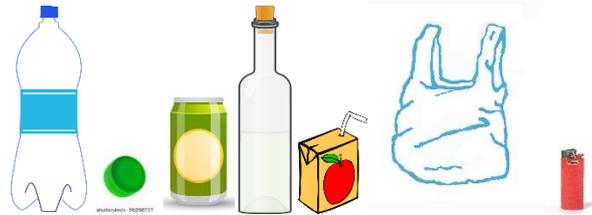


E 2 LITTER COUNTS



Litter counts are well established in citizen science. Coastwatch has included litter counts since 1989. From a year on year comparability point of view one would keep the same count method and items. However our litter changes, mirroring new packaging, changes in land and sea use. Coastwatchers are therefore asked periodically would they prefer to keep established methods or propose/adopt any change. This is done both as All Ireland and wider European review.

In 2014 after such review, litter counts were changed in both items included and method.

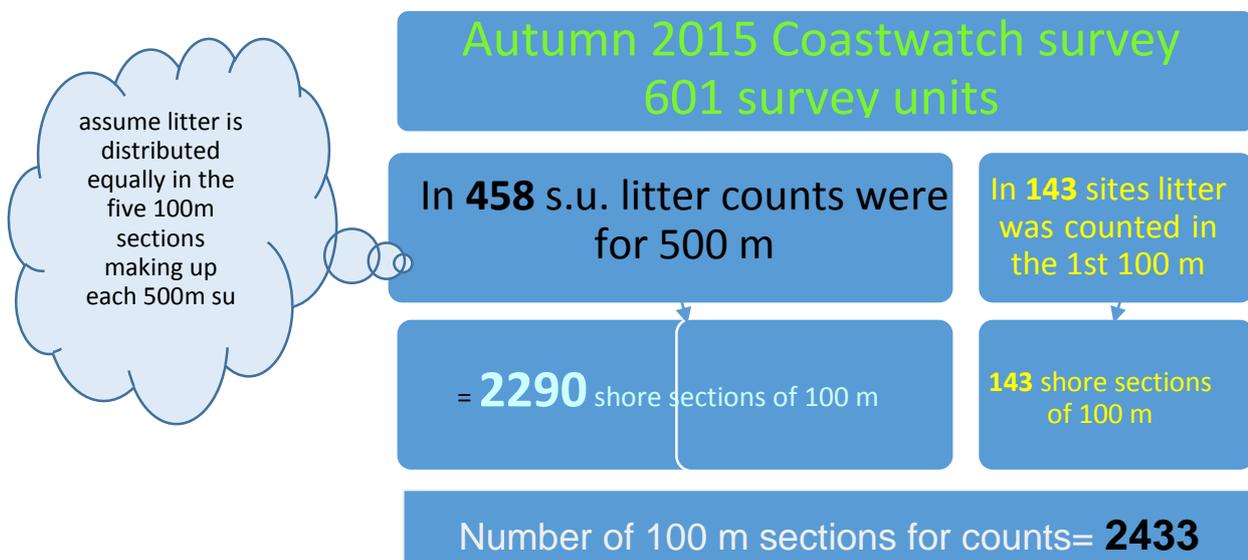
Items: The drinks container group – plastic bottles, cans, tetra packs and glass bottles were maintained, but instead of six pack holders, bottle lids were included as another drinks container linked count item.

The plastic bag count was kept, but instead of counting tyres, a count for cigarette lighters was added. As before an open field count option was maintained to pick up litter types noticed by surveyors as on the rise or locally troublesome.

Length of shore: The standard Coastwatch survey and counts has been over 500 m of shore from hinterland to water's edge. However as the new standardized Marine law litter descriptor count is for only 100m shore stretches and as on littered shores a shorter count distance is welcomed by surveyors, we proposed a change to 100m section counts. The reaction was so strong and mixed that we decided to run with both and defer a decision until we saw the outcome of the 2014 results. For anyone counting only 100m of their 500 m unit, the instruction and training highlighted that the first or last 100 m in a survey unit were to be marked out, to avoid a particularly clean or dirty areas.

All Ireland 2014 results

Just over three quarters of surveyor groups (458 out of 601) stayed with the old 500 m shore length for their counts. To use results from both shore length counts it was decided to break the 500m counts down into 5 sections of 100 m length and assume the litter was spread equally between them. Then add these to the survey units where only 100m counts were undertaken. This yielded **2433** survey sections of 100 m length with litter counts.



For drinks containers a crop of 7027 plastic bottles, 3707 cans, 2706 lids/caps, 717 tetra pack containers and 683 glass bottles were reported from the 2433 one hundred meter long survey sections. Additionally there were 930 plastic shopping bags and 230 lighters counted. Figure 4 below showing ranked counts clearly shows the plastic bottle as the dominant drinks container litter.

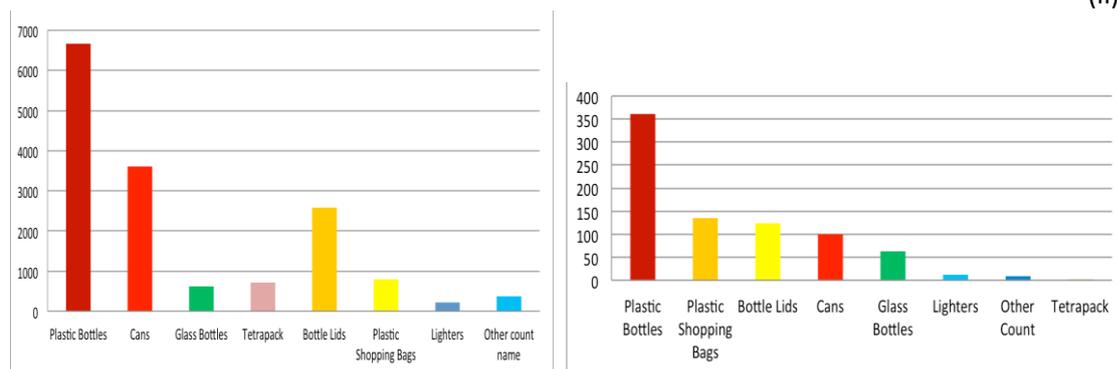
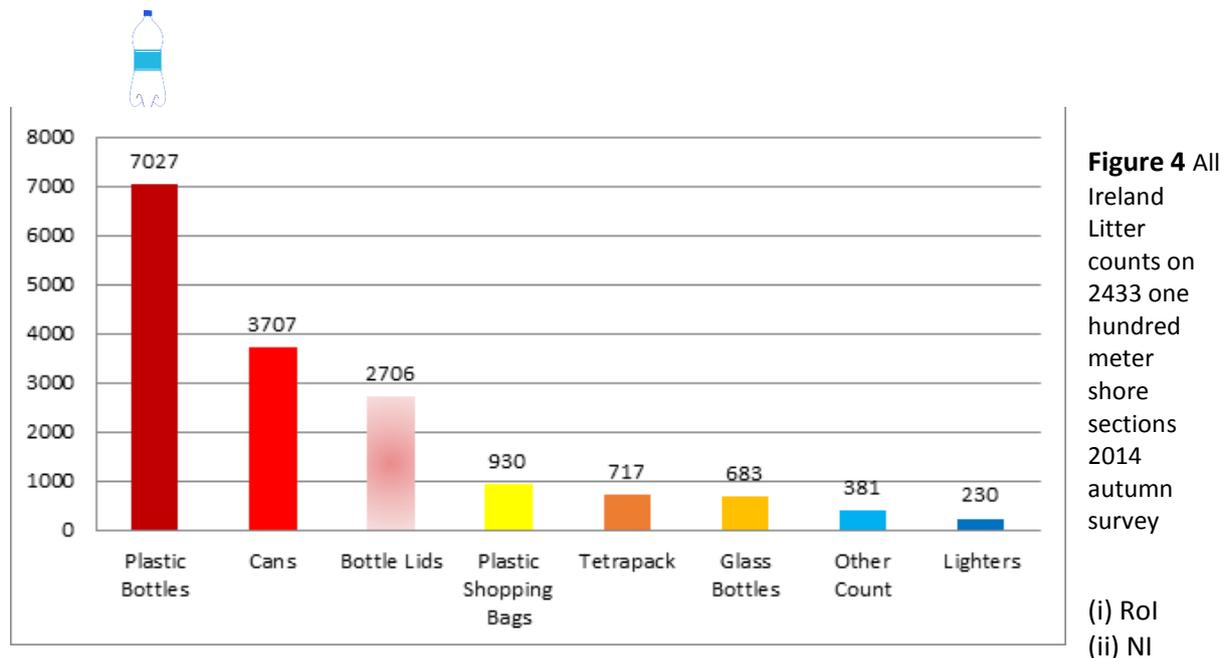


Figure 5 Litter counts separated for (i) Republic of Ireland and (ii) NI 2014 autumn survey

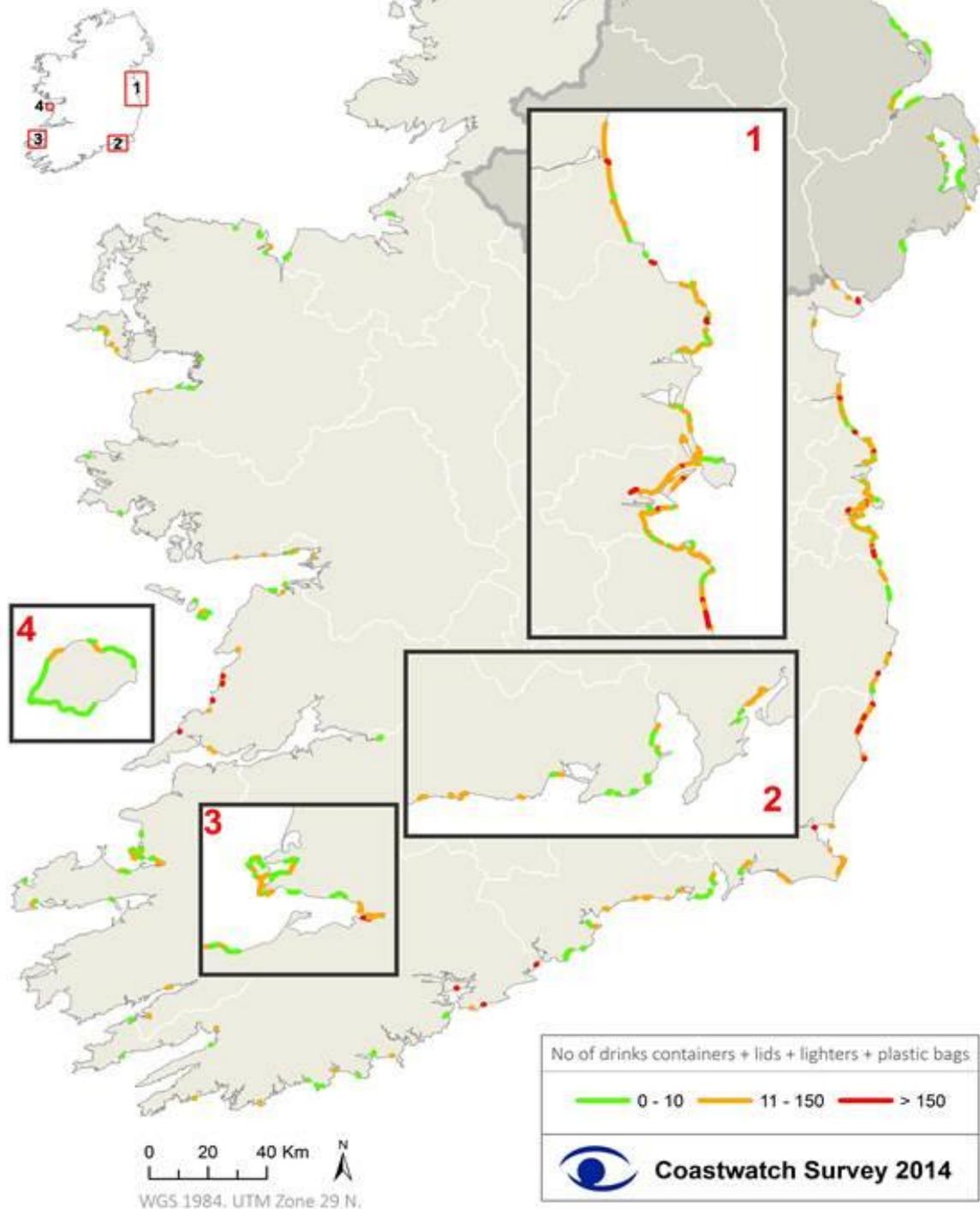
Map 2 overleaf shows that taking the basket of 8 counted litter items, the majority of surveyed shores are coloured orange with litter counts between 11 and 150 items per 500 m survey unit. The density increases around urban and estuarine areas as well as deposition shores where the sea can unload litter from a large sweep of the ocean. The higher consumer litter concentrations around urban centres is predictable. Additionally most towns are on rivers and so here the riverine litter load mixes with that of the shore users and what winds may have funnelled from the sea into an estuary.



Image: Celebrate Water Donegal – apart from Coastwatch surveying, this group does amazing litter clean ups after storms, instigating voluntary drinks container bring back and shore/water ecology work. They prefer the ecology! Photo Mark Daly.

LITTER COUNTS Drinks containers, lids, lighters, and plastic bags

- 1 South Louth, Meath, Fingal, Dublin City and Dun Laoghaire
- 2 Bannow Bay and East Waterford
- 3 Tralee Bay
- 4 Inis Oirr (Aran Islands)



Map 2 shows survey sites with counted litter items colour coded by amount of litter found in 500m.

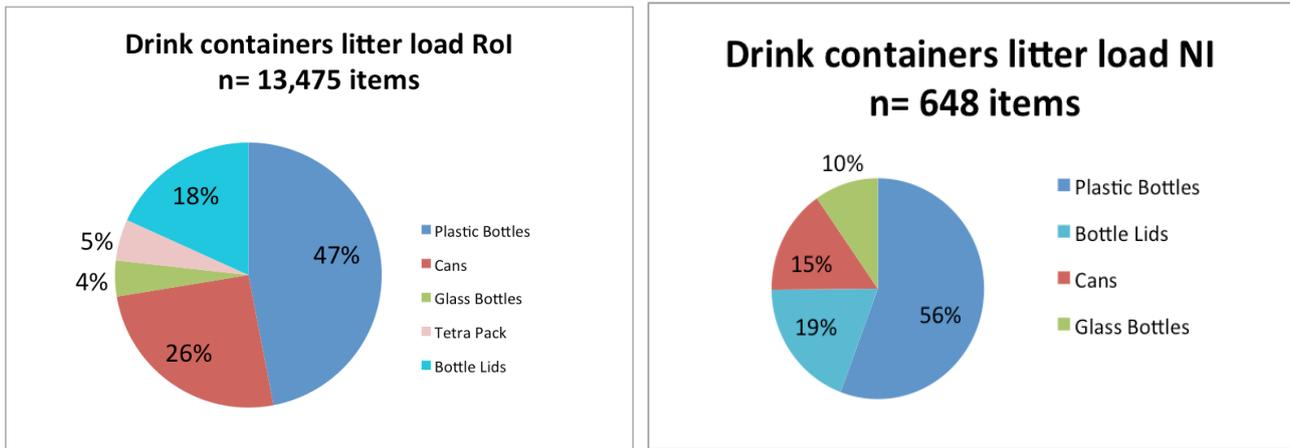


Figure 6 Shares in the drinks container litter load reported by Coastwatch surveyors from RoI (n= 501 su) & NI (n=100 su).

Separating the drinks container litter from the other 3 categories, figure 6 above shows, plastic made up the majority of drinks container packaging in north and south. While in the south plastic made up 65% of the drinks container litter - plastic bottle (47%) + lids (18%) - in NI plastic packaging was even more dominant, making up three quarters of the drinks litter.

The table below shows how the drinks containers were spread over the coast. Bottles were widely distributed all over Ireland, found on 505 out of the 601 survey units and occurring on 83% and 84% of all surveyed shores North and South. Only the density is higher in the south. Cans on the other hand are twice as widely spread in the RoI than in NI where the 100 cans found were concentrated in 35% of survey sites.

Drinks Container Litter	Number of and percentage of 500m survey units with drinks litter - 2014 Coastwatch survey		
	RoI 501 su	NI 100 su	Total su
Plastic Bottles	422(84%)	83	505 (84%)
Cans	350 (70%)	35	385(64%)
Bottle Lids	227 (45%)	31	258(43%)
Glass Bottles	202(20%)	27	229(38%)
Tetrapack	164(33%)	3	167(28%)



Image 13: Drinks containers highly suitable for reuse in case of bottle and recycling in case of can, seen here as marine litter on a Dublin shore.

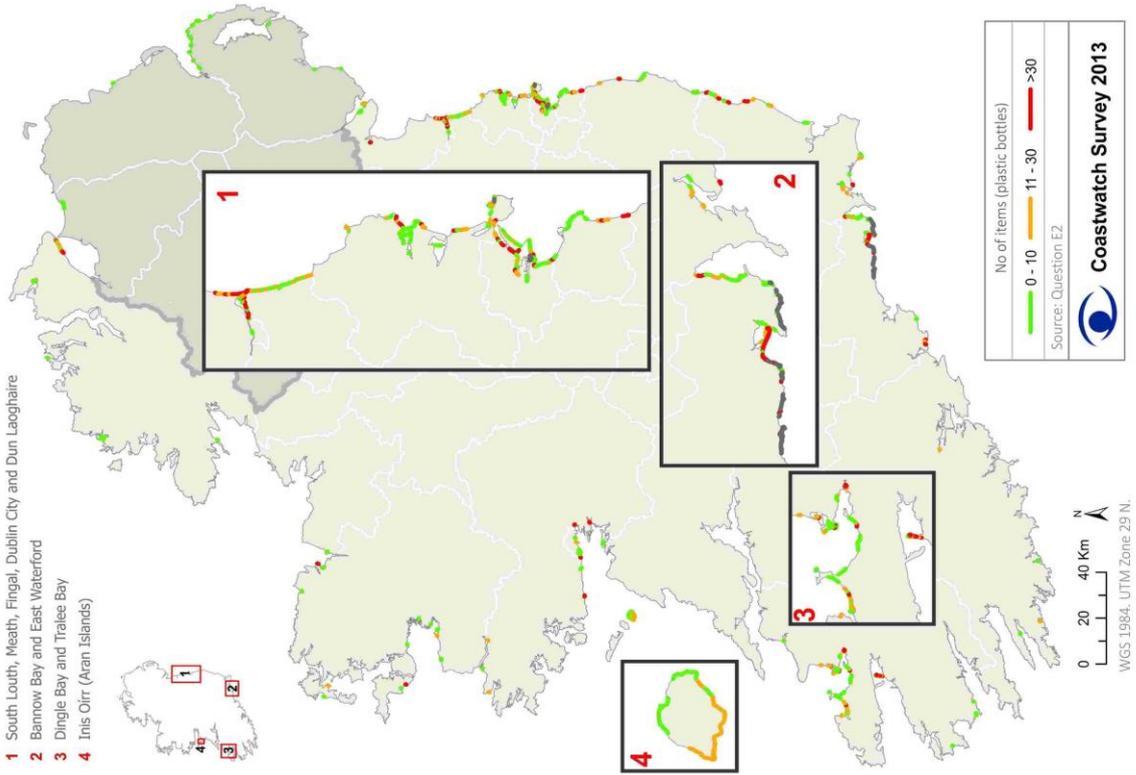
Table 1: Distribution of drinks container litter items on our shores – percentage of shores where one or more drinks container was recorded in the autumn 2014 Coastwatch survey.

Focussing on plastic bottles as largest single litter source, maps 3 and 4 overleaf plot bottle distribution on our surveyed shores. Comparing bottle count results for 2013 and 2014 (using the old 500m shore units) shows that improvements in state of littering are widespread but not universal. While the west coast has improved dramatically, there is not much difference on the east coast where a few areas have become more littered. No weather pattern data has been analysed to see whether wind patterns are likely to have had a role bringing waste to shores around the Irish Sea.

If, or when, a deposit on return for drinks packaging is introduced, the litter concentration around coastal urban centres will make focussed litter picking profitable and effective.

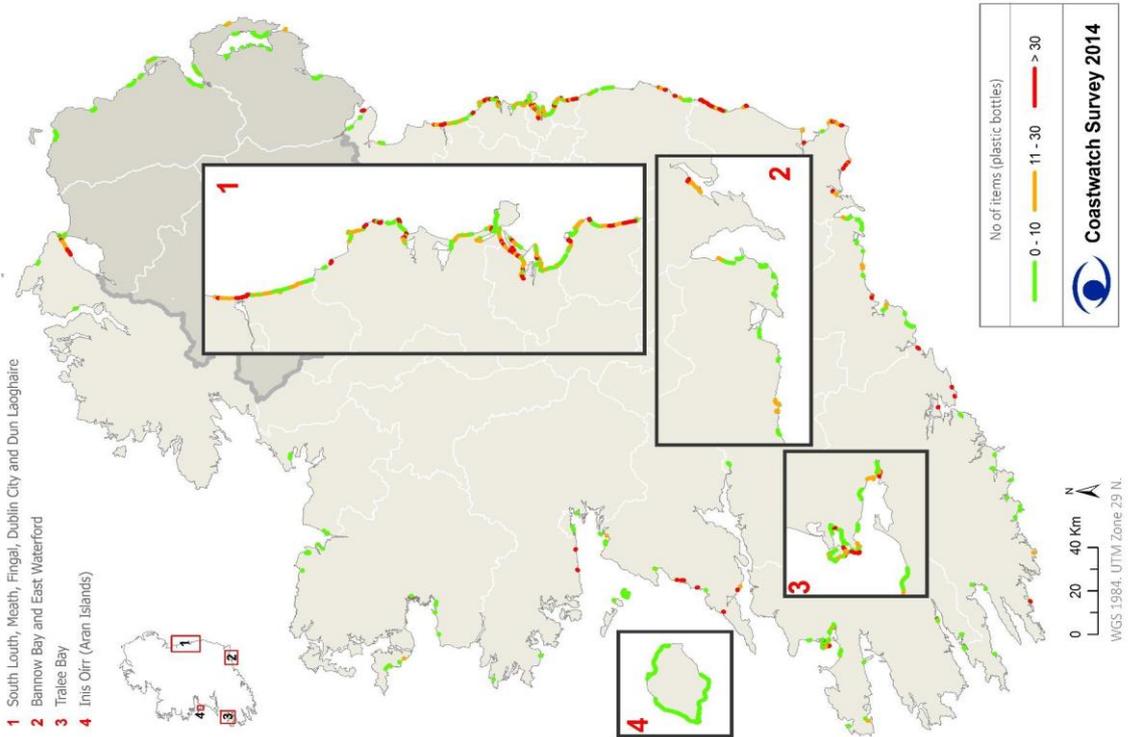
PLASTIC BOTTLES

- 1 South Louth, Meath, Fingal, Dublin City and Dun Laoghaire
- 2 Bannow Bay and East Waterford
- 3 Dingle Bay and Tralee Bay
- 4 Inis Oírr (Aran Islands)



PLASTIC BOTTLES

- 1 South Louth, Meath, Fingal, Dublin City and Dun Laoghaire
- 2 Bannow Bay and East Waterford
- 3 Tralee Bay
- 4 Inis Oírr (Aran Islands)



Map 3 and 4: Comparison of plastic bottle litter counts between 2013 (n= 424 five hundred m su) and 2014 (n=601)



Plastic Bottle counts over time: The plastic bottle count started in 1991 and if plotted over time shows a lot of variation in Ireland. However there is a general upward trend until 2005 with a decrease since then – see Figure 6. The 2014 average count of 2.9 plastic bottles/100 m survey section, or to compare to previous years expressed as 15 bottles per 500 m s.u. are the lowest since 1992 and a halving of counts in one year.

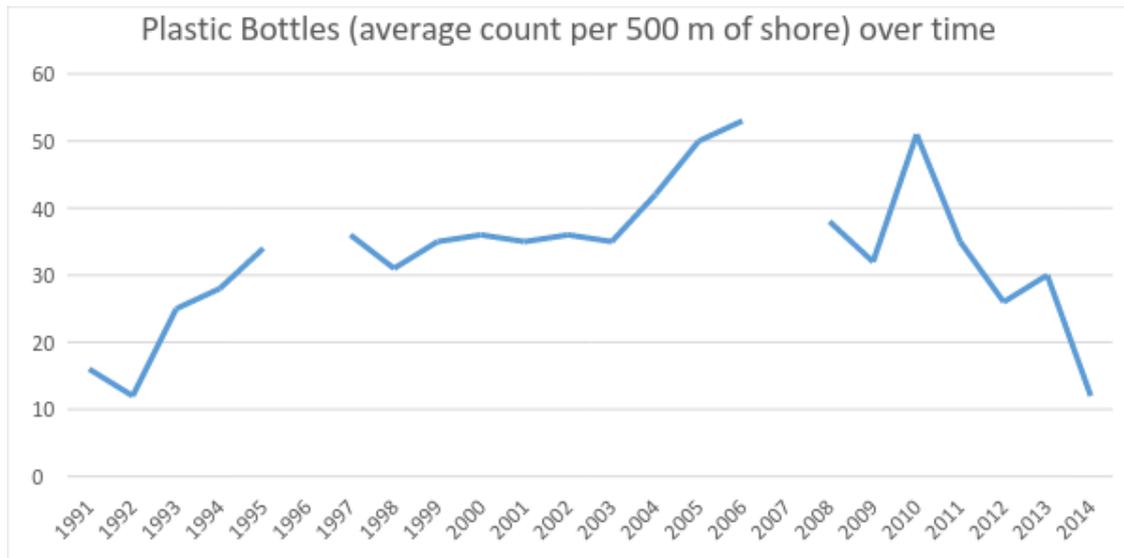


Figure 6 Plastic bottle counts per 500 su over time – Coastwatch survey 1991 to 2014

When separating North and South, the RoI is as in all previous surveys more littered, but still showing a most striking improvement from 30 bottles/500msu in 2013 to 16/500m.su in 2014. The North of Ireland was reported to be much cleaner again with 3.6 bottles/su.

Litter Count Accuracy:

As the count results are showing such striking improvements in 2014 explanations were sought. One noticeable difference is that in 2014 there was no bottle or can heap count. In previous years there were typically 3+1 of these 500 or 1000 item plus sites, which raised the national count averages for both bottles and cans. These sites are either litter funnels - like the Boyne estuary North shore at Baltray, or a favourite drinking spot where users collect containers. Both hot spots were missing, either taken by winter storms and then abandoned as drink corners, or cleaned before the survey.

Our change in shore length counts and items may account for some uncertainty over distance marked on the survey forms, so a 100m count could accidentally be marked as a 500m full survey unit count. But after getting back to a number of surveyors this was not thought to be the case. Most surveyors put the improvement down to an unprecedented cleaning effort. This effort started after the big winter storms when layers of rubbish had been deposited in some areas and tonnes were removed. And it continued with regular clean ups later in the year.

One other interesting suggestion was that our habits are changing. Less people run around with drinks containers in their hand and we are becoming cleaner, more litter conscious.

It was also suggested and observed in a small trial in Portrane that surveyor interests and knowledge can influence observations. There was a surveyor bias in NI towards ecologists and the NI biodiversity survey records were substantial. In the RoI more Tidy Towns, Coast care and Green school groups participated. These groups used to litter picking, see even a half hidden clear PET bottle under seaweed, which an ecologist might miss with the eye peeled to see fish egg cases. So while the NI litter count has always been lower even where we had more mixed surveyor groups, there may have been some additional bias this year.

To conclude – a very welcome dramatic decrease in drinks container litter loads on the shore has been recorded in the 2014 survey. This decrease is occurring with investment in education and shore clean ups where unfortunately waste is mixed and all goes to landfill, incineration or export. The case for economic instruments to get back sorted high value packing materials is still strong.