KINGDOM OF CAMBODIA

National Religion King

Ministry of Agriculture Forestry and Fisheries

Fisheries Administration

Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector: Capture Component

Monthly Statistical Report

Scientific Catch Assessment of Inland Fisheries in Cambodia December 2021

By Inland Fisheries Research and Development Institute

Funded by European Union
ACA/2018/041-466 and ACA/2019/041-594

1 Introduction

IFReDI, with technical assistance from FAO CAPFISH project under EU budget support, is currently piloting scientific catch assessment using a monthly household recall survey for 900 households, covering all provinces in Cambodia. The aim is to obtain better information on catch and effort by small-scale household fisheries in Cambodia, and to develop a sustainable catch monitoring methodology for implementation by provincial fisheries administrations, supported by IFReDI. The randomly selected household coverage of survey is gradually expanding since the start of catch assessment survey in June 2021. The current statistical report provides preliminary analysis based on the available data and focuses on the main indicators that are covered by the catch assessment survey. Therefore, the results do not represent final estimates and may be changed in future updates.

A description of the methodology can be found in:
Fisheries Administration (FiA). 2021. Manual for Scientific Catch Assessment by Recall survey of Inland Fisheries in Cambodia. Inland Fisheries Research and Development Institute of the Fisheries Administration, Phnom Penh, Cambodia. 47 pages.

2 Methodology of data collection and analysis

The total estimated catch in this report is calculated using the proportion of fishing households found by the random household selection under the Household Selection Interview survey. This is taken to be representative for the proportion of fishing households for each fishing area and this is combined with the total number of rural households by fishing area from the NIS 2019 population census to estimate the total number of fishing households. The Fishing Activity Coefficient is estimated from proportion of households reporting fishing activities in the Household Catch Interview.

Estimates for CPUE, the average (mean) daily household catch and the mean monthly household catch used for extrapolating the total catch, come with a value for the standard error (ε). This is used to indicate the accuracy of the estimate for the mean catch. To better evaluate the accuracy of the mean value, the *relative* standard error is included, calculated by dividing the standard error by the mean catch. If this is higher than 30% this indicates a high inaccuracy[1], due to high variation or low sample size and the resulting total estimate should be used with extreme caution.

In tables with the proportion of reported catch obtained by habitat and fishing gear, the average daily catch by habitat or gear (CPUE) isn't included. This is a basic characteristic of Cambodian inland fisheries; the available data displays too much variation and the accuracy is too low for it to be statistically accurate and representative for the real CPUE.

3 Statistical tables and results

[1] For national statistical reports a rule of thumb exists that if the *relative* standard error is higher than 30%, the average should not be reported. The current report includes all estimated values to indicate the availability of data, with the accuracy indicated by the relative standard error.

The coverage for data collection December 2021 is included in Table 1, overall, 20.4% of the target household sample was covered in December, a decline from previous months, due to limited budget available for field work.

Table 1. Number of random selected households covered by the survey and proportion of target household by fishing area for October 2021.

Fishing Area	Villages	Household		
		Count	Target	Proportion
Coastal	4	47	60	78.3%
Floodplain	10	117	315	37.1%
Mountainous	2	20	105	19.0%
Plateau			105	0.0%
Tonle Sap			315	0.0%
Total	**16**	**184**	**900**	**20.4%**

Table 2. Mean **daily** household catch (CPUE), with standard deviation, confidence limits, relative standard error.

Fishing Area	Active HH	Daily HH catch (Kg)	SD	CL	ε%
Coastal	18	3.59	2.03	0.86	13.3%
Floodplain	84	4.08	4.33	0.79	11.6%
Mountainous	11	3.35	2.47	1.43	22.3%
Plateau					
Tonle Sap					

Mean daily catch calculated based on the reported 5-day catch and fishing days, with SD is Standard Deviation; CL is Confidence Limits; ε% is relative Standard Error

Table 3. Mean **monthly** household catch with standard deviation, confidence limits, relative standard error and total estimated catch by fishing area.

Fishing Area	Active HH	Monthly HH catch (Kg)	SD	CL	ε%	Total (MT)
Coastal	18	45.60	25.62	10.50	12.9%	1,126.56
Floodplain	84	76.50	74.20	13.55	10.6%	33,808.44
Mountainous	11	55.52	53.31	30.91	29.0%	3,650.19
Plateau						
Tonle Sap						
				Total estimated catch (MT)		**38,585.19**

SD is Standard Deviation; CL is Confidence Limits; ε% is relative Standard Error

Table 4. Proportion of fishing days on which male and female adults and children are reporting fishing activities.

Fishing Area	Adult		Child	
	Female	Male	Female	Male
Coastal	0.0%	0.0%	100.0%	0.0%
Floodplain	3.4%	0.0%	93.1%	4.8%
Mountainous	0.0%	0.0%	100.0%	50.0%
Plateau				
Tonle Sap				
Total	**3.0%**	**0.0%**	**93.9%**	**7.3%**

The maximum involvement of each gender and age group is 100% for each fishing area, if they are fishing on all reported fishing days.

Table 5. Reported catch (Kg) with proportion caught by main boat type by fishing area.

Fishing Area	Catch (Kg)	No boat	Motorised	Non-motorised
Coastal	131.00	55.6%	0.0%	44.4%
Floodplain	998.90	52.2%	39.9%	7.9%
Mountainous	98.50	19.5%		80.5%
Plateau				
Tonle Sap				
Overall	1,228.40	**55.8%**	**14.2%**	**30.0%**

Overall proportion based on weighted average catch by main boat type and fishing area, not reported total catch[2]

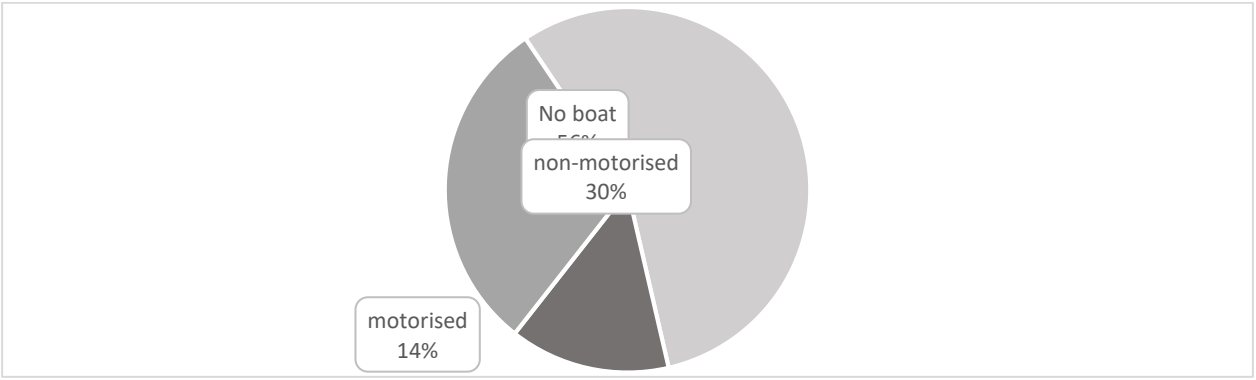

Figure 1. Overall contribution of the main boat types to total reported catch.

Table 6. Reported catch by habitat for single habitat catches by fishing area.

Fishing Habitats	Coastal	Floodplain	Mountainous	Overall
Floodplain: lakes and ponds	2.2%	26.8%	69.7%	26.9%
Mekong Mainstream	0.0%	19.1%	0.0%	16.0%
Irrigation canals	31.1%	14.2%	0.0%	15.0%
Sub-Stream	8.4%	10.6%	0.0%	9.7%
Floodplain: rice fields (rain)	8.2%	9.5%	1.3%	8.9%

[2] This is the standard way to calculate, but isn't done for habitat and gear catch, as this is complicated by fishing days where the reported catch is from multiple habitats or caught by multiple gears

Major Tributaries	0.0%	8.5%	0.0%	7.1%
Floodplain: rice fields (flooded)	4.9%	6.3%	0.0%	5.8%
Stream	18.7%	0.0%	0.0%	1.9%
Tributaries to Tonle Sap	0.0%	1.2%	0.0%	1.0%
Reservoir	4.3%	0.0%	0.0%	0.4%
Other habitats	22.3%	3.9%	29.1%	7.3%
Total catch single habitat days	92.0	775.7	55.7	923.4

Only catch for fishing days that report fishing in a single habitat is included

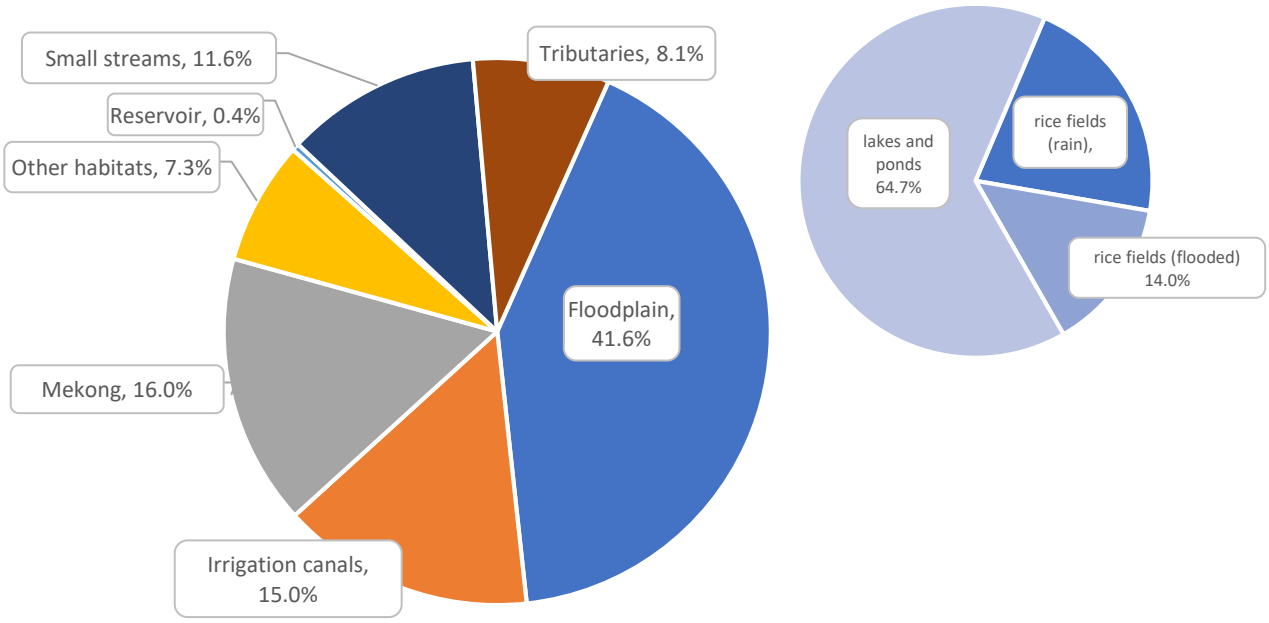

Figure 2. Overall contribution of the habitats to total reported catch, with proportion of catch for floodplain habitats.

Table 7. Reported catch by gear for single gear days, by fishing area.

Fishing habitats	Coastal	Floodplain	Mountainous	Overall
Stationary gillnet	27.8%	29.2%	3.7%	28.0%
Cast net	14.8%	17.1%	0.0%	16.2%
Horizontal cylinder trap	22.5%	13.7%	0.0%	13.9%
Drifting gillnet	4.1%	15.6%	0.0%	13.9%
Bamboo vertical cylinder trap	0.0%	10.3%	14.4%	9.5%
Hand capture	5.6%	1.6%	46.7%	4.0%
Hook and line	0.0%	3.5%	0.0%	3.0%
Pumping	0.0%	2.1%	0.0%	1.8%
Push nets	0.0%	0.0%	33.1%	1.5%
Spear	11.2%	0.3%	0.0%	1.3%
Bag nets	0.0%	0.9%	0.0%	0.8%
Seine nets	0.0%	0.1%	0.0%	0.1%

Others gears	14.0%	5.5%	2.0%	6.1%
Total catch single gear days	**71.50**	**683.43**	**34.70**	**789.63**

Only catch for fishing days that report fishing with a single gear is included

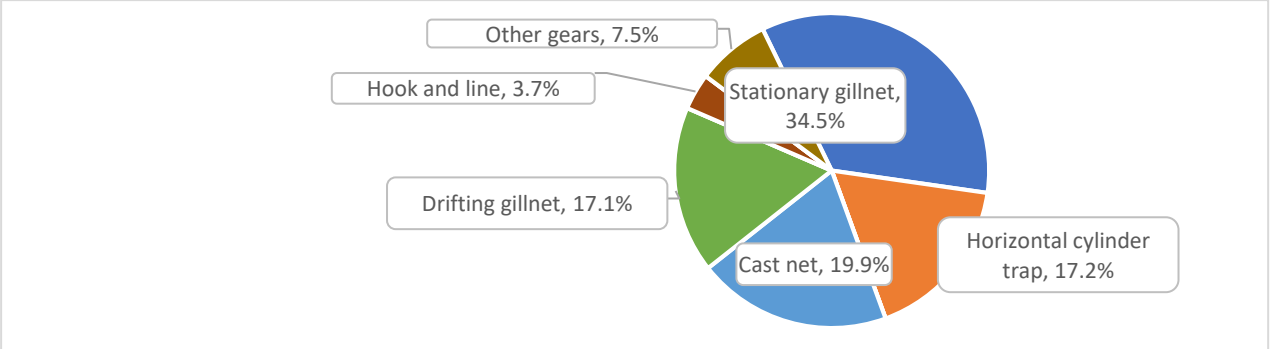

Figure 3. Overall contribution of the gears to total reported catch.

Table 8. Reported disposal by fishing area in weight and proportion.

Fishing Area	Sold		Consumed		Other	
	Kg	%	Kg	%	Kg	%
Coastal	55.6	49.0%	45.6	40.2%	12.3	10.9%
Floodplain	559.1	56.0%	245.7	24.6%	194.1	19.4%
Mountainous	36.6	37.2%	53.5	54.3%	8.4	8.5%
Plateau						
Tonle Sap						
Overall	**651.3**	**53.8%**	**344.7**	**28.5%**	**214.9**	**17.7%**

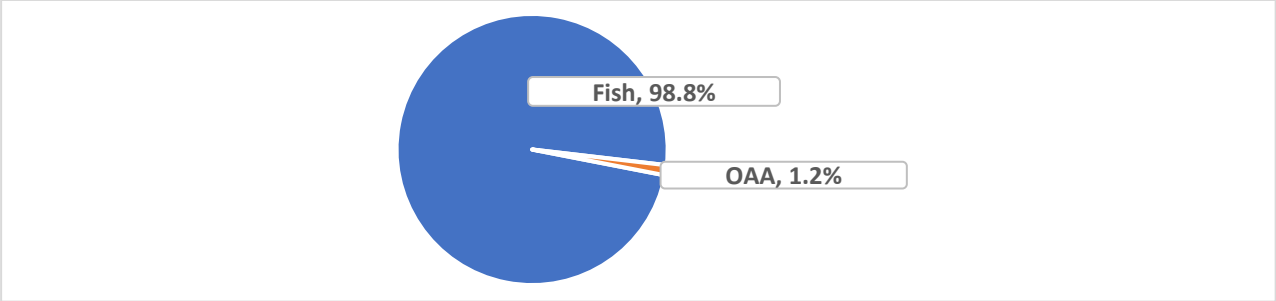

Figure 4. Catch contribution for fish and other aquatic animals.

Table 9. Top 10 reported species and species groups **by weight** in reported household catch, with reported weight and proportion of catch by individual species and species groups.

	Scientific name	catch (kg)	Catch contribution	
			Proportion	Cumulative
1	*Channa striata*	153.3	12.7%	12.7%
2	*Anabas testudineus*	133.8	11.0%	23.7%
3	*Clarias batrachus*	96.5	8.0%	31.7%
4	*Henicorhynchus siamensis*	90.6	7.5%	39.2%
5	*Henicorhynchus lobatus*	89.0	7.3%	46.5%
6	*Barbonymus gonionotus*	81.5	6.7%	53.2%
7	*Tilapia sp.*	47.6	3.9%	57.2%
8	*Helicophagus waandersii*	36.5	3.0%	60.2%
9	*Puntioplites proctozysron*	34.5	2.8%	63.0%
10	Other species	447.6	37.0%	100.0%
	Total reported catch	**1210.9**		

Table 10. Top 10 reported species by value (1000 Riel) in reported catch, with reported value, proportion of value by individual species and species groups.

	Scientific name	Value (1000 Riel)	Value Contribution	
			Proportion	Cumulative
1	*Channa striata*	1,858.4	16.9%	16.9%
2	*Anabas testudineus*	1,210.2	11.0%	28.0%
3	*Clarias batrachus*	1,071.4	9.8%	37.7%
4	*Barbonymus gonionotus*	831.3	7.6%	45.3%
5	*Henicorhynchus lobatus*	657.2	6.0%	51.3%
6	*Henicorhynchus siamensis*	521.0	4.7%	56.0%
7	*Macrognathus siamensis*	386.0	3.5%	59.6%
8	*Puntioplites falcifer*	378.0	3.4%	63.0%
9	*Puntioplites proctozysron*	350.8	3.2%	66.2%
10	Other species	3,708.5	33.8%	100.0%
	Total reported value	**10,972.8**		