Plastic Pollution:
Premilary findings on macroplastics in Tonle Sap River
compared to fishes catch at Dai fisheries

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Introduction

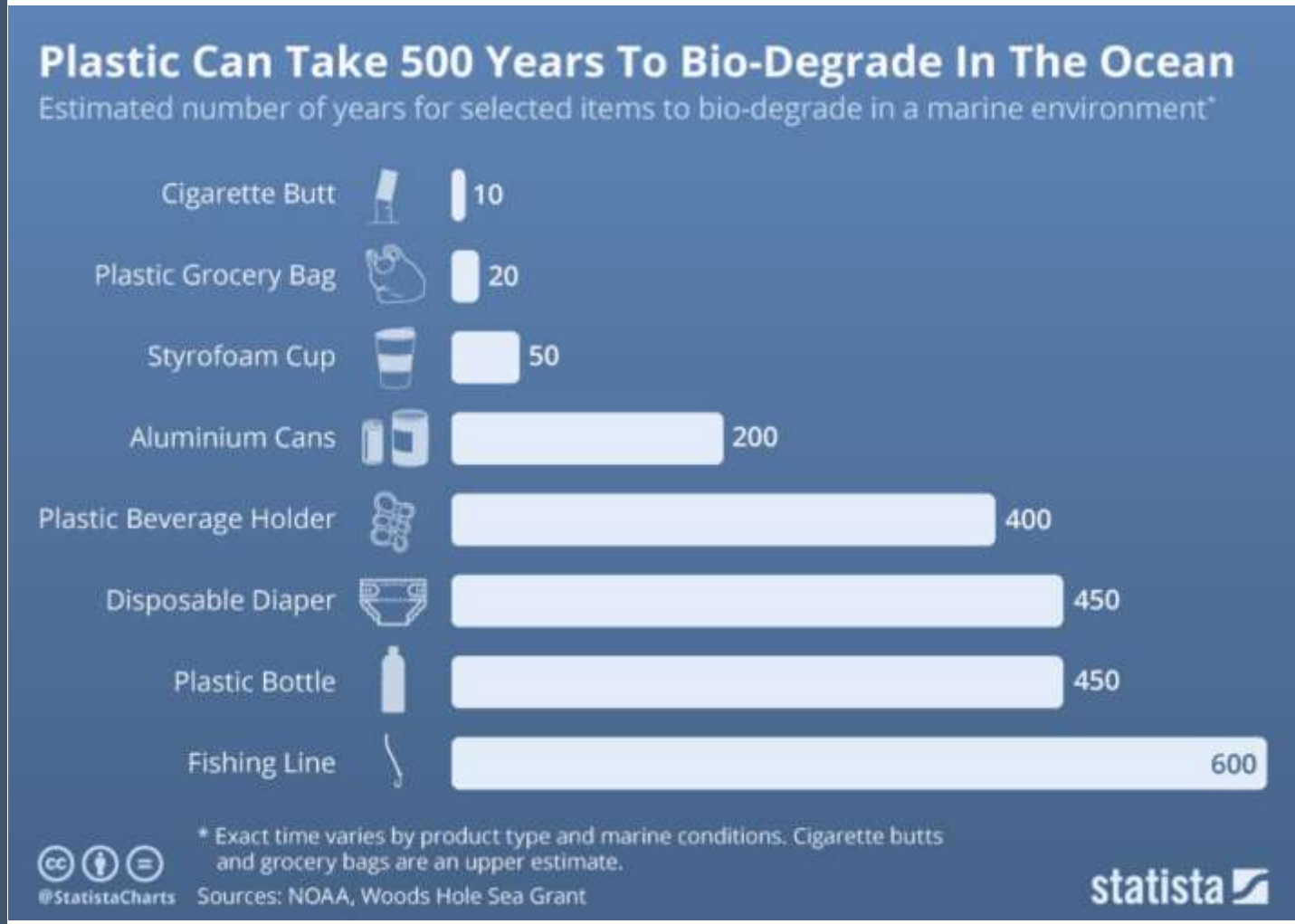
- Plastic pollution has found in different ecosystems and combined of different sizes, shape, color, polymer types and items (Emmerik and Schwarz, 2020).
- Riverine plastic pollution plays a key role transporting land-based plastic waste to the oceans. However, Rivers are directly affected by plastic pollution (Emmerik and Schwarz, 2020). The Mekong River is one of the top 10th rivers that collectively transport 88-95% of the global mismanaged plastic debris from land-based sources into the sea (Schmidt et al., 2017).
- A total of annual municipal solid waste in Cambodia was 4,090,209 tonne per year (data in 2015). Approximately 63% of total annual municipal solid waste have been collected, 29% was illegal disposal and 8% recycled (MoE, 2021).

Introduction (cont.)

- 10 million plastic bags used every day in Phnom Penh
- 12 Plastic Bags/Day/Household
- A study by Haberstroh et al., 2021 estimated a total of plastic 203,000 kg per day of plastic were released from Phnom Penh into the Mekong during wet season.
- Finnergan and Gouramanis, 2021 projected the mismanaged of plastic waste in Tonle Sap Basin: at BAU scenario a total 500,000 tonne of plastic will end in the Tonle Sap Basin by 2030.
- Limitations of scientific data on macro and microplastics in LMB (Cambodia)

Why study plastics?

Plastics persist in the environment for a long time, degrade to microplastics, ingested by animals…

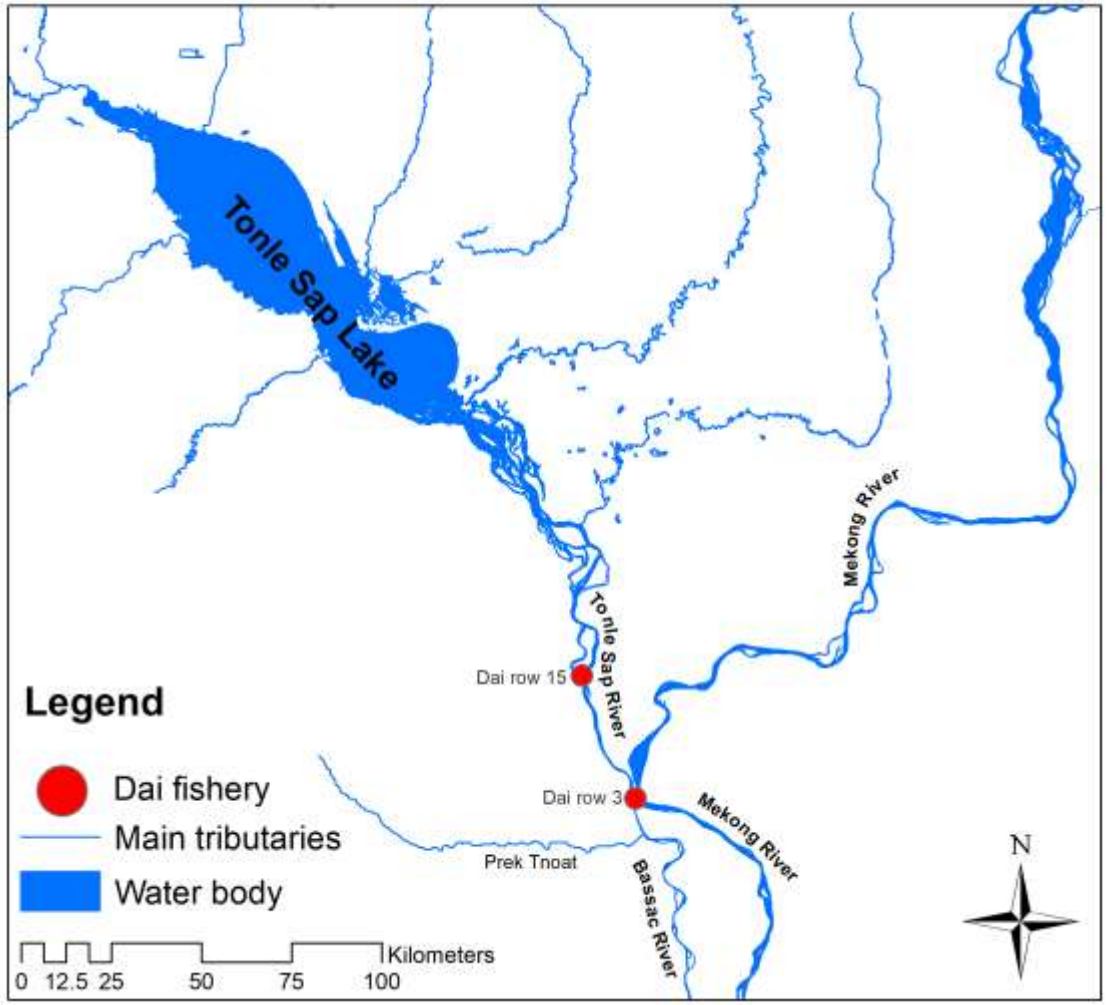


Dai fisheries

Research questions

(1)How much riverine macro-plastics are generated by dai fishery and compare to amount of fish catch?

(2) What are origins of riverine macro plastics, what are the most abundant plastic types? and where is the key hotspot of riverine macro plastic pollution in Cambodia?



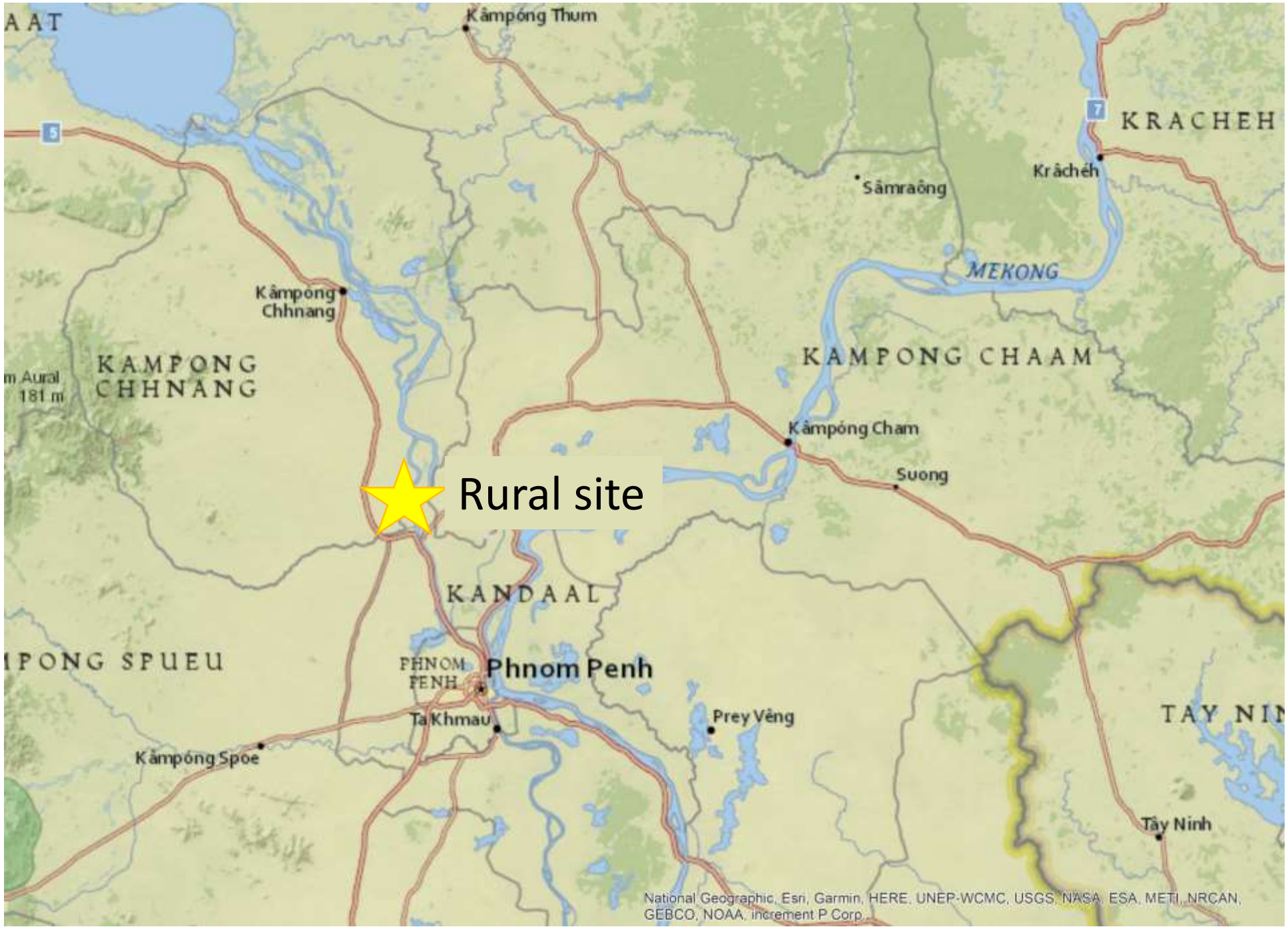
Research Objectives

- To investigate of macro-plastics caught by Dai fisheries
- To compare macro-plastics transport in the Tonle Sap River and fish caught by Stationary bagnet (Dai fishery) deployed upstream and lower part of the Tonle Sap River.
- To identify plastic types and sources of the macro-plastics
- To understand the trend of plastic and fish catch during peak and low period based on the lunar month cycle.

Research methodology

- Macro-plastics will be collected at Dai fisheries #3 and #15 during low and peak period catch of fish within dai operation period in October - March to understand amount of plastic catch compared to fish catch.
- Collecting macro-plastics at each site: 3-5 times during 24h (morning, noon, Evening), collect trash during low and peak period 2times/month, approximately 6-10 times/season.
- Sorting plastics by product and polymers types, weight and count number of each type, Total mass of plastics (kg) and total fish catch per haul
- Document Water profile (using Acoustic Doppler Current Profiler-ADCP) to measure discharge (m3/s)

Sample location:		Site description:	
Date:		Other notes:	
Weather notes:			
Material		Count (#)	Weight (g)
Category	UNEP Code and Item Type		
Plastic	Plastic bags		
	Food wrappers and snack bags		
	Other plastics (Cutlery, cigarrett butts, clothing, plastic tape, unidentified plastics, etc.)		
	Woven bags		
	Cups, bottles, lids, and straws (not foam)		
	Face masks		
	Sanitary (gloves, diapers, syringe, pads)		
	Foam (cups, take-away food containers, etc.)		
Other	Glass/Ceramics (light bulbs, bottles, jars, tableware, construction material)		
	Fishing equipment (all gear including line, nets, rope, metal and foam)		
	Foil wrappers		
	Other non-plastic man-made materials (paper, cardboard, clothing, rubber, unidentified)		



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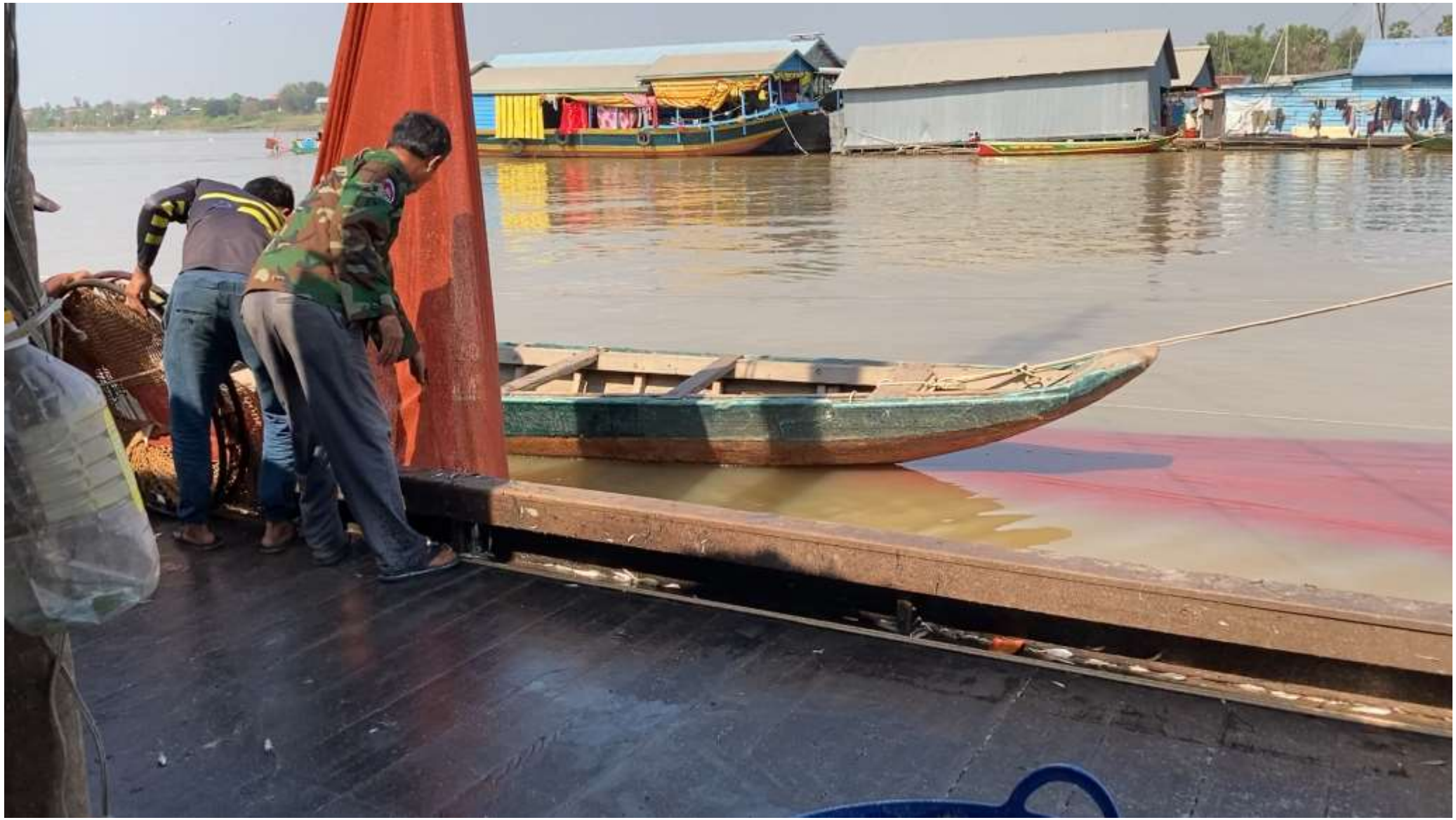

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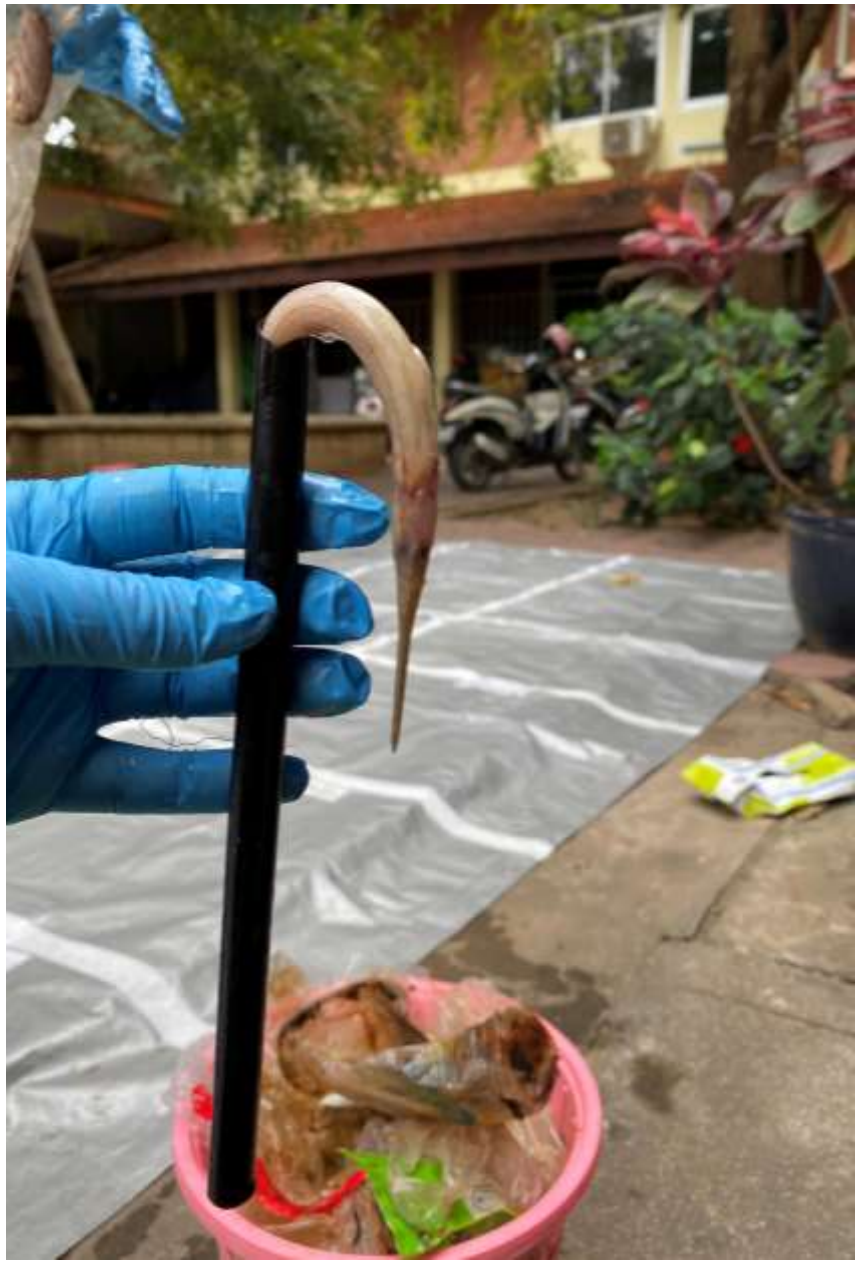
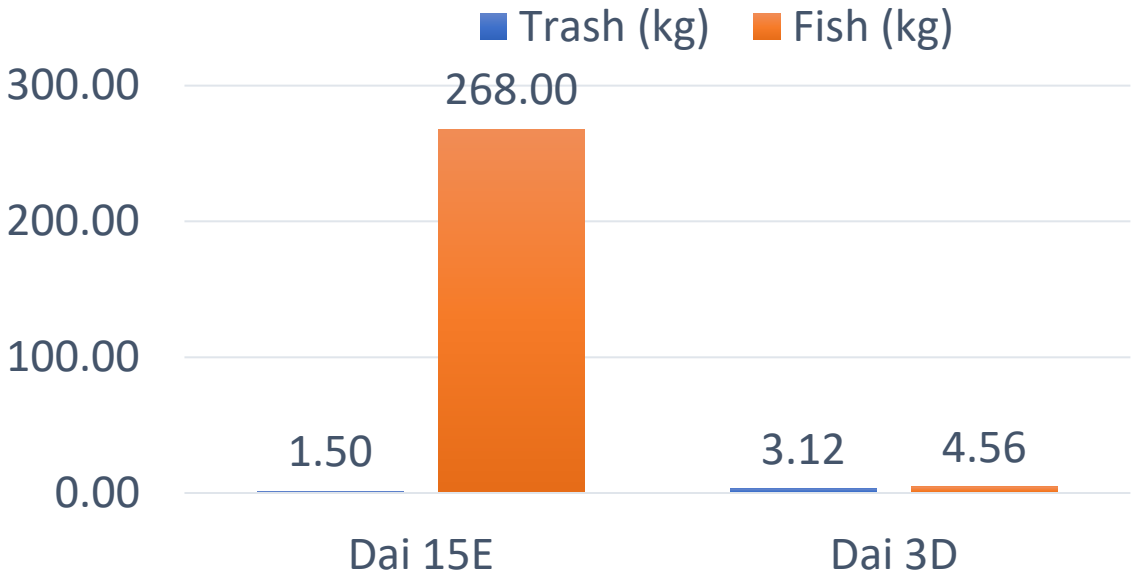
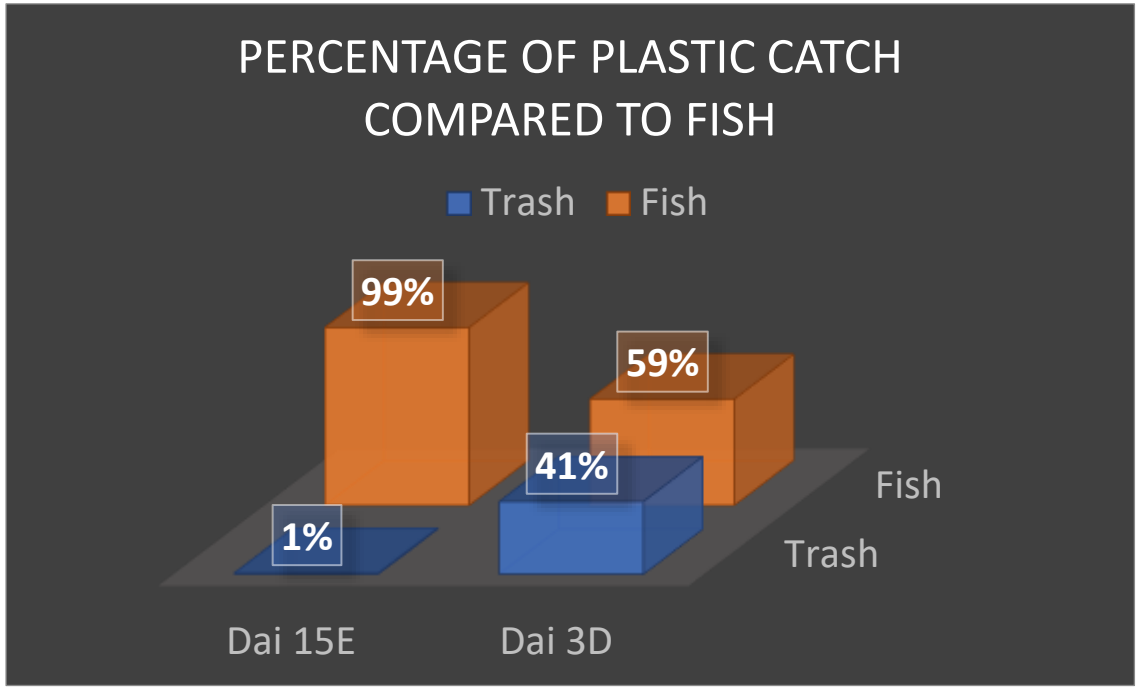
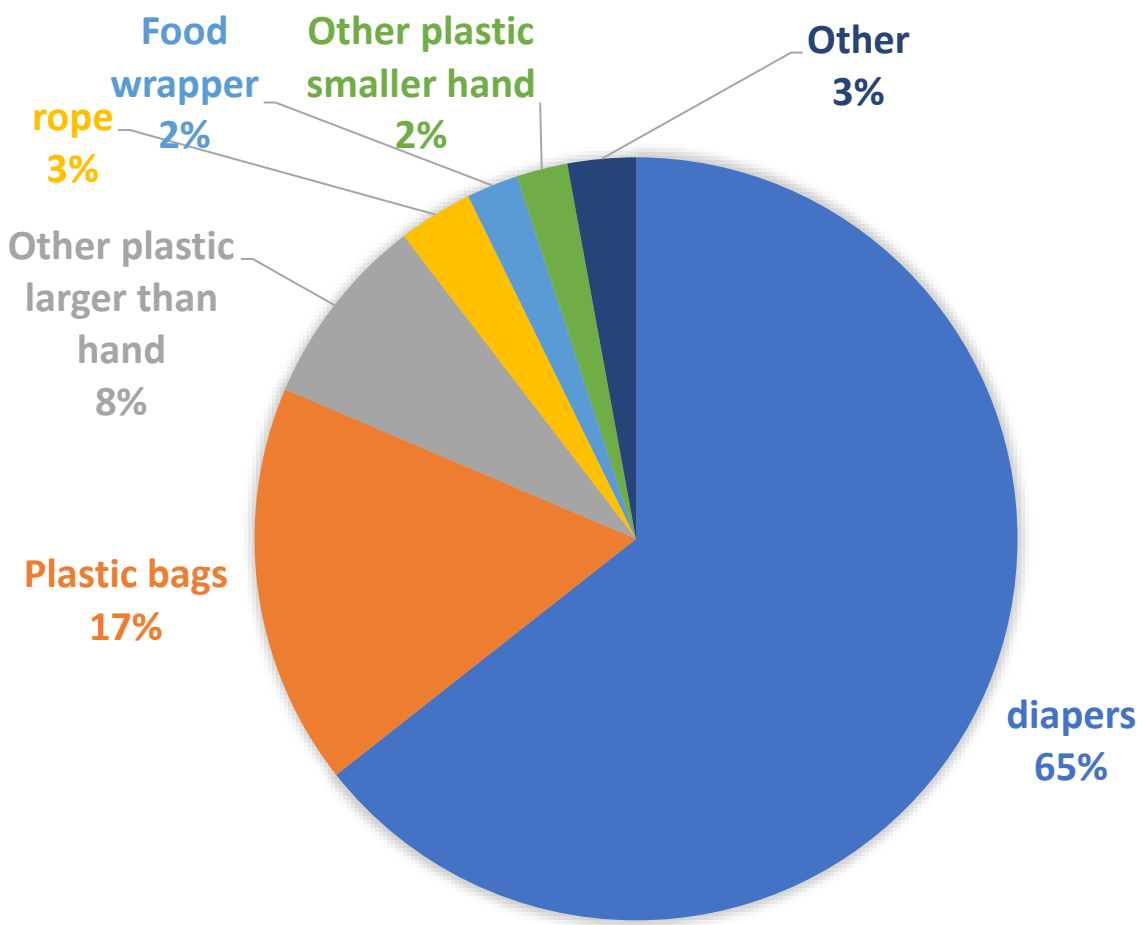



GOOGHI
PANTS


Average plastics and fish catch per haul/h
Trash (kg)
Fish (kg)
300.00
200.00
100.00
0.00
268.00
1.50
3.12
4.56
Dai 15E
Dai 3D

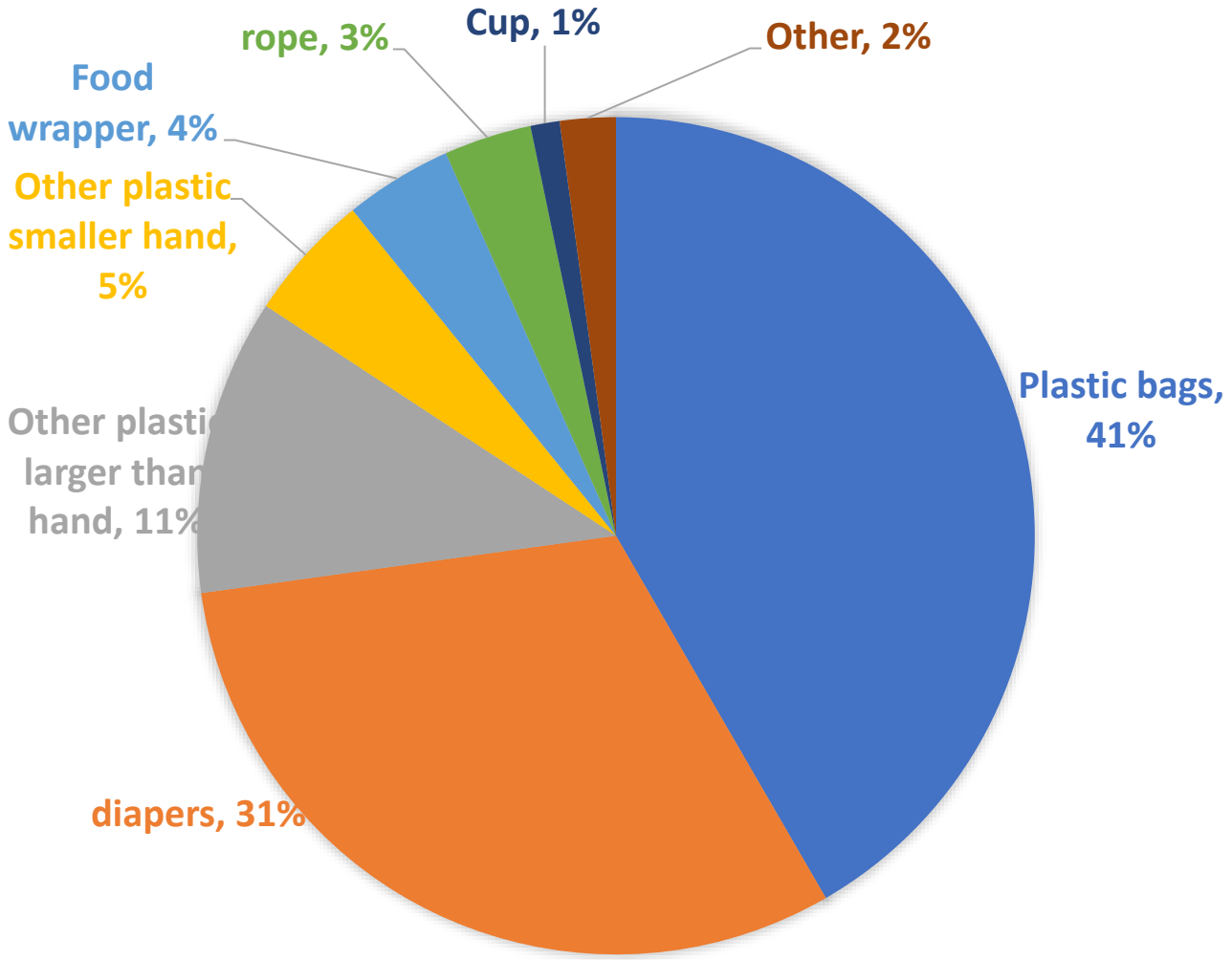

PERCENTAGE OF PLASTIC CATCH COMPARED TO FISH
Trash
Fish
99%
59%
41%
1%
Fish
Trash
Dai 15E
Dai 3D

“rural” site



RIVERINE PLASTIC DEBRIS BY CATEGORIES AT DAI 15E

“urban” site



RIVERINE PLASTIC DEBRIS BY CATEGORIES AT DAI 3D

Next steps

- Don’t litter everywhere
- Continue monitoring and collecting data on plastic pollution in the river and other environment and its impacts to human and biodiversity, Observe on the human perception and behavior changes
- Outreach campaign
- Provide training and capacity building to all on plastic waste pollution and management and eco-school competition



Thank you for your attention!

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