MEKONG RIVER COMMISSION/DOF/DANIDA

Project for Management of the Freshwater Capture Fisheries of Cambodia

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PHASE II

Draft

DAI [BAGNET] FISHERY: 1994/95-2000/01

CATCH ASSESSMENT METHODOLGY AND RESULTS

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I- INTRODUCTION:

Inland fisheries statistics have been re-existed since 1980 after Cambodia was liberated from Khmer Rouge regime in 1979. All the provincial fisheries offices are obliged to produce the summery figures of the monthly total catch and send it to the central department by the end of current month, Department of Fisheries (DoF), who are in charge of compiling and publishing as the national statistics. Dai Fisheries are categorized as the large scale fisheries (Cambodian Fisheries law, 1990). From 1980-95, annual fish production by the Dais given by DoF was manually and non-scientifically estimated due to lack of both human resources and advanced facilities. This resulted in a limited and unreliable data.

In 1994, the Project for the Management of the Freshwater Capture Fisheries of Cambodia was set up to help the DoF develop the fisheries data collection system and fisheries data estimation and analysis. New software programs, Artfish and Lenfreq, were also designed and introduced to support scientific data analysis of the fish stocks. The start of data collection activities (mobile gears and large- scale fisheries) took place, in which Dai Fisheries were also sampled from 1994 onward. Several staff from DoF was trained and assigned to be responsible for Dai fisheries data collection, processing and analysis. However, they often work only 2 or 3 years and then left for their graduate study abroad one after another. Some works were left undocumented. This led to difficulties for their successors in taking over this work.

This report is compiled to explain the development of methodology used in collecting data and estimating annual fish production of the Dai fisheries. The results of the catch estimation are also included. They sometimes deviate from the original estimates based on the row data, as particularly in the 1995/96 season the estimation of Dai fishery effort is considered too limited to be used, and has been augmented using data obtained during the 1996/97 census.

II- OPERATIONAL LOCATION OF THE DAI FISHERIES:

A Dai is a stationary trawl positioned in the river to capture "white" fish species migrating out of submerged areas around the Great Lake and Tonle Sap river to the Mekong River. It operates from October through March in only a specific location in the lower part of the Tonle Sap river about 4-35 kilometers north of Phnom Penh (Lieng et al., 1995). It has a precise number of units (63 units in all), decided by the Ministry of Agriculture, Forestry and Fisheries, among which 25 units (row #1-6) belongs to Phnom Penh and 38 units (row # 7-15) belongs to Kandal (See figure 1: Map of overall view of Dai location in the Tonle Sap river and figure 2: Diagram of each Dai unit installed in the river). This creates a favorable condition for us in observing and making plan for data collection.

For fishing rights, Dai Fisheries are auctioned by the government to the highest bidder for a 2-year period exclusive exploitation (see Lieng et al., 1995 for more information).

Figure 1: Map of Overall View indicating the posistion of various dai rows in the Tonle Sap

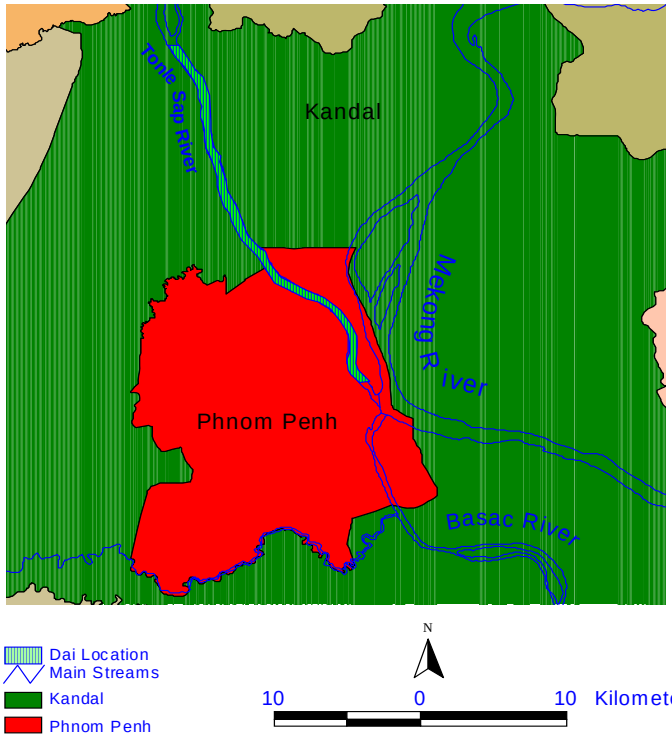


Figure 2: Diagram of each Dai unit installed in the river

Row 15	A	B	C	D				
Row 14	A	B	C					
Row 13	A							
Row 12	A	B	C	D	E			
Row 11	A	B	C	D				
Row 10	A	B	C	D	E	F	G	
Row 9		B	C	D				
Row 8			C	D	E	F	G	H
Row 7			C	D	E	F	G	
Row 6			C	D	E	F	G	
Row 5		B	C	D	E	F		
Row 4	A	B	C	D				
Row 3	A	B	C	D				
Row 2	A	B	C	D				
Row 1		B	C	D				

III- SAMPLING METHODOLOGY:

Basically, before estimating the overall catch from the Dai Fisheries, all Dai units in Phnom Penh and Kandal are stratified into minor strata. Due to a large difference in catch during the time window of 6-1 days before full moon and during the rest of the month, time stratification is also applied: Peak Period and Low Period. The sampling then is conducted in each minor stratum randomly. Samples on species composition of the catch and length frequency are also taken.

Artfish Version I and Lenfreq (Stamatopoulos, 1995) have been used to store, process and estimate monthly and annually fish catch and length frequency data from the Dai Fisheries.

Development of the Catch Estimation Sampling Stratification:

After the data collection scheme was introduced in 1994, some changes have been made in the sampling stratification in order to improve the result of Dai catch estimation.

1. 1994-95: (source: Lieng et al., 1995)

All Dai units in Phnom Penh and Kandal (73 Dais in 15 rows) were stratified into three minor strata:

- Minor stratum 1: Row 1-6
- Minor stratum 2: Row 6-10 and
- Minor stratum 3: Row 11-15.

Time stratification:

- A peak period: 4 to 6 days before full moon.
- A low period during the rest of the month.

Sampling was conducted randomly with an average frequency of 2 days per month. Catch per haul was estimated, as well as the number of hauls per 24 hours. The total catch of a haul was sampled for species composition at low periods, while sub-sampling was necessary at peak periods.

2. 1995-96:

Stratification by group of rows as applied in 1994-95 was not continued. Considering that the price for which a Dai is auctioned reflects its perceived productivity, Dai units were stratified for random sampling into two strata:

- Dais with an auctioned price above the Riel equivalent of US$ 3000
- Dais with an auctioned price below the Riel equivalent of US$ 3000

Time stratification was still applied as the fish catches at the peak period and the low period are extremely different.

3. 1996-97:

The sampling method of stratification was still maintained as it was applied in 1995-96. However, in this fishing season, the Department of Fisheries conducted a census survey of the Dai fisheries in order to find out what each Dai was catching. The collected data allowed a re-stratification of the Dais based on their catch.

It was the intention of the DoF to carry out this census, i.e. measuring all catches made by all Dais in operation between October 1996 and March 1997. All data collectors were the staff of the Department of the Fisheries and of the Phnom Penh and Kandal fisheries offices. The data collectors were supposed to stay at the Dai unit for 24 hours to observe and constantly record every catch per haul and the time between the successive hauls. However, in reality only

49 % of the total Dai effort could be monitored because it was difficult to sustain the monitoring effort continuously. Census catch sheets were provided to every data collectors for this survey. The observation was mainly focused on the catch per haul and number of hauls per day. These two factors are critical for catch estimation (Ngor, 2000). The results of the census data was stored and analyzed in an Electronic Spreadsheet.

4. 1997-98: (source: Deap, 1999)

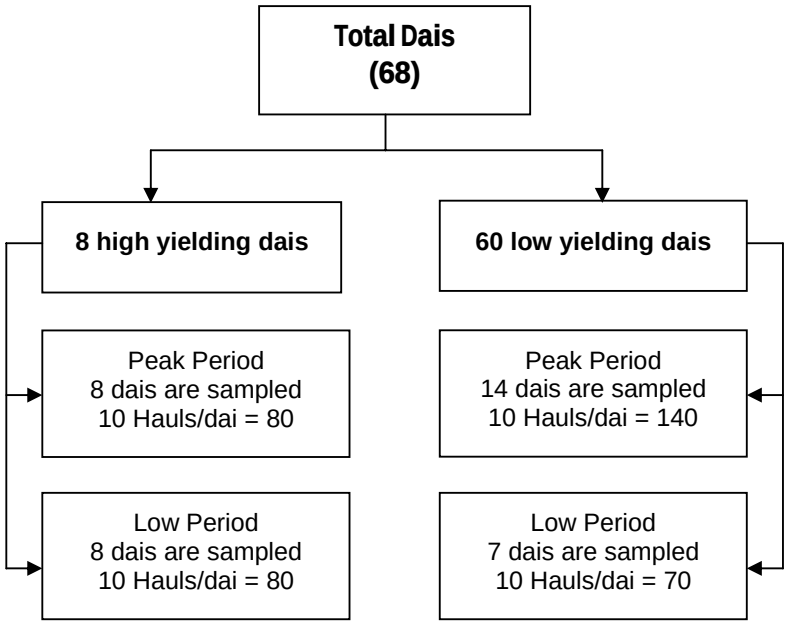
Stratification by yield level

The dais units in Phnom Penh and Kandal (68 dais in 15 rows) are divided into two groups: the high yielding ones and the low yielding ones. This stratification is based on the census data obtained from the peak period in January 1997 (see Annex 1, table4).

Stratification in time

Catches vary strongly with lunar periodicity. There is a peak period of 4-6 days before full moon and a low period during the rest of the month. In the peak period sampling intensity needs to be high. Dais to be sampled are chosen at random.

Figure 3: Dai stratification scheme for sampling purposes (1997-98)



See annex 1 for high yielding dais and low yielding dais.

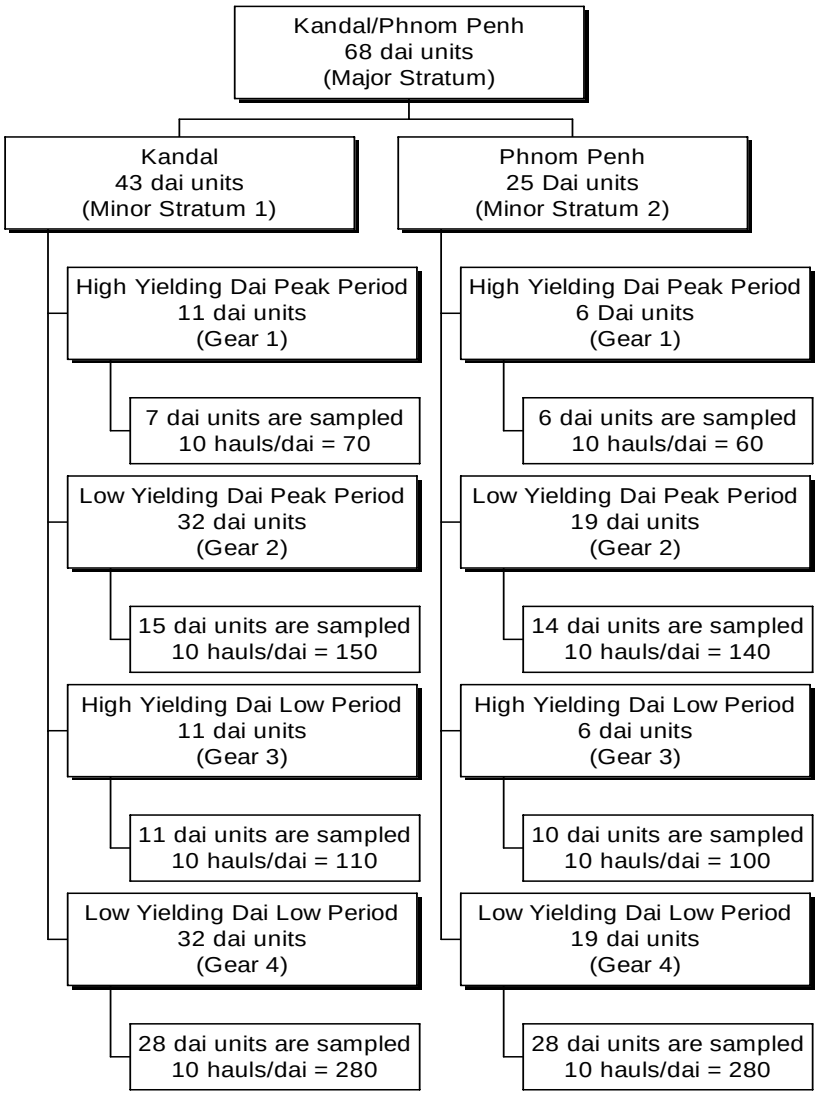
5. 1998/99-2000/01:

As it is the intention of DoF and Kandal and Phnom Penh Fisheries offices to get a separate estimated catch for Kandal and Phnom Penh, the stratification for the Dai fishery sampling is spited into 2 minor strata: Kandal and Phnom Penh. The sampling design for data collection is as given in figure 4.

This stratification is based on the census data conducted by DoF in 1996-97. All the data in the peak period from October through March was computed and the cumulative percentage of the catch of all Dais was used to rank the Dais by yield (see annex 1, table 1-6). High yielding Dais contributing 50 percent to the total catch were considered as one fishing gear and the rest of the Dais as the other.

Officially there are only 63 dai units in operation in Kandal and Phnom Penh. Due to our field survey, 5 extra dai units are usually illegally operating in Kandal province between row # 10 and row # 12. We therefore include these dai units in our catch estimation.

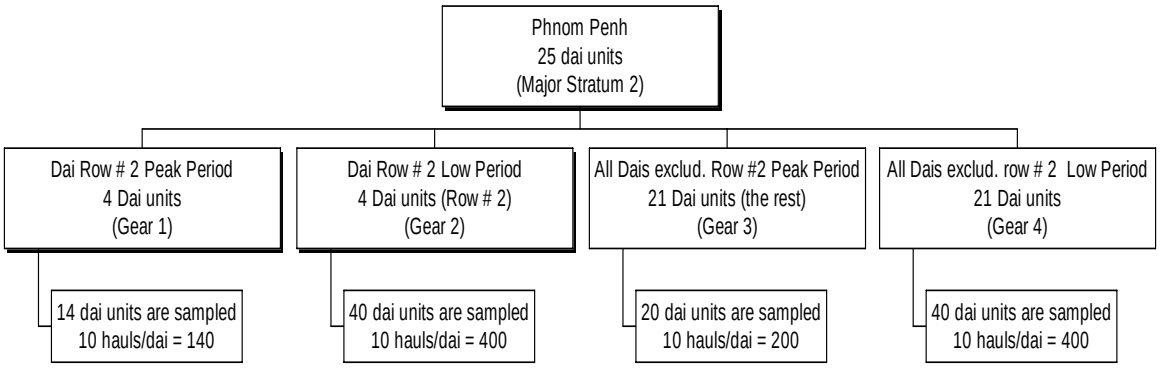
Figure 4: Dai sampling designs for data collection and estimation (1998/99-1999/01)



In 2000-01 fishing season, there was a little change in data collection scheme in Phnom Penh (Minor stratum2) because the project is quite interested in the catch composition in Dai row number 2 (4 units). As this row is already regarded as the high yielding dais in the fishing season 1998/99-1999/00, it then is maintained.

The sampling design considered row number 2 as one gear (4 dai units) and the rest as the other (see figure 5 for sampling design).

Figure 5: Dai Sampling Designs for data collection and estimation in Phnom Penh 2000-01



IV- CATCH AND EFFORT ESTIMATION METHODOLOGY

To estimate the effort of a dai unit, the time between the successive hauls is measured by carrying out at least 10 hauls during the day. The total catch of each haul observed are also recorded in the effort information form (see table 1: Effort information form). Using the above data, the average time per haul within 24 hours (one day) then can be calculated. The average frequency of hauls per day in the low and peak period can also be found by averaging separately the number of hauls per day in accordance with the number of days in the low and peak period observed.

It is important to note that differences in day and night catches per haul are important. Night catches are higher. However, the number of hauls at night is less than during the day, and thus should be accurately assessed on sampling days, as variation in effort has a greater impact in the catch estimation process than the variation in the catch itself.

In the fishing seasons of 1998/99-2000/01, the sampling in the peak periods is more intensive. An extra 5-day 24 hours observation in each peak period from October through March is conducted. The survey focuses on times between successive hauls, number of hauls and catch per hauls within 24 hours. They are recorded subsequently in a separate form. These data provide a good information in estimating efforts, which are a key factor for catch estimation. See annex 2: table of effort information form.

V- SPECIES COMPOSITION METHODOLOGY

Samples on species composition of the catch are taken at least 3 hauls at the time the catch and effort are recorded. A sub-sample of fish is sorted by species, weighed and counted before it is recorded on the species form. Length frequency of some selected species is also taken.

VI- LENGTH FREQUENCY DATA:

Length frequency data of the Dai Fisheries was carried out only in 1995-96 fishing season. In the fishing season of 1996-97 and 1997-98, the survey was not conducted. Data were collected again from fishing season of 1998/99 to 2000/01. This data collection mainly focuses on the important species, the species that are common and represent a large part in the catch composition. These species are *Henicorhychus spp., Cirrhinus microlepis, Dangila spp., Pangasius spp. Cyclocheilichthus enoplos etc.*

This type of data set is stored and processed in Lenfreq software and can be exported to an Electronic Spreatsheet for analysis.

VII- RE-ESTIMATION OF CATCH DATA:

Noteworthy is that the Dai catch estimated in the fishing season of 1995-96 seemed to be over-estimated as the input efforts for that estimation were very high compared to those found in the 1996-97 census data. For example, the number of hauls per day found in the low period of December 1995 was 40 times (too high) a day while only 34 times a day found in the peak period. Average catch per haul was also found higher.

Considering that the census data is more accurate, the project decided to use the efforts from the census data for this re-estimation. The average catch per haul per day within the low and the peak period sampled from November 1995 through March 1996 is also re-calculate manually in an Electronic Spreadsheet. See annex 3 in table 1-8: dai effort and the average catch per haul per day used for previous estimation and re-estimation of dai catch in fishing season of 1995-96 for comparison.

The same problem occurred with the catch estimation in 1996-97 fishing season, as the estimated catch amounted to 16,827 tons, which is 1339 tons higher than the census data.

However, the percentage of species composition of each species estimated in 1995-96 and 1996-97 is used to re-calculate catches and values by species in accordance with the re-estimated total catch and value.

So far the data analysis of the Dai fisheries made by the project takes the re-estimated catch and value into consideration (see Ngor et al., 2000 for catch data analysis, Hap et al., 2000 for economic data analysis of the dai fishery in Cambodia and Mark, 2001 for economic evaluation of inland fisheries in Cambodia?).

VIII- REFERENCE:

- **Deap, L. 1999.** The Bagnet [Dai] Fishery in the Tonle Sap River. in: Van Zalinge, N.P. and Nao Thuok (Eds.), 1999. pp 141-159. Present Status of Cambodia's Freshwater Capture Fisheries and Management Implication. Nine presentations given at the annual meeting of the Department of Fisheries of the Ministry of Agriculture, Forestry and Fisheries, 19-21 January 1999. Mekong River Commission and Department of Fisheries, Phnom Penh, Cambodia, 149 p.
- **Hap, N. V. and Ngor, P. B. 2000.** Economics analysis of fish production of the dai fisheries in the phnom penh and kandal province, cambodia. in: Van Zalinge, N.P., T. Nao and S. Lieng (Eds.), 200. pp 30-47. Management aspects of Cambodia's Freshwater Capture Fisheries. Eleven presentations given at the annual meeting of the Department of Fisheries of the Ministry of Agriculture, Forestry and Fisheries, 27-28 January 2000. Mekong River Commission and Department of Fisheries, Phnom Penh, Cambodia, 169 p.
- **Lieng, S.; Yim, C. and van Zalinge, N.P. 1995.** Freshwater fisheries of Cambodia: the bagnet (Dai) fishery in the Tonle Sap River. Asian Fisheries Science 8: 255 – 262.
- **Mark, A. T. 2001. Economic evaluation of the inland fishery in Cambodia?**
- **Ngor, P. B. 2000.** Dai Fisheries in the Tonle Sap River of Phnom Penh and Kandal province (including a Review of the Census Data of 1996-97). in: Van Zalinge, N.P., T. Nao and S. Lieng (Eds.), 200. pp 30-47. Management aspects of Cambodia's Freshwater Capture Fisheries. Eleven presentations given at the annual meeting of the Department of Fisheries of the Ministry of Agriculture, Forestry and Fisheries, 27-28 January 2000. Mekong River Commission and Department of Fisheries, Phnom Penh, Cambodia, 169 p.
- **Ngor, P. B. and Hem, C. 2000.** Analysis of the Dai Catches in Phnom Penh/Kandal. Written for the 3rd MRC Fisheries Program Technical Symposium, Phnom Penh 13-14 December 2000
- **Stamatopoulos, C. 1995.** The microcomputer system for the statistical monitoring of artisanal fisheries. Version 1.

IX. RESULT:

TOTAL CATCH OF THE DAI FISHERIES FROM THE FISHING SEASON OF 1994/95-2000/01

Table1: Total Catch (Ton) by species of Dai Fisheries in Kandal/Phnom Penh ranked due to the amount of catch (December,1994 - February,1995)

No	Species in Khmer	Scientific Name	Month			Total	
			Dec.	Jan.	Feb.	Catch	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	54.72	6834.12	5543.13	**12431.97**	**67.52**
2	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	31.30	1562.16	866.16	**2459.63**	**13.36**
3	KROS	*Osteochilus hasselti (4, pg 116)*	41.67	542.74	394.45	**978.86**	**5.32**
4	LINH	*Thynnichthys thynnoides (pg 105)*	2.56	479.25	33.43	**515.23**	**2.80**
5	KAEK	*Morulius chrysophekadion (pg 155)*	16.82	420.48	34.17	**471.47**	**2.56**
6	PRUOL/ KRALANG	*Cirrhinus microlepis (pg 107)*	4.32	142.96	251.08	**398.36**	**2.16**
7	KANH CHROUK	*Botia sp. (8, pg 132)*	4.41	171.17	94.34	**269.93**	**1.47**
8	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	37.52	70.47	83.94	**191.93**	**1.04**
9	BANDOUL AMPAOV	*Clupeoides borneensis (4, pg 59)*	0.53	10.81	76.51	**87.86**	**0.48**
10	KES	*Micronema spp.(3, pg148)*	0.82	81.99		**82.81**	**0.45**
11	CHHVAET	*Pang siamensis/spp.(4, pg 155)*	1.01	55.48		**56.49**	**0.31**
12	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	8.37	46.80		**55.17**	**0.30**
13	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	10.44	15.87	3.71	**30.03**	**0.16**
14	KROM	*Osteochilus melanopleurus (pg 117)*	18.28	7.36		**25.64**	**0.14**
15	CHHLANG	*Mystus nemurus (pg 143)*	0.38		11.14	**11.52**	**0.06**
16	PO	*Pang. Lanaudiei (pg 155)*	10.18			**10.18**	**0.06**
17	KAHE	*Barbodes altus (2, pg 95)*	0.70	9.46		**10.16**	**0.06**
18	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	5.01	0.66		**5.67**	**0.03**
19	DANG KHTENG	*Macrochirichthys macrochirus*	5.143			**5.14**	**0.03**
20	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	3.83			**3.83**	**0.02**
21	KANTRANG PRENG	*Parambassis wolffi (pg 182)*	0.51	2.90		**3.41**	**0.02**
22	KHLANG HAI	*Belodontichthys dinema (pg 145)*	3.41			**3.41**	**0.02**

23	CHANLUANH MEAN	*Coilia spp.*		1.82		**1.82**	**0.01**
24	CHHPIN	*Barbodes gonionotus (pg 95)*	1.11			**1.11**	**0.01**
25	LOLOK SOR	*Ostechilus schlgeli*	0.97			**0.97**	**0.01**
26	TRA SORK	*Probarbus jullieni*	0.84			**0.84**	**0.00**
27	KBORK	*Tenualosa thibaudeaui*	0.68			**0.68**	**0.00**
28	AMPIL TUM	*Systomus orphoides (pg 104)*	0.48			**0.48**	**0.00**
29	SRAKA KDAM	*Cyclocheilichthys apogon/spp. (pg 87)*	0.12			**0.12**	**0.00**
30	X-OTHERS	*Other species*	13.91	244.86	37.14	**295.91**	**1.61**
Total			**280**	**10701**	**7429**	**18411**	**100**

Table 2: Total Catch (Ton) by species of Dai Fisheries in Kandal/Phnom Penh ranked due to the amount of catch (November,1995 - March,1996)

No	Species in Khmer	Scientific Name	Month					Total	
			Nov.	Dec.	Dec.-Jan.	Jan-Feb.	Feb-Mar	Catch	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	1.10	77.71	1526.80	4453.66	1064.77	**7124.03**	**49.37**
2	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	2.33	3.80	1354.62	432.08	123.67	**1916.50**	**13.28**
3	KHNANG VENG	*Dangila spp. (pg 110)*	0.29	85.98	571.40	221.96	9.72	**889.33**	**6.16**
4	KANH CHROUK	*Botia sp. (8, pg 132)*		4.38	216.51	571.32	58.87	**851.09**	**5.90**
5	KHLANG HAI	*Belodontichthys dinema (pg 145)*	5.63	3.44	562.65			**571.72**	**3.96**
6	LINH	*Thynnichthys thynnoides (pg 105)*		4.98	264.15	161.80	50.22	**481.15**	**3.33**
7	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	26.65	55.14	246.60	72.52	25.75	**426.67**	**2.96**
8	PRUOL/ KRALANG	*Cirrhinus microlepis (pg 107)*	18.55	30.25	10.44	120.49	21.74	**201.48**	**1.40**
9	KROS	*Osteochilus hasselti (4, pg 116)*		2.73	35.66	83.53	66.80	**188.73**	**1.31**
10	KAEK	*Morulius chrysophekadion (pg 155)*	2.47	23.12	72.60	68.18	14.79	**181.16**	**1.26**
11	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	17.07	41.77	26.79	76.69	9.85	**172.17**	**1.19**

12	BANDOUL AMPAOV	*Clupeoides borneensis (4, pg 59)*		0.15	32.33	91.08	22.76	**146.32**	**1.01**
13	CHUNH CHUKDAI	*Gyrinocheilus aymonieri*		0.20	112.77	20.64	2.30	**135.91**	**0.94**
14	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	10.11	11.51	17.69	36.73	18.80	**94.83**	**0.66**
15	CHHVAET	*Pang siamensis/spp.(4, pg 155)*	1.62	1.28	62.00	25.65	2.94	**93.49**	**0.65**
16	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*		2.76	55.87	15.68	1.53	**75.85**	**0.53**
17	KROM	*Osteochilus melanopleurus (pg 117)*	12.95	4.93	12.86	28.17	6.57	**65.48**	**0.45**
18	KANTRANG PRENG	*Parambassis wolffi (pg 182)*		0.53	18.99	18.20	8.23	**45.94**	**0.32**
19	PO	*Pang. Lanaudiei (pg 155)*	0.71	5.67	9.05	16.88	6.74	**39.05**	**0.27**
20	KES	*Micronema spp.(3, pg148)*	5.47	5.56	7.70	11.02	4.94	**34.69**	**0.24**
21	CHHPIN	*Barbodes gonionotus (pg 95)*	12.15	10.55	0.17	8.28	3.28	**34.43**	**0.24**
22	KANH CHANH CHRAS	*Parambassis apogoniodes (2, pg 182)*		0.10	20.15	0.00	0.38	**20.63**	**0.14**
23	KAHE	*Barbodes altus (2, pg 95)*	0.04	0.66	2.56	7.67	4.94	**15.87**	**0.11**
24	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	1.36		5.67	4.27		**11.29**	**0.08**
25	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	0.22	1.04	1.01	5.99		**8.26**	**0.06**
26	CHHLANG	*Mystus nemurus (pg 143)*		0.03		2.88	3.28	**6.19**	**0.04**
27	AMPIL TUM	*Systomus orphoides (pg 104)*	1.11	0.04	0.18	0.27	3.28	**4.88**	**0.03**
28	SLAT	*Notopterus notopterus (pg 56)*	2.22					**2.22**	**0.02**
29	SRAKA KDAM	*Cyclocheilichthys apogon/spp. (pg 87)*		0.56	0.70	0.10		**1.35**	**0.01**
30	SANDAI	*Wallago attu (pg 151)*	0.18	0.01				**0.20**	**0.00**
31	KAN TRORB	*Pristolepis fasciata (pg 191)*		0.06				**0.06**	**0.00**
32	X-OTHERS	*Other species*	5.33	6.74	130.73	411.92	33.29	**588.01**	**4.08**
Total			**128**	**386**	**5379**	**6968**	**1569**	**14429**	**100.00**

Table 3: Total Catch (Ton) by species of Dai Fisheries in Kandal/Phnom Penh ranked due to the amount of catch (Census: October,1996 - March,1997)

No	Species in Khmer	Scientific Name	Month						Total	
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Catch	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	3.80	1.75	28.72	3721.34	473.83	2818.86	**7048.30**	**45.51**
2	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	0.88	1.50	4.74	981.03	568.03	85.02	**1641.20**	**10.60**
3	KROS	*Osteochilus hasselti (4, pg 116)*	0.86	0.00	26.08	1078.16	185.68	313.21	**1603.99**	**10.36**
4	KHNANG VENG	*Dangila spp. (pg 110)*	0.47	2.12	2.77	867.17	8.13	0.00	**880.66**	**5.69**
5	LINH	*Thynnichthys thynnoides (pg 105)*	0.40	0.15	0.40	669.53	63.96	16.47	**750.91**	**4.85**
6	KANH CHROUK	*Botia sp. (8, pg 132)*	0.37	0.35	1.74	549.34	86.34	54.44	**692.59**	**4.47**
7	KAEK	*Morulius chrysophekadion (pg 155)*	0.25	6.07	12.81	429.16	8.62	0.00	**456.91**	**2.95**
8	CHHVAET	*Pang siamensis/spp.(4, pg 155)*	0.15	0.49	6.29	262.45	10.36	0.00	**279.74**	**1.81**
9	PO	*Pang. Lanaudiei (pg 155)*	0.14	1.60	35.89	222.09	3.40	0.00	**263.12**	**1.70**
10	PRUOL/ KRALANG	*Cirrhinus microlepis (pg 107)*	0.14	12.08	35.44	186.37	4.34	13.44	**251.81**	**1.63**
11	CHAN TEAS PHLUK	*Parachela siamensis (4,pg 69)*	0.08	0.00	0.83	151.54	0.00	0.00	**152.46**	**0.98**
12	KROM	*Osteochilus melanopleurus (pg 117)*	0.06	5.86	34.82	77.13	0.64	0.00	**118.51**	**0.77**
13	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.06	0.00	6.20	88.29	15.73	0.00	**110.28**	**0.71**
14	BANDOUL AMPAOV	*Clupeoides borneensis (4, pg 59)*	0.06	1.40	0.57	68.56	14.25	21.51	**106.35**	**0.69**
15	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	0.05	2.22	15.13	66.19	14.08	0.00	**97.67**	**0.63**
16	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	0.05	0.00	6.42	89.92	0.21	0.00	**96.61**	**0.62**
17	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	0.05	8.02	37.08	42.03	4.54	0.00	**91.72**	**0.59**
18	KHLANG HAI	*Belodontichthys dinema (pg 145)*	0.05	6.28	27.29	31.38	22.92	0.00	**87.92**	**0.57**
19	PHKAKOR	*Barbichthys thynnoides*	0.05	0.01	5.35	48.01	30.66	0.00	**84.07**	**0.54**
20	AMPIL TUM	*Systomus orphoides (pg 104)*	0.04	0.00	3.60	75.89	0.43	0.00	**79.96**	**0.52**
21	SRAKA KDAM	*Cyclocheilichthys apogon/spp. (pg 87)*	0.04	0.00	0.77	65.27	1.51	0.00	**67.58**	**0.44**

22	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	0.03	5.98	23.60	24.59	2.84	0.00	**57.05**	**0.37**
23	KBAL RUY		0.02	0.10	0.01	9.88	18.03	1.34	**29.39**	**0.19**
24	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	0.02	2.99	8.78	11.30	4.86	0.00	**27.95**	**0.18**
25	KES	*Micronema spp.(3, pg148)*	0.01	1.18	2.94	14.97	0.07	3.36	**22.53**	**0.15**
26	KANH CHANH CHRAS	*Parambassis apogoniodes (2, pg 182)*	0.01	0.39	2.08	5.53	1.95	11.09	**21.05**	**0.14**
27	CHHPIN	*Barbodes gonionotus (pg 95)*	0.01	6.25	13.03	1.58	0.07	0.00	**20.94**	**0.14**
28	CHUNH CHUKDAI	*Gyrinocheilus aymonieri*	0.01	0.22	1.53	5.79	4.15	6.38	**18.08**	**0.12**
29	KAHE	*Barbodes altus (2, pg 95)*	0.00	0.02	0.80	3.60	1.56	0.00	**5.98**	**0.04**
30	KAMPREAM	*Polynemus multifilis (4, pg 188)*	0.00	0.11	0.08	2.41	1.82	0.00	**4.43**	**0.03**
31	CHHLANG	*Mystus nemurus (pg 143)*	0.00	0.03	3.21	0.22	0.78	0.00	**4.24**	**0.03**
32	KANTRANG PRENG	*Parambassis wolffi (pg 182)*	0.00	0.04	0.08	1.45	0.14	0.67	**2.38**	**0.02**
33	KHMAN	*Hampala dispar (2, pg 101)*	0.00	1.30	0.22	0.00	0.00	0.00	**1.52**	**0.01**
34	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*	0.00	0.00	1.26	0.00	0.00	0.00	**1.26**	**0.01**
35	SANDAI	*Wallago attu (pg 151)*	0.00	0.00	0.28	0.00	0.00	0.00	**0.28**	**0.00**
36	SLAT	*Notopterus notopterus (pg 56)*	0.00	0.10	0.18	0.00	0.00	0.00	**0.27**	**0.00**
37	PRAMA	*Boesemania microlepis (pg 188)*	0.00	0.00	0.08	0.00	0.00	0.00	**0.08**	**0.00**
38	X-OTHERS	*Other species*	0.17	2.36	11.40	252.16	27.44	14.79	**308.31**	**1.99**
Total			**8**	**71**	**363**	**10104**	**1581**	**3361**	**15488**	**100.00**

Table 4: Total Catch (Ton) by species of Dai Fisheries in KD/P.Penh ranked due to the amount of catch (`Sampling: November,1996 - March,1997)

No	Species in Khmer	Scientific Name	Month					Total	
			Nov.	Dec.	Jan.	Feb.	Mar.	Catch	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	1.67	70.53	4543.36	512.76	1534.25	**6662.57**	**39.58**
2	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	1.43	11.64	1197.73	614.70	46.28	**1871.78**	**11.12**
3	KROS	*Osteochilus hasselti (4, pg 116)*	0.00	64.04	1316.32	200.93	170.47	**1751.77**	**10.41**
4	KHNANG VENG	*Dangila spp. (pg 110)*	2.03	6.81	1058.72	8.80	0.00	**1076.35**	**6.39**
5	LINH	*Thynnichthys thynnoides (pg 105)*	0.15	0.97	817.42	69.21	8.96	**896.71**	**5.33**
6	KANH CHROUK	*Botia sp. (8, pg 132)*	0.34	4.27	670.69	93.44	29.63	**798.36**	**4.74**
7	KAEK	*Morulius chrysophekadion (pg 155)*	5.81	31.47	523.96	9.33	0.00	**570.56**	**3.39**
8	PO	*Pang. Lanaudiei (pg 155)*	1.53	88.13	271.15	3.68	0.00	**364.48**	**2.17**
9	CHHVAET	*Pang siamensis/spp.(4, pg 155)*	0.47	15.45	320.43	11.22	0.00	**347.55**	**2.06**
10	PRUOL/ KRALANG	*Cirrhinus microlepis (pg 107)*	11.56	87.02	227.54	4.70	7.32	**338.14**	**2.01**
11	CHAN TEAS PHLUK	*Parachela siamensis (4,pg 69)*	0.00	2.04	185.02	0.00	0.00	**187.06**	**1.11**
12	KROM	*Osteochilus melanopleurus (pg 117)*	5.60	85.52	94.17	0.69	0.00	**185.98**	**1.10**
13	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	7.67	91.05	51.32	4.91	0.00	**154.95**	**0.92**
14	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.00	15.23	107.80	17.02	0.00	**140.05**	**0.83**
15	KHLANG HAI	*Belodontichthys dinema (pg 145)*	6.01	67.01	38.32	24.80	0.00	**136.14**	**0.81**
16	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	2.12	37.17	80.81	15.23	0.00	**135.33**	**0.80**
17	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	0.00	15.77	109.79	0.23	0.00	**125.79**	**0.75**
18	BANDOUL AMPAOV	*Clupeoides borneensis (4, pg 59)*	1.34	1.41	83.71	15.42	11.71	**113.57**	**0.67**
19	PHKAKOR	*Barbichthys thynnoides*	0.01	13.13	58.62	33.17	0.00	**104.93**	**0.62**
20	AMPIL TUM	*Systomus orphoides (pg 104)*	0.00	8.85	92.65	0.46	0.00	**101.96**	**0.61**
21	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	5.72	57.96	30.03	3.08	0.00	**96.78**	**0.57**

22	SRAKA KDAM	*Cyclocheilichthys apogon/spp. (pg 87)*	0.00	1.89	79.69	1.63	0.00	**83.21**	**0.49**
23	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	2.86	21.57	13.79	5.26	0.00	**43.49**	**0.26**
24	CHHPIN	*Barbodes gonionotus (pg 95)*	5.98	32.00	1.93	0.08	0.00	**39.99**	**0.24**
25	KBAL RUY		0.10	0.03	12.07	19.51	0.73	**32.44**	**0.19**
26	KES	*Micronema spp.(3, pg148)*	1.12	7.22	18.28	0.08	1.83	**28.54**	**0.17**
27	KANH CHANH CHRAS	*Parambassis apogoniodes (2, pg 182)*	0.38	5.11	6.75	2.11	6.04	**20.38**	**0.12**
28	CHUNH CHUKDAI	*Gyrinocheilus aymonieri*	0.21	3.76	7.08	4.49	3.48	**19.00**	**0.11**
29	CHHLANG	*Mystus nemurus (pg 143)*	0.03	7.88	0.27	0.84	0.00	**9.02**	**0.05**
30	KAHE	*Barbodes altus (2, pg 95)*	0.02	1.97	4.40	1.68	0.00	**8.07**	**0.05**
31	KAMPREAM	*Polynemus multifilis (4, pg 188)*	0.11	0.19	2.94	1.97	0.00	**5.21**	**0.03**
32	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*	0.00	3.10	0.00	0.00	0.00	**3.10**	**0.02**
33	KANTRANG PRENG	*Parambassis wolffi (pg 182)*	0.04	0.19	1.77	0.15	0.37	**2.52**	**0.01**
34	KHMAN	*Hampala dispar (2, pg 101)*	1.24	0.54	0.00	0.00	0.00	**1.78**	**0.01**
35	SANDAI	*Wallago attu (pg 151)*	0.00	0.70	0.00	0.00	0.00	**0.70**	**0.00**
36	SLAT	*Notopterus notopterus (pg 56)*	0.09	0.43	0.00	0.00	0.00	**0.52**	**0.00**
37	PRAMA	*Boesemania microlepis (pg 188)*	0.00	0.20	0.00	0.00	0.00	**0.20**	**0.00**
38	X-OTHERS	*Other species*	2.26	27.99	307.86	29.69	8.05	**375.85**	**2.23**
Total			**68**	**890**	**12336**	**1711**	**1829**	**16835**	**100**

Table 5: Total Catch (Ton) by species of Dai Fisheries in Kandal/Phnom Penh ranked due to the amount of catch (Nov,1997 - March,1998)

No	Species in Khmer	Scientific name	Month					Total	
			Nov.	Dec.	Jan.	Feb.	Mar.	Catch	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	4.92	158.35	2098.01	1078.61	418.11	**3758.00**	**25.73**
2	SL-RUSSEY	*Paralaubica typus (7, pg 67)*	0.84	40.91	1945.64	72.85	61.53	**2121.76**	**14.53**
3	LINH	*Thynnichthys thynnoides (pg 105)*	0.00	11.10	833.81	34.39	20.60	**899.90**	**6.16**
4	KROS	*Osteochilus hasselti (4, pg 116)*	0.11	59.93	697.99	93.08	26.94	**878.03**	**6.01**
5	KHLANG HAI	*Belodontichthys dinema (pg 145)*	3.02	76.33	789.96	1.71	0.66	**871.69**	**5.97**
6	KHNANG VENG	*Dangila spp. (pg 110)*	0.01	21.15	612.11	40.49	102.64	**776.40**	**5.32**
7	KANH CHROUK	*Botia sp. (8, pg 132)*	0.57	12.73	496.12	38.99	20.98	**569.38**	**3.90**
8	KAEK	*Morulius chrysophekadion (pg 155)*	3.00	42.00	444.00	10.00	22.00	**521.00**	**3.57**
9	CH-TEASPHUK	*Parachela siamensis (4,pg 69)*	0.37	6.15	354.59	7.93	14.27	**383.32**	**2.62**
10	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	7.28	88.24	241.47	11.93	15.88	**364.81**	**2.50**
11	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	7.58	90.94	244.50	7.18	3.88	**354.06**	**2.42**
12	CHUN CHOUK DAI	*Gyrinocheilus aymonieri*	0.00	3.34	256.00	11.02	2.46	**272.82**	**1.87**
13	CHHVAET	*Pang siamensis/spp.(4, pg 155)*	2.13	32.97	222.95	3.22	5.01	**266.27**	**1.82**
14	PHKAKOR	*Barbichthys thynnoides*	0.00	9.06	245.96	4.54	0.00	**259.56**	**1.78**
15	ARCH KOK	*Dangila spilopleura (pg 110)*	0.00	25.22	137.78	18.20	48.77	**229.96**	**1.57**
16	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	2.41	10.78	145.05	8.31	50.09	**216.64**	**1.48**
17	PRUOL/ KRALANG	*Cirrhinus microlepis (pg 107)*	15.44	30.65	38.83	90.40	27.12	**202.44**	**1.39**
18	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	11.60	54.73	76.87	13.15	0.28	**156.63**	**1.07**
19	B-AMPAOV	*Clupeoides borneensis (4, pg 59)*	0.00	7.20	99.71	6.28	9.74	**122.93**	**0.84**
20	KANH CHANH CHRAS	*Parambassis apogoniodes (2, pg 182)*	0.00	1.86	116.59	2.33	1.80	**122.58**	**0.84**
21	KROM	*Osteochilus melanopleurus (pg 117)*	6.29	21.39	74.66	4.35	7.18	**113.88**	**0.78**

22	PO	*Pang. Lanaudiei (pg 155)*	4.61	14.38	44.13	3.58	12.00	**78.70**	**0.54**
23	KANTRANG PRENG	*Parambassis wolffi (pg 182)*	0.00	0.26	75.62	0.00	0.00	**75.88**	**0.52**
24	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.22	14.00	55.00	1.00	0.00	**70.22**	**0.48**
25	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*	0.00	2.04	54.16	1.50	2.65	**60.35**	**0.41**
26	CHHPIN	*Barbodes gonionotus (pg 95)*	5.56	37.03	13.73	2.54	0.00	**58.85**	**0.40**
27	CHHLANG	*Mystus nemurus (pg 143)*	4.78	23.30	26.57	0.59	0.10	**55.34**	**0.38**
28	KES	*Micronema spp.(3, pg148)*	1.40	5.23	22.48	0.00	2.55	**31.66**	**0.22**
29	PRAMA	*Boesemania microlepis (pg 188)*	0.85	0.77	23.50	0.00	0.57	**25.69**	**0.18**
30	SANDAI	*Wallago attu (pg 151)*	1.21	6.45	6.10	0.00	11.53	**25.30**	**0.17**
31	KBAL RUY		0.00	0.07	22.48	0.00	0.00	**22.55**	**0.15**
32	KAHE	*Barbodes altus (2, pg 95)*	0.46	6.00	5.00	1.00	0.00	**12.46**	**0.09**
33	SRAKA KDAM	*Cyclocheilichthys apogon/spp.(pg 87)*	0.00	0.39	9.38	0.00	0.19	**9.96**	**0.07**
34	KHMAN	*Hampala dispar (2, pg 101)*	1.23	2.32	0.00	0.00	3.40	**6.96**	**0.05**
35	SLAT	*Notopterus notopterus (pg 56)*	0.62	1.20	0.00	0.00	3.97	**5.79**	**0.04**
36	AMPIL TUM	*Systomus orphoides (pg 104)*	0.00	0.84	0.00	0.81	0.00	**1.65**	**0.01**
37	X-OTHERS	*Other species*	5.25	58.75	459.77	32.26	45.27	**601.29**	**4.12**
Total			**92**	**978**	**10991**	**1602**	**942**	**14605**	**100.00**

Table 6: Total Catch (Ton) by species of Dai Fisheries in Kandal/Phnom Penh ranked due to the amount of catch (October, 1998 - February,1999)

No	Khmer name	Scientific name	Month						Total	
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Catch	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	1.11	1.03	1083.42	1824.01	56.41		**2965.98**	**33.35**
2	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	0.04	0.51	673.90	524.66	17.93		**1217.04**	**13.68**
3	KHLANG HAI	*Belodontichthys dinema (pg 145)*	0.85	1.35	657.43	188.74	1.57		**849.93**	**9.56**
4	CHUN CHOUK DAI	*Gyrinocheilus aymonieri*	0.14	0.50	305.46	153.01	3.49		**462.60**	**5.20**
5	KANH CHROUK	*Botia sp. (8, pg 132)*	0.12	0.25	233.70	155.02	3.50		**392.60**	**4.41**
6	LINH	*Thynnichthys thynnoides (pg 105)*	0.13	0.16	176.09	156.45	2.85		**335.67**	**3.77**
7	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	0.66	1.59	100.95	126.54	1.39		**231.13**	**2.60**
8	KHNANG VENG	*Dangila spp. (pg 110)*	0.20	0.41	80.77	137.48	0.07		**218.93**	**2.46**
9	KAEK	*Morulius chrysophekadion (pg 155)*	0.41	0.31	138.94	42.26	1.07		**182.99**	**2.06**
10	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	1.64	3.11	148.10	14.55	8.88		**176.28**	**1.98**
11	RUSCHEK	*Acantopsis sp. 2 (pg 136)*	0.03	0.40	143.36	16.42	2.05		**162.26**	**1.82**
12	KROS	*Osteochilus hasselti (4, pg 116)*	0.01	0.12	88.49	61.76	0.93		**151.31**	**1.70**
13	PRAMA	*Boesemania microlepis (pg 188)*	0.13	0.07	147.95	0.44	0.67		**149.26**	**1.68**
14	KROM	*Osteochilus melanopleurus (pg 117)*	0.39	1.18	52.87	90.08	0.18		**144.69**	**1.63**
15	CHHVEAT	*Pang siamensis/spp.(4, pg 155)*	0.12	0.28	110.47	11.50	3.88		**126.25**	**1.42**
16	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	1.24	1.45	95.31	5.81	0.49		**104.30**	**1.17**
17	KES	*Micronema spp.(3, pg148)*	0.24	0.06	74.43	21.80	0.29		**96.82**	**1.09**
18	CHANLUONH MOAN	*Coilia spp.(2, pg 63)*	0.07	0.39	53.76	17.62	1.29		**73.11**	**0.82**
19	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	0.58	1.05	61.26	2.63	0.50		**66.02**	**0.74**
20	PO	*Pang. Lanaudiei (pg 155)*	0.16	0.43	51.94	6.79	0.08		**59.39**	**0.67**
21	BANDOUL AMPOAV	*Clupeoides borneensis (4, pg 59)*	0.37	0.46	36.48	12.61	1.92		**51.84**	**0.58**

22	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*		0.04	5.77	33.51	0.92		**40.23**	**0.45**
23	CHHPIN	*Barbodes gonionotus (pg 95)*	0.58	0.58	21.87	5.20	0.14		**28.39**	**0.32**
24	PRUOL/KRALANG	*Cirrhinus microlepis (pg 107)*	0.15	0.40	10.63	15.94	0.31		**27.44**	**0.31**
25	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*			18.38	3.99	0.01		**22.38**	**0.25**
26	CHHLANG	*Mystus nemurus (pg 143)*	0.06	0.15	9.95	10.49			**20.65**	**0.23**
27	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*		0.41	7.99	4.91	0.06		**13.38**	**0.15**
28	KAHE	*Barbodes altus (2, pg 95)*	0.06	0.02	9.00	2.74	0.03		**11.85**	**0.13**
29	CHHMAR	*Setipinna melanochir (2, pg 64)*	0.03	0.19	3.24	2.02	0.27		**5.74**	**0.06**
30	CHAN TEAS PHLUK	*Parachela siamensis (4,pg 69)*		0.04	1.31	3.63			**4.98**	**0.06**
31	SRAKA KDAM	*Cyclocheilichthys apogon/spp.(pg 87)*			2.00	2.94			**4.94**	**0.06**
32	KANH CHOS	*Mystus spp.(11, pg 141)*	0.07	0.08	2.68	0.62	0.00		**3.46**	**0.04**
33	CHHDOR/DIEP	*Channa micropeltes (pg 220)*			2.93				**2.93**	**0.03**
34	KHMAN	*Hampala dispar (2, pg 101)*			0.01	2.15			**2.16**	**0.02**
35	TA AUN/KROR MOM	*Ompok hypophthalmus (4, pg 149)*	0.04	0.11	0.79	0.07	0.01		**1.02**	**0.01**
36	AMPIL TUM	*Systomus orphoides (pg 104)*	0.19	0.00	0.02	0.68	0.02		**0.91**	**0.01**
37	SANDAI	*Wallago attu (pg 151)*	0.09	0.03	0.04				**0.16**	**0.00**
38	ROMEAS	*Osphronemus exodon (pg 218)*					0.08		**0.08**	**0.00**
39	SANGKAT PRAK	*Puntius brevis (1,pg 89;3, pg 102)*	0.01						**0.01**	**0.00**
40	X-OTHER	Other species	1.71	2.19	329.54	144.14	7.56		**485.14**	**5.45**
Total			**12**	**19**	**4941**	**3803**	**119**	**0**	**8894**	**100.00**

Table 7: Total Catch (Ton) by species of Dai Fisheries in Kandal/Phnom Penh ranked due to the amount of catch (October, 1999 - March, 2000)

No	Khmer name	Scientific name	Month						Total	
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Catch	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	4.44	4.64	189.13	4889.51	100.86	38.99	**5227.57**	**45.70**
2	ARCH KOK	*Dangila spilopleura (pg 110)*	3.38	2.46	63.57	703.70	29.00	17.86	**819.97**	**7.17**
3	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	1.75	2.59	33.41	454.15	61.33	17.89	**571.12**	**4.99**
4	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	1.52	2.85	67.18	391.16	3.11	0.61	**466.41**	**4.08**
5	KAEK	*Morulius chrysophekadion (pg 155)*	2.35	4.58	62.77	329.80	15.30	2.37	**417.16**	**3.65**
6	KHLANG HAI	*Belodontichthys dinema (pg 145)*	2.82	4.66	55.97	293.94	3.36		**360.75**	**3.15**
7	KANH CHROUK	*Botia sp. (8, pg 132)*	0.92	1.20	21.63	284.36	19.81	3.50	**331.42**	**2.90**
8	PO	*Pang. Lanaudiei (pg 155)*	1.05	3.09	62.49	209.15	3.44	0.31	**279.53**	**2.44**
9	LINH	*Thynnichthys thynnoides (pg 105)*	0.08	1.28	9.54	249.29	11.72	2.92	**274.82**	**2.40**
10	KROM	*Osteochilus melanopleurus (pg 117)*	7.42	2.19	49.19	157.17	0.84		**216.80**	**1.90**
11	KHNANG VENG	*Dangila spp. (pg 110)*	0.21	0.21	8.22	198.48	7.62	0.57	**215.31**	**1.88**
12	CHHVEAT	*Pang siamensis/spp.(4, pg 155)*	0.48	1.19	46.25	138.76	5.30	1.64	**193.62**	**1.69**
13	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	4.84	4.75	32.22	111.55	13.79	4.53	**171.67**	**1.50**
14	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	1.64	2.64	49.49	101.21	6.53	0.23	**161.74**	**1.41**
15	RUSCHEK	*Acantopsis sp. (pg1 36)*	0.26	0.72	31.05	118.12	2.37	0.01	**152.53**	**1.33**
16	CHUN CHOUK DAI	*Gyrinocheilus aymonieri*	0.21	0.68	3.40	139.65	4.18	0.18	**148.31**	**1.30**
17	KAHE	*Barbodes altus (2, pg 95)*	0.04	0.42	13.22	119.47	1.00	0.09	**134.24**	**1.17**
18	CHANLUONH MOAN	*Coilia spp.(2, pg 63)*	1.31	1.23	9.95	111.28	2.30	0.00	**126.06**	**1.10**
19	PRUOL/KRALANG	*Cirrhinus microlepis (pg 107)*	0.35	2.78	18.50	101.98	0.93		**124.54**	**1.09**
20	CHHMAR	*Setipinna melanochir (2, pg 64)*	0.16	0.42	3.71	96.22	1.53	0.80	**102.84**	**0.90**
21	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	1.66	3.03	55.27	33.39	3.93	1.04	**98.32**	**0.86**

22	KES	*Micronema spp.(3, pg148)*	0.23	0.55	22.92	73.63	0.02	0.38	**97.73**	**0.85**
23	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.08	0.02	0.88	64.95	0.64	0.01	**66.58**	**0.58**
24	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	0.03	0.45	8.57	29.76	0.57		**39.38**	**0.34**
25	KROS	*Osteochilus hasselti (4, pg 116)*	0.02	0.17	12.43	22.00	2.83	0.20	**37.65**	**0.33**
26	BANDOUL AMPOAV	*Clupeoides borneensis (4, pg 59)*	3.54	1.73	2.11	12.71	15.53	1.98	**37.59**	**0.33**
27	CHAN TEAS PHLUK	*Parachela siamensis (4,pg 69)*	0.03	0.04		36.82	0.10	0.00	**36.99**	**0.32**
28	CHHPIN	*Barbodes gonionotus (pg 95)*	2.34	1.65	19.82	10.48	0.76		**35.05**	**0.31**
29	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*	0.26	0.19	1.06	8.51	4.01	3.32	**17.34**	**0.15**
30	PROR LOUNG	*Loptobarbus hoeveni (pg 74)*		0.47	3.69	8.38	0.22		**12.76**	**0.11**
31	CHHLANG	*Mystus nemurus (pg 143)*	0.78	1.13	5.05	2.64	0.43	0.32	**10.33**	**0.09**
32	KANH CHOS	*Mystus spp.(11, pg 141)*	0.29	0.41	3.79	0.05	0.13	0.04	**4.71**	**0.04**
33	TA AUN/KROR MOM	*Ompok hypophthalmus (4, pg 149)*	0.08	0.00	2.96		0.01		**3.05**	**0.03**
34	AMPIL TUM	*Systomus orphoides (pg 104)*		0.23	1.31		0.00		**1.55**	**0.01**
35	SANDAI	*Wallago attu (pg 151)*	0.14	0.01	0.26			1.05	**1.45**	**0.01**
36	PRAMA	*Boesemania microlepis (pg 188)*	0.30	0.17	0.07	0.77			**1.31**	**0.01**
37	X-OTHER	*Other species*	3.53	5.65	105.16	309.39	12.55	3.27	**439.55**	**3.84**
Total			**49**	**60**	**1076**	**9812**	**336**	**104**	**11438**	**100.00**

Table 8: Total Catch (Ton) by species of Dai Fisheries in Kandal/Phnom Penh ranked due to the amount of catch (October, 2000 - March, 2001)

No	Khmer name	Scientific name	Month						Total	
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Catch	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	0.91	6.41	113.60	2878.21	1792.23	688.56	**5479.91**	**36.60**
2	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	0.35	0.01	4.80	413.09	945.63	251.22	**1615.09**	**10.79**
3	ARCH KOK	*Dangila spilopleura (pg 110)*	0.46	0.65	10.50	402.89	233.85	71.72	**720.05**	**4.81**
4	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	0.37	10.33	23.59	489.61	131.72	55.04	**710.66**	**4.75**
5	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	1.05	7.90	61.36	436.84	76.34	65.04	**648.53**	**4.33**
6	KHNANG VENG	*Dangila spp. (pg 110)*	0.14	0.11	6.75	422.53	192.97	14.83	**637.32**	**4.26**
7	LINH	*Thynnichthys thynnoides (pg 105)*	0.06	0.42	11.97	325.26	188.81	46.97	**573.48**	**3.83**
8	KROS	*Osteochilus hasselti (4, pg 116)*	0.02	0.87	2.67	230.03	120.07	28.05	**381.71**	**2.55**
9	PO	*Pang. Lanaudiei (pg 155)*	0.52	6.43	16.91	217.35	82.45	39.84	**363.48**	**2.43**
10	KANH CHROUK	*Botia sp. (8, pg 132)*	0.01	0.01	3.62	119.07	188.14	15.76	**326.60**	**2.18**
11	PRUOL/KRALANG	*Cirrhinus microlepis (pg 107)*	3.86	35.60	79.96	166.03	31.15	8.49	**325.09**	**2.17**
12	KAEK	*Morulius chrysophekadion (pg 155)*	0.19	5.53	16.87	177.22	105.92	16.09	**321.82**	**2.15**
13	CHAN TEAS PHLUK	*Parachela siamensis (4,pg 69)*	0.02	0.07	4.91	241.63	33.57	11.99	**292.19**	**1.95**
14	KHLANG HAI	*Belodontichthys dinema (pg 145)*	0.61	8.10	23.51	193.56	60.88	4.16	**290.83**	**1.94**
15	KROM	*Osteochilus melanopleurus (pg 117)*	1.61	33.62	61.96	135.93	40.98	12.25	**286.35**	**1.91**
16	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.06	1.28	11.35	171.43	16.01	21.50	**221.63**	**1.48**
17	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	0.52	6.93	45.52	87.28	35.41	25.19	**200.84**	**1.34**
18	KES	*Micronema spp.(3, pg148)*	0.34	2.04	11.46	127.91	36.18	7.67	**185.59**	**1.24**
19	CHHVEAT	*Pang siamensis/spp.(4, pg 155)*	0.19	0.59	18.32	59.21	72.34	13.42	**164.06**	**1.10**
20	CHHPIN	*Barbodes gonionotus (pg 95)*	0.09	4.28	17.05	98.83	8.15	6.86	**135.26**	**0.90**
21	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	1.91	2.82	10.45	32.15	29.91	23.39	**100.63**	**0.67**
22	KAHE	*Barbodes altus (2, pg 95)*	0.01	0.20	4.20	52.91	7.96	10.60	**75.88**	**0.51**
23	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	0.06	1.04	4.00	50.32	2.55	0.36	**58.33**	**0.39**

24	CHHLANG	*Mystus nemurus (pg 143)*	0.15	1.81	3.68	21.94	20.42	4.72	**52.72**	0.35
25	BANDOUL AMPOAV	*Clupeoides borneensis (4, pg 59)*	0.01	0.54	5.30	36.17	1.49	4.43	**47.93**	0.32
26	CHUN CHOUK DAI	*Gyrinocheilus aymonieri*	0.00	0.10	2.22	16.78	22.43	2.92	**44.44**	0.30
27	PROR LOUNG	*Loptobarbus hoeveni (pg 74)*	0.07	3.26	11.08	3.77	2.58	0.29	**21.05**	0.14
28	CHANLUONH MOAN	*Coilia spp.(2, pg 63)*	0.01	1.02	7.39	5.04	5.52	1.78	**20.75**	0.14
29	PRAMA	*Boesemania microlepis (pg 188)*	0.01	0.32	0.54	13.89	1.28	1.46	**17.50**	0.12
30	SRAKA KDAM	*Cyclocheilichthys apogon/spp.(pg 87)*	0.00	0.02	2.47	6.45	1.26	2.50	**12.70**	0.08
31	RUSCHEK	*Acantopsis sp. (pg1 36)*	0.00	0.00	1.22	2.01	1.84	4.43	**9.50**	0.06
32	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*	0.00	0.00	2.03	0.00	2.84	4.07	**8.94**	0.06
33	CHHMAR	*Setipinna melanochir (2, pg 64)*	0.00	0.02	0.02	0.00	3.11	0.00	**3.14**	0.02
34	AMPIL TUM	*Systomus orphoides (pg 104)*	0.00	0.00	0.04	2.12	0.00	0.47	**2.63**	0.02
35	KANH CHOS	*Mystus spp.(11, pg 141)*	0.00	0.02	2.09	0.30	0.03	0.00	**2.45**	0.02
36	SANDAI	*Wallago attu (pg 151)*	0.00	0.40	1.61	0.00	0.00	0.00	**2.01**	0.01
37	TA AUN/KROR MOM	*Ompok hypophthalmus (4, pg 149)*	0.00	0.00	0.10	0.00	0.00	0.00	**0.10**	0.00
38	X-OTHER	*Other species*	0.75	11.12	44.73	290.66	200.10	65.85	**613.20**	4.09
Total			**14**	**154**	**650**	**7928**	**4696**	**1532**	**14974**	**100**

TOTAL VALUE OF THE DAI FISHERIES FROM THE FISHING SEASON OF 1995/96-2000/01

Table 1: Total Value (Mill. Riel) by species of Dai Fisheries of Kandal/Phnom Penh in the open season (November,1995 - March,1996)

No	Species in Khmer	Scientific Name	Month					Total	
			Nov.	Dec.	Jan.	Feb.	Mar.	Value	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	0.16	41.79	267.12	601.28	212.94	**1123.30**	**32.06**
2	KHLANG HAI	*Belodontichthys dinema (pg 145)*	1.13	4.45	648.76	0.00	0.00	**654.34**	**18.68**
3	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	5.50	73.52	238.53	20.44	16.55	**354.53**	**10.12**
4	KHNANG VENG	*Dangila spp. (pg 110)*	0.02	25.35	166.81	49.93	1.93	**244.04**	**6.97**
5	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	0.14	1.06	116.49	73.02	24.72	**215.42**	**6.15**
6	PRUOL/ KRALANG	*Cirrhinus microlepis (pg 107)*	6.01	73.59	2.12	59.76	21.75	**163.23**	**4.66**
7	KANH CHROUK	*Botia sp. (8, pg 132)*	0.00	3.06	39.21	77.66	11.64	**131.57**	**3.76**
8	LINH	*Thynnichthys thynnoides (pg 105)*	0.00	0.41	61.76	37.01	10.03	**109.21**	**3.12**
9	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	3.18	73.89	14.21	10.72	1.97	**103.97**	**2.97**
10	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	2.28	12.45	2.45	5.30	17.52	**40.00**	**1.14**
11	KAEK	*Morulius chrysophekadion (pg 155)*	0.48	10.26	10.46	10.16	2.97	**34.33**	**0.98**
12	CHHPIN	*Barbodes gonionotus (pg 95)*	3.04	24.63	0.16	0.99	0.64	**29.47**	**0.84**
13	KROS	*Osteochilus hasselti (4, pg 116)*	0.00	0.53	3.59	9.39	13.36	**26.87**	**0.77**
14	KROM	*Osteochilus melanopleurus (pg 117)*	4.30	9.62	1.31	4.75	1.33	**21.30**	**0.61**
15	PO	*Pang. Lanaudiei (pg 155)*	0.07	11.05	1.63	1.99	3.94	**18.69**	**0.53**
16	BANDOUL AMPAOV	*Clupeoides borneensis (4, pg 59)*	0.00	0.00	1.31	12.70	4.48	**18.49**	**0.53**
17	CHUNH CHUKDAI	*Gyrinocheilus aymonieri*	0.00	0.00	8.82	3.54	0.00	**12.36**	**0.35**
18	CHHVAET	*Pang siamensis/spp.(4, pg 155)*	0.11	0.30	6.21	4.20	0.57	**11.39**	**0.33**
19	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.00	1.28	7.35	2.32	0.29	**11.24**	**0.32**
20	KES	*Micronema spp.(3, pg148)*	1.32	6.56	0.98	1.33	1.00	**11.19**	**0.32**
21	KANTRANG PRENG	*Parambassis wolffi (pg 182)*	0.00	0.04	2.61	2.54	1.65	**6.84**	**0.20**

22	KANH CHANH CHRAS	*Parambassis apogoniodes (2, pg 182)*	0.00	0.04	4.08	0.00	0.07	**4.19**	**0.12**
23	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	0.03	0.98	0.49	1.88	0.00	**3.38**	**0.10**
24	KAHE	*Barbodes altus (2, pg 95)*	0.00	0.08	0.33	1.22	1.00	**2.62**	**0.07**
25	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	0.00	0.00	1.47	1.10	0.00	**2.58**	**0.07**
26	CHHLANG	*Mystus nemurus (pg 143)*	0.00	0.04	0.00	0.44	0.64	**1.12**	**0.03**
27	AMPIL TUM	*Systomus orphoides (pg 104)*	0.11	0.08	0.16	0.11	0.64	**1.11**	**0.03**
28	SRAKA KDAM	*Cyclocheilichthys apogon/spp. (pg 87)*	0.00	0.26	0.49	0.00	0.00	**0.75**	**0.02**
29	KAN TRORB	*Pristolepis fasciata (pg 191)*	0.00	0.15	0.00	0.00	0.00	**0.15**	**0.00**
30	SANDAI	*Wallago attu (pg 151)*	0.07	0.00	0.00	0.00	0.00	**0.07**	**0.00**
31	SLAT	*Notopterus notopterus (pg 56)*	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
32	X-OTHERS	*Other species*	1.25	1.77	24.83	111.13	6.63	**145.62**	**4.16**
Total			**29**	**377**	**1634**	**1105**	**358**	**3503**	**100**

Table 2: Total Value (Mill. Riel) by species of Dai Fisheries of Kandal/Phnom Penh in the open season (Sampling: November,1996 - March,1997)

No	Species in Khmer	Scientific Name	Month					Total	
			Nov.	Dec.	Jan.	Feb.	Mar.	Value	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	1.24	53.22	545.81	103.55	422.15	**1125.97**	**25.51**
2	PO	*Pang. Lanaudiei (pg 155)*	2.31	172.12	388.42	0.00	0.00	**562.84**	**12.75**
3	PRUOL/ KRALANG	*Cirrhinus microlepis (pg 107)*	14.65	278.26	41.67	0.20	1.90	**336.68**	**7.63**
4	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	1.13	6.24	151.12	125.53	12.08	**296.09**	**6.71**
5	KROM	*Osteochilus melanopleurus (pg 117)*	10.78	262.45	17.80	0.00	0.00	**291.03**	**6.59**
6	KROS	*Osteochilus hasselti (4, pg 116)*	0.00	34.51	176.61	35.52	43.86	**290.50**	**6.58**
7	KHLANG HAI	*Belodontichthys dinema (pg 145)*	11.88	135.00	74.85	7.74	0.00	**229.46**	**5.20**
8	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	15.66	155.01	9.51	0.76	0.00	**180.94**	**4.10**
9	KANH CHROUK	*Botia sp. (8, pg 132)*	0.51	2.61	126.03	18.92	8.18	**156.26**	**3.54**
10	KHNANG VENG	*Dangila spp. (pg 110)*	1.60	10.44	114.70	1.26	0.00	**128.00**	**2.90**
11	LINH	*Thynnichthys thynnoides (pg 105)*	0.10	0.58	89.82	10.76	2.40	**103.65**	**2.35**
12	KAEK	*Morulius chrysophekadion (pg 155)*	11.14	32.77	55.43	1.83	0.00	**101.17**	**2.29**
13	CHHPIN	*Barbodes gonionotus (pg 95)*	14.38	67.14	0.00	0.00	0.00	**81.51**	**1.85**
14	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	8.55	67.43	4.45	0.50	0.00	**80.92**	**1.83**
15	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	1.62	34.51	36.21	2.16	0.00	**74.50**	**1.69**
16	CHHVAET	*Pang siamensis/spp.(4, pg 155)*	0.36	7.69	48.96	2.19	0.00	**59.20**	**1.34**
17	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	4.02	32.05	3.24	5.31	0.00	**44.61**	**1.01**
18	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.00	7.40	23.06	2.19	0.00	**32.65**	**0.74**
19	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	0.00	12.91	13.35	0.00	0.00	**26.26**	**0.59**
20	KES	*Micronema spp.(3, pg148)*	2.39	17.26	6.07	0.00	0.50	**26.21**	**0.59**
21	CHAN TEAS PHLUK	*Parachela siamensis (4,pg 69)*	0.00	0.58	15.78	0.00	0.00	**16.36**	**0.37**

22	CHHLANG	*Mystus nemurus (pg 143)*	0.02	15.37	0.00	0.27	0.00	**15.66**	**0.35**
23	BANDOUL AMPAOV	*Clupeoides borneensis (4, pg 59)*	0.68	0.44	8.90	2.42	3.04	**15.49**	**0.35**
24	PHKAKOR	*Barbichthys thynnoides*	0.01	4.79	7.89	0.07	0.00	**12.75**	**0.29**
25	AMPIL TUM	*Systomus orphoides (pg 104)*	0.00	0.15	9.91	0.00	0.00	**10.06**	**0.23**
26	SRAKA KDAM	*Cyclocheilichthys apogon/spp. (pg 87)*	0.00	0.58	8.09	0.30	0.00	**8.97**	**0.20**
27	KANH CHANH CHRAS	*Parambassis apogoniodes (2, pg 182)*	0.30	1.74	1.21	0.37	1.55	**5.16**	**0.12**
28	KBAL RUY		0.08	0.00	1.21	3.59	0.25	**5.13**	**0.12**
29	CHUNH CHUKDAI	*Gyrinocheilus aymonieri*	0.17	1.16	1.42	0.76	1.05	**4.55**	**0.10**
30	KHMAN	*Hampala dispar (2, pg 101)*	2.48	1.60	0.00	0.00	0.00	**4.07**	**0.09**
31	KAHE	*Barbodes altus (2, pg 95)*	0.01	2.47	0.40	0.20	0.00	**3.08**	**0.07**
32	SANDAI	*Wallago attu (pg 151)*	0.00	2.18	0.00	0.00	0.00	**2.18**	**0.05**
33	PRAMA	*Boesemania microlepis (pg 188)*	0.00	0.44	0.40	0.00	0.00	**0.84**	**0.02**
34	KANTRANG PRENG	*Parambassis wolffi (pg 182)*	0.03	0.15	0.20	0.03	0.10	**0.51**	**0.01**
35	SLAT	*Notopterus notopterus (pg 56)*	0.07	0.15	0.00	0.00	0.00	**0.21**	**0.00**
36	KAMPREAM	*Polynemus multifilis (4, pg 188)*	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
37	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
38	X-OTHERS	*Other species*	3.84	28.86	40.86	5.68	1.95	**81.18**	**1.84**
Total			**110**	**1450**	**2023**	**332**	**499**	**4415**	**100**

Table 3: Total Value (Mill. Riel) by species of Dai Fisheries of Kandal/Phnom Penh in the open season (November,1997 - March,1998)

No	Species in Khmer	Scientific Name	Month					Total	
			Nov.	Dec.	Jan.	Feb.	Mar.	Value	%
1	KHLANG HAI	*Belodontichthys dinema (pg 145)*	4.31	124.71	1029.28	2.84	0.25	**1161.39**	**22.90**
2	RIEL	*Henicorhynchus spp. (3, pg 111)*	3.31	40.90	382.73	155.54	95.83	**678.31**	**13.37**
3	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	12.27	100.57	242.88	19.49	27.20	**402.41**	**7.93**
4	SL-RUSSEY	*Paralaubica typus (7, pg 67)*	0.35	9.22	308.41	10.84	16.56	**345.39**	**6.81**
5	PRUOL/ KRALANG	*Cirrhinus microlepis (pg 107)*	29.65	48.44	78.03	49.21	19.02	**224.36**	**4.42**
6	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	12.28	123.19	64.52	7.11	1.10	**208.21**	**4.11**
7	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	17.44	71.38	59.79	15.01	0.53	**164.16**	**3.24**
8	KHNANG VENG	*Dangila spp. (pg 110)*	0.00	5.69	112.49	6.94	19.92	**145.04**	**2.86**
9	KAEK	*Morulius chrysophekadion (pg 155)*	2.38	26.63	104.72	1.27	8.92	**143.91**	**2.84**
10	LINH	*Thynnichthys thynnoides (pg 105)*	0.00	2.17	108.10	4.69	9.04	**123.99**	**2.44**
11	KROM	*Osteochilus melanopleurus (pg 117)*	13.25	30.72	61.48	5.30	9.16	**119.91**	**2.36**
12	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	1.69	4.81	30.74	3.69	66.30	**107.24**	**2.11**
13	KANH CHROUK	*Botia sp. (8, pg 132)*	0.32	3.29	86.81	8.31	4.87	**103.60**	**2.04**
14	KROS	*Osteochilus hasselti (4, pg 116)*	0.03	7.06	78.71	11.12	5.40	**102.31**	**2.02**
15	KES	*Micronema spp.(3, pg148)*	3.47	4.89	85.46	0.00	3.76	**97.59**	**1.92**
16	CHHPIN	*Barbodes gonionotus (pg 95)*	10.89	51.09	16.89	4.07	0.00	**82.93**	**1.64**
17	CHHVAET	*Pang siamensis/spp.(4, pg 155)*	1.58	17.80	51.68	0.89	4.79	**76.74**	**1.51**
18	PRAMA	*Boesemania microlepis (pg 188)*	1.54	0.64	67.90	0.00	1.15	**71.22**	**1.40**
19	PO	*Pang. Lanaudiei (pg 155)*	6.92	19.49	20.94	4.34	18.32	**70.02**	**1.38**
20	CH-TEASPHUK	*Parachela siamensis (4,pg 69)*	0.11	1.76	53.37	0.79	7.03	**63.07**	**1.24**
21	ARCH KOK	*Dangila spilopleura (pg 110)*	0.00	12.27	24.32	1.81	22.13	**60.53**	**1.19**

22	SANDAI	*Wallago attu (pg 151)*	2.19	11.55	1.69	0.00	30.55	**45.98**	**0.91**
23	PHKAKOR	*Barbichthys thynnoides*	0.00	1.84	38.51	0.65	0.00	**41.00**	**0.81**
24	CHHLANG	*Mystus nemurus (pg 143)*	6.84	21.17	11.82	0.17	0.04	**40.05**	**0.79**
25	CHUN CHOUK DAI	*Gyrinocheilus aymonieri*	0.03	0.48	36.48	1.61	0.65	**39.25**	**0.77**
26	KBAL RUY		0.00	0.00	38.51	0.00	0.00	**38.51**	**0.76**
27	B-AMPAOV	*Clupeoides borneensis (4, pg 59)*	0.00	4.33	19.59	0.86	1.84	**26.62**	**0.52**
28	KANH CHANH CHRAS	*Parambassis apogoniodes (2, pg 182)*	0.00	0.32	23.31	0.51	0.33	**24.47**	**0.48**
29	KANTRANG PRENG	*Parambassis wolffi (pg 182)*	0.00	0.08	12.50	0.00	0.00	**12.58**	**0.25**
30	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*	0.00	0.48	10.81	0.58	0.53	**12.40**	**0.24**
31	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.20	2.49	8.11	0.07	0.04	**10.90**	**0.21**
32	SLAT	*Notopterus notopterus (pg 56)*	0.62	1.12	0.00	0.00	6.75	**8.49**	**0.17**
33	KHMAN	*Hampala dispar (2, pg 101)*	1.37	3.53	0.00	0.00	2.05	**6.94**	**0.14**
34	KAHE	*Barbodes altus (2, pg 95)*	0.31	4.09	0.68	0.44	0.00	**5.52**	**0.11**
35	SRAKA KDAM	*Cyclocheilichthys apogon/spp.(pg 87)*	0.00	0.00	2.36	0.00	0.04	**2.41**	**0.05**
36	AMPIL TUM	*Systomus orphoides (pg 104)*	0.00	0.08	0.00	0.10	0.00	**0.18**	**0.00**
37	X-OTHERS	*Other species*	7.63	43.79	104.04	23.84	24.99	**204.29**	**4.03**
Total			**141**	**802**	**3378**	**342**	**409**	**5072**	**100**

Table 4: Total Value (Mill. Riel) by species of Dai Fisheries of Kandal/Phnom Penh in the open season (October,1998 - February, 1999)

No	Species in Khmer	Scientific Name	Month						Total	
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Value	%
1	KHLANG HAI	*Belodontichthys dinema (pg 145)*	3.78	4.93	2226.79	568.81	3.91		**2808.22**	**29.09**
2	PRAMA	*Boesemania microlepis (pg 188)*	0.63	0.19	884.13	1.60	0.83		**887.38**	**9.19**
3	RIEL	*Henicorhynchus spp. (3, pg 111)*	0.70	0.51	209.74	652.61	1.04		**864.61**	**8.96**
4	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	1.11	5.74	370.81	330.97	3.41		**712.04**	**7.37**
5	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	7.41	13.30	607.22	50.98	29.71		**708.61**	**7.34**
6	RUSCHEK	*Acantopsis sp. 2 (pg 136)*	0.04	1.33	458.59	50.24	33.78		**543.97**	**5.63**
7	KROM	*Osteochilus melanopleurus (pg 117)*	1.27	3.78	219.64	265.15	0.07		**489.92**	**5.07**
8	KANH CHROUK	*Botia sp. (8, pg 132)*	0.12	0.25	184.73	210.79	4.97		**400.86**	**4.15**
9	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	0.01	0.17	179.97	180.03	0.16		**360.34**	**3.73**
10	KES	*Micronema spp.(3, pg148)*	1.10	0.08	288.45	56.86	0.23		**346.73**	**3.59**
11	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	0.85	2.65	170.93	2.06	0.20		**176.70**	**1.83**
12	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	4.36	4.02	137.82	5.46	0.74		**152.40**	**1.58**
13	PO	*Pang. Lanaudiei (pg 155)*	0.39	1.32	120.27	7.69	0.20		**129.87**	**1.35**
14	CHUN CHOUK DAI	*Gyrinocheilus aymonieri*	0.06	0.17	63.20	40.83	2.09		**106.35**	**1.10**
15	LINH	*Thynnichthys thynnoides (pg 105)*	0.08	0.15	34.64	61.37	1.70		**97.94**	**1.01**
16	CHHVEAT	*Pang siamensis/spp.(4, pg 155)*	0.13	0.40	83.60	5.22	6.65		**96.00**	**0.99**
17	KAEK	*Morulius chrysophekadion (pg 155)*	0.71	0.61	54.94	14.79	0.62		**71.67**	**0.74**
18	KHNANG VENG	*Dangila spp. (pg 110)*	0.09	0.40	18.21	45.96	0.03		**64.69**	**0.67**
19	CHHPIN	*Barbodes gonionotus (pg 95)*	2.29	2.00	50.75	4.47	0.50		**60.01**	**0.62**
20	PRUOL/KRALANG	*Cirrhinus microlepis (pg 107)*	0.50	1.17	28.98	15.63	4.06		**50.34**	**0.52**
21	CHHLANG	*Mystus nemurus (pg 143)*	0.14	0.42	32.98	13.57	0.00		**47.10**	**0.49**

22	KROS	*Osteochilus hasselti (4, pg 116)*	0.01	0.05	20.87	19.34	0.41		**40.68**	**0.42**
23	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*	0.09	0.00	29.21	7.75	0.01		**37.07**	**0.38**
24	CHANLUONH MOAN	*Coilia spp.(2, pg 63)*	0.02	0.14	14.83	5.26	0.77		**21.01**	**0.22**
25	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	0.00	0.01	3.04	11.47	1.05		**15.56**	**0.16**
26	BANDOUL AMPOAV	*Clupeoides borneensis (4, pg 59)*	0.10	0.18	10.46	3.48	1.15		**15.37**	**0.16**
27	KAHE	*Barbodes altus (2, pg 95)*	0.34	0.02	13.34	0.90	0.02		**14.62**	**0.15**
28	SRAKA KDAM	*Cyclocheilichthys apogon/spp.(pg 87)*	0.00	0.00	0.46	0.99	9.90		**11.35**	**0.12**
29	SANDAI	*Wallago attu (pg 151)*	0.25	0.06	0.00	0.00	7.52		**7.83**	**0.08**
30	CHHMAR	*Setipinna melanochir (2, pg 64)*	0.04	0.26	4.35	0.72	0.16		**5.52**	**0.06**
31	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.00	0.10	2.34	1.71	0.02		**4.18**	**0.04**
32	TA AUN/KROR MOM	*Ompok hypophthalmus (4, pg 149)*	0.10	0.38	2.62	0.18	0.00		**3.28**	**0.03**
33	KANH CHOS	*Mystus spp.(11, pg 141)*	0.07	0.19	2.03	0.18	0.00		**2.47**	**0.03**
34	CHAN TEAS PHLUK	*Parachela siamensis (4,pg 69)*	0.00	0.02	0.31	1.08	0.00		**1.41**	**0.01**
35	KHMAN	*Hampala dispar (2, pg 101)*	0.00	0.00	0.00	0.81	0.00		**0.81**	**0.01**
36	AMPIL TUM	*Systomus orphoides (pg 104)*	0.32	0.00	0.00	0.27	0.01		**0.59**	**0.01**
37	CHHDOR/DIEP	*Channa micropeltes (pg 220)*	0.00	0.00	0.52	0.00	0.00		**0.52**	**0.01**
38	X-OTHER	Other species	2.89	3.00	239.77	45.29	6.29		**297.25**	**3.08**
TOTAL			**30**	**48**	**6771**	**2685**	**122**	**0**	**9655**	**100**

Table 5: Total Value (Mill. Riel) by species of Dai Fisheries of Kandal/Phnom Penh in the open season (October,1999 - March,2000)

No	Species in Khmer	Scientific Name	Month						Total	
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Value	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	3.01	2.76	119.43	1765.62	41.80	33.24	**1965.86**	**16.97**
2	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	3.05	8.05	243.01	1222.95	5.07	1.60	**1483.74**	**12.81**
3	KHLANG HAI	*Belodontichthys dinema (pg 145)*	11.03	15.63	190.11	938.20	10.27	0.00	**1165.24**	**10.06**
4	KROM	*Osteochilus melanopleurus (pg 117)*	48.30	10.62	250.87	723.56	2.74	0.00	**1036.09**	**8.94**
5	PO	*Pang. Lanaudiei (pg 155)*	3.00	8.00	142.30	477.76	8.35	0.88	**640.28**	**5.53**
6	KES	*Micronema spp.(3, pg148)*	1.14	2.35	149.92	424.10	0.10	1.70	**579.30**	**5.00**
7	RUSCHEK	*Acantopsis sp. (pg1 36)*	0.89	1.43	124.05	366.11	7.03	0.04	**499.55**	**4.31**
8	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	18.90	17.45	76.92	307.25	36.58	12.90	**470.01**	**4.06**
9	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	4.39	11.49	228.92	107.32	3.85	3.54	**359.51**	**3.10**
10	PRUOL/KRALANG	*Cirrhinus microlepis (pg 107)*	0.55	10.01	85.93	259.65	1.96	0.00	**358.10**	**3.09**
11	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	3.45	7.44	112.50	193.87	15.36	0.47	**333.08**	**2.88**
12	KAHE	*Barbodes altus (2, pg 95)*	0.12	1.63	36.27	285.62	1.54	0.05	**325.23**	**2.81**
13	KANH CHROUK	*Botia sp. (8, pg 132)*	0.71	1.17	23.56	270.04	18.79	3.52	**317.79**	**2.74**
14	ARCH KOK	*Dangila spilopleura (pg 110)*	2.07	1.71	38.58	212.05	9.82	11.55	**275.79**	**2.38**
15	KAEK	*Morulius chrysophekadion (pg 155)*	3.68	6.51	63.99	159.25	8.67	1.18	**243.28**	**2.10**
16	CHHVEAT	*Pang siamensis/spp.(4, pg 155)*	0.50	1.41	48.51	168.77	6.93	2.17	**228.30**	**1.97**
17	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	1.21	1.59	14.09	121.17	25.14	12.86	**176.05**	**1.52**
18	CHHPIN	*Barbodes gonionotus (pg 95)*	8.16	5.79	63.53	25.10	0.93	0.00	**103.51**	**0.89**
19	KHNANG VENG	*Dangila spp. (pg 110)*	0.16	0.20	3.23	89.15	3.72	0.58	**97.05**	**0.84**
20	LINH	*Thynnichthys thynnoides (pg 105)*	0.04	0.84	3.70	61.45	3.90	1.53	**71.45**	**0.62**
21	CHAN TEAS PHLUK	*Parachela siamensis (4,pg 69)*	0.03	0.03	0.00	53.66	0.05	0.01	**53.77**	**0.46**
22	CHUN CHOUK DAI	*Gyrinocheilus aymonieri*	0.10	0.34	1.62	29.43	1.42	0.08	**32.99**	**0.28**

23	CHHMAR	*Setipinna melanochir (2, pg 64)*	0.09	0.22	2.77	28.56	0.71	0.35	**32.70**	**0.28**
24	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*	0.58	0.42	2.08	12.12	8.11	4.82	**28.13**	**0.24**
25	CHANLUONH MOAN	*Coilia spp.(2, pg 63)*	0.71	0.65	3.23	22.50	0.69	0.00	**27.78**	**0.24**
26	BANDOUL AMPOAV	*Clupeoides borneensis (4, pg 59)*	3.34	1.31	1.62	9.52	9.70	1.13	**26.62**	**0.23**
27	CHHLANG	*Mystus nemurus (pg 143)*	3.97	2.01	11.78	6.92	0.66	0.95	**26.30**	**0.23**
28	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	0.01	0.42	7.39	12.98	0.17	0.00	**20.98**	**0.18**
29	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.05	0.03	0.46	19.91	0.37	0.01	**20.83**	**0.18**
30	PROR LOUNG	*Loptobarbus hoeveni (pg 74)*	0.00	1.59	15.48	1.73	0.22	0.00	**19.02**	**0.16**
31	KROS	*Osteochilus hasselti (4, pg 116)*	0.01	0.18	3.70	9.52	2.60	0.10	**16.10**	**0.14**
32	PHKAKOR	*Cirrhinus prosemion*		0.24	8.09	6.92	0.59	0.00	**15.84**	**0.14**
33	SANDAI	*Wallago attu (pg 151)*	0.94	0.00	0.92	0.00	0.00	8.45	**10.32**	**0.09**
34	TA AUN/KROR MOM	*Ompok hypophthalmus (4, pg 149)*	0.04	0.00	8.78	0.00	0.02	0.00	**8.84**	**0.08**
35	PRAMA	*Boesemania microlepis (pg 188)*	1.00	0.52	0.00	1.73	0.00	0.00	**3.24**	**0.03**
36	KANH CHOS	*Mystus spp.(11, pg 141)*	0.58	0.46	2.08	0.00	0.05	0.06	**3.23**	**0.03**
37	AMPIL TUM	*Systomus orphoides (pg 104)*	0.00	0.72	0.46	0.00	0.00	0.00	**1.18**	**0.01**
38	X-OTHER	*Other species*	5.21	10.84	219.91	261.38	7.13	2.23	**506.70**	**4.37**
Total			**131**	**136**	**2310**	**8656**	**245**	**106**	**11584**	**100**

Table 6: Total Value (Mill. Riel) by species of Dai Fisheries of Phnom Penh/Kandal province in the open season (October,2000 - March,2001)

No	Species in Khmer	Scientific Name	Month						Total	
			Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Value	%
1	RIEL	*Henicorhynchus spp. (3, pg 111)*	0.63	8.54	75.28	1462.03	680.90	363.04	**2590.42**	**20.09**
2	CHRA KENG	*Puntioplites proctozysron (7, pg 93)*	1.25	33.42	53.94	1532.96	270.20	119.28	**2011.05**	**15.60**
3	CHHKOK	*Cyclocheilichthys enoplos (pg 88)*	3.08	27.35	182.40	727.30	143.39	128.91	**1212.44**	**9.40**
4	PRUOL/KRALANG	*Cirrhinus microlepis (pg 107)*	17.63	143.98	315.93	463.08	31.34	12.51	**984.47**	**7.64**
5	KROM	*Osteochilus melanopleurus (pg 117)*	8.03	130.93	245.80	397.12	70.52	28.90	**881.29**	**6.84**
6	PO	*Pang. Lanaudiei (pg 155)*	1.63	15.89	35.41	372.51	161.67	81.11	**668.22**	**5.18**
7	KHLANG HAI	*Belodontichthys dinema (pg 145)*	2.12	21.81	53.12	424.93	111.45	10.42	**623.85**	**4.84**
8	KES	*Micronema spp.(3, pg148)*	1.70	6.94	38.14	353.26	107.22	14.40	**521.66**	**4.05**
9	CHHPIN	*Barbodes gonionotus (pg 95)*	0.33	14.24	44.98	321.97	10.48	17.08	**409.07**	**3.17**
10	PRA	*Pangasius hypophthalmus/sp.(4, pg 152)*	1.21	16.55	86.08	156.88	74.02	45.60	**380.35**	**2.95**
11	SLOEUK RUSSEY	*Paralaubica typus (7, pg 67)*	0.17	0.00	2.07	58.93	137.64	25.13	**223.94**	**1.74**
12	KAHE	*Barbodes altus (2, pg 95)*	0.04	0.75	12.01	137.50	15.41	25.02	**190.75**	**1.48**
13	KAEK	*Morulius chrysophekadion (pg 155)*	0.11	11.61	24.20	64.29	57.00	10.83	**168.03**	**1.30**
14	ANDAT CHHKE	*Achiroides leucorhynchos (13,pg 221)*	7.50	7.81	22.31	31.30	52.14	40.27	**161.33**	**1.25**
15	KANH CHROUK	*Botia sp. (8, pg 132)*	0.00	0.03	2.46	47.84	90.44	8.79	**149.56**	**1.16**
16	CHAN TEAS PHLUK	*Parachela siamensis (4,pg 69)*	0.03	0.08	3.54	88.60	27.32	6.65	**126.21**	**0.98**
17	KHNANG VENG	*Dangila spp. (pg 110)*	0.09	0.11	6.03	74.39	36.23	5.62	**122.47**	**0.95**
18	CHHVEAT	*Pang siamensis/spp.(4, pg 155)*	0.23	0.90	14.18	47.60	38.72	8.07	**109.70**	**0.85**
19	ARCH KOK	*Dangila spilopleura (pg 110)*	0.24	0.54	2.85	58.21	38.25	8.34	**108.43**	**0.84**
20	CHHLANG	*Mystus nemurus (pg 143)*	0.41	3.88	8.30	29.41	53.80	8.77	**104.56**	**0.81**
21	KAMBUT CHRAMOS	*Sikukia gudgeri (pg 94)*	0.05	1.10	6.55	62.07	5.17	23.75	**98.69**	**0.77**

22	LINH	*Thynnichthys thynnoides (pg 105)*	0.07	0.55	4.59	53.67	31.91	6.54	**97.33**	**0.75**
23	PROR LOUNG	*Loptobarbus hoeveni (pg 74)*	0.37	12.35	41.10	12.50	11.26	1.43	**79.01**	**0.61**
24	KROS	*Osteochilus hasselti (4, pg 116)*	0.01	3.01	1.40	32.68	14.80	2.65	**54.56**	**0.42**
25	RUSCHEK	*Acantopsis sp. (pg1 36)*	0.00	0.00	1.31	4.47	7.28	15.68	**28.74**	**0.22**
26	KAMPOUL BAI	*Cosmochilus harmandi (pg 87)*	0.06	0.87	1.67	11.71	0.78	0.16	**15.24**	**0.12**
27	PHTONG	*Xenentodon sp./Dermogenys sp.(pg 172)*	0.00	0.00	2.63	0.00	5.05	6.75	**14.43**	**0.11**
28	PRAMA	*Boesemania microlepis (pg 188)*	0.01	1.21	1.67	3.93	2.50	3.28	**12.60**	**0.10**
29	BANDOUL AMPOAV	*Clupeoides borneensis (4, pg 59)*	0.00	0.46	3.06	6.96	0.62	1.07	**12.18**	**0.09**
30	CHUN CHOUK DAI	*Gyrinocheilus aymonieri*	0.00	0.07	0.70	4.07	5.43	0.76	**11.04**	**0.09**
31	SANDAI	*Wallago attu (pg 151)*	0.00	1.92	6.16	0.00	0.00	0.00	**8.08**	**0.06**
32	PHKAKOR	*Cirrhinus molitorella (pg 108)*	0.00	0.89	2.77	3.76	0.47	0.00	**7.88**	**0.06**
33	CHANLUONH MOAN	*Coilia spp.(2, pg 63)*	0.01	0.63	2.18	1.63	1.88	0.35	**6.67**	**0.05**
34	KANH CHOS	*Mystus spp.(11, pg 141)*	0.00	0.03	2.76	0.16	0.00	0.00	**2.95**	**0.02**
35	CHHMAR	*Setipinna melanochir (2, pg 64)*	0.00	0.03	0.00	0.00	1.56	0.00	**1.60**	**0.01**
36	AMPIL TUM	*Systomus orphoides (pg 104)*	0.00	0.00	0.00	0.58	0.00	0.20	**0.77**	**0.01**
37	TA AUN/KROR MOM	*Ompok hypophthalmus (4, pg 149)*	0.00	0.00	0.40	0.00	0.00	0.00	**0.40**	**0.00**
38	X-OTHER	*Other species*	1.01	22.93	30.55	296.33	190.77	151.18	**692.78**	**5.37**
Total			**48**	**491**	**1339**	**7345**	**2488**	**1183**	**12893**	**100**

ANNEX

Annex 1: Ranking of Total Catch (Kg) in the peak period of October 1996 – March 97

Table 1: Ranking of Total Catch (Kg) in the peak period of October 1996

Dai unit	Catch	Percentage (%)	Cumulative (%)	Rank
2D	315	7.99	7.99	1
2B	287	7.28	15.27	2
2C	264	6.70	21.97	3
2A	243	6.16	28.13	4
10A	235	5.96	34.09	5
12B	212	5.38	39.47	6
10E	154	3.91	43.38	7
3D	147	3.73	47.11	8
6D	137	3.48	50.58	9
6E	137	3.48	54.06	10
3C	133	3.37	57.43	11
6C	133	3.37	60.81	12
3A	132	3.35	64.15	13
10D	130	3.30	67.45	14
3B	110	2.79	70.24	15
4D	110	2.79	73.03	16
4B	103	2.61	75.65	17
4C	103	2.61	78.26	18
10C	91	2.31	80.57	19
4A	90	2.28	82.85	20
5B	84	2.13	84.98	21
5C	84	2.13	87.11	22
6F	71	1.80	88.91	23
5D	61	1.55	90.46	24
6G	60	1.52	91.98	25
1D	58	1.47	93.45	26
1B	56	1.42	94.87	27
5E	54	1.37	96.24	28
1C	49	1.24	97.49	29
5F	46	1.17	98.65	30
10B	34	0.86	99.52	31
15C	19	0.48	100.00	32
14A	3942	100.00		

Table 2: Ranking of Total Catch (Kg) in the peak period of November 1996

Dai unit	Catch	Percentage	Cumulative (%)	Rank
2D	1405	10.36	10.36	1
2C	1139	8.40	18.77	2
5C	801	5.91	24.68	3
3D	776	5.72	30.40	4
5B	776	5.72	36.12	5
5D	776	5.72	41.85	6
1D	718	5.30	47.15	7
3C	689	5.08	52.23	8
12A	611	4.51	56.74	9
3B	608	4.49	61.22	10
12B	433	3.19	64.41	11
11A	433	3.19	67.61	12
1C	402	2.97	70.57	13
1B	394	2.91	73.48	14
5E	394	2.91	76.39	15
5F	375	2.77	79.15	16
6C	332	2.45	81.6	17
4D	291	2.15	83.75	18
4C	270	1.99	85.74	19
10E	215	1.59	87.33	20
6D	190	1.40	88.73	21
7G	188	1.39	90.12	22
7E	183	1.35	91.47	23
6E	162	1.20	92.66	24
6F	148	1.09	93.75	25
15C	134	0.99	94.74	26
7F	117	0.86	95.6	27
10A	99	0.73	96.33	28
10D	99	0.73	97.06	29
7D	99	0.73	97.79	30
4B	74	0.55	98.34	31
4A	73	0.54	98.88	32
10C	46	0.34	99.22	33
7C	39	0.29	99.51	34
11B	35	0.26	99.76	35
10B	32	0.24	100.00	
14A	13556	100.00		

Table 3: Ranking of Total Catch (Kg) in the peak period of December 1996

Dai unit	Catch	Percentage	Cumulative (%)	Rank
14A	14820	9.92	9.92	1
11A	9680	6.48	16.40	2
14B	9596	6.42	22.82	3
10F	8106	5.43	28.25	4
15C	7374	4.94	33.19	5
3D	6604	4.42	37.61	6
7G	5930	3.97	41.58	7
10B	5664	3.79	45.37	8
3C	5017	3.36	48.73	9
3B	4589	3.07	51.80	10
3A	4112	2.75	54.55	11
10E	3878	2.60	57.15	12
10C	3781	2.53	59.68	13
7C	3482	2.33	62.01	14
7E	3335	2.23	64.24	15
5C	2901	1.94	66.18	16
10A	2884	1.93	68.11	17
10G	2823	1.89	70.00	18
5B	2768	1.85	71.86	19
12B	2298	1.54	73.39	20
2D	2296	1.54	74.93	21
2C	2186	1.46	76.39	22
10D	2167	1.45	77.84	23
7D	2137	1.43	79.28	24
5D	2091	1.40	80.68	25
14C	1974	1.32	82.00	26
12C	1870	1.25	83.25	27
7F	1793	1.20	84.45	28
2B	1760	1.18	85.63	29
12A	1730	1.16	86.78	30
4D	1701	1.14	87.92	31
6E	1655	1.11	89.03	32
5E	1650	1.10	90.14	33
6D	1640	1.10	91.23	34
4C	1593	1.07	92.30	35
2A	1540	1.03	93.33	36
5F	1529	1.02	94.35	37
4B	1394	0.93	95.29	38
4A	1128	0.76	96.04	39
6C	1084	0.73	96.77	40
1D	985	0.66	97.43	41
1B	882	0.59	98.02	42
1C	796	0.53	98.55	43
11B	772	0.52	99.07	44
6F	716	0.48	99.55	45
6G	676	0.45	100.00	
11C	149387	100.00		

Table 4: Ranking of Total Catch (Kg) in the peak period of January 1997

Dai unit	Catch	Percentage	Cumulative (%)	Rank
12A	712568	11.47	11.47	1
14B	470339	7.57	19.04	2
14A	351480	5.66	24.7	3
11A	345430	5.56	30.26	4
12B	305965	4.93	35.19	5
10D	274320	4.42	39.61	6
10F	195045	3.14	42.75	7
4D	193040	3.11	45.86	8
6E	156078	2.51	48.37	9
6F	152290	2.45	50.82	10
11B	147818	2.38	53.20	11
10C	147175	2.37	55.57	12
7G	141520	2.28	57.85	13
5C	139270	2.24	60.09	14
10B	135765	2.19	62.28	15
5B	135710	2.18	64.46	16
4C	122400	1.97	66.43	17
5D	121670	1.96	68.39	18
5F	116120	1.87	70.26	19
3D	114885	1.85	72.11	20
5E	113650	1.83	73.94	21
10E	111624	1.80	75.74	22
6D	109975	1.77	77.51	23
7C	106446	1.71	79.22	24
7E	99541	1.60	80.82	25
2A	90484	1.46	82.28	26
15B	89600	1.44	83.72	27
2B	80682	1.30	85.02	28
7D	80277	1.29	86.31	29
3A	79021	1.27	87.59	30
6C	73922	1.19	88.78	31
6G	68665	1.11	89.88	32
10G	66311	1.07	90.95	33
2C	64490	1.04	91.99	34
7F	61000	0.98	92.97	35
3C	57021	0.92	93.89	36
1D	54735	0.88	94.77	37
2D	53770	0.87	95.64	38
4B	51476	0.83	95.46	39
10A	50440	0.81	97.28	40
1B	46060	0.74	98.02	41
3B	43898	0.71	98.72	42
1C	42840	0.69	99.41	43
4A	36396	0.59	100	44
14C	6211212	100.00		

Table 5: Ranking of Total Catch (Kg) in the peak period of February 1997

Dai unit	Catch	Percentage	Cumulative (%)	Rank
2A	52587	6.85	6.85	1
2C	52450	6.84	13.69	2
6D	46487	6.06	19.74	3
12A	42520	5.54	25.29	4
6C	39150	5.10	30.39	5
2B	38720	5.05	35.43	6
5B	35490	4.63	40.06	7
5C	34580	4.51	44.57	8
4D	29914	3.90	48.47	9
4C	28166	3.67	52.14	10
2D	25780	3.36	55.50	11
3C	24499	3.19	58.69	12
3B	24014	3.13	61.82	13
3D	23850	3.11	64.93	14
5D	23790	3.10	68.03	15
14C	22010	2.87	70.90	16
10D	19965	2.60	73.50	17
3A	16485	2.15	75.65	18
10A	14750	1.92	77.57	19
7D	14406	1.88	79.45	20
1D	13401	1.75	81.19	21
5E	13090	1.71	82.90	22
4B	13087	1.71	84.60	23
12C	11498	1.50	86.10	24
1C	11337	1.48	87.58	25
10B	11027	1.44	89.02	26
14B	10860	1.42	90.43	27
5F	10795	1.41	91.84	28
4A	9285	1.21	93.05	29
12B	8204	1.07	94.12	30
1B	8052	1.05	95.17	31
10E	7608	0.99	96.16	32
11C	5590	0.73	96.89	33
6F	5200	0.68	97.57	34
15C	4777	0.62	98.19	35
10G	4653	0.61	98.80	36
15A	4635	0.60	99.40	37
6G	2820	0.37	99.77	38
15B	1761	0.23	100.00	39
14A	767293	100.00		

Table 6: Ranking of Total Catch (Kg) in the peak period of March 1997

Dai unit	Catch	Percentage	Cumulative (%)	Rank
6F	93220	10.23	10.23	1
4A	71642	7.86	18.09	2
5F	70680	7.76	25.85	3
5E	68270	7.49	33.35	4
4B	64222	7.05	40.40	5
6E	63600	6.98	47.38	6
3B	60700	6.66	54.04	7
3A	57600	6.32	60.36	8
6D	57380	6.30	66.66	9
5D	54400	5.97	72.63	10
6C	44440	4.88	77.51	11
3C	36866	4.05	81.56	12
5C	36650	4.02	85.58	13
5B	34610	3.80	89.38	14
4D	32450	3.56	92.94	15
4C	25946	2.85	95.79	16
1D	16245	1.78	97.57	17
1C	22090	2.42	100.00	
14A	911011	100.00		

Annex 2: **Table 1: Effort Information form**

Dai Unit:
Time of observation from ..... to .....
Observed number of lifts per dai unit .....

No	**Time**	**Catch per lift (Kg)**	**No**	**Time**	**Catch per lift (Kg)**
1			6		
2			7		
3			8		
4			9		
5			10		

Through the above table we can calculate the number of hauls per day and the average quantity of fish caught per haul.

Annex 3: Dai effort used for previous estimation and re-estimation in fishing season of 1995-96

Table 1:Number of haul/dai unit found in previous estimation 1995-96

Month	High Yielding Dai (19)		Low Yielding Dai (40)	
	Nº of haul/dai Low Period	Nº of haul/dai Peak Period	Nº of haul/dai Low Period	Nº of haul/dai Peak Period
November, 1995	17	24	15	24
December, 1995	30	42	43	34
January, 1996	17	43	18	71
February, 1996	14	48	16	49
March, 1996	0	19	0	17

Table 2: Time raising factor (number of active days) found in previous estimation 1995-96

Time stratification / Month	Low period	Peak period
November, 1995	19	4
December, 1995	17	8
January, 1996	16	9
February, 1996	19	6
March, 1996	0	5

Table 3: Number of hauls (from the census data) used for re-estimation of dai catch in the fishing season of 1995-96

Month	Av. Nº of haul/ dai in the low period	Av. Nº of haul/ dai in the peak period
November, 1995	9	
December, 1995	13	21
January, 1996	18	76
February, 1996	17.9	52.6
March, 1996	0	30

Table 4: Time raising factor (number of active days) for re-estimation 1995-96

Time stratification / Month	Low period	Peak period
November, 1995		30
December, 1995	7	24
January, 1996	8	23
February, 1996	8	20
March, 1996	6	

Table 5: Average catch per haul (Kg) found in previous estimation

	High Yielding Dai (19)		Low Yielding Dai (40)	
	Av. catch/haul Low Period	Av. catch/haul Peak Period	Av. catch/haul Low Period	Av. catch/haul Peak Period
November, 1995	4.1	10.77	4.73	7.2
December, 1995	115.32	40.29	47.63	79.68
January, 1996	6.97	350	22.25	256
February, 1996	72.5	118.89	66.67	333.33
March, 1996		108		252.20

Table 6: Average catch per haul (Kg) found in previous estimation

Month	Low period	Peak period
November, 1995	7.5	
December, 1995	6.1	28.7
January, 1996	3.7	137.9
February, 1996	70.5	212.9
March, 1996		138.4

Table 7: Re-estimation of dai catch using the effort from the census data

Dai sampling in the peak period of 95-96

No	Date Nov	Date	Dec	Date	Dec-Jan	Date	Jan-Feb	Date	Feb-Mar
1		5	28.31	31-Dec	50	1-Feb	150	1-Mar	15
2		4	20.00	31-Dec	70	1-Feb	300	1-Mar	18
3		4	23.00	31-Dec	130	1-Feb	110	1-Mar	20
4		4	18.00	31-Dec	60	29-Jan	200	26-Feb	95
5		4	25.50	31-Dec	110	29-Jan	180	26-Feb	100
6		4	21.50	31-Dec	125	29-Jan	250	26-Feb	139
7		4	24.50	30-Dec	75	29-Jan	255	26-Feb	130
8		4	19.00	30-Dec	285	29-Jan	100	26-Feb	110
9		4	27.50	30-Dec	290	29-Jan	240	28-Feb	130
10		4	32.00	30-Dec	298	1-Feb	450	1-Mar	130
11		4	15.50	30-Dec	50	1-Feb	380	1-Mar	200
12		4	18.00	30-Dec	100	1-Feb	130	1-Mar	250
13		1	21.85	30-Dec	135	29-Jan	125	28-Feb	200
14		4	38.50	30-Dec	153	29-Jan	110	28-Feb	400
15		4	26.00						
16		4	40.00						
17		4	21.50						
18		4	35.00						
19		4	33.00						
20		4	42.00						
21		4	35.00						
22		4	23.50						
23		4	20.00						
24		4	39.00						
25		4	30.50						
26		4	49.00						
27		4	37.00						
28		4	26.00						
29		4	33.00						
30		4	41.00						
31		4	15.00						
32		2	38.35						
Av.			28.69		137.86		212.86		138.36
Duration in days			7		8		8		6
Av. Nº of hauls/day			21		76		52.6		30
Av. catch/haul			28.7		137.9		212.9		138.4
Nº of Dai units			63		63		63		63
Est. catch (kg)			265791		5282122		5644064		1569456

Table 8: Re-estimation of dai catch

Dai sampling in the low period of 95-96

No	Date	Nov	Date	Dec.	Date	Jan	Date	Feb	Date Mar
1	13	4.30			22	3.50	14	30	
2	13	5.10			22	4.00	14	25	
3	13	3.60	18	12.06	22	4.77	14	20	
4	13	3.40	12	3.70	18	3.50	8	150	
5	11	14.00	12	2.50	12	2.90	8	160	
6	11	5.00	12	4.00	12	3.00	8	50	
7	13	4.90	12	3.50	12	3.00	8	80	
8	13	5.60	12	4.30	12	5.00	8	65	
9	4	3.80	12	4.20	18	4.00	8	55	
10	29	5.20	12	3.00	18	4.50			
11	29	5.70	12	4.50	12	3.50			
12	29	6.50	12	4.20	12	2.50			
13	28	26.00	12	5.00					
14	28	13.00	12	2.50					
15	29	7.40	12	3.50					
16	29	8.20	12	21.00					
17	29	7.50	12	23.00					
18	29	8.00	12	15.00					
19	29	8.50	12	3.16					
20	29	6.30	12	3.50					
21			12	2.00					
22			12	3.50					
23			12	4.00					
24			12	3.16					
25			12	2.50					
26			12	8.00					
27			12	7.00					
28			12	6.50					
29			12	5.00					
30									
Av.		7.47		6.08		3.68		7.56	

Duration in days	30	24	23	20
Av. # of hauls/day	9	13	18	17.9
Av. catch/haul	7.5	6.1	3.7	70.5
Nº of Dai units	63	63	63	63
Est. catch (tons)	127,575	119,902	96,503	1,323,567

	In Kg	**In tons**
Peak Period	**12,761,432.46**	**12,761.43**
Low Period	**1,667,547.00**	**1,667.55**
Grand Total	**14,428,979.46**	**14,429**