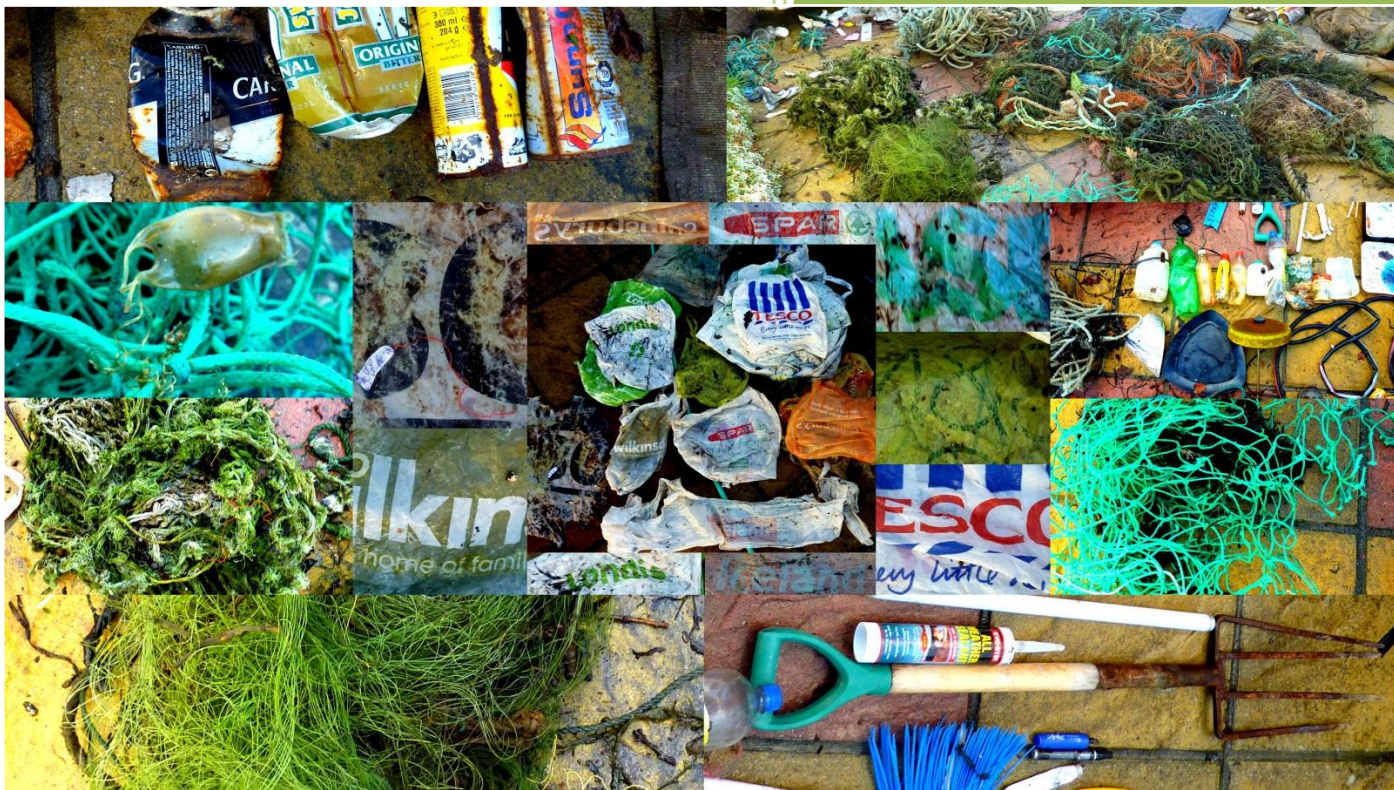


2012

Helford Estuary Kayak Clean Litter Report



Jessica Hirons

Helford Marine Conservation Group

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Figure 1: Helford River Kayak Clean, Tremayne Quay, Hirons, J. 2012.

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Figure 2: Marine Litter collected on Helford River Kayak Clean. Hirons, J. 2012.



Figure 3: Kayakers on the river looking for Marine Litter, Hirons, J. 2012.

Introduction

The Helford Estuary is located on the South West coast of Cornwall in the United Kingdom. It is host to a biodiverse and conservationally important marine ecosystem which is protected within the Fal and Helford Special Area of Conservation or SAC. This designation is listed under European legislation called the Habitats Directive and is part of a network of marine and terrestrial protected areas.

Marine litter is a problem which affects all marine environments and in particular coastal habitats where human activity is more prominent thus concentrating litter into specific areas. Debris is also circulated across oceans on currents such as the Gulf Stream which carries items from the west to east across the North Atlantic reaching the Cornish and other European coastlines.

There are many types of marine litter but particularly plastics are a huge threat to wildlife. Small fragments often enter marine food chains while larger pieces can get caught around marine mammals causing injury and often death.

Marine litter also looks unsightly and in areas such as Cornwall where tourism contributes to a large proportion of its local economy this must be taken into consideration.

In addition to the organisation's scientific research and advisory commitments, Helford Marine Conservation Group have been co-ordinating beach cleans and contributing to other community conservation events on the Estuary for many years. There are also many volunteers who currently litter pick on the shores of the Helford Estuary with regular cleaning of the more popular and accessible areas. Many sections of the estuary are however not accessible and so are not cleaned regularly, if at all. A solution to this is to access shores by sea on kayaks recording hotspots which may require more frequent cleaning.

On 10th November 2012 16 volunteers in 11 Kayaks left Helford Passage at 1200 with the intention of following the shore on the North banks of the Helford Estuary to Tremayne Quay and returning via the South banks.

The main aim was to collect as much marine litter as possible with three crew members aboard the Orca Sea Safaris boat retrieving the litter from the kayakers and also assisting with safety cover. Table 1 shows names of the volunteers who helped to achieve this and also the crew on the Orca boat. You can see from the table there was a vast mix of abilities; many individuals had little or no experience. It was possible to include members of the community who do not usually access the river due to the kind loan of a number of Kayaks from Lizard Adventures, a local business. This presented an important opportunity to give others the chance to help tackle a local issue not familiar to them.

The litter collected was then taken and counted to acquire important quantitative data for analysis. This data is hoped to be the start of an annual data set which may help to better understand and even prevent the litter accumulating in the estuary and elsewhere in the future.

Table 1: Participant List

Name	Experience
Kayak Coaches	
Alyna Cope	Coach
Andrea Vaillancourt-Alder	Coach
Claire Eatock	Coach
Debbie Gregson	Coach
Kayak Volunteers	
Alexander Gardener	Basic
Christina Cure e Couto	Experienced
Elliot Badwin	Basic
Emma Rojano	
Howard Pierce	Experienced
Jessica Grove	Basic
Jessica Hirons	Intermediate
Ken Gilham	Basic
Lindsay Leyden	Basic
Louise Young	None
Pat Kilminster	Basic
Sarah Williams	None
Orca Sea Safaris Crew	
Caroline Harvey	Bosun
George Harvey	First Mate
Steve Harvey	Skipper



Figure 4: Kayakers on the shores of the Helford River. Hirons, J. 2012.

Method

Prior to the event a full risk assessment was completed and evaluated by HMCG and Lizard Adventures. All attendees on the kayaks completed safety forms which complied with Insurance supplied by Lizard Adventure and informed responsible parties of emergency contacts and other relevant information in order to complete the event safely.

Marine Litter was collected from the banks and beaches of the Helford River between Helford Passage and Tremayne Quay on Saturday 10th November. Figure 5 shows a map of the track made by the kayakers who were followed in deeper water by Orca Sea Safaris boat. Kayakers left Helford Passage at 1200, reaching Tremayne at 1345. After checking a small section just past Tremayne known as The Boat House kayakers then paddled back down the estuary on the South banks collecting litter on the way. On both the upstream and downstream journeys kayakers paddled on the main estuary only. Polwheveral, Port Navas and Frenchman's Creek were all missed out due to time constraints and a risk of volunteers getting cold.



Figure 5: Map of Kayak Clean Track. Google Maps [online, www.google.com], adapted by Hirons, J.2012

All volunteers wore suitable protective gloves and litter was placed in bin liners, this was then sealed and transported aboard Orca Sea Safaris boat. On arrival back at Helford Passage litter was taken from Orca and brought ashore where it was double bagged and placed in transport to be taken away and analysed. All litter was then categorised and counted with the data recorded on a spread sheet provided by Keep Britain Tidy (table 2 page 12/13).

Results

For the first section of the kayak clean we followed Helford passage beach and then went around to Pedn Billy before paddling across Port Navas and over to Calemansack. These areas were all free of any litter. It was also observed they had either public access or a private house nearby. Figure 6 shows areas where an estimated 90% of the litter was retrieved from, all with limited or no access from land. No Litter was found on Groyne Point, another area where there is no terrestrial access so litter was expected. To follow is a series of charts representing raw data taken from table 2 on page 13/14.



Figure 6: Map showing estimated litter hotspots on the Helford. Google Maps [online, www.google.com], adapted by Hirons, J. 2012.

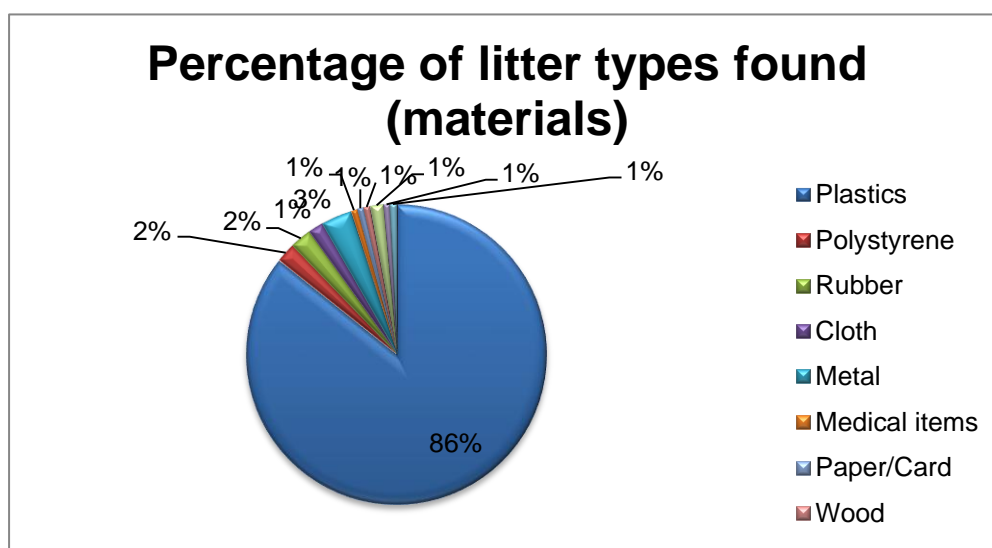


Figure 7: Pie Chart showing percentage of litter types found on Helford River Kayak Clean 2012. Hirons, J. 2012. The chart shows that plastic was the most prominent type of marine litter found during the kayak clean with 366 items collected, second to this was metal with 14 items.

Percentage of Plastics Collected

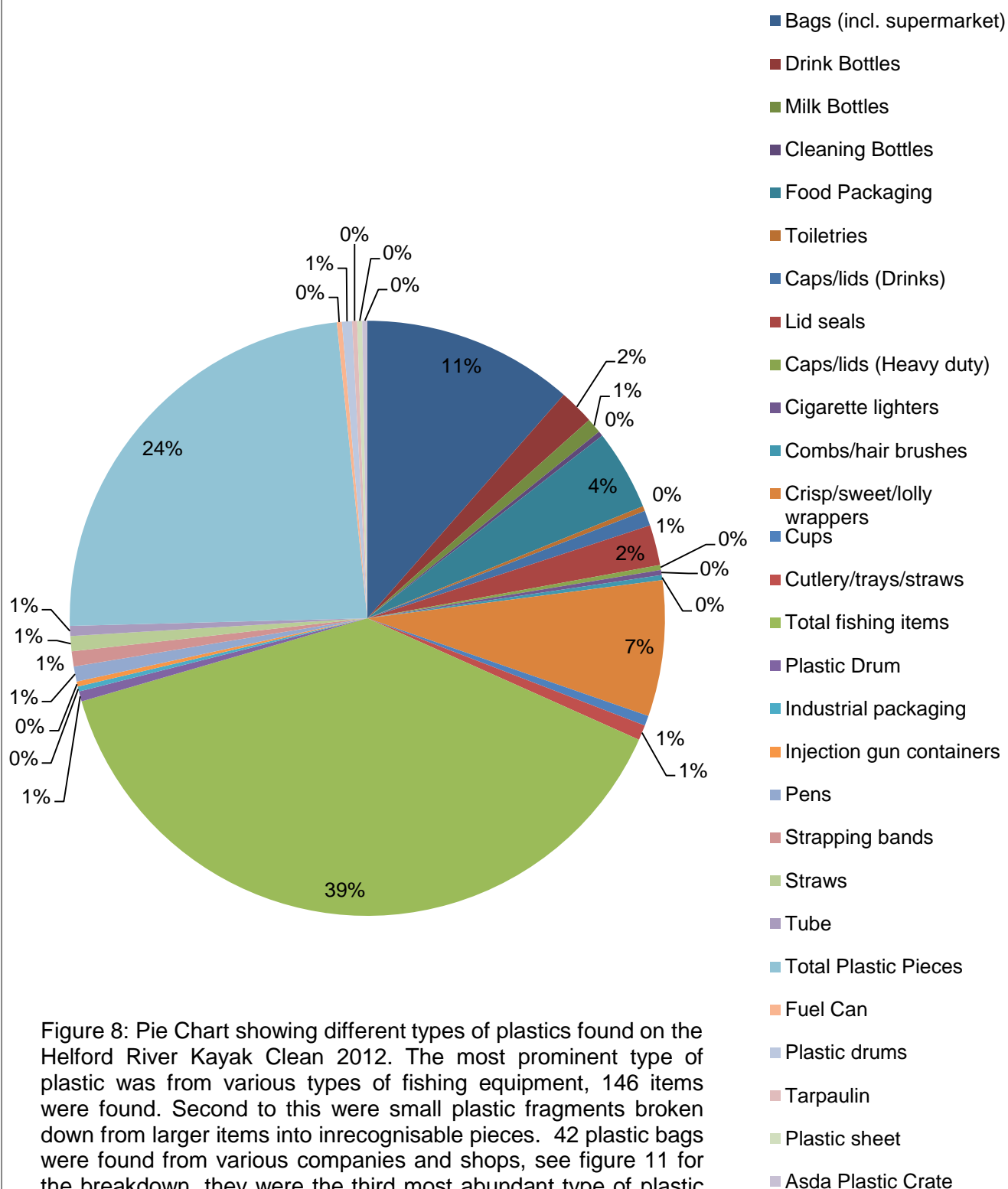


Figure 8: Pie Chart showing different types of plastics found on the Helford River Kayak Clean 2012. The most prominent type of plastic was from various types of fishing equipment, 146 items were found. Second to this were small plastic fragments broken down from larger items into inrecognisable pieces. 42 plastic bags were found from various companies and shops, see figure 11 for the breakdown, they were the third most abundant type of plastic debris. 0% represents a higher than zero but lower than one percentage.

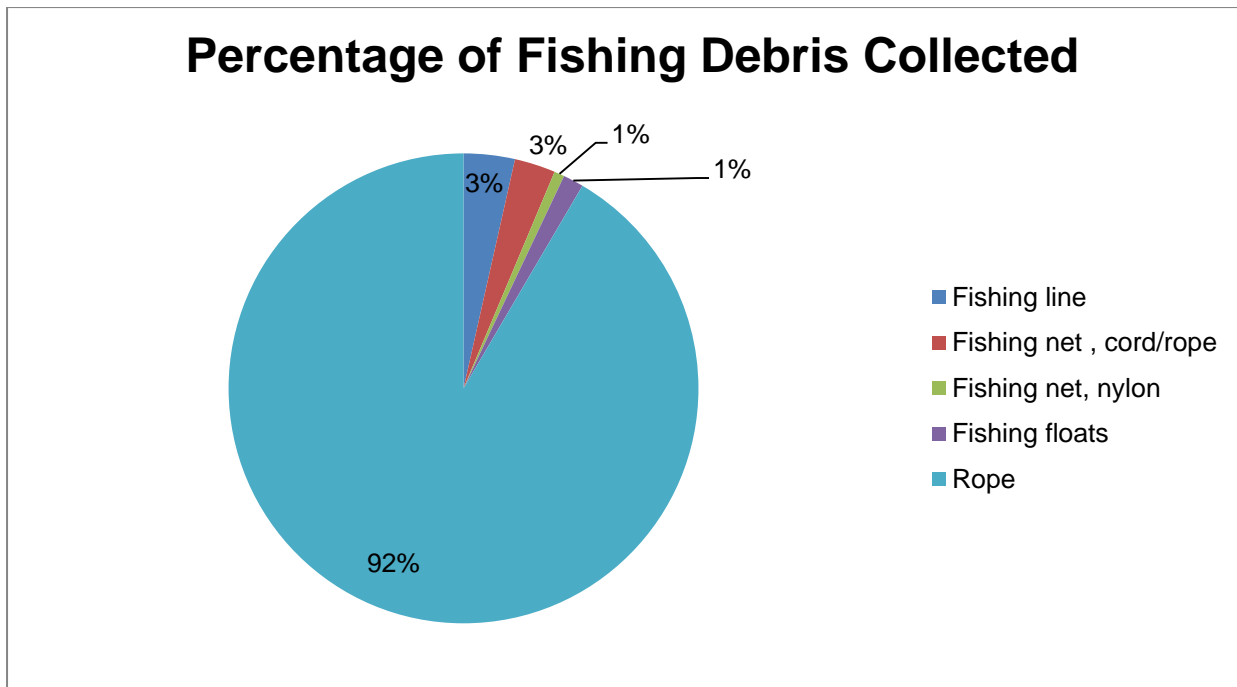


Figure 9: The pie chart shows different types of fishing debris found on the Helford River kayak clean 2012. Rope was by far the most abundant type of fishing debris with 130 pieces found. This was followed by 5 large fishing nets.

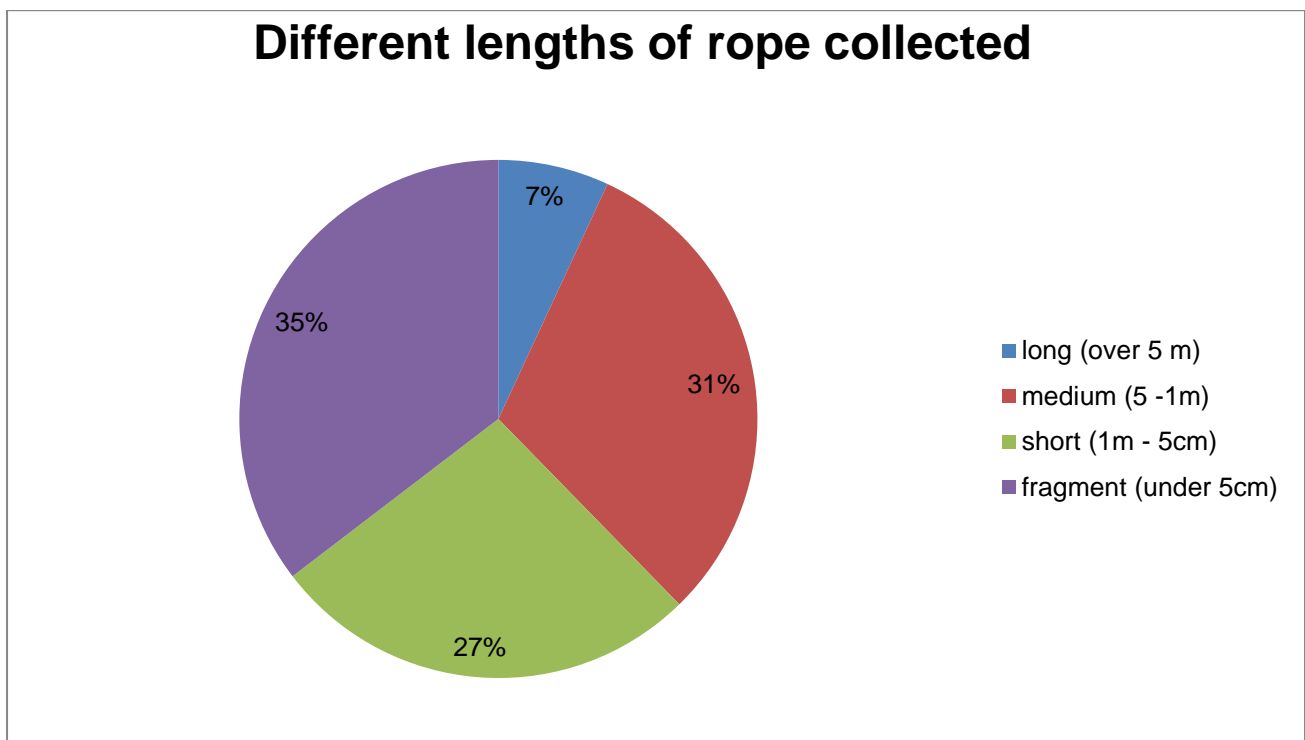


Figure 10: This pie chart shows the amount of different rope lengths collected on the Helford River Kayak Clean 2012. 46 small pieces or fragments were found less than 5cm in length, closely followed by 40 medium and 35 short pieces. One long piece of rope found was over 20m long.



Figure 11: The bar graph shows the amount of different plastic bags found. Tesco's shopping bags were the most abundant bags which were recognisable there, were however many bags which were not recognisable, listed as other.

Figure 12 shows some of the shopping bags collected and sorted into piles some bags were very decomposed and fell apart as they dried. Others were in 'like new' condition except for a little sea water.



Discussion

As previously mentioned, on the first section of the kayak clean most areas were free of any litter, all of these locations have access so it is presumed that local residents are actively cleaning these shores in addition to HMCG volunteers. An estimated 90% of the litter was retrieved from locations



Figure 12: Grey Seal Pup, Hirons. J, 2012.

shown in figure 6, all of which had limited or no access which is presumed the reason for the accumulation. It would be difficult for local people and HMCG volunteers to collect the litter from these areas. Groyne Point is another area where there is no terrestrial access but unlike the other locations this too was litter free. The Point reaches out into the estuary and it is possible that strong tidal flow would carry litter away from this location.

Figure 7 is a pie chart showing the amounts of various materials found on the kayak clean. Plastic is clearly the most abundant litter type and this is not surprising as it is well known that plastics take many years to decompose and generally float so are carried in tides and currents to estuaries and beaches or even the very centre of ocean gyres. Plastics pose the most danger to marine species and can even reach humans through the food chain potentially causing ill health and disease. Figure 12 is an image of a new born seal pup lying on a bed of plastic debris washed onto the beach by the tide. Figure 13 is an image of an adult grey seal (*Halichoerus grypus*) with monofilament netting caught around its body; this cuts the skin causing a gaping, open wound which it may wear for life if it doesn't cause premature death in the animal. It is easy to see how this happens; there have been many observations of marine animals playing with discarded nets and rope. Among the litter collected on the kayak clean, 86% was plastic and of that 39% was fishing equipment. Some nets were found, the biggest threat being a large monofilament net which is a common culprit for marine animal entanglements. On one of the cord nets found was a ray egg case which had been attached to the net by the mother and was since



Figure 13: Adult netted Grey Seal

Hirons, J. 2012.



Figure 14: Egg Case attached to netting. Hirons, J. 2012.

hatched (figure 14). By far the more abundant of any one category was rope and fragments of rope, most of which was the sort used in fishing. Rope is not only a risk to marine species but it can also threaten the safety of watercraft users as it is easily caught around propellers and steering devices such as rudders. Rope also breaks down into small fragments which are easily ingested and like other plastics can leach chemicals into marine creatures, thus entering the food chain.

Another abundant feature of the kayak clean was plastic bags (figure 11 and 12). Recently legislation has been introduced in the UK for supermarkets to encourage consumers to keep reusable bags and to slowly phase out the cheaper disposable bags. There is no previous data set to compare this with but 24% of all plastics found were bags, many of them still with a recognisable logo printed on them. Like all the other plastic items already mentioned bags are very dangerous to marine species and are often mistaken for prey and ingested. Tesco has a large supermarket in the area and was the most abundant of the bags which were recognisable (Figure 15); this may however be a coincidence.



Figure 15: Tescos shopping bag, Hirons, J. 2012.



Figure 16: The beautiful Helford Estuary. Hirons, J. 2012.

Conclusion

With far too many items of litter to discuss in this report it is clear that, as in other coastal areas, plastics are the most abundant form of marine litter in the Helford Estuary. The Helford River Kayak Clean 2012 has highlighted a requirement for more frequent cleaning of the hard to reach areas that our current volunteers cannot access. It is clear that the areas which are cleaned by HMCG volunteers are very clean with little or no litter collected. This is a credit to them and other members of the community who contribute to the clean-up efforts along our shores. These more public areas are a brilliant example of how the whole Estuary and River should be.



Figure 17: Litter free shores on the Helford. Hirons, J. 2012.

Raw Data

ITEM	SURVEY AREA		ITEM	SURVEY AREA	
Plastics			Cloth		
4/6 pack holders			Cloth pieces	2	
Bags (incl. supermarket)	42		Clothing/shoes		
Bottles, containers, packets:			Hand wipes		
- Drinks	7		Sacking	5	
-Milk bottles	3		Towels		
- Cleaner	1		Metal		
- Food	17		Aerosol cans	2	
- Toiletries	1		BBQ's		
Caps/lids (Drinks)	3		Car parts	1	
lid seals	8				
Caps/lids (Heavy duty)	1		Drinks cans	5	
Cigarette lighters	1		Foil wrappers	3	
Combs/hair brushes	1		Food cans		
Cord			Metal pieces		
Crisp/sweet/lolly wrappers	27		Oil drums		
Cups	2		Scrap metal/appliances		
Cutlery/trays/straws	3		Wire and wire mesh	2	
Fishing boxes			Nails/screws	1	
Fishing line		5	Medical items	1	<i>needle</i>
Fishing net , chord/rope		4	Faeces		
Fishing net, nilon		1	Paper/Card		
Fishing floats		2	Bags		
Total fishing items	12		Cardboard		
Plastic Drum	2		Cartons/tetrapak	2	
Lobster pot tags			Cigarette packets		
Glow sticks			Cigarette stubs	1	
Industrial packaging	1		Cups		
Injection gun containers	1		Newspapers/mag's		
Mesh vegetable bags			Tissues		
Pens	3		Paper pieces		
Rope			Wood		
long (over 5 m)		9	Corks		
medium (5 -1m)		40	Crab pots		
short (1m - 5cm)		35	Crates/pallets		
fragment (under 5cm)		46	Ice lolly sticks		
total rope	130	130	Paint brushes	1	
Shoes/sandals			Wood (Machined)	2	
Shotgun cartridges			Glass		
Strapping bands	3		Bottles	3	
straws	3		Light bulbs/tubes	1	
Toys/bucket/spade/party poprs			Glass pieces	2	
tube	2		Sanitary		

Plastic pieces			Sanitary Towel/appl		
			Condoms		
over 5cm		31	Cotton bud sticks	1	
under 5cm		56	Other		
total	87	87	Oyster bag	4	
Polystyrene			Garden Fork	1	
Buoys			Fuel Can	1	
Fast food containers/cups			Plastic drums	2	
Fibreglass			Tarpaulin	1	
Foam/sponge	2		Plastic sheet	1	
Packaging			Asda Plastic Crate	1	
Polystyrene pieces	7				
Surfboard/boogy board					
Rubber					
Ball	1				
Balloons					
Boots					
Gloves					
Tyres (innertube)	1				
Rubber pieces	8				
BeachCare Survey Sheet					
Date of Survey	10.11.2012				
Time of Survey	1200 - 1530				
Beach Surveyed	Helford Estuary		North and South Bank from Helford Passage to Tremayne Quay		
Surveyor Name(s)	HMCG				
			Organiser: HMCG		
No. of volunteers	19				
No. of Bags collected	10 bags plus larger items (estimated 16 bags inc laggers items)				





Acknowledgements

Many thanks to everyone involved in making the Helford Kayak Clean 2012 a success.

- All the volunteers who helped to collect litter from the shores of the Helford River.
 - Lizard Adventures for loaning HMCG their kayaks.
 - Orca Sea Safaris for their help to collect the litter and provide safety cover.
- All current HMCG volunteers and others who help to continually keep their patch of the Helford so beautiful and clean for humans and marine creatures alike.

For more information about the HMCG please see www.helfordmarineconservation.co.uk.