

PRELIMINARY ASSESSMENT FOR UPPER SPENCER GULF MARINE PARK LOCAL ADVISORY GROUP TO ASSIST WITH THE MEETING ON 3rd MAY 2011

Rapid Assessment on Comprehensive, Adequate and Representative (CAR) Principles for the UPPER SPENCER GULF (Marine Park 10) suggested zoning options

Overview

DENR has undertaken a rapid assessment of the CAR principles for the possible sanctuary zone options for the Upper Spencer Gulf Marine Park. Possible zones were suggested at the Marine Park Local Advisory Group Meeting held on 16th February.

Community feedback and MPLAG advice has resulted in sanctuary zones suggested at ten locations within the marine park, with alternative zones suggested at two of the locations (E, J).

Using combinations of alternate suggested zones (E1 (part a and b) and E2, E3 and J1/J3 and J1, J2, J3) with the suggested zones (A1, B1, C4, D1, F1, G1, H1, I1, J1, J3), four zoning options for the marine park were developed (see Figures 1-4).

This rapid assessment¹ helps to determine if the zoning options meet the core biophysical principles of:

Comprehensive: To be comprehensive, examples of all ecosystems and habitats within the marine park should be included within sanctuary zones.

Adequate: To be adequate, the marine parks system should provide for the maintenance of the ecological viability and integrity of populations, species and communities

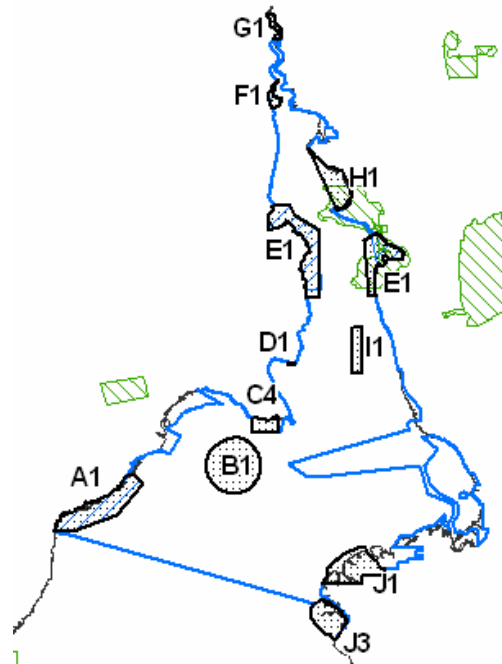
Representative: To be representative, the system of sanctuary zones should reflect the biodiversity and variability naturally present in the marine park.

MPLAGs should seek to apply the full suite of 14 design principles in any further zoning advice generated.

Possible zoning options for Marine Park 10 using combinations of the ten suggested zones

Figure 1: Zoning Option 1 (15% of MP)

(possible zones: A1, B1, C4, D1, E1, F1, G1, H1, I1, J1, J3)



¹ GIS processing formed the basis of the rapid assessments. A number of data layers captured at various scales were used in the analysis, these include layers such as: state and national benthic mapping; coastal shoreline types; and sea lion haul out and breeding locations. Procedures such as intersections, unions, frequency analysis as well as manual measurements were used in this assessment. All information is subject to the scale and accuracy of the data used.

Figure 2: Zoning Option 2 (17% of MP)
(possible zones: A1, B1, C4, D1, E2, E3, F1, G1, H1, I1, J1, J3)

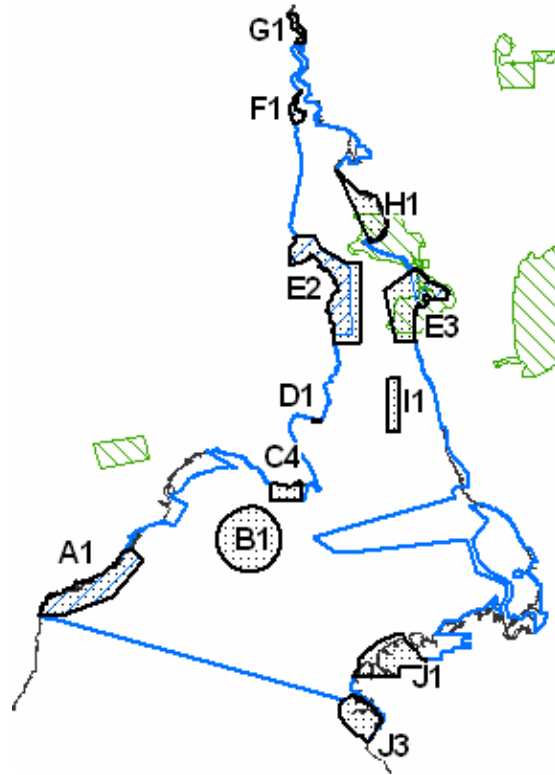


Figure 3: Zoning Option 3 (16% in MP)
(possible zones: A1, B1, C4, D1, E1, F1, G1, H1, I1, J1, J2, J3)

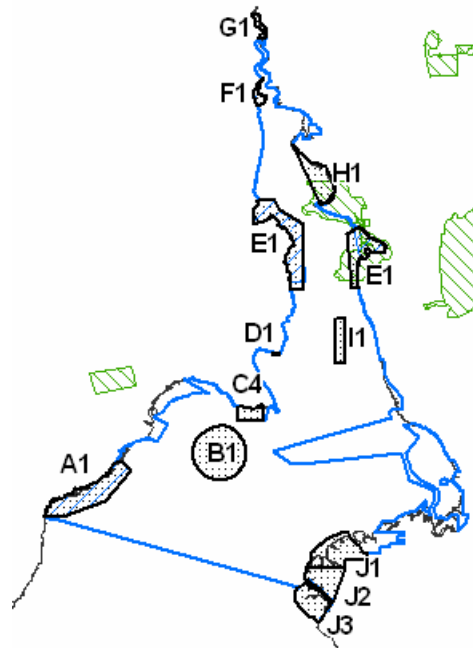
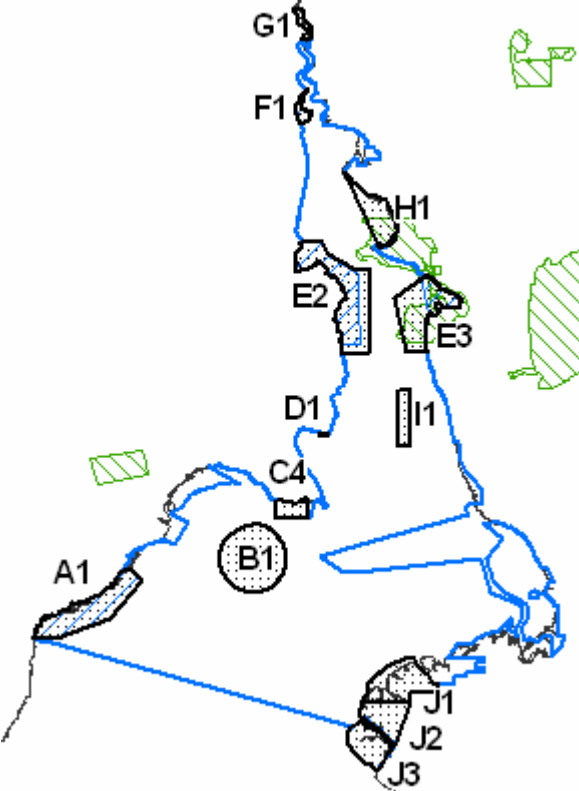


Figure 4: Zoning Option 4 (18% in MP)
(possible zones: A1, B1, C4, D1, E2, E3, F1, G1, H1, I1, J1, J2, J3)



How to use this document

The rapid assessment shows the range of environmental values/features that are included in MPLAG zoning options and that are omitted. It also shows those features that are well represented and those that are under-represented. **For each under-represented feature, the maps in Appendix C show alternative locations where the feature is mapped.**

The rapid assessment also provides a measure of each suggested sanctuary zone to assist consideration of the adequacy of those zones. **Note: It is better to have fewer, larger sanctuary zones than many smaller ones.**

Comprehensiveness

Each option was assessed for the inclusion of examples of shoreline types and seafloor (benthic) habitats in the suggested sanctuary zones.

All four zoning options include the following shoreline and seafloor (benthic) habitats:

- ✓ Macroalgae
- ✓ Reef
- ✓ Seagrass
- ✓ Soft bottom habitat
- ✓ Unmapped habitat
- ✓ Bedrock platform
- ✓ Coarse sand beach
- ✓ Mangrove
- ✓ Mixed beach
- ✓ Saltmarsh
- ✓ Cobble

All four zoning options do not include the following shoreline and seafloor (benthic) habitats:

- ✗ Mudflats and sandflats
- ✗ Pebble cobble beach

Representativeness

Each option was assessed against the proportion of environmental values² represented in the suggested sanctuary zones. To consider the full diversity and variability of the coastal and marine features, this assessment included benthic habitat types at different depths, shoreline types at different exposures and a range of other ecologically important features. Each zoning option was assessed for the proportion (as a %) of environmental values represented in the suggested sanctuary zones. Proportions were broken into 4 categories: ≥20%, between 10% and 19%, <10% and 0%. A comparison of the environmental values represented as a proportion of their availability within the park for each option can be seen in Table 1.

² In this assessment an environmental values include seafloor habitats and shoreline habitats and ecologically important features available within the outer boundary

Table 1 Environmental values represented within the possible zoning options as a proportion of their availability within the park

- ✓✓✓ Environmental values that are represented at a level $\geq 20\%$
- ✓✓ Environmental values that are represented between 10-19%
- ✓ Environmental values that are represented at a level $< 10\%$
- x Environmental values that are not represented (0%)

Environmental Value	Option 1	Option 2	Option 3	Option 4
Cosema Endangered Macroalgae	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Emergent Land	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Estuary	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Sea Bird Sites	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Macroalgae (0 to -10m)	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Macroalgae (-10 to -30m)	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Reef (0 to -10m)	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Unmapped (0 to -10m)	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Saltmarsh	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Mangrove	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Coastal Wader Birds	✓✓	✓✓	✓✓	✓✓
Unmapped (-10 to -30m)	✓✓	✓✓	✓✓	✓✓
Soft bottom habitat (0 to -10m)	✓✓	✓✓	✓✓	✓✓
Seagrass (0 to -10m)	✓✓	✓✓	✓✓	✓✓
Cobble (0 to -10m)	✓✓	✓✓	✓✓	✓✓
Seagrass (-10 to -30m)	✓	✓	✓	✓
Bedrock Platform (Sheltered)	✓	✓	✓	✓
Coarse Sand Beach (Moderate)	✓	✓	✓	✓
Coarse Sand Beach (Sheltered)	✓	✓	✓	✓
Mixed Beach (Moderate)	✓	✓	✓	✓
Mixed Beach (Sheltered)	✓	✓	✓	✓
Soft bottom habitat (-10m to -30m)	x	x	x	x
Surveyed Reef Fish Sites	x	x	x	x
Mudflats and Sandflats (Sheltered)	x	x	x	x
Pebble Cobble Beach (Sheltered)	x	x	x	x

Note:

- A more detailed assessment of environmental values and the percentage included in each zoning option can be viewed in Appendix A.
- Environmental values included within each suggested individual zone can be viewed in Appendix B.
- The locations of environmental values that are not included or are represented $< 10\%$ are shown in Appendix C.

Adequacy

Each of the suggested zones were measured for their approximate lengths (from coast to offshore or longitudinal lengths) and widths (coastline or latitudinal lengths), these are shown in Table 1. The total area of each of the four options was then calculated, as shown in Table 2.

Note: The guideline is that a zone should include whole habitats or areas with minimum linear dimensions of 7-10 km (or 5km where State waters are limited to 3 nautical miles). Smaller dimensions are likely to have a value but not for all organisms.

Table 1. Approximate length, width and size of each suggested zone (areas rounded to the nearest whole number).

Zone	From the coast to offshore (length) (km)	Coastline along shore (width) (km)	Size of zone (km²)
A1	3	14	38
B1	8	8	55
C4	2	4	8
D1	500m	1	0
E1	2-3km (west) 1-4km (east)	15km (west) 10 km (east)	58
E2	2-4km (west)	15km (west)	49
E3	2-7km (east)	10 km (east)	36
F1	<1 to 1.5	4	3
G1	4	1	3
H1	4	10	20
I1	8	1	10
J1	4	8	31
J2	5	5	18
J3	5	4	18

Areas of alternative Zoning Options 1, 2, 3, 4

Four alternative zoning options were developed using different combinations of the individual zones suggested at each of the ten locations.

A comparison of the total area (km²) of each of the zoning options and the percentage sanctuary zones in each option can be seen in Table 2.

Table 2. Comparison of the total area and percentage of sanctuary zones in each zoning option.

Suggested zoning option	Total area of sanctuary zones (km²)	% of sanctuary zones located in the marine park
Option 1	244	15
Option 2	271	17
Option 3	262	16
Option 4	288	18

Comparing the four zoning options

- Zoning Option 4 is the slightly larger of the four options, including 18% (288km²) sanctuary zones within the marine park, compared to Option 1 (15% or 244km²), Option 2 (17% or 271km²) or Option 3 (16% or 262km²).
- Option 1 includes 6% more macroalgae (0 to -10m) but 4% less macroalgae (-10 to -30m) than Options 2-4.
- Option 1 includes 58% reef (0-10m) in sanctuary zones compared to Options 2-4 which have 32% located in the suggested sanctuary zones.
- Options 2 and 4 include 16% of soft bottom habitat (0 to -10m) located in the suggested sanctuary zones compared to Options 1 and 3 which has 12% within in the suggested zones.

Appendix A.

Table 3: The percentage of each environmental value included in zoning Options.

	Option 1 Total in all Zones (%)	Option 2 Total in all Zones (%)	Option 3 Total in all Zones (%)	Option 4 Total in all Zones (%)
Ecological Importance				
Coastal Wader Bird Sites	10	10	10	10
COSEMA Endangered Macroalgae	25	25	25	25
Emergent Land	50	50	50	50
Estuary	22	22	22	22
Surveyed Reef Fish Sites	0	0	0	0
Sea Bird Sites	75	75	75	75

	Option 1 Total in all Zones (%)	Option 2 Total in all Zones (%)	Option 3 Total in all Zones (%)	Option 4 Total in all Zones (%)
Underwater Habitats				
Cobble (0 to -10m)	15	15	15	15
Macroalgae (0 to -10m)	61	55	55	55
Macroalgae (-10 to -30m)	31	35	35	35
Reef (0 to -10m)	58	32	32	32
Seagrass (0 to -10m)	11	12	9	12
Seagrass (-10 to -30m)	6	6	6	6
Soft bottom habitat (0 to -10m)	12	16	12	16
Soft bottom habitat (-10m to -30m)	0	0	0	0
Unmapped habitat (0 to -10m)	95	95	95	95
Unmapped habitat (-10 to -30m)	19	19	19	19
Saltmarsh	57	57	75	75
Mangrove	45	45	45	45
Total	16	18	17	19

	Option 1 Total in all Zones (%)	Option 2 Total in all Zones (%)	Option 3 Total in all Zones (%)	Option 4 Total in all Zones (%)
Shoreline Habitats				
Bedrock Platform (Sheltered)	4	4	4	4
Coarse Sand Beach (Moderate)	8	8	8	8
Coarse Sand Beach (Sheltered)	2	2	2	2
Mixed Beach (Moderate)	1	1	1	1
Mixed Beach (Sheltered)	2	2	2	2
Mudflats and Sandflats (Sheltered)	0	0	0	0
Pebble Cobble Beach (Sheltered)	0	0	0	0
Total	1	1	1	1

Note: percentages rounded to the nearest whole number

Environmental values represented
Represented ≥20%
represented between 10-19%
represented <10%
Not Represented 0%

Appendix B.

Table 4. Environmental values represented in each suggested zone.

Ecological Importance	Units	A1	B1	C4	D1	E1	E2	E3	F1	G1	H1	I1	J1	J2	J3	Total in Marine Park
Coastal Wader Birds	Count	21				3	3				8				1	328
COSEMA Endangered Macroalgae	Count					1	1									5
Emergent Land	Count	11				2	2				1					28
Estuary	Count					1	1						1			9
Estuary	km ²					8	8		3	3	3		31	18	18	389
Surveyed Reef Fish Sites	Count															2
Sea Bird Sites	Count										1		2			4

Underwater Habitats	Units	A1	B1	C4	D1	E1	E2	E3	F1	G1	H1	I1	J1	J2	J3	Total in Marine Park (km2)
Cobble (0 to -10m)	km2				<1	<1	<1									2
Macroalgae (0 to -10m)	km2			3												5
Macroalgae (-10 to -30m)	km2			2												6
Reef (0 to -10m)	km2			1												2
Seagrass (0 to -10m)	km2	23		<1	<1	28	28	18	<1	<1	10	5	<1		<1	714
Seagrass (-10 to -30m)	km2		4	1								5				166
Soft bottom habitat (0 to -10m)	km2	9		<1	<1	20	15	13		<1	<1		<1		<1	242
Soft bottom habitat (-10m to -30m)	km2			<1												80
Unmapped (0 to -10m)	km2		8													9
Unmapped (-10 to -30m)	km2		43	<1												220
Saltmarsh	km2	1				1	1	0	0	2	2		22	15	15	
Mangrove	km2	4				8	3	4	3	0	7		7	0	0	
Total		37	55	8	0	58	48	36	3	3	19	10	30	15	15	1,446

Shoreline Habitats	Units	A1	B1	C4	D1	E1	E2	E3	F1	G1	H1	I1	J1	J2	J3	Total in Marine Park (km)
Bedrock Platform (Sheltered)	km			<1												9
Coarse Sand Beach (Moderate)	km														1	10
Coarse Sand Beach (Sheltered)	km				<1	1	1	1			<1					79
Mixed Beach (Moderate)	km				<1											4
Mixed Beach (Sheltered)	km	1		<1		<1	<1									55
Mudflats and Sandflats (Sheltered)	km															0
Pebble Cobble Beach (Sheltered)	km															3
Total		1		<1	<1	2	1	1			<1				1	641

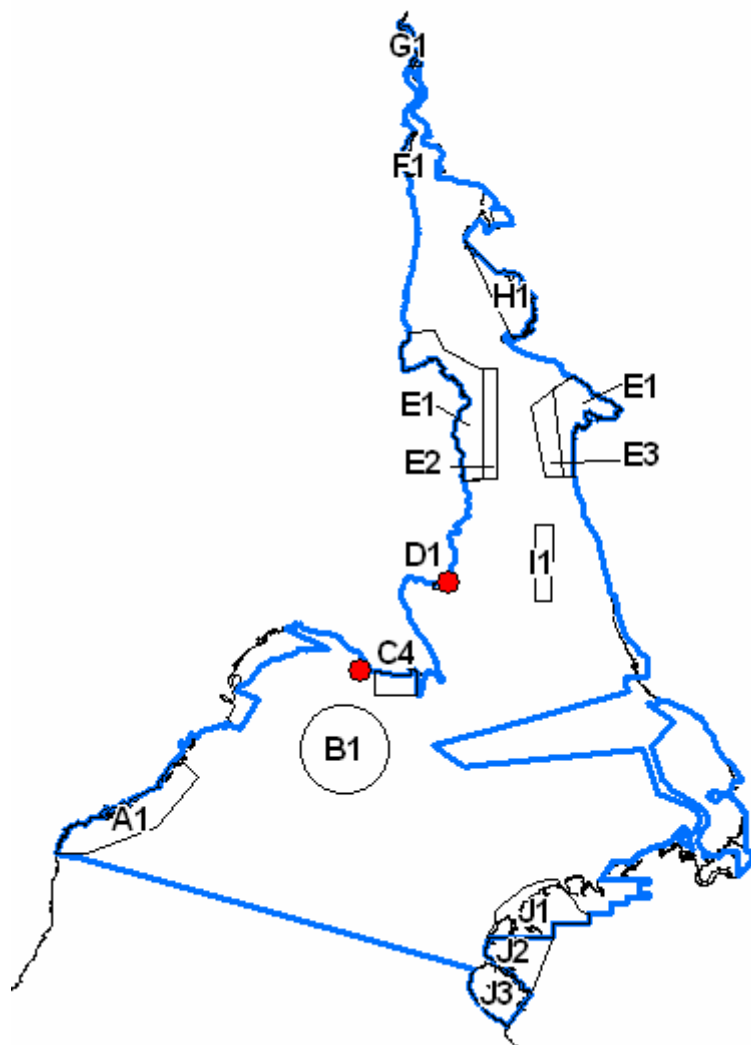
Note: numbers have been rounded to the nearest whole number

Appendix C. Location of the environmental values <10% or not represented.

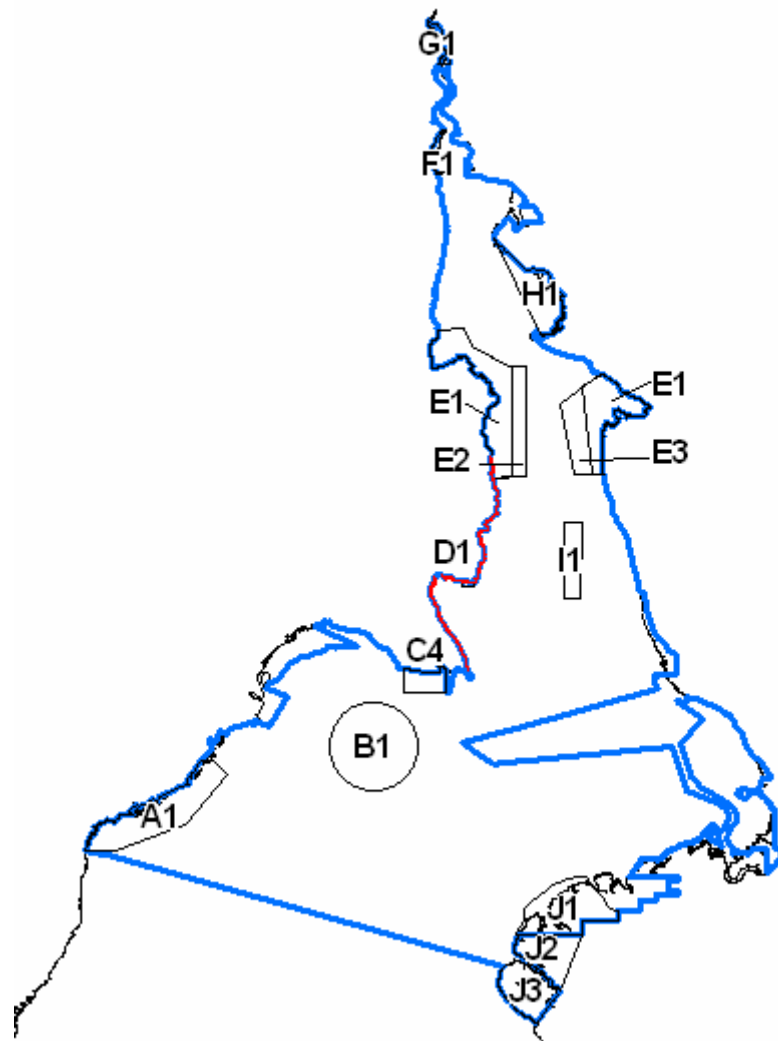
Environmental values that have <10% representation are shown in red, identifying where they could be represented within the marine park.

Note: maps are best viewed in colour.

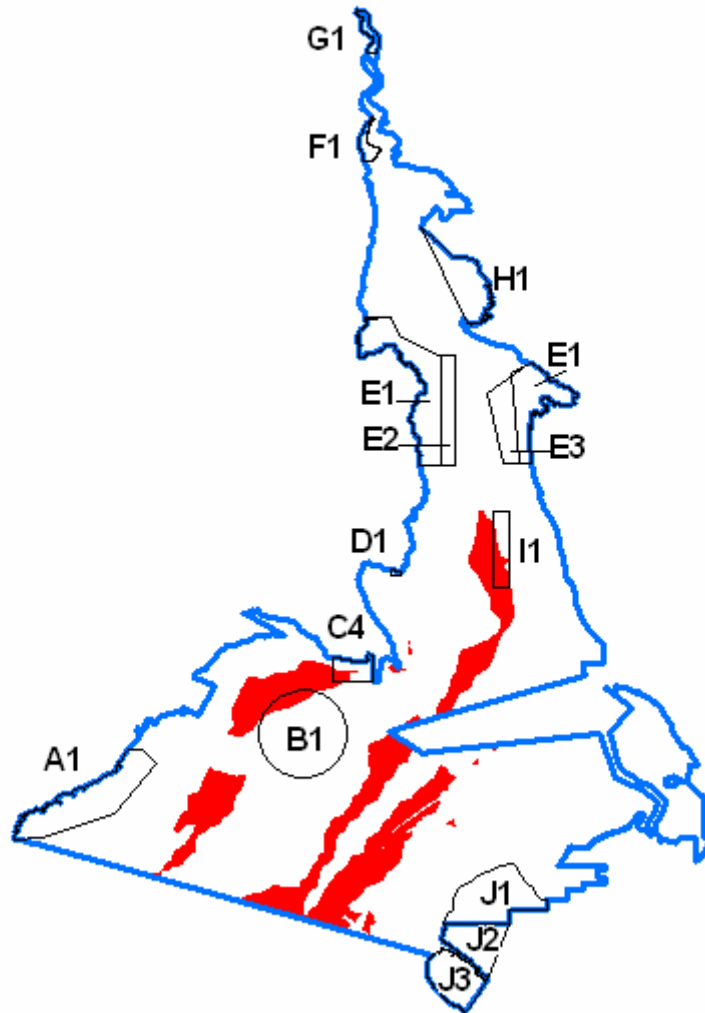
Surveyed Reef Fish Sites



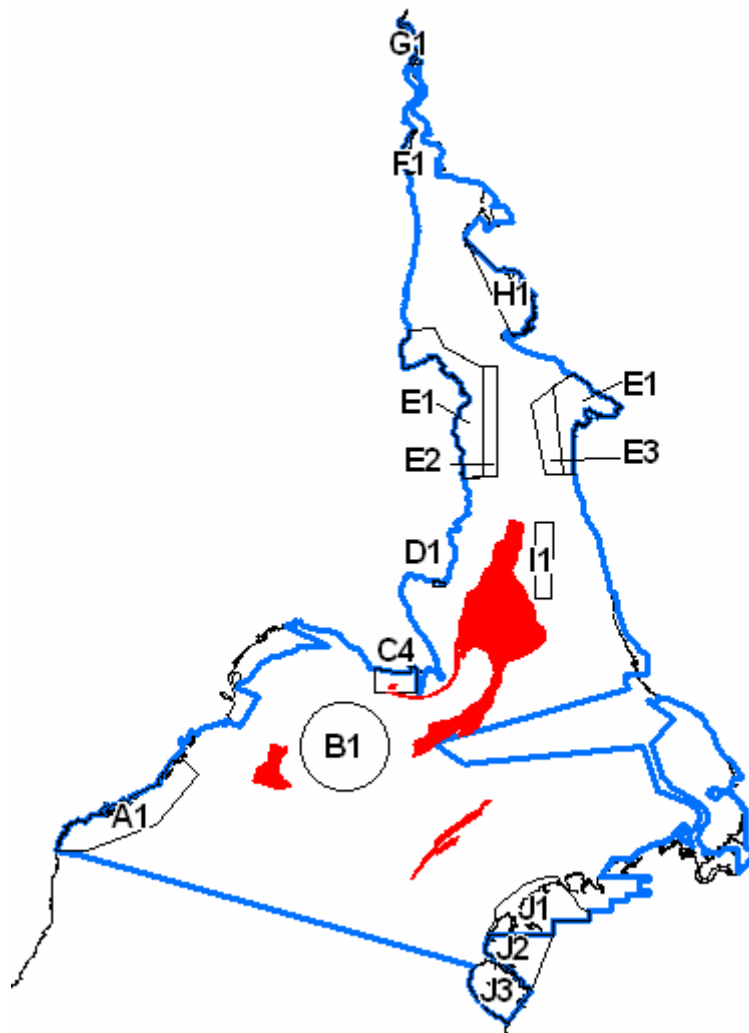
Cobble (0-10m)



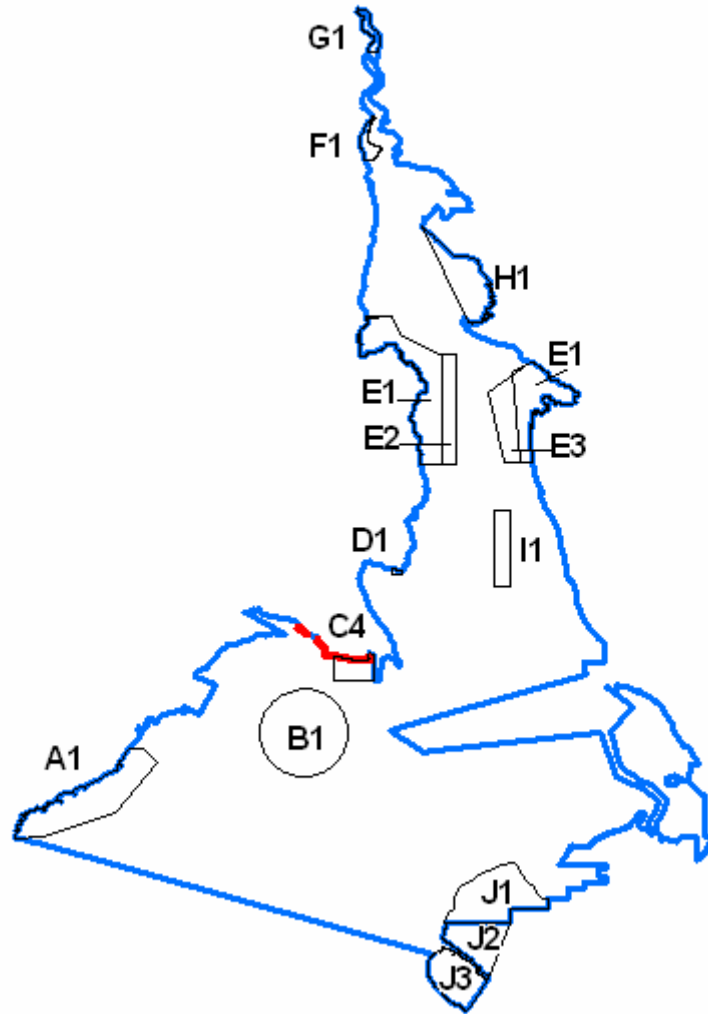
Seagrass (-10 to -30m)



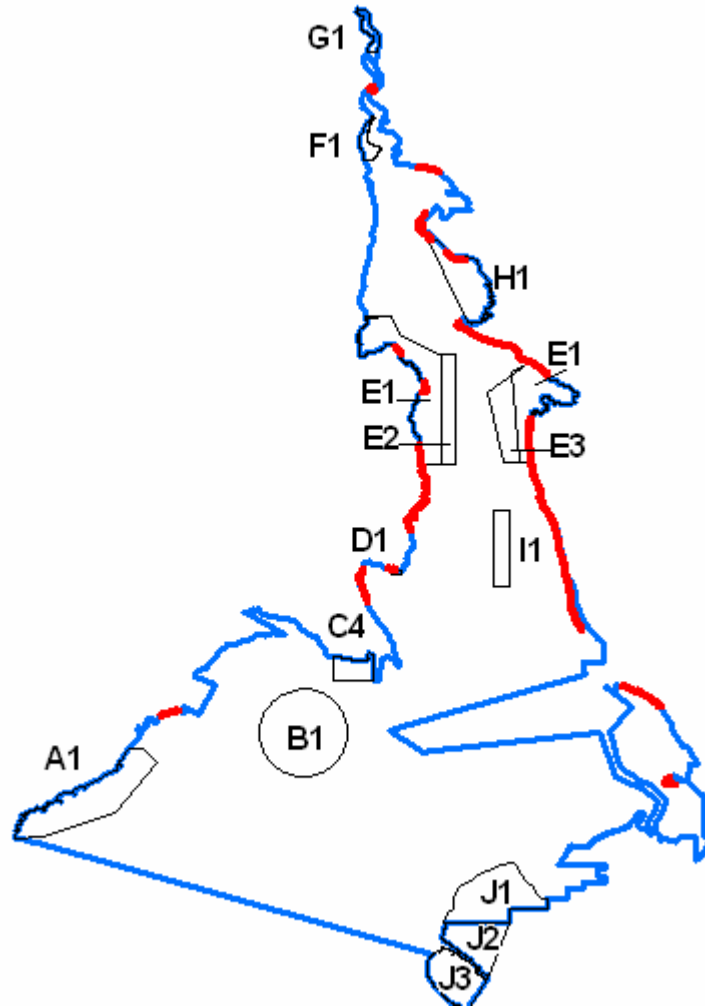
Soft bottom habitat (-10m to -30m)



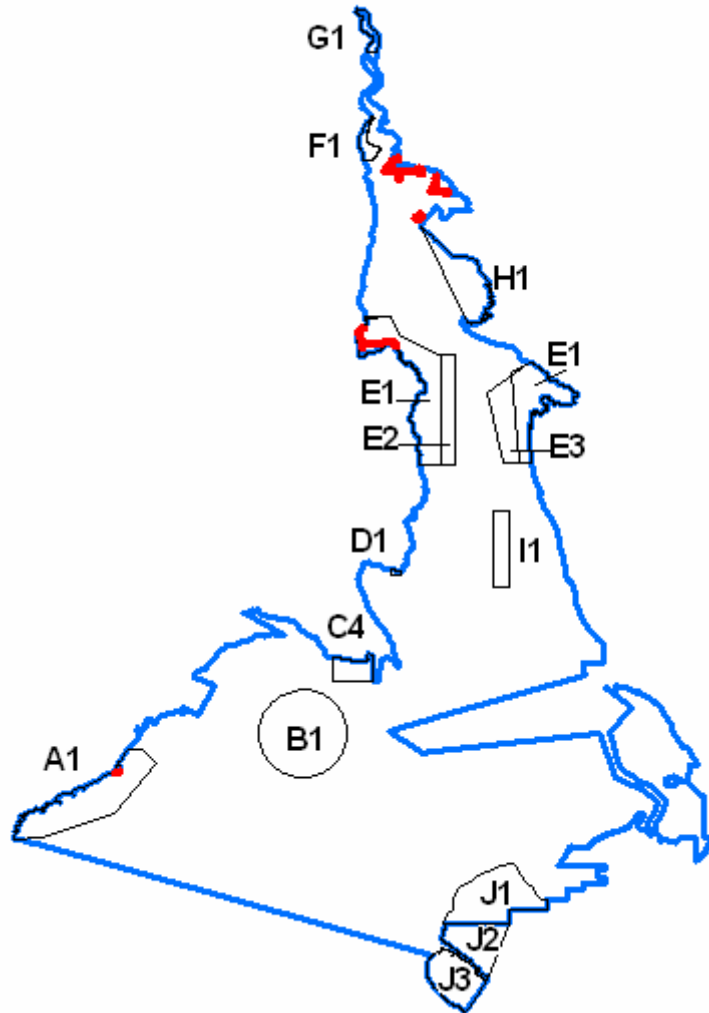
Bedrock Platform (Sheltered)



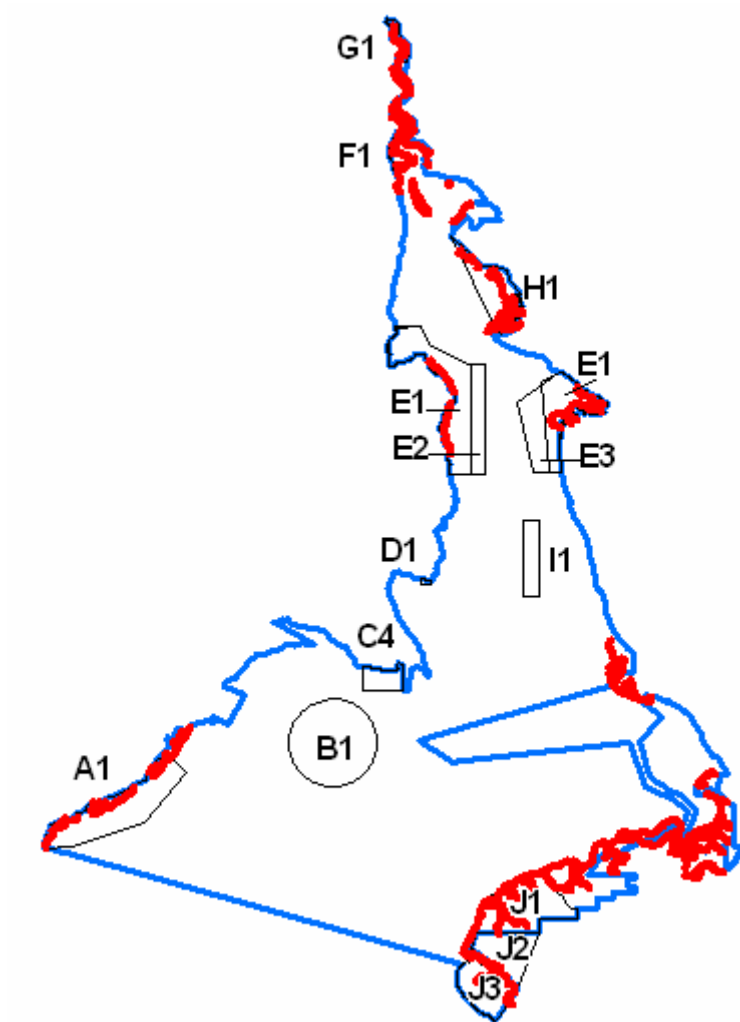
Coarse Sand Beach (Sheltered)



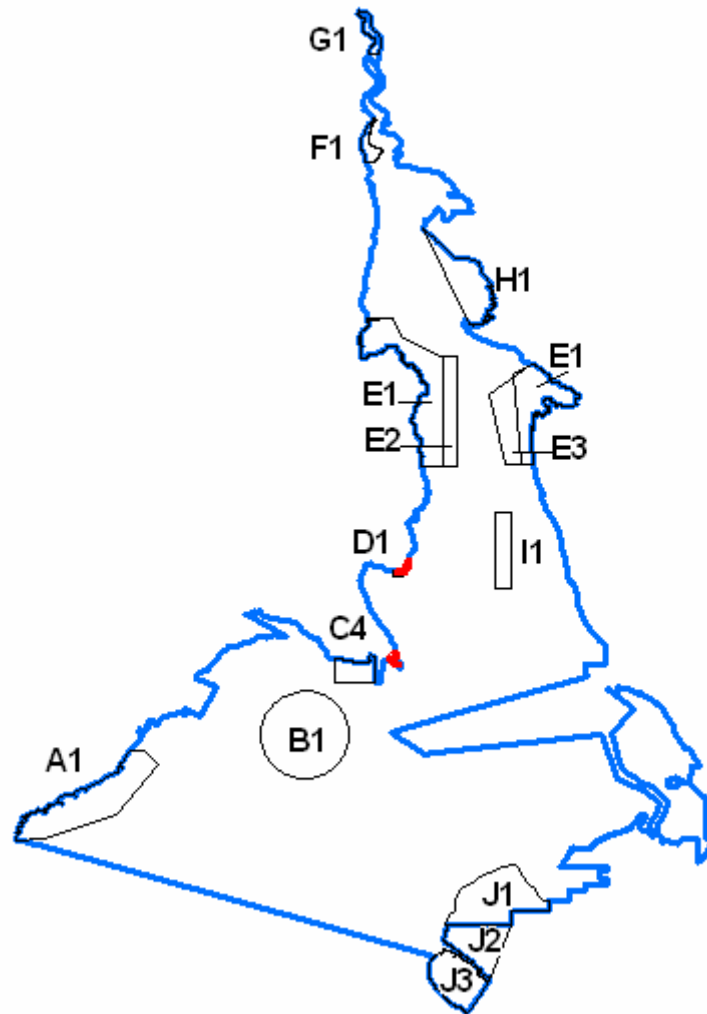
Mangrove (Moderate)



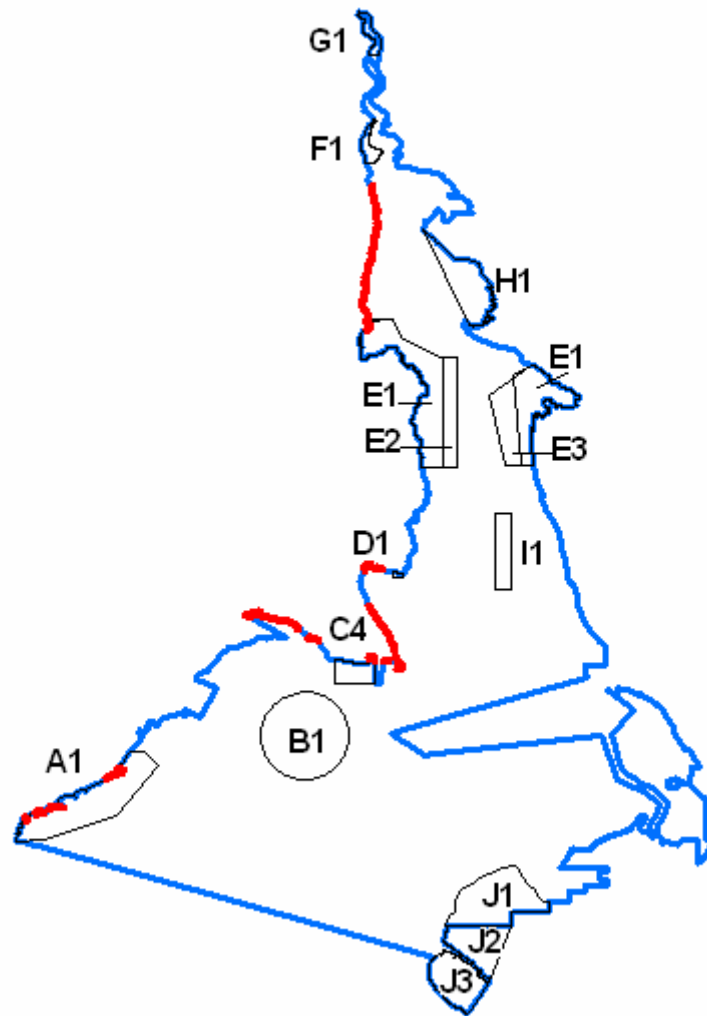
Mangrove (Sheltered)



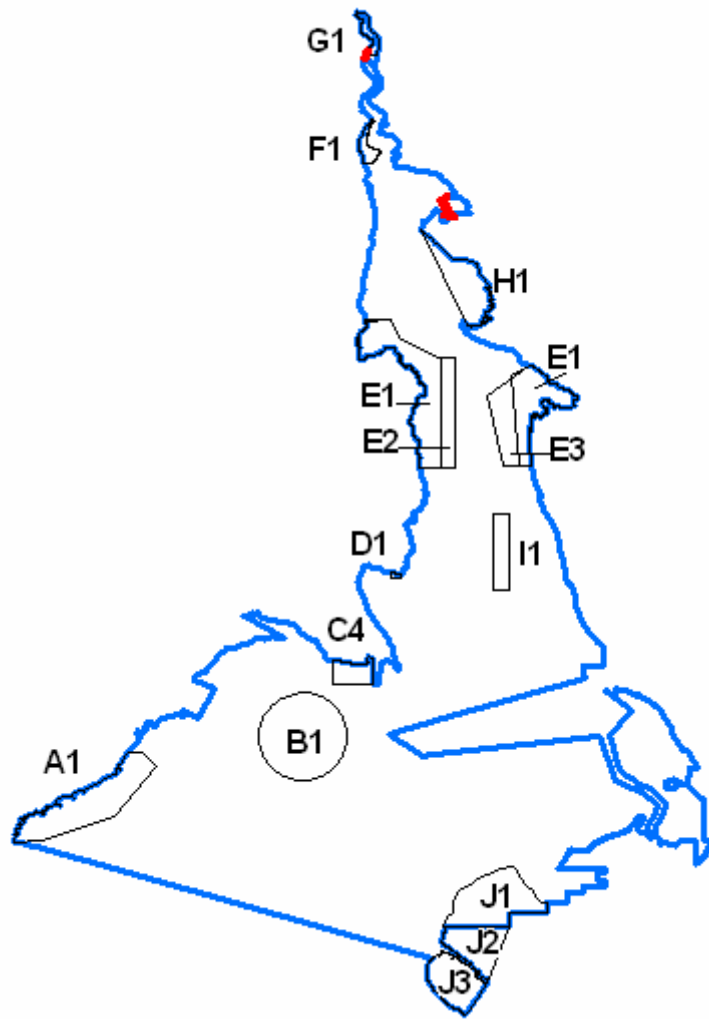
Mixed Beach (Moderate)



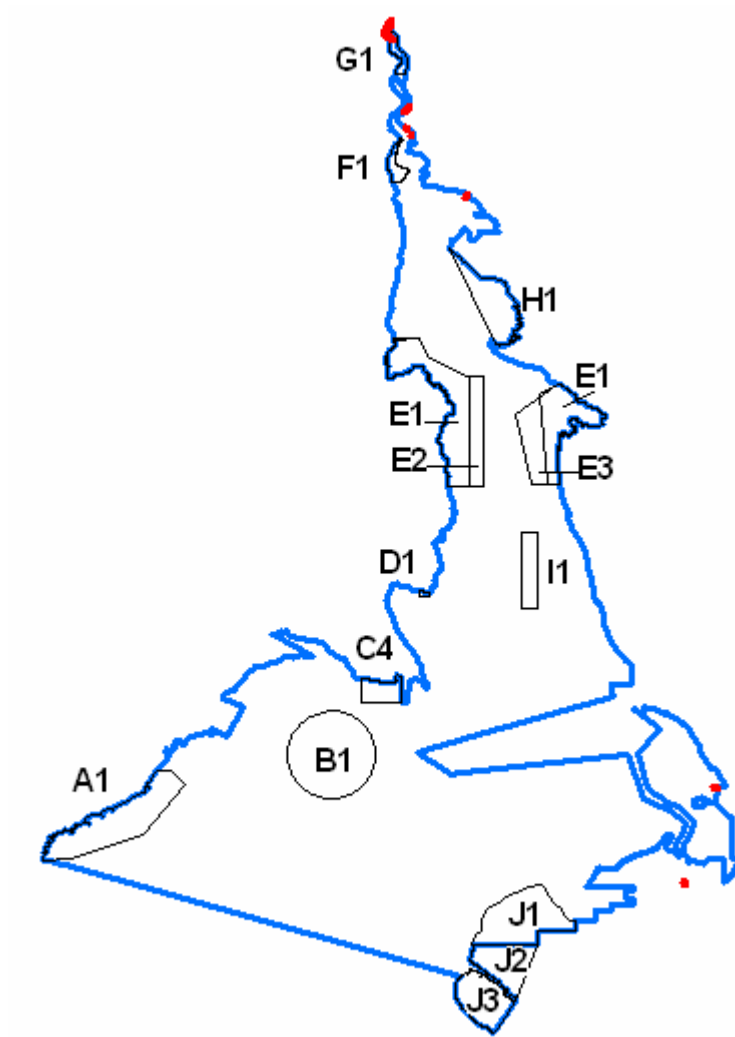
Mixed Beach (Sheltered)



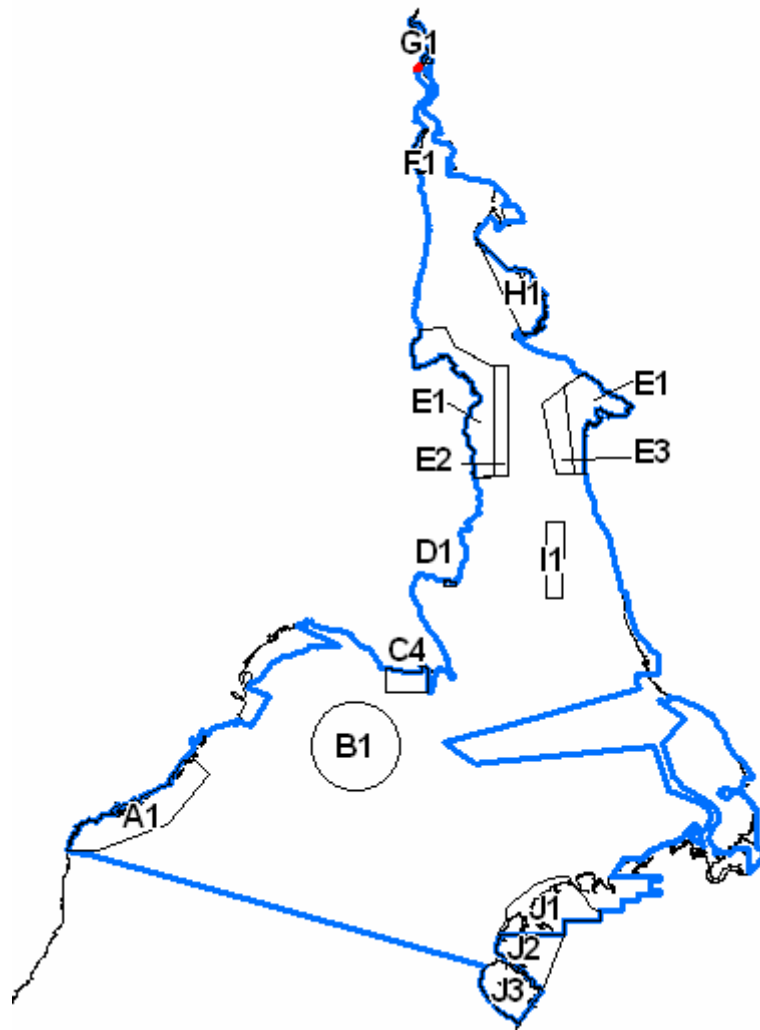
Saltmarsh (Moderate)



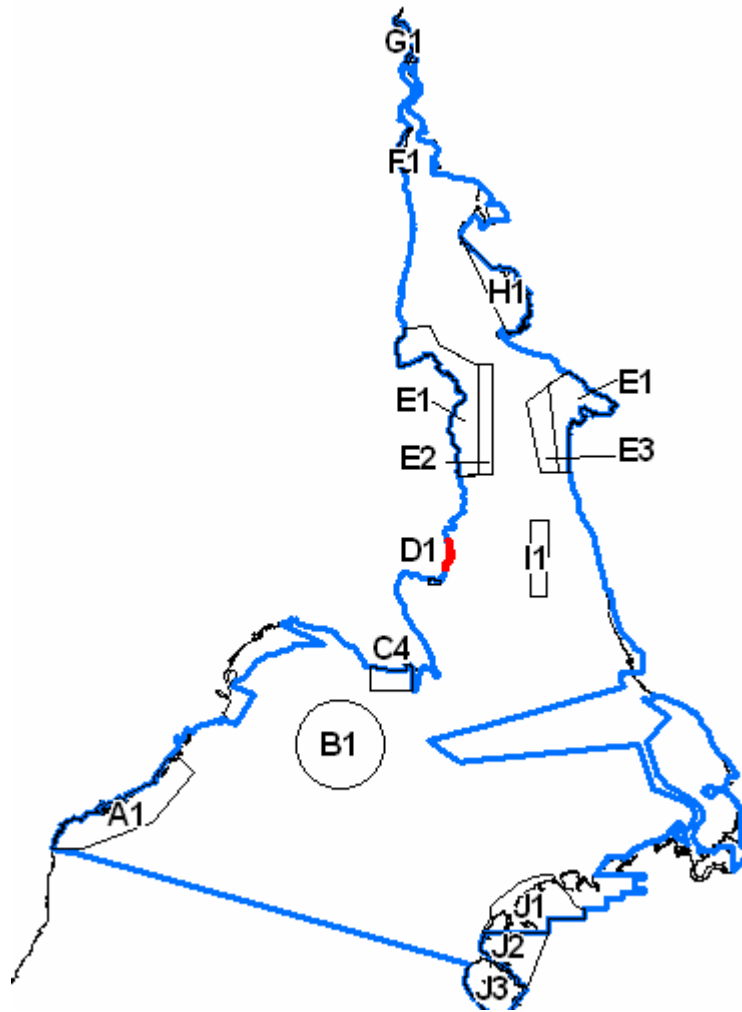
Saltmarsh (Sheltered)



Mudflats and sandflats (Sheltered)



Pebble cobble beach (*sheltered*)



Mapping information:

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