



## **Tamar Estuaries Complex Crab Tile Survey 2012**



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## 1. EXECUTIVE SUMMARY

Crab tiling is the practice of placing artificial refugia in intertidal areas to encourage use by moulting shore crabs (*Carcinus maenas*). These crabs are subsequently collected for use as angling bait. This method of bait collection is prevalent throughout Devon, including the Tamar Estuaries Complex, which is designated as a Special Protected Area (SPA) and Special Area of Conservation (SAC) for its internationally important bird populations and habitats. Concerns have been raised regarding the effects of sediment trampling and disturbance on designated bird species, therefore regular surveys are conducted to assess the number of crab tiles and determine potential environmental impacts.

This survey was conducted by Devon and Severn IFCA and Cornwall IFCA between August and November 2012, using methodology guidelines produced by the Devon Wildlife Trust and employed on previous surveys. Volunteers from a range of organisations provided assistance in data collection. All areas of crab tiles on the Tamar Estuaries were quantified and mapped, with environmental and physical data also recorded. Crab tile data polygons were produced in MapInfo.

The results showed a significant increase of 36%, in comparison to the number of crab tiles recorded in 2003/04. The two previous surveys in 2003/04 and 2000/01 recorded total numbers of crab tiles which were reasonably stable. The rise in numbers was attributed to increased numbers in historic crab tile areas, and to the establishment of new areas of tiles, primarily on the Cornish side of the Complex. These new areas of tiles accounted for 22% of the overall tile count for 2012. The most substantial increase in numbers was recorded on the Tamar, although a notable decline was observed on the Plym. The overall upwards trend in crab tile numbers may be accounted for by the high market value of peeler crab, and increased levels of economic hardship. Regular monitoring and research should continue, to mitigate potential impacts of the activity on features of the Tamar Estuaries Complex.

## 2. INTRODUCTION

Crab tiling, also known as crab potting, is a method of collecting shore crabs (*Carcinus maenas*) for use as fishing bait by anglers. Like all other crustaceans, shore crabs moult their shells at intervals during their life cycle, during which they seek a refuge from predators. Crab tilers exploit this behaviour, providing artificial shelters such as roof tiles (hence the name), guttering, drainpipes, chimney pots and tyres. Whilst sheltering under the tiles, the crabs are in the 'soft shell' state i.e. the hard shell has been shed and the new shell has not yet hardened. It is in this state that the crabs are collected for fishing bait, when the tiles are exposed at low tide. This method of bait collection has been used throughout Devon and Cornwall for generations, with the Tamar Estuaries Complex supporting large amounts of tiles.

The Tamar Estuaries Complex is comprised of the Tamar, Tavy, Lynher and Plym estuaries, and Plymouth Sound, and holds the European Marine Site (EMS) designations of Special Protection Area (SPA) and Special Area of Conservation (SAC), due to its internationally important bird populations and habitats. Although crab tiling is not thought to impact negatively on shore crab populations (Sheehan et. al, 2008), concerns have been raised regarding the reduction of infaunal diversity due to sediment trampling between tiles (Sheehan et.al., 2010), and potential disturbance to birds on the shore.

Under the Marine and Coastal Access Act (MaCCA, 2009), the Inshore Fisheries and Conservation Authorities (IFCAs) assumed statutory responsibility for the management of inshore bait collection activities within their districts. The Tamar Estuaries Complex falls within the jurisdiction of both Devon and Severn IFCA and Cornwall IFCA, who manage the area in partnership. Although no statutory or voluntary measures have been established to control the activity in the Complex, it is necessary to monitor the numbers of crab tiles to determine whether levels are environmentally sustainable. A survey was conducted in 2000/1 to establish baseline crab tile numbers, following which another survey was completed in 2003/4. The 2012 survey was conducted by the Devon and Severn IFCA and Cornwall IFCA in collaboration with the Tamar Estuaries Consultative Forum (TECF) and Natural England.

## 3. METHODOLOGY

Fieldwork was conducted between August and November 2012. Several groups of two or three participants worked in different areas of the estuaries, having been fully briefed prior to the survey. Each group contained an IFCA officer to improve data standardisation and ensure that the survey was conducted in a safe manner.

All fieldwork was conducted within a period of approximately two hours before and after low tide, and timed to coincide with the lowest spring tides possible. Parts of the survey were conducted on foot, although the upper parts of the Tamar and the Lynher were surveyed by boat.

The survey employed the methodology developed by the Devon Wildlife Trust, which has been used in crab tile surveys elsewhere in Devon (see Appendix 1 for survey guidelines). This approach is thought to provide more comprehensive data than the method used in the 2003/4 Tamar Estuaries survey (Black, 2004). Additional monitoring areas were also added by Devon and Severn IFCA to ensure that the entire estuary was represented. Survey sheets were used to record numbers of tiles in distinct block or line formations, in addition to substrate, type of materials used, orientation, epibiota, and usage status (see Appendix 2 for an example survey form). To assist in location of historic crab tile areas, previous data layers were overlaid onto Ordnance Survey data to create field maps. Once areas of crab tiles had been located, GPS co-ordinates were taken around the perimeters, or at the start and end of each line. These coordinates were later plotted using MapInfo 11.0.4, and used to create data polygons. All associated crab tile data was stored in the data layer.

Crab tiles were counted wherever possible, although estimation was necessary where extremely large numbers of tiles were encountered. In such cases, each team member would make an estimate, and a figure was agreed by consensus. In areas where full access was not possible, due to tidal conditions or deep mud, the size of the area covered by crab tiles was also estimated as accurately as possible for mapping purposes.

#### 4. RESULTS

The overall results of the 2012 survey are compared to those of previous surveys in Table 3.1, with tile distribution around the estuary compared in Table 3.2. Detailed breakdowns of crab tile distribution in comparison to the 2003/04 and baseline datasets are presented in Table 3.3 and Table 3.4.

**Table 4.1: Comparison of Total Tile Counts**

Survey	Number of Tiles	Difference
2000/01	8,403	Baseline
2003/04	8,165	-238
2012	12,870	+4,705

**Table 4.2: Crab Tile Distribution Comparison - 2012, 2003/04 and 2000/01**

Estuary/Location	Estuary Area	2012 Tiles	2003/04 Tiles	2000/01 Tiles
Lynher	TAM00	1269	200	0
	TAM01	814	741	532
	TAM02	0	0	8
	TAM03	0	0	43
	TAM04	415	840	834
	TAM27	262	0	0
Tavy	TAM07	0	0	20
	TAM08	181	360	284
	TAM09	816	980	442
Tamar	TAM05	254	340	108
	TAM06	635	327	314
	TAM12	1581	344	1068
	TAM13	810	281	475
	TAM14	191	211	227
	TAM15	412	0	294
	TAM16	0	0	79
	TAM17	0	0	117
	TAM23	0	92	0
	TAM24	160	250	0
	TAM25	580	0	0
	TAM26	1316	0	0
	TAM37	526	0	0
	Tamerton Lake	TAM10	938	470
TAM11		0	0	112
Plym	TAM18	50	560	176
	TAM19	495	1247	1125
	TAM20	0	0	288
	TAM21	655	620	714
	TAM22	360	302	653
Hooe Lake	TAM36	150	0	0
<b>TOTAL</b>		<b>12870</b>	<b>8165</b>	<b>8403</b>

Table 4.3 Comparison of Crab Tile Distribution: 2012 and 2003/04

Estuary/Location	Estuary Area	2012 Tiles	2003/04 Tiles	Number Difference	Percentage Difference
Lynher	TAM00	1269	200	+ 1069	+ 84%
	TAM01	814	741	+ 73	+9%
	TAM02	0	0	0	0
	TAM03	0	0	0	0
	TAM04	415	840	- 425	- 51%
	TAM27	262	0	+ 262	+ 100%
Tavy	TAM07	0	0	0	0
	TAM08	181	360	- 179	- 50%
	TAM09	816	980	- 164	- 17%
Tamar	TAM05	254	340	- 86	- 25%
	TAM06	635	327	+ 308	+ 49%
	TAM12	1581	344	+ 1237	+ 78%
	TAM13	810	281	+ 529	+ 65%
	TAM14	191	211	- 20	- 9%
	TAM15	412	0	+ 412	+ 100%
	TAM16	0	0	0	0
	TAM17	0	0	0	0
	TAM23	0	92	- 92	- 100%
	TAM24	160	250	- 90	- 36%
	TAM25	580	0	+ 580	+ 100%
	TAM26	1316	0	+ 1316	+ 100%
Tamerton Lake	TAM10	938	470	+ 468	+ 50%
	TAM11	0	0	0	0
Plym	TAM18	50	560	- 510	- 91%
	TAM19	495	1247	- 752	- 60%
	TAM20	0	0	0	0
	TAM21	655	620	+ 35	+ 5%
	TAM22	360	302	+ 58	+ 16%
Hooe Lake	TAM36	150	0	+ 150	+ 100%
<b>TOTAL</b>		<b>12870</b>	<b>8165</b>	<b>+ 4705</b>	<b>+ 36%</b>

Table 4.4 Comparison of Crab Tile Distribution: 2012 and 2000/01

Estuary/Location	Estuary Area	2012 Tiles	2000/1 Tiles	Number Difference	Percentage Difference
Lynher	TAM00	1269	0	+ 1269	+ 100%
	TAM01	814	532	+ 282	+ 35%
	TAM02	0	8	- 8	- 100%
	TAM03	0	43	- 43	- 100%
	TAM04	415	834	- 419	- 50%
	TAM27	262	0	+ 262	+ 100%
Tavy	TAM07	0	20	- 20	- 100%
	TAM08	181	284	- 103	- 36%
	TAM09	816	442	+ 374	+ 46%
Tamar	TAM05	254	108	+ 146	+ 57%
	TAM06	635	314	+ 321	+ 51%
	TAM12	1581	1068	+ 513	+ 32%
	TAM13	810	475	+ 335	+ 41%
	TAM14	191	227	- 36	- 16%
	TAM15	412	294	+ 118	+ 29%
	TAM16	0	79	- 79	- 100%
	TAM17	0	117	- 117	- 100%
	TAM23	0	0	0	- 100%
	TAM24	160	0	+ 160	+ 100%
	TAM25	580	0	+ 580	+ 100%
	TAM26	1316	0	+ 1316	+ 100%
	TAM37	526	0	+ 526	+ 100%
Tamerton Lake	TAM10	938	490	+ 448	+ 48%
	TAM11	0	112	- 112	- 100%
Plym	TAM18	50	176	- 126	- 72%
	TAM19	495	1125	- 630	- 56%
	TAM20	0	288	- 288	- 100%
	TAM21	655	714	- 59	- 8%
	TAM22	360	653	- 293	- 45%
Hooe Lake	TAM36	150	0	+ 150	+ 100%
<b>TOTAL</b>		12870	8403	+ 4467	+ 35%

Overall maps of the 2012 digitised crab tile areas are presented in Figure 4.1 to Figure 4.3. Detailed maps of the changes in crab tile areas between 2003/4 and 2012 are displayed graphically in Figure 4.4 to Figure 4.10, although it should be noted that area is not an accurate proxy measure for number of crab tiles. These maps have only been produced for areas where crab tiles were recorded. Figures 4.11 to 4.13 show the usage status of crab tile areas in the Tamar Complex.

**Figure 4.1: 2012 Overall Crab Tile Distribution – Tamar, Tamerton Lake and Tavy**

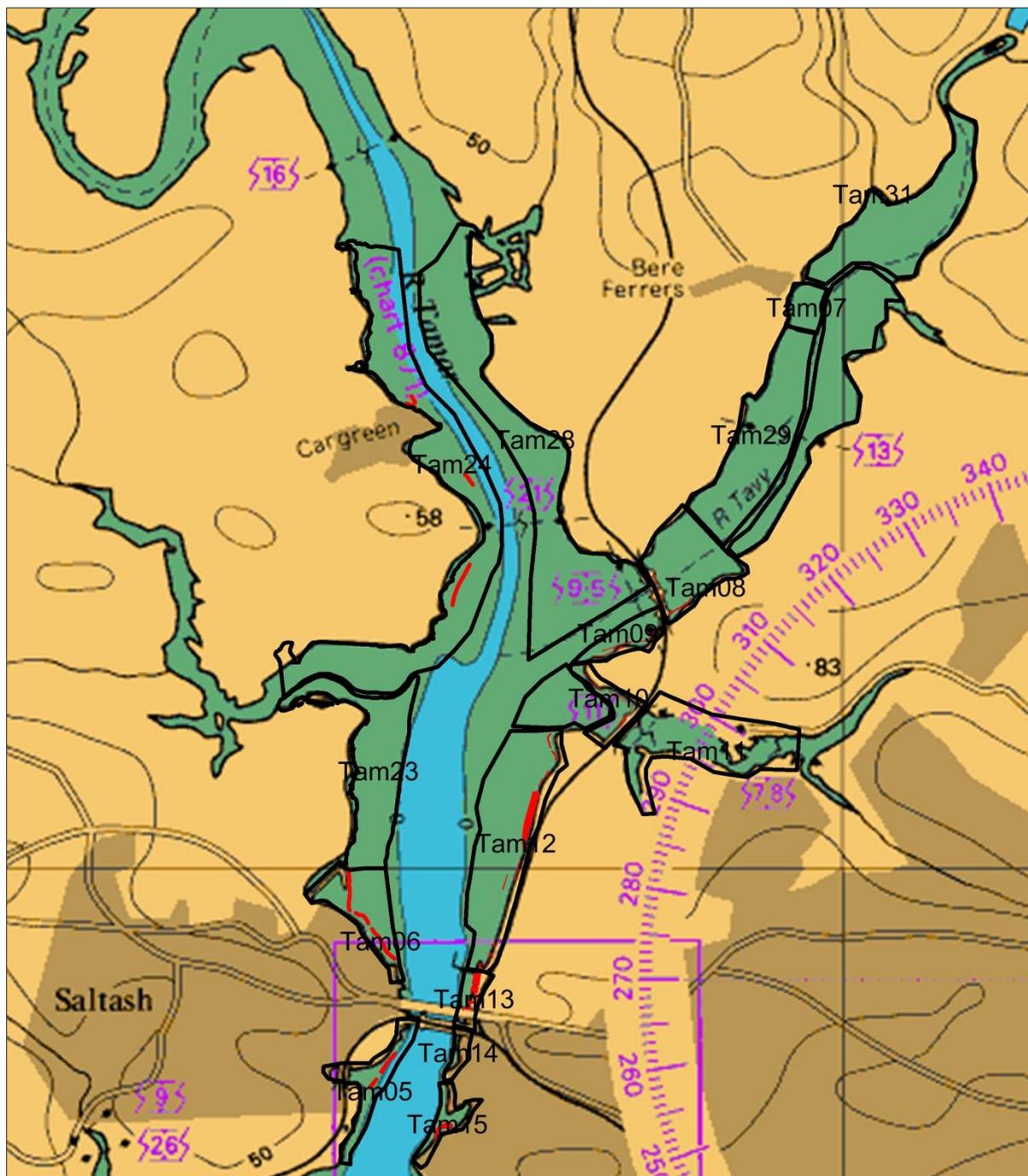


Figure 4.2: Overall Crab Tile Distribution – Tamar and Lynher

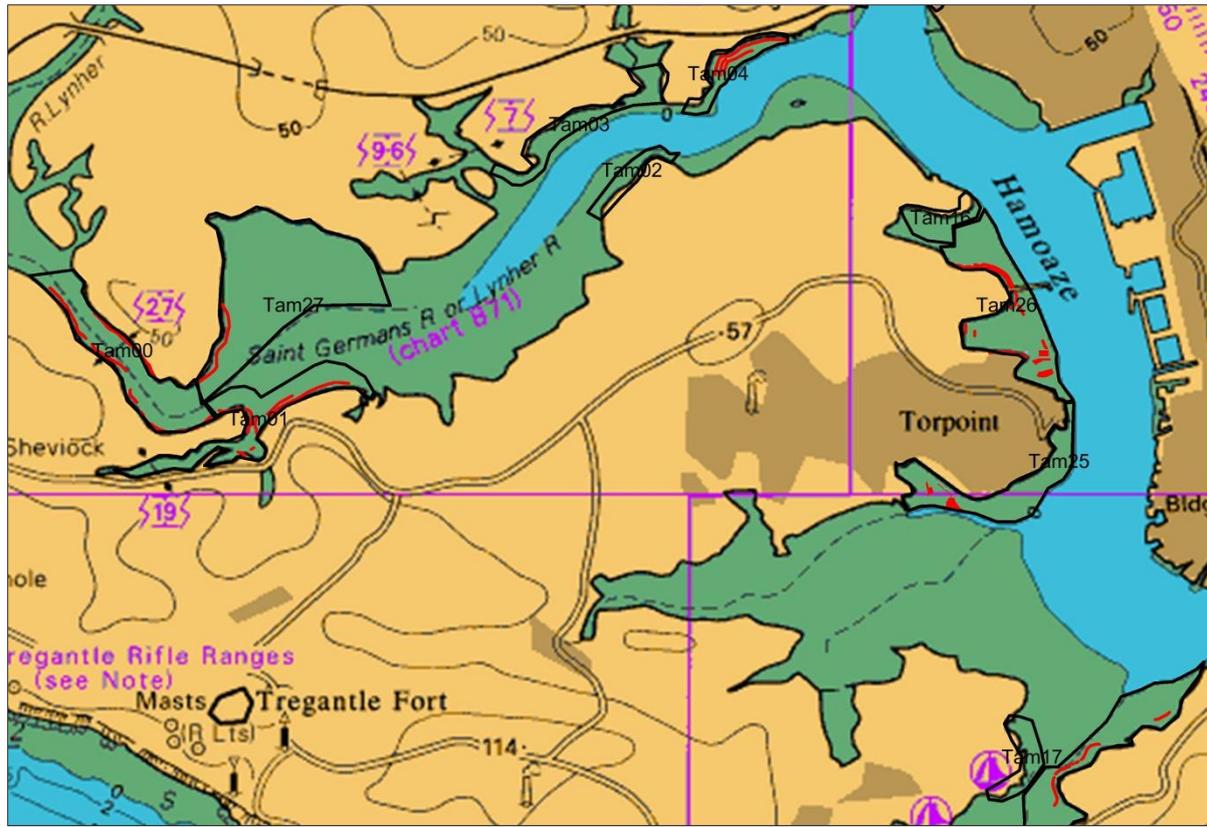


Figure 4.3: Overall Crab Tile Distribution – Plym and Hooe Lake

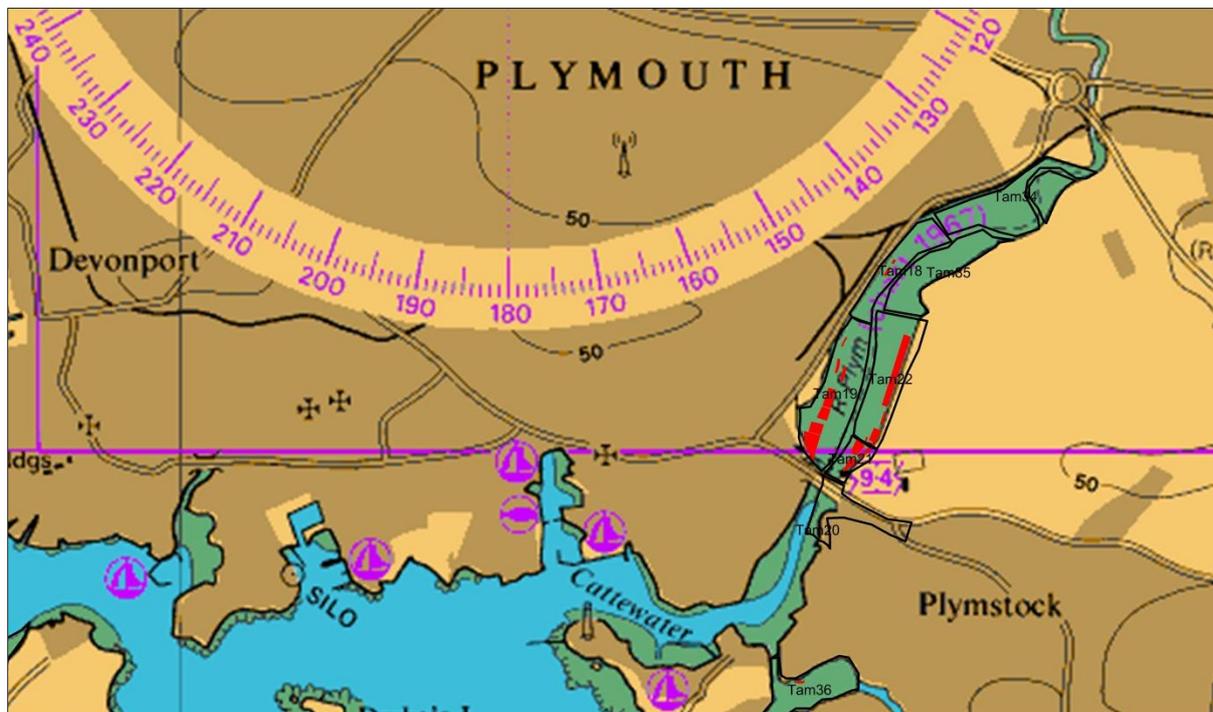


Figure 4.4: Crab Tile Distribution – Areas 08, 09, 24 and 28

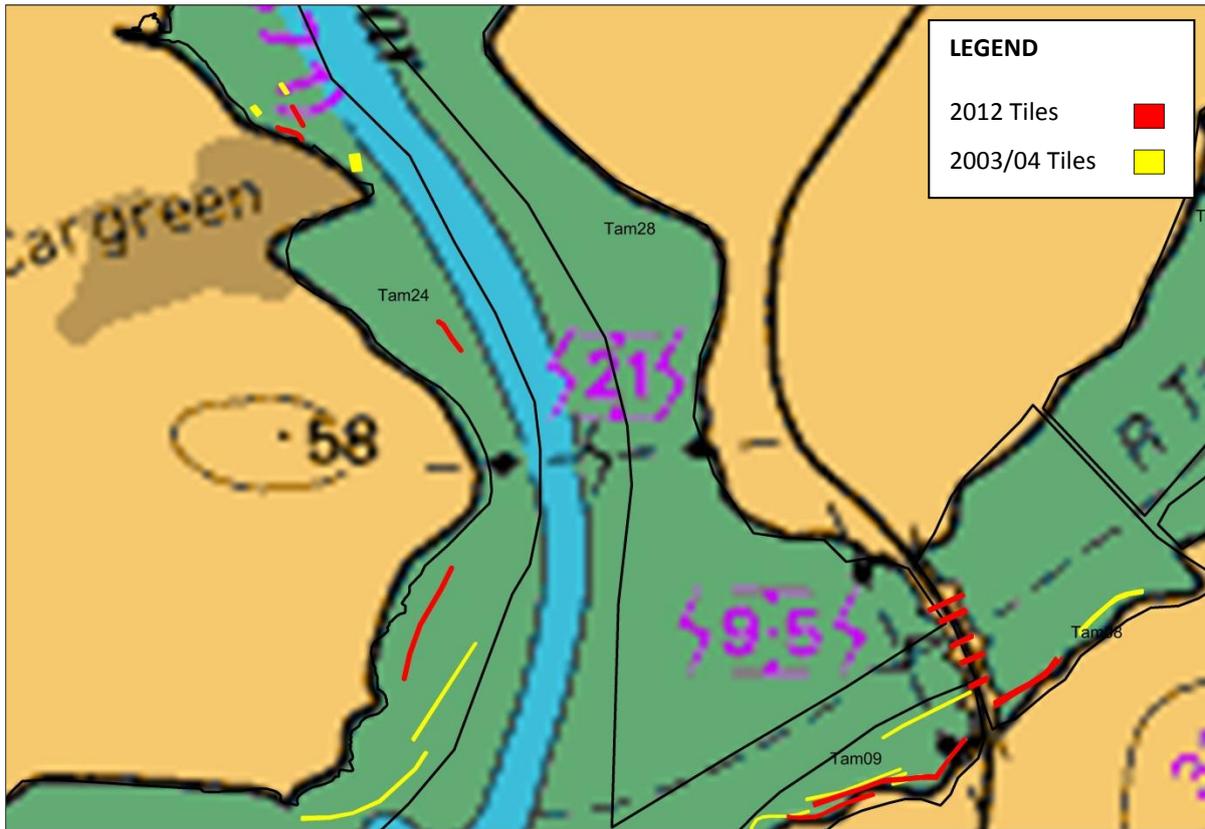


Figure 4.5: Crab Tile Distribution – Areas 10, 11, 12, 13, 23 and 32

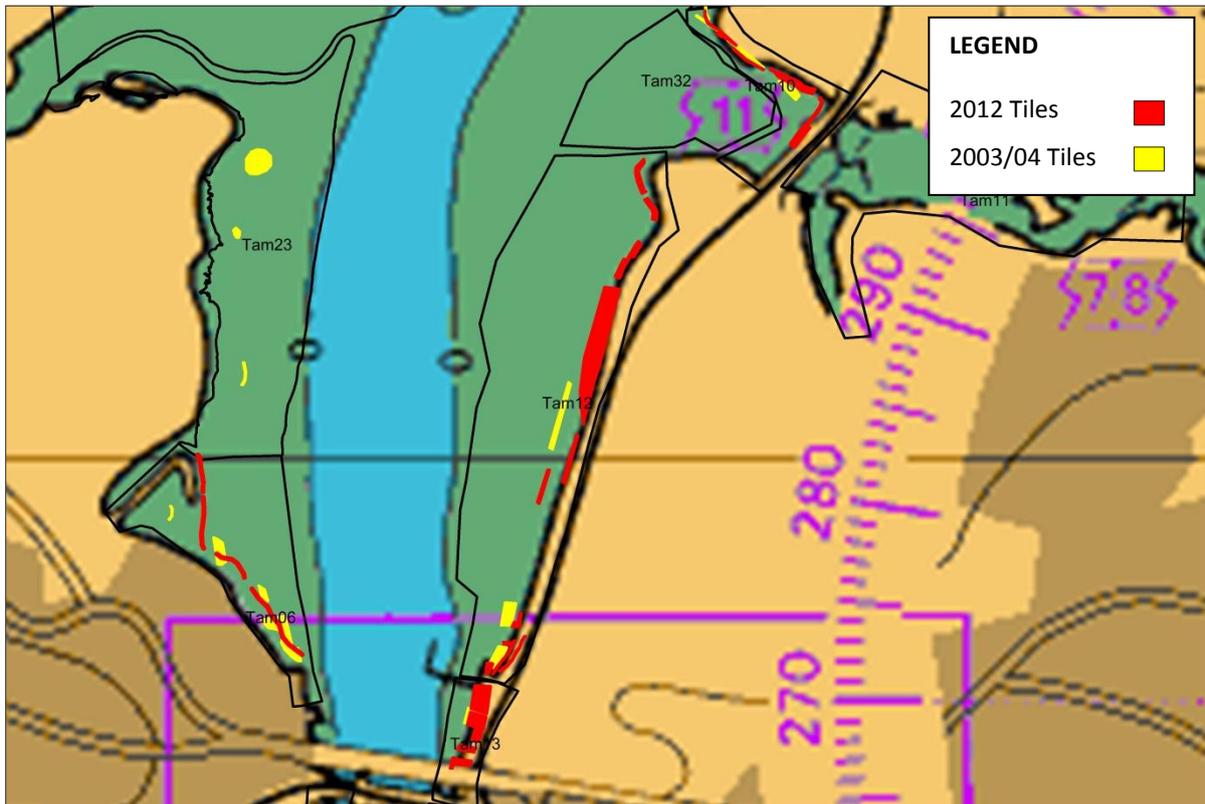


Figure 4.6: Crab Tile Distribution – Areas 04, 05 and 15

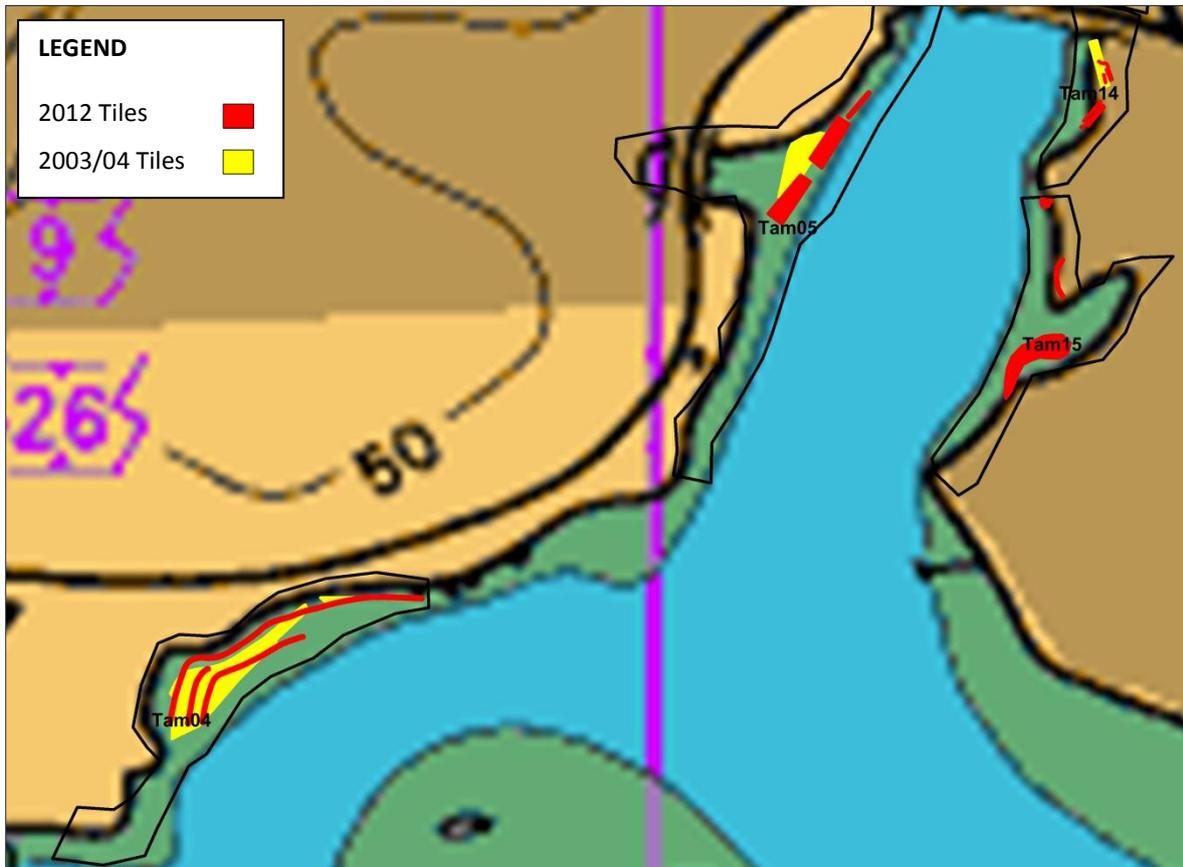


Figure 4.7: Crab Tile Distribution – Areas 00, 01 and 27

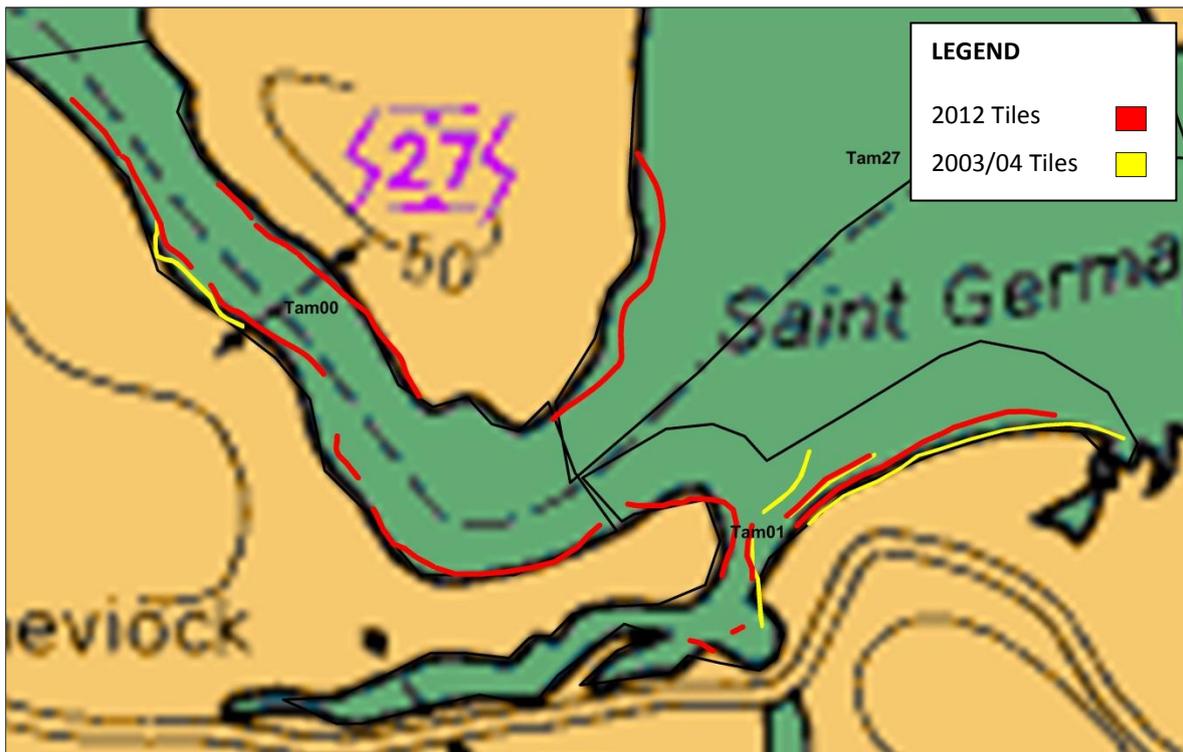


Figure 4.8: Crab Tile Distribution – Areas 17, 25, 26 and 37

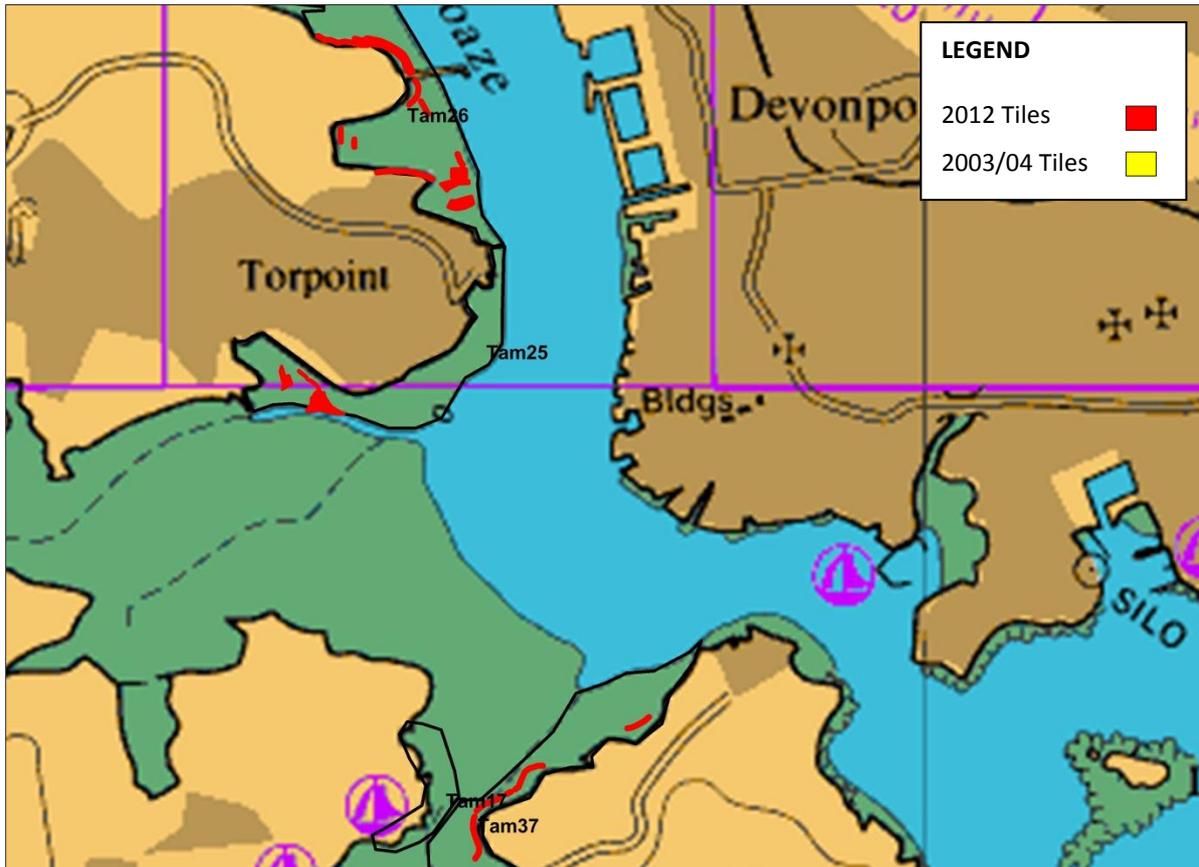


Figure 4.9: Crab Tile Distribution – Areas 18, 19, 21, 22, 33, 34, 35

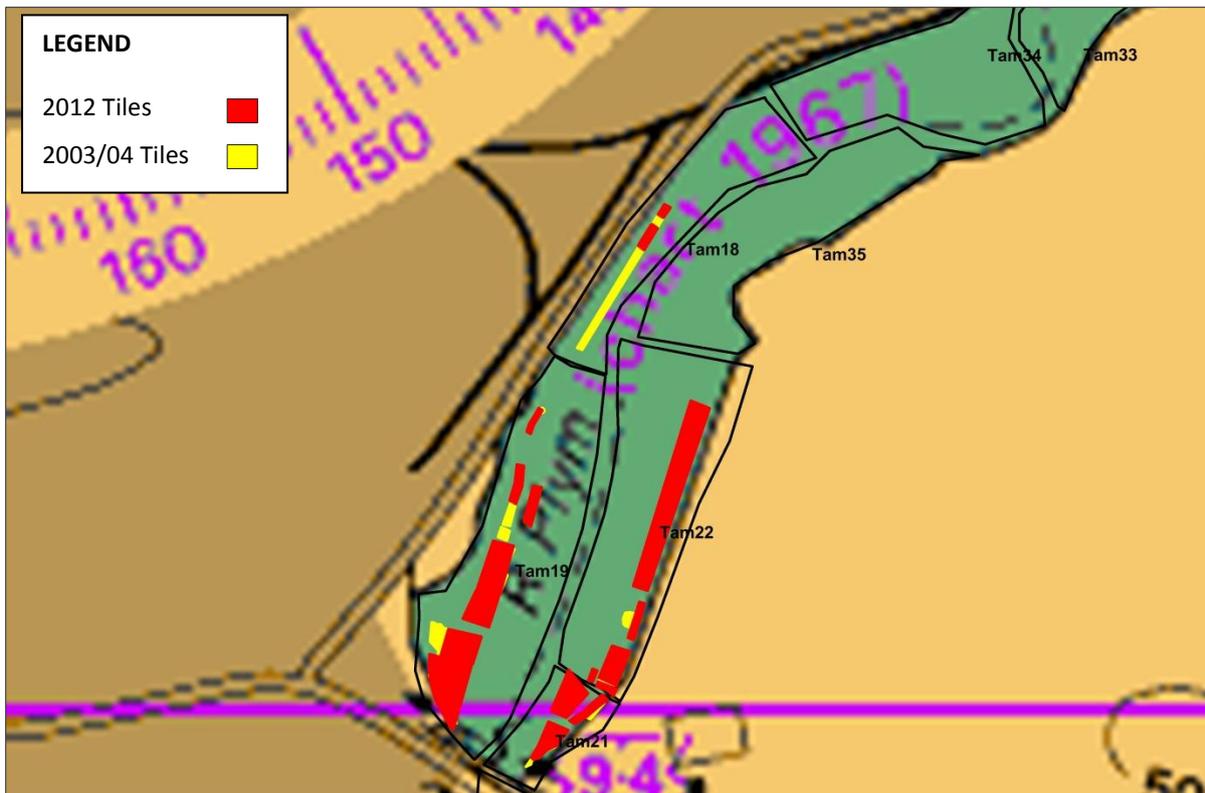


Figure 4.10: Crab Tile Distribution – Area 36

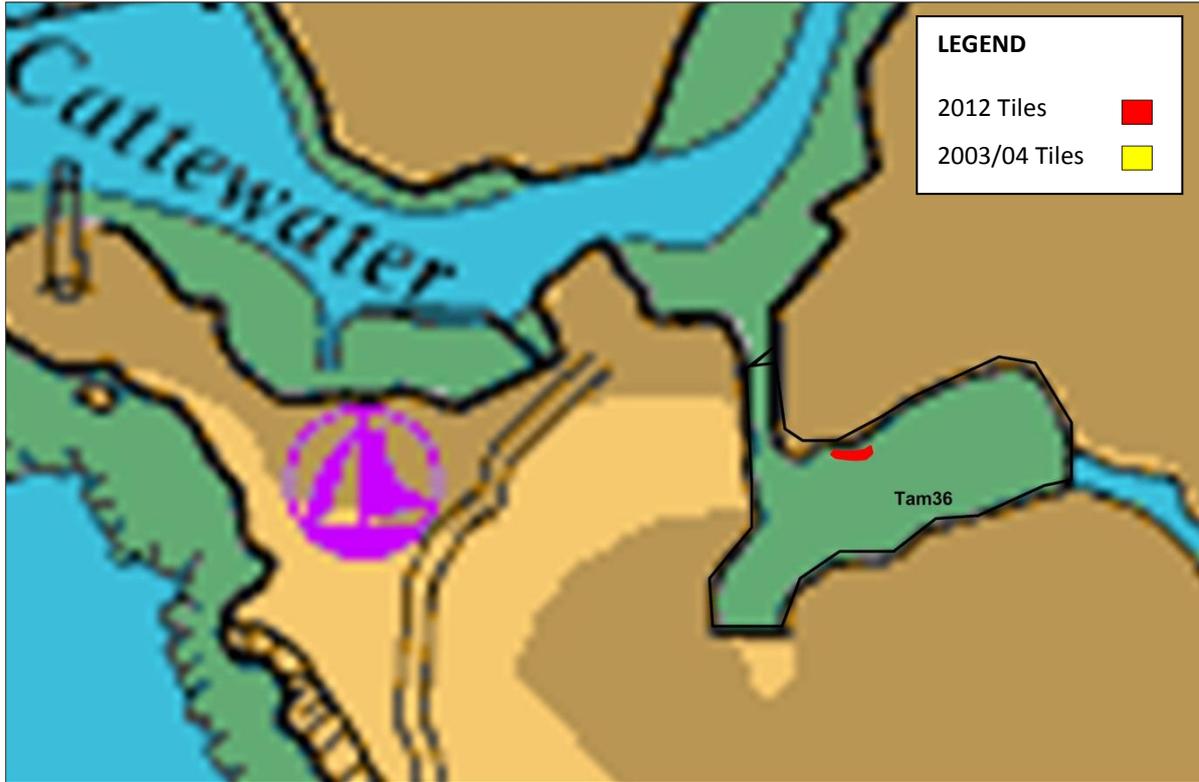


Figure 4.11: Crab Tile Usage – Tamar, Tamerton Lake and Tavy

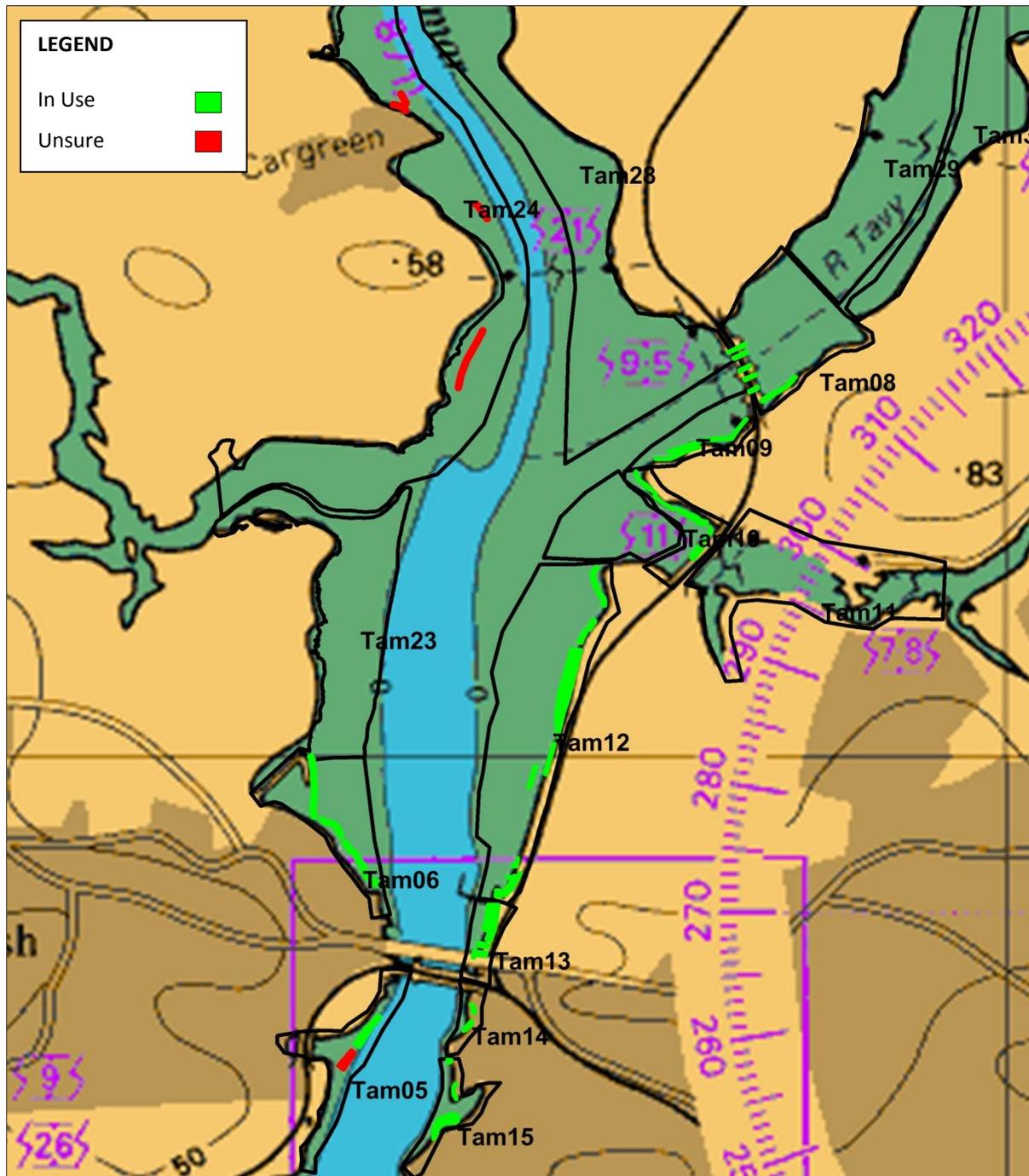


Figure 4.12: Crab Tile Usage – Tamar and Lynher

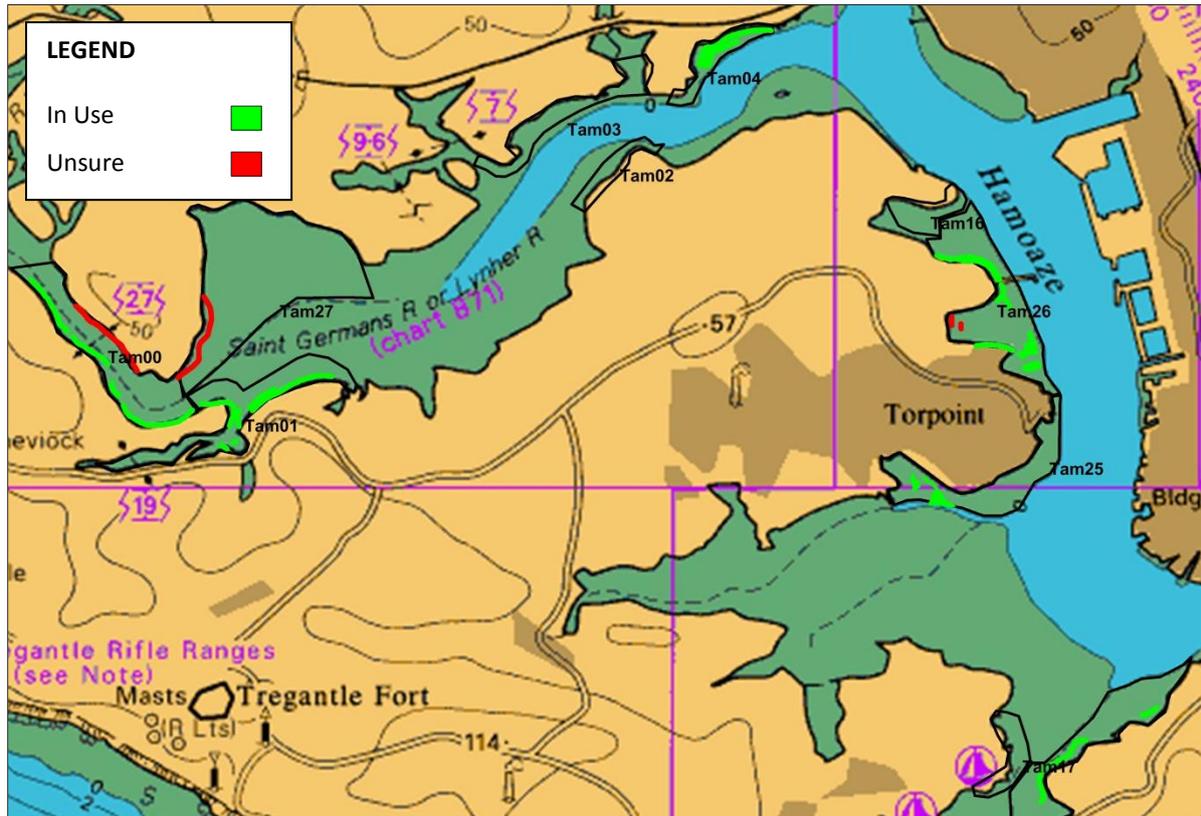
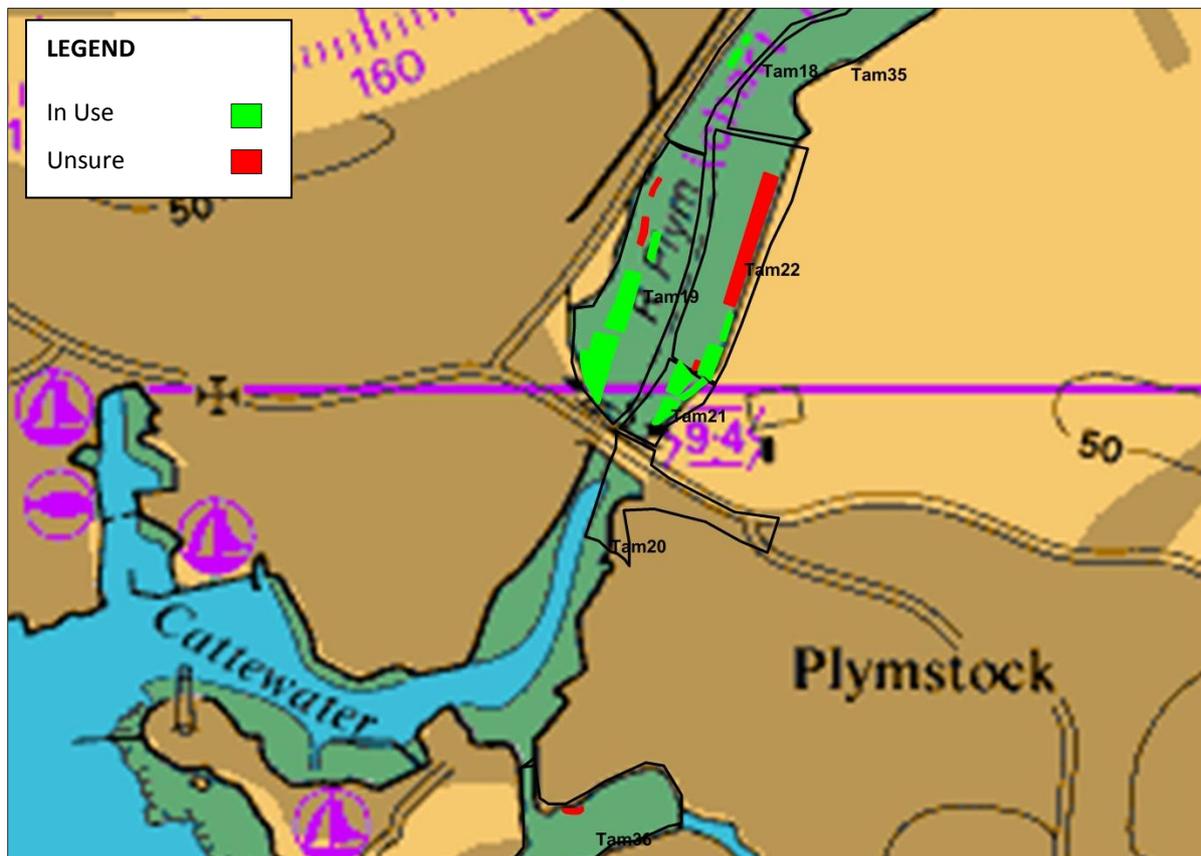


Figure 4.13: Crab Tile Usage – Plym and Hooe Lake

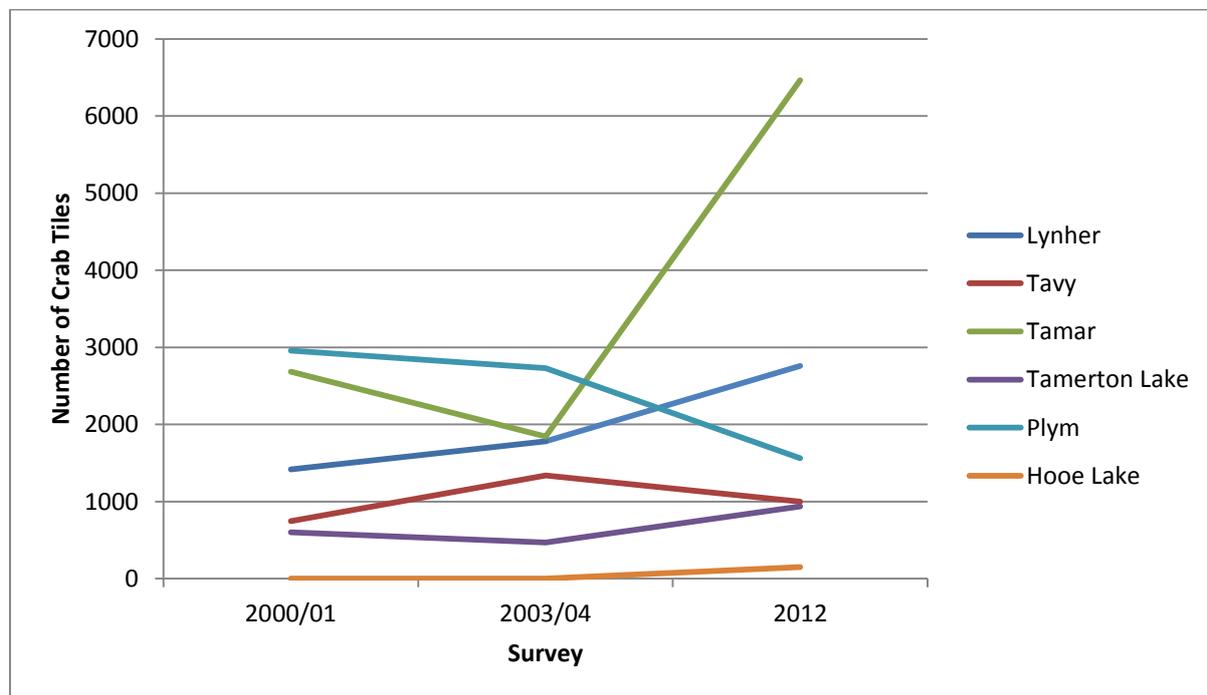


**5. DISCUSSION**

In contrast to the stability of crab tile numbers recorded on the Tamar Estuaries Complex between 2000/01 (8403 tiles) and 2003/4 (8,165 tiles), the overall number of tiles appears to have increased by 36% (2012; 12,870 tiles). This increase may be attributed to both a rise in the number of crab tiles at existing areas, and the expansion of the activity into previously unused regions of the estuaries. The vast majority of the crab tile areas observed appeared to be in use, with a few more ambiguous areas where bait collecting may have ceased.

Historic variation in the number of crab tiles in different regions of the Complex is graphically presented in Figure 5.1. The majority of these regions recorded an increase in the number of crab tiles, although a significant decrease was observed on the Plym estuary (most notably in Area 18 where a reduction of 91% was recorded) and a slight reduction on the Tavy. These decreases are likely to be caused by redistribution of tiles to different areas, or tidal burying due to lack of use. Crab tile numbers rose moderately on the Lynher and Tamerton Lake, whilst a dramatic increase was evident on the Tamar. The largest increases in historic tiling areas of the Tamar were recorded in Areas 06 (+49%), 12 (+78%) and 13 (+65%), all of which are in close proximity to the Tamar Bridge and are relatively accessible in comparison to other parts of the Complex. Notable increases were also evident on Lynher (Area 00; +84%) and Tamerton Lake (Area 10; +50%).

**Figure 5.1: Crab Tile Numbers in 2000/01, 2003/04 and 2012 by Estuary or Water Body**



In addition to these increases, five new areas (Areas 25, 26, 27, 36 & 37) were recorded where tiles had not previously been observed in either the 2000/01 or 2003/4 surveys. These areas comprised 2834 tiles; 22% of the overall crab tile count for 2012. The majority of the new areas were recorded within the Cornwall IFCA district; Areas 25 and 26 in the vicinity of Torpoint (580 and 1316 tiles), Area 27 on the upper Lynher (262 tiles), and Area 37 in the vicinity of Cremyll (526 tiles). A small area of 150 tiles was also discovered in Hooe Lake (Area 37) in the Devon and Severn IFCA district.

The results indicate a dramatic increase in crab tile numbers on the Tamar Estuaries Complex; although it should be considered that comparable data from the 2003/04 survey may contain a degree of inaccuracy. Black (2004) writes in the 2003/04 survey report that ‘It should be noted that the survey on the Dart and some areas in the Tamar Complex (Tamar, Tavy, Plym and Lynher) did not cover the entire estuary. In these cases it has been assumed that there have been no changes to numbers of crab tiles in areas not surveyed.’, although the affected areas are not detailed. Considering this caveat, it is possible that although an overall rise has occurred, the rate at which numbers have increased is not as sharp as suggested by a 2012 and 2003/04 data comparison. However, it is clear that the prevalence of crab tiling is increasing in the Complex, potentially due to the high market value of peeler crabs, and the climate of economic instability. With no statutory or voluntary management measures in place on the Tamar Estuaries, regular monitoring should continue to gauge the growth rate of the activity, and any potential impacts on features of the SPA and SAC.

### 6. DATA LIMITATIONS

When interpreting the figures reported in this document it should be noted that although every effort was made to ensure accuracy, various factors may have contributed to slight discrepancies in numbers of crab tiles recorded. The survey made use of a wide range of volunteers, who may have estimated numbers differently, and who were required to use personal objectivity to determine whether crab tiles were still in use. Tiles may also have been inaccurately estimated due to having sunk into the sediment, or having been mistaken for rocks in areas of mixed sediment. The difficult nature of the survey, due to tidal regimes and hazardous sediments, may have caused some small areas of crab tiles to be overlooked. The process of crab tile mapping can also be subjective, based on the different surveyors involved and their perception of groups of crab tiles as “areas”, and variable tile spacing. Area covered by crab tiles should therefore not be considered as a good indicator of change, and only the number of crab tiles should be taken into account.

### 7. SUGGESTIONS FOR FUTURE WORK

Given the increase in crab tiling recorded, it would be valuable to conduct research into the effects of direct or prey disturbance on the species for which the SPA is designated; Avocet (*Recurvirostra avosetta*) and Little Egret (*Egretta garzetta*).

As part of the ongoing monitoring programme a regular assessment of the number of crab tiles is essential, however there is potential for the survey to be modified. Although effective and thorough, the current shore-visit methodology is expensive in terms of time and resources, due to the tidal nature of the environment, the size of the estuary and access difficulties. Crab tiles can generally be clearly seen and mapped from high resolution photographs; therefore the acquisition of recent photographic data at low-tide may be a cost-effective alternative to conducting the survey on foot. This approach will necessitate sacrificing data on crab tile material and epibiota, however this information may be considered less critical than accurate mapping of crab tile number and density.

### 8. ACKNOWLEDGEMENTS

Devon and Severn IFCA and Cornwall IFCA would like to thank the following organisations for their efforts in providing data, logistical and field assistance for this project; Tamar Estuaries Consultative Forum (TECF), Natural England, and students of the University of Plymouth. Unaffiliated volunteers also provided invaluable assistance.

### 9. REFERENCES

Black, G (2004) Report on surveys in 2003/04 of crab tiling activities on Devon's estuaries, and comparison with 2000/01 crab tile survey data. Devon Biodiversity Records Centre, Shirehampton House, 35-37 St David's Hill, Exeter, EX4 4DA

Sheehan, E.V., Thompson, R.C., Coleman, R.A., & Attrill, M.J. (2008) Positive feedback fishery: Population consequences of 'crab-tiling' on the green crab *Carcinus maenas*. *Journal of Sea Research* 60: 303-309

Sheehan, E.V., Coleman, R.A., Thompson, R.C., & Attrill, M.J.(2010) Crab tiling reduces the diversity of estuarine infauna. *Marine Ecology Progress Series* 411: 137 -148

**9. APPENDICES**

**APPENDIX 1: Devon Wildlife Trust Survey Guidelines**



**Guidelines for Crab Tile Survey**

These guidelines provide additional information to help clarify sections of the survey form.

**Use one survey form per site.**

**Temporary Site Number –**

Put OS map number found on top right of map, plus both surveyors initials and the number of the site you are about to survey. Mark the position of this site on the OS Map with same reference number.

Example **Map 7/KM/AO/01** if it is the first site, **Map 7/KM/AO/02** if the second and so on.

Then add the number of crab tiles found at the site in a circle, next to the reference number.

Example **Map 7/KM/AO/01** 250

**Grid Reference of Site –**

Refer to OS National Grid instruction sheet in volunteer pack.

**Site Description –**

Physical description of site to include;

Sediment, is there a gradient (pebbles, coarse to fine sediment) from high shore to low shore

Presence/absence of water channels in mudflats

Presence /absence of vegetation on mudflats (other than that growing on crab tiles)

Proximity of site to non-mudflat intertidal habitat eg rocky or sandy foreshore, saltmarsh and any manmade development eg jetty, slipway, groynes, embankment.

*GRADIENT OF FORE SHORE .*

**Spacing of Tiles -**

1 : less than 15 cms apart

2 : 15 – 30 cms

3 : 30 cms - 1metre

4 : 1 – 1.5 metres

5 : greater than 1.5 metres

6 : *RANDOM .*

*DESCRIBE ROW DISTANCES .*

**Sediment Type -**

This will be a fairly subjective assessment, but it is likely that you will be able to differentiate between very fine, silty sediment and coarse, sandier sediment. The on-site training will provide an opportunity assess different sediments.



The following is a guide –

Pebble	= more than 4.0mm across
Granular	= 2.0 – 4.0mm
Very coarse sand	= 1.0 – 2.0mm
Coarse sand	= 0.5 – 1.0mm
Medium sand	= 0.25 – 0.5mm
Fine sand	= 0.13 – 0.25mm
Very fine sand	= 0.063 – 0.13mm
Silt	= 0.002 – 0.13mm
Clay	= less than 0.002mm

### Shore Position -

This relates to distance from waters edge, therefore low corresponds to tiles which are close to waters edge, and high corresponds to tiles positioned furthest away from the water. In some instances the crab tiles may extend from low shore up to high shore, tick all three boxes in these cases.

### Tiles in Use -

When tiles are in use the crab tilers regularly service the traps by removing mud or other material to ensure the crab has easy access to the interior. While this can only be a subjective assessment, it may be possible to determine whether or not the tiles are in use by checking for such signs. Another indication of tiles being in current usage is if the mud around the tiles shows signs of recent trampling.

### Epiflora and Fauna on Tiles –

Coverage – a subjective assessment of extent of growth of flora/fauna on the crab tiles.

### Orientation of Tiles - *Close of Tiles?*

I think this section is self-explanatory, but just in case!

NOTE - PAT FORMS.

Flat - corresponds to tiles which are laid flat on the mud.

45° – corresponds to tiles projecting out of the mud at approximately this angle.

Upright – where tiles are projecting vertically out of the mud.

### Ease of Public Access -

Accessibility to crab tile site –

Vehicular access

Limited / restricted vehicular access

Public footpath / track



Ladders / steps / slipways

If site is only accessible by boat, state here.

**Potential Conflicts -**

We are looking for information regarding any potential or actual conflicts the crab tiles may have with other estuary uses and users.

These include proximity to

Boat moorings

Shellfisheries

Waterski, jetski, canoeing, sailing activities

Feeding waders and wildfowl

Bait digging

COMMERCIAL - U - RECREATION  
VISUAL IMPACT,  
EEL GRASS BEDS,  
SAFETY OF OTHER USERS

**Sketch Map of Site -**

It is important here to orientate the site, please mark North with an arrow.

Sketch the distribution and pattern of tiles and include an approximate scale in metres, so we know the size of the site.

Each site should be identifiable by

Geographical demarcation

and

Pattern of crab tiles:- e.g.

Linear – in line with estuary or lined up along smaller channels in the mudflats

Random – no particular spacing, or linear regime

Include

Areas outside the crab tile site which may be potential areas for expansion, and any reasons why expansion hasn't happened e.g. accessibility, area used for another purpose, mud may be too treacherous.

Areas outside the crab tile site unsuitable for expansion e.g. shingle beach.

Also include other features such as:-

Landmarks

Proximity to jetties

Slipways

Footpaths

Water channels

In other words, a graphical description of what you observe at the site.



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Note : if a crab tile site extends beyond the black demarcation lines on the OS Map, complete a survey form as usual but include the demarcation line in the sketch map and a note to say the site continues onto adjacent map area.  
(See sample sketch map)

**List of Spring tide dates**

**July 1<sup>st</sup> 2<sup>nd</sup> 3<sup>rd</sup> 4<sup>th</sup> and 5<sup>th</sup>**

**July 31<sup>st</sup>**

**August 1<sup>st</sup> 2<sup>nd</sup> 3<sup>rd</sup> 4<sup>th</sup> and 5<sup>th</sup>**

**August 29<sup>th</sup> 30<sup>th</sup> and 31<sup>st</sup>**

**September 1<sup>st</sup> and 2<sup>nd</sup>**

**Thank you for taking part in this survey, the data you collect will be a valuable contribution to an initiative which aims to assess the extent of crab tiling activity in all of Devon's estuaries.**

**APPENDIX 2: Survey Form**

<p><b>FOR OFFICE USE ONLY</b>                  Site No:                  Checked by EO <input type="checkbox"/>                  Checked by DBRC <input type="checkbox"/>                  Tide Times:                  MLW am <input type="checkbox"/> pm                  MHW am <input type="checkbox"/> pm</p>	<p><b>CRAB TILE SURVEY FORM</b></p>		
<p><b>ESTUARY:</b>                  TEMP. SITE No:                  GRID REF OF SITE:                  * Please mark location of site on copy of OS map                  (See guidance notes)</p>	<p><b>DATE OF SURVEY:</b>                  START TIME AT THIS SITE:                  FINISH TIME AT THIS SITE:                  AMOUNT OF TIME                  AT THIS SITE:</p>		
<p><b>SURVEYOR NAME/S:</b></p>	<p><b>CONTACT PHONE No:</b></p>		
<p><b>SITE DESCRIPTION:</b>                  (See guidance notes)</p>			
<p><b>NAME &amp; ADDRESS OF CRAB TILER (If known):</b></p>			
<p><b>NUMBER OF TILES:</b></p>	<p><b>SPACING OF TILES: (1-5 scale):</b>                  (See guidance notes)</p>		
<p><b>SEDIMENT TYPE:</b>                  FINE <input type="checkbox"/>                  MEDIUM <input type="checkbox"/>                  COARSE <input type="checkbox"/>                  OTHER <input type="checkbox"/>                  (Please specify)</p>	<p><b>SHORE POSITION: (See guidance notes)</b>                  HIGH <input type="checkbox"/>                  MEDIUM <input type="checkbox"/>                  LOW <input type="checkbox"/></p>		
<p><b>MATERIAL OF TILE:</b>                  PLASTIC PIPING <input type="checkbox"/>                  TERRACOTTA ROOF                  TILE <input type="checkbox"/>                  TYRE <input type="checkbox"/>                  CORRUGATED IRON <input type="checkbox"/>                  CHIMNEY POT <input type="checkbox"/>                  OTHER <input type="checkbox"/>                  (Please specify)</p>	<p><b>TILES IN USE?</b>                  YES <input type="checkbox"/>                  NO <input type="checkbox"/>                  UNSURE <input type="checkbox"/>                  (See guidance notes)</p>		
<p><b>EPIFLORA &amp; FAUNA ON TILES:</b>                  (See guidance notes)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">                 SEAWEED <input type="checkbox"/>                  BARNACLES <input type="checkbox"/>                  NONE (Tiles clean) <input type="checkbox"/>                  OTHER <input type="checkbox"/>                  (Please specify)             </td> <td style="width: 50%; border: none;"> <p><b>COVERAGE</b>                  1=slight 2=medium 3=dense</p> <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/>  <input type="checkbox"/> </td> </tr> </table>		SEAWEED <input type="checkbox"/> BARNACLES <input type="checkbox"/> NONE (Tiles clean) <input type="checkbox"/> OTHER <input type="checkbox"/> (Please specify)	<p><b>COVERAGE</b>                  1=slight 2=medium 3=dense</p> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SEAWEED <input type="checkbox"/> BARNACLES <input type="checkbox"/> NONE (Tiles clean) <input type="checkbox"/> OTHER <input type="checkbox"/> (Please specify)	<p><b>COVERAGE</b>                  1=slight 2=medium 3=dense</p> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
<p><b>ORIENTATION OF TILES: (See guidance)</b>                  FLAT <input type="checkbox"/>                  45° <input type="checkbox"/>                  UPRIGHT <input type="checkbox"/></p>	<p><b>EASE OF PUBLIC ACCESS: (See guidance notes)</b></p>		
<p>OTHER <input type="checkbox"/>                  (please specify)</p>			

**POTENTIAL CONFLICTS:** Please list here  
(See guidance notes)

**SKETCH MAP OF SITE:**  
(Please include distribution and pattern of tiles)  
(See guidance notes)

PLEASE RETURN FORM TO ESTUARY OFFICER BY ..... date

THANK YOU