The Community Perspective

Sustainable Solutions for Sargassum Inundations in Turks & Caicos

Dr Debbie Bartlett CMLI FCIEEM SFHEA
Professor of Environmental Conservation

Location & Aim

Large quantities of holopelagic *Sargassum spp.* has been washing ashore since 2011.

This project aimed to

- review historical information
- determine current distribution and
- composition of beached sargassum
- how this is affecting businesses
- what the implications might be for removal

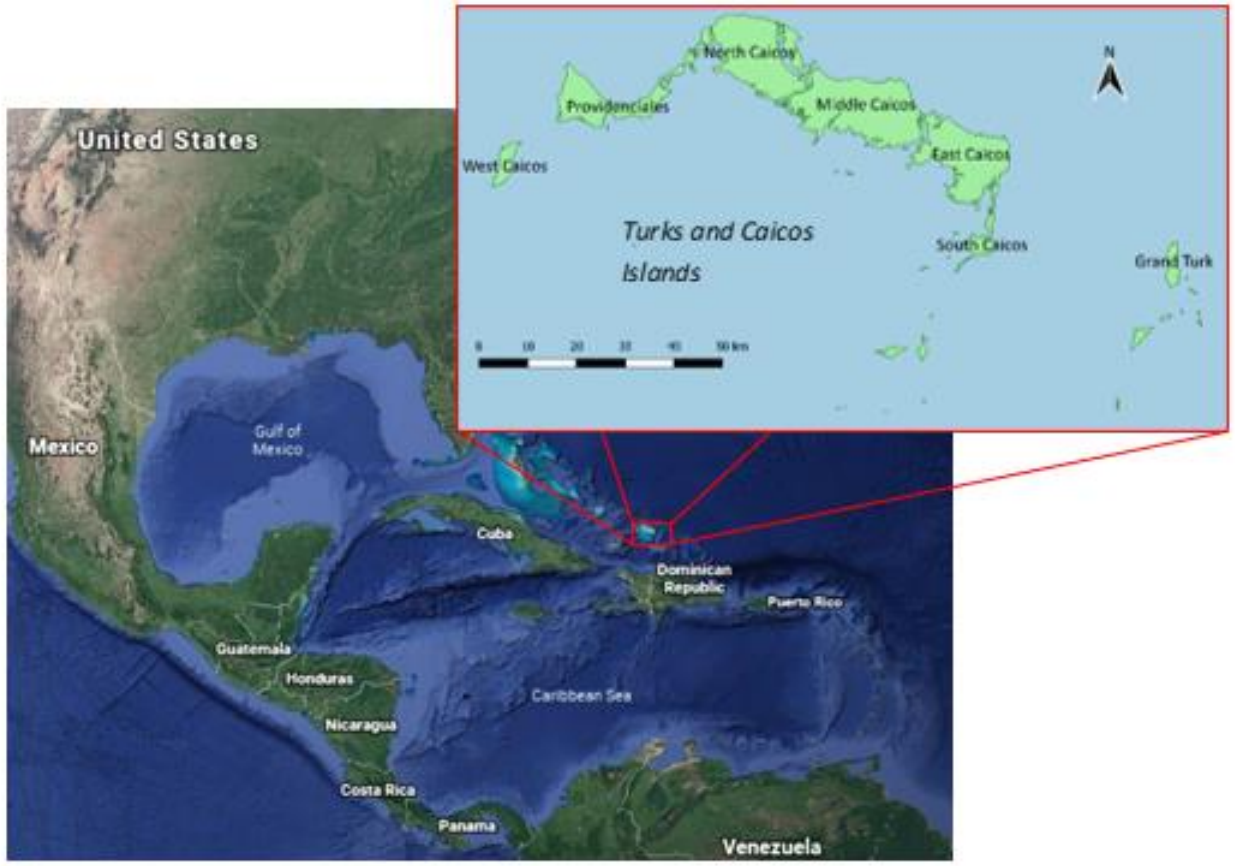


Figure 1: Location of TCI (Google, 2019)

This research was funded DEFRA Darwin Plus DPLUS100: in partnership with the Department of Environment and Coastal Resources (DECR), Turks and Caicos Islands (TCI) Government; the University of Greenwich (UofG); the School for Field Studies (SFS), South Caicos, and the Chartered Institute of Ecologists and Environment Managers (CIEEM) Overseas Territory Special Interest Group.


A: GDT


B: GDT


C: PLS


D: PLS


E: XSC


F: XSC

Two types of investigation

1. Focus groups

Location	Host	Time	Male	Female
Providenciales	DECR offices	eve	9	1
Grand Turk	DECR/National museum	pm	11	4
South Caicos	DECR offices	eve	3	
Providenciales	The Sustainable Tourism Association	pm	3	1
	TOTAL		26	6

Public meetings advertised on the DECR website and strategically placed posters


Distribution and composition of
Sargassum spp. washed ashore
in the Turks and Caicos Islands
Sylvia W M Myers, University of Greenwich
UNIVERSITY of GREENWICH

Themes that emerged

	P	GT	SC	STA	TOTALS
NEGATIVE IMPACT	1	11	3	3	18
OCURENCE & FREQUENCY	8	4	2	3	17
REMOVAL & DISPOSAL	6	1	5	4	16
POSITIVE IMPACT	1	4	1	6	12
POTENTIAL END USE	1	4	0	1	6

Sports fishers benefit from more fish (3)

Fish yields have reduced significantly - is this related to sargassum? (2)

What is the real economic impact - real estate?

Sargassum is good – as long as it stays out at sea

Effect on seagrass and corals

People don't know what it is and think it is sewage

Some did not realise sargassum was floating

Business category	Total responses				Number reporting impact (responding 'Yes' to Q1)				Percentages impacted per business			
	All	PLS	GDT	XCS	All	PLS	GDT	XCS	All	PLS	GDT	XCS
Restaurant/bar	11	8	1	2	6	5	0	1	55	63	0	50
Fishing	7	1	1	5	6	1	1	4	86	100	100	80
Sports fishing	6	4	1	1	6	4	1	1	100	100	100	100
Resort	9	4	0	5	7	3	0	4	78	75	N/A	80
Accommodation	4	3	1	0	3	3	0	0	75	100	0	N/A
Real estate/developer	4	4	0	0	3	3	0	0	75	75	N/A	N/A
Wildlife charity	1	1	0	0	0	0	0	0	0	0	N/A	N/A
Snorkelling / Diving	11	7	3	1	5	2	3	0	45	29	100	0
Surface water sports	9	7	2	0	6	4	2	0	67	57	100	N/A
Shore leisure	5	2	3	0	3	1	2	0	60	50	67	N/A
Market Trader	12	8	2	2	2	2	0	0	17	25	0	0
Travel/ boat trips	12	6	3	3	7	2	2	3	58	33	67	100
Farmer	1	1	0	0	1	1	0	0	100	100	N/A	N/A
Independent tourism consultant	2	2	0	0	1	1	0	0	50	50	N/A	N/A
Tourist board	2	1	1	0	2	1	1	0	100	100	100	N/A
Entrepreneur	1	1	0	0	0	0	0	0	0	0	N/A	N/A
Utilities/services	1	0	0	1	0	0	0	0	0	N/A	N/A	0
Government dep.	1	0	1	0	0	0	0	0	0	N/A	0	N/A
Museum	1	0	1	0	0	0	0	0	0	N/A	0	N/A
Totals	**100**	**60**	**20**	**20**	**58**	**33**	**12**	**13**	**58**	**55**	**60**	**65**

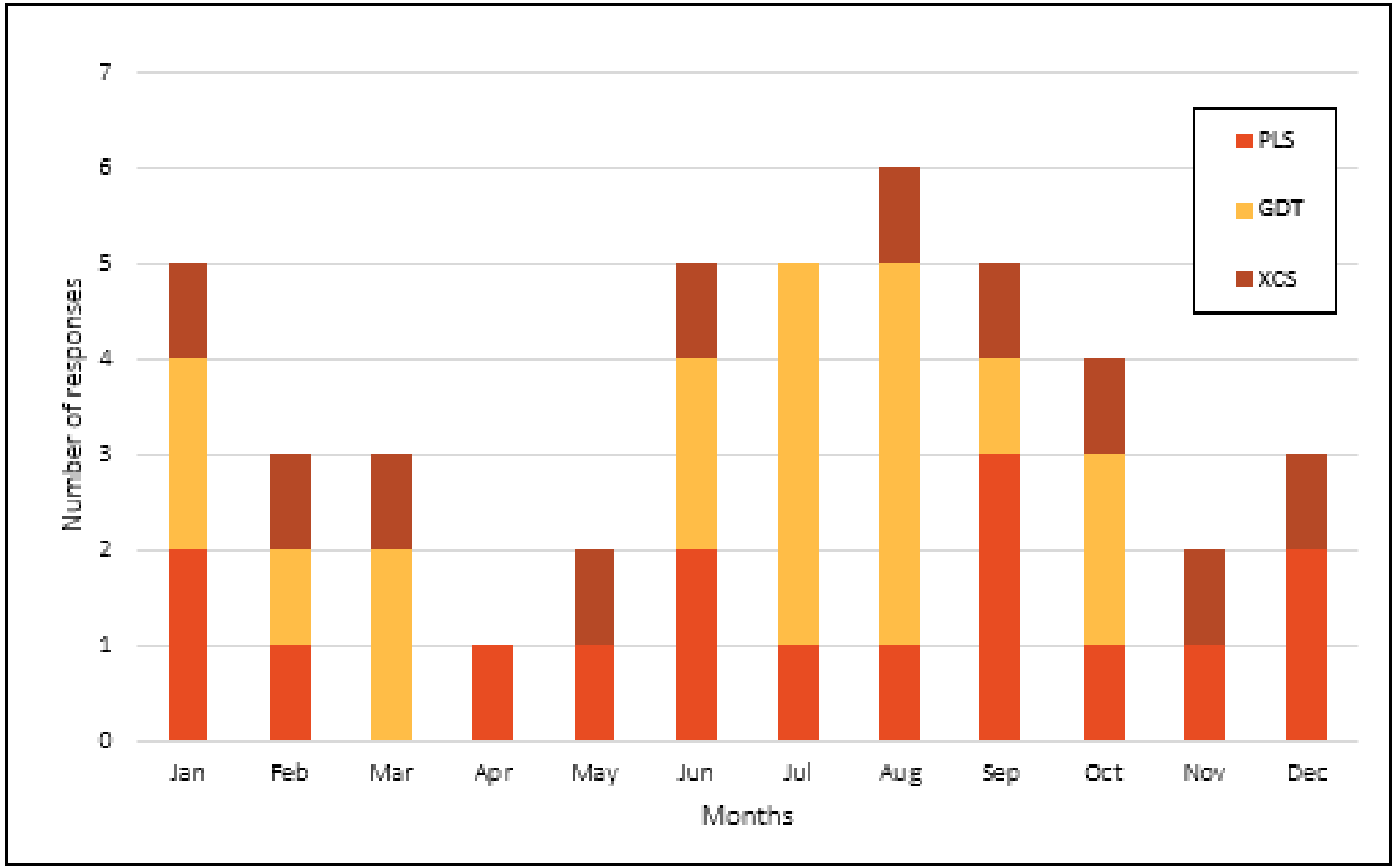
2. Face to face interview Results

100 people in tourism

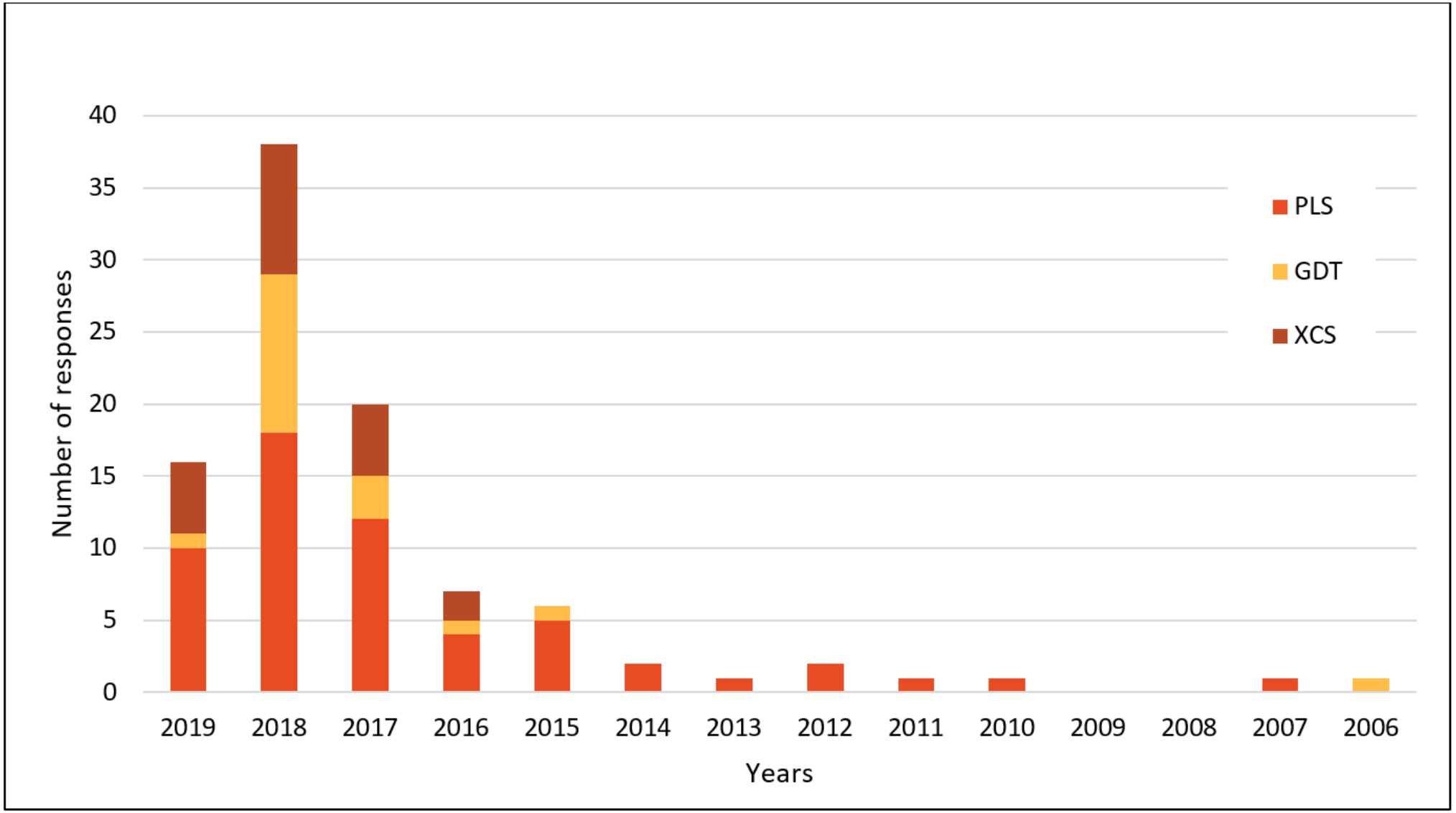
Q1 Had Sargassum impacted their business?

Qu 2 was impact low, moderate or high?

Qu 3 Seasonality (based on 2018)



Qu 4 when did you first notice Sargassum?



Qu 5 asked if Sargassum was being removed?
Qu 6 asked how is this being done?

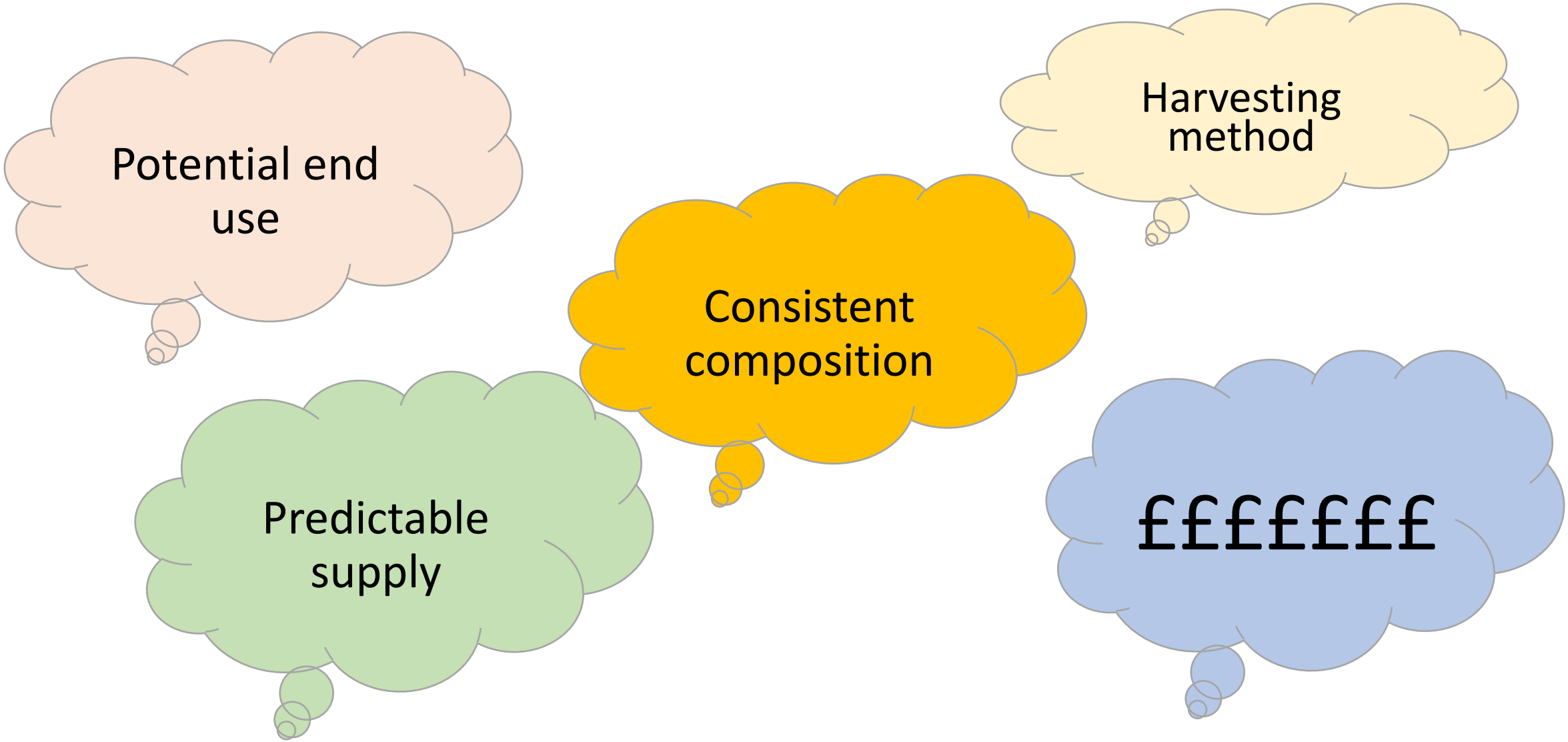
Disposal methods

Disposal method	OT	XCS
Pile on beach		5
Skip/dump		2
Burying it		0
Composting		0

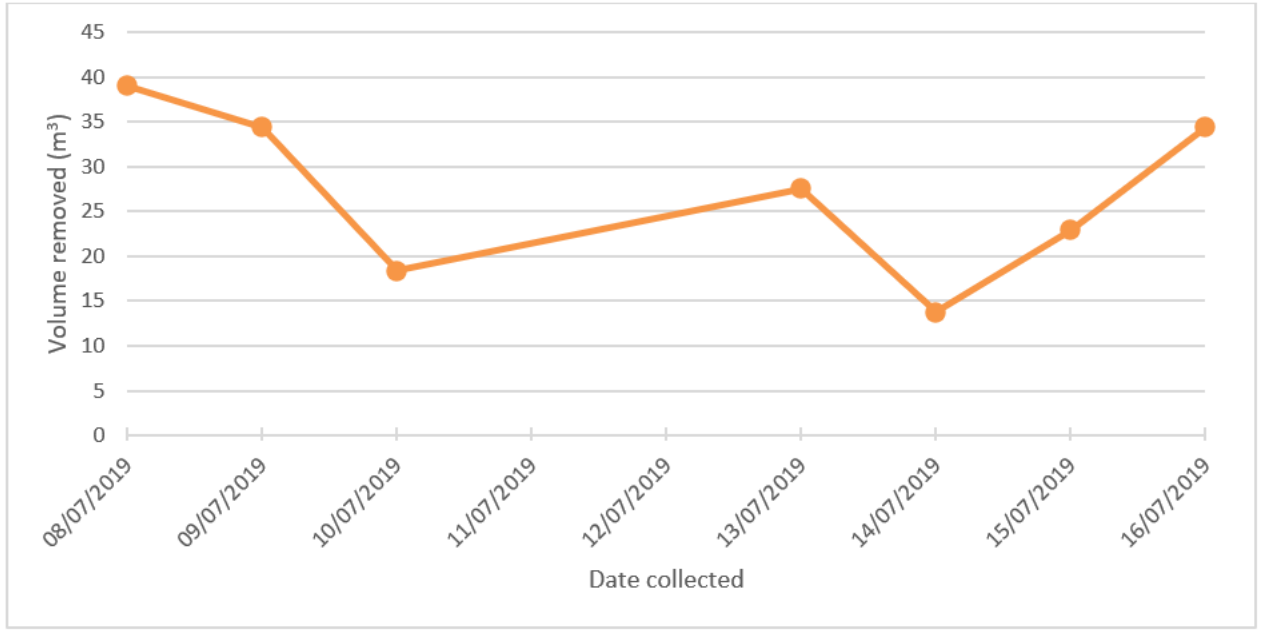
Qu 7 how often?

Frequency	All	PLS	GDT	XCS
Daily	23	15	4	4
Weekly	5	4	0	1
Monthly	4	4	0	0
When necessary	3	3	0	0
Other	7	4	2	1

Why is finding this out so important?



Estimating quantity



Depth of deposit x area = volume m^3

Quantity removed by an individual resort

The impact of Sargassum inundations

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related

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on Tourism Relat

Initial Assessmen

Sargassum rafts support a diverse array of life described as ‘golden rainforests’ (Laffoley *et al*, 2011)

- 100 species of fish
- 4 turtles,
- 145 invertebrates
- numerous sponges, fungi, bacteria, diatoms, and protists
- 10 endemic species
- spawning grounds for economically important and iconic species
  - such as American and European eels (*Anguilla rostrata* and *A. anguilla*),
  - flying fish (*Exocoetidae*),
  - white marlin (*Tetrapturus albidus*), and blue marlin (*Makaira nigricans*).
- floating nurseries for
  - swordfish (*Xiphius gladius*),
  - Green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricate*), loggerhead (*Caretta caretta*), and Kemp’s Ridley turtles (*Lepidochelys kempii*).
  - Tuna (*Thunnus spp.*),
- Hunting grounds
  - Various sharks (*Selachimorpha*)
  - whales (*Cetacea*)

(Huffard *et al*, 2014; Laffoley *et al*, 2011).

Sustainable Solution?

What is the environmental impact of harvesting?

At sea?

FLOATING RAFTS	
Positive impact	Negative Impacts
• **feeding, nesting and spawning grounds for diverse fish and sea turtle species** • **10 endemic species** • **foraging for endangered humpback whales**	• Change water chemistry • reduce water oxygen levels • mortality to near-shore corals • change in ecology of seagrass meadows

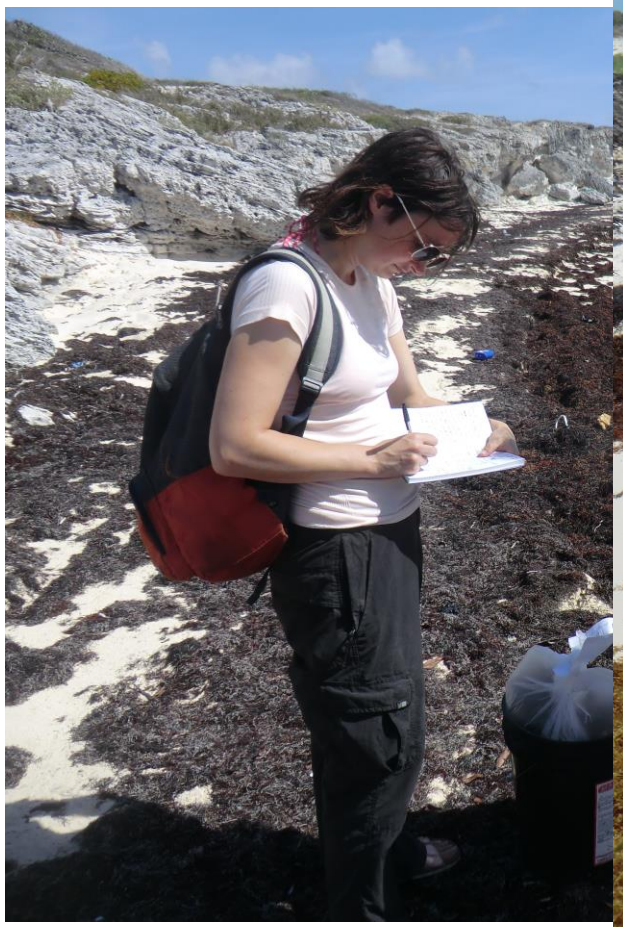
From the beach?

BEACHED SARGASSUM	
Positive impact	Negative Impacts
• **high beach and sand dune stabilisation** • **provides nutrients that can increase coastal vegetation growth** • **foraging for birds**	• objectionable odours • aesthetically unpleasant views of beaches • potential health effects of odours • barrier for hatchling turtles • mortality to corals & seagrass meadows.

What is the impact of not removing it?

Only with a full cost – benefit assessment can this be determined

With thanks to Sylvia Myers and Kirsty Lee



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Thank you for listening

d.bartlett@gre.ac.uk