

Supplementary materials

Frequency of beach cleaning

Table A The frequency of beach cleaning (BC) conducted at the study site by the community.

Frequency of beach cleaning (BC) at the study sites				
Types of beach cleaning	Pulau Lembu	Pulau Songsong	Teluk Aling	Pulau Gazumbo
Responsible authority	Once a year	-	Three times per week	-
Local people	-	Occasionally Once per month	-	-
Volunteers	-	Occasionally Once per month	-	Once in a while

Table B Frequency of beach cleaning (BC) of the study site based on Likert scale.

Frequency of beach cleaning (BC) at the study sites				
Types of beach cleaning	Pulau Lembu	Pulau Singsong	Teluk Aling	Pulau Gazumbo
Responsible authority	0.08	0	2.37	0
Local people	0	0.57	0	0
Volunteers	0	0.57	0	0.01
Total	0.08	1.15	2.37	0.01

Table C Guide to value given based on Likert scale to beach cleaning activities by different communities.

Beach cleaning activities (BC)			
Numerical value	Responsible authority	Local people	Volunteers
0	None	None	None
1	Once/month	Once/month	Once/month
2	Once/week	Once/week	Once/week
3	Once/day	Once/day	Once/day
4	Twice/day	Twice/day	Twice/day

Availability of waste bins

Table D Number of waste bin observed at the study site.

Number of waste bin	Study sites			
	Pulau Lembu	Pulau Songsong	Teluk Aling	Pulau Gazumbo
0	✓	-	-	✓
1	-	✓	✓	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-

Table E Availability of waste bins (AB) at the study site based on Likert scale.

Availability of waste bins (AB) at study sites				
Numerical value	Pulau Lembu	Pulau Songsong	Teluk Aling	Pulau Gazumbo
0	✓	-	-	✓
1	-	✓	✓	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-

Table F Guide to value given based on Likert scale to availability of waste bins.

Numerical value	Availability of waste bins (AB)
0	Unavailable
1	Low availability (< 2)
2	Moderately available (2 < X < 5)
3	Available (5 < X < 10)
4	Highly available (> 10)

Occurrence of anthropogenic activities

Table G Occurrence of anthropogenic activities at the study site.

Type of anthropogenic activity	Study Sites			
	Pulau Lembu	Pulau Songsong	Teluk Aling	Pulau Gazumbo
Recreational activities				
Picnicking	✓	✓	✓	✓
Camping	-	✓	-	-
Overnight event	-	✓	-	-
Swimming	-	✓	✓	-
Jet Skiing	-	-	✓	-
Parasailing	-	-	✓	-
Recreational Boating	✓	✓	✓	✓
Sunbathing	-	✓	✓	-
Snorkelling	✓	✓	-	-
Diving	✓	✓	-	-
Strolling	-	✓	✓	✓
Fishing activities				
Leisure fishing	-	✓	✓	✓
Fishing village	-	-	✓	✓
Fishing boat	-	✓	✓	✓
Pre-fishing activities	-	-	-	-
Shipping activities	-	-	✓	-
Facilities and services				
Boat	✓	✓	✓	✓
Total	5	12	12	7

Table H Occurrence of anthropogenic activity based on Likert scale.

Numerical value	Study sites			
	Pulau Lembu	Pulau Songsong	Teluk Aling	Pulau Gazumbo
0	-	-	-	-
1	✓	-	-	-
2	-	-	-	✓
3	-	✓	✓	-
4	-	-	-	-

Table I Guide to value given based on Likert scale to the occurrence of anthropogenic activity.

Numerical value	Number of anthropogenic activities
0	None
1	Low (< 5)
2	Moderate (5 < X < 10)
3	High (10 < X < 20)
4	Very high (> 20)

Occurrence of natural factors

Table J Occurrence of natural factor at the study site.

Natural factor	Study sites			
	Pulau Lembu	Pulau Songsong	Teluk Aling	Pulau Gazumbo
Winds	✓ ²	✓	✓	✓
Waves	✓	✓	✓	✓
Rainfall season	- ¹	-	✓	✓
Storm	-	-	-	-
Monsoon season	-	-	-	-
Total	2	2	3	3

Table K Occurrence of natural factor at the study site based on Likert scale.

Numerical value	Study sites			
	Pulau Lembu	Pulau Songsong	Teluk Aling	Pulau Gazumbo
0	-	-	-	-
1	-	-	-	-
2	✓	✓	✓	✓
3	-	-	-	-
4	-	-	-	-

Table L Guide to value given based on Likert scale to the occurrence of natural factor.

Numerical value	Frequency of occurrence of natural factors
0	None
1	Low (< 1)
2	Moderate (1 < X < 3)
3	High (3 < X < 5)
4	Very high (> 5)