Estimation of Catch-at-Size, Catch-at-Age and Total Catch per Area

IOTC Secretariat

Summary

This document describes the methods used by the IOTC Secretariat to estimate of catch-at-size tables for yellowfin tuna, bigeye tuna and skipjack tuna for the period 1950-2006 using estimates of total catch and the available catch and effort data and size frequency data in the IOTC database. The results are affected by the lack of information for some fleets, periods and years, notably by the lack of catch and size data from most artisanal fleets and some industrial fleets. The paucity of the size data available for longline fleets in recent years is of concern as is as the lack of catch and effort and size frequency data from some artisanal fleets (which use mainly gillnets and operate on the high seas). The results indicate that industrial purse seiners using fish aggregating devices and bait boats usually catch small sized fish (<5kg), gillnets catch small to medium sized fish (5-15 kg) and hand lines, troll lines, longlines and purse seiners fishing free schools catch medium to large sized fish (>20kg).

Rationale

Catch-At-Size (CAS) and Catch-at-Age (CAA) has three main uses:

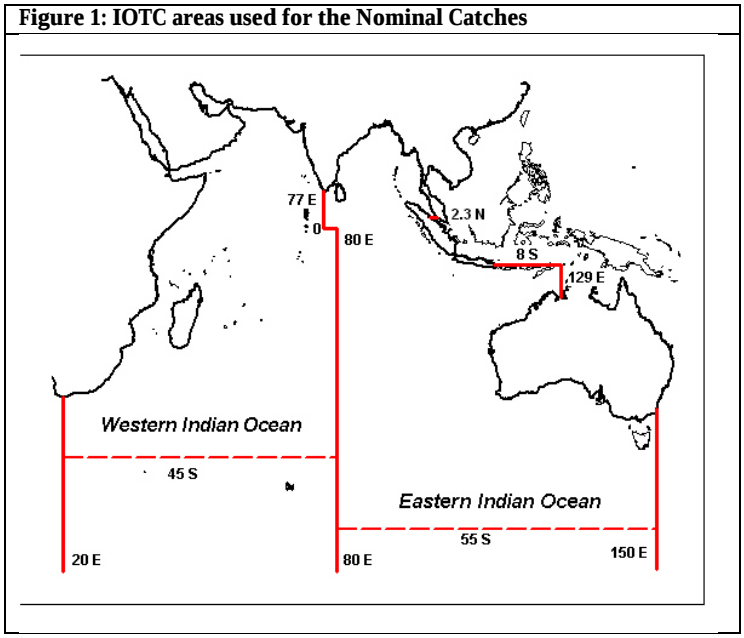
- Input for stock assessment models being currently used by the Commission's technical groups (CASAL, ASPM and SS2)
- Stock status indicators (e.g. trends in average weight per fishery)
- Production of tables of total catch by fleet, species, gear, year, month and five degrees square areas.

The construction of a catch-at-size table for a particular species requires that length frequency distributions are assigned to the total catch. Thus, the sampled weight estimated for each stratum(i.e. the weight resulting from summing up the weights estimated for the specimens within each length class) is raised to the nominal catch recorded for that stratum.

Species involved

CAS tables are estimated for yellowfin tuna, bigeye tuna, skipjack tuna, albacore and swordfish. The estimation of CAS for other species has not been attempted in this paper due to a paucity of data.

Figure 1: IOTC areas used for the Nominal Catches



Input Data

Three datasets are used for the estimation of CAS:

- *Nominal catches*: Total catch estimates per Species, Fleet, Year, Gear and IOTC Area (Figure 1). The data in this dataset issues from two different sources:

a. Reports from the flag countries or reports from other countries on the catches of foreign vessels operating within its Economic Exclusive Zone or based in ports within its territory.
b. Estimates carried out by the IOTC Secretariat: this may involve changes in the catches reported by the above or the estimation of catches for non-reporting fleets (e.g. catches recorded under the NEI[1] category).

- *Catches per area* (from catch and effort): Catches (in tonnes or/and in number) are recorded per Species, Fleet, Year, Gear, Type of School, Time Interval (month or quarter usually) and area (usually 1 degree square areas for industrial purse seine fisheries, 5 degrees square areas for industrial longline fisheries and various regular or irregular areas for artisanal fisheries). Catches per area are not available for all Nominal catches strata. When recorded, the catches in these datasets might represent the total catches of the species in the year for the fleet and gear concerned or represent simply a sample of those.
- *Size data*: Size frequency data (standard or processed length or standard or processed weight) are recorded per Species, Fleet, Year, Gear, Type of School, Time Interval (month or quarter or year usually) and area (usually 5 degrees square areas for purse seine fisheries, 10 degrees latitude by 20 degrees longitude for longline fisheries and various regular or irregular areas for artisanal fisheries). Size data are not available for all Nominal catches strata. When recorded, the size data might represent the total catches of the species in the strata concerned or simply a sample of those.

The type of information recorded in each case is summarized in **Table 1** below:

Dataset	*Fishery Strata*	*Time Strata*	*Area Strata*	*Status*
Nominal Catches	Fleet-Gear (or gear aggregate)-Species (or species aggregate)	Year	IOTC Area	Complete record
Catches per area	Fleet-Gear (or gear aggregate)-Type of School (purse seine only)-Species	Month (quarter or year)	1°square area (purse seine) 5°square area (longline) Other regular or irregular areas	Sample
Size data	Species- Fleet-Gear (or gear aggregate)-Type of School (purse seine only)-Type of measurement (length or weight, standard or processed)-Size interval (between size classes)	Quarter (year or month)	5°square area (purse seine) 10°Lat.*20°Lon. area (longline) Other regular or irregular areas	Sample

Data Processing

Estimating total catches per species and gear

The catches in the IOTC nominal catches database are not recorded per species and/or per gear in all cases. The Secretariat conducted a review aiming at estimating catches when data were not available by species or gear in the IOTC database. This process was documented in a paper presented to the WPTT in 2004 (IOTC-2004-WPTT-06).

Standardizing the data in the catch and effort table

The catches in the catch and effort table are recorded under different levels of aggregation. All the catches from this record were assigned per Species-Fleet-Gear-Type of School-Year-Month-5° square grid-Catch in number of fish-(and/or)-Catch in metric tons.

i. Area allocation: All the catches not recorded per 5° square areas were assigned to 5° square areas as follows:
   a. Allocation of catches recorded under irregular areas to regular grids: The catches recorded under irregular areas (e.g. port of unloading, fishing district, etc.) were assigned to regular grids. The areas assigned are shown in Appendix I.
   b. Aggregation of catches recorded under lower resolution areas: all catches recorded under areas smaller than the standard were aggregated under the corresponding 5° square areas.
   c. Disaggregation of catches recorded under higher resolution areas: all catches recorded under areas larger than the standard were evenly assigned per 5° square area.
ii. Time allocation: The catches recorded per time intervals higher than a month were proportionally assigned per month.

[1] Not elsewhere identified

Standardizing the available size frequency data

The samples in the size frequency table are recorded under different levels of aggregation. The samples from this record were aggregated depending on the species and type of fishery. The level of aggregation chosen in each case is indicated below:

- Industrial purse seine fisheries: Species-Fleet-Gear-Type of School-Year-Quarter-Purse Seine Statistical Area-Fork length class (in centimetres)-Number of fish.
- Other fisheries (industrial longline plus all artisanal fisheries): Species-Fleet-Gear-Type of School-Year-Quarter-10o latitude by 20o longitude areas-Fork length class (in centimetres)-Number of fish.

The areas referred to above are shown in Figures 2 and 3.

Figure 2: Areas used for industrial purse seiners

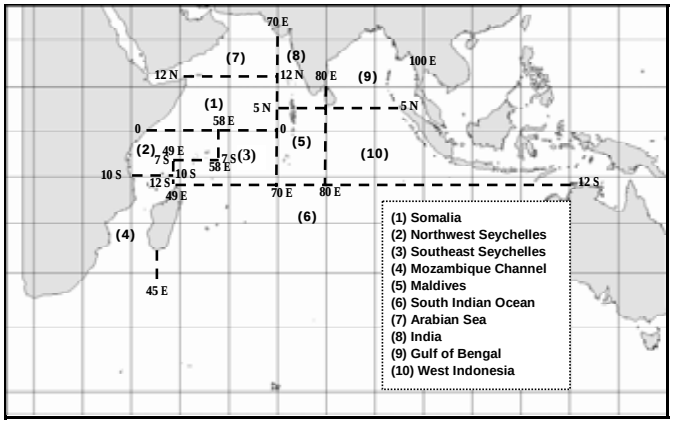
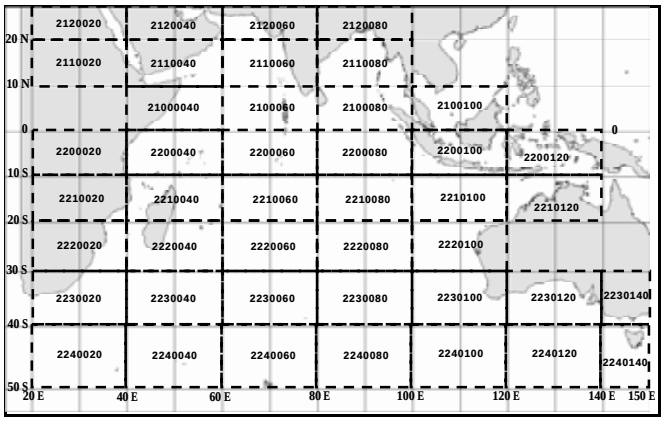


Figure 3: Areas used for other fisheries



Most of the size data in the IOTC database for industrial longline fisheries (Japan, Taiwan,China) and industrial purse seine fisheries (EC, Seychelles and related vessels) is recorded as perthe areas shown in Figure 2 and Figure 3 above.

The intervals used between consecutive size classes were assigned depending on the species (Table 2).

Table 2: Standard length, first length, interval and total number of size classes used for tropical tuna species

Species	*Standard Length*	*First length (cm)*	*Interval between length classes (cm)*	*Total number of size classes*	*Maximum interval allowed (cm)*
Yellowfin tuna	Fork length	10	2	150	4
Bigeye tuna	Fork length	10	2	150	4
Skipjack tuna	Fork length	10	1	150	2

NOTE: All samples in the IOTC database were assigned according to the specifications above; the samples recorded under length intervals higher than the maximum interval specified above were deleted

The steps given to put the samples available for each species into standard form are indicated below:

i. Converting from non-standard measurement types into standard length (Table 3):
   a. Converting from weight into standard-length: The process used to estimate fork length from the gilled and gutted weights recorded for yellowfin tuna and bigeye tuna is documented in a separate document (IOTC-2006-WPTT-INF06).
   b. Converting from non-standard length into standard length: The regression equations indicated in Table 3 are used to estimate fork length from the lengths to the first dorsal fin recorded for yellowfin tuna and bigeye tuna, respectively (through slicing).

ii. Assigning the existing fork lengths per standard length class interval:
   a. Aggregation of lengths recorded under classes lower than the standard class: all lengths recorded under classes lower than the standard were aggregated to the closest lower class (e.g. YFT specimens recorded under the classes 10-11 cm and 11-12 cm were accumulated under the length class 10).
   b. Disaggregation of lengths recorded under classes higher than the standard class: all the specimens recorded under length classes below the standard classes defined in table 2 above were assigned proportionally to the length classes making the aggregate (e.g. 2/3 of the YFT specimens recorded under the length class 10-13 were assigned to the class 10-12 and 1/3 to the class 12-14). The samples recorded under length intervals over the maximum interval recorded in table 2 were deleted.

iii. Area allocation: All the samples not recorded per standard areas (see figure 2 and figure 3 above) were assigned to the corresponding areas as follows:

a. Allocation of samples recorded under irregular areas to regular grids: The samples recorded under irregular areas (e.g. port of unloading, fishing district, etc.) were assigned to regular areas. The areas assigned are shown in Appendix I (page 13).
b. Aggregation of samples recorded within the standard areas: all samples recorded under areas within the standard areas were aggregated under the corresponding standardareas.
c. Disaggregation of samples recorded under two or more standard areas: the samples recorded under two or more standard areas were assigned proportionally to the areas concerned.

Table 3: Regression equations used to convert from non-standard measurements into standard lengths, per species

Species: Yellowfin tuna

Type Measurement	*Equation*	*Parameters*	*Sample size*	*Size*	*Variance*	*Covariance ab*	*Mean Residual*	*Gradient*
Weight gilled and gutted[A]	$a*W^{\wedge}b$	a= 44.28699 b= 0.3008591	2,361	Min:14 Max:71	a=0.00752476509 b=2.86244E-07	-4.626246E-05	4.095958	a=3.033852 b=495.6385
Length to the base of the 1st dorsal fin[B]	$a*L^{\wedge}b$	a=1.9011 b=1.177	3,139	Min:10 Max:50				

Species: Bigeye tuna

Type Measurement	*Equation*	*Parameters*	*Sample size*	*Size*	*Variance*	*Covariance ab*	*Mean Residual*	*Gradient*
Weight gilled and gutted[A]	$a*W^{\wedge}b$	a= 42.2186 b= 0.3012349	316	Min:12 Max:107	a=0.0321755341 b=1.299934E-06	-0.0002034041	3.98137	a=3.03806 b=473.1455
Length to the base of the 1st dorsal fin[C]	$\frac{(L+a)^2}{(b)^2}$	a=21.45108 b=5.28756	2,858	Min:13 Max:48				

A: ***Data from Penang Sampling Programme (1992-93)***
B: Data from the Atlantic Ocean, Caverivière (1976) (Fonteneau, A. et J. Marcille (eds), 1988: Ressources, pêche et biologie des thonidés tropicaux de l'Atlantique Centre-Est. FAO Doc.Tech.Pêches, (292), page 261)
C: Data from the Atlantic Ocean, Champagnat et Pianet (1974) (ibid. B)

iv. Time allocation: The catches not recorded per quarter were aggregated or proportionally disaggregated per quarter.
v. Estimation of sampled weight: The weight for each sample was calculated by adding the weights estimated for all the specimens making it. The equations used to estimate weight from the available lengths are shown in Table 4.

Table 4: Equations used to convert from standard (fork) length into round weight, per species

Species	*Gear Type/s*	*From type measurement – To type measurement*	*Equation*	*Parameters*	*Sample size*	*Length*
Yellowfin tuna	Purse seine Pole and Line Gillnet	<64cm Fork length – Round Weight(kg)[A] >=64 cm Fork length – Round Weight(kg)[A]	$RND=a*L^{\wedge}b$ $RND=a*L^{\wedge}b$	a= 0.0000531300 b= 2.75366 a= 0.0000158490 b= 3.04600	n/a	n/a
	Longline Line Other Gears	Fork length(cm) – Gilled and gutted weight(kg)[B] Gilled and gutted weight(kg) - Round Weight(kg)[C]	$GGT=a*L^{\wedge}b$ $RND=GGT*1.13$	a= 0.0000159207 b= 3.0415414023	15,133	Min:72 Max:177
Bigeye tuna	Purse seine Pole and Line Gillnet	Fork length(cm) – Round Weight(kg)[D]	$RND=a*L^{\wedge}b$	a= 0.000027000 b= 2.95100	n/a	n/a
	Longline Line Other Gears	Fork length(cm) – Gilled and gutted weight(kg)[B] Gilled and gutted weight(kg) - Round Weight(kg)[C]	$GGT=a*L^{\wedge}b$ $RND=GGT*1.13$	a= 0.0000094007 b= 3.126843987	12,047	Min:70 Max:187
Skipjack tuna	All gears	Fork length(cm) – Round Weight(kg)[E]	$RND=a*L^{\wedge}b$	a= 0.0000074800 b= 3.25260	14,140	Min:32 Max:78

A: ***Montaudoin, Hallier and Hassani, IPTP TWS/90/48 (vol.4)***
B: Multilateral catch monitoring Benoa (2002-04)
C: ICCAT Field Manual (Appendix 4: Population parameters for key ICCAT species. Product Conversion Factors)
D: Cort (1986)
E: ***Data from the Atlantic Ocean,*** *Cayré et Laloë (****Fonteneau, A. et J. Marcille (eds), 1988: Ressources, pêche et biologie des thonidés tropicaux de l'Atlantique Centre-Est. FAO Doc.Tech.Pêches, (292)****, page262)*

Examples of the standard tables referred to above can be found in Appendix II (page 15).

Breaking the nominal catches per time and area (CTA)

The aim of this process is to break the catches recorded in the nominal catches table per time and area. This information is used:

- For the estimation of catch-at-size tables: The length distributions of tuna species may change depending on the area and/or time fished and therefore the estimation of catches-at-size is likely to be improved if this information is used.
- For the estimation of total catches per time and area for the Tuna Atlas.

The steps given to assign the catches available for each NC stratum per month and 5º square areas are indicated below:

i. Nominal catches strata for which catches per time and area (CTA) exist:
   a. Deleting strata from the catches per time and area table: The catches per time and area for NEI-(deep)-freezing longliners and NEI-fresh tuna longliners were not used because they refer to very specific areas and times and are not considered to cover all the areas of operation of these fleets. The catches for industrial purse seiners operating under the flag of the Soviet Union and other flags in recent times (NEI-ex-Soviet) were deleted for some years for the same reason.
   b. Breaking the nominal catches per time and area: The nominal catches were broken per time and area in years for which spatio-temporal catches are available for the fleet concerned.

ii. Nominal catches strata for which catches per time and area do not exist:
   a. Catches per area are available for the same fleet in years before or after the year concerned: The catches recorded in the five years closest to the year of reference were accumulated and the average values obtained used to break the catches per area in the year concerned. Data extending to up to 15 years above or below the year concerned are used.
   b. Catches per area are not available for the same fleet in years before or after the year concerned or they are available but very far in time (more than 15 years before or after the year concerned):
      i. Fleets that are presumed to operate as other fleets for which catches per area exist: This refers mainly to industrial fleets. The catches per area available for other fleets (and years) are used to break the nominal catches per month and 5 degrees square area/s.
         a. Catches per area for the alternative fleet are available for the same year: This information is used to break the nominal catches per time and area.
         b. Catches per area for the alternative fleet are not available for the same year: The same substitution scheme as the one defined in ii.a. above is used.

      The fisheries for which the above substitution scheme was used and the alternate fleets and gears selected for substitution in each case can be found in Appendix III (page 17).
      ii. Fleets that are presumed to operate in specific areas: This refers mainly to artisanal and semi-industrial fleets. One or more 5º square areas were assigned to each fleet. The areas assigned are shown in Appendix IV (page 18).
         a. Time-area catches exist for other fleets in the areas concerned: The nominal catches are broken per month and area according to the proportion that the catches available from other fleets make in the area/s concerned.
         b. Time-area catches do not exist for other fleets in the areas concerned: The catches for the fleet concerned are broken proportionally per month and area.

Estimating catches-at-size (CAS)

The aim of this process is to estimate length frequency distributions for each species, year and gear type. Thus, the accumulated weight estimated from the specimens making up the length frequency shall be the same than the total weight recorded in the stratum concerned and the weight issuing from all the strata shall be equal to the total catches recorded for the species in the year concerned. These data are used to estimate catches-at-age and other information used as input for stock assessment models.

The time-area resolution used for the estimation of catches-at-size depends on the gear type (see 'Standardizing the available size frequency data' on page 2 for details). The minimum sample size was set to 30 specimens. The samples made up of less than 30 fish were completed with specimens from other stratum/a until a total of 30 or more specimens were attained.

The amount of length frequency data available is scarce for some fisheries and/or periods. The use of length frequency information from fleets and/or gears other than the one for which nominal catches are recorded is required in many cases. The substitution scheme used to assign length frequency data per time and area is explained below:

i. Length frequency data are available for the stratum concerned:

a. Deleting samples from the length frequency table: The samples recorded for South Korea were not used because they are presumed very incomplete.
b. Assigning the available length frequency distributions per strata: The remaining length frequency distributions were assigned per strata.

ii. Length frequency data are not available for the stratum concerned:

a. Length frequency data are available within the year before or after the quarter concerned:

i. Length frequency data are available for the same fleet and gear. Two substitution schemes are used depending on the gear type:

a. Industrial purse seiners: The areas defined in Figure 2 (page 3) are used. The following latitude and longitude are assigned to each area[2]:

PS Area	*Q-Lat-Lon*
(1) Somalia	1 00 040
(2) NW Seychelles	2 00 020
(3) SE Seychelles	2 00 060
(4) Moz. Channel	2 10 020
(5) Maldives	2 00 080

PS Area	*Q-Lat-Lon*
(6) S Indian Ocean	2 20 060
(7) Arabian Sea	1 20 040
(8) India	1 00 080
(9) Gulf of Bengal	1 00 100
(10) W Indonesia	2 00 100

b. Other gears: The areas defined in Figure 3 (page 3) are used. Two regions are identified:
i. Areas below 10°S
ii. Areas above 10 °S
The sizes of the specimens of yellowfin tuna and bigeye tuna seem to vary markedly depending on the latitude. The substitution scheme is therefore applied independently to each area (i.e. Length frequency data from areas below 10 °S are not used for strata in the North and *vice versa*).

The substitution process is based on changes in time (quarter) and/or space (latitude and/or longitude). Below is an example of the first substitution steps. All steps are defined in the table presented in Appendix V (page 22).

Step	*Lat*	*Long*	*Qtr*	*Description*
1	0	0	-0.25	Length frequency data from the same area and previous quarter are used for substitution, if any
2	0	0	0.25	Length frequency data from the same area and following quarter are used for substitution, if any
3	0	-20	0	Length frequency data from the first area to the West and same quarter are used for substitution, if any
4	0	20	0	Length frequency data from the first area to the East and same quarter are used for substitution, if any
5	0	-20	-0.25	Length frequency data from the first area to the West and previous quarter are used for substitution, if any
!	!	!	!	!
764	0	120	1.00	Length frequency data from the area 120 degrees to the East and following year are used for substitution, if any

Note that the latitude and longitude defined above for industrial PS and those from the 10*20 grids for other fisheries are used

ii. No length frequency data are available for the same fleet and gear: Information from other fleet/s is used. The length frequency data available from other fleets that are presumed to operate the same areas and/or use the same fishing techniques are used for substitution. The same substitution scheme in time and area is applied in each case. Three levels of aggregation are established. The complete substitution tables for each species are shown in Appendix VI (page 25). Below is an example of the substitution scheme:

CTA Strata			*Level Aggregation 1*		*Level Aggregation 2*		*Level Aggregation 3*	
Species	*Gear*	*Fleet*	*Gear Ag1*	*Fleet Ag1*	*Gear Ag2*	*Fleet Ag2*	*Gear Ag3*	*Fleet Ag3*
BET	LL	IND	LL	AG3	LL	AG2	LL	AG1
BET	LL	IRN	LL	AG2	LL	AG2	LL	AG1
BET	LL	JPN	LL	AG1	LL	AG1	LL	AG1
BET	LL	KOR	LL	AG1	LL	AG1	LL	AG1
BET	LL	NEI-DFRZ	LL	AG3	LL	AG2	LL	AG1

[2] Note that the substitution scheme is based on changes in time and/or space (latitude and/or longitude). The areas assigned are used for the substitution.

CTA Strata			*Level Aggregation 1*		*Level Aggregation 2*		*Level Aggregation 3*	
Species	*Gear*	*Fleet*	*Gear Ag1*	*Fleet Ag1*	*Gear Ag2*	*Fleet Ag2*	*Gear Ag3*	*Fleet Ag3*
BET	LL	PHL	LL	AG3	LL	AG2	LL	AG1
BET	LL	SUN	LL	AG2	LL	AG2	LL	AG1
BET	LL	SYC	LL	AG3	LL	AG2	LL	AG1
BET	LL	THA	LL	AG1	LL	AG1	LL	AG1
BET	LL	TWN	LL	AG3	LL	AG2	LL	AG1

If no samples of bigeye tuna are recorded for the longline fishery of South Korea in the stratum concerned (or the sample is made up of less than 30 specimens) the samples available for South Korea and/or Japan and/or Thailand are aggregated. The substitution scheme defined in Appendix V applies also in this case. If no samples are available for the above fleets the second level of aggregation is used and the third level is used in the case that no samples are found.

b. No length frequency data are available within the year before or after the quarter concerned:
   i. Length frequency data are available for the same fleet in other years: The samples for the three years that are closest to the year concerned are used. Only the samples from the 25 years before or after the year concerned are used.
   ii. No length frequency data are available for the same fleet in other years or they are very far in time (more than 25 years ahead or behind the year concerned). The available length data for other fleets are used. The information from the fleets and gears specified in Appendix VI and the above substitution scheme (b.i.) apply in this case.
c. No Length frequency data are available for the gear concerned in the 25 years before or after the year concerned:
   i. Length frequency data are available for the same fleet and gear anytime at all: all available samples are used (i.e. the accumulated length frequency for the whole period is used).
   ii. No length frequency data are available for the same fleet and gear anytime at all: The available length data for other fleets are used. The information from the fleets and gears specified in Appendix VI (page 25) and the above substitution scheme (c.i.) apply in this case.

The average weights estimated from the samples (by using the equations in Table 4, page 4) are used to estimate the number of specimens or the weight for each stratum in the CAS table:

- Longline fisheries: The catches are usually recorded in numbers. The average weights estimated from the sample are multiplied by the numbers of fish recorded (from the CTA table) to obtain the weights per stratum. This method is also used for fisheries for which only numbers of fish are recorded.
- Other fisheries: The catches are usually recorded in weight. The average weights estimated from the sample are divided by the weight recorded (from the CTA table) to obtain the numbers per stratum. This method is also used for longline fisheries for which only the weights are recorded.

The resulting weights are accumulated per fleet, gear, year, species and IOTC Area. The factor resulting from dividing the total catches estimated for the species (nominal catches) and those issuing from the CAS table is used to estimate total weight, total number of fish and number of fish per length class for each stratum in the CAS table.

Estimating total catches per area

The catches and numbers of fish in the CTA table are weighed by following the same approach (as explained in the last part of the previous section).

Estimation of catch-at-age tables

The catches-at-age for each species are estimated from the available catches-at-size. The estimation procedures for the yellowfin tuna is presented in a separate document (INSERT REFERENCE TO ALEJANDRO'S DOC IOTC-2007-WPTT-INF__).

Results

Total catches per species

The total catches per species, gear type and year estimated from the process are shown in Appendix VII (page 30). **The catches estimates for 2006 are very preliminary** due to the paucity of the data available.

- Bigeye tuna: This species is caught by longliners, purse seiners and, to a lesser extent, bait boats and other artisanal fleets. The catches are likely to be of good quality. The total catches recorded in the IOTC database versus those estimated (disaggregation) are shown in Figures 4 and 5.

Figure 4: Total catches of bigeye tuna (BET) in the IOTC database (NCDB) *versus* those estimated for the WPTT (Disaggregation), per year (1950-2006).

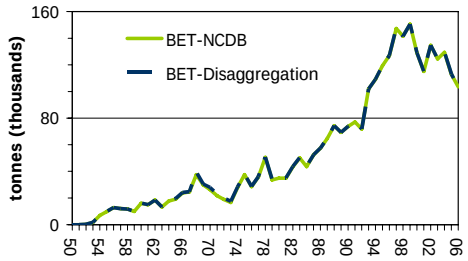
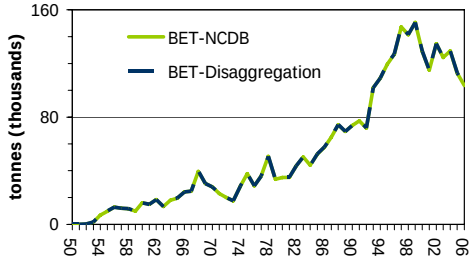


Figure 5: Catches of bigeye tuna (BET) recorded per gear in the IOTC database (NCDB) *versus* the total catches estimated for the WPTT (Disaggregation), per year (1950-2006).



- Yellowfin tuna: This species is caught by several industrial (PS, LL) and artisanal (GILL, BB, LINE) fleets. The total catches recorded in the IOTC database versus those estimated (disaggregation) are shown in Figures 6 and 7. The amount of catches of yellowfin tuna that is not reported per gear is of concern, mainly since the early 90's. The majority of these catches is presumed to refer to artisanal gears, mainly gillnets, hand lines and troll lines. The catches recorded under those gears are thought, for this reason, less accurate.

Figure 6: Total catches of yellowfin tuna (YFT) in the IOTC database (NCDB) *versus* those estimated for the WPTT (Disaggregation), per year (1950-2006).

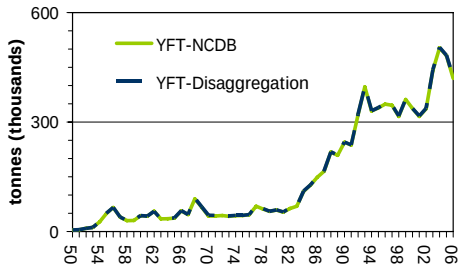
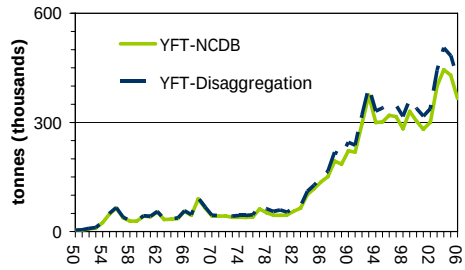


Figure 7: Catches of yellowfin tuna (YFT) recorded per gear in the IOTC database (NCDB) *versus* the total catches estimated for the WPTT (Disaggregation), per year (1950-2006).



- Skipjack tuna: This species is caught by industrial purse seiners and several artisanal fleets (GILL, BB, LINE and other). The total catches recorded in the IOTC database versus those estimated (disaggregation) are shown in Figures 8 and 9. The amount of catches of skipjack tuna that is not reported per gear is of concern. The majority of these catches is presumed to refer to artisanal gears, mainly gillnets, hand lines and troll lines. The catches recorded under those gears are thought, for this reason, less accurate.

Figure 8: Total catches of skipjack tuna (SKJ) in the IOTC database (NCDB) *versus* those estimated for the WPTT (Disaggregation), per year (1950-2006).

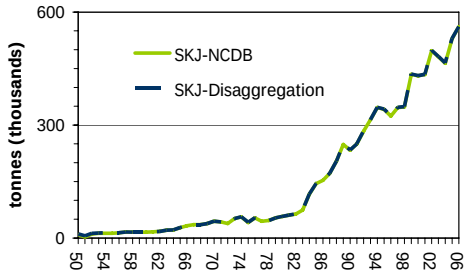
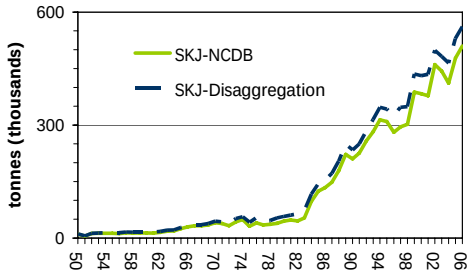


Figure 9: Catches of skipjack tuna (SKJ) recorded per gear in the IOTC database (NCDB) *versus* the total catches estimated for the WPTT (Disaggregation), per year (1950-2006).



Catch-at-size tables

CAS tables are estimated for yellowfin tuna, bigeye tuna and skipjack tuna. The precision of the estimates is likely to vary depending on the quality of the catches (see the above section), the availability of catches in time and space and the amount (coverage) and representativeness of the samples available.

- Bigeye tuna:

Completeness of time-area catches: The amount of catches that are available in time and space *versus* the total catches of bigeye tuna estimated are shown in the figures 10 to13 below. The amount of catches not available in time and space for longline fisheries is of concern making up between the 30-50% in recent years. This refers mainly to fleets operating under the flags of various non-reporting countries (NEI fleets). Almost no catches are available for 2006.

Figure 10: Total catches of bigeye tuna (BET) available in time and space *versus* the total catches recorded for the species (all gears combined).

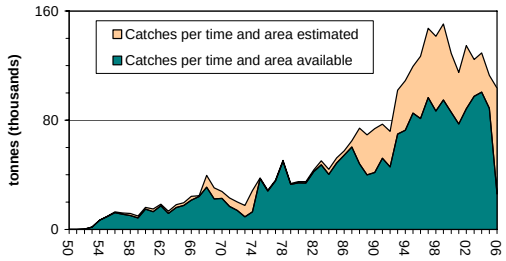


Figure 11: Total catches of bigeye tuna (BET) available in time and space *versus* the total catches recorded for the species (purse seine).

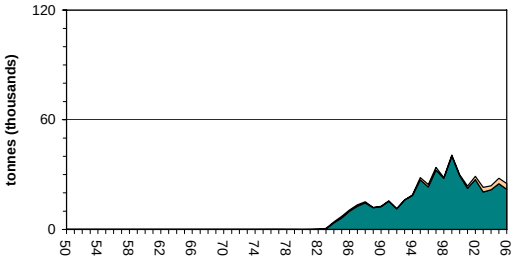


Figure 12: Total catches of bigeye tuna (BET) available in time and space *versus* the total catches recorded for the species (longline).

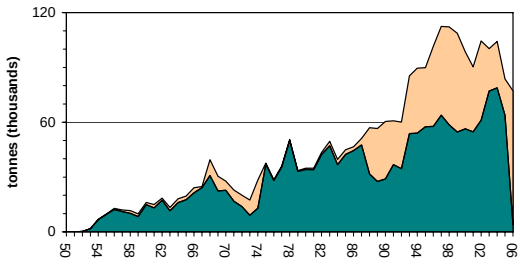
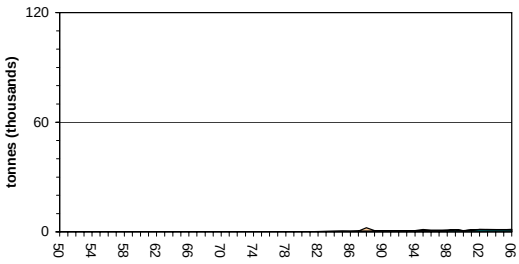


Figure 13: Total catches of bigeye tuna (BET) available in time and space *versus* the total catches recorded for the species (artisanal gears).

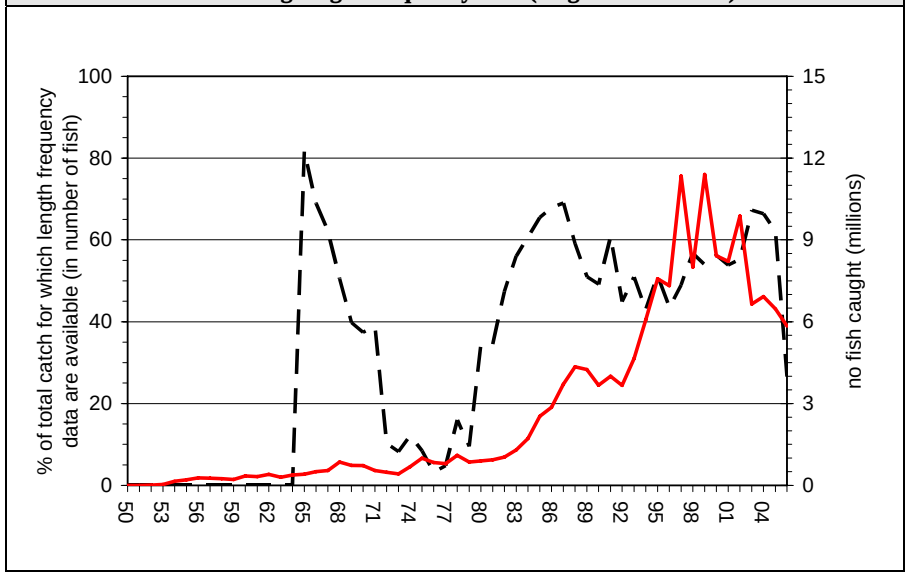


Completeness of length data: The catches estimated for strata having samples available *versus* the total catches estimated for the species per year is shown in Figure 14. The same information per gear is shown in Appendix VIII (page 33). The estimation of catches-at-size is thought less accurate:

- 1950-1964: No size data are available for the species.
- 1969-1981 and 2004-06: The amount of samples available is very low.

The lack of data is likely to affect in the estimation of CAS for longline fisheries during the referred periods. The numbers of fish measured per strata in relation with the total numbers caught by several longline fisheries, mainly Japan, has been declining in recent years. The representativeness of the samples might be also compromised for this reason.

Figure 14: Total numbers of bigeye tuna (BET) estimated and proportion (in weight) estimated for strata having length frequency data (all gears combined).



- Yellowfin tuna:

Completeness of time-area catches: The amount of catches that are available in time and space *versus* the total catches of yellowfin tuna estimated are shown in the figures 15 to18 below. The amount of catches not available in time and space since the mid 80's for longline fisheries is of concern making up between 30-60% of the total catches estimated. Almost no catches are available for 2006. The coverage in time and space is also very low for most artisanal fisheries, notably gillnet, hand line and troll line. The lack of spatial coverage is likely to be important for fleets operating in island countries or in countries having a large coastline, notably Indonesia and Sri Lanka. The lack of coverage in time is likely to be important for fleets operating in regions with a marked seasonality, notably the countries in the Arabian Peninsula (Yemen, Oman, Iran, and Pakistan) and Indonesia.

Figure 15: Total catches of yellowfin tuna (YFT) available in time and space *versus* the total catches recorded for the species (all gears combined).

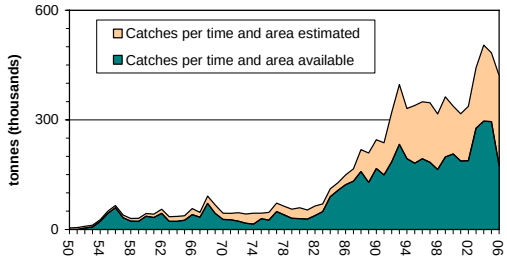


Figure 16: Total catches of yellowfin tuna (YFT) available in time and space *versus* the total catches recorded for the species (purse seine).

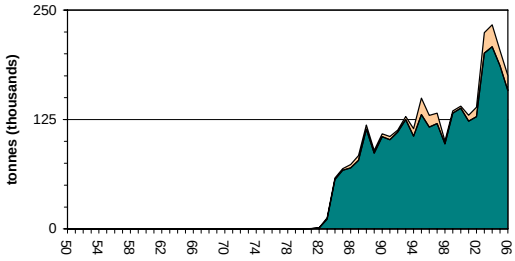


Figure 17: Total catches of yellowfin tuna (YFT) available in time and space *versus* the total catches recorded for the species (longline).

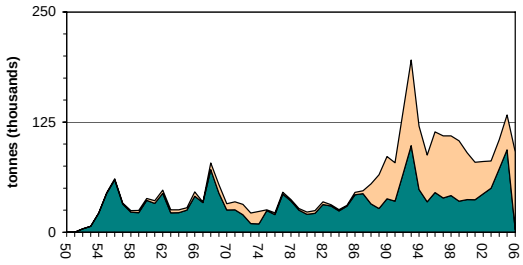
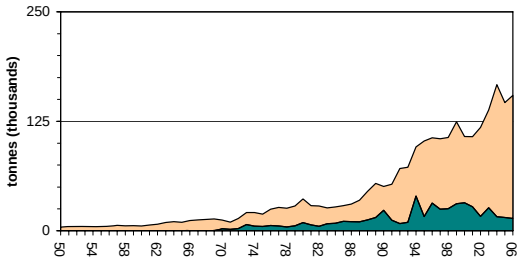


Figure 18: Total catches of yellowfin tuna (YFT) available in time and space *versus* the total catches recorded for the species (artisanal gears).



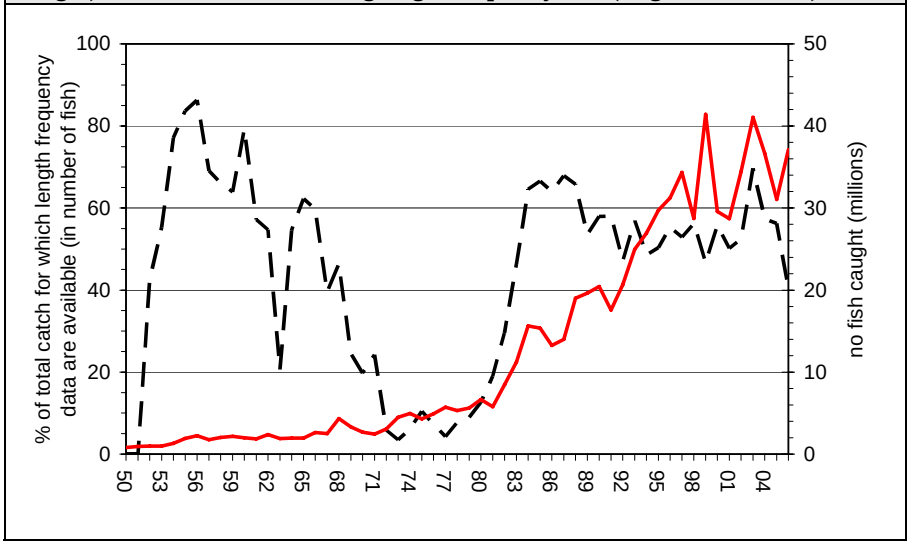
Completeness of length data: The catches estimated for strata having samples available *versus* the total catches estimated for the species per year is shown in Figure 19. The same information per gear is shown in Appendix VIII (page 33). The estimation of catches-at-size is thought less accurate for 1970-1982 and 2004-06 due to the paucity of the samples available.

This lack of data is likely to affect in the estimation of CAS for longline fisheries during the referred periods.
The numbers of fish measured per strata in relation with the total numbers caught by several longline fisheries, mainly Japan, has been declining in recent years. The representativeness of the samples might be also compromised for this reason.
The lack of length data for artisanal fisheries is of concern:

- Gillnet: No size data are available for 1950-1975. The amount of samples available is very low for other years or periods (1976-82, 1994-95, 2000-01).
- Pole and line: No size data are available for 1950-1980, 2000-02 and 2004-2006.
- Hand lines and troll lines: there is an almost complete lack of samples for both gears.

The quality of the CAS estimated for the artisanal gears is likely to be highly compromised due to the above.

Figure 19: Total numbers of yellowfin tuna (YFT) estimated and proportion (in weight) estimated for strata having length frequency data (all gears combined).



- Skipjack tuna

Completeness of time-area catches: The amount of catches that are available in time and space *versus* the total catches of skipjack tuna estimated are shown in the figures 20 to 23 below. The amount of catches not available in time and space up to the early 80's (artisanal fisheries) and since the early 90's (notably gillnets) is of concern. The coverage in time and space is also very low for most artisanal fisheries, notably the gillnet.

Figure 20: Total catches of skipjack tuna (SKJ) available in time and space *versus* the total catches recorded for the species (all gears combined).

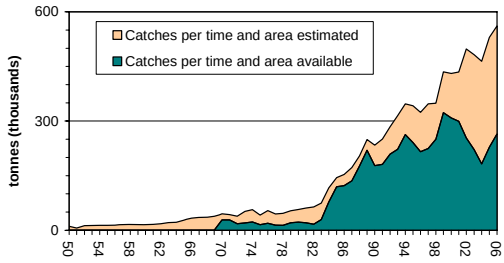


Figure 21: Total catches of skipjack tuna (SKJ) available in time and space *versus* the total catches recorded for the species (purse seine).

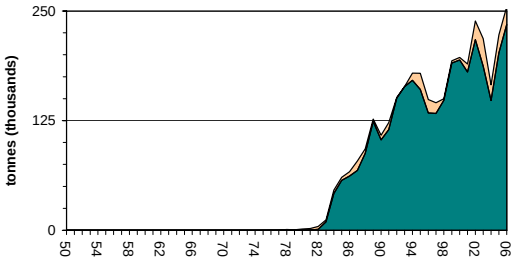


Figure 22: Total catches of skipjack tuna (SKJ) available in time and space *versus* the total catches recorded for the species (gillnet).

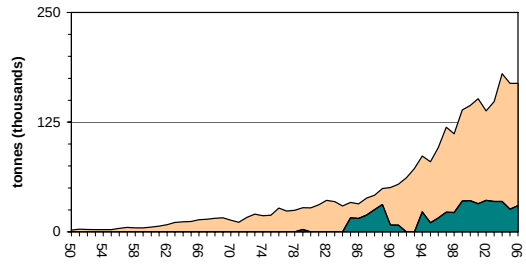
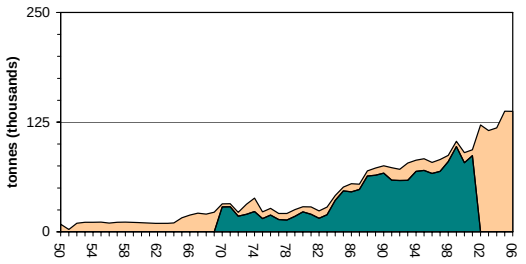
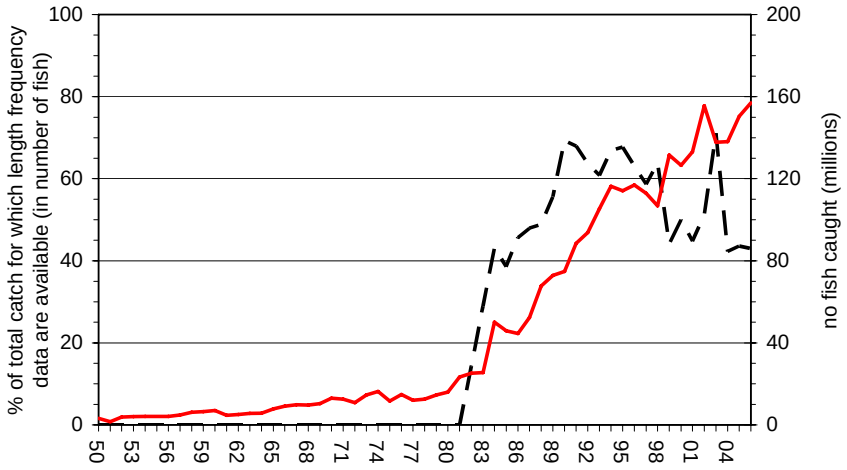


Figure 23: Total catches of skipjack tuna (SKJ) available in time and space *versus* the total catches recorded for the species (other artisanal gears).



Completeness of length data: The catches estimated for strata having samples available *versus* the total catches estimated for the species per year is shown in Figure 24. The same information per gear is shown in Appendix VIII (page 34). The estimation of catches-at-size is thought less accurate for 1950-1980 due to the paucity of the samples available. This lack of data is likely to affect in the estimation of CAS for all artisanal fisheries during the referred periods. The representativeness of the samples is unknown for most artisanal fisheries.
The quality of the CAS estimated for the artisanal gears is likely to be highly compromised due to the above.

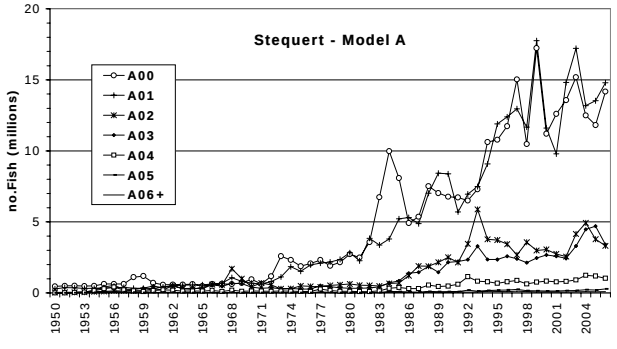
Figure 24: Total numbers of skipjack tuna (SKJ) estimated and proportion (in weight) estimated for strata having length frequency data (all gears combined).

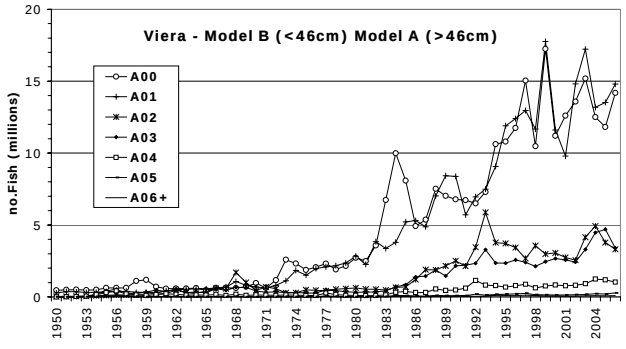


Catch-at-age tables

Catches-at-age were only created for the yellowfin tuna. The numbers of fish estimated per age class for surface and longline fisheries are shown in Figures 25 (Stequert) and 26 (Viera); the numbers obtained from the two estimating procedures are shown in Appendix IX. The estimation of catches-at-age is likely to be compromised for some fisheries and periods (see the previous section), notably for artisanal fisheries.

Figure 25-26: Total numbers of yellowfin tuna (BET) estimated per age class (classes 6-8+ are represented as 6+); left Stequert, right Viera





APPENDIX I
Areas allocated to catches and/or size frequency data not recorded under regular grids

CodeArea	Description	Grid Assigned
Custom grid for BIOT fishing areas (Chagos EEZ)		
BIOT	British Indian Ocean Territory EEZ	6205070
Custom grid for Indonesia landing places		
BACEH	Indonesia - Banda Aceh	6105095
BALI	Indonesia - Bali	6205115
PADANG	Indonesia - Padang	6200095
PELRATU	Indonesia - Pelabuhan Ratu	6205105
PRIGI	Indonesia - Prigi	6205110
Custom grid for Iran fishing areas		
ABADAN	Port of Abadan - Khouzestan	6125045
BANDAR	Port of Bandar - Abbas-Hormozgan	6125055
BERIS	Port of Beris - Sistan and Baluchistan	6125060
BUSHEHR	Port of Bushehr - Bushehr	6125050
BUSHRCOAST	Bushehr Area	6125050
DAYER	Port of Dayer - Bushehr	6125050
DEYLAM	Port of Deylam - Bushehr	6125050
GENAVEH	Port of Genaveh - Bushehr	6125050
HENDIJAN	Port of Hendijan - Khouzestan	6125045
HORMOZGAN	Hormozgan Area	6125050
IRAN	Iran Economic Exclusive Zone	2120040
JASK	Port of Jask - Hormozgan	6125055
KHOUZESTAN	Khouzestan Area	6125045
KOLAHI	Port of Kolahi - Hormozgan	6125055
LENGEH	Port of Lengeh - Hormozgan	6125050
MAHSHAHR	Port of Mahshahr - Khouzestan	6125045
NAKHLE	Port of Nakhle Taghi - Bushehr	6125050
OMANSEA	Oman Sea	1100030
POZM	Port of Pozm - Sistan and Baluchistan	6125060
QUISHM	Quishm Island- Hormozgan	6125055
RAMIN	Port of Ramin - Sistan and Baluchistan	6125060
SISTAN	Sistan Area	6125060
Custom grid for Malaysia Fishing Districts		
KEDAH	Malaysia-Kedah District	6100100
PENANG	Malaysia-Penang District	6100100
PERAK	Malaysia-Perak District	6100100
PERLIS	Malaysia-Perlis District	6105100
SELANGOR	Malaysia-Selangor District	6100100
Custom grid for Maldives Atolls		
ADDU	Addu - Seenu	5200073
ADDUHI	Addu - South hithadhoo - Seenu	5200073
ADDUMA	Addu - South maradhoo - Seenu	5200073
BAA	South Maalhosmadulu - Baa	5105072
DHKUDA	South Nilandhe - Dhaalu	5102072
FAADHI	Faadhippolhu - Lhaviyani	5105073
FELID	Felidhu Atholhu - Vaavu	5103073
FUVAHM	Fuvahmulah - Gnaviyani	5200073
GAVILI	North Huvadhu - Gaafu alifu	5100073
GAVILIKO	North Huvadhu - Kolamafushi - Gaafu Alifu	5100073
GAVILIVI	North Huvadhu -Gadhoo Villingili - Gaafu Alifu	5100073
GDHTHI	South Huvadhu - Gaafu Dhaalu	5100073
HDHKUL	South Thiladhunmathi - Haa Dhaalu	5106072
KMALE	Male Atholhu - Kaafu	5104073
KOLHUM	Kolhumadulu - Thaa	5102073
LMAAM	Hadhdhunmathi - Laamu	5101073
MALE	Male - Male	5104073
MMADU	Mulaku Atholhu - Meemu	5103073
NNILAN	North Nilandhe - Faafu	5103072
NRALIF	North Ari Atholhu - Alifu Alifu	5103072
NTHILA	North Thiladhunmathi - Haa Alifu	5106073
RALIF	Ari Atholhu - Alifu	5103072
RKAN	North Maalhosmadulu - Raa	5105072
SHAV	North Miladhunmathi - Shaviyani	5106073
SMILAD	South Miladhunmathi - Noonu	5105073
SRALIF	South Ari Atholhu - Alifu Dhaalu	5103072

CodeArea	Description	Grid Assigned
Custom grid for Omani landing places		
ALWUS	Al-Wusta	5120058
AWADU	Al-Wusta - Willayat A'Duqum	5120058
AWALJ	Al-Wusta - Willayat Al'Jazer	5120058
AWMAH	Al-Wusta - Willayat Mahut	5120058
BAKHA	Batinah - Willayat A'Khaburah	5125057
BAMUS	Batinah - Willayat A'Musanaa	5125057
BASUW	Batinah - Willayat A'Suwaiq	5125057
BATIN	Batinah	6120055
BBARK	Batinah - Willayat Barka	5125057
BLIWA	Batinah - Willayat Liwa	5125057
BSAHA	Batinah - Willayat Saham	5125057
BSHIN	Batinah - Willayat Shinas	5125057
BSOHA	Batinah - Willayat Sohar	5125057
DDHAL	Dhofar - Willayat Dhalkuit	5117056
DHOFA	Dhofar	6115050
DMIRB	Dhofar - Willayat Mirbat	5117056
DRHKU	Dhofar - Willayat Rhkuit	6115050
DSADA	Dhofar - Willayat Sadah	5117056
DSALA	Dhofar - Willayat Salalah	5117056
DSHHA	Dhofar - Willayat Shaleem&Halaniyat	5117056
DTAQA	Dhofar - Willayat Taqah	5117056
MMUSC	Muscat - Willayat Muscat	5124058
MMUTR	Muscat - Willayat Mutrah	5124058
MQURA	Muscat - Willayat Qurayat	5124058
MSEEB	Muscat - Willayat Seeb	5124058
MUBUK	Musadan - Willayat Bukha	5126057
MUDAB	Musadan - Willayat Dabba	5126057
MUKHA	Musadan - Willayat Khasab	5126057
MUSAD	Musandam	5126057
MUSCA	Muscat	5124058
OMAN	Omani EEZ	1100030
SHARQ	Sharqiyah	6120055
SJALA	Sharqiyah - Willayat Ja'laan	5121059
SMASI	Sharqiyah - Willayat Masirah	5121059
SSUR	Sharqiyah - Willayat Sur	5121059
Custom grid for Pakistan fishing areas		
PAKISTAN	Pakistan	3120060
Custom grid for Saudi Arabia fishing areas		
PERSIANGLF	Persian Gulf	2120040
REDSEA	Red Sea	1100030
SAUEEZ	Saudi Arabia Economic Exclusive Zone	1100030
Custom grid for Seychelles fishing areas		
SYCZEE	Seychelles Economic Exclusive Zone	3200050
Custom grid for Sri Lanka fishing areas		
BERU-TR5	Beruwala (SW) - Mechanised traditional orru	6105075
BERU-UN1	Beruwala (SW) - 5.5 - 7.2 m FRP dinghy	6105075
BERU-UN2	Beruwala (SW) - 8.8 - 9.8 m	6105075
BERU-UN2A	Beruwala (SW) - 8.8 - 9.8 m Single day boats	6105075
BERU-UN2B	Beruwala (SW) - 8.8 - 9.8 m Multi-day boats	6105075
BERU-UN3	Beruwala (SW) - 9.8 - 12.2 m	6105075
BERU-UN3A	Beruwala (SW) - 9.8 - 12.2 m	6105075
BERU-UN3B	Beruwala (SW) - Above 12.2m	6105075
CODB-UN2B	Codbay (NE) - 8.8 - 9.8 m Multi-day boats	6105080
DOND-UN1	Dondra (S) - 5.5 - 7.2 m FRP dinghy	6105080
DOND-UN2	Dondra (S) - 8.8 - 9.8 m	6105080
DOND-UN2A	Dondra (S) - 8.8 - 9.8 m Single day boats	6105080
DOND-UN2B	Dondra (S) - 8.8 - 9.8 m Multi-day boats	6105080
DOND-UN3	Dondra (S) - 9.8 - 12.2 m	6105080
DOND-UN3A	Dondra (S) - 9.8 - 12.2 m	6105080
DOND-UN3B	Dondra (S) - Above 12.2m	6105080
DOND-UN4	Dondra (S) - 15.2 - 18.3 m	6105080
GALL-UN1	Galle (SW) - 5.5 - 7.2 m FRP dinghy	6105075
GALL-UN2	Galle (SW) - 8.8 - 9.8 m	6105075

CodeArea	Description	Grid Assigned
Custom grid for Sri Lanka fishing areas (cont.)		
GALL-UN2A	Galle (SW) - 8.8 - 9.8 m Single day boats	6105075
GALL-UN2B	Galle (SW) - 8.8 - 9.8 m Multi-day boats	6105075
GALL-UN3	Galle (SW) - 9.8 - 12.2 m	6105075
GALL-UN3A	Galle (SW) - 9.8 - 12.2 m	6105075
GALL-UN3B	Galle (SW) - Above 12.2m	6105075
HAMB-UN1	Hambantota (SE) - 5.5 - 7.2 m FRP dinghy	6105080
HAMB-UN2A	Hambantota (SE) - 8.8 - 9.8 m Single day boats	6105080
HAMB-UN2B	Hambantota (SE) - 8.8 - 9.8 m Multi-day boats	6105080
KALM-UN1	Kalmunai (E) - 5.5 - 7.2 m FRP dinghy	6105080
KALM-UN2	Kalmunai (E) - 8.8 - 9.8 m	6105080
KALM-UN2A	Kalmunai (E) - 8.8 - 9.8 m Single day boats	6105080
KALM-UN2B	Kalmunai (E) - 8.8 - 9.8 m Multi-day boats	6105080
KALT-UN1	Kalmetiya SE) - 5.5 - 7.2 m FRP dinghy	6105080
KALT-UN2A	Kalmetiya SE) - 8.8 - 9.8 m Single day boats	6105080
KALT-UN2B	Kalmetiya SE) - 8.8 - 9.8 m Multi-day boats	6105080
KALT-UN3A	Kalmetiya SE) - 9.8 - 12.2 m	6105080
KAND-UN1	Kandakuliya (NW) - 5.5 - 7.2 m FRP dinghy	6105075
KAND-UN2	Kandakuliya (NW) - 8.8 - 9.8 m	6105075
KIRI-UN1	Kirinda (SE) - 5.5 - 7.2 m FRP dinghy	6105080
KIRI-UN2A	Kirinda (SE) - 8.8 - 9.8 m Single day boats	6105080
KIRI-UN2B	Kirinda (SE) - 8.8 - 9.8 m Multi-day boats	6105080
KIRI-UN3A	Kirinda (SE) - 9.8 - 12.2 m	6105080
KOTT-UN1	Kottegoda (S) - 5.5 - 7.2 m FRP dinghy	6105080
KOTT-UN2	Kottegoda (S) - 8.8 - 9.8 m	6105080
KOTT-UN2A	Kottegoda (S) - 8.8 - 9.8 m Single day boats	6105080
KOTT-UN3	Kottegoda (S) - 9.8 - 12.2 m	6105080
KUDA-TR5	Kudawela (SE) - Mechanised traditional orru	6105080
KUDA-UN1	Kudawela (SE) - 5.5 - 7.2 m FRP dinghy	6105080
KUDA-UN2	Kudawela (SE) - 8.8 - 9.8 m	6105080
KUDA-UN2A	Kudawela (SE) - 8.8 - 9.8 m Single day boats	6105080
KUDA-UN2B	Kudawela (SE) - 8.8 - 9.8 m Multi-day boats	6105080
KUDA-UN3	Kudawela (SE) - 9.8 - 12.2 m	6105080
KUDA-UN3A	Kudawela (SE) - 9.8 - 12.2 m	6105080
KUDA-UN3B	Kudawela (SE) - Above 12.2m	6105080
KUDA-UN4	Kudawela (SE) - 15.2 - 18.3 m	6105080
LKAE	East Area Sri lanka (E)	6105080
LKANE	Northeast Area Sri Lanka (NE)	6105080
LKANW	Northwest Area Sri Lanka (NW)	6105075
LKAS	South Area Sri Lanka (S)	6105080
LKASE	Southeast Area Sri Lanka (SE)	6105080
LKASW	Southwest Area Sri Lanka (SW)	6105075
LKAW	West Area Sri Lanka (W)	6105075
MALI-UN2A	Malikadu (E) - 8.8 - 9.8 m Single day boats	6105080
MALI-UN2B	Malikadu (E) - 8.8 - 9.8 m Multi-day boats	6105080

CodeArea	Description	Grid Assigned
Custom grid for Sri Lanka fishing areas (cont.)		
MIRI-TR5	Mirissa (S) - Mechanised traditional orru	6105080
MIRI-UN1	Mirissa (S) - 5.5 - 7.2 m FRP dinghy	6105080
MIRI-UN2	Mirissa (S) - 8.8 - 9.8 m	6105080
MIRI-UN2A	Mirissa (S) - 8.8 - 9.8 m Single day boats	6105080
MIRI-UN2B	Mirissa (S) - 8.8 - 9.8 m Multi-day boats	6105080
MIRI-UN3	Mirissa (S) - Above 9.8 m	6105080
MIRI-UN3A	Mirissa (S) - 9.8 - 12.2 m	6105080
MIRI-UN3B	Mirissa (S) - Above 12.2m	6105080
MIRI-UN4	Mirissa (S) - 15.2 - 18.3 m	6105080
MUTH-UN1	Muththur (NE) - 5.5 - 7.2 m FRP dinghy	6105080
NEGO-UN1	Negombo (W) - 5.5 - 7.2 m FRP dinghy	6105075
NEGO-UN2	Negombo (W) - 8.8 - 9.8 m	6105075
NEGO-UN2A	Negombo (W) - 8.8 - 9.8 m Single day boats	6105075
NEGO-UN2B	Negombo (W) - 8.8 - 9.8 m Multi-day boats	6105075
NEGO-UN3	Negombo (W) - Above 9.8 m	6105075
NEGO-UN3A	Negombo (W) - 9.8 - 12.2 m	6105075
NEGO-UN3B	Negombo (W) - Above 12.2m	6105075
NEGO-UN4	Negombo (W) - 15.2 - 18.3 m	6105075
SRIL	All Areas Sri Lanka (CA)	1100060
TANG-UN1	Tangalle (SE) - 5.5 - 7.2 m FRP dinghy	6105080
TANG-UN2	Tangalle (SE) - 8.8 - 9.8 m	6105080
TANG-UN2A	Tangalle (SE) - 8.8 - 9.8 m Single day boats	6105080
TANG-UN2B	Tangalle (SE) - 8.8 - 9.8 m Multi-day boats	6105080
TANG-UN3	Tangalle (SE) - 9.8 - 12.2 m	6105080
TANG-UN3A	Tangalle (SE) - 9.8 - 12.2 m	6105080
TANG-UN3B	Tangalle (SE) - Above 12.2m	6105080
TRIN-UN1	Trincomalee (NE) - 5.5 - 7.2 m FRP dinghy	6105080
TRIN-UN2	Trincomalee (NE) - 8.8 - 9.8 m	6105080
TRIN-UN2A	Trincomalee (NE) - 8.8 - 9.8 m Single day boats	6105080
TRIN-UN2B	Trincomalee (NE) - 8.8 - 9.8 m Multi-day boats	6105080
TRIN-UN3	Trincomalee (NE) - Above 9.8 m	6105080
TRIN-UN3A	Trincomalee (NE) - 9.8 - 12.2 m	6105080
TRIN-UN3B	Trincomalee (NE) - Above 12.2m	6105080
WELI-TR5	Weligama (S) - Mechanised traditional orru	6105080
WELI-UN1	Weligama (S) - 5.5 - 7.2 m FRP dinghy	6105080
WELI-UN2	Weligama (S) - 8.8 - 9.8 m	6105080
WELI-UN2A	Weligama (S) - 8.8 - 9.8 m Single day boats	6105080
WELI-UN2B	Weligama (S) - 8.8 - 9.8 m Multi-day boats	6105080
WELI-UN3A	Weligama (S) - 9.8 - 12.2 m	6105080
WELI-UN4	Weligama (S) - 15.2 - 18.3 m	6105080
Custom grid for Thai fishing areas		
ANDAM	Andaman Sea (Thai)	6105095
INOCE	Indian Ocean (Thai)	6105095

APPENDIX II
Examples of Standard Tables

a/ Nominal catches (NC)

ID	Fleet	EName	Area	Year	Gear	Species	CatchNC	CdeSubs
7461	AUS	Australia	IO_Eastern	1972	TROL	SKJ	100	1

Where:

Field	Description
ID	Unique identifier NC strata
Fleet	Fleet code
EName	Fleet description
Area	IOTC Area
Year	Year
Gear	Gear type code
Species	Species code
CatchNC	Total catch in tons
CdeSubs	Substitution code: original catches (0) or catches estimated (1)

b/ Catches per time-area stratum (CTA)

id	NCid	Species	Gear	School Type	Fleet	Year	Month Start	Month End	Grid	SF Area	IOTC Area	NO	MT	CE estimated
16287920	5360	YFT	PS	LS	FRA	2004	7	7	6210040	9210020	IO_Western		560	0

Where:

Field	Description
id	Unique identifier CTA strata
NCid	NC identifier (NC stratum to which each CTA stratum refers to)
Species	Species code
Gear	Gear type code
SchoolType	Type of school (used for industrial purse seine fisheries)
Fleet	Fleet code
Year	Year
Month	Month
Grid	5º square grid
SFArea	Length frequency data area (see figures 2 and 3) to which each CTA grid refers to
IOTC_Area	NC Area to which each CTA grid refers to
NO	Catch in number of fish (if available; required if MT is not available)
MT	Catch in metric tons (if available required if NO is not available)
CEestimated	Substitution code: original stratum (0) or stratum estimated (>0)

c/ Samples per time-area stratum (STA)

id	Species	Year	Quarter	Gear	Fleet	Grid	School type	SF no.Fish	SF mt.Fish	First Class Low	Size Interval	T001	…	T150
833327	YFT	2003	4	ELL	MUS	2210020	UNCL	128	5.753	10	2	0	…	0

Where:

Field	Description
id	Unique identifier STA strata
Species	Species code
Year	Year
Quarter	Quarter
Gear	Gear type code
Fleet	Fleet code
Grid	STA Areas (see figures 2 and 3)
Schooltype	Type of school (used for industrial purse seine fisheries)
SFnoFish	Number of fish in the sample
SFmtFish	Sampled weight (in tons)
FirstClassLow	First length class
SizeInterval	Interval between length classes
T001	Number of fish measured (1st length class)
……	Number of fish measured (2nd length class to 149th length class)
T150	Number of fish measured (150th length class)
SFestimated	Substitution code: original time-area-length class stratum (0) or time-area-length class stratum estimated (>0)

APPENDIX III
Industrial fleets for which no catches per time and area are available and alternate fleets whose data were used for substitution

Fleet Code	Fleet Name	Gear Code	IOTC Area	Year From	Year To	Alternate Fleet Code	Alternate Gear Code
FRAT	France-Territories	ELL	IO_Western	1998	2006	FRA-REU	ELL
GIN	Guinea	ELL	IO_Western	2003	2006	ESP	ELL
KEN	Kenya	ELL	IO_Eastern	2005	2006	ESP	ELL
NEI-DFRZ	NEI-Deep-freezing	ELL	IO_Eastern	2002	2006	ESP	ELL
NEI-DFRZ	NEI-Deep-freezing	ELL	IO_Western	2002	2006	ESP	ELL
PRT	Portugal	SLL	IO_Western	2004	2004	ESP	ELL
PRT	Portugal	LL	IO_Western	1998	2003	ESP	ELL
SEN	Senegal	ELL	IO_Western	2003	2006	ESP	ELL
GBR	United Kingdom	LL	IO_Western	2004	2004	ESP	ELL
GBR	United Kingdom	LL	IO_Eastern	2005	2006	ESP	ELL
URY	Uruguay	ELL	IO_Western	2001	2002	ESP	ELL
BLZ	Belize	LL	IO_Western	2001	2006	TWN	LL
BLZ	Belize	LL	IO_Eastern	2001	2005	TWN	LL
IND	India	LLEX	IO_Western	1986	2003	TWN	LL
IND	India	LL	IO_Eastern	1983	1985	TWN	LL
IND	India	LL	IO_Western	1983	1992	TWN	LL
IND	India	LLEX	IO_Eastern	1986	2003	TWN	LL
IRN	Iran, Islamic Republic	LL	IO_Western	1976	2004	TWN	LL
KEN	Kenya	ELL	IO_Western	1980	2006	TWN	LL
MUS	Mauritius	LL	IO_Western	1978	1999	TWN	LL
MUS	Mauritius	ELL	IO_Western	2006	2006	JPN	LL
NEI-DFRZ	NEI-Deep-freezing	TLL	IO_Western	2004	2004	TWN	LL
NEI-DFRZ	NEI-Deep-freezing	LL	IO_Western	1985	2006	TWN	LL
NEI-DFRZ	NEI-Deep-freezing	LL	IO_Eastern	1985	2006	TWN	LL
PAK	Pakistan	LL	IO_Western	1991	2000	TWN	LL
PHL	Philippines	LL	IO_Western	2005	2006	JPN	LL
PHL	Philippines	LL	IO_Eastern	2005	2006	JPN	LL
SYC	Seychelles	LL	IO_Eastern	1999	1999	TWN	LL
SYC	Seychelles	LL	IO_Western	1999	2002	TWN	LL
ZAF	South Africa	SLL	IO_Western	1997	2006	TWN	LL
SUN	Soviet Union	LL	IO_Western	1964	1989	TWN	LL
SUN	Soviet Union	LL	IO_Eastern	1977	1985	TWN	LL
ESP	Spain	LLEX	IO_Eastern	2006	2006	TWN	LL
ESP	Spain	LLEX	IO_Western	2006	2006	TWN	LL
THA	Thailand	LL	IO_Western	2001	2006	JPN	LL
THA	Thailand	LL	IO_Eastern	2000	2006	JPN	LL
BLZ	Belize	PS	IO_Western	2001	2002	ESP	PS
BLZ	Belize	PS	IO_Eastern	2001	2002	ESP	PS
FRAT	France-Territories	PS	IO_Western	2001	2002	FRA	PS
IRN	Iran, Islamic Republic	PS	IO_Eastern	1996	1998	ESP	PS
IRN	Iran, Islamic Republic	PS	IO_Western	1992	2006	ESP	PS
JPN	Japan	PS	IO_Western	1983	1983	NEI-OTH	PS
JPN	Japan	PS	IO_Eastern	1977	1979	NEI-OTH	PS
MUS	Mauritius	PS	IO_Western	1979	1979	NEI-OTH	PS
SYC	Seychelles	PS	IO_Western	1991	1992	NEI-OTH	PS
SUN	Soviet Union	PS	IO_Eastern	1985	1985	NEI-OTH	PS
SUN	Soviet Union	PS	IO_Western	1983	1991	NEI-OTH	PS
THA	Thailand	PS	IO_Western	2005	2006	NEI-OTH	PS
THA	Thailand	PS	IO_Eastern	2000	2006	JPN	PS

APPENDIX IV

Areas of operation assigned to fleets for which no catches per time and area are available

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Australia	BB	IO_Eastern	1982	1990
	GILL	IO_Eastern	1992	2004
	HAND	IO_Eastern	1989	2004
	PS	IO_Eastern	1981	1988
	TROL	IO_Eastern	1972	1999

NC assigned to Areas			
Area	Area	Area	Area
108 - {6210120}	161 - {6225110}	204 - {6235110}	211 - {6235145}
109 - {6210125}	180 - {6230110}	205 - {6235115}	236 - {6240140}
125 - {6215110}	181 - {6230115}	206 - {6235120}	237 - {6240145}
126 - {6215115}	182 - {6230120}	207 - {6235125}	262 - {6245140}
127 - {6215120}	183 - {6230125}	208 - {6235130}	263 - {6245145}
143 - {6220110}	184 - {6230130}	209 - {6235135}	
144 - {6220115}	185 - {6230135}	210 - {6235140}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Bahrain	GILL	IO_Western	1976	1980

NC assigned to Areas			
Area	Area	Area	Area
59 - {6125050}	60 - {6125055}		

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Bangladesh	HAND	IO_Eastern	1985	1985

NC assigned to Areas			
Area	Area	Area	Area
54 - {6120085}	55 - {6120090}		

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Comoros	HAND	IO_Western	1950	2004
	TROL	IO_Western	1979	2004

NC assigned to Areas			
Area	Area	Area	Area
92 - {6210040}	93 - {6210045}		

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Djibouti	GILL	IO_Western	1983	2004

NC assigned to Areas			
Area	Area	Area	Area
25 - {6110040}			

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
East Timor	GILL	IO_Eastern	1999	2004
	HAND	IO_Eastern	1999	2004
	TROL	IO_Eastern	2000	2004

NC assigned to Areas			
Area	Area	Area	Area
108 - {6210120}	109 - {6210125}		

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
France-Reunion	HAND	IO_Western	1998	2004
	TROL	IO_Western	1950	2004

NC assigned to Areas			
Area	Area	Area	Area
113 - {6215050}	114 - {6215055}	131 - {6220050}	132 - {6220055}

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
France-Territories	HAND	IO_Western	1995	2004
	TROL	IO_Western	1995	2004

NC assigned to Areas			
Area	Area	Area	Area
92 - {6210040}	93 - {6210045}		

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
India	BB	IO_Western	1992	2004

NC assigned to Areas			
Area	Area	Area	Area
19 - {6105070}	31 - {6110070}	32 - {6110075}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
India	GILL	IO_Eastern	1950	2004
	HAND	IO_Eastern	1985	2004
	PSS	IO_Eastern	1950	1990
	TROL	IO_Eastern	1991	2004

NC assigned to Areas			
Area	Area	Area	Area
20 - {6105075}	33 - {6110080}	44 - {6115080}	54 - {6120085}
23 - {6105090}	35 - {6110090}	45 - {6115085}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
India	GILL	IO_Western	1950	2004
	HAND	IO_Western	1991	2003
	TROL	IO_Western	1992	2003

NC assigned to Areas			
Area	Area	Area	Area
31 - {6110070}	32 - {6110075}	43 - {6115070}	53 - {6120070}

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Indonesia	LL	IO_Eastern	1973	2004

NC assigned to Areas			
Area	Area	Area	Area
71 - {6200085}	90 - {6205110}	108 - {6210120}	140 - {6220095}
72 - {6200090}	91 - {6205115}	109 - {6210125}	141 - {6220100}
73 - {6200095}	103 - {6210095}	122 - {6215095}	142 - {6220105}
86 - {6205090}	104 - {6210100}	123 - {6215100}	158 - {6225095}
87 - {6205095}	105 - {6210105}	124 - {6215105}	159 - {6225100}
88 - {6205100}	106 - {6210110}	125 - {6215110}	160 - {6225105}
89 - {6205105}	107 - {6210115}	126 - {6215115}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Indonesia	BB	IO_Eastern	1950	1993
	GILL	IO_Eastern	1950	1967
	HAND	IO_Eastern	1950	2004
	TROL	IO_Eastern	1950	1969

NC assigned to Areas			
Area	Area	Area	Area
12 - {6100095}	24 - {6105095}	88 - {6205100}	91 - {6205115}
13 - {6100100}	73 - {6200095}	89 - {6205105}	108 - {6210120}
23 - {6105090}	74 - {6200100}	90 - {6205110}	109 - {6210125}

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Iran, Islamic Republic	GILL	IO_Western	2002	2004
	HAND	IO_Western	1994	1994

NC assigned to Areas			
Area	Area	Area	Area
49 - {6120050}	51 - {6120060}	59 - {6125050}	
50 - {6120055}	58 - {6125045}	60 - {6125055}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Jordan	GILL	IO_Western	1998	2004
	TROL	IO_Western	1998	2004

NC assigned to Areas			
Area	Area	Area	Area
58 - {6125045}			

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Kenya	GILL	IO_Western	1981	2004
	HAND	IO_Western	1981	2004
	TROL	IO_Western	1984	2004

NC assigned to Areas			
Area	Area	Area	Area
62 - {6200040}	63 - {6200045}		

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Korea, Republic of	BB	IO_Eastern	1975	1981

NC assigned to Areas			
Area	Area	Area	Area
9 - {6100080}	24 - {6105095}	45 - {6115085}	84 - {6205080}
10 - {6100085}	33 - {6110080}	70 - {6200080}	85 - {6205085}
11 - {6100090}	34 - {6110085}	71 - {6200085}	86 - {6205090}
22 - {6105085}	35 - {6110090}	72 - {6200090}	87 - {6205095}
23 - {6105090}	36 - {6110095}	73 - {6200095}	88 - {6205100}

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Korea, Republic of	BB	IO_Western	1971	1983

NC assigned to Areas			
Area	Area	Area	Area
1 - {6100040}	18 - {6105065}	63 - {6200045}	81 - {6205065}
2 - {6100045}	27 - {6110050}	64 - {6200050}	92 - {6210040}
3 - {6100050}	28 - {6110055}	65 - {6200055}	93 - {6210045}
4 - {6100055}	29 - {6110060}	66 - {6200060}	94 - {6210050}
5 - {6100060}	30 - {6110065}	67 - {6200065}	95 - {6210055}
6 - {6100065}	39 - {6115050}	76 - {6205040}	110 - {6215035}
14 - {6105045}	40 - {6115055}	77 - {6205045}	111 - {6215040}
15 - {6105050}	41 - {6115060}	78 - {6205050}	128 - {6220035}
16 - {6105055}	42 - {6115065}	79 - {6205055}	129 - {6220040}
17 - {6105060}	62 - {6200040}	80 - {6205060}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Madagascar	BB	IO_Western	1973	1975

NC assigned to Areas			
Area	Area	Area	Area
93 - {6210045}	112 - {6215045}	130 - {6220045}	148 - {6225045}
94 - {6210050}	113 - {6215050}	131 - {6220050}	
111 - {6215040}	129 - {6220040}	147 - {6225040}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Malaysia	LL	IO_Eastern	2002	2003

NC assigned to Areas			
Area	Area	Area	Area
9 - {6100080}	23 - {6105090}	45 - {6115085}	84 - {6205080}
10 - {6100085}	24 - {6105095}	46 - {6115090}	85 - {6205085}
11 - {6100090}	33 - {6110080}	70 - {6200080}	86 - {6205090}
12 - {6100095}	34 - {6110085}	71 - {6200085}	87 - {6205095}
21 - {6105080}	35 - {6110090}	72 - {6200090}	88 - {6205100}
22 - {6105085}	36 - {6110095}	73 - {6200095}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Maldives	BB	IO_Western	1950	1969
	FN	IO_Western	1994	2004
	HAND	IO_Western	1994	2004
	LLCO	IO_Western	2000	2004
	TROL	IO_Western	1994	2004

NC assigned to Areas			
Area	Area	Area	Area
7 - {6100070}	19 - {6105070}	68 - {6200070}	
8 - {6100075}	20 - {6105075}		

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Maldives	LL	IO_Western	2002	2004

NC assigned to Areas			
Area	Area	Area	Area
6 - {6100065}	18 - {6105065}	30 - {6110065}	69 - {6200075}
7 - {6100070}	19 - {6105070}	31 - {6110070}	70 - {6200080}
8 - {6100075}	20 - {6105075}	67 - {6200065}	
9 - {6100080}	21 - {6105080}	68 - {6200070}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Mauritius	TROL	IO_Western	1977	2004

NC assigned to Areas			
Area	Area	Area	Area
114 - {6215055}	115 - {6215060}	132 - {6220055}	133 - {6220060}

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
NEI-Fresh Tuna	LL	IO_Eastern	1989	2004

NC assigned to Areas			
Area	Area	Area	Area
9 - {6100080}	23 - {6105090}	45 - {6115085}	84 - {6205080}
10 - {6100085}	24 - {6105095}	46 - {6115090}	85 - {6205085}
11 - {6100090}	33 - {6110080}	70 - {6200080}	86 - {6205090}
12 - {6100095}	34 - {6110085}	71 - {6200085}	87 - {6205095}
21 - {6105080}	35 - {6110090}	72 - {6200090}	88 - {6205100}
22 - {6105085}	36 - {6110095}	73 - {6200095}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
NEI-IDN Fresh Tuna	LL	IO_Eastern	1986	1999

NC assigned to Areas			
Area	Area	Area	Area
71 - {6200085}	90 - {6205110}	108 - {6210120}	140 - {6220095}
72 - {6200090}	91 - {6205115}	109 - {6210125}	141 - {6220100}
73 - {6200095}	103 - {6210095}	122 - {6215095}	142 - {6220105}
86 - {6205090}	104 - {6210100}	123 - {6215100}	158 - {6225095}
87 - {6205095}	105 - {6210105}	124 - {6215105}	159 - {6225100}
88 - {6205100}	106 - {6210110}	125 - {6215110}	160 - {6225105}
89 - {6205105}	107 - {6210115}	126 - {6215115}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Oman	GILL	IO_Western	1950	2004

NC assigned to Areas			
Area	Area	Area	Area
40 - {6115055}	50 - {6120055}	51 - {6120060}	60 - {6125055}

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Pakistan	GILL	IO_Western	1950	1971

NC assigned to Areas			
Area	Area	Area	Area
41 - {6115060}	42 - {6115065}	51 - {6120060}	52 - {6120065}

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Qatar	GILL	IO_Western	1982	2004

NC assigned to Areas			
Area	Area	Area	Area
59 - {6125050}			

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Seychelles	GILL	IO_Western	1973	1979
	HAND	IO_Western	1970	1999
	TROL	IO_Western	1970	1991

NC assigned to Areas			
Area	Area	Area	Area
64 - {6200050}	65 - {6200055}	78 - {6205050}	79 - {6205055}

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Spain	BB	IO_Western	1981	1982

NC assigned to Areas			
Area	Area	Area	Area
1 - {6100040}	18 - {6105065}	63 - {6200045}	81 - {6205065}
2 - {6100045}	27 - {6110050}	64 - {6200050}	92 - {6210040}
3 - {6100050}	28 - {6110055}	65 - {6200055}	93 - {6210045}
4 - {6100055}	29 - {6110060}	66 - {6200060}	94 - {6210050}
5 - {6100060}	30 - {6110065}	67 - {6200065}	95 - {6210055}
6 - {6100065}	39 - {6115050}	76 - {6205040}	110 - {6215035}
14 - {6105045}	40 - {6115055}	77 - {6205045}	111 - {6215040}
15 - {6105050}	41 - {6115060}	78 - {6205050}	128 - {6220035}
16 - {6105055}	42 - {6115065}	79 - {6205055}	129 - {6220040}
17 - {6105060}	62 - {6200040}	80 - {6205060}	

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
UK-Territories	HAND	IO_Western	2003	2004

NC assigned to Areas			
Area	Area	Area	Area
68 - {6200070}	82 - {6205070}		

NC strata with no CE				
Fleet	Gear	Area	YearFirst	YearLast
Yemen	GILL	IO_Western	1950	2004
	HAND	IO_Western	1953	2004
	TROL	IO_Western	1950	2004

NC assigned to Areas			
Area	Area	Area	Area
25 - {6110040}	26 - {6110045}	27 - {6110050}	39 - {6115050}

APPENDIX V
Substitution scheme used for the estimation of Catches-at-Size (time-area)

Step	Lat	Lon	Qtr	Step	Lat	Lon	Qtr	Step	Lat	Lon	Qtr	Step	Lat	Lon	Qtr	Step	Lat	Lon	Qtr
1	0	0	-0.25	53	20	-20	0.00	105	30	-20	-0.25	157	40	0	-0.25	209	10	-80	0.00
2	0	0	0.25	54	20	20	0.00	106	30	20	-0.25	158	40	0	0.25	210	10	80	0.00
3	0	-20	0.00	55	-20	-20	-0.25	107	-30	-20	0.25	159	-40	-80	0.00	211	-10	-80	-0.25
4	0	20	0.00	56	-20	20	-0.25	108	-30	20	0.25	160	-40	80	0.00	212	-10	80	-0.25
5	0	-20	-0.25	57	20	-20	-0.25	109	30	-20	0.25	161	40	-80	0.00	213	10	-80	-0.25
6	0	-20	0.25	58	20	20	-0.25	110	30	20	0.25	162	40	80	0.00	214	10	80	-0.25
7	0	20	-0.25	59	-20	-20	0.25	111	-30	-40	0.00	163	-40	-80	-0.25	215	-10	-80	0.25
8	0	20	0.25	60	-20	20	0.25	112	-30	40	0.00	164	-40	80	-0.25	216	-10	80	0.25
9	-10	0	0.00	61	20	-20	0.25	113	30	-40	0.00	165	40	-80	-0.25	217	10	-80	0.25
10	10	0	0.00	62	20	20	0.25	114	30	40	0.00	166	40	80	-0.25	218	10	80	0.25
11	-10	0	-0.25	63	-10	-40	0.00	115	-30	-40	-0.25	167	-40	-80	0.25	219	-20	-80	0.00
12	-10	0	0.25	64	-10	40	0.00	116	-30	40	-0.25	168	-40	80	0.25	220	-20	80	0.00
13	10	0	-0.25	65	10	-40	0.00	117	30	-40	-0.25	169	40	-80	0.25	221	20	-80	0.00
14	10	0	0.25	66	10	40	0.00	118	30	40	-0.25	170	40	80	0.25	222	20	80	0.00
15	-10	-20	0.00	67	-10	-40	-0.25	119	-30	-40	0.25	171	-40	-20	0.00	223	-20	-80	-0.25
16	-10	20	0.00	68	-10	40	-0.25	120	-30	40	0.25	172	-40	20	0.00	224	-20	80	-0.25
17	10	-20	0.00	69	10	-40	-0.25	121	30	-40	0.25	173	40	-20	0.00	225	20	-80	-0.25
18	10	20	0.00	70	10	40	-0.25	122	30	40	0.25	174	40	20	0.00	226	20	80	-0.25
19	-10	-20	-0.25	71	-10	-40	0.25	123	-10	-60	0.00	175	-40	-20	-0.25	227	-20	-80	0.25
20	-10	20	-0.25	72	-10	40	0.25	124	-10	60	0.00	176	-40	20	-0.25	228	-20	80	0.25
21	10	-20	-0.25	73	10	-40	0.25	125	10	-60	0.00	177	40	-20	-0.25	229	20	-80	0.25
22	10	20	-0.25	74	10	40	0.25	126	10	60	0.00	178	40	20	-0.25	230	20	80	0.25
23	-10	-20	0.25	75	0	-60	0.00	127	-10	-60	-0.25	179	-40	-20	0.25	231	-30	-80	0.00
24	-10	20	0.25	76	0	60	0.00	128	-10	60	-0.25	180	-40	20	0.25	232	-30	80	0.00
25	10	-20	0.25	77	0	-60	-0.25	129	10	-60	-0.25	181	40	-20	0.25	233	30	-80	0.00
26	10	20	0.25	78	0	-60	0.25	130	10	60	-0.25	182	40	20	0.25	234	30	80	0.00
27	0	-40	0.00	79	0	60	-0.25	131	-10	-60	0.25	183	-40	-40	0.00	235	-30	-80	-0.25
28	0	40	0.00	80	0	60	0.25	132	-10	60	0.25	184	-40	40	0.00	236	-30	80	-0.25
29	0	-40	-0.25	81	-30	0	0.00	133	10	-60	0.25	185	40	-40	0.00	237	30	-80	-0.25
30	0	-40	0.25	82	30	0	0.00	134	10	60	0.25	186	40	40	0.00	238	30	80	-0.25
31	0	40	-0.25	83	-30	0	-0.25	135	-20	-60	0.00	187	-40	-40	-0.25	239	-30	-80	0.25
32	0	40	0.25	84	-30	0	0.25	136	-20	60	0.00	188	-40	40	-0.25	240	-30	80	0.25
33	-20	0	0.00	85	30	0	-0.25	137	20	-60	0.00	189	40	-40	-0.25	241	30	-80	0.25
34	20	0	0.00	86	30	0	0.25	138	20	60	0.00	190	40	40	-0.25	242	30	80	0.25
35	-20	0	-0.25	87	-30	-60	0.00	139	-20	-60	-0.25	191	-40	-40	0.25	243	0	-100	0.00
36	-20	0	0.25	88	-30	60	0.00	140	-20	60	-0.25	192	-40	40	0.25	244	0	100	0.00
37	20	0	-0.25	89	30	-60	0.00	141	20	-60	-0.25	193	40	-40	0.25	245	0	-100	-0.25
38	20	0	0.25	90	30	60	0.00	142	20	60	-0.25	194	40	40	0.25	246	0	-100	0.25
39	-20	-40	0.00	91	-30	-60	-0.25	143	-20	-60	0.25	195	-40	-60	0.00	247	0	100	-0.25
40	-20	40	0.00	92	-30	60	-0.25	144	-20	60	0.25	196	-40	60	0.00	248	0	100	0.25
41	20	-40	0.00	93	30	-60	-0.25	145	20	-60	0.25	197	40	-60	0.00	249	0	-120	0.00
42	20	40	0.00	94	30	60	-0.25	146	20	60	0.25	198	40	60	0.00	250	0	120	0.00
43	-20	-40	-0.25	95	-30	-60	0.25	147	0	-80	0.00	199	-40	-60	-0.25	251	0	-120	-0.25
44	-20	40	-0.25	96	-30	60	0.25	148	0	80	0.00	200	-40	60	-0.25	252	0	-120	0.25
45	20	-40	-0.25	97	30	-60	0.25	149	0	-80	-0.25	201	40	-60	-0.25	253	0	120	-0.25
46	20	40	-0.25	98	30	60	0.25	150	0	-80	0.25	202	40	60	-0.25	254	0	120	0.25
47	-20	-40	0.25	99	-30	-20	0.00	151	0	80	-0.25	203	-40	-60	0.25	255	0	0	-0.50
48	-20	40	0.25	100	-30	20	0.00	152	0	80	0.25	204	-40	60	0.25	256	0	0	0.50
49	20	-40	0.25	101	30	-20	0.00	153	-40	0	0.00	205	40	-60	0.25	257	0	-20	-0.50
50	20	40	0.25	102	30	20	0.00	154	40	0	0.00	206	40	60	0.25	258	0	-20	0.50
51	-20	-20	0.00	103	-30	-20	-0.25	155	-40	0	-0.25	207	-10	-80	0.00	259	0	20	-0.50
52	-20	20	0.00	104	-30	20	-0.25	156	-40	0	0.25	208	-10	80	0.00	260	0	20	0.50

Step	Lat	Lon	Qtr
261	-10	0	-0.50
262	-10	0	0.50
263	10	0	-0.50
264	10	0	0.50
265	-10	-20	-0.50
266	-10	20	-0.50
267	10	-20	-0.50
268	10	20	-0.50
269	-10	-20	0.50
270	-10	20	0.50
271	10	-20	0.50
272	10	20	0.50
273	0	-40	-0.50
274	0	-40	0.50
275	0	40	-0.50
276	0	40	0.50
277	-20	0	-0.50
278	-20	0	0.50
279	20	0	-0.50
280	20	0	0.50
281	-20	-40	-0.50
282	-20	40	-0.50
283	20	-40	-0.50
284	20	40	-0.50
285	-20	-40	0.50
286	-20	40	0.50
287	20	-40	0.50
288	20	40	0.50
289	-20	-20	-0.50
290	-20	20	-0.50
291	20	-20	-0.50
292	20	20	-0.50
293	-20	-20	0.50
294	-20	20	0.50
295	20	-20	0.50
296	20	20	0.50
297	-10	-40	-0.50
298	-10	40	-0.50
299	10	-40	-0.50
300	10	40	-0.50
301	-10	-40	0.50
302	-10	40	0.50
303	10	-40	0.50
304	10	40	0.50
305	0	-60	-0.50
306	0	-60	0.50
307	0	60	-0.50
308	0	60	0.50
309	-30	0	-0.50
310	-30	0	0.50
311	30	0	-0.50
312	30	0	0.50
313	-30	-60	-0.50
314	-30	60	-0.50
315	30	-60	-0.50
316	30	60	-0.50
317	-30	-60	0.50
318	-30	60	0.50
319	30	-60	0.50
320	30	60	0.50
321	-30	-20	-0.50
322	-30	20	-0.50
323	30	-20	-0.50
324	30	20	-0.50
325	-30	-20	0.50
326	-30	20	0.50
327	30	-20	0.50
328	30	20	0.50
329	-30	-40	-0.50
330	-30	40	-0.50
331	30	-40	-0.50
332	30	40	-0.50
333	-30	-40	0.50
334	-30	40	0.50
335	30	-40	0.50
336	30	40	0.50
337	-10	-60	-0.50
338	-10	60	-0.50
339	10	-60	-0.50
340	10	60	-0.50
341	-10	-60	0.50
342	-10	60	0.50
343	10	-60	0.50
344	10	60	0.50
345	-20	-60	-0.50
346	-20	60	-0.50
347	20	-60	-0.50
348	20	60	-0.50
349	-20	-60	0.50
350	-20	60	0.50
351	20	-60	0.50
352	20	60	0.50
353	0	-80	-0.50
354	0	-80	0.50
355	0	80	-0.50
356	0	80	0.50
357	-40	0	-0.50
358	-40	0	0.50
359	40	0	-0.50
360	40	0	0.50
361	-40	-80	-0.50
362	-40	80	-0.50
363	40	-80	-0.50
364	40	80	-0.50
365	-40	-80	0.50
366	-40	80	0.50
367	40	-80	0.50
368	40	80	0.50
369	-40	-20	-0.50
370	-40	20	-0.50
371	40	-20	-0.50
372	40	20	-0.50
373	-40	-20	0.50
374	-40	20	0.50
375	40	-20	0.50
376	40	20	0.50
377	-40	-40	-0.50
378	-40	40	-0.50
379	40	-40	-0.50
380	40	40	-0.50
381	-40	-40	0.50
382	-40	40	0.50
383	40	-40	0.50
384	40	40	0.50
385	-40	-60	-0.50
386	-40	60	-0.50
387	40	-60	-0.50
388	40	60	-0.50
389	-40	-60	0.50
390	-40	60	0.50
391	40	-60	0.50
392	40	60	0.50
393	-10	-80	-0.50
394	-10	80	-0.50
395	10	-80	-0.50
396	10	80	-0.50
397	-10	-80	0.50
398	-10	80	0.50
399	10	-80	0.50
400	10	80	0.50
401	-20	-80	-0.50
402	-20	80	-0.50
403	20	-80	-0.50
404	20	80	-0.50
405	-20	-80	0.50
406	-20	80	0.50
407	20	-80	0.50
408	20	80	0.50
409	-30	-80	-0.50
410	-30	80	-0.50
411	30	-80	-0.50
412	30	80	-0.50
413	-30	-80	0.50
414	-30	80	0.50
415	30	-80	0.50
416	30	80	0.50
417	0	-100	-0.50
418	0	-100	0.50
419	0	100	-0.50
420	0	100	0.50
421	0	-120	-0.50
422	0	-120	0.50
423	0	120	-0.50
424	0	120	0.50
425	0	0	-0.75
426	0	0	0.75
427	0	-20	-0.75
428	0	-20	0.75
429	0	20	-0.75
430	0	20	0.75
431	-10	0	-0.75
432	-10	0	0.75
433	10	0	-0.75
434	10	0	0.75
435	-10	-20	-0.75
436	-10	20	-0.75
437	10	-20	-0.75
438	10	20	-0.75
439	-10	-20	0.75
440	-10	20	0.75
441	10	-20	0.75
442	10	20	0.75
443	0	-40	-0.75
444	0	-40	0.75
445	0	40	-0.75
446	0	40	0.75
447	-20	0	-0.75
448	-20	0	0.75
449	20	0	-0.75
450	20	0	0.75
451	-20	-40	-0.75
452	-20	40	-0.75
453	20	-40	-0.75
454	20	40	-0.75
455	-20	-40	0.75
456	-20	40	0.75
457	20	-40	0.75
458	20	40	0.75
459	-20	-20	-0.75
460	-20	20	-0.75
461	20	-20	-0.75
462	20	20	-0.75
463	-20	-20	0.75
464	-20	20	0.75
465	20	-20	0.75
466	20	20	0.75
467	-10	-40	-0.75
468	-10	40	-0.75
469	10	-40	-0.75
470	10	40	-0.75
471	-10	-40	0.75
472	-10	40	0.75
473	10	-40	0.75
474	10	40	0.75
475	0	-60	-0.75
476	0	-60	0.75
477	0	60	-0.75
478	0	60	0.75
479	-30	0	-0.75
480	-30	0	0.75
481	30	0	-0.75
482	30	0	0.75
483	-30	-60	-0.75
484	-30	60	-0.75
485	30	-60	-0.75
486	30	60	-0.75
487	-30	-60	0.75
488	-30	60	0.75
489	30	-60	0.75
490	30	60	0.75
491	-30	-20	-0.75
492	-30	20	-0.75
493	30	-20	-0.75
494	30	20	-0.75
495	-30	-20	0.75
496	-30	20	0.75
497	30	-20	0.75
498	30	20	0.75
499	-30	-40	-0.75
500	-30	40	-0.75
501	30	-40	-0.75
502	30	40	-0.75
503	-30	-40	0.75
504	-30	40	0.75
505	30	-40	0.75
506	30	40	0.75
507	-10	-60	-0.75
508	-10	60	-0.75
509	10	-60	-0.75
510	10	60	-0.75
511	-10	-60	0.75
512	-10	60	0.75
513	10	-60	0.75
514	10	60	0.75
515	-20	-60	-0.75
516	-20	60	-0.75
517	20	-60	-0.75
518	20	60	-0.75
519	-20	-60	0.75
520	-20	60	0.75

Step	Lat	Lon	Qtr
521	20	-60	0.75
522	20	60	0.75
523	0	-80	-0.75
524	0	-80	0.75
525	0	80	-0.75
526	0	80	0.75
527	-40	0	-0.75
528	-40	0	0.75
529	40	0	-0.75
530	40	0	0.75
531	-40	-80	-0.75
532	-40	80	-0.75
533	40	-80	-0.75
534	40	80	-0.75
535	-40	-80	0.75
536	-40	80	0.75
537	40	-80	0.75
538	40	80	0.75
539	-40	-20	-0.75
540	-40	20	-0.75
541	40	-20	-0.75
542	40	20	-0.75
543	-40	-20	0.75
544	-40	20	0.75
545	40	-20	0.75
546	40	20	0.75
547	-40	-40	-0.75
548	-40	40	-0.75
549	40	-40	-0.75
550	40	40	-0.75
551	-40	-40	0.75
552	-40	40	0.75
553	40	-40	0.75
554	40	40	0.75
555	-40	-60	-0.75
556	-40	60	-0.75
557	40	-60	-0.75
558	40	60	-0.75
559	-40	-60	0.75
560	-40	60	0.75
561	40	-60	0.75
562	40	60	0.75
563	-10	-80	-0.75
564	-10	80	-0.75
565	10	-80	-0.75
566	10	80	-0.75
567	-10	-80	0.75
568	-10	80	0.75
569	10	-80	0.75
570	10	80	0.75
571	-20	-80	-0.75
572	-20	80	-0.75
573	20	-80	-0.75
574	20	80	-0.75
575	-20	-80	0.75
576	-20	80	0.75
577	20	-80	0.75
578	20	80	0.75
579	-30	-80	-0.75
580	-30	80	-0.75
581	30	-80	-0.75
582	30	80	-0.75
583	-30	-80	0.75
584	-30	80	0.75
585	30	-80	0.75
586	30	80	0.75
587	0	-100	-0.75
588	0	-100	0.75
589	0	100	-0.75
590	0	100	0.75
591	0	-120	-0.75
592	0	-120	0.75
593	0	120	-0.75
594	0	120	0.75
595	0	0	-1.00
596	0	0	1.00
597	0	-20	-1.00
598	0	-20	1.00
599	0	20	-1.00
600	0	20	1.00
601	-10	0	-1.00
602	-10	0	1.00
603	10	0	-1.00
604	10	0	1.00
605	-10	-20	-1.00
606	-10	20	-1.00
607	10	-20	-1.00
608	10	20	-1.00
609	-10	-20	1.00
610	-10	20	1.00
611	10	-20	1.00
612	10	20	1.00
613	0	-40	-1.00
614	0	-40	1.00
615	0	40	-1.00
616	0	40	1.00
617	-20	0	-1.00
618	-20	0	1.00
619	20	0	-1.00
620	20	0	1.00
621	-20	-40	-1.00
622	-20	40	-1.00
623	20	-40	-1.00
624	20	40	-1.00
625	-20	-40	1.00
626	-20	40	1.00
627	20	-40	1.00
628	20	40	1.00
629	-20	-20	-1.00
630	-20	20	-1.00
631	20	-20	-1.00
632	20	20	-1.00
633	-20	-20	1.00
634	-20	20	1.00
635	20	-20	1.00
636	20	20	1.00
637	-10	-40	-1.00
638	-10	40	-1.00
639	10	-40	-1.00
640	10	40	-1.00
641	-10	-40	1.00
642	-10	40	1.00
643	10	-40	1.00
644	10	40	1.00
645	0	-60	-1.00
646	0	-60	1.00
647	0	60	-1.00
648	0	60	1.00
649	-30	0	-1.00
650	-30	0	1.00
651	30	0	-1.00
652	30	0	1.00
653	-30	-60	-1.00
654	-30	60	-1.00
655	30	-60	-1.00
656	30	60	-1.00
657	-30	-60	1.00
658	-30	60	1.00
659	30	-60	1.00
660	30	60	1.00
661	-30	-20	-1.00
662	-30	20	-1.00
663	30	-20	-1.00
664	30	20	-1.00
665	-30	-20	1.00
666	-30	20	1.00
667	30	-20	1.00
668	30	20	1.00
669	-30	-40	-1.00
670	-30	40	-1.00
671	30	-40	-1.00
672	30	40	-1.00
673	-30	-40	1.00
674	-30	40	1.00
675	30	-40	1.00
676	30	40	1.00
677	-10	-60	-1.00
678	-10	60	-1.00
679	10	-60	-1.00
680	10	60	-1.00
681	-10	-60	1.00
682	-10	60	1.00
683	10	-60	1.00
684	10	60	1.00
685	-20	-60	-1.00
686	-20	60	-1.00
687	20	-60	-1.00
688	20	60	-1.00
689	-20	-60	1.00
690	-20	60	1.00
691	20	-60	1.00
692	20	60	1.00
693	0	-80	-1.00
694	0	-80	1.00
695	0	80	-1.00
696	0	80	1.00
697	-40	0	-1.00
698	-40	0	1.00
699	40	0	-1.00
700	40	0	1.00
701	-40	-80	-1.00
702	-40	80	-1.00
703	40	-80	-1.00
704	40	80	-1.00
705	-40	-80	1.00
706	-40	80	1.00
707	40	-80	1.00
708	40	80	1.00
709	-40	-20	-1.00
710	-40	20	-1.00
711	40	-20	-1.00
712	40	20	-1.00
713	-40	-20	1.00
714	-40	20	1.00
715	40	-20	1.00
716	40	20	1.00
717	-40	-40	-1.00
718	-40	40	-1.00
719	40	-40	-1.00
720	40	40	-1.00
721	-40	-40	1.00
722	-40	40	1.00
723	40	-40	1.00
724	40	40	1.00
725	-40	-60	-1.00
726	-40	60	-1.00
727	40	-60	-1.00
728	40	60	-1.00
729	-40	-60	1.00
730	-40	60	1.00
731	40	-60	1.00
732	40	60	1.00
733	-10	-80	-1.00
734	-10	80	-1.00
735	10	-80	-1.00
736	10	80	-1.00
737	-10	-80	1.00
738	-10	80	1.00
739	10	-80	1.00
740	10	80	1.00
741	-20	-80	-1.00
742	-20	80	-1.00
743	20	-80	-1.00
744	20	80	-1.00
745	-20	-80	1.00
746	-20	80	1.00
747	20	-80	1.00
748	20	80	1.00
749	-30	-80	-1.00
750	-30	80	-1.00
751	30	-80	-1.00
752	30	80	-1.00
753	-30	-80	1.00
754	-30	80	1.00
755	30	-80	1.00
756	30	80	1.00
757	0	-100	-1.00
758	0	-100	1.00
759	0	100	-1.00
760	0	100	1.00
761	0	-120	-1.00
762	0	-120	1.00
763	0	120	-1.00
764	0	120	1.00

APPENDIX VI
Substitution scheme used for the estimation of Catches-at-Size (Fleet-Gear)

a/ Bigeye tuna

Gear	Fleet	GearA	FleetA	GearA2	FleetA2	GearA3	FleetA3
BB	AUS	BB	AG1	BB	AG1	PS	AG1
BB	MDV	BB	AG2	BB	AG1	PS	AG1
BBM	MDV	BB	AG2	BB	AG1	PS	AG1
BBN	MDV	BB	AG2	BB	AG1	PS	AG1
BB	TZA	BB	AG3	BB	AG1	PS	AG1
ELL	AUS	ELL	AG1	ELL	AG1	LL	AG1
ELL	ESP	ELL	AG2	ELL	AG1	LL	AG1
LLEX	ESP	ELL	AG2	ELL	AG1	LL	AG1
ELL	FRA-REU	ELL	AG3	ELL	AG1	LL	AG1
ELL	FRAT	ELL	AG3	ELL	AG1	LL	AG1
LL	GBR	ELL	AG2	ELL	AG1	LL	AG1
ELL	GIN	ELL	AG2	ELL	AG1	LL	AG1
ELL	KEN	ELL	AG2	ELL	AG1	LL	AG1
ELL	MUS	ELL	AG3	ELL	AG1	LL	AG1
LL	MUS	ELL	AG2	ELL	AG1	LL	AG1
ELL	NEI-DFRZ	ELL	AG2	ELL	AG1	LL	AG1
TLL	NEI-DFRZ	ELL	AG2	ELL	AG1	LL	AG1
LL	PRT	ELL	AG2	ELL	AG1	LL	AG1
LLD	PRT	ELL	AG2	ELL	AG1	LL	AG1
SLL	PRT	ELL	AG2	ELL	AG1	LL	AG1
ELL	SYC	ELL	AG3	ELL	AG1	LL	AG1
ELL	URY	ELL	AG2	ELL	AG1	LL	AG1
LL	ZAF	ELL	AG2	ELL	AG1	LL	AG1
SLL	ZAF	ELL	AG2	ELL	AG1	LL	AG1
TLL	ZAF	ELL	AG2	ELL	AG1	LL	AG1
FLL	CHN	FLL	AG1	FLL	AG1	LL	AG1
LL	CHN	FLL	AG1	FLL	AG1	LL	AG1
FLL	IDN	FLL	AG2	FLL	AG1	LL	AG1
FLL	MDV	FLL	AG1	FLL	AG1	LL	AG1
FLL	MYS	FLL	AG1	FLL	AG1	LL	AG1
FLL	NEI-ICE	FLL	AG1	FLL	AG1	LL	AG1
FLL	NEI-IDN	FLL	AG2	FLL	AG1	LL	AG1
FLL	OMN	FLL	AG1	FLL	AG1	LL	AG1
FLL	TWN	FLL	AG1	FLL	AG1	LL	AG1
GILL	AUS	GILL	AG2	GILL	AG1	ART	AG1
G/L	LKA	GILL	AG5	GILL	AG1	ART	AG1
GILL	LKA	GILL	AG2	GILL	AG1	ART	AG1
GILL	TMP	GILL	AG2	GILL	AG1	ART	AG1
GILL	TWN	GILL	AG5	GILL	AG1	ART	AG1
HAND	AUS	HAND	AG1	LINE	AG1	ART	AG1
HAND	COM	HAND	AG2	LINE	AG1	ART	AG1
HAND	FRA-REU	HAND	AG3	LINE	AG1	ART	AG1
HAND	FRAT	HAND	AG2	LINE	AG1	ART	AG1
HAND	KEN	HAND	AG2	LINE	AG1	ART	AG1
HAND	LKA	HAND	AG5	LINE	AG1	ART	AG1
LL	LKA	HAND	AG5	LINE	AG1	ART	AG1
HAND	SYC	HAND	AG5	LINE	AG1	ART	AG1
HAND	TZA	HAND	AG2	LINE	AG1	ART	AG1
HAND	ZAF	HAND	AG3	LINE	AG1	ART	AG1
LL	BLZ	LL	AG3	LL	AG2	LL	AG1
LL	IND	LL	AG3	LL	AG2	LL	AG1
LLEX	IND	LL	AG3	LL	AG2	LL	AG1
LL	IRN	LL	AG2	LL	AG2	LL	AG1
LL	JPN	LL	AG1	LL	AG1	LL	AG1
LL	KOR	LL	AG1	LL	AG1	LL	AG1
LL	NEI-DFRZ	LL	AG3	LL	AG2	LL	AG1
LL	PHL	LL	AG3	LL	AG2	LL	AG1
LL	SUN	LL	AG2	LL	AG2	LL	AG1
LL	SYC	LL	AG3	LL	AG2	LL	AG1
LL	THA	LL	AG1	LL	AG1	LL	AG1
LL	TWN	LL	AG3	LL	AG2	LL	AG1
PS	BLZ	PS	AG5	PS	AG2	PS	AG1
PS	ESP	PS	AG2	PS	AG2	PS	AG1
PS	FRA	PS	AG3	PS	AG2	PS	AG1
PS	FRAT	PS	AG3	PS	AG2	PS	AG1
PS	IRN	PS	AG5	PS	AG2	PS	AG1
PS	JPN	PS	AG4	PS	AG3	PS	AG1
PS	MUS	PS	AG4	PS	AG3	PS	AG1
PS	NEI-OTH	PS	AG5	PS	AG2	PS	AG1
PS	NEI-SUN	PS	AG6	PS	AG4	PS	AG1
PS	SUN	PS	AG6	PS	AG4	PS	AG1
PS	SYC	PS	AG5	PS	AG2	PS	AG1
PS	THA	PS	AG6	PS	AG4	PS	AG1
PSS	IDN	PSS	AG1	PSS	AG1	PS	AG1
RIN	LKA	PSS	AG1	PSS	AG1	PS	AG1
TROL	AUS	TROL	AG1	LINE	AG1	ART	AG1
TROL	COM	TROL	AG2	LINE	AG1	ART	AG1
TROL	FRA-REU	TROL	AG3	LINE	AG1	ART	AG1
TROL	FRAT	TROL	AG2	LINE	AG1	ART	AG1
TROL	IDN	TROL	AG1	LINE	AG1	ART	AG1
TROL	LKA	TROL	AG5	LINE	AG1	ART	AG1
TROL	MUS	TROL	AG3	LINE	AG1	ART	AG1

b/Yellowfin tuna

Gear	Fleet	GearA	FleetA	GearA2	FleetA2	GearA3	FleetA3
BB	AUS	BB	AG1	BB	AG1	PS	AG1
BBPS	AUS	BB	AG1	BB	AG1	PS	AG1
BB	ESP	BB	AG3	BB	AG1	PS	AG1
BB	IDN	BB	AG2	BB	AG1	PS	AG1
BB	IND	BB	AG2	BB	AG1	PS	AG1
BB	LKA	BB	AG2	BB	AG1	PS	AG1
BB	MDG	BB	AG3	BB	AG1	PS	AG1
BB	MDV	BB	AG2	BB	AG1	PS	AG1
BBM	MDV	BB	AG2	BB	AG1	PS	AG1
BBN	MDV	BB	AG2	BB	AG1	PS	AG1
BB	TZA	BB	AG3	BB	AG1	PS	AG1
ELL	AUS	ELL	AG1	ELL	AG1	LL	AG1
ELL	ESP	ELL	AG2	ELL	AG1	LL	AG1
ELL	FRA-REU	ELL	AG3	ELL	AG1	LL	AG1
ELL	FRAT	ELL	AG3	ELL	AG1	LL	AG1
LL	GBR	ELL	AG2	ELL	AG1	LL	AG1
ELL	GIN	ELL	AG2	ELL	AG1	LL	AG1
ELL	KEN	ELL	AG2	ELL	AG1	LL	AG1
ELL	MUS	ELL	AG3	ELL	AG1	LL	AG1
LL	MUS	ELL	AG2	ELL	AG1	LL	AG1
ELL	NEI-DFRZ	ELL	AG2	ELL	AG1	LL	AG1
TLL	NEI-DFRZ	ELL	AG2	ELL	AG1	LL	AG1
LL	PRT	ELL	AG2	ELL	AG1	LL	AG1
LLD	PRT	ELL	AG2	ELL	AG1	LL	AG1
SLL	PRT	ELL	AG2	ELL	AG1	LL	AG1
ELL	SEN	ELL	AG2	ELL	AG1	LL	AG1
ELL	SYC	ELL	AG3	ELL	AG1	LL	AG1
ELL	URY	ELL	AG2	ELL	AG1	LL	AG1
LL	ZAF	ELL	AG2	ELL	AG1	LL	AG1
SLL	ZAF	ELL	AG2	ELL	AG1	LL	AG1
TLL	ZAF	ELL	AG2	ELL	AG1	LL	AG1
FLL	CHN	FLL	AG1	FLL	AG1	LL	AG1
FLL	HND	FLL	AG1	FLL	AG1	LL	AG1
FLL	IDN	FLL	AG2	FLL	AG1	LL	AG1
FLL	IND	FLL	AG1	FLL	AG1	LL	AG1
FLL	MDV	FLL	AG1	FLL	AG1	LL	AG1
FLL	MYS	FLL	AG1	FLL	AG1	LL	AG1
FLL	NEI-ICE	FLL	AG1	FLL	AG1	LL	AG1
FLL	NEI-IDN	FLL	AG2	FLL	AG1	LL	AG1
FLL	OMN	FLL	AG1	FLL	AG1	LL	AG1
FLL	TWN	FLL	AG1	FLL	AG1	LL	AG1
GILL	AUS	GILL	AG1	GILL	AG1	GILL	AG1
GILL	BHR	GILL	AG2	GILL	AG1	GILL	AG1
GILL	DJI	GILL	AG3	GILL	AG1	GILL	AG1
GILL	IDN	GILL	AG1	GILL	AG1	GILL	AG1
GILL	IND	GILL	AG2	GILL	AG1	GILL	AG1
GILL	IRN	GILL	AG2	GILL	AG1	GILL	AG1
GILL	JOR	GILL	AG2	GILL	AG1	GILL	AG1
GILL	KEN	GILL	AG3	GILL	AG1	GILL	AG1
G/L	LKA	GILL	AG5	GILL	AG2	GILL	AG1
GILL	LKA	GILL	AG2	GILL	AG1	GILL	AG1
GIOF	LKA	GILL	AG5	GILL	AG2	GILL	AG1
FN	MDV	GILL	AG4	GILL	AG1	GILL	AG1
GILL	OMN	GILL	AG2	GILL	AG1	GILL	AG1
GILL	PAK	GILL	AG2	GILL	AG1	GILL	AG1
GILL	QAT	GILL	AG2	GILL	AG1	GILL	AG1
GILL	TMP	GILL	AG1	GILL	AG1	GILL	AG1
GILL	TWN	GILL	AG5	GILL	AG2	GILL	AG1
GILL	TZA	GILL	AG3	GILL	AG1	GILL	AG1
GILL	YEM	GILL	AG2	GILL	AG1	GILL	AG1
HAND	AUS	HAND	AG1	LINE	AG1	ART	AG1
HAND	BGD	HAND	AG4	LINE	AG1	ART	AG1
HAND	COM	HAND	AG2	LINE	AG1	ART	AG1
HAND	FRA-REU	HAND	AG3	LINE	AG1	ART	AG1
HAND	FRAT	HAND	AG2	LINE	AG1	ART	AG1
HAND	GBRT	HAND	AG5	LINE	AG1	ART	AG1
HAND	IDN	HAND	AG1	LINE	AG1	ART	AG1
HAND	IND	HAND	AG4	LINE	AG1	ART	AG1
HAND	KEN	HAND	AG2	LINE	AG1	ART	AG1
HAND	LKA	HAND	AG5	LINE	AG1	ART	AG1
LL	LKA	HAND	AG5	LINE	AG1	ART	AG1
LLHA	LKA	HAND	AG5	LINE	AG1	ART	AG1
HAND	MDV	HAND	AG5	LINE	AG1	ART	AG1
LLCO	MDV	HAND	AG6	LINE	AG1	ART	AG1
HAND	OMN	HAND	AG4	LINE	AG1	ART	AG1
HAND	SYC	HAND	AG5	LINE	AG1	ART	AG1
HAND	TMP	HAND	AG1	LINE	AG1	ART	AG1
HAND	TZA	HAND	AG2	LINE	AG1	ART	AG1
HAND	YEM	HAND	AG4	LINE	AG1	ART	AG1
HAND	ZAF	HAND	AG3	LINE	AG1	ART	AG1
HARP	LKA	HARP	AG1	ART	AG1	ART	AG1
LL	BLZ	LL	AG3	LL	AG2	LL	AG1
LL	CHN	LL	AG3	LL	AG2	LL	AG1
LL	IND	LL	AG3	LL	AG2	LL	AG1
LLEX	IND	LL	AG3	LL	AG2	LL	AG1
LL	IRN	LL	AG2	LL	AG2	LL	AG1
LL	JPN	LL	AG1	LL	AG1	LL	AG1
LL	KOR	LL	AG1	LL	AG1	LL	AG1

Gear	Fleet	GearA	FleetA	GearA2	FleetA2	GearA3	FleetA3
LL	NEI-DFRZ	LL	AG3	LL	AG2	LL	AG1
LL	PAK	LL	AG3	LL	AG2	LL	AG1
LL	PHL	LL	AG3	LL	AG2	LL	AG1
LL	SUN	LL	AG2	LL	AG2	LL	AG1
LL	SYC	LL	AG3	LL	AG2	LL	AG1
LL	THA	LL	AG1	LL	AG1	LL	AG1
LL	TWN	LL	AG3	LL	AG2	LL	AG1
PS	AUS	PS	AG1	PS	AG1	PS	AG1
PS	BLZ	PS	AG2	PS	AG2	PS	AG1
PS	ESP	PS	AG2	PS	AG2	PS	AG1
PS	FRA	PS	AG3	PS	AG2	PS	AG1
PS	FRAT	PS	AG3	PS	AG2	PS	AG1
PS	IRN	PS	AG5	PS	AG2	PS	AG1
PS	JPN	PS	AG4	PS	AG3	PS	AG1
PS	MUS	PS	AG4	PS	AG3	PS	AG1
PS	NEI-OTH	PS	AG5	PS	AG2	PS	AG1
PS	NEI-SUN	PS	AG6	PS	AG4	PS	AG1
PS	SUN	PS	AG6	PS	AG4	PS	AG1
PS	SYC	PS	AG5	PS	AG2	PS	AG1
PS	THA	PS	AG6	PS	AG4	PS	AG1
BS	IDN	PSS	AG1	PSS	AG1	ART	AG1
PSS	IDN	PSS	AG1	PSS	AG1	PS	AG1
RIN	LKA	PSS	AG1	PSS	AG1	PS	AG1
PSS	SUN	PSS	AG2	PSS	AG1	PS	AG1
PSS	TZA	PSS	AG1	PSS	AG1	PS	AG1
SPOR	AUS	TROL	AG1	LINE	AG1	ART	AG1
TROL	AUS	TROL	AG1	LINE	AG1	ART	AG1
TROL	COM	TROL	AG2	LINE	AG1	ART	AG1
TROL	FRA-REU	TROL	AG3	LINE	AG1	ART	AG1
TROL	FRAT	TROL	AG2	LINE	AG1	ART	AG1
TROL	IDN	TROL	AG1	LINE	AG1	ART	AG1
TROL	IND	TROL	AG4	LINE	AG1	ART	AG1
TROL	IRN	TROL	AG4	LINE	AG1	ART	AG1
TROL	JOR	TROL	AG4	LINE	AG1	ART	AG1
TROL	KEN	TROL	AG2	LINE	AG1	ART	AG1
TROL	LKA	TROL	AG5	LINE	AG1	ART	AG1
TROL	MDV	TROL	AG5	LINE	AG1	ART	AG1
TROLM	MDV	TROL	AG5	LINE	AG1	ART	AG1
TROLN	MDV	TROL	AG5	LINE	AG1	ART	AG1
TROL	MUS	TROL	AG3	LINE	AG1	ART	AG1
TROL	SYC	TROL	AG3	LINE	AG1	ART	AG1
TROL	TMP	TROL	AG1	LINE	AG1	ART	AG1
TROL	TZA	TROL	AG2	LINE	AG1	ART	AG1
TROL	YEM	TROL	AG4	LINE	AG1	ART	AG1

c/Skipjack tuna

Gear	Fleet	GearA	FleetA	GearA2	FleetA2	GearA3	FleetA3
TRAP	AUS	ART	AG1	ART	AG1	ART	AG1
TRAW	AUS	ART	AG1	ART	AG1	ART	AG1
TRAW	IND	ART	AG1	ART	AG1	ART	AG1
BB	AUS	BB	AG1	BB	AG1	PS	AG1
BBPS	AUS	BB	AG1	BB	AG1	PS	AG1
BB	ESP	BB	AG3	BB	AG1	PS	AG1
BB	IDN	BB	AG2	BB	AG1	PS	AG1
BB	IND	BB	AG2	BB	AG1	PS	AG1
BB	KOR	BB	AG3	BB	AG1	PS	AG1
BB	LKA	BB	AG2	BB	AG1	PS	AG1
BB	MDG	BB	AG3	BB	AG1	PS	AG1
BB	MDV	BB	AG2	BB	AG1	PS	AG1
BBM	MDV	BB	AG2	BB	AG1	PS	AG1
BBN	MDV	BB	AG2	BB	AG1	PS	AG1
BB	TZA	BB	AG3	BB	AG1	PS	AG1
ELL	AUS	ELL	AG1	ELL	AG1	LL	AG1
ELL	ESP	ELL	AG2	ELL	AG1	LL	AG1
LLEX	ESP	ELL	AG2	ELL	AG1	LL	AG1
ELL	FRA-REU	ELL	AG3	ELL	AG1	LL	AG1
LL	GBR	ELL	AG2	ELL	AG1	LL	AG1
ELL	GIN	ELL	AG2	ELL	AG1	LL	AG1
ELL	KEN	ELL	AG2	ELL	AG1	LL	AG1
LL	MUS	ELL	AG2	ELL	AG1	LL	AG1
ELL	NEI-DFRZ	ELL	AG2	ELL	AG1	LL	AG1
LL	PRT	ELL	AG2	ELL	AG1	LL	AG1
LLD	PRT	ELL	AG2	ELL	AG1	LL	AG1
ELL	URY	ELL	AG2	ELL	AG1	LL	AG1
LL	ZAF	ELL	AG2	ELL	AG1	LL	AG1
FLL	CHN	FLL	AG1	FLL	AG1	LL	AG1
LL	CHN	FLL	AG1	FLL	AG1	LL	AG1
FLL	IDN	FLL	AG2	FLL	AG1	LL	AG1
FLL	MDV	FLL	AG1	FLL	AG1	LL	AG1
FLL	MYS	FLL	AG1	FLL	AG1	LL	AG1
FLL	NEI-ICE	FLL	AG1	FLL	AG1	LL	AG1
FLL	OMN	FLL	AG1	FLL	AG1	LL	AG1
FLL	TWN	FLL	AG1	FLL	AG1	LL	AG1
GILL	AUS	GILL	AG1	GILL	AG1	GILL	AG1
GILL	BHR	GILL	AG2	GILL	AG1	GILL	AG1
GILL	DJI	GILL	AG3	GILL	AG1	GILL	AG1
GILL	IDN	GILL	AG1	GILL	AG1	GILL	AG1
GILL	IND	GILL	AG2	GILL	AG1	GILL	AG1
GILL	IRN	GILL	AG2	GILL	AG1	GILL	AG1
GILL	JOR	GILL	AG2	GILL	AG1	GILL	AG1
GILL	KEN	GILL	AG3	GILL	AG1	GILL	AG1
G/L	LKA	GILL	AG5	GILL	AG2	GILL	AG1
GILL	LKA	GILL	AG2	GILL	AG1	GILL	AG1
GIOF	LKA	GILL	AG5	GILL	AG2	GILL	AG1
FN	MDV	GILL	AG4	GILL	AG1	GILL	AG1
GILL	OMN	GILL	AG2	GILL	AG1	GILL	AG1
GILL	PAK	GILL	AG2	GILL	AG1	GILL	AG1
GILL	QAT	GILL	AG2	GILL	AG1	GILL	AG1
GILL	SYC	GILL	AG3	GILL	AG1	GILL	AG1
GILL	TMP	GILL	AG1	GILL	AG1	GILL	AG1
GILL	TWN	GILL	AG5	GILL	AG2	GILL	AG1
GILL	TZA	GILL	AG3	GILL	AG1	GILL	AG1
GILL	YEM	GILL	AG2	GILL	AG1	GILL	AG1
HAND	AUS	HAND	AG1	LINE	AG1	ART	AG1
HAND	BGD	HAND	AG4	LINE	AG1	ART	AG1
HAND	COM	HAND	AG2	LINE	AG1	ART	AG1
HAND	FRA-REU	HAND	AG3	LINE	AG1	ART	AG1
HAND	FRAT	HAND	AG2	LINE	AG1	ART	AG1
HAND	GBRT	HAND	AG5	LINE	AG1	ART	AG1
HAND	IDN	HAND	AG1	LINE	AG1	ART	AG1
HAND	IND	HAND	AG4	LINE	AG1	ART	AG1
HAND	IRN	HAND	AG4	LINE	AG1	ART	AG1
HAND	KEN	HAND	AG2	LINE	AG1	ART	AG1
HAND	LKA	HAND	AG5	LINE	AG1	ART	AG1
LL	LKA	HAND	AG5	LINE	AG1	ART	AG1
HAND	MDV	HAND	AG5	LINE	AG1	ART	AG1
LLCO	MDV	HAND	AG6	LINE	AG1	ART	AG1
HAND	SYC	HAND	AG5	LINE	AG1	ART	AG1
HAND	TZA	HAND	AG2	LINE	AG1	ART	AG1
HAND	ZAF	HAND	AG3	LINE	AG1	ART	AG1
HARP	LKA	HARP	AG1	ART	AG1	ART	AG1
LL	BLZ	LL	AG3	LL	AG2	LL	AG1
LL	IND	LL	AG3	LL	AG2	LL	AG1
LLEX	IND	LL	AG3	LL	AG2	LL	AG1
LL	JPN	LL	AG1	LL	AG1	LL	AG1
LL	KOR	LL	AG1	LL	AG1	LL	AG1
LL	NEI-DFRZ	LL	AG3	LL	AG2	LL	AG1
LL	SUN	LL	AG2	LL	AG2	LL	AG1
LL	THA	LL	AG1	LL	AG1	LL	AG1
LL	TWN	LL	AG3	LL	AG2	LL	AG1
PS	AUS	PS	AG1	PS	AG1	PS	AG1
PS	BLZ	PS	AG5	PS	AG2	PS	AG1
PS	ESP	PS	AG2	PS	AG2	PS	AG1
PS	FRA	PS	AG3	PS	AG2	PS	AG1
PS	FRAT	PS	AG3	PS	AG2	PS	AG1

Gear	Fleet	GearA	FleetA	GearA2	FleetA2	GearA3	FleetA3
PS	IRN	PS	AG5	PS	AG2	PS	AG1
PS	JPN	PS	AG4	PS	AG3	PS	AG1
PS	MUS	PS	AG4	PS	AG3	PS	AG1
PS	NEI-OTH	PS	AG5	PS	AG2	PS	AG1
PS	NEI-SUN	PS	AG6	PS	AG4	PS	AG1
PS	SUN	PS	AG6	PS	AG4	PS	AG1
PS	SYC	PS	AG5	PS	AG2	PS	AG1
PS	THA	PS	AG6	PS	AG4	PS	AG1
BS	IDN	PSS	AG1	PSS	AG1	ART	AG1
PSS	IDN	PSS	AG1	PSS	AG1	PS	AG1
PSS	IND	PSS	AG1	PSS	AG1	PS	AG1
RIN	LKA	PSS	AG1	PSS	AG1	PS	AG1
PSS	SUN	PSS	AG2	PSS	AG1	PS	AG1
PSS	TZA	PSS	AG1	PSS	AG1	PS	AG1
SPOR	AUS	TROL	AG1	LINE	AG1	ART	AG1
TROL	AUS	TROL	AG1	LINE	AG1	ART	AG1
TROL	COM	TROL	AG2	LINE	AG1	ART	AG1
TROL	FRA-REU	TROL	AG3	LINE	AG1	ART	AG1
TROL	FRAT	TROL	AG2	LINE	AG1	ART	AG1
TROL	IDN	TROL	AG1	LINE	AG1	ART	AG1
TROL	IND	TROL	AG4	LINE	AG1	ART	AG1
TROL	JOR	TROL	AG4	LINE	AG1	ART	AG1
TROL	LKA	TROL	AG5	LINE	AG1	ART	AG1
TROL	MDV	TROL	AG5	LINE	AG1	ART	AG1
TROLM	MDV	TROL	AG5	LINE	AG1	ART	AG1
TROLN	MDV	TROL	AG5	LINE	AG1	ART	AG1
TROL	MUS	TROL	AG3	LINE	AG1	ART	AG1
TROL	MYS	TROL	AG1	LINE	AG1	ART	AG1
TROL	SYC	TROL	AG3	LINE	AG1	ART	AG1

APPENDIX VII
Total catches and total number of fish estimated per species, gear and year

a/ Bigeye tuna

Bigeye Tuna catches in number of fish

	Industrial Gears				Artisanal Gears						
Year	PS	LL	ELL	FLL	PSS	BB	GILL	HAND	TROL	OTHER	TOTAL
1950	0	0	0	0	0	0	0	4	0	0	5
1951	0	0	0	0	0	0	0	7	1	0	8
1952	0	6,459	0	0	0	0	0	5	0	0	6,464
1953	0	36,802	0	0	0	0	0	3	0	0	36,805
1954	0	144,908	0	0	0	0	0	3	0	0	144,910
1955	0	205,196	0	0	0	0	0	2	0	0	205,198
1956	0	267,775	0	0	0	0	0	3	0	0	267,778
1957	0	259,219	0	0	0	0	0	3	0	0	259,222
1958	0	247,443	0	0	0	0	0	3	0	0	247,446
1959	0	211,736	0	0	0	0	0	3	0	0	211,739
1960	0	343,772	0	0	0	0	0	4	0	0	343,776
1961	0	319,810	0	0	0	0	0	5	0	0	319,815
1962	0	398,980	0	0	0	0	0	7	1	0	398,988
1963	0	293,904	0	0	0	0	0	18	1	0	293,923
1964	0	377,415	0	0	0	0	0	18	1	0	377,434
1965	0	414,780	0	0	0	0	0	17	1	0	414,797
1966	0	501,266	0	0	0	0	0	18	1	0	501,286
1967	0	539,465	0	0	0	0	0	19	1	0	539,485
1968	0	855,720	0	0	0	0	0	21	1	0	855,742
1969	0	728,649	0	0	0	0	0	22	1	0	728,672
1970	0	678,591	0	0	0	41,665	0	17	1	0	720,275
1971	0	515,083	0	0	0	24,501	0	12	1	0	539,596
1972	0	451,457	0	0	0	28,812	0	16	1	0	480,285
1973	0	357,876	0	650	0	62,790	0	19	1	0	421,336
1974	0	617,723	0	5,349	0	60,671	0	22	1	0	683,766
1975	0	929,878	0	10,194	0	54,412	0	14	1	0	994,499
1976	0	750,709	0	8,401	0	75,596	0	30	3	0	834,739
1977	0	705,652	0	7,528	0	85,179	0	42	5	0	798,405
1978	745	1,029,338	0	10,073	0	63,400	0	46	7	0	1,103,610
1979	149	782,353	0	9,536	0	64,228	0	58	8	0	856,333
1980	4,619	822,383	4,843	14,283	0	50,679	0	49	10	0	896,867
1981	2,542	803,783	4,022	12,938	0	110,770	0	65	13	0	934,132
1982	22,519	934,207	3,987	21,510	0	50,155	35	25	49	0	1,032,487
1983	82,859	1,070,140	7,204	49,294	0	91,931	38	12	64	0	1,301,542
1984	659,082	816,836	2,195	61,155	0	174,999	0	63	56	0	1,714,386
1985	1,326,476	983,675	1,689	67,883	0	151,760	213	13	60	0	2,531,769
1986	1,698,912	1,036,132	4,907	18,330	0	102,741	248	13	64	0	2,861,348
1987	2,440,588	1,047,529	1,183	60,633	0	156,566	2,129	13	173	0	3,708,814
1988	2,947,591	1,083,839	1,967	136,769	0	149,572	25,634	12	92	0	4,345,476
1989	2,724,041	991,132	620	378,581	0	145,552	5,184	474	278	0	4,245,863
1990	2,115,431	975,038	267	412,346	0	157,236	9,209	473	552	0	3,670,552
1991	2,399,833	934,191	805	402,409	0	262,051	1,584	750	210	0	4,001,835
1992	1,982,670	967,539	6,898	496,809	0	210,074	632	329	427	0	3,665,378
1993	2,591,000	1,359,532	15,751	411,012	0	273,210	95	296	444	0	4,651,341
1994	3,642,536	1,339,648	5,656	639,006	0	438,012	1,936	339	482	0	6,067,614
1995	4,806,650	1,773,733	2,336	610,562	0	362,457	18,706	360	534	0	7,575,337
1996	4,669,150	1,648,830	4,402	761,241	0	231,211	4,068	659	484	0	7,320,046
1997	8,512,653	1,663,291	5,449	965,604	0	190,272	4,762	578	848	0	11,343,457
1998	4,877,056	2,051,615	11,297	792,688	0	263,372	3,809	444	231	0	8,000,512
1999	8,156,860	1,897,010	23,131	779,801	0	545,015	1,379	359	807	0	11,404,362
2000	5,632,422	1,868,789	17,468	593,474	0	303,087	282	347	839	0	8,416,709
2001	5,354,909	1,571,888	26,264	756,611	0	499,552	2,596	342	421	0	8,212,583
2002	6,763,413	1,534,959	28,609	922,631	0	621,328	2,171	352	414	0	9,873,877
2003	3,868,591	1,687,518	31,790	446,205	0	611,234	1,555	462	362	0	6,647,717
2004	4,159,195	1,642,310	24,679	548,753	0	549,180	1,124	2,068	459	0	6,927,770
2005	4,050,150	1,275,742	84,164	489,636	0	572,120	720	399	416	0	6,473,347
2006	3,418,171	1,015,919	339,284	489,817	0	572,120	3,312	754	416	0	5,839,792

Bigeye Tuna catches in weight (tonnes)

	Industrial Gears				Artisanal Gears						
Year	PS	LL	ELL	FLL	PSS	BB	GILL	HAND	TROL	OTHER	TOTAL
1950	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	0	0	0	0	0	1	0	0	1
1952	0	280	0	0	0	0	0	0	0	0	280
1953	0	1,653	0	0	0	0	0	0	0	0	1,653
1954	0	6,850	0	0	0	0	0	0	0	0	6,850
1955	0	9,739	0	0	0	0	0	0	0	0	9,740
1956	0	12,846	0	0	0	0	0	0	0	0	12,846
1957	0	11,991	0	0	0	0	0	0	0	0	11,991
1958	0	11,655	0	0	0	0	0	0	0	0	11,655
1959	0	9,868	0	0	0	0	0	0	0	0	9,868
1960	0	16,115	0	0	0	0	0	0	0	0	16,115
1961	0	14,950	0	0	0	0	0	0	0	0	14,951
1962	0	18,481	0	0	0	0	0	1	0	0	18,482
1963	0	13,303	0	0	0	0	0	1	0	0	13,304
1964	0	18,027	0	0	0	0	0	1	0	0	18,027
1965	0	19,540	0	0	0	0	0	1	0	0	19,540
1966	0	24,131	0	0	0	0	0	1	0	0	24,132
1967	0	24,762	0	0	0	0	0	1	0	0	24,763
1968	0	39,509	0	0	0	0	0	1	0	0	39,510
1969	0	30,432	0	0	0	0	0	1	0	0	30,433
1970	0	27,761	0	0	0	83	0	1	0	0	27,845
1971	0	22,967	0	0	0	51	0	0	0	0	23,018
1972	0	20,001	0	0	0	60	0	1	0	0	20,062
1973	0	17,395	0	29	0	130	0	1	0	0	17,555
1974	0	28,120	0	239	0	126	0	1	0	0	28,486
1975	0	37,244	0	428	0	102	0	1	0	0	37,775
1976	0	28,233	0	310	0	142	0	1	0	0	28,686
1977	0	35,591	0	319	0	160	0	2	0	0	36,072
1978	5	50,106	0	438	0	119	0	2	0	0	50,671
1979	1	33,056	0	420	0	132	0	3	0	0	33,613
1980	21	34,150	183	528	0	105	0	2	0	0	34,989
1981	13	34,208	170	459	0	230	0	3	0	0	35,083
1982	116	42,392	176	815	0	105	3	2	2	0	43,610
1983	587	47,261	314	1,939	0	193	3	1	3	0	50,300
1984	4,020	37,210	115	2,359	0	369	0	4	2	0	44,079
1985	7,158	42,392	74	2,403	0	319	16	1	2	0	52,365
1986	10,629	45,678	206	725	0	216	18	1	3	0	57,475
1987	13,400	48,701	53	2,417	0	332	110	1	3	0	65,017
1988	15,066	51,744	90	5,128	0	317	1,923	1	3	0	74,271
1989	11,995	42,650	24	13,890	0	307	356	29	7	0	69,257
1990	12,668	44,111	12	16,318	0	294	368	29	7	0	73,806
1991	15,624	44,569	39	16,192	0	484	118	46	7	0	77,079
1992	11,260	38,252	261	21,609	0	388	42	20	25	0	71,856
1993	16,012	64,874	520	19,960	0	505	6	18	27	0	101,923
1994	18,881	61,932	252	27,348	0	510	104	21	29	0	109,077
1995	28,381	67,066	107	22,603	0	473	706	22	32	0	119,391
1996	24,529	70,530	188	30,759	0	630	204	43	30	0	126,912
1997	33,965	74,356	220	37,856	0	540	297	40	52	0	147,326
1998	28,333	78,393	419	33,332	0	606	291	27	14	0	141,416
1999	40,659	70,048	963	37,680	0	1,007	84	22	49	0	150,513
2000	29,858	69,283	786	28,395	0	560	9	21	51	0	128,963
2001	23,718	59,874	896	29,554	0	923	37	21	26	0	115,048
2002	29,043	67,690	1,040	35,711	0	1,148	41	21	25	0	134,721
2003	22,946	78,403	1,149	20,722	0	1,129	93	28	22	0	124,492
2004	23,842	78,097	1,068	25,012	0	1,015	93	164	28	0	129,320
2005	28,007	59,755	1,459	22,506	0	1,054	54	25	25	0	112,886
2006	25,045	52,772	1,435	22,909	0	1,054	243	52	25	0	103,535

b / Yellowfin tuna

Yellowfin Tuna catches in number of fish											
	Industrial Gears				Artisanal Gears						
Year	PS	LL	ELL	FLL	PSS	BB	GILL	HAND	TROL	OTHER	TOTAL
1950	0	0	0	0	0	527,236	204,461	25,022	41,699	0	798,418
1951	0	0	0	0	0	527,236	325,441	48,565	42,728	0	943,970
1952	0	62,801	0	0	0	527,236	306,185	45,174	50,357	0	991,753
1953	0	120,707	0	0	0	527,236	266,562	44,465	24,896	0	983,867
1954	0	429,025	0	0	0	527,236	269,484	35,944	50,155	0	1,311,844
1955	0	870,828	0	0	0	702,981	268,135	34,223	50,119	0	1,926,287
1956	0	1,180,321	0	0	0	710,279	253,251	43,939	44,749	0	2,232,540
1957	0	636,562	0	0	0	708,820	310,179	45,544	44,492	0	1,745,597
1958	0	520,745	0	0	0	1,116,047	288,575	47,397	44,557	0	2,017,321
1959	0	572,586	0	0	0	1,179,465	300,024	47,993	51,866	0	2,151,934
1960	0	900,372	0	0	0	628,402	346,965	63,593	46,128	0	1,985,459
1961	0	779,024	0	0	0	515,789	431,590	81,649	47,794	0	1,855,847
1962	0	1,174,782	0	0	0	496,076	578,177	90,912	45,577	0	2,385,524
1963	0	614,077	0	0	720	499,495	621,296	116,127	47,313	0	1,899,028
1964	0	577,747	0	0	3,168	498,307	681,248	128,383	48,356	0	1,937,209
1965	0	750,700	0	0	1,728	329,433	687,274	112,537	50,685	0	1,932,356
1966	0	1,199,066	0	0	0	490,634	780,355	120,683	50,776	0	2,641,513
1967	0	952,645	0	0	0	506,453	841,375	128,813	66,363	0	2,495,648
1968	0	2,752,585	0	0	0	471,291	895,767	134,013	77,517	0	4,331,172
1969	0	1,616,253	0	0	0	526,898	951,385	146,844	76,894	0	3,318,275
1970	0	859,371	0	0	0	816,767	793,155	142,783	62,605	0	2,674,681
1971	0	1,105,845	0	0	0	455,518	641,205	125,835	105,958	0	2,434,362
1972	0	873,368	0	0	0	941,044	956,826	170,137	114,817	0	3,056,193
1973	0	469,047	0	2,647	0	2,582,146	1,074,733	252,411	122,308	0	4,503,292
1974	0	531,693	0	7,014	0	2,036,490	2,002,488	182,091	186,050	0	4,945,826
1975	0	724,391	0	18,095	0	1,721,976	1,504,389	134,677	200,239	0	4,303,766
1976	0	568,061	0	25,488	0	1,817,307	2,059,465	231,442	224,031	0	4,925,793
1977	2,923	951,429	0	29,799	0	1,756,543	2,046,485	304,998	623,663	0	5,715,840
1978	18,485	862,025	388	31,925	0	1,341,325	2,212,096	402,224	435,229	0	5,303,698
1979	8,856	694,010	0	34,407	0	1,599,128	2,477,368	477,649	311,585	0	5,603,003
1980	30,692	547,453	2,367	57,609	0	2,164,436	2,794,658	591,653	473,947	0	6,662,813
1981	35,810	599,974	5,911	74,059	0	2,180,650	2,308,142	250,081	317,033	0	5,771,660
1982	114,489	874,110	6,136	68,700	0	2,654,947	3,307,922	980,694	444,585	0	8,451,583
1983	1,016,027	777,887	11,098	21,910	0	5,425,087	2,670,466	725,281	575,460	0	11,223,217
1984	4,807,138	592,286	3,049	19,991	0	6,345,262	2,174,990	750,958	938,730	0	15,632,402
1985	7,713,004	761,593	4,149	19,752	0	2,181,935	2,179,790	1,134,174	1,371,748	0	15,366,144
1986	4,743,535	1,177,872	6,178	20,624	0	1,397,668	2,671,384	1,233,129	1,993,204	0	13,243,593
1987	5,253,888	1,155,715	2,142	35,540	0	1,800,262	1,622,673	1,511,116	2,608,301	0	13,989,637
1988	9,441,147	1,279,164	2,992	136,481	0	1,492,404	2,375,568	1,300,984	2,968,082	0	18,996,823
1989	8,649,381	1,173,367	9,672	780,912	0	1,767,791	2,850,579	2,775,925	1,633,520	0	19,641,147
1990	9,749,231	1,551,392	2,617	901,464	0	1,166,522	2,758,857	2,764,581	1,544,486	0	20,439,148
1991	6,512,257	1,108,669	2,597	888,743	0	2,226,780	2,734,012	2,532,246	1,553,994	0	17,559,298
1992	8,942,031	2,559,584	3,775	1,098,719	0	2,145,405	3,597,773	772,756	1,520,198	0	20,640,240
1993	9,068,115	6,279,064	6,419	1,077,127	0	2,851,082	4,430,236	507,291	756,704	0	24,976,038
1994	8,858,016	2,095,824	24,939	1,975,036	0	5,916,902	6,599,881	526,228	906,690	0	26,903,515
1995	12,329,105	1,270,462	9,323	1,158,847	0	5,478,882	7,514,399	706,483	1,268,869	0	29,736,370
1996	14,899,407	1,590,228	9,414	1,757,315	0	4,266,400	6,578,374	752,686	1,389,755	0	31,243,579
1997	19,983,696	1,139,579	15,858	1,330,833	0	3,843,396	6,033,862	629,489	1,373,533	0	34,350,246
1998	11,159,069	1,636,049	23,975	1,149,840	0	5,307,945	6,396,909	903,097	2,158,019	0	28,734,903
1999	22,769,796	1,397,095	39,114	1,243,375	0	4,778,744	7,699,875	905,102	2,584,588	0	41,417,689
2000	15,350,354	1,311,856	34,846	1,054,606	0	3,024,307	6,190,505	650,489	1,969,399	0	29,586,362
2001	13,446,174	1,089,829	37,185	888,669	0	3,299,268	6,527,614	801,035	2,599,208	0	28,688,983
2002	18,760,202	1,286,917	25,668	729,855	0	2,458,266	6,561,746	2,234,422	2,361,829	0	34,418,904
2003	19,933,036	1,285,119	22,458	613,829	0	3,859,561	10,028,138	2,136,513	3,155,810	0	41,034,464
2004	17,822,263	2,084,903	24,678	576,219	0	4,870,672	7,608,067	744,539	2,923,827	0	36,655,169
2005	16,367,444	2,681,740	26,933	740,345	0	5,045,005	5,848,411	1,629,075	2,965,881	0	35,304,834
2006	16,389,042	1,505,849	23,809	670,789	0	5,045,005	7,220,616	2,545,224	3,705,358	0	37,105,690

Yellowfin Tuna catches in weight (tonnes)											
	Industrial Gears				Artisanal Gears						
Year	PS	LL	ELL	FLL	PSS	BB	GILL	HAND	TROL	OTHER	TOTAL
1950	0	0	0	0	0	1,500	2,139	236	295	0	4,170
1951	0	0	0	0	0	1,500	2,931	414	300	0	5,145
1952	0	3,683	0	0	0	1,500	2,751	349	351	0	8,634
1953	0	6,757	0	0	0	1,500	2,542	363	171	0	11,332
1954	0	21,876	0	0	0	1,500	2,575	248	347	0	26,547
1955	0	44,853	0	0	0	2,000	2,577	230	347	0	50,007
1956	0	60,575	0	0	0	2,021	2,396	412	311	0	65,715
1957	0	33,117	0	0	0	2,017	3,412	421	310	0	39,277
1958	0	24,471	0	0	0	2,018	2,792	438	311	0	30,030
1959	0	24,564	0	0	0	2,017	3,006	440	362	0	30,389
1960	0	38,298	0	0	0	1,032	3,395	632	324	0	43,681
1961	0	35,610	0	0	0	1,544	3,756	812	336	0	42,058
1962	0	47,662	0	0	0	1,513	5,053	757	323	0	55,308
1963	0	25,386	0	0	5	1,526	6,599	1,044	339	0	34,899
1964	0	25,292	0	0	22	1,518	7,203	1,227	346	0	35,608
1965	0	27,692	0	0	12	1,019	7,315	965	360	0	37,363
1966	0	45,747	0	0	0	1,516	8,638	1,050	363	0	57,314
1967	0	34,038	0	0	0	1,724	9,104	1,136	474	0	46,475
1968	0	78,628	0	0	0	1,724	9,583	1,176	554	0	91,666
1969	0	53,957	0	0	0	1,820	9,805	1,306	559	0	67,446
1970	0	32,398	0	0	0	2,339	8,184	1,159	615	0	44,694
1971	0	34,389	0	0	0	1,426	6,600	959	867	0	44,242
1972	0	31,529	0	0	0	2,602	9,199	1,288	936	0	45,554
1973	0	21,620	0	114	0	7,588	9,975	2,148	1,110	0	42,555
1974	0	23,208	0	300	0	6,263	11,621	1,412	1,544	0	44,348
1975	0	24,676	0	686	0	4,846	11,286	1,140	1,661	0	44,294
1976	0	20,924	0	967	0	5,351	15,451	1,891	1,955	0	46,540
1977	34	44,134	0	1,301	0	4,987	15,231	1,908	4,643	0	72,239
1978	215	35,638	17	1,345	0	3,942	16,492	2,231	3,250	0	63,130
1979	103	25,435	0	1,441	0	4,560	18,538	2,704	2,548	0	55,329
1980	130	20,626	78	2,126	0	6,128	20,773	5,411	4,017	0	59,289
1981	263	21,654	198	2,591	0	6,124	17,267	2,524	2,825	0	53,446
1982	1,165	31,548	238	2,741	0	4,858	17,885	3,720	1,784	0	63,941
1983	12,626	29,892	417	829	0	7,797	13,055	2,914	2,360	0	69,890
1984	58,241	24,529	131	815	0	8,401	13,377	2,436	3,093	0	111,023
1985	68,756	29,498	170	787	0	7,329	14,229	3,302	3,810	0	127,881
1986	73,447	44,237	219	743	0	6,367	16,652	3,183	4,472	0	149,320
1987	83,796	45,530	81	1,300	0	7,693	18,872	3,091	5,382	0	165,744
1988	118,623	49,828	113	4,926	0	6,101	29,856	2,710	6,262	0	218,418
1989	89,750	38,886	328	26,004	0	5,756	35,468	8,088	4,841	0	209,122
1990	108,700	52,128	92	33,809	0	5,249	31,221	9,012	5,126	0	245,338
1991	105,406	45,900	111	32,745	0	7,459	30,994	9,091	5,635	0	237,341
1992	112,905	94,924	158	41,581	0	8,528	45,440	5,975	11,019	0	320,528
1993	128,400	155,473	192	39,917	0	9,784	46,669	5,820	10,278	0	396,534
1994	114,370	64,903	771	54,829	0	12,817	65,657	6,075	11,348	0	330,771
1995	149,419	44,334	383	42,896	0	12,192	67,864	7,522	14,915	0	339,526
1996	129,671	59,568	383	53,889	0	11,960	70,260	7,726	16,241	0	349,699
1997	132,152	44,459	655	64,227	0	12,688	66,762	7,771	17,931	0	346,645
1998	100,380	55,071	974	53,264	0	13,440	65,669	7,968	19,485	0	316,253
1999	134,766	44,096	984	58,619	0	13,102	81,790	7,716	21,862	0	362,934
2000	140,255	43,873	1,129	44,958	0	10,637	63,481	7,984	25,497	0	337,814
2001	129,967	39,104	1,696	38,441	0	11,643	59,654	8,240	27,821	0	316,565
2002	138,992	47,736	1,196	31,208	0	16,880	61,320	17,535	22,469	0	337,336
2003	224,076	52,343	1,311	27,282	0	16,669	80,850	15,141	25,302	0	442,973
2004	233,047	78,193	836	25,868	0	14,867	104,974	7,452	39,498	0	504,736
2005	203,734	99,521	990	32,661	0	17,064	81,233	20,972	27,105	0	483,279
2006	175,343	59,968	963	30,218	0	17,064	89,320	21,032	27,088	0	420,995

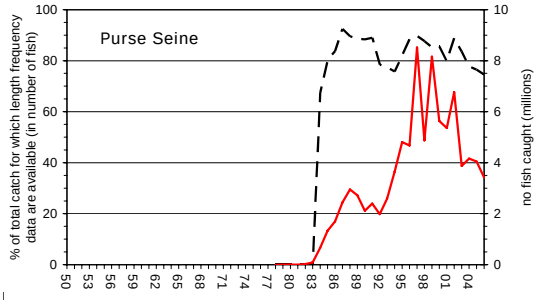
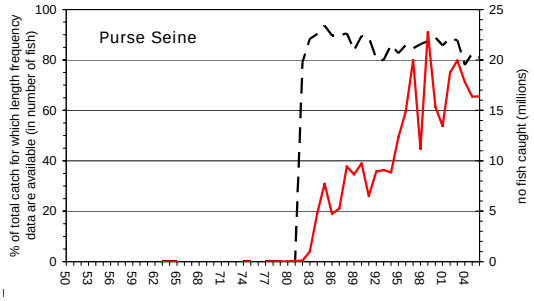
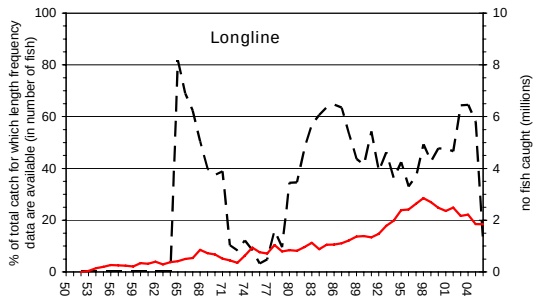
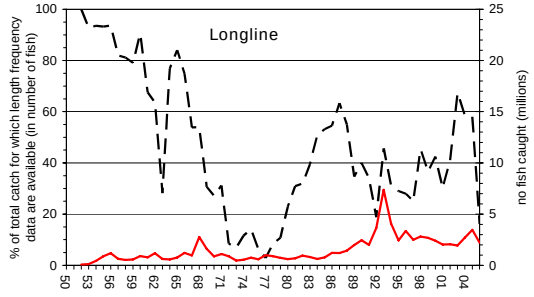
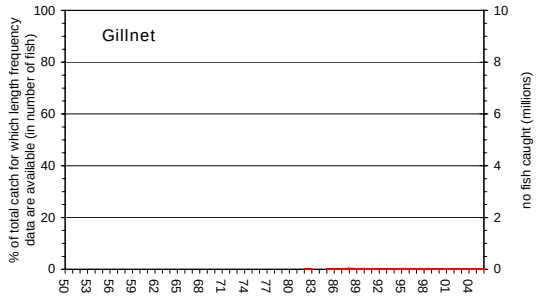
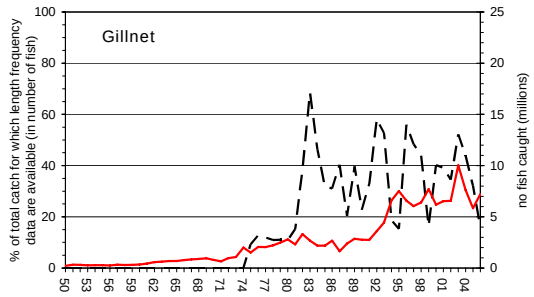
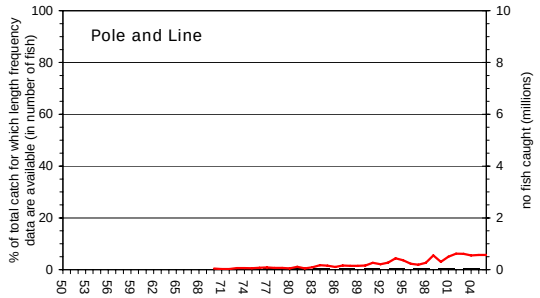
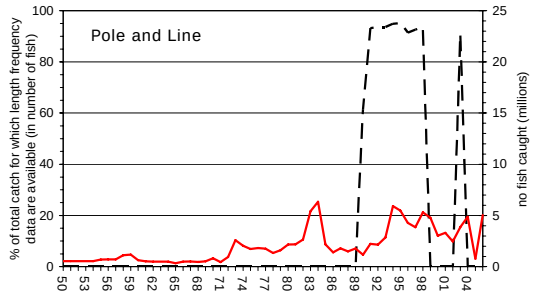
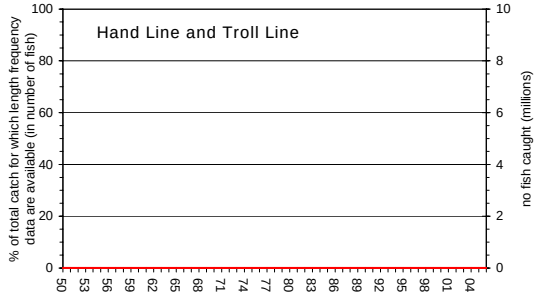
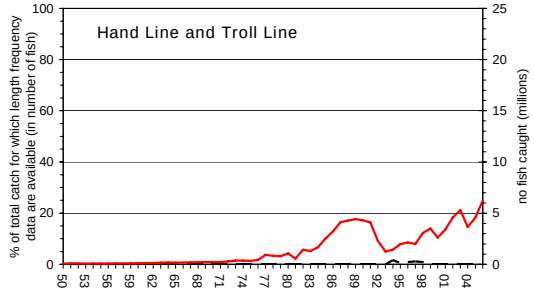
c/Skipjack tuna

Skipjack Tuna catches in number of fish											
	Industrial Gears				Artisanal Gears						
Year	PS	LL	ELL	FLL	PSS	BB	GILL	HAND	TROL	OTHER	TOTAL
1950	0	0	0	0	0	2,660,266	439,463	120,165	6,819	38	3,226,751
1951	0	0	0	0	0	726,010	688,161	154,658	7,933	39	1,576,802
1952	0	0	0	0	0	3,091,500	607,468	111,596	7,483	39	3,818,086
1953	0	0	0	0	1	3,450,986	555,455	96,869	2,346	58	4,105,715
1954	0	0	0	0	2	3,486,922	563,135	95,852	6,921	136	4,152,967
1955	0	0	0	0	2	3,486,922	554,785	123,990	6,832	209	4,172,741
1956	0	0	0	0	39	3,008,375	897,760	190,511	13,609	3,865	4,114,160
1957	0	0	0	0	32	3,312,638	1,284,912	168,299	13,713	3,175	4,782,769
1958	0	0	0	0	32	4,741,299	1,186,944	184,464	13,956	3,127	6,129,823
1959	0	0	0	0	28	5,189,165	1,097,289	187,358	13,882	2,775	6,490,497
1960	0	0	0	0	52	5,382,709	1,343,144	222,946	14,543	5,151	6,968,545
1961	0	0	0	0	72	2,722,622	1,643,052	273,012	17,225	7,115	4,663,098
1962	0	0	0	0	24	2,676,986	2,023,857	331,637	19,438	2,343	5,054,285
1963	0	0	0	0	14,524	2,741,351	2,392,192	430,031	23,600	4,240	5,605,939
1964	0	31	0	0	66,156	2,709,941	2,503,820	437,585	24,162	8,451	5,750,146
1965	0	65	0	0	3,358	4,707,058	2,564,972	428,225	24,076	3,873	7,731,627
1966	0	59	0	0	40	5,610,381	2,996,817	489,930	26,208	3,931	9,127,366
1967	0	34	0	0	40	6,058,390	3,197,664	521,996	31,987	3,911	9,814,022
1968	0	343	0	0	27	5,563,080	3,440,871	586,480	38,822	2,698	9,632,322
1969	0	204	0	0	30	6,248,924	3,579,323	573,935	40,819	2,989	10,446,225
1970	0	24,551	0	0	15	9,188,806	2,943,964	741,349	148,842	1,402	13,048,929
1971	0	19,945	0	0	21	9,263,081	2,470,850	693,574	139,026	2,076	12,588,572
1972	0	28,190	0	0	41	6,039,948	3,787,661	807,982	162,149	3,786	10,829,757
1973	0	4,021	0	0	14	8,806,598	4,590,766	1,018,888	156,394	1,365	14,578,047
1974	0	4,495	0	0	50	11,075,912	4,125,940	940,102	218,502	4,682	16,369,683
1975	0	3,512	0	0	69	5,882,138	4,348,748	974,839	380,250	6,490	11,596,046
1976	0	1,978	0	0	76	6,620,823	6,325,746	1,347,100	431,935	7,469	14,735,127
1977	51,286	809	0	0	53	5,071,029	5,455,902	1,221,840	237,989	5,197	12,044,106
1978	356,674	2,673	0	0	85	5,083,057	5,755,699	1,166,945	235,713	8,390	12,609,235
1979	233,882	2,355	0	0	106	6,440,335	6,373,893	894,645	559,156	10,519	14,514,891
1980	492,252	2,621	0	0	0	7,228,175	6,571,980	1,055,960	651,908	0	16,002,896
1981	698,319	5,001	340	0	0	7,010,300	13,815,152	1,141,186	687,615	0	23,357,914
1982	1,411,394	2,744	117	0	0	9,264,862	12,905,448	968,258	584,109	0	25,136,933
1983	3,964,911	2,029	235	0	0	10,869,390	9,155,906	875,422	616,213	0	25,484,105
1984	15,789,316	3,069	0	0	0	25,210,200	7,648,819	717,314	638,234	0	50,006,952
1985	19,619,624	6,647	0	0	0	14,930,743	9,837,580	793,502	710,920	0	45,899,016
1986	20,468,976	4,350	0	0	0	14,226,176	8,355,988	752,194	772,624	0	44,580,308
1987	22,404,074	2,581	0	0	0	17,362,884	10,514,115	1,177,414	898,769	0	52,359,837
1988	31,772,566	9,773	268	0	0	23,725,533	9,529,506	1,556,945	1,050,275	0	67,644,866
1989	39,547,008	15,728	154	0	0	18,483,581	12,034,579	1,404,615	1,394,624	0	72,880,289
1990	37,599,556	16,587	0	0	0	23,030,808	11,380,901	1,295,429	1,522,033	0	74,845,315
1991	43,450,270	5,699	0	0	0	28,428,131	13,663,903	1,408,470	1,538,318	0	88,494,791
1992	47,857,530	12,672	0	0	0	30,459,277	13,634,634	598,555	1,163,421	0	93,726,088
1993	56,179,476	36,169	0	65	0	31,917,817	15,682,596	571,762	1,012,865	0	105,400,750
1994	65,217,996	14,695	447	53	0	29,829,071	19,761,984	496,682	1,008,260	0	116,329,188
1995	67,407,503	17,651	153	86	0	24,267,598	20,820,762	614,552	1,033,849	0	114,162,154
1996	58,764,003	10,689	3	323	0	29,067,052	27,590,826	524,392	984,752	9	116,942,049
1997	58,316,534	8,950	151	1,468	0	25,369,977	27,750,743	440,961	1,079,630	0	112,968,412
1998	55,275,798	13,330	156	1,836	0	20,943,582	29,069,164	397,465	1,061,993	12	106,763,335
1999	75,147,101	10,905	119	1,031	0	20,421,296	34,923,033	171,603	843,982	11	131,519,082
2000	64,609,529	8,018	3	258	0	26,377,038	34,368,118	137,668	965,304	5	126,465,940
2001	67,640,102	1,699	100	743	0	27,376,734	36,923,255	112,059	980,978	11	133,035,682
2002	95,729,568	2,431	38	22	0	27,363,376	31,138,081	174,564	1,160,664	0	155,568,744
2003	69,190,645	3,746	616	112,863	0	32,670,281	34,611,004	96,386	1,086,817	0	137,772,358
2004	60,448,655	4,797	973	73,720	0	34,479,450	40,779,328	147,048	2,202,763	0	138,136,734
2005	72,493,092	14,267	722	53,926	0	40,056,151	36,028,114	314,904	1,424,327	0	150,385,504
2006	77,196,521	15,142	718	39,854	0	40,074,281	37,891,141	313,582	1,439,889	0	156,971,128

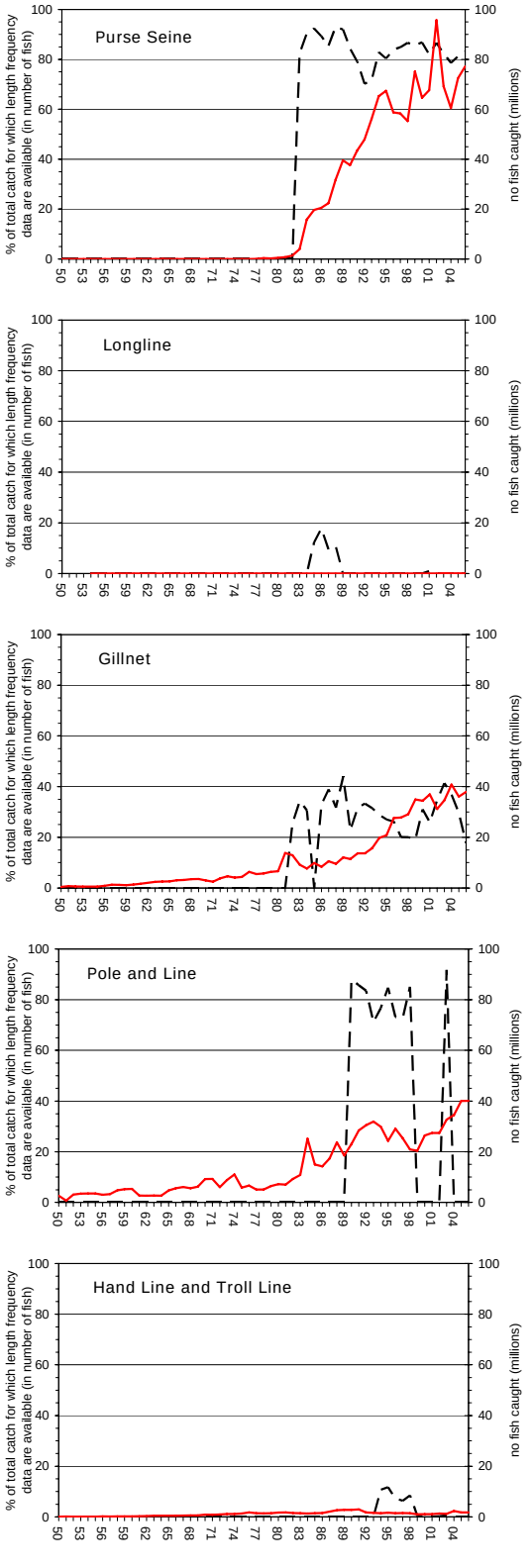
Skipjack Tuna catches in weight (tonnes)											
	Industrial Gears				Artisanal Gears						
Year	PS	LL	ELL	FLL	PSS	BB	GILL	HAND	TROL	OTHER	TOTAL
1950	0	0	0	0	0	8,200	2,003	424	25	0	10,652
1951	0	0	0	0	0	2,100	3,031	565	29	0	5,725
1952	0	0	0	0	0	9,400	2,661	421	27	0	12,508
1953	0	0	0	0	0	10,500	2,471	365	10	0	13,345
1954	0	0	0	0	0	10,600	2,499	362	24	0	13,486
1955	0	0	0	0	0	10,600	2,466	452	24	1	13,542
1956	0	0	0	0	0	9,294	3,809	734	41	11	13,888
1957	0	0	0	0	0	10,235	5,100	664	42	9	16,051
1958	0	0	0	0	0	10,258	4,421	711	44	9	15,444
1959	0	0	0	0	0	10,235	4,468	721	45	8	15,477
1960	0	0	0	0	0	9,446	5,457	840	51	15	15,810
1961	0	0	0	0	0	8,623	6,497	1,037	60	21	16,238
1962	0	0	0	0	0	8,188	8,101	1,266	71	7	17,633
1963	0	0	0	0	48	8,364	10,720	1,579	86	12	20,810
1964	0	0	0	0	219	8,258	11,427	1,600	87	25	21,616
1965	0	0	0	0	11	14,370	11,705	1,568	86	11	27,752
1966	0	0	0	0	0	17,123	13,786	1,792	94	11	32,806
1967	0	0	0	0	0	19,241	14,455	1,915	115	11	35,736
1968	0	2	0	0	0	17,841	15,507	2,150	139	8	35,647
1969	0	1	0	0	0	19,882	16,022	2,349	148	9	38,411
1970	0	162	0	0	0	28,149	13,111	2,757	728	4	44,910
1971	0	136	0	0	0	28,665	10,917	2,534	620	6	42,879
1972	0	193	0	0	0	18,405	16,577	2,974	600	11	38,761
1973	0	28	0	0	0	27,196	20,187	3,584	660	4	51,658
1974	0	31	0	0	0	34,147	18,231	3,305	785	14	56,513
1975	0	25	0	0	0	18,039	18,830	3,496	1,059	19	41,468
1976	0	14	0	0	0	20,531	27,138	4,873	1,351	22	53,929
1977	132	6	0	0	0	15,536	23,620	4,507	839	15	44,655
1978	918	18	0	0	0	15,666	24,690	4,289	843	24	46,449
1979	607	16	0	0	0	19,967	27,389	3,457	1,859	31	53,325
1980	1,420	17	0	0	0	22,214	27,328	4,109	2,227	0	57,315
1981	2,004	32	3	0	0	21,526	30,703	4,421	2,347	0	61,035
1982	4,185	20	1	0	0	18,852	35,887	3,054	1,874	0	63,873
1983	11,848	12	2	0	0	23,044	34,491	3,090	2,053	0	74,540
1984	45,710	28	0	0	0	36,502	29,560	2,637	2,060	0	116,498
1985	60,365	52	0	0	0	46,279	33,375	2,530	2,040	0	144,642
1986	66,652	37	0	0	0	50,131	31,846	2,506	2,192	0	153,363
1987	78,992	16	0	0	0	49,356	38,536	2,685	2,284	0	171,868
1988	92,893	75	2	0	0	64,179	41,703	2,710	2,481	0	204,043
1989	126,831	98	1	0	0	64,968	49,478	3,671	4,028	0	249,075
1990	108,250	107	0	0	0	67,346	50,385	3,376	4,368	0	233,834
1991	122,786	35	0	0	0	65,179	54,402	3,523	4,326	0	250,251
1992	151,323	76	0	0	0	64,794	61,609	2,371	3,950	0	284,124
1993	163,927	218	0	0	0	72,090	72,285	2,371	3,757	0	314,648
1994	179,175	95	3	0	0	75,753	86,295	2,038	3,646	0	347,006
1995	178,936	114	1	1	0	77,309	79,788	2,174	3,731	0	342,054
1996	149,163	73	0	2	0	73,561	96,053	2,053	3,427	0	324,332
1997	145,374	60	1	9	0	76,764	119,247	1,720	3,912	0	347,088
1998	150,040	90	1	10	0	82,085	111,869	1,353	3,656	0	349,105
1999	193,247	86	1	8	0	99,531	138,949	585	2,950	0	435,356
2000	196,889	61	0	2	0	86,263	143,916	496	3,454	0	431,080
2001	189,604	12	1	6	0	89,509	151,746	406	3,598	0	434,881
2002	238,583	11	0	0	0	117,025	137,795	593	4,184	0	498,191
2003	218,289	22	4	668	0	110,626	148,438	332	3,624	0	482,003
2004	165,738	31	7	424	0	108,542	180,258	473	9,067	0	464,540
2005	222,830	94	5	342	0	130,850	169,345	1,120	5,031	0	529,617
2006	255,001	100	5	251	0	130,850	169,296	1,110	5,024	0	561,638

APPENDIX VIII

Total numbers of fish estimated (CAS) and amount of catches (number) for which length frequency data are available per species and gear type

Bigeye tuna	Yellowfin tuna
	
	
	
	
	

Skipjack tuna



APPENDIX IX
Total numbers of yellowfin tuna estimated per age class and year

Stequert - Model A

Year	A00	A01	A02	A03	A04	A05	A06+
1950	462,367	278,714	37,901	14,238	3,814	673	393
1951	499,232	376,169	45,546	16,880	4,439	824	535
1952	505,116	357,974	44,710	31,993	37,544	11,874	2,226
1953	482,174	316,806	52,006	52,132	55,995	18,367	6,065
1954	496,077	325,318	90,389	195,683	154,864	38,258	10,812
1955	629,374	369,410	105,977	420,460	297,479	76,261	26,759
1956	628,599	366,493	149,605	534,551	416,259	100,459	35,894
1957	631,058	390,090	142,720	260,672	209,020	77,229	34,134
1958	1,114,042	326,272	142,174	232,272	148,906	41,019	11,993
1959	1,186,068	327,445	171,296	340,066	99,513	19,868	7,034
1960	705,252	303,489	287,180	481,518	168,256	27,133	11,973
1961	576,685	418,680	216,197	369,113	216,191	46,695	11,666
1962	588,148	517,780	495,642	527,890	189,946	47,799	17,614
1963	588,668	541,778	297,705	310,023	127,670	26,558	5,914
1964	616,611	559,357	256,377	334,246	143,628	21,314	4,879
1965	477,084	570,339	423,652	297,370	128,301	27,996	6,742
1966	625,375	630,943	588,025	582,682	176,734	29,011	7,869
1967	641,014	690,785	579,665	460,869	105,168	13,471	4,018
1968	621,173	1,078,784	1,701,115	670,312	195,808	47,042	16,132
1969	706,943	814,649	1,001,088	657,137	117,032	15,092	5,587
1970	959,292	693,905	441,566	410,310	143,659	19,449	5,730
1971	625,128	632,062	698,158	320,641	130,832	20,539	6,230
1972	1,175,485	802,506	565,732	359,933	115,677	24,447	11,590
1973	2,590,850	1,131,789	292,588	299,444	143,066	32,996	11,748
1974	2,323,256	1,846,444	299,419	318,533	119,006	30,189	8,037
1975	1,876,825	1,518,618	494,145	273,202	107,820	25,334	6,993
1976	2,072,891	1,977,872	460,224	274,715	105,157	25,615	8,644
1977	2,312,896	2,095,229	421,974	517,850	267,800	70,946	28,390
1978	1,911,467	2,174,372	530,424	449,910	174,715	46,616	15,351
1979	2,156,172	2,363,880	578,829	360,462	114,297	18,909	9,595
1980	2,728,089	2,830,996	627,539	323,368	115,328	24,595	11,976
1981	2,487,827	2,268,004	543,737	332,136	99,447	24,095	15,292
1982	3,571,879	3,842,616	536,388	352,743	98,471	26,429	22,187
1983	6,741,276	3,371,517	481,897	425,072	148,053	34,081	20,377
1984	9,986,433	3,802,725	661,267	707,839	324,192	106,003	42,838
1985	8,084,673	5,219,669	701,008	844,321	383,079	99,785	32,549
1986	4,924,119	5,305,166	1,215,118	1,388,637	306,297	70,270	32,814
1987	5,365,157	4,875,551	1,897,097	1,454,673	309,669	64,036	22,384
1988	7,518,784	7,023,479	1,878,361	1,871,831	553,333	107,889	41,937
1989	7,023,921	8,428,603	2,157,773	1,457,362	458,305	86,591	27,531
1990	6,778,184	8,384,840	2,507,069	2,162,700	481,783	86,405	36,934
1991	6,726,114	5,711,577	2,144,789	2,214,006	616,244	93,705	51,739
1992	6,503,908	6,955,290	3,452,884	2,339,637	1,148,127	189,854	49,353
1993	7,300,222	7,492,323	5,882,049	3,290,692	825,179	129,355	54,697
1994	10,618,316	9,077,929	3,774,448	2,363,035	782,412	173,035	112,631
1995	10,788,611	11,899,996	3,720,856	2,347,851	679,174	194,249	103,827
1996	11,742,122	12,395,657	3,439,032	2,580,981	783,898	206,631	93,490
1997	15,035,469	12,964,889	2,676,361	2,404,398	882,916	249,681	134,564
1998	10,481,194	11,674,412	3,569,303	2,132,817	629,582	156,301	90,397
1999	17,238,699	17,765,837	2,987,315	2,454,410	759,870	150,313	59,151
2000	11,205,026	11,612,681	3,058,026	2,675,389	833,154	140,952	58,867
2001	12,604,080	9,792,798	2,742,271	2,578,625	779,277	137,608	51,743
2002	13,577,376	14,815,837	2,559,672	2,430,947	817,288	153,953	60,887
2003	15,181,131	17,224,650	4,147,866	3,303,634	916,525	175,782	82,552
2004	12,496,394	13,185,875	4,930,925	4,476,390	1,240,054	224,730	98,389
2005	11,817,968	13,529,391	3,788,320	4,698,683	1,185,655	200,582	81,544
2006	14,178,953	14,799,240	3,316,395	3,403,561	1,031,483	280,515	92,132

Viera - Model B (<46cm) Model A (>46cm)

Year	noA00	noA01	noA02	noA03	noA04	noA05	A06+
1950	462,500	278,583	37,901	14,238	3,814	673	393
1951	499,371	376,032	45,546	16,880	4,439	824	535
1952	505,253	357,837	44,710	31,993	37,544	11,874	2,226
1953	482,306	316,674	52,006	52,132	55,995	18,367	6,065
1954	496,212	325,184	90,389	195,683	154,864	38,258	10,812
1955	629,548	369,236	105,977	420,460	297,479	76,261	26,759
1956	628,777	366,315	149,605	534,551	416,259	100,459	35,894
1957	631,237	389,914	142,720	260,672	209,020	77,229	34,134
1958	1,114,266	326,048	142,174	232,272	148,906	41,019	11,993
1959	1,186,278	327,234	171,296	340,066	99,513	19,868	7,034
1960	705,365	303,376	287,180	481,518	168,256	27,133	11,973
1961	576,792	418,573	216,197	369,113	216,191	46,695	11,666
1962	588,253	517,676	495,642	527,890	189,946	47,799	17,614
1963	588,777	541,670	297,705	310,023	127,670	26,558	5,914
1964	616,718	559,251	256,377	334,246	143,628	21,314	4,879
1965	477,164	570,258	423,652	297,370	128,301	27,996	6,742
1966	625,483	630,835	588,025	582,682	176,734	29,011	7,869
1967	641,132	690,667	579,665	460,869	105,168	13,471	4,018
1968	621,287	1,078,670	1,701,115	670,312	195,808	47,042	16,132
1969	707,081	814,513	1,001,088	657,137	117,032	15,092	5,587
1970	959,456	693,742	441,566	410,310	143,659	19,449	5,730
1971	625,242	631,949	698,158	320,641	130,832	20,539	6,230
1972	1,175,685	802,306	565,732	359,933	115,677	24,447	11,590
1973	2,591,335	1,131,303	292,588	299,444	143,066	32,996	11,748
1974	2,323,672	1,846,025	299,419	318,533	119,006	30,189	8,037
1975	1,877,151	1,518,292	494,145	273,202	107,820	25,334	6,993
1976	2,073,265	1,977,498	460,224	274,715	105,157	25,615	8,644
1977	2,313,344	2,094,781	421,974	517,850	267,800	70,946	28,390
1978	1,911,836	2,174,000	530,424	449,910	174,715	46,616	15,351
1979	2,156,561	2,363,491	578,829	360,462	114,297	18,909	9,595
1980	2,728,588	2,830,496	627,539	323,368	115,328	24,595	11,976
1981	2,488,276	2,267,551	543,737	332,136	99,447	24,095	15,292
1982	3,572,712	3,841,784	536,388	352,743	98,471	26,429	22,187
1983	6,742,453	3,370,337	481,897	425,072	148,053	34,081	20,377
1984	9,988,091	3,801,068	661,267	707,839	324,192	106,003	42,838
1985	8,087,060	5,217,282	701,008	844,321	383,079	99,785	32,549
1986	4,925,056	5,304,230	1,215,118	1,388,637	306,297	70,270	32,814
1987	5,366,258	4,874,450	1,897,097	1,454,673	309,669	64,036	22,384
1988	7,520,364	7,021,899	1,878,361	1,871,831	553,333	107,889	41,937
1989	7,025,720	8,426,803	2,157,773	1,457,362	458,305	86,591	27,531
1990	6,779,880	8,383,144	2,507,069	2,162,700	481,783	86,405	36,934
1991	6,727,858	5,709,833	2,144,789	2,214,006	616,244	93,705	51,739
1992	6,505,235	6,953,963	3,452,884	2,339,637	1,148,127	189,854	49,353
1993	7,301,942	7,490,604	5,882,049	3,290,692	825,179	129,355	54,697
1994	10,621,254	9,074,988	3,774,448	2,363,035	782,412	173,035	112,631
1995	10,791,484	11,897,122	3,720,856	2,347,851	679,174	194,249	103,827
1996	11,745,022	12,392,757	3,439,032	2,580,981	783,898	206,631	93,490
1997	15,039,091	12,961,270	2,676,361	2,404,398	882,916	249,681	134,564
1998	10,483,660	11,671,947	3,569,303	2,132,817	629,582	156,301	90,397
1999	17,243,507	17,761,030	2,987,315	2,454,410	759,870	150,313	59,151
2000	11,208,464	11,609,243	3,058,026	2,675,389	833,154	140,952	58,867
2001	12,608,244	9,788,630	2,742,271	2,578,625	779,277	137,608	51,743
2002	13,581,002	14,812,211	2,559,672	2,430,947	817,288	153,953	60,887
2003	15,185,505	17,220,275	4,147,866	3,303,634	916,525	175,782	82,552
2004	12,498,663	13,183,609	4,930,925	4,476,390	1,240,054	224,730	98,389
2005	11,821,231	13,526,129	3,788,320	4,698,683	1,185,655	200,582	81,544
2006	14,182,598	14,795,595	3,316,395	3,403,561	1,031,483	280,515	92,132