Canadian Atlantic Fisheries
Scientific Advisory Committee

CAFSAC Res. Doc. 81/60

An Examination of the Product Form to Whole Weight Conversion Used by the Foreign Fleets in 1980 (Nfld. Observer Program)

by

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ABSTRACT

A vessel, by stock area, by species, by process breakdown of conversion factors for processed to round weight, revealed several factors which affect the amount of weight loss during production as follows: area, season, processing method, size of catch, and size of fish. The last three have the greatest affect and size of fish causes dramatic intercatch, intracatch and temporal variation. All of the above effects act synergistically to produce the observed differences in magnitude of conversion factors observed from set to set and between vessels. The relative amount of fish processed by hand and by machine also contributed to degrees of variation dependent on the other factors. As much as 21% difference was noted between vessels in a given fishery (France, cod, 4RS3Pn fillets) and relatively high coefficient of variations pointed to high interset and intervessel variation. The experimental conversion factor values differed from those used by the vessel as much as 55% but variation was not consistent.

Variation in pan weights on a given vessel was generally small but difference in average pan weights used by that vessel to experimental values were occasionally quite high. Product size and pan filling technique were the two factors contributing to pan weight variance.

RESUME

Le classement des facteurs de conversion du poids transformé au poids rond, par bateau, aire de stock, espèce et méthode de transformation indique l'existence de plusieurs facteurs influençant la perte de poids au cours de la transformation. Ces facteurs sont: l'aire, la saison, la méthode de transformation, le volume de prises et la taille du poisson. Les trois derniers sont les facteurs dont l'influence est la plus marguée, la taille du poisson causant une variation interprises, intraprises et temporelle dramatique. Tous ces effets agissent en synergie pour produire les différences de facteurs observés d'un trait de chalut à l'autre et d'un chalutier à l'autre. La quantité relative de poisson transformé à la main par rapport à celui transformé à la machine contribue, elle aussi, à la variation dépendante des autres facteurs. On a noté des différences allant jusqu'à 21 % entre bateaux pratiquant une pêche donnée (France, morue, 4RS3PN, production de filets) et des coefficients de variation relativement élevés indiquent une forte variation d'un trait de chalut à l'autre et d'un chalutier à l'autre. Les facteurs de conversion expérimentaux diffèrent de ceux utilisés à bord des bateaux. La variation peut atteindre 55 %, mais elle n'est pas uniforme.

Le poids des plateaux utilisés dans la transformation sur un bateau particulier accuse généralement peu de variation. Par contre, le poids moyen des plateaux utilisés par ce bateau diffère parfois beaucoup des valeurs expérimentales. Le volume du produit et la méthode de remplissage des plateaux sont les deux facteurs qui contribuent à la variance du poids des plateaux.

INTRODUCTION

Actual weights or volumetric estimates of product form weights are almost always measured or derived by the fishing captains of freezer factory and salt vessels of foreign nations participating in the fisheries within the Canadian Economic Zone, as a condition of license. These figures are recorded in production logs supplied by the Canadian government and records are kept for any fish taken and processed within the 200 mile limit. These production figures are important to each vessel as records of amount of product in the hold and they represent reasonably accurate data from which both the vessel captain and observer can derive catch figures in conjunction with the other methods of estimating catch which are used. The accuracy of the catch figures derived from production figures then depends on precision of the product to whole weight conversion factors used and the accuracy of the average product form block weight or "lata" weight used when mutliplying out the number of blocks put down. Baised reported catch figures could result for any given vessel if either of these parameters was inaccurate.

To examine this problem an experiment was designed to calculate these factors and compare them to the conversion factor and product form block weights used by the vessel personnel. Observer coverage was quite extensive so this group could provide the coverage necessary for such a project. They could supply the data needed from a large number of vessels fishing within Canada's 200 mile limit hence the Observer Program product form to whole weight conversion factor project.

METHOD

Conversion factor and product form data were collected by observers during 135 trips on foreign vessels in 1980. Seventeen species and 10 countries were examined and those fisheries most observed reflect the amount of data collected for each category during this program.

a) CONVERSION FACTORS

On each vessel the observer was required to compile a list of conversion factors used by that vessel and then calculate his/her own factor(s) for the main species taken while he/she was on board. The procedure used to derive the calculated factor(s) was as follows:

1) Arrangements were made with the fishing captain to have time set aside to perform 1 or 2 experiments each week on the main species caught.

2) Each experiment involved weighing 2 or 3 baskets of the main species being processed. These round fish were then given to the crew to be processed in the manner which the rest of the catch was being done whether it be machine processed, hand processed or a combination. To weigh the sample, the observer used a 100 x .5 kg (or 200 x 2 lb.) hanging balance or the ships balance, which ever he determined to be more accurate. When the ocean swell caused movement of the balance dial the range of the swing was carefully noted and the midpoint was taken. In conditions where the swell was substantial the experiments were not carried out to avoid inaccuracies in the data and injury to the experimenter. Also, the samples were made large enough to minimize the error encountered in weighing the fish.

3) The weight of the unprocessed fish was then divided by the resulting product weight to yield a conversion factor for that experiment.

4) Average conversion factor values and coefficient of variation (C.V.) between experiments were then calculated. In some cases raw data were not available from the observer to derive the coefficient of variation.

5) The data were then compiled in tabular form by species, by country, by vessel, by process, by area and where enough data was available, by season. Also, C.V. was calculated between vessels for each category.

6) These experimental values were compared to the data used by that vessel and were then summarized by country, by process and then the percent differences between used and experimental values were calculated.

7) Where such data were available conversion factors were extracted from other written sources and were displayed for comparison with those gathered during this project.

b) PRODUCT FORM BLOCK WEIGHT

On each freezer equipped vessel the observer compiled a list of product form block weights used by that vessel to calculate weight of the product in the hold. He then determined his own average block weight for the main species/ process being used. The procedure used to derive the block weights is as follows:

1) Between 5 and 10 product blocks are weighed together for each experiment using the hanging balance or ships balance and the mean weight of those blocks is calculated.

2) This experiment is repeated once or twice a week, sea conditions permitting

3) The mean and coefficient of variation (C.V.) of the experiments are then calculated for the trip and compiled by species, by process, by country.

In the case of the Portuguese salt fisheries the average "lata" or basket weight was determined in a number of cases and then compared to the "lata" weight used.

RESULTS

Tables 1 (cod), Table 2 (white hake, pollock, haddock, roundnose grenadier, wolfish and silver hake), Table 3 (redfish), Table 4 (flatfish) and Table 5 (capelin, squid, shrimp, tuna, skate) list the used and observer calculated conversion factors, the coefficient of variation for the calculated factor and the difference between the used and calculated figure. The data are presented by country, by process and by area. When enough observation were available the differences between seasons were also compared. In the case there two different trips occurred on the same vessel they are listed separately as 1. and 2.

The last two columns illustrate conversion factors extracted from other sources for comparative purposes. The abbreviated source references are as follows:

79 N.O. = data collected by Newfoundland observers during 1979.

HFXR 4 = Allan R. J. (1979). A list of selected processing methods related fish species conversion factors of the international fishery. Obs. Rep. No. 4.*

*This is a list of used figures compiled by Maritime observers.

NDOC 6 = NAFO SEC. (1980). Provisional lists of conversion factors for selected Northwest Atlantic species. NAFO SCS Doc. 80/VI/6.**

**This is a NAFO document which presents the list of FAO compiled conversion factors for the Atlantic.

DISCUSSION

a) CONVERSION FACTORS

There are several factors which affect the amount of weight loss from round to product form occurring during processing. For any given species process they are as follows: area, season, size of fish in the catch; size of catch and the process method used (i.e. hand machine, processed or a combination). A less tangible effect is that of the individual cutter's technique in conjunction with any instruction given to him by the fishing captain. All of the above effects act synergistically to produce differences in the magnitude of the conversion factors observed from set to set and between vessels. The various fish species were processed in a variety of ways and in some cases were processed in more than one way from a single set. Fillets were a common product form but there are several methods or subprocesses used to produce a fillet depending on the quality of product desired. The most desirable product form is skin-off, trimmed, and boned and it resulted in the highest weight loss of the various filleting methods. It also took the most time and is often used when sets are small, but when large sets were brought on board often the trimming and boning steps are left out during at least part of the set. Table 1-5 break down the various types of filleting processes but each situation is not always clear cut because some trimming might be done for a portion of a set.

Machine versus hand processing was another factor affecting the magnitude of the conversion factor for fillet. Often machines were more wasteful but yielded a much more constant product to whole weight ratio. If only machines were used to fillet during a trip then only the size of fish in the catch introduced variation into the calculated conversion factor. More often a combination of hand and machine processing was used and yielded a much more complicated pattern of variation.

Another common process was gutting and removing the head. In this case the major variability arose from method used to remove the head. Using machines, large fish lost more flesh because of knife setting. When processing by hand the relative amount lost varied with the size of set coming on board (i.e., more waste in large sets due to less precise cutting procedures).

Another method of processing used by Portugal and Spain is splitting of the fish in preparation for salting which is used mainly for cod. In this case both machine and hand processing is done but there seems to be relatively little difference in weight loss from whole to product form between the two methods, however, size of fish can affect the outcome as larger fish yield relatively less product from the whole fish.

The two other factors affecting the magnitude of the conversion factors not yet discussed are area fished and season. The main reason that two areas might yield different factors would be differences in average size of fish caught between the two areas but there is no constant pattern of fish size distribution by area making it impossible to set conversion factor levels by area. Seasonality will have an effect, particularly with the simple types of

processing such as gutting. During spawning season more of the fish could be discarded because the ratio of somatic to gonad weight is less at this time yielding a larger conversion factor.

For shrimp, two processes are generally used. 1. They can be cooked and frozen whole and in this case there is almost no weight loss. In one of the experiments done there actually appeared to be weight gain because of water retained under the shell from the cooking process. 2. When the shrimp were peeled this left only the abdonimal muscle and this resulted in considerable weight loss (see Table 5). Also, the results were quite variable as affected by size of shrimp processed.

The above then are the perceived reasons for differences observed in calculated conversion factors between vessels, countries, areas and seasons. The biggest differences noted were not due to seasonal or specific areal effects but rather occurred between vessels as affected by sizes of fish caught and differences in processing methodology and technique. These two factors follow no predictable pattern. For instance, in Table 1 for skinless, boneless fillets the minimum experimental value observed for a vessel in the French fleet fishing in the Gulf of St. Lawrence was 21% less than the maximum value observed. These observations were made over a very small area during a 4 month period. This considerable spread points to the differences in processing methods in conjunction with size of fish taken and the effect that this can have on the whole to product form conversion factor. This pattern can be seen for all species and processes where enough vessels were observed. The coefficient of variation (C.V.) of the calculated conversion factor (Col. 6, Tables 1-5) between vessels was almost always higher than the coefficient of variation

between individual experiments done on a given vessel for each fleet/species/process indicating that for a given trip the variance was relatively low and processing differences were minimal during the observed period in comparison to differences between vessels.

By comparing the average factor calculated for a given country/process/species (all seasons and areas included) it becomes apparent that the differences are relatively small over a large number of observations. For instance the average calculated conversion factors for skinless, boneless fillets of cod are: France-2.90, FRG.-2.97, and Portugal-2.68, for skinless trimmed cod fillets the observed factors are FRG.-3.35 and Poland-3.31; for gutted head off (hand and machine processing) cod the observed factor are Poland-1.80, Portugal-1.67, Japan-1.78, and USSR-1.65 (in this case the degree of use of machines to head the fish and size of fish caught probably contributed most to the differences between countries); for gutted head-on cod the observed factors are Portugal-1.48, UK-1.11, USSR-1.22 (Portugal was taking mostly large fish during the period of observations); for gutted head and tail off round nose grenadier GDR-2.39, USSR-2.28; for gutted head off redfish FRG-2.08, GDR-2.10, Poland-1.88, USSR-1.54 (1 vessel only observed); for gutted head off, plaice - Poland-1.33, Portugal-1.50; and for gutted head on, turbot - Portugal-1.12, UK-1.10, USSR-1.20.

Each vessel used its own conversion factor for any given species/process although quite often the used conversion factors were the same for most vessels of a given country. Often these factors were obtained from a list compiled by the F.A.O. (see col. 8, for the F.A.O. values and col. 9 for the source-NDOC 6, Tables1-5). Column 7 shows that the percent differences between used and calculated conversion factors were quite large in many cases for individual

vessels. The largest was a 46.8% higher calculated factor than observed for peeled shrimp on the Fame (Table 5). The used factor in this case would grossly underestimate the actual catch. There are many instances of differences exceeding 10% but in some cases the used conversion factor was larger than the calculated one and for these an over estimate of catch would result. It should be noted that not all vessels used their production log to estimate final catch weights but for those that did substantial error could result if improper factors were used. For any given fleet these percent differences were generally low.

As shown in Tables 1-5 calculated conversion factors were quite variable between vessels for reasons outlined above and percent differences between calculated and used factors was quite high in a substantial number of cases. It was difficult to predict or calculate average conversion factors by country, by area, by species and by process because of the differences between vessels in processing technique and also because of the unpredictability of size or maturity of fish caught for any fleet or area or season. The only accurate way to produce a reliable conversion factor is to periodically check the factor by experiment. Vessel personnel obviously do not have time to carry out such procedures but the observer does. If the observer calculates a factor for each species/process while on board a given vessel then a very good estimate of weight loss in processing can be obtained and the process can be easily worked into the observer schedule. This will lead to a more accurate estimate of catch using production figures. One factor affecting the whole to product relationship, the size of fish can be studied in detail and should be one aspect of any future conversion factor analyses.

b) PRODUCT BLOCK WEIGHT

Table 6, comparing block weights used by the vessel and those calculated by observers shows some vessels using average block weights that are inaccurate. Of the 78 vessels examined, 9 showed greater than 10% differences between the two. In general though the observed differences in average block weights were quite low, but significant differences between used and actual average block weight can create a considerable error in reported round weight. It is where those inaccuracies occur that observer calculated estimates can improve observer and reported catch weights.

Most of the relatively low values for coefficient of variation listed in Table 6 indicate that there was a relatively small variance between the groups of blocks measured per experiment for a given trip. Differences arise between individual blocks because of variable pan filling techniques i.e., there might tend to be heavier and/or lighter blocks when larger fillets are being packed but by using 5-10 block samples per experiment this effect is averaged out. With the observer carrying out these experiments during his trip he/she can contribute to improved estimates of catch.

On some vessels that salt their fish the split unsalted product is placed into a "lata" or basket before it is dumped into the hold for salting. In this way a man is able to keep track by abacass or other counting method how many "lata" go into the hold. Several observers weighed "lata" to determine an average weight (Table 6) and found considerable discrepancy in some cases. By checking the weight of this basket on a regular basis more accurate catch estimates can be obtained when used in conjunction with calculated split green conversion factors.

SUMMARY

Catch estimates can be significantly improved by an ongoing conversion factor/block weight project to adjust those values to suit the situation. It is possible to get only approximate average values of these factors for a given process and species because of the variability between vessels but with an on ongoing project the catch estimates can be significantly improved.

Table 1. Calculated and used conversion factors for cod as observed in 1980 foreign fisheries: Data taken from selected trips.

Country/vessel	Process	Area/ season	Conversion factor used	calc.***	C.V.	% diff.	Other C. factors	Source
FRANCE		(W+SP)*****						
Jutland 3	*S.B. fillets	4RS3Pn	2.81	-	-	-		
Victor Plevin	"	4RS3Pn	2.81	-	-	-		
1. J. Roty 2	"	4RS3Pn	2.80	-	-	-		
2. J. Roty 2								
Small cod	"	4RS3Pn	2.80	-	-	-		
Medium cod	"	4RS3Pn	2.75	-	-	-		
Large cod	"	4RS3Pn	2.70	-	-	-		
Le Dauphin	"	4RS3Pn	2.80	3.30	-	-15.2		
1. Neve	"	4RS3Pn	2.80	2.95	-	-5.1	2.81	79 N.O.
2. Neve	"	4RS3Pn	2.81	2.70	-	+4.1		
Comm. Gue								
Small cod	"	4RS3Pn	2.81	2.81	-	-0.4		
Large cod	"	4RS3Pn	2.81	2.75	-	+2.1		
Island 4	"	4RS3Pn	2.81	2.91	-	-3.4		
Finlande 3	"	4RS3Pn	2.81	2.85	-	-1.4		
Zelande	"	4RS3Pn	2.58	3.21	-	-19.6		
Shamrock 3	"	4RS3Pn	2.60	2.60	-	0		
All observed	"	4RS3Pn	2.77	2.90	0.079	-4.4	2.76 2.81	HFXR 4 79 N.O.
Victor Plevin	Split salt	4RS3Pn	2.74*	-	-	-		
Le Dauphin	"	4RS3Pn	2.60	-	-	-		
Shamrock 3	"	4RS3Pn	2.65	--	-			
All observed	"	4RS3Pn	2.66	-	-	-		
Croix de Loraine	Gutted head on	4RS	1.18	-	-	-	1.24 1.21	N DOC 6 HFXR 4
FRG		(SP)						
Bremen	**S. Tr. Fillet	2J+3KL	3.0	3.20	-	-6.7		
Freiburg	"	2J+3KL	3.0	3.56	-	-18.7		
Regulus	"	2J+3KL	2.91	3.29	-	-11.6		
Julius Foch	"	2J+3KL	2.91	3.35	-	-13.1		
All observed	"	2J+3KL	2.96	3.35	0.046	-11.6	2.95	N DOC 6

* Skinless boneless fillets
** Skinless trimmed fillets
*** Skinless untrimmed fillets
**** Skin on fillets
***** W = winter; SP = spring; S = summer; F = fall.

Table 1. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
Freiburg	***S. Untr. fillet	2J+3KL	3.0	2.97	-	+1.0	2.95	N DOC 6
Bremen	Gutted head on	2J+3KL	1.50	-	-	-	1.18	N DOC 6
GDR								
Hannover	****S. O. fillet	2J+3KL	2.95	-	-	-		
J. D. Broelmann	"	2J+3KL(SP)	3.0	2.22	-	+35.1		
Peter Nell	"	2J+3KL (F)	2.71	-	-	-	2.95	HFXR 4
Rudolf Leonard	"	2J+3KL	2.71	2.84	0.053	-4.6		
All observed	"	2J+3KL	2.89	2.53	0.173	+14.2	2.71	79 N.O.
Hannover	Gutted head off	2J+3KL	1.71	-	-	-	1.71	HFXR 4
POLAND								
1. Dalmor	S. fillets	2GH	3.30	3.09	0.008	+6.5		
2. Dalmor	"	2GH	3.30	3.30	0.021	0		
Dalmor (AVE)	"	2GH	3.30	3.24	0.036	+1.9		
Dalmor	S. fillets	3M	3.30	3.36	-	-1.8		
Dalmor	S. fillets	2J+3KL	3.33	3.31	-	+0.6		
G. Rachimow	"	2J+3KL	3.33	-	-	-		
							3.12	NDOC 6
All observed	"	2J+3KL	3.33	3.31		+0.6	2.83	HFXR 4
							3.33	N.O. 79
Dalmor	Gutted head off	2J+3KL	1.82	1.80	-	+1.1		
G. Rachimow	"	2J+3KL	1.75	-	-	-		
All observed	"	2J+3KL	1.79	1.80	-	-0.6		
PORTUGAL								
Lutador	Split green	2GH	2.50	-	-	-		

*** Skinless untrimmed fillets
**** Skin on fillets

Table 1. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
PORTUGAL (Cont'd.)								
		(W)						
Coimbra	Split green	2J+3KL	1.72	-	-	-		
Lutador	"	2J+3KL	1.85	-	-	-		
C.J. Vilarhino	"	2J+3KL	2.0	-	-	-		
All observed	"	2J+3KL	1.86	-	-	-		
		(SP)						
Adelia Maria	Split green	2J+3KL	-	1.61	-	-		
Agvas Santas	"	2J+3KL	-	1.68	-	-		
Estevao Gomes	"	2J+3KL	-	1.67	0.021	-		
All observed	"	2J+3KL	-	1.65	0.023	-		
		(S)						
Neptuno	Split green	2J+3KL	1.80	1.66	0.009	+8.4		
Sernache	"	2J+3KL	1.80	1.56	-	+15.4		
Santa Maria Manuela	"	2J+3KL	1.80	1.41	-	+27.4		
Sao Gabriel	"	2J+3KL	1.60	1.80	-	-11.1		
Conceicao Vilarhino	"	2J+3KL	1.80	-	-	-		
Ave Maria	"	2J+3KL	1.70	1.63	0.022	+4.3		
Santo Andre	"	2J+3KL	1.80	-	-	-		
Antarctico	"	2J+3KL	1.80	1.96	-	-8.2		
Capitao Ferriera	"	2J+3KL	1.80	-	-	-		
All observed	"	2J+3KL	1.77	1.67	0.114	+6.0		
		(F)						
M. da Rames Pascoal	Split green	2J+3KL	1.80	1.89	-	-4.8		
Capitao Ferreira	"	2J+3KL	1.60	1.60	0.006			
All observed	"	2J+3KL (ALL)	1.70	1.75	0.117	-2.8		
All seasons	Split green	2J+3KL	1.78	1.68	0.092	+6.0		

Table 1. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
PORTUGAL (Cont'd.)								
		(W)						
Sao Goncalino	Split salted	2J+3KL	2.50	-	-	-		
Antonio Pascoal	"	2J+3KL	2.50	-	-	-		
Marnita	"	2J+3KL	2.50	-	-	-		
All observed	"	2J+3KL	2.50	-	-	-		
		(S)						
Bissaya Barreto	Split salted	2J+3KL	2.40	-	-	-		
		(F)						
Senhora Das Candeias	Split salted	2J+3KL	2.50	-	-	-		
Antarctio	"	2J+3KL	2.20	-	-	-		
All observed	"	2J+3KL	2.35	-	-	-		
All seasons	"	2J+3KL	2.43	-	-	-		
PORTUGAL (Cont'd.)								
Rio Lima	Split green	3NO	1.70	2.12	0.045	-19.8		
Neptuno	"	3NO	1.67	1.60	0.056	+4.3		
Sernache	"	3NO	1.80	1.55	0.009	+16.1		
Sao Ruy	"	3NO	1.80	1.60	-	+12.5		
Conceicao Vilarinho	"	3NO	1.80	-	-	-		
Ave Maria	"	3NO	1.70	1.63	0.022	+4.3		
Capitoa Ferreira	"	3NO	1.80	-	-	-		
All	"	3NO	1.75	1.70	0.139	+2.9		
		(F)						
1. Jose Cacao	Split green	3NO	2.0	1.54	0.031	+29.9		
2. Jose Cacao	"	3NO	2.0	1.58	0.029	+26.6		
All	"	3NO	2.0	1.56	0.018	+28.2		
All seasons	"	3NO	1.81	1.66	0.124	+9.0		

Table 1. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	calc.	C.V.	% diff.	Other C. factors	Source
PORTUGAL (Cont'd.)								
Senhora des Candeias	Split salt	3NO	2.50	-	-	-		
All seasons/areas	Split green	All	1.79	1.67	0.102	+7.2	1.60	N.O. 79
All seasons/areas	Split salt	All	2.44	-	-	-	2.75	N.O. 79
Martereza	Gutted head on	2J+3KL	-	1.25	-	-		
L. Fer. De Carvalho	"	2J+3KL	1.40	1.40	-	0		
Antarctico	"	2J+3KL	1.20	-	-	-		
All	"	2J+3KL	1.30	1.33	-	-2.3		
C. Joao Vilprinho	Gutted head on	3NO	1.90	1.80	-	+5.6		
Lutador	"	3NO	1.20	-	-	-		
All	"	3NO	1.55	1.80	-	-13.8		
All areas	Gutted head on	All	1.43	1.48	0.192	-3.4		
Coimbra	Gutted head on	2GH	1.50	-	-	-		
Elizabeth	Gutted head off	2J+3KL	1.72	1.70	0.019	+1.2		
Martereza	Gutted head off	3NO	1.67	1.70	-	-1.8		
Marnita	"	3NO	1.66	1.67	0.005	-0.6		
All	"	3NO	1.67	1.69	0.013	-1.2		
Elizabeth	Gutted head off	4VWX	1.75	1.56	-	+12.2		
Antonio Pascoal	"	4VWX	1.67	1.72	-	-2.9		
All	"	4VWX	1.71	1.64	-	+4.3		
All areas	Gutted head off	All	1.66	1.67	0.038	-0.6		

Table 1. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
PORTUGAL (Cont'd.)								
Santa Isabel	Fillet	2GH	-	2.68	-	-		
Adelia Isabel	Fillet	2J+3KL	2.0	-	-	-		
Arctico	Fillet	3NO	2.70	-	-	-		
Sao Goncalinito	Cod faces	2J+3KL	8.0	-	-	-		
SPAIN								
		(S)						
Rio Piles	Split green	2J+3KL	1.66	-	-	-		
Lenengoa	"	2J+3KL	1.50	-	-	-		
Bigaro	"	2J+3KL	-	1.71	0.027	-		
Uralde	"	2J+3KL	1.80	1.71	0.074	+5.3		
Meixviera	"	2J+3KL	1.34	1.60	-	-16.3		
Leon Marcotres	"	2J+3KL	-	1.60	-	-		
Vieirasa Seis	"	2J+3KL	1.80	1.60	0.031	+12.5		
Usguio	"	2J+3KL	1.75	1.82	0.027	-3.8		
All	"	2J+3KL	1.64	1.67	0.054	-1.8		
		(S)						
La Salve	Split green	3NO	1.50	1.68	0.210	-10.7		
Vierasa Seis	"	3NO	1.80	1.60	0.031	+12.5		
Leon Marcotres	"	3NO	1.70	1.60	-	+6.3		
Leon Marco Dos								
Hand processed	"	3NO	1.50	1.56	0.014	-3.9		
Machine processed		3NO	1.50	1.50	0.006	-0.7		
All	"	3NO	1.50	1.54	0.023	-2.6		
Rio Piles	Split green	3NO	1.66	-	-	-		
Lenengoa	"	3NO	1.50	-	-	-		
Jose Cornide								
Small fish	"	3NO	1.70	1.88	-	-9.6		
Large fish	"	3NO	2.0	2.30	0.184	-13.0		
All	"	3NO	1.85	2.13	0.195	-13.1		

Table 1. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
SPAIN								
Mar del Galicia	Split green	3NO	2.0	-	-	-		
Monte Galeneiro	"	3NO	1.54	1.67	0.002	-7.8		
Jose Cornide	"	3NO	1.70	1.63	-	+4.3		
All	"	3NO	1.68	1.69	0.117	-0.6		
		(F)						
Esguio	Split green	3NO	1.75	1.82	0.027	-3.8		
Albero	"	3NO	1.80	1.60	-	+12.5		
Terra	"	3NO	-	1.73	0.120	-		
All	"	3NO	1.78	1.72	0.064	+3.5		
All seasons	Split green	3NO	1.69	1.70	0.10	-0.6		
All seasons/areas	Split green	All	1.68	1.69	0.084	-0.6		
Castelo	Split salt	2J+3KL	2.0	2.54	0.150	-21.3		
Terra	Split salt	3NO	2.30	-	-	-		
Monte Galineiro	"	3NO	-	2.30	-	-		
All	"	3NO	2.30	2.30	-	0		
All areas	Split salt	All	2.20	2.42	0.070	-9.0	3.0 2.2	NDOC 6 N.O. 79
JAPAN								
Kasuga Maru								
By hand	Gutted head off	2J+3KL	1.82	1.67	-	+9.0		
By machine	"	2J+3KL	1.82	1.81	0.007	+0.6		
All	"	2J+3KL	1.82	1.78	0.034	+2.2		

Table 1. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
UK								
Princess Anne	Gutted head on	(S) 2J+3KL	1.11	1.11	0.007	0	1.20	NDOC 6
USSR								
Anatoli Bredov	Gutted head on	(F) 2J+3KL	1.14	1.22	-	-6.6		
	Gutted head off	2J+3KL	1.56	1.65	-	+5.4	1.56	NDOC 6
							1.73	N.O. 79
Andrey Markin	Skinless fillet	(F) 2J+3KL	2.26	-	-	-	2.31	NDOC 6
Kosmos	"	2J+3KL	2.26	-	-	-		
Andrey Markin	Skin on fillets	2J+3KL	1.12	2.49	-	+14.9		

Table 2. Calculated and used conversions factors for white hake, pollock, haddock, roundnose grenadier, wolfish and silver hake in 1980 foreign fisheries: Data taken from selected trips.

Country/vessel	Process	Area/ season	Conversion factor used	calc.	C.V.	% diff.	Other C. factors	Source
WHITE HAKE								
FRANCE								
Victor Pleven	Skinless fillets	4RS3Pn	3.0	-	-	-		
PORTUGAL								
		(S+F)						
Sao Gabriel	Split green	3NO	1.60	1.43	-	+11.9		
Rio Lima	"	3NO	2.0	2.14	0.041	-6.5		
Neptuno	"	3NO	1.67	1.61	-	+3.7		
Capitao Ferreira	"	3NO	1.80	-	-	-		
Santa Maria Manuela	"	3NO	1.80	1.59	-	+13.2		
Jose Cacao	"	3NO	2.0	1.56	0.006	+28.2		
All	"	3NO	1.81	1.67	0.164	+8.4		
Antarctico	Split salted	2J+3KL	2.0	-	-	-		
Neptuno	"	3NO	1.82	-	-	-		
All	"	All	1.91	-	-	-		
POLLOCK								
FRANCE								
Finlande 3	Skinless fillet	4RS-4Vn	2.17	-	-	-		
Comm. Gue	"	4RS-4Vn	2.17	-	-	-	2.81	HFXR 4
Jutland 3	"	4RS-4Vn	2.70	-	-	-		
Joseph Roty 2	"	4RS-4Vn	2.80	-	-	-	2.81	HFXR 4
Le Dauphin	"	4RS-4Vn	2.70	-	-	-		
Jutland 3	"	4RS-4Vn	2.17	-	-	-		
Victor Pleven	"	4RS-4Vn	2.17	-	-	-		
Island IV	"	4RS-4Vn	1.67					
All	"	4RS-4Vn	2.32	-	-	-		
PORTUGAL								
Sen. Das Candeias	Gutted head off	All	1.50	-	-	-		

Table 2. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	calc.	C.V.	% diff.	Other C. factors	Source
POLLOCK								
SPAIN								
Pesc. Tercero	Split green	4VWX	1.62	-	-	-		
HADDOCK								
FRANCE								
Finlande 3	Skinless fillet	4RS-4Vn	2.70	-	-	-		
Comm. Gue	"	4RS-4Vn	2.70	-	-	-		
Jutland 3	"	4RS-4Vn	2.70	-	-	-		
Joseph Roty 2	"	4RS-4Vn	2.80	-	-	-		
Le Dauphin	"	4RS-4Vn	2.80	-	-	-		
Jutland 3	"	4RS-4Vn	2.70	-	-	-		
Victor Pleven	"	4RS-4Vn	2.70	-	-	-	2.7	N.O. 79
All	"	4RS-4Vn	2.73	-	-	-	3.0	NDOC 6
PORTUGAL								
Elizabeth	Gutted head off	4VWX	1.75	1.58	-	+10.8		
Sen. Das Candieas	"	All	1.50	-	-	-		
All	"	All	1.63	1.58	-	+3.2		
WOLFISH								
GDR								
Hannover	Fillet	2J+3KL	1.57	-	-	-		
Peter Nell	"	2J+3KL	2.59	-	-	-		
All	"	2J+3KL	2.08	-	-	-	2.71	N.O. 79
Hannover	Gutted head off	2J+3KL	1.39	-	-	-		
Peter Nell	Meal	2J+3KL	5.50	-	-	-		

Table 2. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	calc.	C.V.	% diff.	Other C. factors	Source
WOLFISH								
PORTUGAL								
Sao Gonchalinho	Skinless fillets	2J+3KL	3.33	-	-	-		
Lutador	"	2J+3KL	3.30	-	-	-		
Aguas Santas	"	2J+3KL	3.0	-	-	-		
Bissaya Barreto	"	2J+3KL	3.0	-	-	-		
Santo Andre	:	2J+3KL	2.5	-	-	-		
All	"	2J+3KL	3.03	-	-	-		
Matereza	Gutted head on	3NO	1.25	-	-	-		
Lutador	"	3NO	1.20	-	-	-		
All	"	3NO	1.23	-	-	-		
UK								
Princess Anne	Gutted head on	2J+3KL	1.11	-	-	-	1.13	NDOC 6
USSR								
Lunnik	Gutted head on	2J+3KL	1.20	1.14	0.031	+5.3		
ROUNDNOSE GRENADIER								
GDR								
Hannover	Fillet	2+3	4.0	-	-	-	2.6	NDOC 6
Walter Dehmel	Gutted H.&T. off	2+3	2.63	2.08	-	+55.0		
1. Rudolf Leonard	"	2+3	2.63	2.59	0.041	+3.7		
2. Rudolf Leonard	"	2+3	2.63	2.51	0.056	+4.8		
All	"	2+3	2.63	2.39	0.115	+10.0		

Table 2. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
ROUNDNOSE GRENADIER								
USSR								
Lunnik	Gutted H & T off	2+3	2.28	2.28	0.008	0		
Audreymarkin	"	2+3	2.28	-	-	-		
Kosmos	"	2+3	2.28	-	-	-		
All	"	2+3	2.28	2.28	-	0	2.11	NDOC 6
SILVER HAKE								

Table 2. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
ROUNDNOSE GRENADIER								
USSR								
Lunnik	Gutted H & T off	2+3	2.28	2.28	0.008	0		
Audreymarkin	"	2+3	2.28	-	-	-		
Kosmos	"	2+3	2.28	-	-	-		
All	"	2+3	2.28	2.28	-	0	2.11	NDOC 6
SILVER HAKE								
PORTUGAL								
Praia da Comenda	Gutted head off	4VWX	1.20	1.20	-	0		
Elizabeth	"	4VWX	1.75	1.50	-	+12.2		
All	"	4VWX	1.48	1.43	-	+3.4		

Table 3. Calculated and used conversion factors for redfish in 1980 foreign fisheries: Data taken from selected trips.

Country/vessel	Process	Area/ season	Conversion factor used	calc.	C.V.	% diff.	Other C. factors	Source
FRANCE								
		(W+S)						
Victor Pleven	Skinless fillet	4RS-4Vn	2.81	-	-	-		
Finlande 3	"	4RS-4Vn	2.81	-	-	-		
Com. Gue	"	4RS-4Vn	2.81	-	-	-		
Jutland 3	"	4RS-4Vn	2.81	-	-	-		
Joseph Roty 2	"	4RS-4Vn	2.80	-	-	-		
All	"	4RS-4Vn	2.81	-	-	-	2.81	HFXR 4
							2.81	N.O. 79
Victor Pleven	Tr. Gutted head off	4RS-4Vn	2.86	-	-	-	2.80	NDOC 6
FRG								
Julius Foch	Skinless fillet	2+3K	3.0	-	-	-	2.94	HFXR 4
	Gutted head off	2+3K	1.93	-	-	-	1.93	NODC 6
GDR								
Hannover	Skinless fillets	2+3K	3.0	-	-	-		
Walter Dehmel	Skin on fillets	2+3K	3.0	-	-	-	3.0	HFXR 4
1. Peter Nell	Gutted head off	2+3K	-	1.99	0.006	-		
2. Peter Nell	"	2+3K	1.98	2.01	0.013	3.0		
Hannover	"	2+3K	1.71	-	-	-		
Walter Dehmel	"	2+3K	1.98	2.28	0.105	-13.2		
1. Rudolf Leonard	"	2+3K	1.98	2.05	0.034	-3.4		
2. Rudolf Leonard	"	2+3K	1.98	2.08	0.064	-4.8		
All	"	2+3K	1.93	2.08	0.056	-7.2	1.98	N.O. 79
POLAND								
		(S+F)						
1. Gen. Rachimow	Skinless fillets	2+3K	3.38	-	-	-		
2. Gen. Rachimow	"	2+3K	3.70	-	-	-		
1. Dalmor	"	2+3K	3.70	-	-	-		
2. Dalmor	"	2+3K	3.70	3.72	-	-0.5		
All	"	2+3K	3.61	3.72	-	-11.0	3.70	NDOC 6

Table 3. (Cont'd.)

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
Gen. Rachimow	Gutted head off	2+3K	1.67	-	-	-		
1. Dalmor	"	2+3K	1.89	1.86	0.037	+1.6		
2. Dalmor	"	2+3K	1.89	1.83		+3.3		
3. Dalmor	"	3M	1.86	1.95	0.031	-9.0		
All	"	2+3K/3M	1.83	1.88	0.033	-2.7	1.89	N.O. 79
PORTUGAL								
Coimbra	Gutted head off	2+3K	2.0	-	-	-		
Luis Ferr. de Carvalho	"	2+3K	1.33	-	-	-		
Sao Goncaltnho	"	2+3K	1.43	-	-	-		
Aguas Santas	"	2+3K	2.0	-	-	-		
All	"	2+3K	1.69	-	-	-		
Santo Andre	Gutted head off	3M	2.0	-	-	-		
	"	3M	1.43	-	-	-		
All	"	3M	1.72	-	-	-		
USSR								
		(S+F)						
Audrey Markin	Gutted head off	2+3K	1.68	-	-	-		
Anatoli Bredov	"	2+3K	1.51	1.54	-	-1.9		
Kosmas	"	2+3K	1.68	-	-	-		
All	"	2+3K	1.62	1.54	-	+5.2	1.51	N.O. 79
							1.51	NDOC 6
Anatoli Bredov	Gutted head on	2+3K	1.14	1.21	-	-5.8	N.O. 79	

Table 4. Calculated and used conversion factors for flatfish in 1980 foreign fisheries: Data taken from selected trips.

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
PLAICE								
POLAND								
1. Dalmor	Gutted head off	2J+3KL	1.31	1.33	-	-1.5		
2. Dalmor	"	2J+3KL	1.43	-	-	-		
All	"	2J+3KL	1.37	1.37	-	+3.0	1.49	NDOC 6
							1.43	N.O. 79
PORTUGAL								
		(S+F)						
Antonio Pascoal	Gutted head on	3NO	1.11	-	-	-		
Martereza	"	3NO	1.11	-	-	-		
Marnita	"	3NO	1.11	-	-	-		
All	"	3NO	1.11	-	-	-		
Adelia Maria	Gutted head off	2J+3KL	2.0	-	-	-		
Lutador	"	2J+3KL	1.38					
Santo Andre	"	2J+3KL	2.0	-	-	-		
Aguas Santas	"	2J+3KL	1.50	-	-	-		
L. Ferr. de Carvalho	"	2J+3KL	1.50	1.50	-	0		
All	"	2J+3KL	1.68	1.50	-	+12.0		
Coimbra	Skinless fillets	2J+3KL	3.0	-	-	-		
Adelia Maria	"	2J+3KL	3.0	-	-	-		
All	"	2J+3KL	3.0	-	-	-		
WITCH								
GDR								
		(F)						
Walter Dehmel	Gutted head off	2J+3KL	1.39	-	-	-		
Peter Nell	"	2J+3KL	1.39	-	-	-		
All	"	2J+3KL	1.39	-	-	-		

Table 4. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
WITCH								
POLAND								
1. Gen. Rachimow	Gutted head off	2+3KL	1.25	-	-	-		
2. Gen. Rachimow	"	2+3KL	1.32	1.13	0.059	+16.8		
Dalmor	"	2+3KL	1.32	-	-	-		
All	"	2+3KL	1.30	1.13	-	+14.7	1.32	N.O. 79
PORTUGAL								
Aguas Santas	Skinless fillets	2+3KL	3.0	-	-	-		
Adelia Maria	"	2+3KL	3.0	-	-	-		
All	"	2+3KL	3.0	-	-	-		
TURBOT								
GDR								
Walter Dehmel	Gutted head off	2+3KL	1.60	1.69	-	-5.3	1.39	N.O. 79
							1.39	HFXR 4
Peter Nell	Skinless fillets	2+3KL	3.10	-	-	-	2.07	N.O. 79
Rudolf Leonard	"	2+3KL	2.70	2.60	0.044	+3.7		
All	"	2+3KL	2.90	2.60	0.044	+11.5		
POLAND								
1. Dalmor	Gutted head off	2+3KL	1.43	1.43	-			
2. Dalmor	"	2+3KL	1.43	1.42	-			
Gen. Rachimow	"	2+3KL	1.88	-	-			
All	"	2+3KL	1.58	1.43	0.005	+10.5	1.43	HFXR 6
PORTUGAL								
Lutador	Gutted head on	2+3KL	1.20	-	-	-		
Antarctico	"	2+3KL	1.10	1.10	-	0		
Antonio Pascoal	"	2+3KL	1.11	1.14	-	-2.6		
Mariereza	"	2+3KL	1.11	-	-	-		
Marnita	"	2+3KL	1.11	-	-	-		
All	"	2+3KL	1.13	1.12	0.025	+0.9		

Table 4. (Cont'd).

Country/vessel	Process	Area/ season	Conversion factor used	calc.	C.V.	% diff.	Other C. factors	Source
TURBOT								
UK								
Princess Anne	Gutted head on	2+3KL	1.10	1.10	0	0	1.13	NDOC 6
USSR								
Lunnik	Gutted head off	2+3KL	1.42	1.48	0.033	-4.1	1.30	HFXR 4
Lunnik	Gutted head off top filleted (for smoking)	2+3KL	2.11	1.76	0.129	+35.0		
Lunnik	Gutted head on	2+3KL	1.08	1.09	0.013	-0.9		
Anatoli Bredov	"	2+3KL	1.28	1.30	-	-1.5		
All	Gutted head on	2+3KL	1.18	1.20	0.123	-1.6	1.08	HFXR 4
HALIBUT								
GDR								
Peter Nell	Fillet	2J+3KL	3.10	-	-	-		
PORTUGAL								
Marnita	Gutted head off	2J+3KL	1.25	-	-	-		
Martereza	"	2J+3KL	1.25	-	-	-		
All	"	2J+3KL	1.25	-	-	-		
POLAND								
Dalmor	Gutted head off	2J+3KL	1.43	-	-	-		
USSR								
Andrey Markin	Skin on fillet	2J+3KL	1.81	-	-	-	1.81	NDOC 6

Table 5. Calculated and used conversion factors for other species observed in 1980 foreign fisheries: Data taken from selected trips.

Country/vessel	Process	Area/ season	Conversion factor used	calc.	C.V.	% diff.	Other C. factors	Source
CAPELIN								
USSR								
All	Round frozen	(F) 2+3	1.01	-	-	-		
Vyshgorod	Meal	2+3	7.10	-	-	-		
Demyansk	"	2+3	7.20	-	-	-		
All	"	2+3	7.20	-	-	-		
SQUID								
USSR								
Andrey Markin	Fillet	3+4	1.95	-	-	-		
Kosmos	"	3+4	1.95	-	-	-		
All	"	3+4	1.95	-	-	-	1.95	HFXR 4
Andrey Markin	Round frozen	3+4	1.03	-	-	-		
Kosmos	"	3+4	1.03	-	-	-		
All	"	3+4	1.03	-	-	-		
SHRIMP								
DENMARK								
Fame	Cooked-frozen	0+1		1.02	0.024	-		
Fame	Peeled cooked	0+1	3.30	6.20	0.211	-46.8		
Ocean Prawns	"	0+1	-	4.47	-			
All	"	o+1	3.30	5.34	0.229	-38.2		

Table 5. (Cont'd.).

Country/vessel	Process	Area/ season	Conversion factor used	Conversion factor calc.	Conversion factor C.V.	% diff.	Other C. factors	Source
BIGEYE TUNA								
Azoma Maru 58	Gutted	4	1.21	-	-	-		
Daito Maru 38	"	4	1.18	-	-	-		
All	"	4	1.20	-	-	-		
SKATES								
FRANCE								
Victor Pleven	Dressed	4RS+3P	1.21	-	-	-		
Jutland III	"	4RS+3P	1.21	-	-	-		
All	"	4RS+3P	1.21	-	-	-		
Finlande 3	Wings	4RS+3P	4.0	-	-	-		
GDR								
Walter Dehmel	Wings	2J+3KL	4.08	-	-	-		
PORTUGAL								
Sao Gabriel	Skin on wings	3NO	-	1.90	-	-		
Agua Santas	Wings	2J+3KL	3.0	-	-	-		
Coimbra	"	2J+3KL	5.0	-	-	-		
All	"	2J+3KL	4.0	-	-	-		

Table 6. Calculated and used pan weights for foreign fisheries observed in 1980: Selected data.

Species/ Country	Vessel	Process	Used	Calc.	C.V.	% Diff.
COD						
FRANCE	Zelande	Fillet	24.0	24.5	-	+2.0
	Comm. Gue	"	31.0	30.8	-	-0.6
	Island 4	"	26.5	26.5	-	0
	Neve	"	28.0	28.5	0.002	+1.8
	Finlande 3	"	32.0	31.8	-	-0.6
						+1.3
FRG	Bremen	Fillet	8.0	9.0	-	+11.1
	Bremen	"	26.0	27.0	-	+3.7
	Freiburg	"	8.5	8.7	0.016	+2.3
	Regulus	"	10.5	10.65	-	+1.4
	J.D. Broelmann	"	26.5	26.3	0.003	-0.8
	Julius Foch	"	22.5	22.4	0.028	-2.8
						+2.5
GDR	Rudolf Leonard	Fillet	29.0	28.9	0.026	+0.3
	Rudolf Leonard	"	29.0	39.9	-	-3.3
	Rudolf Leonard	"	29.0	29.5	0.26	-1.7
JAPAN	Kasuga Maru	Gutted head off	11.5	11.5	0.005	0
PORTUGAL	Sernache	Split green	-	35.6	0.019	-
	Ave Maria	"	-	38.0	0.139	-
	Sen. Das Candeias	"	25.0	25.0	-	0
	Marnita	Gutted head off	14.2	14.3	0.018	+0.7
	Antonio Pascoal	"	16.0	17.3	0.029	+7.5
	1. L.F. de Carvalho	"	26.0	26.5	-	+1.9
	2. L.F. de Carvalho	"	26.0	27.2	-	+4.4
	P. Da Comenoa	"	27.0	27.3	-	+1.0
	Elizabeth	"	27.0	27.0	-	0
	Martereza	"	12.0	12.6	-	+4.8
	Matereza	"	9.8	10.0	-	+2.0
	Elizabeth	"	26.0	25.6	0.003	-1.6
						+2.3

Table 6. (Cont'd.).

Species/ Country	Vessel	Process	Used	Calc.	C.V.	% Diff.
POLAND	1. Dalmor	Fillet	30	30.1	0.003	+0.3
	2. Dalmor	"	10.0	10.7	0.078	+6.5
	3. Dalmor	"	10.0	9.9	0.042	-1.0
	4. Dalmor	"	10.0	10.0	-	0
						+1.9
	Dalmor	Gutted head off	9.0	9.0	-	0
UK	Princess Anne	Gutted head on	45.4	52.0	0.030	+12.7
USSR	Anatoli Bredov	Gutted head on	30	29.9	-	-0.3
	Anatoli Bredov	Gutted head off	30	30.2	-	+0.7
REDFISH						
FRG	Julius Foch	Gutted head off	21.5	21.0	-	-2.4
GDR	Walter Dehmel	Gutted head off	11.2	11.7	0.010	+4.3
	Peter Nell	Gutted head off	11.5	11.8	0.043	+2.5
	Rudolf Lenard	Gutted head off	22.5	22.9	0.006	+1.7
PORTUGAL	Antarctico	Round	20.0	18.0	-	-11.1
	L.F. De Carvalho	Gutted head off	26.5	26.0	-	-1.9
POLAND	1. Dalmor	Gutted head off	27.0	27.0	0	0
	2. Dalmor	Gutted head off	9.0	9.7	0.101	+7.2
	3. Dalmor	Gutted head off	9.0	9.0	-	0
	Dalmor	Fillet	10.0	10.0	-	0
SPAIN	Pes Tercero	Gutted head off	-	21.3	-	-
UK	Princess Anne	Round	41.6	48.3	0.012	+13.9
USSR	Anatoli Bredov	Gutted head on	27	27	-	0
	Anatoli Bredov	Gutted head off	27	26.8	-	-0.7

Table 6. (Cont'd.).

Species/ Country	Vessel	Process	Used	Calc.	C.V.	% Diff.
TURBOT						
GDR	Walter Dehmel	Gutted head off	11.2	13.8	-	+18.8
	Rudolf Leonard	Fillet	29.0	29.3	0.025	+1.0
PORTUGAL	Antarctico	Gutted head on	20.0	22.0	-	+9.0
POLAND	Dalmor	Gutted head off	10.0	9.5	0.128	-5.3
UK	Princess Anne	Gutted head on	45.4	48.1	0.014	+5.6
USSR	Lunnik	Gutted head off	10.0	10.0	0.051	0
	Lunnik	Gutted head on	10.1	10.0	0.008	0
	Anatoli Bredov	Gutted head on	30.0	30.0	-	0
WITCH						
POLAND	Gen. Rachimow	Gutted head off	10	9.8	0.040	-2.0
ROUNDNOSE GRENADIER						
GDR	Walter Dehmel	Gutted head off	11.2	11.9	-	+5.9
	Rudolf Leonard	Gutted head off	25.5	25.7	0.053	+0.8
USSR	Lunnik	Gutted head off trimmed	10.0	10.0	0.028	0

Table 6. (Cont'd.).

Species/ Country	Vessel	Process	Used	Calc.	C.V.	% Diff.
CAPELIN						
USSR	Demyansk	Round	33.0	33.5	0.004	+1.5
	Demyansk	"	1.0	1.0	-	0
	Vasilykiselov	"	33.0	35.1	0.007	+6.0
	Uyshgorod	"	33.0	33.2	-	+0.6
	Uyshgorod	Meal bags	30.0	30.0	-	0
	Demyansk	"	30	30.1	0.005	+0.3
SILVER HAKE						
PORTUGAL	Dr. De. Comenoa	Gutted head off	27.0	27.25	-	+0.9
	Elizabeth	"	26.0	26.0	-	0
SPAIN	Pes. Tercero	Gutted head off	-	23.8	-	-
WOLFISH						
UK	Princess Anne	Gutted	45.4	57	0.014	+20.4
SHRIMP						
DENMARK	Fame	Cooked	5.75	5.81	0.011	+1.0
(FAR)	Ocean Prawns	Cooked	25.0	26.1	0.10	+4.2
	Fame	Peeled cooked	11.25	11.36	0.009	+1.0
NORWAY	Ingar Iverson	Cooked	5.0	5.0	-	0
SQUID						
PORTUGAL	Zodiaco	Whole	25.0	25.0	-	0
	Elizabeth	"	27.0	27.0	-	0
SPAIN	Vieirasa IV	Whole	22.0	22.1	0.039	0.6
	Esun Sentia	"	11.0	10.5	0	-4.8
"LATA WEIGHTS"						
PORTUGAL	C.J. Vilprinho	"Lata" cod	45	44	-	-2.3
	Sao Gabriel	"	100	119	-	+19.0
	Antarctico	"	40	45	-	+11.1
SPAIN	Castello	"	100	128	0.056	+28