

TD/SP/6

January 1984

TABULATION OF ITEMS  
AND THEIR PERCENTAGES BY AREA AND BY YEAR

(Two Microcomputer Programs)

Shigeaki Shindo

Training Department  
Southeast Asian Fisheries Development Center

Special Publication No.6  
January 1984

TABULATION OF ITEMS  
AND THEIR PERCENTAGES BY AREA AND BY YEAR

(Two Microcomputer Programs)

Shigeaki Shindo

Training Department  
Southeast Asian Fisheries Development Center

## CONTENTS

	Page
1. Introduction .....	1
2. Outline and key operation procedure .....	1
3. Examples of printout .....	10
3.1 Example for Program No.820 .....	10
3.2 Example for Program No.810 .....	11
4. Table layout .....	13
5. Program lists .....	16
5.1 Program No.820 .....	16
5.2 Program No.810 .....	18
6. Additional notes (with examples).....	19



## 1. INTRODUCTION

Before embarking on a theoretical analysis of a fish stock, it is indispensable to obtain a clear picture of the chronological or geographical changes concerning several items of catch, effort or CPUE. The preparatory work entails the construction of tables, often an extremely laborious and time-consuming process. The two original microcomputer programs introduced here are especially designed for tabulation in connection with analysing the status of fishery production. They will be found useful in particular with data concerning various statistical areas and several successive years.

The present programs are capable of a wider application; for instance, if we input successive months instead of years and landing places instead of statistical areas, we shall obtain various kinds of tables useful for analysing the fishery production. Changes in tables are made easily by minor modifications in the table printout.

The programs described here were composed for SHARP PC-1500 microcomputer with 8K bytes RAM module, and using expanded BASIC language. However, both programs can easily be used with any other model of computer, for which it is only necessary to make minor modifications in the program lists.

## 2. OUTLINE AND KEY OPERATION PROCEDURE

The difference between Program No.810 and Program No.820 is that the former has no column for the year total and no lines for the area total, while the latter has them as shown in Tables 3 and 4. Therefore, if the year total and area total are not required, it is recommended to use Program No.810 since the total number of bytes of this program is smaller than that of No.820 and capacity of memory for input data is automatically somewhat larger, about 1K bytes or 15 per cent, than that of Program No.820.

For both programs, the line numbers 5 to 110 in the program list denote the data-input procedure, whereas those from 120 up to the last line number denote tabulation work.

The ITEMS, which are displayed on the screen as instructions of data input, will be explained first. For example, let us look at Table 3 (p.13). Here, there are three ITEMS: (i) 10 MAJ.SPP. (ten major species), (ii) OTHER FISH, and (iii) TRASH FISH. The TOTAL in each area is automatically calculated by the computer. In the next example, Table 4 (p.14) there are four ITEMS: (i) FISH, (ii) MOLLUSCS,



(iii) CRUSTACEANS, and (iv) TRASH FISH. The name of each item can contain a maximum of 16 characters, including spaces between words and punctuation marks. It is sometimes necessary to abbreviate names of items, either because a name may consist of more than 16 characters or because we wish to avoid making the head column too wide. For example, the first item in Table 3 has been abbreviated as 10 MAJ.SPP., consisting of 11 characters.

Before we input any data, we must have the original data table, such as shown below (Table 1 shows the case when there are three items).

Meanwhile, the indicator symbols of input data which are stored inside the computer are shown in Table 2. The numerical figure of 413 (Item 1, Area 1, Year 1) is stored in the computer as a symbol of A(0, 0). In the same way, 591 (Item 2, Area 1, Year 1) is A (0, 1), and so on. If you press the key in RUN mode,       and then press the key marked ENTER, the numerical figure of 591 shows up on the screen. Consequently, if you become aware of a key-in mistake after you have already pressed the ENTER key (e.g. you key-in 571 for A (0, 1) instead of 591), there is no need to repeat typing in all the data from the beginning. Instead, you can recall that part of data which has the error by using the above-mentioned procedure in the RUN mode. When the error (571) appears on the screen, you should type in           and press the key marked ENTER in the RUN mode. In this way the error in your input data will be corrected.

Table 1. The original data table which will be input

		First year	Second year	.....
Area 1	Item 1	413	821	
	Item 2	591	430	
	Item 3	95	197	
Area 2	Item 1	218	480	
	Item 2	224	420	
	Item 3	52	238	
**** *	.....	...	...	
	.....	...	...	
	.....	...	...	

Table 2. Memory indicator symbols

YEAR	First year	Second year	Third year	.....
DATA AND PERCENT	DATA %	DATA %	DATA %	.....
Item 1	A (0,0) = 413	A (1,0) = 821	A (3,0)	.....
Area 1 Item 2	A (0,1) = 591	A (1,1) = 430	A (3,1)	.....
Item 3	A (0,2) = 95	A (1,2) = 197	A (3,2)	.....
TOTAL				
Item 1	A (0,3) = 218	A (1,3) = 480	A (3,3)	.....
Area 2 Item 2	A (0,4) = 224	A (1,4) = 420	A (3,4)	.....
Item 3	A (0,5) = 52	A (1,5) = 238	A (3,5)	.....
TOTAL				
	.....	.....	....	

In Program No.810, the work "BLOCK" is used instead of "ITEM". The details are given in the Key Operation Procedure of Program No.810.

The number of digits of the TOTAL in each Area should be not more than six, (i.e. 999,999 or less) otherwise the printer will not be able to print all the digits of the number. Consequently, the number of digits of input data will be six or five, depending on the situation. It is generally recommended not to exceed 99,999.



Key Operation Procedure (Program No.820)

STEP	KEYSTROKE	DISPLAY (Screen)
0	ON	>
1	DEF A	No. of YEARS (1-8) = ? -
2	8 ENTER	Initial YEAR = ? -
3	1982 ENTER	No. of AREAs (3-9) = ? -
4	9 ENTER	No. of ITEMs in AR (3-6) = ?
5	4 ENTER	** NAME of ITEM > = 10 charact.*  Name of ITEM (1) = ? -
6	10 MAJ.SPP. ENTER	Name of ITEM (2) = ? -
7	OTHER FISH ENTER	Name of ITEM (3) = ? - - Repeat -
8		A (Yr 1, Ln 1) = ?

	REMARKS
	Make sure that the prompt mark is on the screen; this means that the computer is ready for operation.
	Beep 5. The computer asks the number of years in your data. Input it by keystroke. The number of years should be from 1 to 8. If (number of items) $\times$ (number of areas) is less than around 50, the number of years can increase up to 12. Beep 3.
	The computer asks initial year of your data. If it is 1982, type 1982. Beep 3.
	The computer asks the number of Areas of your statistical data. If it is nine, type 9. Beep 3.
	The computer asks number of items in an Area (AR denotes Area). If it is four, type 4. Beep 3.
	The name of an ITEM must not consist of more than 16 characters (it is recommended to use up to ten characters. Also see outline on previous page). The reminder is displayed on screen for about 2 seconds. Beep 5. Then, computer asks the name of ITEM 1. If the name is "ten major species", type 10 MAJ.SPP.
	If the name of item 2 is OTHER FISH, type it.
	The same procedure will be repeated until the last item. Beep 3.
	The computer asks the first data, that is, data of the first item of Area 1 in the initial year (1982). Yr 1 denotes Year 1 (initial year). Ln 1 denotes line 1 or first line. If data is 413, type 413. Beep 1.



STEP	KEYSTROKE	DISPLAY (Screen)
9	413 ENTER	A (Yr 1, Ln 2) = ?
10	591 ENTER	A (Yr 1, Ln 3) = ?  - Repeat -
11		A (Yr 9, Ln 36)

	REMARKS
	<p>If the second data, that is, data of second item of Area 1 in the initial year is 591, type 591. Beep 1. The same procedure will be repeated until last line of the initial year. In this program, Beep 1 is inserted every time after data input. Press key marked ENTER to confirm every key-in procedure. At the same time, Beep 3 is also inserted every time after input of all items in each Area, in order to check the correct input. When all data belonging to the initial year are entered, the computer sounds Beep 10, which informs us that we are entering the second year. The same procedure will be repeated until all data are input.</p>
	<p>When all data are input, the computer starts printing. Finally, the computer prints ----- END ----- on the paper and the prompt mark appears on the screen. This shows that the work of this program has been completed.</p>



Key Operation Procedure (Program No.810)

The key operation procedure of Program 810 is identical to that of Program No.820 except for some terms which are displayed on screen, as shown below. (Step numbers are those of Program No. 820).

STEP	KEYSTROKE	DISPLAY (Screen)
3	-	No. of BLOCKs = ? -
4	-	No. of ITEMS in BLOCK = ? -
5	-	NAME of Line (1) in BL = ?
8		A (V - 1, H - 1) = ?
11		A (V - 9, H - 36) >

	REMARKS
	BLOCK denotes AREA, so meaning of the display is exactly the same as in step 3 in Program No. 820.
	Same as step 4 in Program No. 820.
	No display of reminder which is included in the Program No. 820. "Name of Line (1) in BL. = ?" means "Name of Item (1) = ?" in Program No. 810.
	V denotes vertical column, meaning of which is the same as "Yr" in Program No. 820. H denotes horizontal line ("Ln" in Program No. 820). Therefore, A (V-1, H-1) would appear as A (Yr 1, Ln 1) in Program No.820.
	There is no printout of " ----- END ----- " in this Program. However prompt mark appears on screen when the computer work is completed.



### 3. EXAMPLES OF PRINTOUT

### 3.1 Example for Program No. 820

[illegible]

3.2 Example for Program No.810

YEAR		1980		1981	
DATA AND PERCENT		DATA	%	DATA	%
AREA 1	FISHES	12,365	46.53	789	28.02
	MOLLUSCS	8,049	30.29	456	16.19
	CRUSTACEANS	4,560	17.16	321	11.40
	TRASH FISH	1,599	6.02	1,250	44.39
	TOTAL	26,573	100.00	2,816	100.00
AREA 2	FISHES	3,210	38.28	123	8.29
	MOLLUSCS	654	7.80	456	30.75
	CRUSTACEANS	321	3.83	784	52.87
	TRASH FISH	4,200	50.09	120	8.09
	TOTAL	8,385	100.00	1,483	100.00
AREA 3	FISHES	52,100	68.26	2,301	15.52
	MOLLUSCS	2,345	3.07	4,203	28.34
	CRUSTACEANS	9,879	12.94	4,320	29.13
	TRASH FISH	12,000	15.72	4,005	27.01
	TOTAL	76,324	99.99	14,829	100.00
AREA 4	FISHES	1,254	7.43	1,204	26.85
	MOLLUSCS	5,421	32.14	1,256	28.01
	CRUSTACEANS	6,541	38.78	2,012	44.87
	TRASH FISH	3,652	21.65	12	0.27
	TOTAL	16,868	100.00	4,484	100.00
AREA 5	FISHES	1,200	35.99	45	27.11
	MOLLUSCS	1,254	37.61	51	30.72
	CRUSTACEANS	650	19.50	30	18.07
	TRASH FISH	230	6.90	40	24.10
	TOTAL	3,334	100.00	166	100.00
AREA 6	FISHES	456	3.66	123	32.71
	MOLLUSCS	3,247	26.05	102	27.13
	CRUSTACEANS	6,351	50.95	99	26.33
	TRASH FISH	2,410	19.34	52	13.83
	TOTAL	12,464	100.00	376	100.00
AREA 7	FISHES	1,204	9.95	126	1.88
	MOLLUSCS	2,564	21.19	145	2.17
	CRUSTACEANS	5,123	42.34	3,211	47.95
	TRASH FISH	3,210	26.53	3,214	48.00
	TOTAL	12,101	100.01	6,696	100.00
AREA 8	FISHES	1,250	9.09	1,204	11.45
	MOLLUSCS	4,000	29.08	4,002	38.05
	CRUSTACEANS	4,005	29.11	5,012	47.65
	TRASH FISH	4,501	32.72	300	2.85
	TOTAL	13,756	100.00	10,518	100.00
AREA 9	FISHES	2,310	62.81	1,201	99.01
	MOLLUSCS	123	3.34	0	0.00
	CRUSTACEANS	456	12.40	12	0.99
	TRASH FISH	789	21.45	0	0.00
	TOTAL	3,678	100.00	1,213	100.00



1982		1983	
DATA	%	DATA	%
123	40.59	741	19.56
41	13.53	852	22.49
59	19.47	965	25.48
80	26.40	1,230	32.47
303	99.99	3,788	100.00
123	8.65	4,561	8.14
654	45.99	2,365	4.22
321	22.57	47,894	85.45
324	22.78	1,230	2.19
1,422	99.99	56,050	100.00
123	43.93	1,250	23.09
78	27.86	1,456	26.89
56	20.00	1,230	22.72
23	8.21	1,478	27.30
280	100.00	5,414	100.00
789	56.72	5,210	80.84
456	32.78	125	1.94
23	1.65	456	7.08
123	8.84	654	10.15
1,391	99.99	6,445	100.01
963	13.46	156	98.11
852	11.91	2	1.26
741	10.35	0	0.00
4,600	64.28	1	0.63
7,156	100.00	159	100.00
1,250	12.95	2	6.90
4,201	43.52	3	10.34
1,002	10.38	4	13.79
3,200	33.15	20	68.97
9,653	100.00	29	100.00
2,105	9.47	1,230	7.50
2,006	9.02	4,560	27.80
9,001	40.48	5,012	30.55
9,123	41.03	5,602	34.15
22,235	100.00	16,404	100.00
4,102	31.90		
2,563	19.93		
3,652	28.40		
2,541	19.76		
12,858	99.99		
123	5.19		
654	27.59		
741	31.27		
852	35.95		
2,370	100.00		



Table 3. An example of table layout for Program No.820

YEAR	1982		1983		1984		1985		YEAR (MEAN)	
	DATA	%	DATA	%	DATA	%	DATA	%	DATA	%
10 MAJ. SPP.	413	37.58	821	56.70	283	48.38	515	46.52	508	47.94
OTHER FISH	591	53.78	430	29.70	242	41.37	394	35.59	414	39.89
AREA 1 TRASH FISH	95	8.64	197	13.60	60	10.26	198	17.89	137	12.97
TOTAL	1,099	100.00	1,448	100.00	585	100.00	1,107	100.00	1,059	100.00
10 MAJ. SPP.	218	44.13	480	42.18	395	67.52	377	25.08	367	39.52
OTHER FISH	224	45.34	420	36.91	130	22.22	898	59.75	418	44.95
AREA 2 TRASH FISH	52	10.53	238	20.91	60	10.26	228	15.17	144	15.54
TOTAL	494	100.00	1,138	100.00	585	100.00	1,503	100.00	930	100.00
10 MAJ. SPP.	537	52.60	466	42.02	472	66.76	247	24.07	430	44.58
OTHER FISH	365	35.75	479	43.19	160	22.63	617	60.14	405	41.96
AREA 3 TRASH FISH	119	11.66	164	14.79	75	10.61	162	15.79	130	13.46
TOTAL	1,021	100.00	1,109	100.00	707	100.00	1,026	100.00	965	100.00
10 MAJ. SPP.	642	53.59	721	39.55	465	57.48	760	47.65	647	47.71
OTHER FISH	346	28.88	955	52.39	241	29.79	600	37.62	535	39.48
AREA 4 TRASH FISH	210	17.53	147	8.06	103	12.73	235	14.73	173	12.81
TOTAL	1,198	100.00	1,823	100.00	809	100.00	1,595	100.00	1,356	100.00
10 MAJ. SPP.	452	47.48	622	45.09	403	60.13	474	36.30	488	45.31
OTHER FISH	381	40.03	571	41.39	193	28.78	627	47.96	443	41.13
AREA (MEAN) TRASH FISH	119	12.49	186	13.52	74	11.09	205	15.73	146	13.56
TOTAL	953	100.00	1,379	100.00	671	100.00	1,307	99.99	1,077	100.00



Table 4. Example of table layout for Program No.810


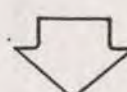
YEAR		1980		1981		1982		1983		
DATA AND PERCENT		DATA	%	DATA	%	DATA	%	DATA	%	
AREA 1	FISHES	12,365	46.53	789	28.02	123	40.59	741	19.56	
	MOLLUSCS	8,049	30.29	456	16.19	41	13.53	852	22.49	
	CRUSTACEANS	4,560	17.16	321	11.40	59	19.47	965	25.48	
	TRASH FISH	1,599	6.02	1,250	44.39	80	26.40	1,230	32.47	
	TOTAL	26,573	100.00	2,816	100.00	303	99.99	3,788	100.00	
AREA 2	FISHES	3,210	38.28	123	8.29	123	8.65	4,561	8.14	
	MOLLUSCS	654	7.80	456	30.75	654	45.99	2,365	4.22	
	CRUSTACEANS	321	3.83	784	52.87	321	22.57	47,894	85.45	
	TRASH FISH	4,200	50.09	-120	8.09	324	22.78	1,230	2.19	
	TOTAL	8,385	100.00	1,483	100.00	1,422	99.99	56,050	100.00	
AREA 3	FISHES	52,100	68.26	2,301	15.52	123	43.93	1,250	23.09	
	MOLLUSCS	2,345	3.07	4,203	28.34	78	27.86	1,456	26.89	
	CRUSTACEANS	9,879	12.94	4,320	29.13	56	20.00	1,230	22.72	
	TRASH FISH	12,000	15.72	4,005	27.01	23	8.21	1,478	27.30	
	TOTAL	76,324	99.99	14,829	100.00	280	100.00	5,414	100.00	
AREA 4	FISHES	1,254	7.43	1,204	26.85	789	56.72	5,210	80.84	
	MOLLUSCS	5,421	32.14	1,256	28.01	456	32.78	125	1.94	
	CRUSTACEANS	6,541	38.78	2,012	44.87	23	1.65	456	7.08	
	TRASH FISH	3,652	21.65	12	0.27	123	8.84	654	10.15	
	TOTAL	16,868	100.00	4,484	100.00	1,391	99.99	6,445	100.01	
AREA 5	FISHES	1,200	35.99	45	27.11	963	13.46	156	98.11	
	MOLLUSCS	1,254	37.61	51	30.72	852	11.91	2	1.26	
	CRUSTACEANS	650	19.50	30	18.07	741	10.35	0	0.00	
	TRASH FISH	230	6.90	40	24.10	4,600	64.28	1	0.63	
	TOTAL	3,334	100.00	166	100.00	7,156	100.00	159	100.00	
AREA 6	FISHES	456	3.66	123	32.71	1,250	12.95			
	MOLLUSCS	3,247	26.05	102	27.13	4,201	43.52			
	CRUSTACEANS	6,351	50.95	99	26.33	1,002	10.30			
	TRASH FISH	2,410	19.34	52	13.83	3,200	33.15			
	TOTAL	12,464	100.00	376	100.00	9,653	100.00			
AREA 7	FISHES	1,204	9.95	126	1.88	2,105	9.47			
	MOLLUSCS	2,564	21.19	145	2.17	2,006	9.02			
	CRUSTACEANS	5,123	42.34	3,211	47.95	9,001	40.48			
	TRASH FISH	3,210	26.53	3,214	48.00	9,123	41.03			
	TOTAL	12,101	100.01	6,696	100.00	22,235	100.00			
AREA 8	FISHES	1,250	9.09	1,204	11.45	4,102	31.90			
	MOLLUSCS	4,000	29.08	4,002	38.05	2,563	19.93			
	CRUSTACEANS	4,005	29.11	5,012	47.65	3,652	28.40			
	TRASH FISH	4,501	32.72	300	2.85	2,541	19.76			
	TOTAL	13,756	100.00	10,518	100.00	12,858	99.99			
AREA 9	FISHES	2,310	62.81	1,201	99.01	123	5.19			
	MOLLUSCS	123	3.34	0	0.00	654	27.59			
	CRUSTACEANS	456	12.40	12	0.99	741	31.27			
	TRASH FISH	789	21.45	0	0.00	852	35.95			
	TOTAL	3,678	100.00	1,213	100.00	2,370	100.00			



Table 5. Example of table with modified arrangement of data (Dummy data).

LANDING PLACE		RAYONG		SAMUT SAKHON		CHUMPHON		SONGKHLA		TOTAL MEAN	
DATA AND PERCENT		DATA	%	DATA	%	DATA	%	DATA	%	DATA	%
JAN. to MAR.	TRAWL	41,332	20.61	82,156	55.18	28,315	26.89	45,985	39.75	49,448	34.68
	PURSE SEINE	59,153	29.50	43,029	28.90	54,263	51.54	55,990	48.40	53,108	37.24
	GILL NET	958	0.48	19,212	12.90	12,500	11.87	12,300	10.63	11,242	7.88
	OTHER GEARS	39,100	49.41	4,480	3.01	10,202	9.69	1,410	1.22	28,798	22.20
	TOTAL	200,548	100.00	148,877	99.99	105,280	99.99	115,685	100.00	142,597	100.00
APR. to JUNE	TRAWL	21,844	22.08	48,042	31.92	5,240	25.64	28,900	57.29	38,506	37.79
	PURSE SEINE	22,445	22.69	42,036	27.93	12,560	51.45	45,163	32.79	30,551	28.98
	GILL NET	5,210	5.27	13,810	9.17	1,410	6.90	12,420	9.02	8,212	8.06
	OTHER GEARS	49,410	49.96	46,642	30.99	1,230	6.02	1,234	0.90	24,629	24.17
	TOTAL	98,909	100.00	150,530	100.01	20,440	100.01	137,717	100.00	101,899	100.00
JULY to SEPT.	TRAWL	53,752	52.08	47,951	34.16	45,880	34.25	45,612	34.89	46,301	36.01
	PURSE SEINE	36,535	35.40	16,210	11.55	46,521	34.72	40,100	30.68	34,841	27.42
	GILL NET	11,911	11.54	1,095	0.78	31,589	23.57	32,510	24.87	19,276	15.17
	OTHER GEARS	1,020	0.99	75,125	53.52	10,002	7.46	12,500	9.56	24,661	19.41
	TOTAL	103,218	100.01	146,381	100.01	134,002	100.00	130,722	100.00	127,080	100.01
OCT. to DEC.	TRAWL	642	9.87	95,501	50.76	456	31.45	45,610	30.92	35,552	41.39
	PURSE SEINE	3,452	53.21	16,400	8.72	412	28.41	45,231	30.66	16,376	19.26
	GILL NET	1,191	18.31	1,095	0.58	459	31.66	14,123	9.57	4,217	4.91
	OTHER GEARS	1,211	18.61	75,141	39.94	123	8.48	42,563	28.85	29,759	34.64
	TOTAL	6,506	100.00	168,137	100.00	1,450	100.00	147,527	100.00	85,905	100.00
TOTAL (MEAN)	TRAWL	29,333	28.73	68,412	43.58	19,975	30.59	54,326	40.65	42,952	37.56
	PURSE SEINE	30,398	29.72	29,418	18.74	28,439	43.56	46,621	35.08	33,719	29.49
	GILL NET	4,817	4.71	8,803	5.61	11,489	17.60	17,838	13.42	10,737	9.39
	OTHER GEARS	37,685	36.84	50,347	32.07	5,389	8.25	14,426	10.85	26,962	23.57
	TOTAL	102,295	100.00	156,981	100.00	65,293	100.00	132,912	100.00	114,370	100.00



# 5. PROGRAM LISTS

## 5.1 Program No. 820

```

5:REM PROG.-820
6:REM CTACH*CPUE
  DATA & %, BY
  AREA AND YEAR
  *TABULATION*
10:"A":CLEAR :
  BEEP 5:INPUT "
  No.of YEARS(1-
  8)=?";T:WAIT 0
  :BEEP 3
15:INPUT "Initial
  YEAR=?";U:
  BEEP 3
19:INPUT "No.of A
  REAs(3-9)=?";Z
  :BEEP 3
20:INPUT "No.of 1
  TEMs in AR.(3-
  6)=?";W:BEEP 3
  :WAIT 100:
  PRINT "**NAMEo
  fITEM<=10 Char
  ct.)*":WAIT
21:BEEP 5:Y=Z*W:
  WAIT 0
22:DIM C$(W-1)
23:FOR J=0TO W-1
24:C$="":CLS :C$=
  "Name of ITEM(
  "+STR$(J+1)+"
  )=?"
25:PRINT C$;
26:INPUT C$(J)
27:NEXT J:BEEP 3:
  CLS
30:DIM A((T-1),(Y
  -1)):WAIT 0
40:FOR I=0TO T-1:
  FOR J=0TO Y-1
41:IF J=W*BEEP 3
42:IF J=W*2*BEEP 3
43:IF J=W*3*BEEP 3
44:IF J=W*4*BEEP 3
45:IF J=W*5*BEEP 3
46:IF J=W*6*BEEP 3
47:IF J=W*7*BEEP 3
48:IF J=W*8*BEEP 3
49:IF J=W*9*BEEP 3
55:A$="":CLS
60:A$="A(Yr"+STR$
  (I+1)+",Ln"+
  STR$(J+1)+")=
  "
  70:PRINT A$;
  80:INPUT A(I,J)
  100:NEXT J:BEEP 10
  110:NEXT I
  115:DIM AS(Z-1),Q(
  W-1),LL(Y-1),T
  G(Y)
  120:REM ***FIRST(H
  EAD)COLUMN **
  121:LF 1:LPRINT
  TAB 7;"YEAR":
  LF 1:LPRINT
  TAB 1;"DATA AN
  D PERCENT":LF
  1
  124:FOR J=0TO T-1
  125:FOR K=0TO Z-1:
  LF 2:LPRINT "A
  REA";K+1:LF -3
  130:FOR J=0TO W-1
  132:LPRINT TAB 7;C
  $(J):NEXT J:
  LPRINT TAB 7;"
  TOTAL":LF 1
  133:NEXT K:LF 1
  134:LPRINT " AREA"
  :LPRINT "(MEAN
  )":LF -3
  135:FOR J=0TO W-1:
  LPRINT TAB 7;C
  $(J):NEXT J:
  LPRINT TAB 7;"
  TOTAL":LF 2
  140:REM **DATA.etc
  **
  141:LPRINT "-----
  -----":LF 1
  142:FOR I=0TO T-1
  150:USING :LPRINT
  TAB 7;U:LF 1:
  LPRINT " D
  ATA":LF -1:
  LPRINT "
  %":LF
  1
  152:Q=W
  153:FOR P=0TO Z-1
  154:S1=0:S2=0:R=0
  155:FOR J=(Q-W)TO
  Q-1
  160:IF J=YGOTO 23
  0
  165:IF I=TGOTO 240
  170:S1=S1+A(I,J)
  180:USING "###,###
  ,###":LPRINT
  TAB 1;A(I,J):
  NEXT J:LPRINT
  TAB 1;S1:LF -(
  W+1)
  190:FOR J=(Q-W)TO
  (Q-1)
  200:R=INT (A(I,J)/
  S1*10000+0.5)/
  100:S2=S2+R
  205:USING "####.##
  ":LPRINT TAB 1
  1;R:NEXT J:
  LPRINT TAB 11;
  S2:LF 1
  210:Q=Q+W:NEXT P:Q
  =0
  212:FOR O=0TO W-1
  214:FOR J=0TO Y-(W
  -O)STEP W
  216:AS(O)=AS(O)+A(
  I,J):NEXT J:TT
  =TT+AS(O)
  218:USING "###,###
  ,###":LPRINT
  TAB 1;AS(O)/Z:
  NEXT O:LPRINT
  TAB 1;TT/Z:LF
  -(W+1)
  220:FOR O=0TO W-1
  230:R=INT (AS(O)/T
  *10000+0.5)/1
  00:UU=UU+R
  240:USING "####.##
  ":LPRINT TAB 1
  1;R:R=0:NEXT O
  :LPRINT TAB 11
  ;UU:LF 1
  242:FOR O=0TO W-1:
  TT=0:AS(O)=0:U
  U=0:NEXT O
  250:LF 2:U=U+1:
  NEXT I:LF 1
  255:REM ---YEAR---
  -----MEAN---
```

```

260:LPRINT "
      YEAR (MEAN)":
      LF 1:LPRINT "
      DATA
      %":LF 1
270:FOR O=0TO Y-1
      STEP W
275:FOR J=0TO O+W-
      1
277:S1=0
280:FOR I=0TO T-1
290:S1=S1+A(I,J)
291:NEXT I
295:USING "###,###
      ,###":LPRINT
      TAB 1;S1/T:LL(
      J)=LL(J)+S1:S1
      =0:TT=TT+LL(J)
      :TG(J)=LL(J)
300:NEXT J:LPRINT
      TAB 1;TT/T:LF
      -(W+1)
310:FOR J=0TO O+W-
      1
315:R=INT (LL(J)/T
      T*10000+0.5)/1
      00:SS=SS+R
320:USING "####.##
      ":LPRINT TAB 1
      1;R:NEXT J:
      LPRINT TAB 11;
      SS:TT=0:SS=0:R
      =0:LF 1
330:FOR J=0TO O+W-
      1:LL(J)=0:NEXT
      J
340:NEXT O
350:REM --GRAND---
      -----TOTAL---
360:FOR O=0TO W-1
380:FOR J=0TO Y-(W
      -O)STEP W
390:TT=TT+TG(J):
      NEXT J
395:USING "###,###
      ,###":S2=INT (
      TT/T/2)
400:LPRINT TAB 1;S
      2:S1=S1+S2:TT=
      0:NEXT O
410:LPRINT TAB 1;S
      1:USING :LF -(
      W+1)
430:FOR O=0TO W-1:
      FOR J=0TO Y-(W
      -O)STEP W
440:TT=TT+TG(J):
      NEXT J
445:R=((INT (TT/T/
      2))/S1*10000+0
      .5)/100:S=S+R
450:USING "####.##
      ":LPRINT TAB 1
      1;R:R=0:TT=0
460:NEXT O:LPRINT
      TAB 11;S:S=0:S
      1=0
470:LF 3:LPRINT "--
      ----- END ---
      ---":LF 4
480:END

STATUS (1)
2406

```



5.2 Program No. 810

```

5:REM PROG.-810
6:REM CATCH&CPUE
  %DATA AND PER-
  CNTAGE BY AREA
  AND BY YEAR
  WITHOUT TOTAL
  "COLUMNS"*
10:"A":CLEAR :
  BEEP 5:INPUT "
  No.of YEARS=?"
  ;T:WAIT 0
15:INPUT "Initial
  YEAR=?";U:
  BEEP 3
19:INPUT "No.of B
  LOCKs in ,VERT
  =?";Z
20:INPUT "No.of I
  TEMs in Block=
  ?";W
21:Y=Z*W
22:DIM C$(W-1)
23:FOR J=0TO W-1
24:C$="":CLS :C$=
  "NAMEinBL.Line
  ("+STR$ (J+1)+
  ")="
25:PRINT C$;
26:INPUT C$(J)
27:NEXT J:BEEP 3:
  CLS
30:DIM A((T-1),(Y
  -1)):WAIT 0
40:FOR I=0TO T-1:
  FOR J=0TO Y-1
41:IF J=W*BEEP 3
42:IF J=W*2BEEP 3
43:IF J=W*3BEEP 3
44:IF J=W*4BEEP 3
45:IF J=W*5BEEP 3
46:IF J=W*6BEEP 3
47:IF J=W*7BEEP 3
48:IF J=W*8BEEP 3
49:IF J=W*9BEEP 3
50:IF J=W*10BEEP
  3
55:A$="":CLS
60:A$="A(U-"+STR$
  (J+1))+",H-"+
  STR$ (J+1))+")="
  70:PRINT A$;
  80:INPUT A(I,J)
  90:S=S+A(I,J):
  BEEP 1
  100:NEXT J:BEEP 10
  110:NEXT I
  120:REM ***FIRST(H
  EAD)COLUMN **
  121:LPRINT TAB 1;"
  -----";
  LF 1:LPRINT
  TAB 7;"YEAR":
  LF 1:LPRINT
  TAB 1;"DATA AN
  D PERCENT";LF
  1
  124:FOR I=0TO T-1
  125:FOR K=0TO Z-1:
  LF 2:LPRINT "A
  REA";K+1:LF -3
  130:FOR J=0TO W-1
  132:LPRINT TAB 7;C
  $(J):NEXT J:
  LPRINT TAB 7;"
  TOTAL":LF 1
  139:NEXT K
  140:REM **DATA.etc
  .**
  141:LF 1:LPRINT "-
  -----";LF
  1
  142:FOR J=0TO T-1
  150:USING :LPRINT
  TAB 7;U:LF 1:
  LPRINT " D
  ATA":LF -1:
  LPRINT "
  %":LF
  1
  152:Q=W
  153:FOR P=0TO Z-1
  154:S1=0:S2=0:R=0
  155:FOR J=(Q-W)TO
  Q-1
  160:IF J)=YGOTO 23
  0
  165:IF J=TGOTO 240
  170:S1=S1+A(I,J)
  180:USING "###,###
  ,###":LPRINT
  TAB 1;A(I,J):
  NEXT J:LPRINT
  TAB 1;S1:LF -(
  W+1)
  190:FOR J=(Q-W)TO
  (Q-1)
  200:R=INT (A(I,J)/
  S1*10000+0.5)/
  100:S2=S2+R
  210:USING "####.##
  ":LPRINT TAB 1
  1;R:NEXT J:
  LPRINT TAB 11;
  S2:LF 1
  220:Q=Q+W:NEXT P
  230:LF 2:U=U+1:
  NEXT I
  240:END
  STATUS (1)
  1269

```

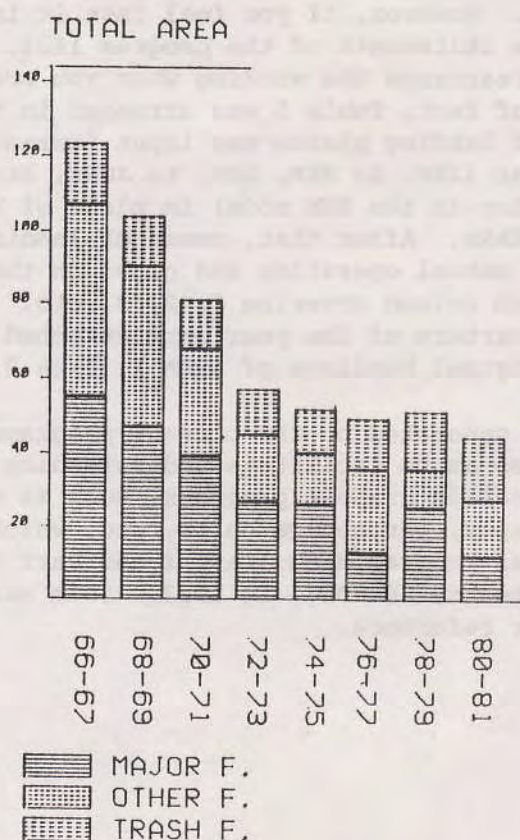
## 6. ADDITIONAL NOTES

As mentioned earlier, Program No.820 and 810 can be used for making various tables, not only with items by area and by years, but also items by landing place and by month, etc., with minor changes of statements in the program list. Table 5 shows an example of a different arrangement. However, if you feel that it is somewhat troublesome to change statements of the program list, you can use the original program and rearrange the wording when you are doing the table layout. As a matter of fact, Table 5 was arranged in this manner as follows: The number of landing places was input instead of No. of YEARS; four quarters in a year (JAN. to MAR, APR. to JUNE, etc. which was done by manual operation in the RUN mode) in place of No. of AREAS; and 1 instead of No. of YEARS. After that, names of landing places were printed separately by manual operation and glued in the position of YEAR at the top of each column covering 1, 2, 3, etc. Printed names indicating the four quarters of the year were attached to the Table so as to cover the original headings of AREA 1, AREA 2, etc.

Using a table generated by the present programs, many kinds of diagrams can be made so as to facilitate understanding of a problem under study. These include graphic programs, such as multi-layered histograms, circle graphs, percentage belts, etc. which were dealt with in the PC-1500 Computer Program Menu (Part I and Part II) published by the Training Department, SEAFDEC, in 1983. Some examples are attached here for your reference.



# EXAMPLE 1



Notes: Biennial changes in proportional composition by three categories of catch in the Gulf of Thailand, in terms of CPUE: 1) ten major demersal fishes, 2) other demersal fishes, and 3) trash fish. 66-67 denotes 1966-67 (Data source: Department of Fisheries, Thailand).

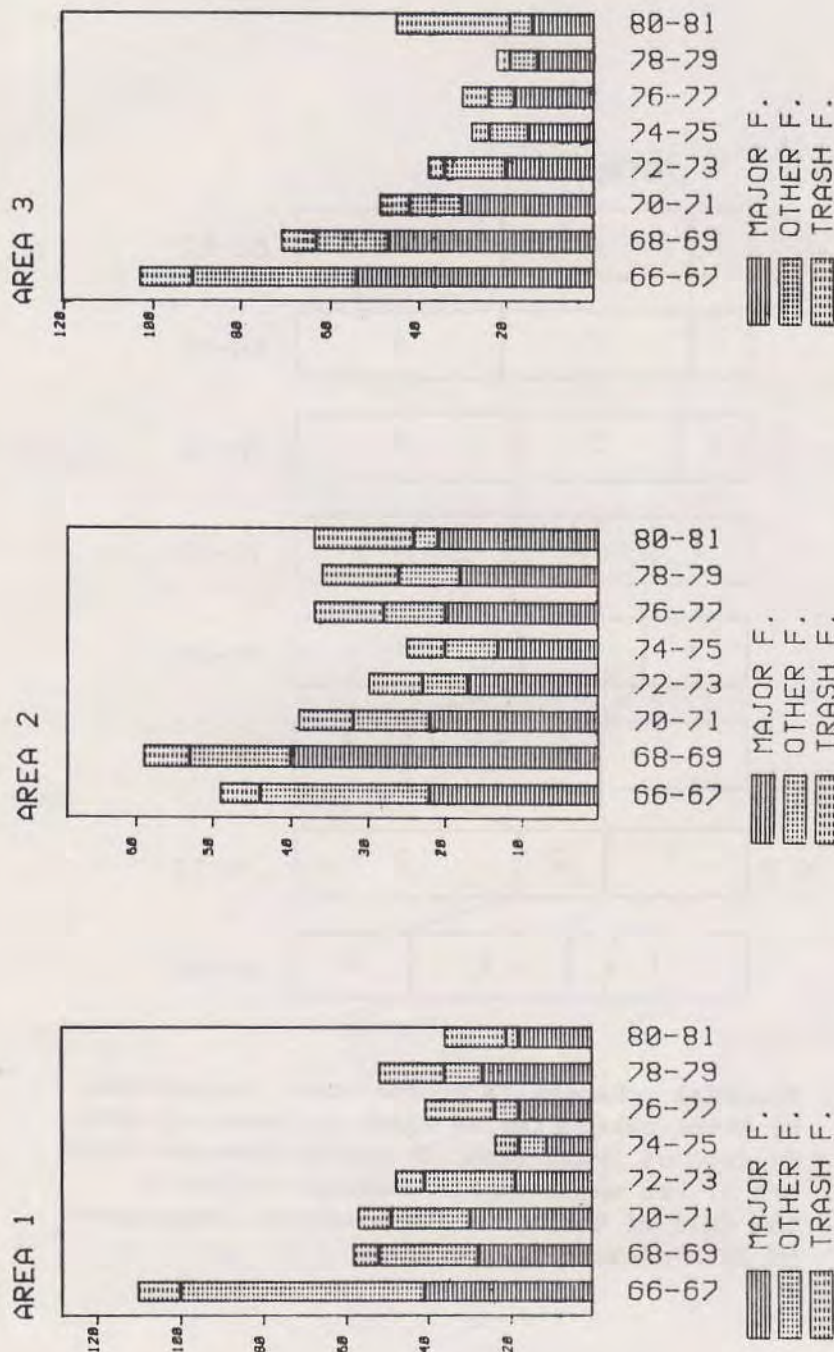
**EXAMPLE 2**

TOTAL AREA			
1	2	3	66-67
1	2	3	68-69
1	2	3	70-71
1	2	3	72-73
1	2	3	74-75
1	2	3	76-77
1	2	3	78-79
1	2	3	80-81

Notes: Biennial changes in proportional composition by three categories of catch in terms of CPUE. 1) denotes trash fish, 2) edible demersal fish, and 3) ten major edible demersal fishes in the Gulf of Thailand. (Data source: Department of Fisheries, Thailand).



# EXAMPLE 3

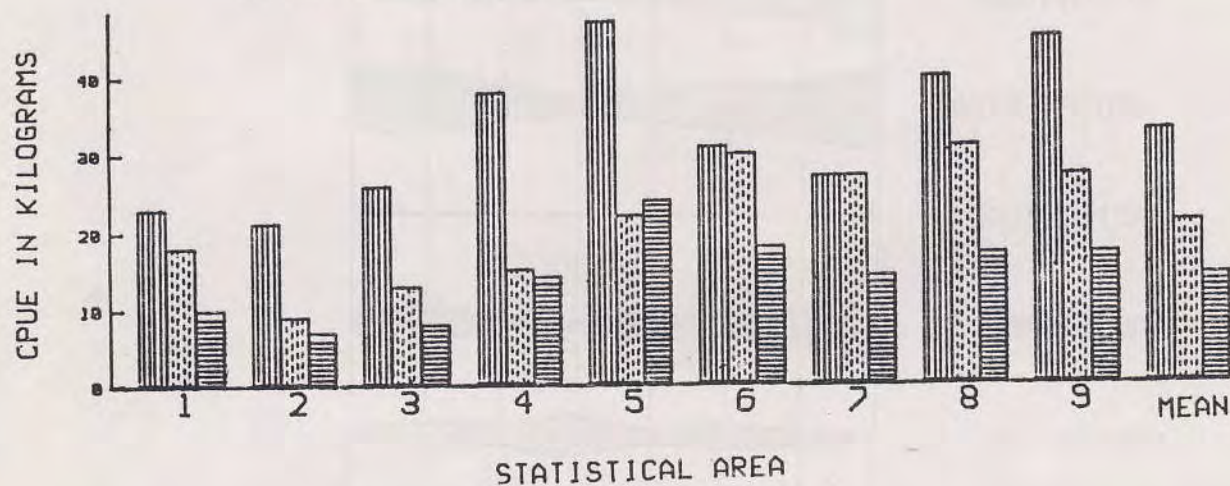


Notes: Biennial changes in proportional composition by three categories of catch in terms of CPUE (in kg), namely ten major species, other demersal fishes and trash fish in Area 1, 2 and 3 in the Gulf of Thailand. 66-67 denotes 1966-67. (Data were obtained by a research vessels belonging to the Department of Fisheries, Thailand).

EXAMPLE 4

LEGEND

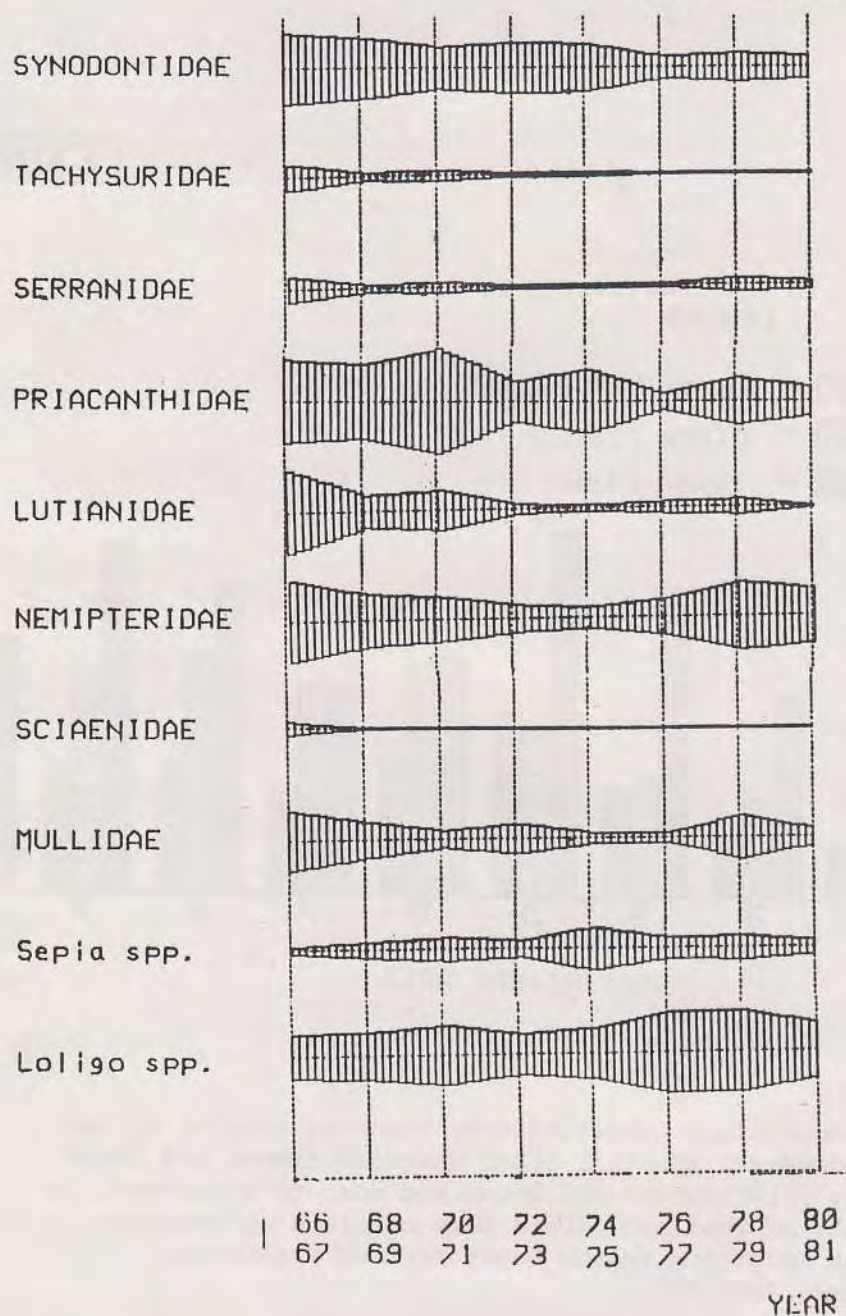
- ▨ = 10 MAJOR SPECIES  
▤ = OTHER FISHES  
▧ = TRASH FISH



Notes: The proportional composition by three categories of ten major demersal species, other demersal fishes and trash fish by nine statistical Areas and mean of Area total in the Gulf of Thailand. (Data were obtained by research vessels belonging to the Department of Fisheries, Thailand, 1966-68).

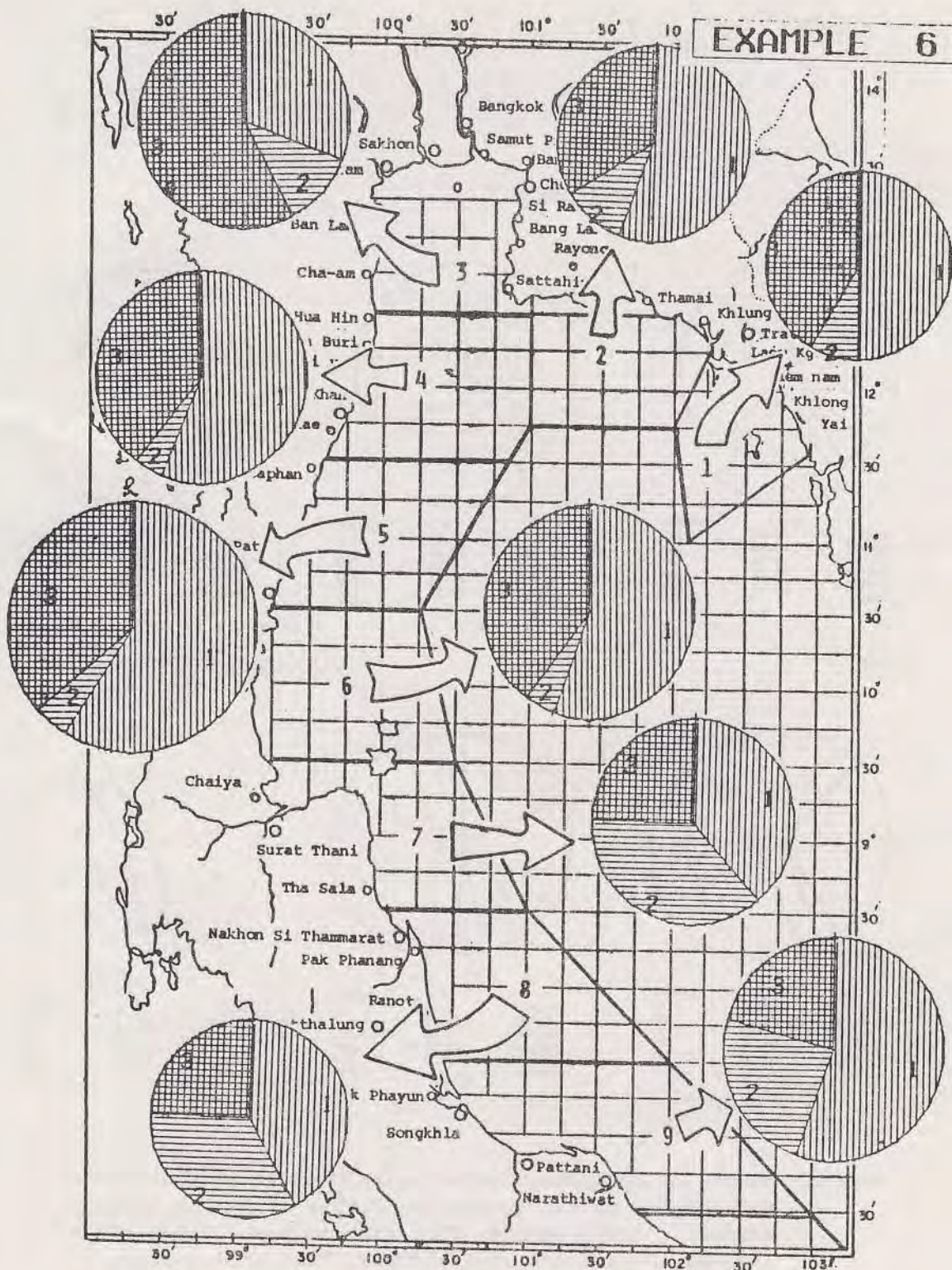


EXAMPLE 5



Notes: Biennial changes in CPUE of ten major demersal species by research vessels in Area 1 in the Gulf of Thailand.  
(Data source: Department of Fisheries, Thailand)



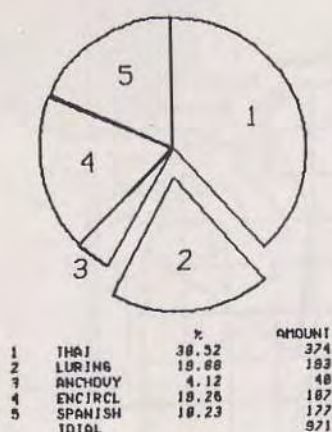


Notes: The proportional composition of three categories of CPUE for 1981. 1) denotes ten major demersal species, 2) other demersal species, and 3) trash fish. (Data source: MFD/DOF).

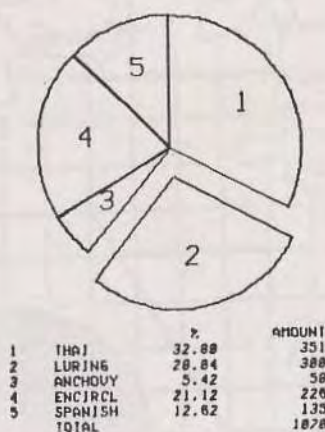


EXAMPLE 7

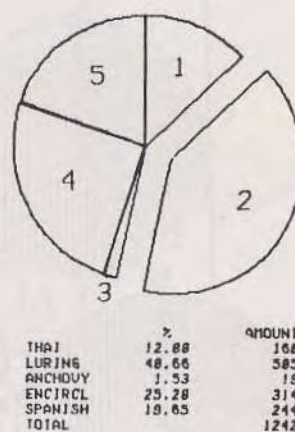
1975



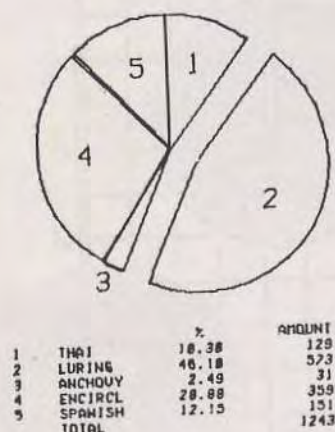
1976



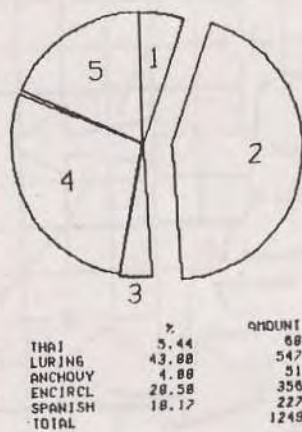
1977



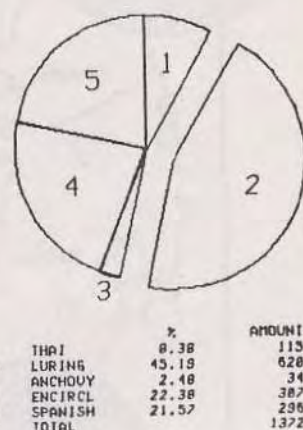
1978



1979



1980



Notes: Number of registered major pelagic gears in Thailand with stress on the increasing number of luring purse seiners. (Data source: Thai fishing vessel statistics, 1975-80, Department of Fisheries, Thailand).