To address problems that exist within the current database, the SARC recommends:

1. Verification and recovery of all information contained on 1994-1996 logbooks be accomplished by screening and performing pre-audits on logbook pages as set out in the database design using software, scanned images, re-entry, or other appropriate procedures.

2. Use of existing data for provisional assessment calculations, such as allocation of catch by stock area, should be done with caution on a case-by-case basis by individuals familiar with the particular fisheries and species. Without additional auditing, all calculations based on these data must be considered preliminary. All calculations should be performed with extreme caution and full awareness of the problems in the database.

To ensure that data collected in the future are usable, the SARC recommends:

3. Analysis and design of the mandatory vessel and dealer reporting system should be completed and implemented in order to accommodate management and scientific data requirements. This analysis must reference the interrelated effect of the Regional database system (e.g., vessel and dealer permitting) on the mandatory reporting system. Such a system should have as its basis at least the following features:

   - unambiguous linking criteria that can be easily implemented for dealer, logbook, sea sampling, and effort monitoring data;

   - pre-audits of all submitted data during the data capture phase with personnel knowledgeable of the fishery, species, regulations, and the database structure and content to eliminate ambiguities in data fields and preserve the original integrity of the logbook information;

   - user-friendly data collection forms which provide clear instructions for recording data in standardized formats.

4. Until the long-term sampling design problems are resolved, immediate steps should be taken to promote cooperation between industry and managers to improve the existing data collection process by adhering to design standards, modifying collection forms and instructions, and by encouraging educational programs.

The SARC advises that experts in sampling design, database management, fishery management, and stock assessment, working in cooperation with industry representatives, be directed to implement these recommendations immediately.

Special Comments: A comprehensive evaluation of the effectiveness of the logbook program depends on the central assumption that the database contains an accurate representation of the information submitted on the logs. Without sufficient quality assurance procedures during the pre-processing, data entry, and audit stages, such accuracy cannot be assured. Such quality assurance procedures initially designed into the pre-audit phase were suspended because of management directives. Thus, many inconsistencies in the observations derived from the logbook database were often the result of erroneous or incomplete entries in the database that were not necessarily present on the original logs. Thus, it was difficult to distinguish between the inaccuracies directly attributable to the logbook information and those introduced during data entry.

Difficulties encountered in attempting to match dealer records with corresponding logbook submissions were due, in part, to the errors introduced to the database during data entry. However, matching of these two data sets is currently not possible because the design of the two data collection systems was not coordinated. An accurate alignment of the two data sets requires the presence of linking criteria on each component. This has not been achieved under the present system. Thus, trip information which, in theory, exists in the separate data sets to allow a direct match cannot be utilized unless information contained on both vessel and dealer records is linked in the database.

Source of Information: 22nd Northeast Regional Stock Assessment Workshop (22nd SAW) Stock Assessment Review Committee (SARC) Consensus Summary of Assessments, NEFSC CRD 96-13.

Appendix B.

Statistical areas associated with species stock areas:

Cod:

Gulf of Maine:	Areas 510-515.
Georges Bank, west:	Area 520-526, 530, 537-539, 600-639.
Georges Bank, east:	Areas 560, 561, 562, 551, 552.
Area 500:	Area 500.
Other:	All other areas not listed above.
Unknown:	Dealer landings with no corresponding vessel trip report data.

Haddock:

Georges Bank, west:	Area 520-526, 530, 537-539, 600-639
Georges Bank, east:	Area 560, 561, 562, 551, 552.
Area 500:	Area 500.
Other:.	All other areas not listed above.
Unknown:	Dealer landings with no corresponding vessel trip report data.

Yellowtail flounder:

Georges Bank:	Areas 522, 525, 560, 561, 562, 551, 552.
Southern New England:	Areas 526, 530, 537-539.
Area 500:	Area 500.
Area 520:	Area 520.
Other:	All other areas not listed above.
Unknown:	Dealer landings with no corresponding vessel trip report data.

Port groups:

Cod and Haddock
Portland and Gloucester
All other Maine, all NH, Sandwich,
Provincetown and MA counties = 07,11,13,15
Boston
Chatham and Harwichport
New Bedford and Nantucket
All other ports south and west.

Yellowtail flounder
All Maine, All NH, Sandwich,
Provincetown and MA counties = 07,11,13,15
Boston, Gloucester and Fairhaven
New Bedford
Other MA counties = 01,03,05
Newport, RI and CT
Point Judith and all other Rhode Island ports
All other ports south and west.

Gear groups:

Cod and Haddock
hook gear
otter trawl gear
gillnet gear
unknown gear
all other gears

Yellowtail flounder
otter trawl gear
gillnet gear
dredge gear
unknown gear
all other gears

Market Category groups:

Cod:
Large ('whale', 'steaker' and 'large')
Market
Scrod ('snapper' and 'scrod')
Unclassified ('unclass. round' and 'unclassified')

Haddock:
Large
Scrod ('snapper' and 'scrod')
Unclassified ('unclass. round' and 'unclassified')

Yellowtail flounder:
Large
Small ('medium' and 'small')
Unclassified