North East Kent Scientific Coastal Advisory Group

Current Account

A Register of the Distribution, Impact and Control of Selected Non-Native Species within the Inter-Tidal Zone of the North East Kent Marine Protected Areas.

Issue 1: 31 December 2019

Willie McKnight
North East Kent Scientific Coastal Advisory Group

Contents

1. Introduction

1. Introduction

Aim

The aim of this project is to set up and maintain an ongoing process to record the distribution, impact and control of selected Non Native Species within the inter-tidal zone of the NEKMPA thereby enabling the Management Group to make informed decisions regarding species management.

The Register

The prime function of the register is to provide the NEKMPA Management Group and the MPA officer with a summary of the condition of the NEKMPA inter-tidal zone in terms of the distribution, impact and control of selected Non Native Species. In addition, open access to the register is made available on-line to interested organizations and individuals via the NEKMPA website: www.thanetcoast.org.uk
Contact MPA Officer Tony Child: tony.child@thanet.gov.uk

Register Management

The register is issued and maintained under documentation control by NEKSCAG and is an agenda item included in the Non Native Species section of NEKSCAG meetings. This provides an opportunity to discuss progress, make adjustments to the process and add or remove selected species. The register is managed on behalf of NEKSCAG by Willie McKnight. The process is "future proof" to facilitate the inclusion of additional new arrivals selected by NEKSCAG.

Frequency

To launch the project, Issue 1 of the register contains baseline and control data for 5 Non Native Species selected by Natural England in 2011. These are:

- Pacific Oyster *Magallana gigas*
- Wireweed *Sargassum muticum*
- Carpet Sea Squirt *Didemnum vexillum*
- Chinese Mitten Crab *Eriocheir sinensis*
- Wakame *Undaria pinnatifida*

The register is re-issued annually on the 31st of December. New issues include amendments approved by NEKSCAG during the current year. Previous issues are archived on the website to provide access to historic data.

Data

To ensure the integrity of the data, the register is compiled entirely with survey data recorded in compliance with the methodology stated in Natural England's Non Native Species project which was launched within the NEKMPA in 2011. Field data must therefore be gathered by surveyors who have attended the associated Non Native Species training course. All surveys are conducted using standard approved methodology. Survey data is therefore quantifiable, evidence based and auditable to it's source. Control data is sourced from Coastbusters volunteers (Natural England and KWT teams). Observations reported from non-trained sources are filtered initially by the MPA officer. Those considered viable are raised at NEKSCAG for assessment and possible field survey.

2. Distribution and Impact by Selected Non Native Species

Table 2.1 shows distribution and impact by species. Species status is indicated per site by an Impact Factor score in the range of 0-48. 0 = species not seen. The section score is the sum of site scores located within the section. The Impact Factor consists of 4 scored components, Peak Density, Area Affected, Substrate Type and Native Species Affected. Impact Factor refers only to wildlife impact.

Table 2.1 Distribution and impact by species.

Section	Survey Period	*Magallana gigas*	*Sargassum muticum*	*Didemnum vexillum*	*Eriocheir sinensis*	*Undaria pinnatifida*					Section IF Total
1	10.2011	22	14	37	0	0					73
2	11.2011	35	13	0	0	0					48
3	11.2011	28	19	15	0	0					62
4											0
5											0
6	12.2011	21	0	18	0	0					39
7	12.2011	21	17	32	0	0					70
8	12.2011	35	23	57	0	0					115
9	9.2011	0	4	41	0	0					45
10	9.2011	25	0	18	0	0					43
11	9.2011	50	0	0	0	0					50
12	9.2011	42	0	0	0	0					42
13	9.2011	58	0	0	0	0					58
14	9.2011	0	0	0	0	0					0
15	9.2011	28	3	11	0	0					42
16	8.2011	75	9	12	0	0					96
17	8.2011	61	0	0	0	0					61
18	11.2012	73	16	0	0	0					89
19	11.2012	67	0	0	0	0					67
20	12.2012	60	0	0	0	0					60
21	12.2012	34	27	0	0	0					61
22	1.2013	36	0	0	0	0					36
23	1.2013	40	29	0	0	0					69
24	1.2013	20	34	0	0	0					54
25	1.2013	36	55	0	0	0					91
26	1.2012	91	47	0	0	0					138
27	1.2012	34	0	0	0	0					34
28	12.2011	33	25	0	0	0					58
29	11.2011	17	0	0	0	0					17
30	11.2011	43	0	0	0	0					43
31	10.2011	47	0	0	0	0					47
32	9.2011	47	0	0	0	0					47
33	9.2011	25	0	0	0	0					25
34	8.2011	36	8	0	0	6					50
35	9.2011	57	12	0	0	0					69
36	10.2011	58	0	0	6	0					64
37	12.2012	22	0	0	0	0					22
38	4.2012	0	0	0	0	0					0
39	4.2012	0	0	0	0	0					0
40	4.2012	0	0	0	0	0					0
41	4.2012	0	0	0	0	0					0
42	4.2012	0	0	0	0	0					0
43	4.2012	0	0	0	0	0					0
44	4.2012	0	0	0	0	0					0
45	4.2012	0	0	0	0	0					0
46	4.2012	0	0	0	0	0					0
Species IF Total		1377	355	241	6	6	0	0	0	0	

2. Distribution and Impact by Selected Non Native Species.

Figure 2.1 shows distribution and impact of *Magallana gigas* by NEKMPA section.

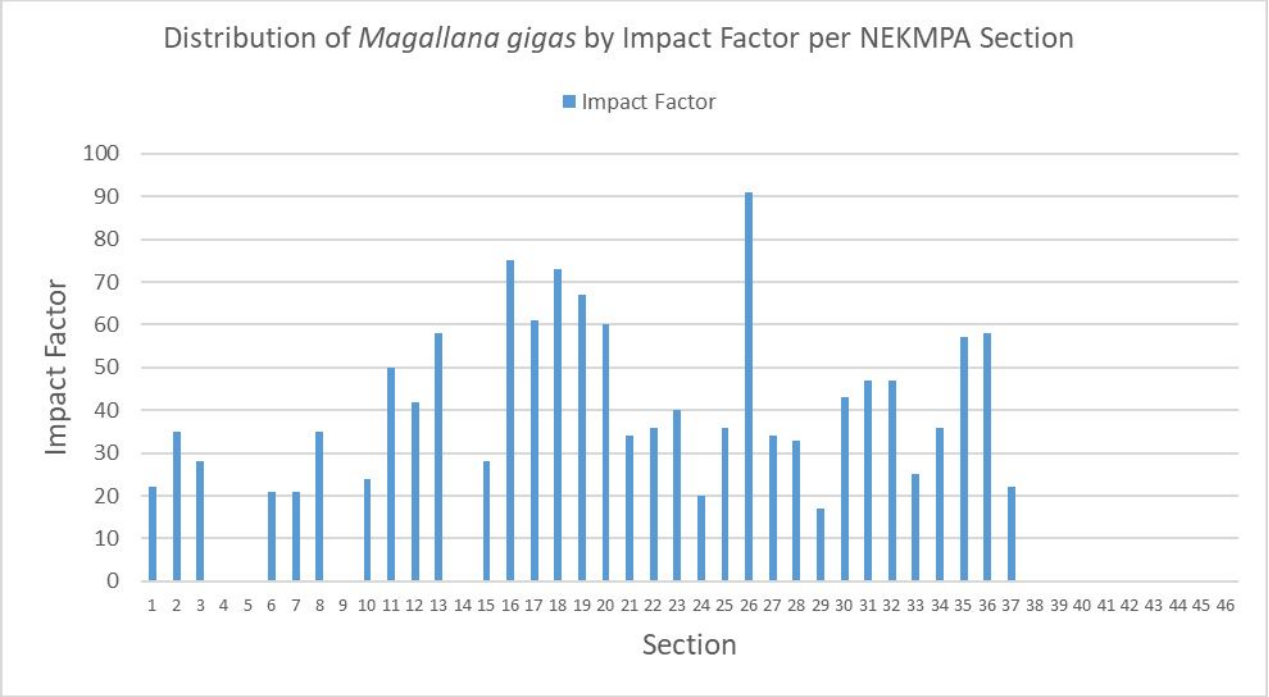


Figure 2.1 Distribution of *Magallana gigas* by Impact Factor per NEKMPA Section.

Figure 2.2 shows distribution and impact of *Sargassum muticum* by NEKMPA section.

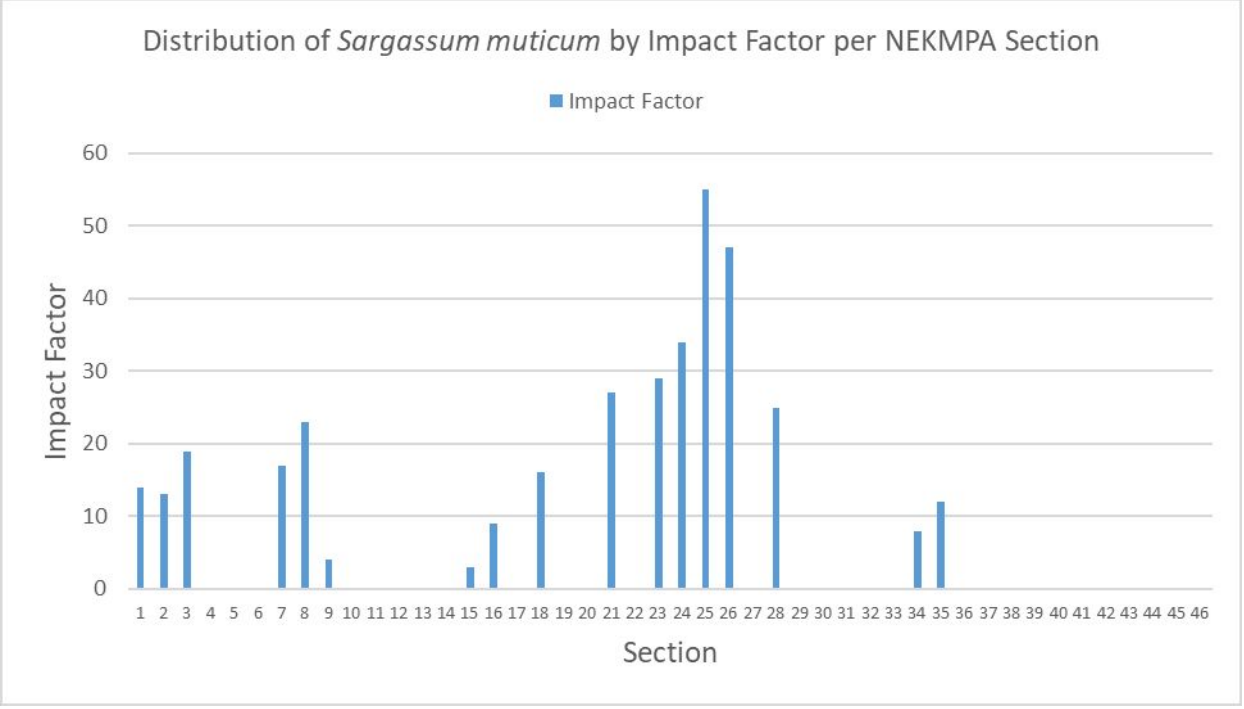


Figure 2.2 Distribution of *Sargassum muticum* by Impact Factor per NEKMPA Section.

2. Distribution and Impact by Selected Non Native Species.

Figure 2.3 shows distribution and impact of *Didemnum vexillum* by NEKMPA section.

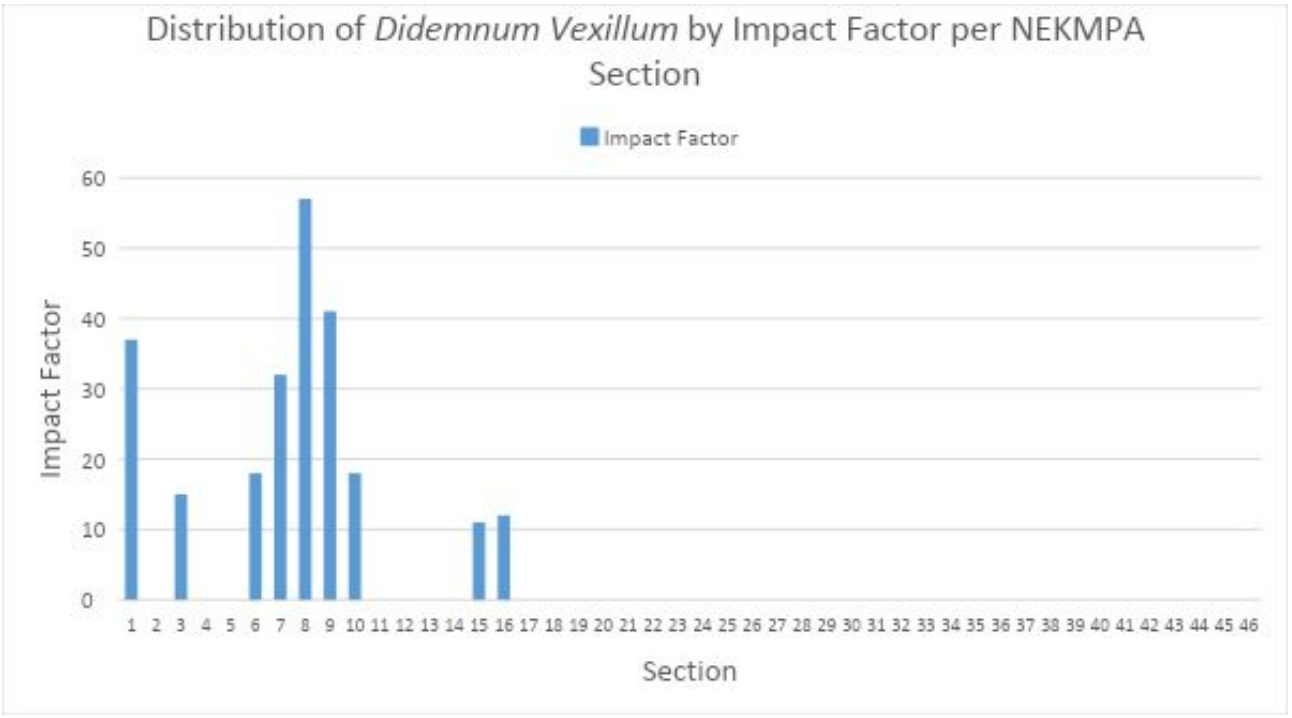


Figure 2.3 Distribution of *Didemnum vexillum* by Impact Factor per NEKMPA Section.

Figure 2.4 shows distribution and impact *of Eriocheir sinensis* by NEKMPA section.

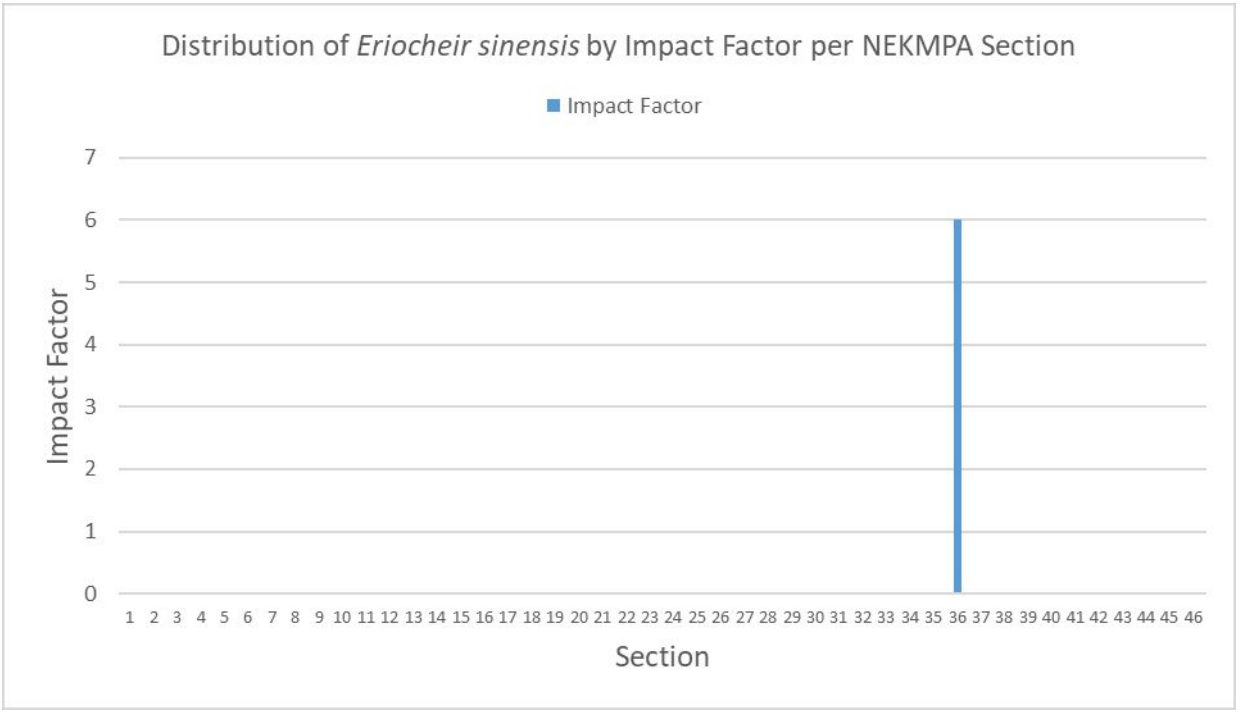


Figure 2.4 Distribution of *Eriocheir sinensis* by Impact Factor per NEKMPA Section.

2. Distribution and Impact by Selected Non Native Species.

Figure 2.5 shows distribution and impact of *Undaria pinnatifida* by NEKMPA section.

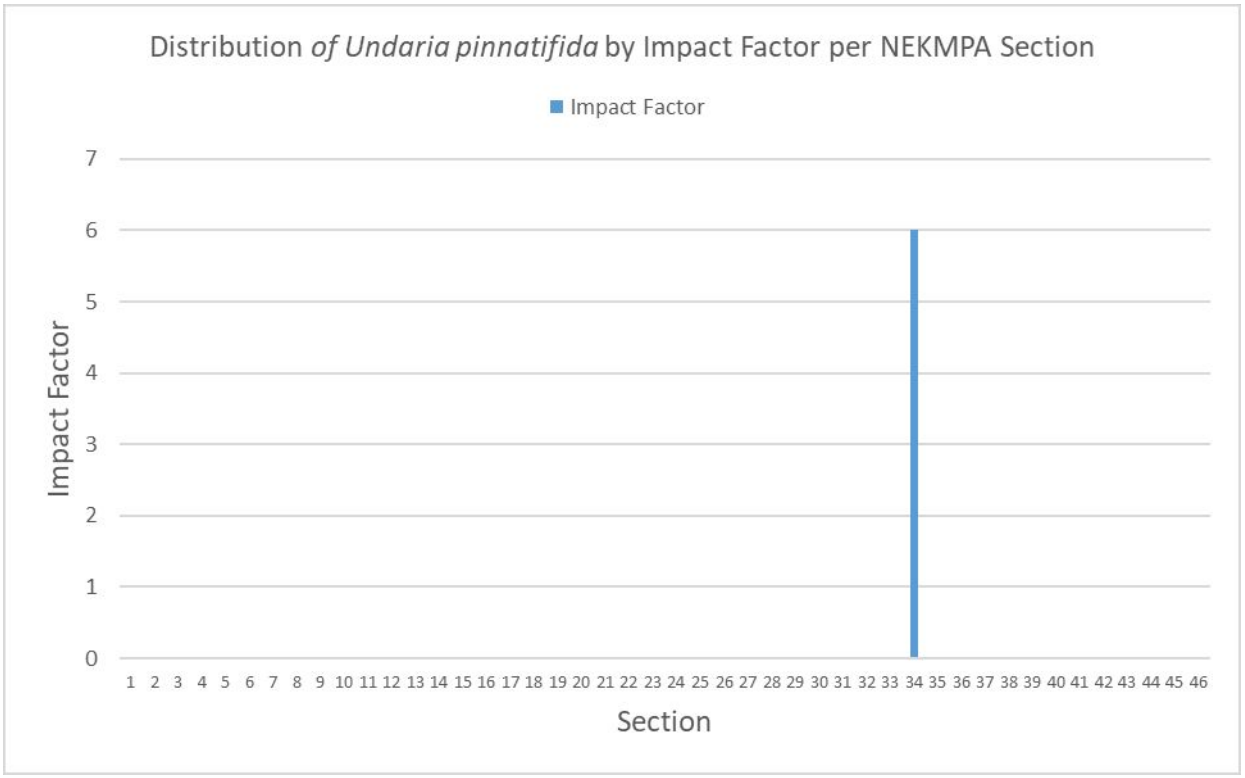


Figure 2.5 Distribution of *Undaria pinnatifida* by Impact Factor per NEKMPA Section.

Figure 2.6 compares the total Impact Factor per species within the NEKMPA.

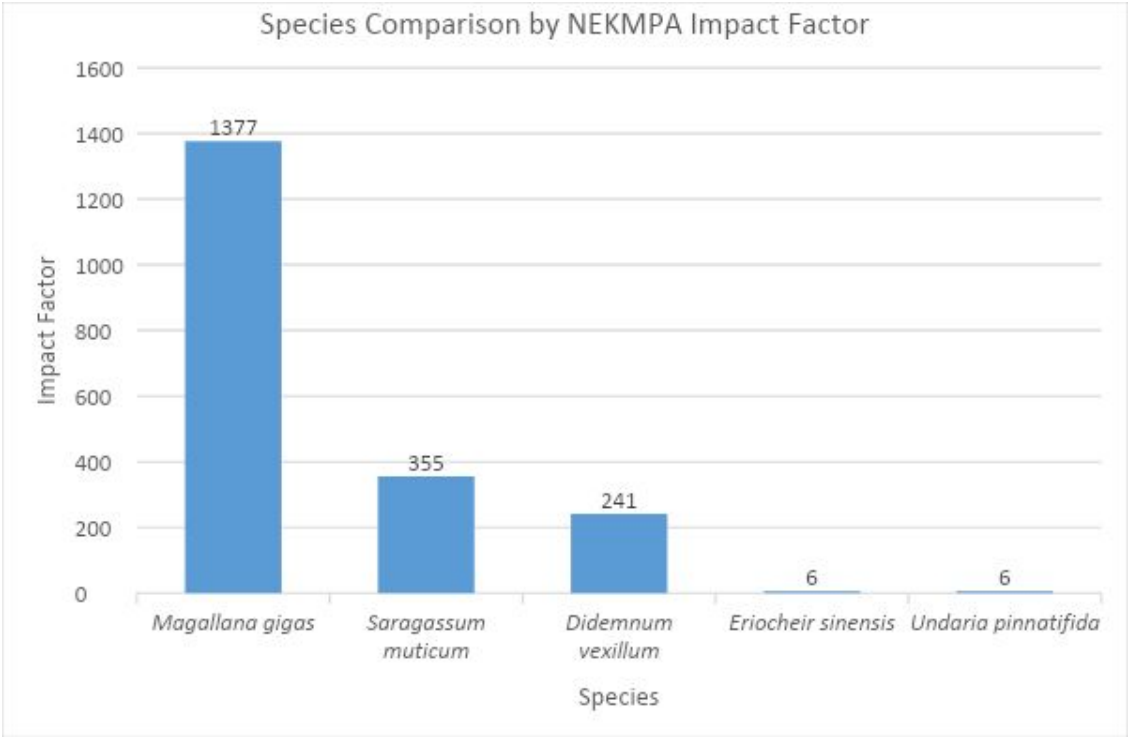


Figure 2.6 Impact Factor comparison by species within the NEKMPA.

3. Distribution and Impact by NEKMPA Section

3. Distribution and Impact by NEKMPA Section.

Section 1

OS Sheet TR Eastings 13000 to 13999
29 Oct. 2011

Magallana gigas is present across the expanse of the site and continues east into Section 2. Attachment is on flint and other shells. Oysters are scattered singly or at low density except on concrete spoil and the outflow pipe in the lower shore where peak density reaches 32. Scattered spat was seen along the northern edge of the spit. This section is low density but large area.
Didemnum vexillum drift was present at the low water line around the perimeter of Long Rock spit attached to *Plocamium cartilagineum* suggesting source was sub-littoral. Within an 80m stretch I counted 22 drift items. This ranged from small blobs (5mm) up to patches reaching 150mm. Similar drift was present along the strand line on the upper shore. D.vex was also present on several submerged and semi-submerged clay boulders along the northern edge of the spit. Peak density was found at the seaward end of a metal outflow pipe (approx. 600mm diameter) in the lower shore zone. Attachment was found on the eastside + westside + underside. In places this formed thin latex like sheets on the vertical faces of timber supports.
Sargassum muticum was found attached to stable flint cobbles along the northern edge of the Long Rock spit. All specimens were < 300mm which may indicate recent settlement. Drift was seen across the section.

Table 3.1 shows Impact Factor scoring for Section 1.

Table 3.1 Impact Factor scoring for Section 1.

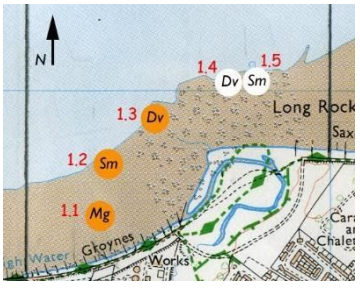
Section 1 29.10.11	Peak Density Score	Area Affected Score	Substrate Chalk Score	Substrate Sediment Score	Substrate Flint Score	Substrate Fauna Score	Substrate Algae Score	Substrate Man-made Score	Substrate Native sp Score	Impact Factor
Site 1.1 Mg	8	12	0	0	1	0	0	1	0	22
Site 1.2 Sm	2	8	0	0	1	0	0	0	0	11
Site 1.3 Dv	8	8	0	2	0	0	2	1	8	29
Site 1.4 Dv	1	1	0	0	0	0	2	0	4	8
Site 1.5 Sm	1	1	0	0	1	0	0	0	0	3
Section Total	20	30	0	2	3	0	4	2	12	73

Table 3.2 shows the location of sites within Section 1.

Table 3.2 Location of sites within Section 1.

GPS

Site 1.1: OS TR 13317 67549
Site 1.2: OS TR 13412 67946
Site 1.3: OS TR 13437 67983
Site 1.4: OS TR 13699 68055
Site 1.5: OS TR 13699 68055



Key

1 - 10
11 - 20
21 - 30
> 30

Figure 3.1 shows an Impact Factor comparison between species within the section.

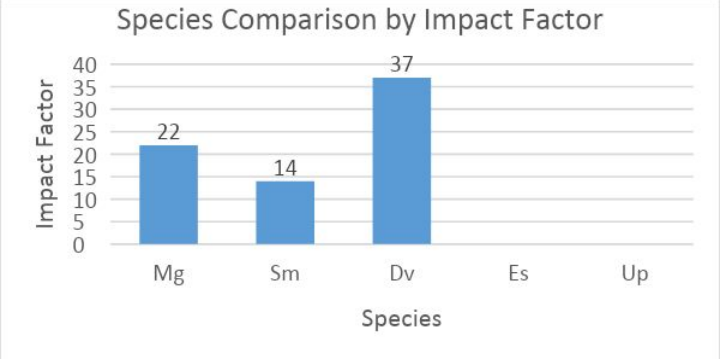


Figure 3.1 Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 2

OS Sheet TR Eastings 14000 to 14999
01.Nov. 2011

Magallana gigas is present across the expanse of the site and continues west into Section 1. Attachment is on flint and other shells. Oysters are scattered singly or at low density. Scattered spat was seen along the northern edge of the spit. Oysters have settled on *Mytilus edulis* at the eastern edge of the section. Mg drift seen. This section is low density but large area.
Sargassum muticum was found attached to clay boulders and stable flint cobbles along the low water line. Abundance was low with small fronds scattered across an area along the low water line. Sm drift was seen across the section.

Table 3.3 shows Impact Factor scoring for Section 2.

Table 3.3 Impact Factor scoring for Section 2.

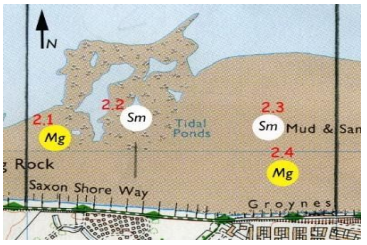
Section 2 01.11.11	Peak Density Score	Area Affected Score	Substrate Chalk Score	Substrate Sediment Score	Substrate Flint Score	Substrate Fauna Score	Substrate Algae Score	Substrate Man-made Score	Substrate Native sp Score	Impact Factor
Site 2.1 Mg	1	12	0	0	1	0	0	1	0	15
Site 2.2 Sm	1	1	0	0	1	0	0	0	0	3
Site 2.3 Sm	4	3	0	2	1	0	0	0	0	10
Site 2.4 Mg	1	12	0	0	1	2	0	0	4	20
Section Total	7	28	0	2	4	2	0	1	4	48

Table 3.4 shows the location of sites within Section 2.

Table 3.4. Location of sites within Section 2.

GPS

Site 2.1: OS TR 14000 68016
Site 2.2: OS TR 14354 68211
Site 2.3: OS TR 14715 68205
Site 2.4: OS TR 14752 67923

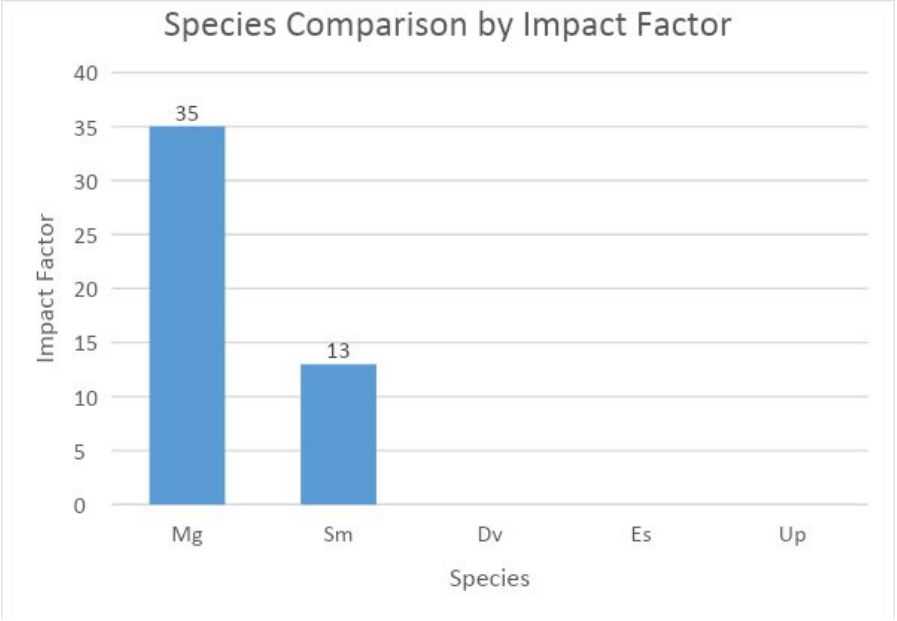


Key

1 - 10
11 - 20
21 - 30
> 30

Figure 3.2 shows an Impact Factor comparison between species within the section.

Figure 3.2 Species comparison by Impact Factor



3. Distribution and Impact by NEKMPA Section.

Section 3

OS Sheet TR Eastings 15000 to 15999
01 Nov. 2011

Magallana gigas is present across a large area extending from the timber groynes in the upper shore, across the mudflats on flint pebble to the seaward extreme of the concrete boulder armour north of the pier. Peak density of 38 is reached adjacent to the pier on a flint/shell/*Mytilus edulis* substrate. There is low level recruitment.
Didemnum vexillum is restricted to a section of the concrete armour north of the pier. Settlement is on 1 boulder on the west side and several boulders in the shallow sub-littoral on the east side. Dv is present on *Sargassum muticum* drift and on *Plocamium cartilagineum* drift across the section.
Sargassum muticum is present across the section in single specimens and small patches containing scattered examples. Specimens are generally small with fronds < 300mm and are attached to fixed flint cobbles and clay boulders

Table 3.5 shows Impact Factor scoring for Section 3.

Table 3.5 Impact Factor scoring for Section 3.

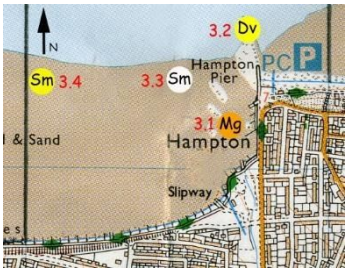
Section 3 01.11.11	Peak Density Score	Area Affected Score	Substrate Chalk Score	Substrate Sediment Score	Substrate Flint Score	Substrate Fauna Score	Substrate Algae Score	Substrate Man-made Score	Substrate Native sp Score	Impact Factor
Site 3.1 Mg	8	12	0	0	1	2	0	1	4	28
Site 3.2 Dv	4	4	0	0	0	0	2	1	4	15
Site 3.3 Sm	6	1	0	0	1	0	0	0	0	8
Site 3.4 Sm	2	6	0	2	1	0	0	0	0	11
Section Total	20	23	0	2	3	2	2	2	8	62

Table 3.6 shows the location of sites within Section 3.

Table 3.6. Location of sites within Section 3.

GPS

Site 3.1: OS TR 15656 67975
Site 3.2: OS TR 15732 68477
Site 3.3: OS TR 15600 68263
Site 3.4: OS TR 15029 68260



Key

1 - 10
11 - 20
21 - 30
> 30

Figure 3.3 shows an Impact Factor comparison between species within the section.

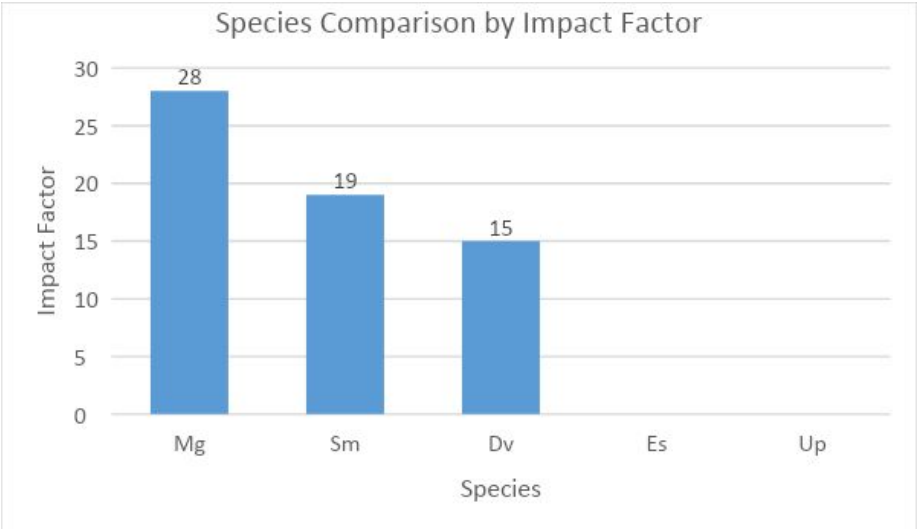


Figure 3.3. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 4

OS Sheet TR Eastings 16000 to 16999

Section 4 Herne Bay is excluded from the North East Kent European Marine Sites (NEKEMS) and was therefore not part of the 2011 survey.

3. Distribution and Impact by NEKMPA Section.

Section 5

OS Sheet TR Eastings 17000 to 17999

Section 5 Herne Bay is excluded from the North East Kent European Marine Sites (NEKEMS) and was therefore not part of the 2011 survey.

3. Distribution and Impact by NEKMPA Section.

Section 6

OS Sheet TR Eastings 18000 to 18999
28.Dec.2011

Magallana gigas is present across the length of the section in a narrow band in the mid shore zone. At the eastern end of the section this band occasionally extends to the lower mid shore zone where small mussel beds exist. Oysters are present in low number and density. Attachment is on the seaward end of the groynes and on flint cobbles, concrete spoil and small patches of mussel bed. Occasional spat was seen < 50mm.
Didemnum vexillum is present on concrete blocks which have been placed in the mud of the lower shore zone to secure fixed nets. Settlement is restricted to these fixtures due to the lack of any other stable hard substrate within the expanse of the lower shore zone mudflats. Colonies are small and in poor condition possibly due to the onset of winter conditions.

Table 3.7 shows Impact Factor scoring for Section 6.

Table 3.7 Impact Factor scoring for Section 6.

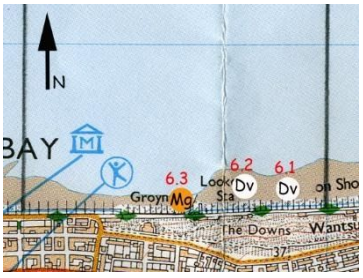
Section 6 28.12.11	Peak Density Score	Area Affected Score	Substrate Chalk Score	Substrate Sediment Score	Substrate Flint Score	Substrate Fauna Score	Substrate Algae Score	Substrate Man-made Score	Substrate Native sp Score	Impact Factor
Site 6.1 Dv	6	1	0	0	0	0	0	1	0	8
Site 6.2 Dv	2	1	0	0	0	0	2	1	4	10
Site 6.3 Mg	1	12	0	0	1	2	0	1	4	21
Section Total	9	14	0	0	1	2	2	3	8	39

Table 3.8 shows the location of sites within Section 6.

Table 3.8. Location of sites within Section 6.

GPS

Site 6.1: OS TR 18861 68608
Site 6.2: OS TR 18718 68757
Site 6.3: OS TR 18490 68480



Key

1 - 10
11 - 20
21 - 30
> 30

Figure 3.4 shows an Impact Factor comparison between species within the section.

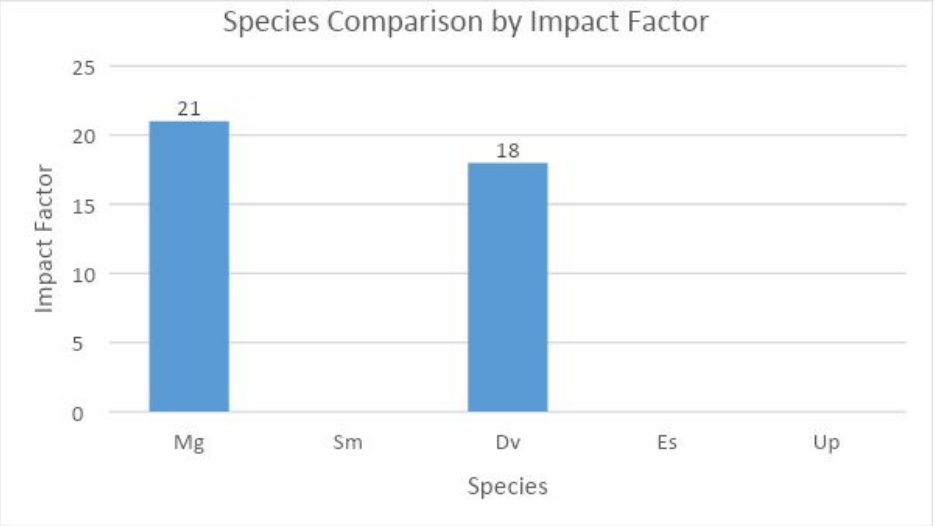


Figure 3.4 Species comparison by Impact Factor

37. Distribution and Impact by NEKMPA Section.

Section 7

OS Sheet TR Eastings 19000 to 19999
28. Dec. 2011

Magallana gigas is present across the length of the section in a narrow band in the mid shore zone. At the eastern end of the section this band occasionally extends to the lower shore zone where mussel beds exist. Oysters are present in low number and density. Attachment is on the seaward end of the groynes and on flint cobbles, concrete spoil and small patches of mussel bed. Occasional spat was seen < 50mm.
Didemnum vexillum is most abundant in the east of the section where it is attached to the sides and undersides of sandstone boulders and slabs. Density decreases towards the west as the substrate changes to 100% mud. Within the mud attachment was seen on concrete and plastic spoil. *Dv* drift on *Plocamium* was seen across the section.
Sargassum muticum is present in large pools and in the shallow sub-littoral across the section. Attachment is on flint, shells and sandstone boulders. Sm drift is common.

Table 3.9 shows Impact Factor scoring for Section 7.

Table 3.9. Impact Factor scoring for Section 7.

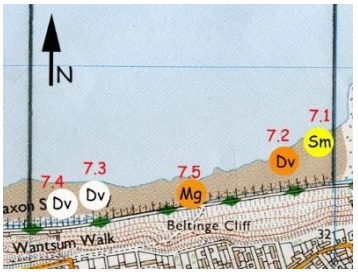
Section 7 28.12.11	Peak Density Score	Area Affected Score	Substrate Chalk Score	Substrate Sediment Score	Substrate Flint Score	Substrate Fauna Score	Substrate Algae Score	Substrate Man-made Score	Substrate Native sp Score	Impact Factor
Site 7.1 Sm	8	8	0	0	1	0	0	0	0	17
Site 7.2 Dv	8	10	0	2	0	0	2	0	4	26
Site 7.3 Dv	1	1	0	0	0	0	0	1	0	3
Site 7.4 Dv	1	1	0	0	0	0	0	1	0	3
Site 7.5 Mg	1	12	0	0	1	2	0	1	4	21
Section Total	19	32	0	2	2	2	2	3	8	70

Table 3.10 shows the location of sites within Section 7.

Table 3.10 Location of sites within Section 7.

GPS

Site 7.1: OS TR 19930 68734
Site 7.2: OS TR 19792 68737
Site 7.3: OS TR 19255 68668
Site 7.4: OS TR 19160 68728
Site 7.5: OS TR 19432 68571



Key

1 - 10
11 - 20
21 - 30

		> 30

Figure 3.5 shows an Impact Factor comparison between species within the section.

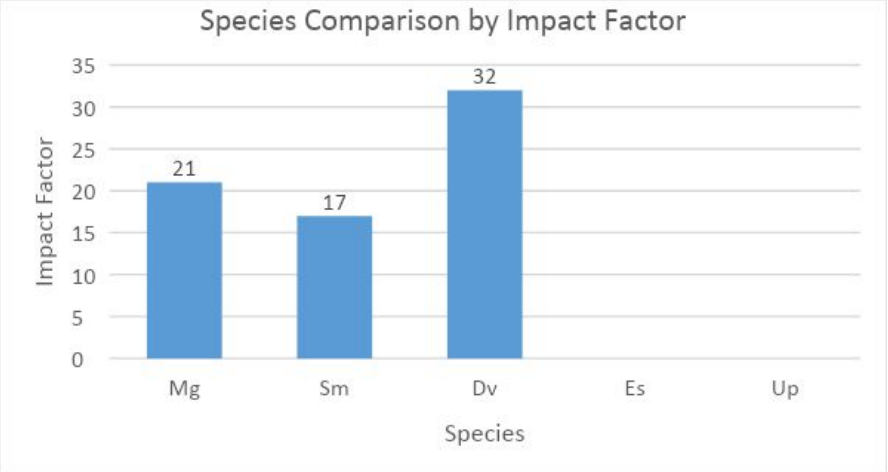


Figure 3.5. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 8

OS Sheet TR Eastings 20000 to 20999
27. Dec. 2011

Magallana gigas is present across the section but in low numbers and density. Attachment is on the scattered sandstone boulders and occasionally on the *Mytilus edulis* which is also attached to the same boulders. There is some attachment to flint pebble on the outcrop at the western boundary of the section. Occasional spat was seen.
Didemnum vexillum is abundant attached to sandstone boulders sometimes in sheets up to 40% density. Settlement is confined to the lower shore zone extending into the shallow sub-littoral. There is extensive drift on *Sargassum Muticum* and sub-littoral species such as *Plocamium cartilagineum* and *Calliblepharis ciliata.* In late December some colonies were seen to retreat.
Sargassum muticum There is extensive settlement in this section. Stands with the greatest density are in shallow pools and the shallow sub-littoral where density can reach 30%. Frequent drift was seen. Attachment is on flint pebble, shell and occasionally sandstone boulders.

Table 3.11 shows Impact Factor scoring for Section 8.

Table 3.11 Impact Factor scoring for Section 8.

Section 8 27.12.11	Peak Density Score	Area Affected Score	Substrate Chalk Score	Substrate Sediment Score	Substrate Flint Score	Substrate Fauna Score	Substrate Algae Score	Substrate Man-made Score	Substrate Native sp Score	Impact Factor
Site 8.1 Dv	8	4	0	2	0	0	0	0	0	14
Site 8.2 Dv	6	1	0	2	0	0	0	0	0	9
Site 8.3 Dv	8	12	0	2	0	2	2	0	8	34
Site 8.4 Mg	1	12	0	2	1	2	0	0	4	22
Site 8.5 Mg	1	4	0	2	0	2	0	0	4	13
Site 8.6 Sm	8	12	0	2	1	0	0	0	0	23
Section Total	32	45	0	12	2	6	2	0	16	115

Table 3.12 shows the location of sites within Section 8.

Table 3.12. Location of sites within Section 8.

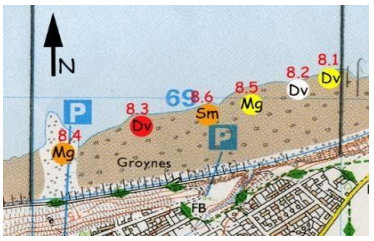
GPS		Key
Site 8.1: OS TR 20995 69039 Site 8.2: OS TR 20856 69035 Site 8.3: OS TR 20254 68774 Site 8.4: OS TR 20430 68812 Site 8.5: OS TR 20909 68903 Site 8.6 OS TR 20445 68940		1 - 10 11 - 20 21 - 30 > 30

Figure 3.6 shows an Impact Factor comparison between species within the section.

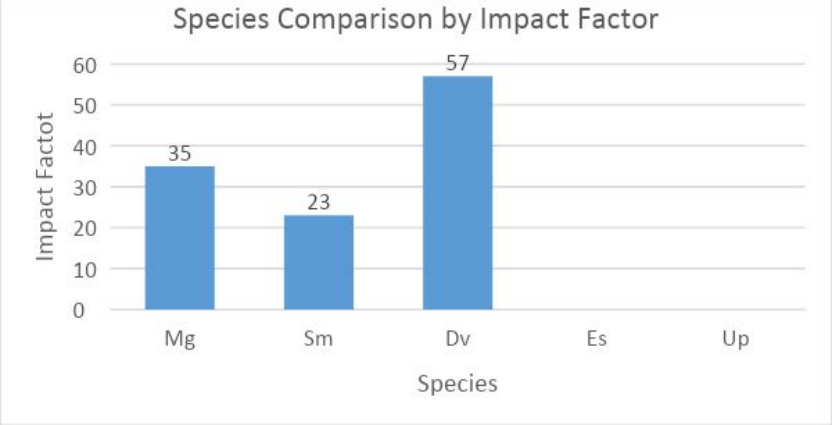


Figure 3.6. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 9

OS Sheet TR Eastings 21000 to 21999
30 Sep. 2011

Didemnum vexillum is present across the section confined to the lower shore zone. Attachment is to the side and underside of sandstone boulders with spread to adjacent *Chondrus crispus* in places. Settlement is abundant and can be seen extending to semi-submerged boulders in the sub-littoral. In sheltered locations Dv has adopted the "dripping" morph. *Dv* is also present as drift on red algae.
Sargassum muticum is present as numerous small specimens with frond lengths up to 200mm. Settlement is on stable flint pebble fixed in the mud.

Table 3.13 shows Impact Factor scoring for Section 9.

Table 3.13. Impact Factor scoring for Section 9

Section 9 30.09.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Dv	1	4	0	2	0	0	2	0	4	13
Site 2 Dv	1	1	0	2	0	0	0	0	0	4
Site 3 Dv	8	8	0	2	0	0	2	0	4	24
Site 4 Sm	1	2	0	0	1	0	0	0	0	4
Section Total	11	15	0	6	1	0	4	0	8	45

Table 3.14 shows the location of sites within Section 9.

Table 3.14. Location of sites within Section 9.

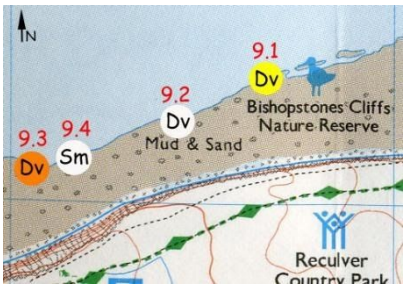
GPS		Key
Site 9.1: OS TR 21678 69332 Site 9.2: OS TR 21439 69167 Site 9.3: OS TR 21136 69056 Site 9.4: OS TR 21128 69101		1 - 10 11 - 20 21 - 30 > 30

Figure 3.7 shows an Impact Factor species within the comparison between section.

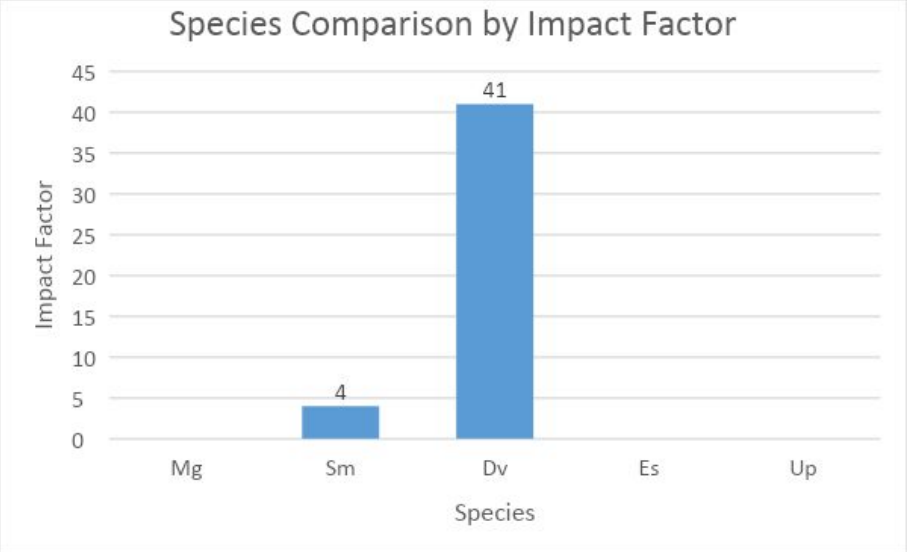


Figure 3.7. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 10

OS Sheet TR Eastings 22000 to 22999
13 Sep. 2011

Magallana gigas is present across the expanse of this section at low numbers and density. Settlement is on man-made structures, tabular boulders and compacted areas of the platform west of Reculver towers. Abundance varies from single specimens to 4 oysters in a square meter. The population is mature with no oysters < 30mm recorded. There is no visible impact on native species or habitats.
Didemnum vexillum is confined to a narrow band of approximately 20m in the lower shore zone running from the end of the sea wall at Reculver to the boundary of Section 9 at Bishopstone. Section density is low with scattered patches attached to the sides and undersides of boulders. At some locations local abundance is high and settlement has progressed to the dripping morph covering up to 1 square meter on the underside of boulders. There is no visible impact on native species or habitats.
Sargassum muticum drift seen.

Table 3.15 shows Impact Factor scoring for Section 10.

Table 3.15. Impact Factor scoring for Section 10

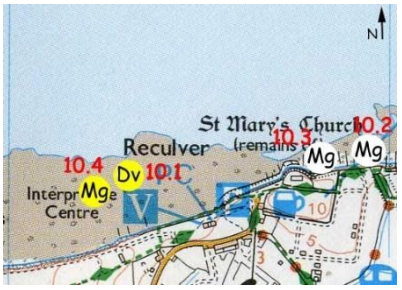
Section 10 Baseline 13.09.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Dv	8	8	0	2	0	0	0	0	0	18
Site 2 Mg	6	1	0	0	0	0	0	1	0	8
Site 3 Mg	2	3	0	0	0	0	0	1	0	6
Site 4 Mg	1	8	0	2	0	0	0	0	0	11
Section Total	17	20	0	4	0	0	0	2	0	43

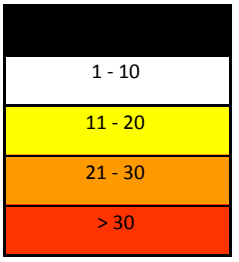
Table 3.16 shows the location of sites within Section 10.

Table 3.16. Location of sites within Section 10.

GPS

Site 10.1: OS TR 22356 69292
Site 10.2: OS TR 22944 69447
Site 10.3: OS TR 22777 69424
Site 10.4: OS TR 22356 69292





Key

Figure 3.8 shows an Impact Factor comparison between species within the section.

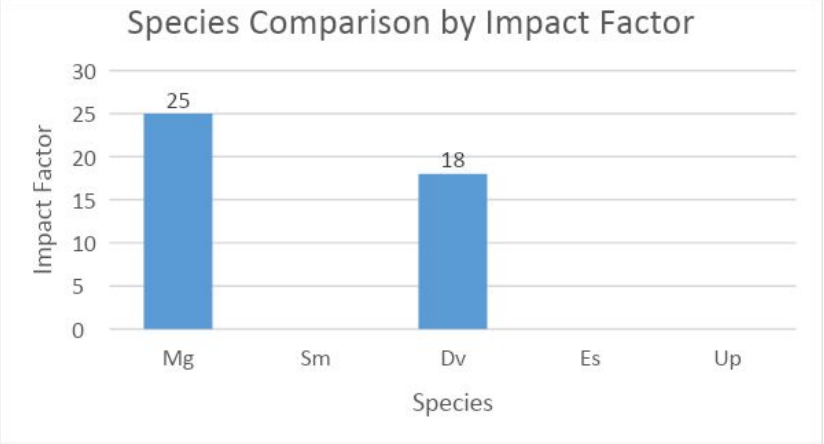


Figure 3.8. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 11

OS Sheet TR Eastings 23000 to 23999
13 Sep. 2011

Magallana gigas is present at low numbers and density. Settlement is confined to the seaward end of the groynes and outflow pipe where *Fucus serratus* may be a controlling factor.
On the mussel bed outcrop oysters are scattered across the feature reaching a peak density of 8 oysters in a square meter. Attachment is on flint cobbles and *Mytilus edulis*. The population is mature with signs of mortalities (gaping shells). There are no oysters < 30mm. There is low level impact on the *Mytilus edulis* population.

Table 3.17 shows Impact Factor scoring for Section 11.

Table 3.17. Impact Factor scoring for Section 11

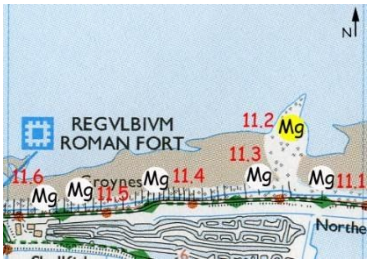
Section 11 Baseline 13.09.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	2	3	0	0	0	0	0	1	0	6
Site 2 Mg	1	10	0	0	1	2	0	0	4	18
Site 3 Mg	1	4	0	0	0	0	0	1	0	6
Site 4 Mg	2	3	0	0	0	0	0	1	0	6
Site 5 Mg	2	3	0	0	0	0	0	1	0	6
Site 6 Mg	6	1	0	0	0	0	0	1	0	8
Section Total	14	24	0	0	1	2	0	5	4	50

Table 3.18 shows the location of sites within Section 11.

Table 3.18. Location of sites within Section 11.

GPS

Site 11.1: OS TR 23881 69510
Site 11.2: OS TR 23785 69613
Site 11.3: OS TR 23664 69517
Site 11.4: OS TR 23394 69498
Site 11.5: OS TR 23182 69482
Site 11.6: OS TR 23101 69466



Key

1 - 10
11 - 20
21 - 30
> 30

Figure 3.9 shows an Impact Factor comparison between species within the section.

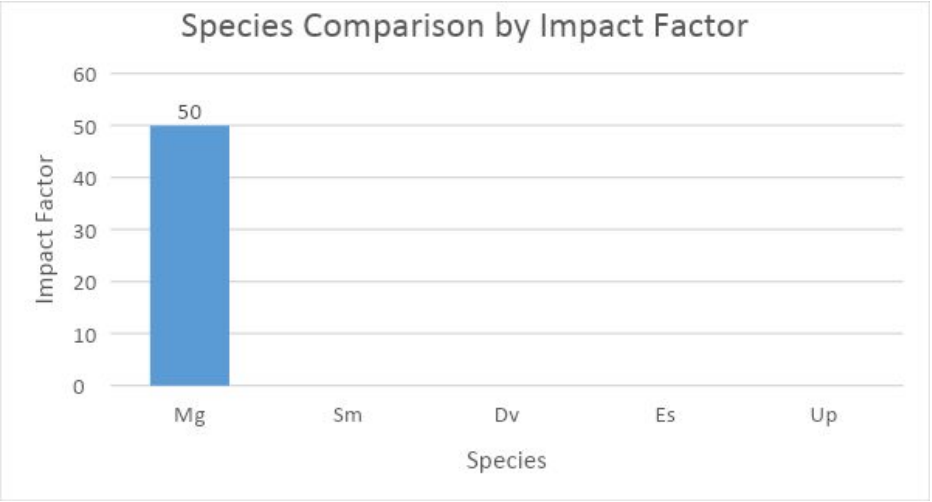


Figure 3.9. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 12

OS Sheet TR Eastings 24000 to 24999
13 Sep. 2011

Magallana gigas is present at low numbers and density. Settlement is confined to the seaward end of the groynes where *Fucus serratus* may be a controlling factor. On the mussel bed outcrop oysters are scattered across the feature reaching a peak density of 6 oysters in a square meter. Attachment is on flint cobbles and *Mytilus edulis*. The population is mature with signs of mortalities (gaping shells). There are no oysters < 30mm. There is low level impact on the *Mytilus edulis* population.

Table 3.19 shows Impact Factor scoring for Section 12.

Table 3.19. Impact Factor scoring for Section 12

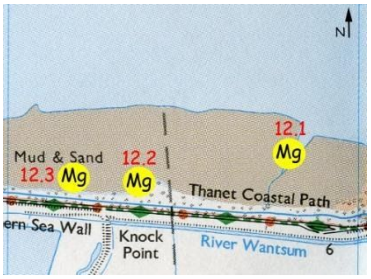
Section 12 Baseline 13.09.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	1	8	0	0	1	2	0	0	4	16
Site 2 Mg	8	4	0	0	0	0	0	1	0	13
Site 3 Mg	8	4	0	0	0	0	0	1	0	13
Section Total	17	16	0	0	1	2	0	2	4	42

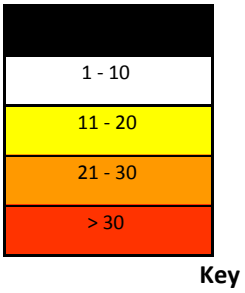
Table 3.20 shows the location of sites within Section 12.

Table 3.20. Location of sites within Section 12.

GPS

Site 12.1: OS TR 24749 69501
Site 12.2: OS TR 24351 69458
Site 12.3: OS TR 24133 69475





Key

Figure 3.10 shows an Impact Factor comparison between species within the section.

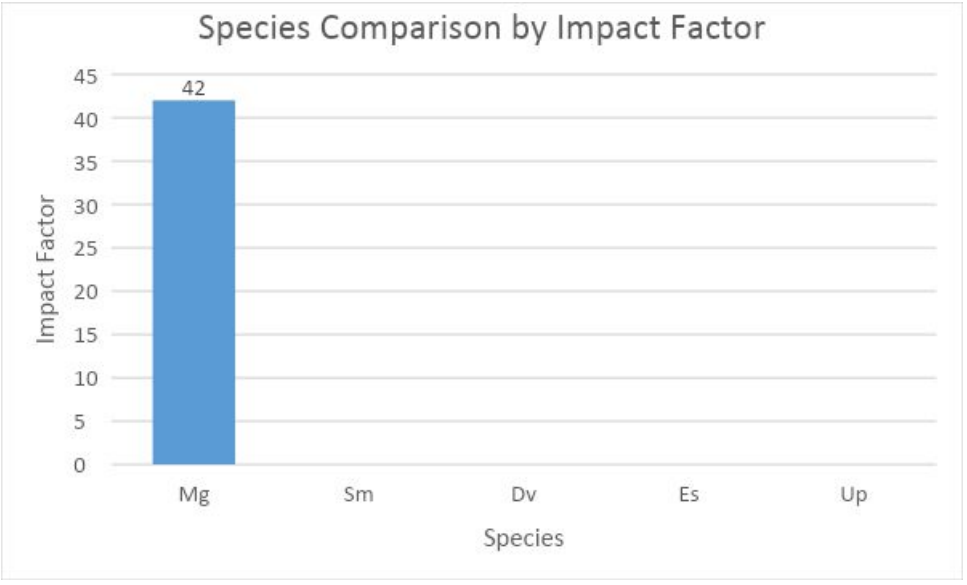


Figure 3.10. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 13

OS Sheet TR Eastings 25000 to 25999
01 Sep. 2011

Magallana gigas is present at low numbers and density. Settlement is confined to the seaward end of the groynes where *Fucus serratus* may be a controlling factor. On the mussel bed outcrop oysters are scattered across the feature reaching a peak density of 11 oysters in a square meter. Attachment is on flint cobbles and *Mytilus edulis*. Around the remains of the timber hull oysters

have attached to the timber and to flint cobbles which have accumulated. The population is mature with signs of mortalities (gaping shells). There are no oysters < 30mm. There is low level impact on the *Mytilus edulis* population. *Sargassum muticum* drift was seen.

Table 3.21 shows Impact Factor scoring for Section 13.

Table 3.21. Impact Factor scoring for Section 13

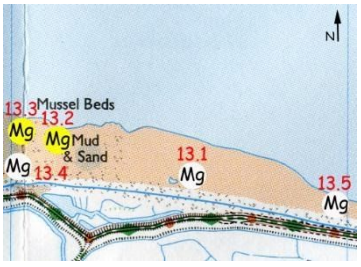
Section 13 Baseline 01.09.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	1	4	0	0	1	0	0	1	0	7
Site 2 Mg	1	10	0	0	1	2	0	0	4	18
Site 3 Mg	1	10	0	0	1	2	0	0	4	18
Site 4 Mg	6	1	0	0	0	0	0	1	0	8
Site 5 Mg	4	2	0	0	0	0	0	1	0	7
Section Total	13	27	0	0	3	4	0	3	8	58

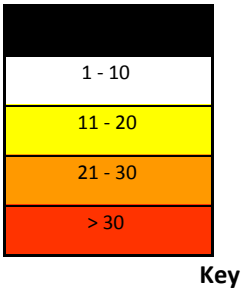
Table 3.22 shows the location of sites within Section 13.

Table 3.22. Location of sites within Section 13.

GPS

Site 13.1: OS TR 25508 69422
Site 13.2: OS TR 25110 69496
Site 13.3: OS TR 25075 69484
Site 13.4: OS TR 25000 69423
Site 13.5: OS TR 25973 69314





Key

Figure 3.11 shows an Impact Factor comparison between species within the section.

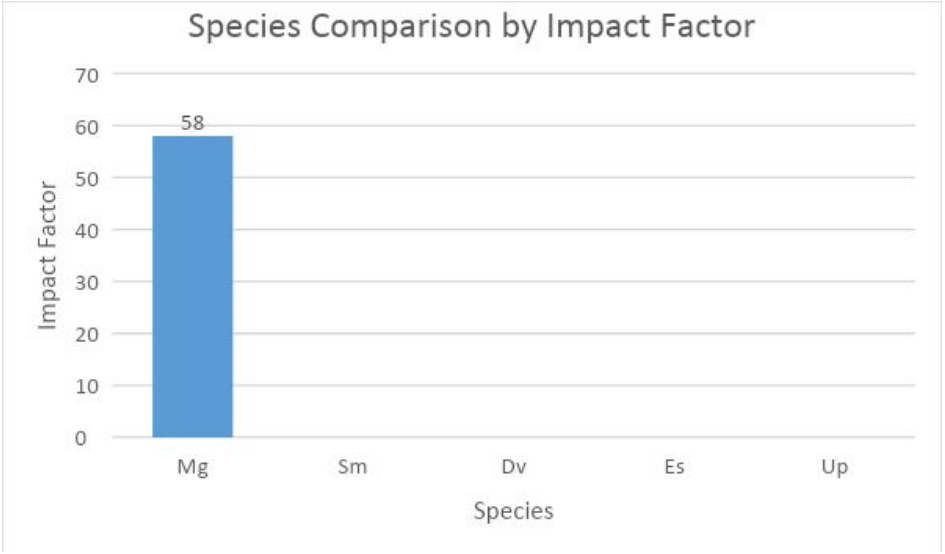


Figure 3.11. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 14

OS Sheet TR Eastings 26000 to 26999
01 Sep. 2011

No target species were seen. *Sargassum muticum and Didemnum vexillum* drift see.

Section 15

OS Sheet TR Eastings 27000 to 27999
01 Sep. 2011

Magallana gigas is present at low numbers and density on the timber frame, outflow pipe and adjacent outcrop. Peak density reaches 9 oysters in a square meter. Attachment on the outcrop is on flint cobble and *Mytilus edulis* and adjacent chalk reef. Several spat < 30mm were seen.
Didemnum vexillum is present at a single location attached to a *Crassostrea gigas* shell and also attached to fronds of *Ceramium sp* all contained within an area of 2 square meters. Nearby, along the low water line, seven examples of drift *Didemnum vexillum* were seen attached to *Ceramium sp* and *Sargassum muticum* .
Also present at this site were examples of a native sponge and ascidians *Botrylloides leachi, Botryllus schlosseri* and *Halichondria panicea* requiring a cautious approach to Dvex identification.
Sargassum muticum is present as a single plant, maximum frond length = 250mm attached to broken shell in shallow standing water east of the outflow pipe. *Sargassum muticum* drift seen.

Table 3.23 shows Impact Factor scoring for Section 15.

Table 3.23. Impact Factor scoring for Section 15

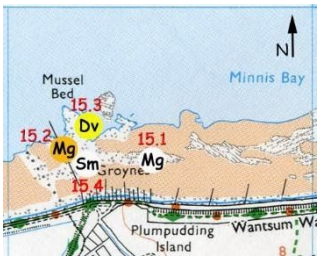
Section 15 Baseline 01.09.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	4	2	0	0	0	0	0	1	0	7
Site 2 Mg	1	8	4	0	1	2	0	1	4	21
Site 3 Dv	1	2	0	0	0	2	2	0	4	11
Site 4 Sm	1	1	0	0	1	0	0	0	0	3
Section Total	7	13	4	0	2	4	2	2	8	42

Table 3.24 shows the location of sites within Section 15.

Table 3.24. Location of sites within Section 15.

GPS

Site 15.1: OS TR 25508 69422
Site 15.2: OS TR 25110 69496
Site 15.3: OS TR 25075 69484
Site 15.4: OS TR 25000 69423



Key

Figure 3.12 shows an Impact Factor comparison between species within the section.

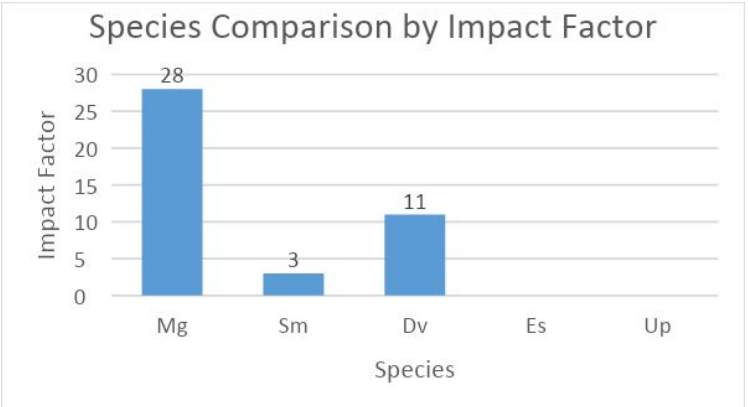


Figure 3.12. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 16

OS Sheet TR Eastings 28000 to 28999
31 Aug. 2011

Magallana gigas is present across the expanse of this section in low numbers and density. On the chalk reef oysters are scattered as single specimens or in small clusters with a peak abundance of 8 oysters in a square meter. Numbers increase from west to east on the reef. On man made structures peak density reaches 11 oysters in a square meter on the sea wall and on the concrete groyne. On the main section of reef attachment is on the chalk, *Mytilus edulis* and flint cobble. Impact on *Mytilus edulis* is low. There are no oysters < 30MM.
Sargassum muticum is present at low abundance confined to the tidal bathing pool in the upper shore. Several fronds are attached close to the inner side of the offshore wall of the pool. There is no spread outside of the pool.
Didemnum vexillum was seen in the tidal pool on 23.06.15.

Table 3.25 shows Impact Factor scoring for Section 16.

Table 3.25. Impact Factor scoring for Section 16

Section 16 Baseline 31.08.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	1	4	0	0	1	2	0	0	4	12
Site 2 Sm	6	2	0	0	0	0	0	1	0	9
Site 3 Mg	1	12	4	0	1	2	0	1	4	25
Site 4 Mg	8	3	0	0	0	0	0	1	0	12
Site 5 Mg	8	4	0	0	0	0	0	1	0	13
Site 6 Mg	8	4	0	0	0	0	0	1	0	13
Site 7 Dv 23.06.15	2	4	0	0	0	0	1	1	4	12
Section Total	34	33	4	0	2	4	1	6	12	96

Table 3.26 shows the location of sites within Section 16.

Table 3.26. Location of sites within Section 16.

GPS

Site 16.1: OS TR 28441 68718
Site 16.2: OS TR 28735 69768
Site 16.3: OS TR 29000 70249
Site 16.4: OS TR 28625 69651
Site 16.5: OS TR 28431 69539
Site 16.6: OS TR 28248 69587
Site 16.7: OS TR 28735 69768

1 - 10
11 - 20
21 - 30
> 30

Key

Figure 3.13 shows an Impact Factor comparison between species within the section.

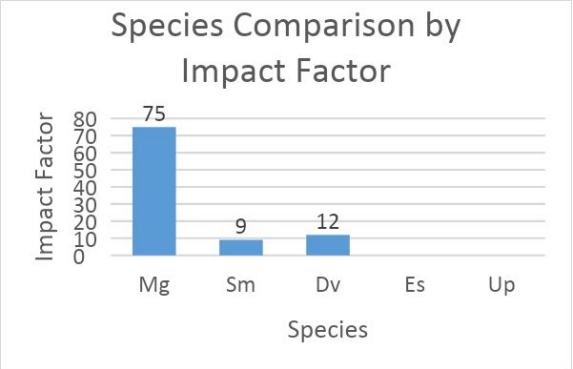


Figure 3.13. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 17

OS Sheet TR Eastings 29000 to 29999
31 Aug. 2011

Magallana gigas is present across the expanse of this section. Numbers and density increase from west to east. Towards the west oysters are scattered singly or in small clusters with a peak density of 8 oysters in a square meter. In the east oysters are more frequent with clusters reaching a peak density of 22 oysters in a square meter. In places reef formation is establishing. There is significant settlement on *Mytilus edulis* and encroachment into the edge of the *Sabellaria spinulosa* reef. There is also significant settlement on the bare chalk. The reef in this section is contiguous with the reef in adjacent sections. Flint cobbles and concrete structures are also affected. Several spat < 30mm were seen.

Table 3.27 shows Impact Factor scoring for Section 17.

Table 3.27. Impact Factor scoring for Section 17

Section 17 Baseline 31.08.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	8	12	4	0	1	2	0	1	8	36
Site 2 Mg	1	12	4	0	1	2	0	1	4	25
Section Total	9	24	8	0	2	4	0	2	12	61

Table 3.28 shows the location of sites within Section 17.

Table 3.28. Location of sites within Section 17.

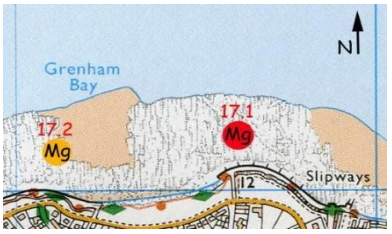
GPS		
Site 17.1: OS TR 29870 70030 Site 17.2: OS TR 29410 70249		 **Key**

Figure 3.14 shows an Impact Factor comparison between species within the section.

Figure 3.14. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 18

OS Sheet TR Eastings 30000 to 30999
16 Nov. 2012

Magallana gigas is abundant on the mussel beds particularly on the east side of the bay where reef formation and biotope modification is advanced. Oysters are also present in the *Sabellaria* belt. Density decreases towards the east of the section where patches of *Sabellaria* are in reef formation.
Oysters are also present on the sea wall between the main access slope to the bay and the first slope to the shore to the west.
Sargassum muticum is present in the mid shore zone at the western edge of the bay. There are multiple small specimens in the shallow pools at the boundary of the chalk reef and the muflats. This is a good site for volunteers.

Table 3.29 shows Impact Factor scoring for Section 18.

Table 3.29. Impact Factor scoring for Section 18

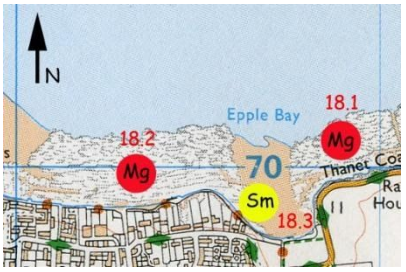
Section 18 Baseline 16.11.12	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	12	12	4	0	0	2	0	0	8	38
Site 2 Mg	8	12	4	0	0	2	0	1	8	35
Site 3 Sm	8	4	4	0	0	0	0	0	0	16
Section Total	28	28	12	0	0	4	0	1	16	89

Table 3.30 shows the location of sites within Section 18.

Table 3.30. Location of sites within Section 18.

GPS

Site 18.1: OS TR 30789 69923
Site 18.2: OS TR 30661 69907
Site 18.3: OS TR 30721 69874



Key

Figure 3.15 shows an Impact Factor comparison between species within the section.

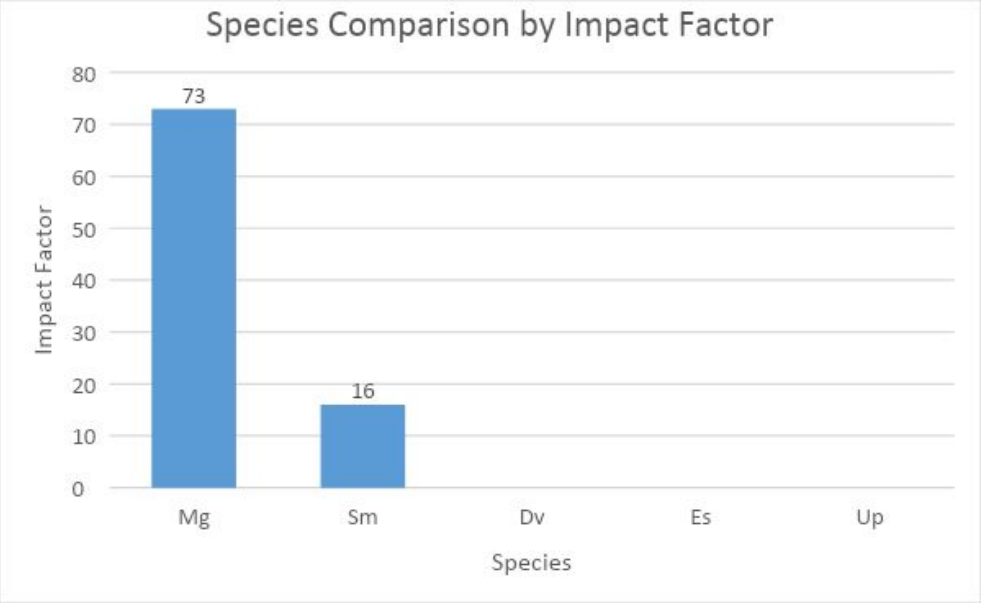


Figure 3.15. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 19

OS Sheet TR Eastings 31000 to 31999
17 Nov. 2012

Magallana gigas is abundant at the western boundary of the site and continues west into Section 18. Large numbers also exist at the edge of the reef on the eastern side of Westgate Bay. There are patches of settlement on the sea wall and groynes. Settlement also occurs in the *Sabellaria* locations but is scattered and the *Sabellaria* remains dominant.
Sargassum muticum drift was seen across the section.

Table 3.31 shows Impact Factor scoring for Section 19.

Table 3.31. Impact Factor scoring for Section 19

Section 19 Baseline 17.11.12	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	8	12	4	0	0	2	0	1	8	35
Site 2 Mg	8	12	4	0	1	2	0	1	4	32
Section Total	16	24	8	0	1	4	0	2	12	67

Table 3.32 shows the location of sites within Section 19.

Table 3.32. Location of sites within Section 19.

GPS		
Site 19.1: OS TR 31650 70161 Site 19.2: OS TR 31995 70291		1 - 10 11 - 20 21 - 30 > 30 **Key**

Figure 3.16 shows an Impact Factor comparison between species within the section.

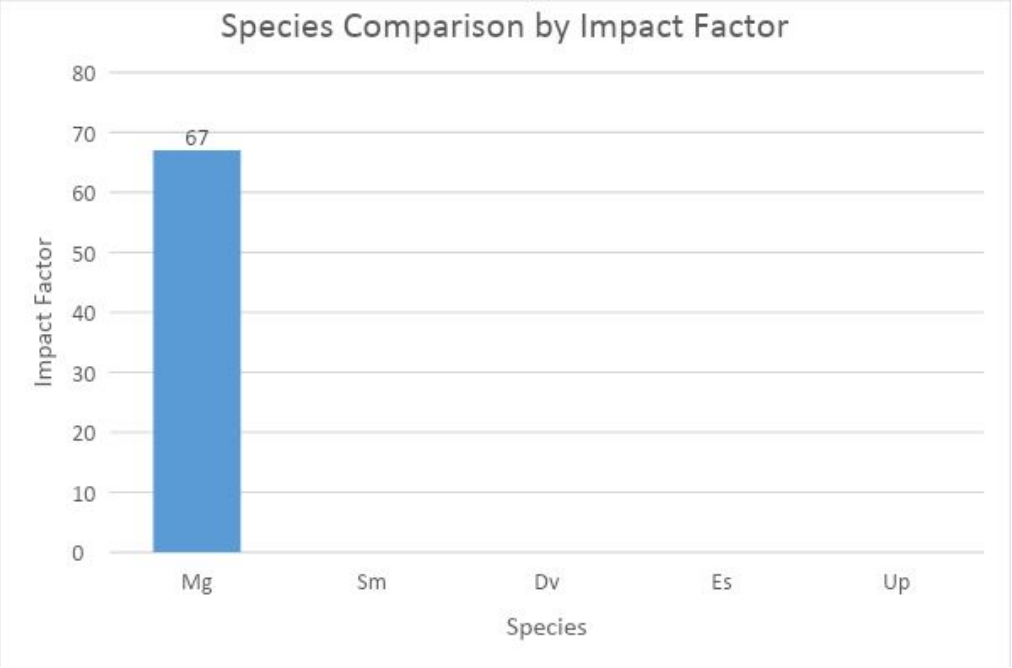


Figure 3.16. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 20

OS Sheet TR Eastings 32000 to 32999
03 Dec. 2012

Magallana gigas is present across the expanse of the reef. Abundance is greatest in the west and decreases towards the east. At Ledge point in the west oysters in the mid shore zone are large, typically up to 150mm shell length. There is scattered settlement on the sea walls and groynes. Peak density reaches 21 on the west reef.

Table 3.33 shows Impact Factor scoring for Section 20.

Table 3.33. Impact Factor scoring for Section 20

Section 20 Baseline 03.12.12	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	8	12	4	0	0	2	0	1	4	31
Site 2 Mg	6	12	4	0	0	2	0	1	4	29
Section Total	14	24	8	0	0	4	0	2	8	60

Table 3.34 shows the location of sites within Section 20.

Table 3.34. Location of sites within Section 20.

GPS		
Site 20.1: OS TR 32044 70268 Site 20.2: OS TR 32720 70526		1 - 10 11 - 20 21 - 30 > 30 **Key**

Figure 3.17 shows an Impact Factor comparison between species within the section.

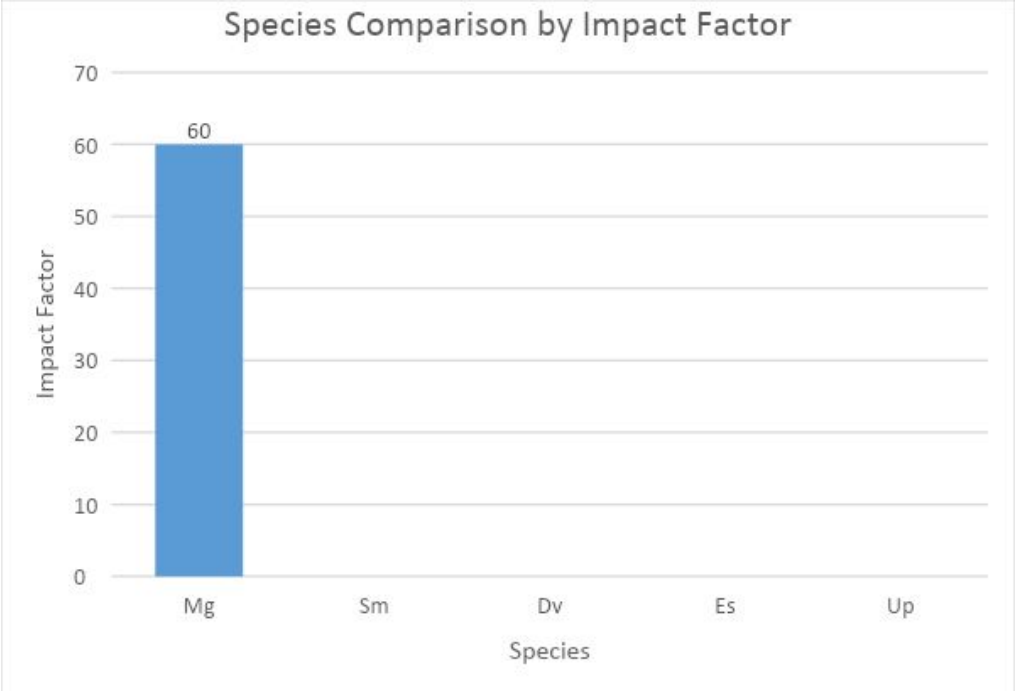


Figure 3.17. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 21

OS Sheet TR Eastings 33000 to 33999
20 Dec. 2012

Magallana gigas is abundant on the long concrete groyne in the east of the section. On the reef west of the groyne oysters are present for an approx. range of 20m. Here they are few and scattered. However, on the east side of the groyne oysters are more abundant and present up to the eastern boundary of the section. At the western boundary of the section 3 oysters are present on a short concrete groyne. No oysters were recorded on the remainder of the reef possibly due to the presence of dense algal canopy.
Sargassum muticum is present along the length of inter-connected rock pools and areas of standing water within a channel in the upper region of the lower shore zone. Specimens are in growth morph with a mean length of 400mm. This is a large, isolated site which needs to be controlled before it expands and creates drift. The site is suitable for volunteer work.

Table 3.35 shows Impact Factor scoring for Section 21.

Table 3.35. Impact Factor scoring for Section 21

Section 21 Baseline 20.12.12	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	8	8	4	0	1	2	0	1	4	28
Site 2 Sm	12	10	4	0	1	0	0	0	0	27
Site 3 Mg	2	3	0	0	0	0	0	1	0	6
Section Total	22	21	8	0	2	2	0	2	4	61

Table 3.36 shows the location of sites within Section 21.

Table 3.36. Location of sites within Section 21.

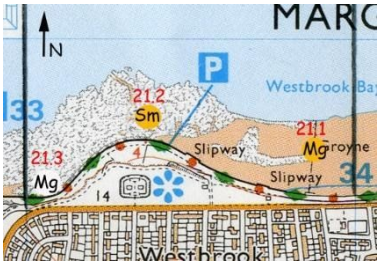
GPS		
Site 21.1: OS TR 33874 70712 Site 21.2: OS TR 33409 70737 Site 21.3: OS TR 33048 70561		1 - 10 11 - 20 21 - 30 > 30 **Key**

Figure 3.18 shows an Impact Factor comparison between species within the section.

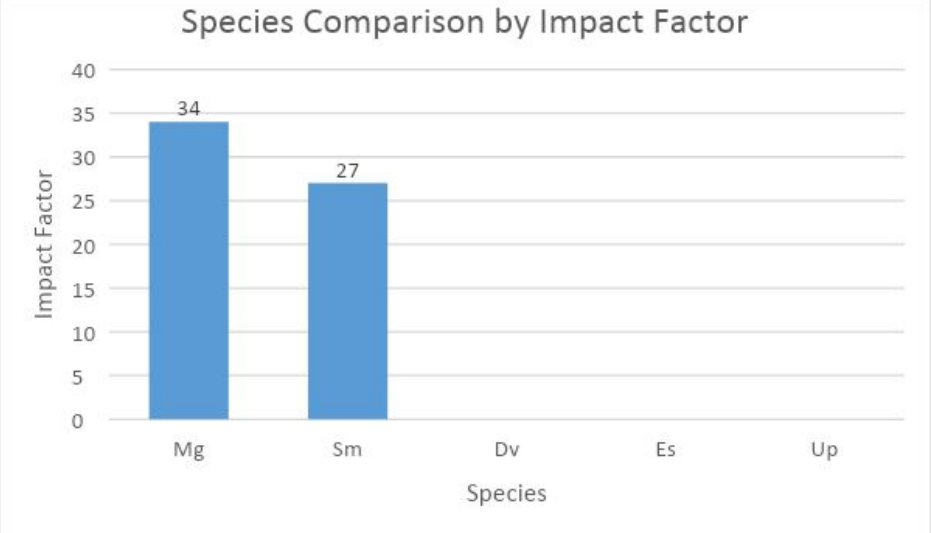


Figure 3.18. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 22

OS Sheet TR Eastings 34000 to 34999
03 Jan. 2013

Magallana gigas is present across the expanse of the section from TR 34192 70749 in the west to the tidal pool in the east. Oysters are more abundant in the west reducing towards the east. The area of reef to the west of the outflow pipe has the greatest settlement. Within the tidal pool oysters were present on the inside walls facing north and west. Peak density here reached 44 and many specimens were >200mm. There was evidence of harvesting on the reef especially to the west of the outflow pipe.

Table 3.37 shows Impact Factor scoring for Section 22.

Table 3.37. Impact Factor scoring for Section 22

Section 22 Baseline 03.01.13	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	8	12	4	0	1	2	0	1	8	36
Section Total	8	12	4	0	1	2	0	1	8	36

Table 3.38 shows the location of sites within Section 22.

Table 3.38. Location of sites within Section 22.

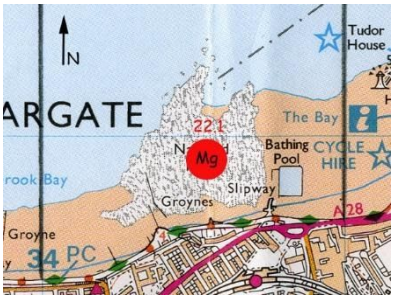
GPS		
Site 22.1: OS TR 34403 70738		 Key

Figure 3.19 shows an Impact Factor comparison between species within the section.

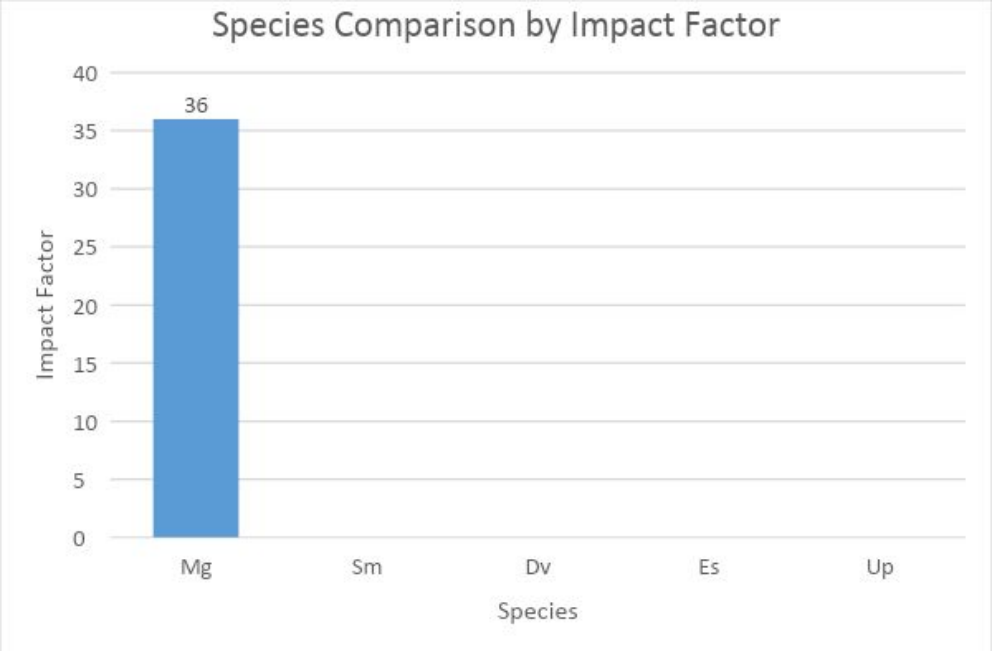


Figure 3.19. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 23

OS Sheet TR Eastings 35000 to 35999
15 Jan. 2013

Magallana gigas is abundant on the seaward face of the harbour wall and the small concrete groyne attached at it's eastern end. The dense algal canopy may be controlling settlement on the chalk reef. Oysters are also present in low number on several concrete groynes and on the sea wall particularly east of the slipway to the east of the Turner Centre.

Sargassum muticum is abundant across the entire expanse of the reef and is present in almost every rockpool and area of standing water. Density is up to 60% cover in places with frond lengths of 800mm recorded. This is the most affected site recorded to date.

Table 3.39 shows Impact Factor scoring for Section 23.

Table 3.39. Impact Factor scoring for Section 23.

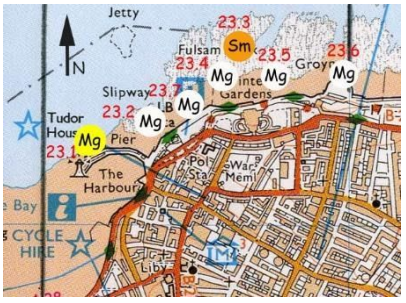
Section 23 Baseline 15.01.13	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	8	4	0	0	0	0	0	1	0	13
Site 2 Mg	1	4	0	0	0	0	0	1	0	6
Site 3 Sm	12	12	4	0	1	0	0	0	0	29
Site 4 Mg	2	3	0		0	0	0	1	0	6
Site 5 Mg	2	3	0	0	0	0	0	1	0	6
Site 6 Mg	1	1	0	0	0	0	0	1	0	3
Site 7 Mg	2	3	0	0	0	0	0	1	0	6
Section Total	28	30	4	0	1	0	0	6	0	69

Table 3.40 shows the location of sites within Section 23.

Table 3.40. Location of sites within Section 23.

GPS

Site 23.1: OS TR 35103 71145
Site 23.2: OS TR 35351 71309
Site 23.3: OS TR 35395 71359
Site 23.4: OS TR 35562 71517
Site 23.5: OS TR 35749 71483
Site 23.6: OS TR 35971 71483
Site 23.7: OS TR 35484 71358



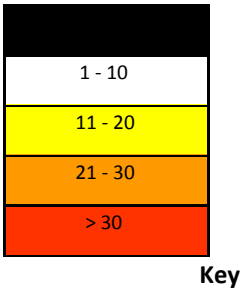


Figure 3.20 shows an Impact Factor comparison between species within the section.

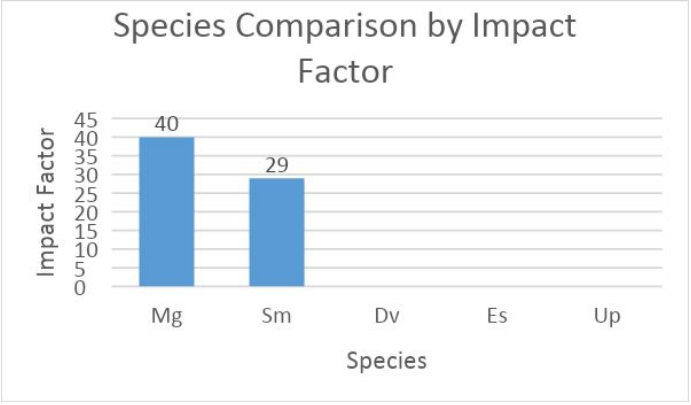


Figure 3.20. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 24

OS Sheet TR Eastings 36000 to 36999
17 Jan. 2013

Magallana gigas is present in low number and density restricted to the concrete groynes and wall of the tidal pool. No oysters were recorded on the reef which is probably due to the dense canopy of *Fucus serratus* preventing settlement.

Sargassum muticum is abundant across the entire area of the chalk reef and is contained within rock pools and areas of standing water. No settlement was recorded within the areas of dense *Fucus* canopy. This section is contiguous with Section 23 and represents the largest area of *Sargassum* settlement within the NEKEMS inter tidal. Native algae such as *Corallina officinalis* are over laid and displaced in some rock pools.

Table 3.41 shows Impact Factor scoring for Section 24.

Table 3.41. Impact Factor scoring for Section 24.

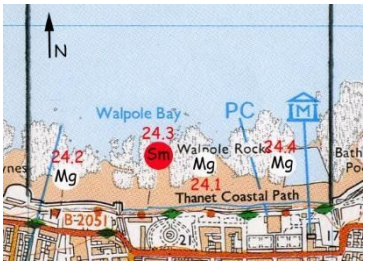
Section 24 Baseline 17.01.13	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	2	3	0	0	0	0	0	1	0	6
Site 2 Mg	2	3	0	0	0	0	0	1	0	6
Site 3 Sm	12	12	4	0	0	0	2	0	4	34
Site 4 Mg	1	6	0	0	0	0	0	1	0	8
Section Total	17	24	4	0	0	0	2	3	4	54

Table 3.42 shows the location of sites within Section 24.

Table 3.42. Location of sites within Section 24.

GPS

Site 24.1: OS TR 36603 71497
Site 24.2: OS TR 36119 71493
Site 24.3: OS TR 36001 71491
Site 24.4: OS TR 36850 71595



1 - 10
11 - 20
21 - 30
> 30
Key

Figure 3.21 shows an Impact Factor comparison between species within the section.

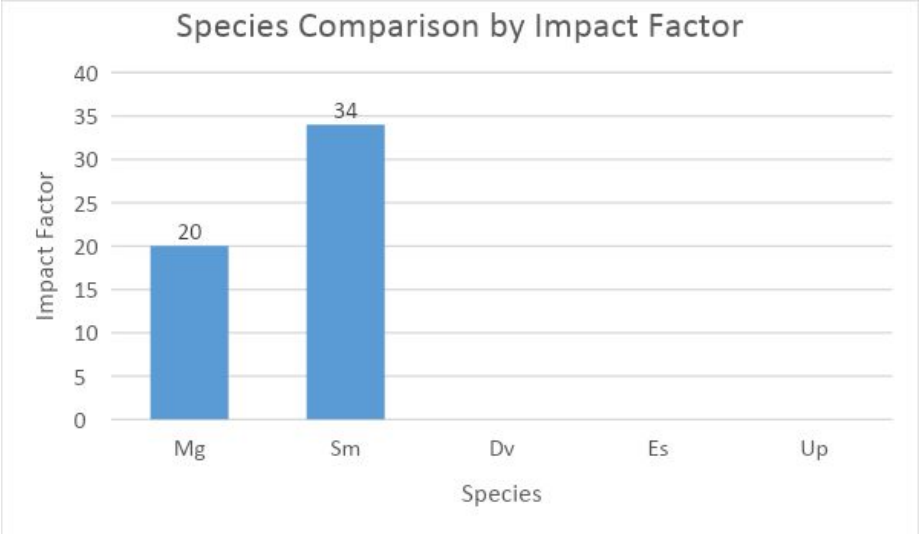


Figure 3.21. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 25

OS Sheet TR Eastings 37000 to 37999
04 Jan. 2013

Magallana gigas is present at low density across the point but is absent from the reef between the point and the eastern boundary of the site. The dense *Fucus* canopy appears to be a controlling factor. Towards the eastern edge of the point, there are patches of stable flint cobble and oysters are present here with a peak density of 15. Within the *Fucus* zone peak density reaches only 2.

Sargassum muticum is present across the point and also on the reef to the east of the point. Specimens are small, typically 200mm but occasionally 1m and confined to rock pools and standing water. Attachment is to the chalk reef, flint cobble and at one location to an area of stable pebbly sediment.

Table 3.43 shows Impact Factor scoring for Section 25.

Table 3.43. Impact Factor scoring for Section 25.

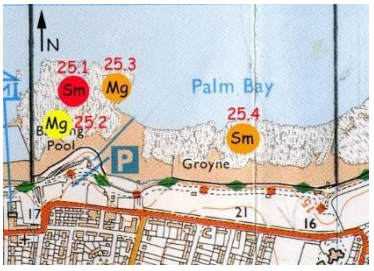
Section 25 Baseline 04.01.13	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Sm	12	12	4	1	2	0	0	0	0	31
Site 2 Mg	1	10	4	0	0	0	0	0	0	15
Site 3 Mg	8	8	4	0	1	0	0	0	0	21
Site 4 Sm	8	12	4	0	0	0	0	0	0	24
Section Total	29	42	16	1	3	0	0	0	0	91

Table 3.44 shows the location of sites within Section 25.

Table 3.44. Location of sites within Section 25.

GPS

Site 25.1: OS TR 37134 71743
Site 25.2: OS TR 37099 71587
Site 25.3: OS TR 37251 71705
Site 25.4: OS TR 37556 71537



1 - 10
11 - 20
21 - 30
> 30

Key

Figure 3.22 shows an Impact Factor comparison between species within the section.

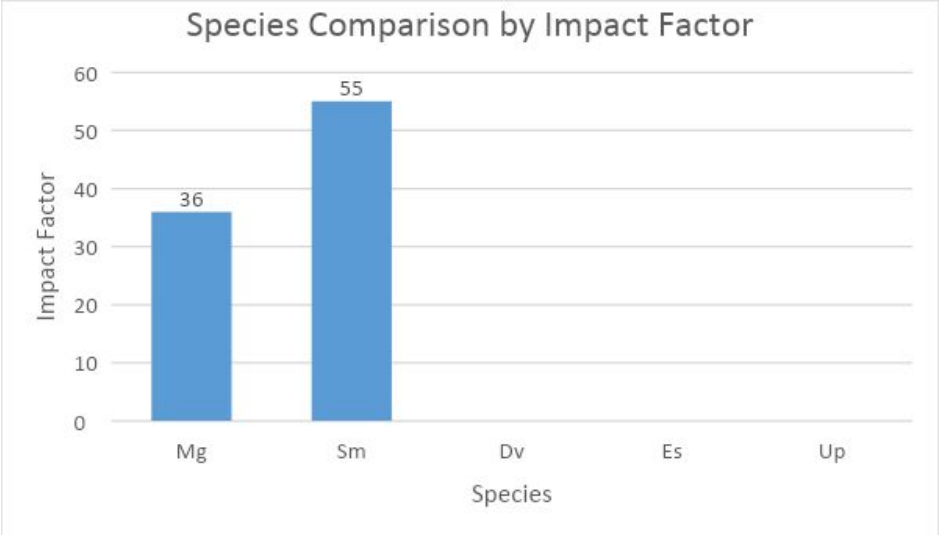


Figure 3.22. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 26

OS Sheet TR Eastings 38000 to 38999
17 Jan. 2012

Magallana gigas is present in high number and density on the concrete groyne. There is evidence here of harvesting. Numbers are lower on the concrete structures in the east and are few across the chalk reef. No settlement was seen within the areas of dense *Fucus serratus*.

Sargassum muticum forms a dense stand in the permanently flooded channel between the concrete outflow pipes. There is some spread to rockpools on the adjacent eastern reef. A few smaller plants were found scattered in pools to the west of the concrete groyne.

Table 3.45 shows Impact Factor scoring for Section 26.

Table 3.45. Impact Factor scoring for Section 26

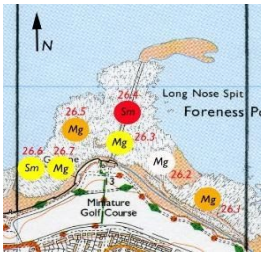
Section 26 Baseline 17.01.12	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	8	10	4	0	1	0	0	0	0	23
Site 2 Mg	1	4	4	0	1	0	0	0	0	10
Site 3 Mg	1	8	4	0	1	0	0	1	0	15
Site 4 Sm	12	8	4	0	1	2	0	0	8	35
Site 5 Mg	1	12	4	0	1	2	0	0	4	24
Site 6 Sm	1	6	4	0	1	0	0	0	0	12
Site 7 Mg	8	6	4	0	0	0	0	1	0	19
Section Total	32	54	28	0	6	4	0	2	12	138

Table 3.46 shows the location of sites within Section 26.

Table 3.46. Location of sites within Section 26.

GPS

Site 26.1: OS TR 38867 71453
Site 26.2: OS TR 38671 71636
Site 26.3: OS TR 38487 71757
Site 26.4: OS TR 38488 71929
Site 26.5: OS TR 38227 71754
Site 26.6: OS TR 38121 71615
Site 26.7: OS TR 38158 71606



1 - 10
11 - 20
21 - 30
> 30
Key

Figure 3.23 shows an Impact Factor comparison between species within the section.

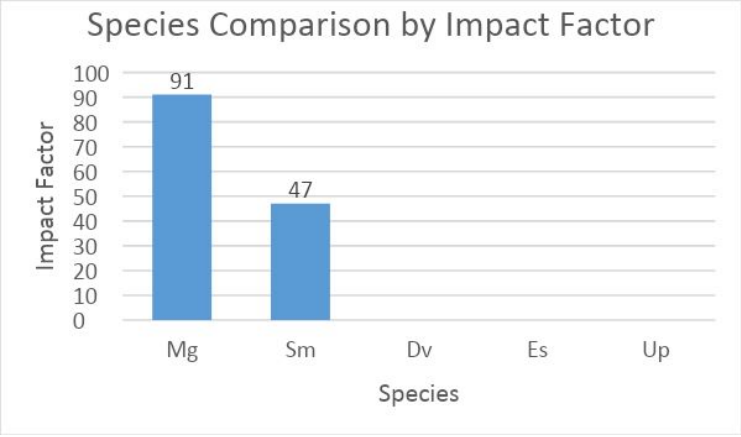


Figure 3.23. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 27

OS Sheet TR Easting 39000 to Northing 71000 (North Coast turning to East coast)
11 Jan. 2012

Magallana gigas is present in low numbers and density. Attachment is mainly on bare patches of chalk within the algal turf and on flint cobbles. The dense algal canopy is probably a controlling factor.

Table 3.47 shows Impact Factor scoring for Section 27.

Table 3.47. Impact Factor scoring for Section 27

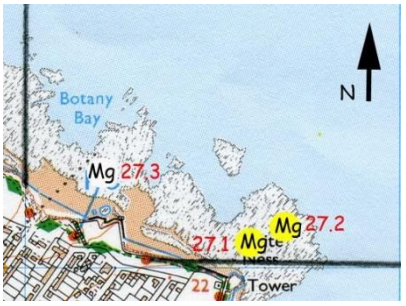
Section 27 Baseline 11.01.12	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	6	2	4	0	0	0	0	0	0	12
Site 2 Mg	1	8	4	0	0	0	0	0	0	13
Site 3 Mg	1	4	4	0	0	0	0	0	0	9
Section Total	8	14	12	0	0	0	0	0	0	34

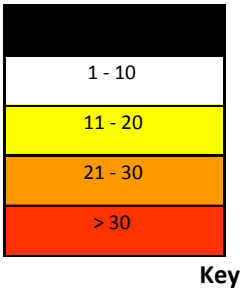
Table 3.48 shows the location of sites within Section 27.

Table 3.48. Location of sites within Section 27.

GPS

Site 27.1: OS TR 39580 71091
Site 27.2: OS TR 39628 71110
Site 27.3: OS TR 39230 71228





Key

Figure 3.24 shows an Impact Factor comparison between species within the section.

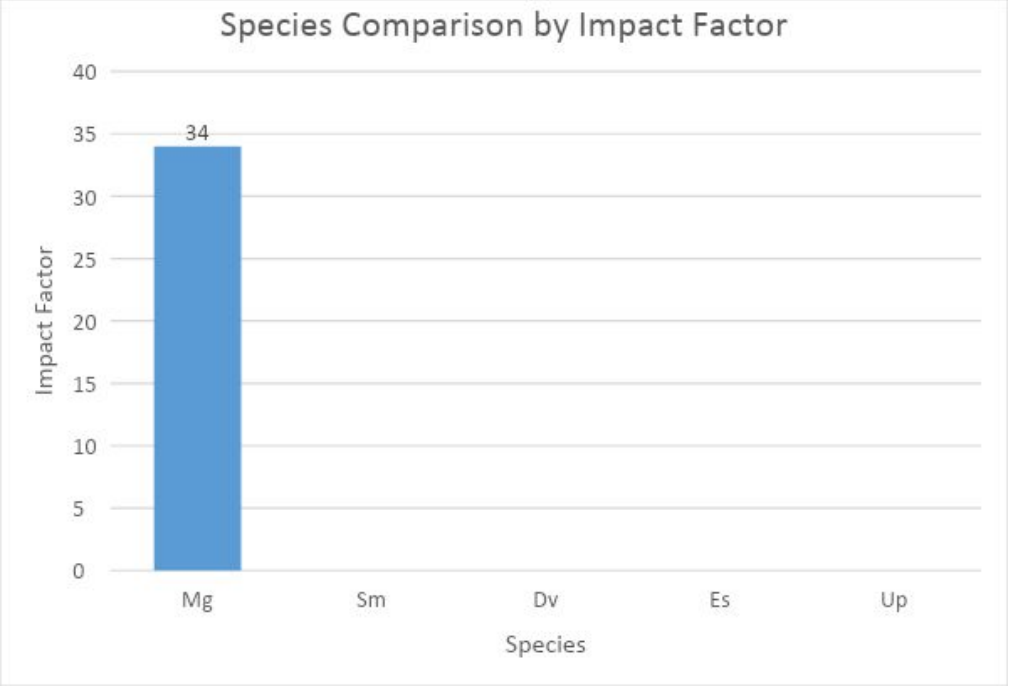


Figure 3.24. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 28

OS Sheet TR Northings 70000 to 70999
19 Dec. 2011

Magallana gigas is present across the areas of chalk reef at low numbers and density. There has been advancement at Site 28.3 on Hackemdown Point but oysters have not yet reached reef formation.

Sargassum muticum is present at the low water line and in standing water in the lower mid shore zone. Density is low at the low water mark but in the lower mid shore zone a large colony is establishing.

Table 3.49 shows Impact Factor scoring for Section 28.

Table 3.49. Impact Factor scoring for Section 28

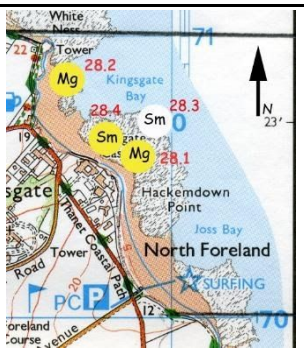
Section 28 Baseline 19.12.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	1	10	4	0	1	0	0	0	0	16
Site 2 Mg	1	10	4	0	1	0	0	1	0	17
Site 3 Sm	2	3	4	0	0	0	0	0	0	9
Site 4 Sm	8	4	4	0	0	0	0	0	0	16
Section Total	12	27	16	0	2	0	0	1	0	58

Table 3.50 shows the location of sites within Section 28.

Table 3.50. Location of sites within Section 28.

GPS

Site 28.1: OS TR 39875 70561
Site 28.2: OS TR 39591 70888
Site 28.3: OS TR 39917 70649
Site 28.4: OS TR 39749 70630



Key

1 - 10
11 - 20
21 - 30
> 30

Figure 3.25 shows an Impact Factor comparison between species within the section.

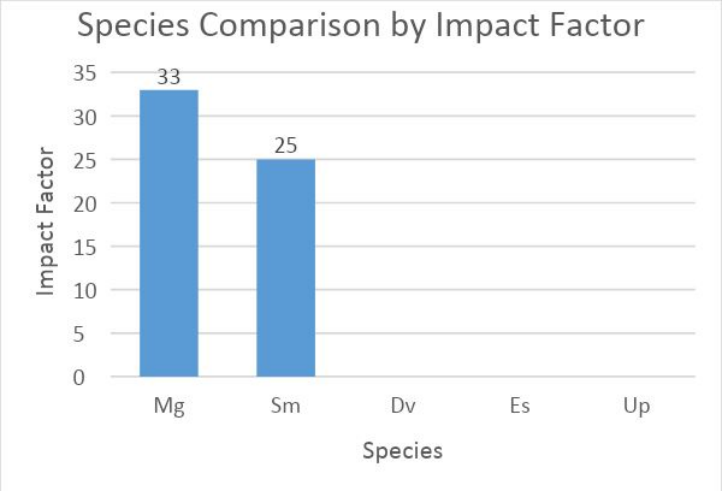


Figure 3.25. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 29

OS Sheet TR Northings 69000 to 69999
27 Nov. 2011

Magallana gigas is present in low numbers and density attached to bare chalk patches on the vertical walls of gullies and on the concrete of the outflow pipe. Dense *Fucus serratus* cover may restrict settlement.

Table 3.51 shows Impact Factor scoring for Section 29.

Table 3.51. Impact Factor scoring for Section 29

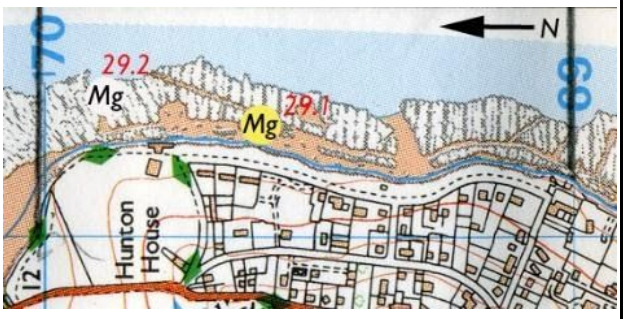
Section 29 Baseline 27.11.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	6	1	4	0	0	0	0	0	0	11
Site 2 Mg	2	3	0	0	0	0	0	1	0	6
Section Total	8	4	4	0	0	0	0	1	0	17

Table 3.52 shows the location of sites within Section 29.

Table 3.52. Location of sites within Section 29.

GPS

Site 29.1: OS TR 40232 69639
Site 29.2: OS TR 40250 69862



1 - 10
11 - 20
21 - 30
> 30

Key

Figure 3.26 shows an Impact Factor comparison between species within the section.

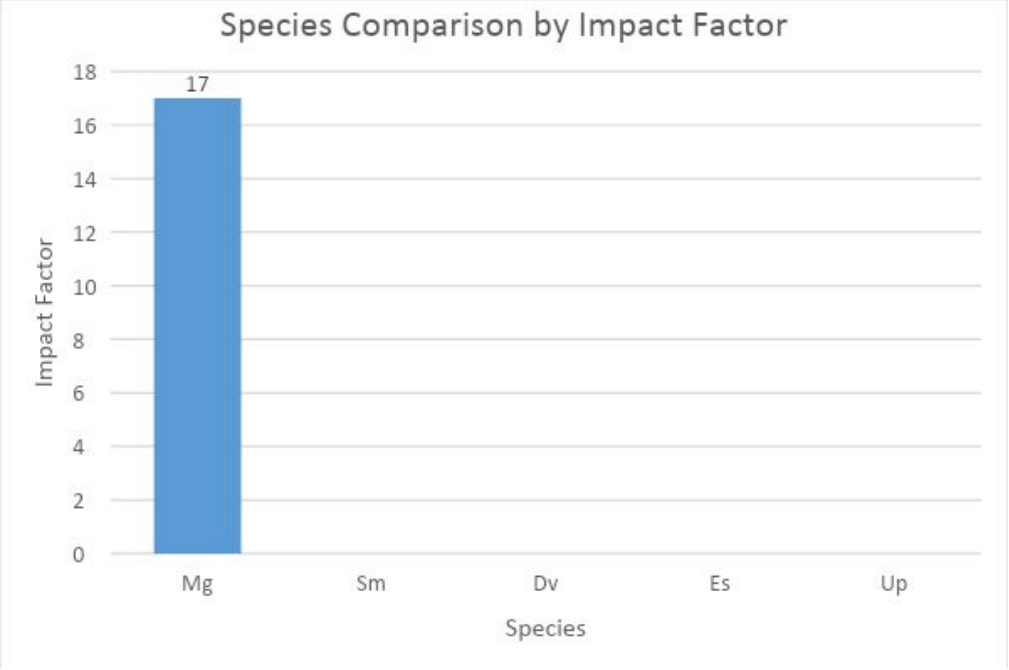


Figure 3.26. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 30

OS Sheet TR Northings 68000 to 68999
15 Nov. 2011

Magallana gigas population is low with oysters attached to flint cobbles on several stable patches of flint. From these, there is spread on to adjacent chalk reef. Settlement on the reef is mainly on bare patches within the dense *Fucus serraatus* canopy which may be a factor controlling settlement.

Table 3.53 shows Impact Factor scoring for Section 30.

Table 3.53. Impact Factor scoring for Section 30

Section 30 Baseline 15.11.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	6	2	0	0	1	0	0	0	0	9
Site 2 Mg	1	4	4	0	1	0	0	0	0	10
Site 3 Mg	1	4	4	0	1	0	0	0	0	10
Site 4 Mg	1	8	4	0	1	0	0	0	0	14
Section Total	9	18	12	0	4	0	0	0	0	43

Table 3.54 shows the location of sites within Section 30.

Table 3.54. Location of sites within Section 30.

GPS		
Site 30.1: OS TR 40034 68209 Site 30.2: OS TR 40033 68430 Site 30.3: OS TR 40037 68504 Site 30.4: OS TR 40105 68872		1 - 10 11 - 20 21 - 30 > 30 **Key**

Figure 3.27 shows an Impact Factor comparison between species within the section.

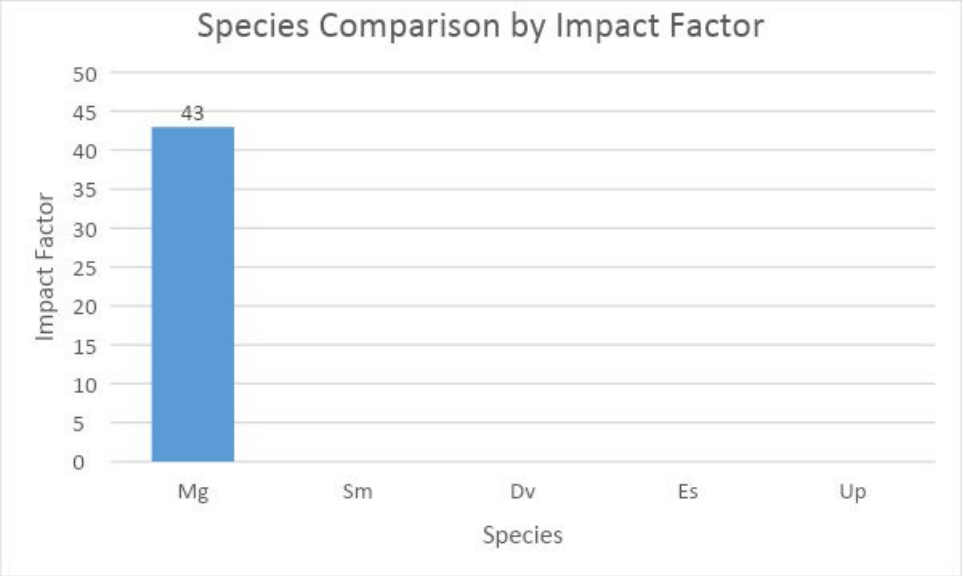


Figure 3.27. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 31

OS Sheet TR Northings 67000 to 67999
03 Oct. 2011

Magallana gigas is present in low numbers and density. To the south of Broadstairs harbour settlement is confined to small bare chalk patches on the vertical walls of gullies. The remainder of the reef has a dense cover of *Fucus serratus* and *Enteromorpha intestinalis* which impedes attachment. Oysters are single or in small clusters with a peak density of 2 oysters in a square meter. Settlement around Broadstairs harbour is on the concrete harbour wall, groyne and a metal outflow pipe to the north. Numbers are low and peak density reaches 3 oysters in a square meter. There were no oysters < 30mm.

Table 3.55 shows Impact Factor scoring for Section 31.

Table 3.55. Impact Factor scoring for Section 31.

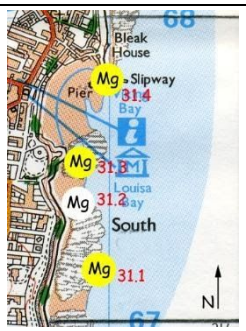
Section 31 Baseline 03.10.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	1	6	4	0	0	0	0	0	0	11
Site 2 Mg	1	4	4	0	0	0	0	0	0	9
Site 3 Mg	1	10	4	0	0	0	0	0	0	15
Site 4 Mg	1	10	0	0	0	0	0	1	0	12
Section Total	4	30	12	0	0	0	0	1	0	47

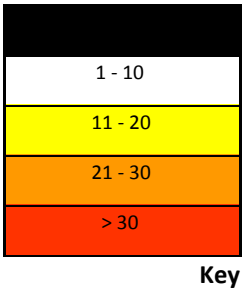
Table 3.56 shows the location of sites within Section 31.

Table 3.56. Location of sites within Section 31.

GPS

Site 31.1: OS TR 39878 67185
Site 31.2: OS TR 39916 67274
Site 31.3: OS TR 39911 67547
Site 31.4: OS TR 39954 67776





Key

Figure 3.28 shows an Impact Factor comparison between species within the section.

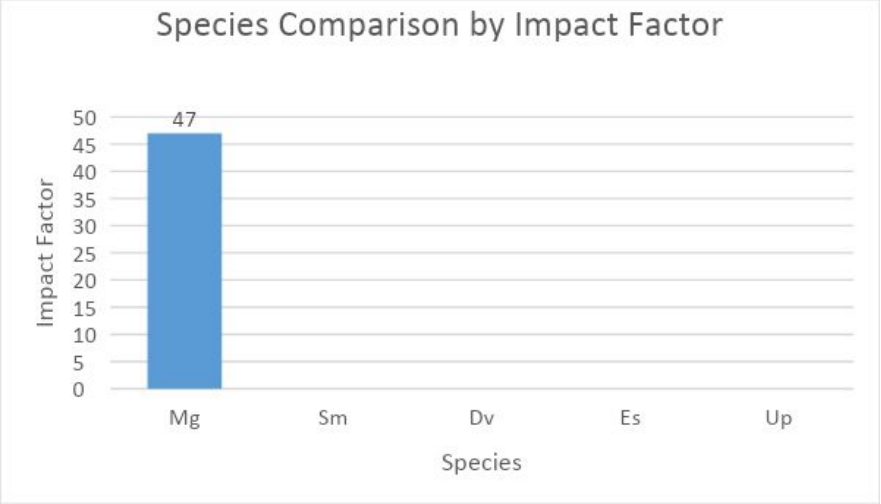


Figure 3.28. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 32

OS Sheet TR Northings 66000 to 66999
30 Sep. 2011

Magallana gigas is present in low numbers and density. Settlement is confined to small bare chalk patches on the vertical walls of gullies. The remainder of the reef has a dense cover of *Fucus serratus* and *Enteromorpha intestinalis* which impedes attachment. Oysters are single or in small clusters with a peak density of 3 oysters in a square meter. At Dumpton Gap 3 oysters are attached to a block of concrete spoil. There were no oysters < 30mm.

Table 3.57 shows Impact Factor scoring for Section 32.

Table 3.57. Impact Factor scoring for Section 32.

Section 32 Baseline 30.09.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	2	3	4	0	0	0	0	0	0	9
Site 2 Mg	6	1	4	0	0	0	0	0	0	11
Site 3 Mg	4	2	0	0	0	0	0	1	0	7
Site 4 Mg	6	1	4	0	0	0	0	0	0	11
Site 5 Mg	2	3	4	0	0	0	0	0	0	9
Section Total	20	10	16	0	0	0	0	1	0	47

Table 3.58 shows the location of sites within Section 32.

Table 3.58. Location of sites within Section 32.

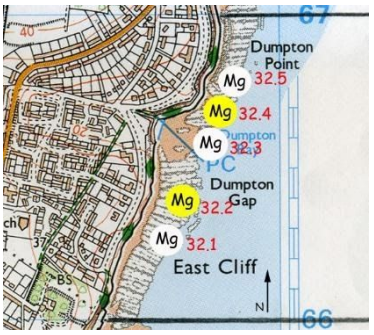
GPS		
Site 32.1: OS TR 39580 66276 Site 32.2: OS TR 39627 66403 Site 32.3: OS TR 39730 66647 Site 32.4: OS TR 39744 66684 Site 32.5: OS TR 39785 66740		1 - 10 11 - 20 21 - 30 > 30 **Key**

Figure 3.29 shows an Impact Factor comparison between species within the section.

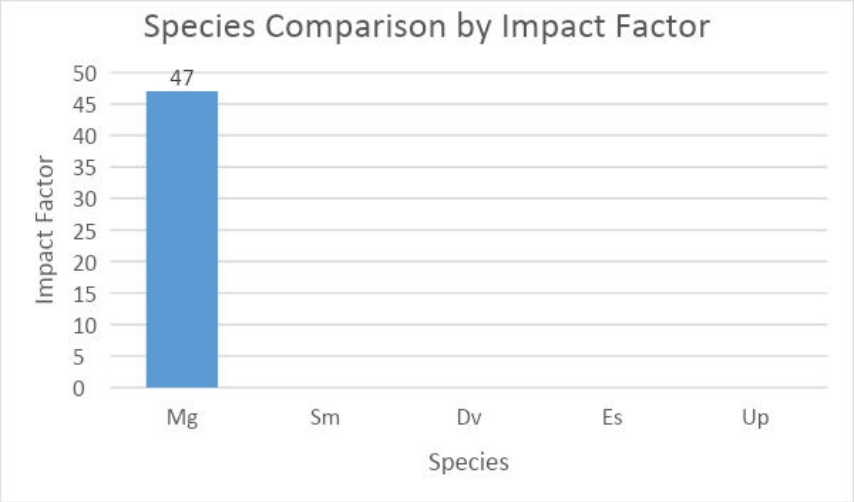


Figure 3.29. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 33

OS Sheet TR Northings 65000 to 65999
27 Sep. 2011

Magallana gigas is present at low numbers and density. Oysters are attached to the seaward end of the concrete groyne at Winterstoke in low numbers and with a peak density of 1 oyster in a square meter.
At the Colburn flint outcrop 12 oysters were seen on flint cobbles on the south side of the feature. Peak density here is 3 oysters in a square meter. Elsewhere on the reef a cluster of 4 oysters were seen attached to bare patches of chalk on vertical walls of gullies. The dense *Fucus serratus* and *Enteromorpha intestinalis* may be impeding attachment to the horizontal areas of chalk. 1 spat < 30mm was seen.

Table 3.59 shows Impact Factor scoring for Section 33.

Table 3.59. Impact Factor scoring for Section 33.

Section 33 Baseline 27.09.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	2	3	4	0	1	0	0	0	0	10
Site 2 Mg	2	3	4	0	0	0	0	0	0	9
Site 3 Mg	2	3	0	0	0	0	0	1	0	6
Section Total	6	9	8	0	1	0	0	1	0	25

Table 3.60 shows the location of sites within Section 33.

Table 3.60. Location of sites within Section 33.

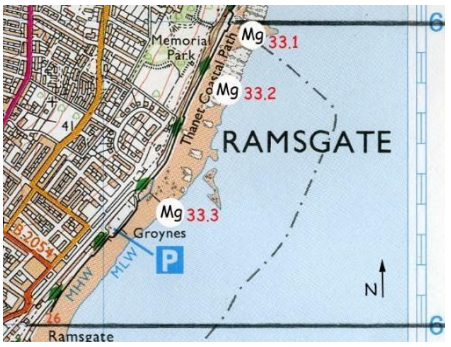
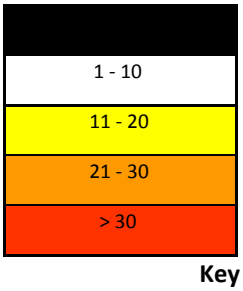
GPS		
Site 33.1: OS TR 39489 65954 Site 33.2: OS TR 39420 65858 Site 33.3: OS TR 39218 65389		

Figure 3.30 shows an Impact Factor comparison between species within the section.

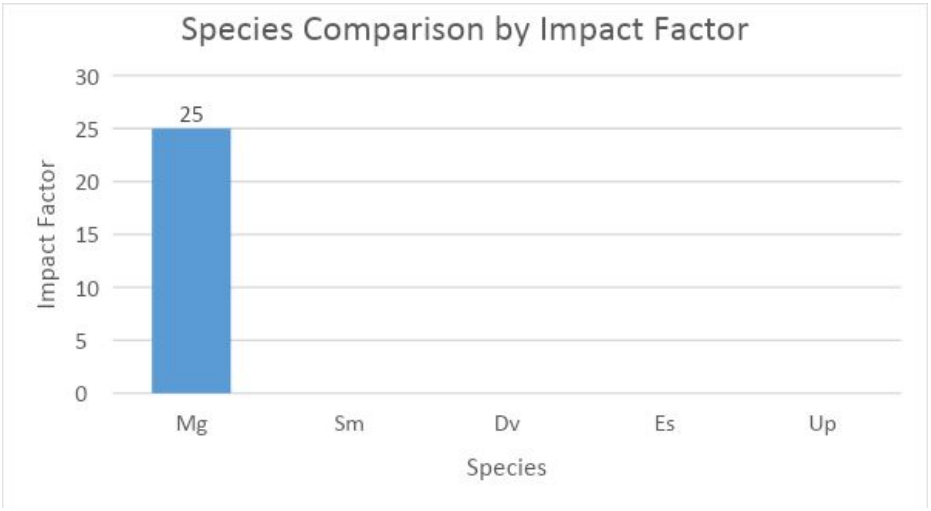


Figure 3.30. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 34

OS Sheet TR Northings 64000 to 64999
17 Aug. 2011

Magallana gigas is present in the outer harbour at low numbers and density. Attachment is on concrete walls and pontoon pilings. The largest cluster is on the outer side of the cross-wall where peak density reached 22 oysters in a square meter.A single oyster was seen on the seaward wall of the east pier. Settlement here is impeded by dense cover of *Enteromorpha intestinalis* and turbulent tidal activity. Several spat < 30MM were seen attached to pontoon pilings.

Sargassum muticum is present at low abundance attached at 2 locations within the pontoon system of the outer harbour.

Undaria pinnatifida was seen attached to a submerged rope attached to a small vessel which had clearly not left its pontoon mooring for some considerable time.

Table 3.61 shows Impact Factor scoring for Section 34.

Table 3.61. Impact Factor scoring for Section 34.

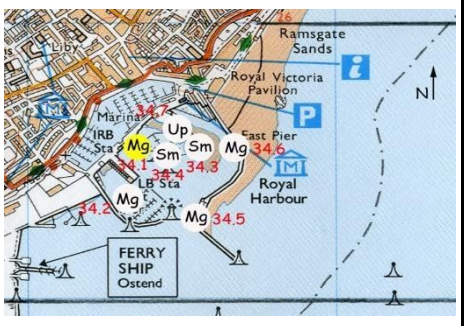
Section 34 Baseline 17.08.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	8	6	0	0	0	0	0	1	0	15
Site 2 Mg	1	4	0	0	0	0	0	1	0	6
Site 3 Sm	2	1	0	0	0	0	0	1	0	4
Site 4 Sm	2	1	0	0	0	0	0	1	0	4
Site 5 Mg	4	2	0	0	0	0	0	1	0	7
Site 6 Mg	6	1	0	0	0	0	0	1	0	8
Site 7 Up	4	1	0	0	0	0	0	1	0	6
Section Total	27	16	0	0	0	0	0	7	0	50

Table 3.62 shows the location of sites within Section 34.

Table 3.62. Location of sites within Section 34.

GPS

Site 34.1: OS TR 38388 64547
Site 34.2: OS TR 38358 64352
Site 34.3: OS TR 38489 64585
Site 34.4: OS TR 38333 64349
Site 34.5: OS TR 38542 64286
Site 34.6: OS TR 38703 64510
Site 34.7: OS TR 38358 64607



1 - 10
11 - 20
21 - 30
> 30

Key

Figure 3.31 shows an Impact Factor comparison between species within the section.

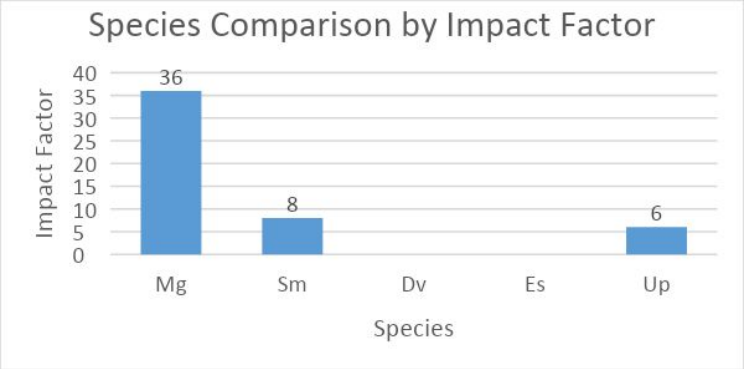


Figure 3.31. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 35

OS Sheet TR Eastings 37000 to 37999
23 Sep. 2011

Magallana gigas is present across the chalk reef and on man-made structures in high numbers and density. Abundance is greatest in the east reducing steadily towards the west. Reef formation is advanced on the granite boulder armour, sections of the chalk reef in the lower shore zone and on the 3 concrete groynes. Reef formation on the chalk is concentrated on a narrow bare band approximately 15M wide between the mussel beds and the mudflats. Peak abundance here reaches 46 oysters in a square meter. There is some settlement on *Mytilus edulis, Sabellaria spinulosa and Laniche conchilega***.**
Significant recruitment has occurred with up to 26 spat in a square meter recorded.

Sargassum muticum is present at low density confined within the tidal bathing pool.

Table 3.63 shows Impact Factor scoring for Section 35.

Table 3.63. Impact Factor scoring for Section 35.

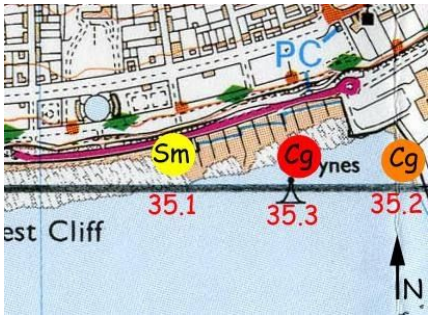
Section 35 Baseline 23.09.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Sm	8	3	0	0	0	0	0	1	0	12
Site 2 Mg	12	4	0	0	0	2	0	1	4	23
Site 3 Mg	8	10	4	0	1	2	0	1	8	34
Section Total	28	17	4	0	1	4	0	3	12	69

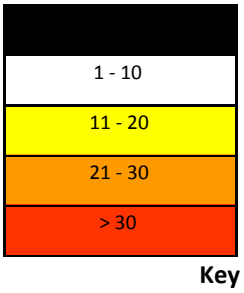
Table 3.64 shows the location of sites within Section 35.

Table 3.64. Location of sites within Section 35.

GPS

Site 35.1: OS TR 37210 64081
Site 35.2: OS TR 37667 64025
Site 35.3: OS TR 37493 64041





Key

Figure 3.32 shows an Impact Factor comparison between species within the section.

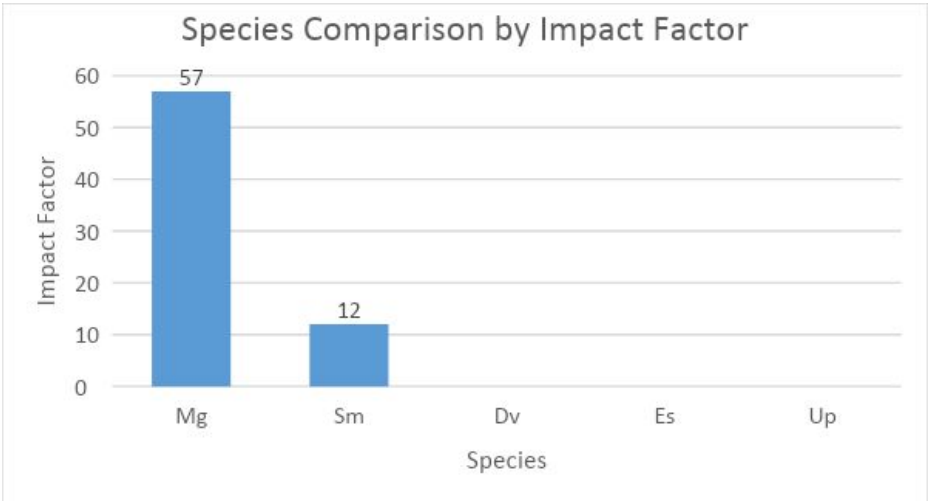


Figure 3.32. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 36

OS Sheet TR Eastings 36000 to 36999
01 Oct. 2011

Magallana gigas is present across the expanse of the chalk reef in low numbers and density. Settlement decreases towards the west and consists of scattered individuals or small clusters. Attachment is mainly on the chalk with some specimens on *Mytilus edulis*. ***Eriocheir sinensis***. A single live specimen was found in a shallow rock pool at the boundary of the chalk reef and mud flats. Drift claws and carapaces are frequently seen in autumn and winter.

Table 3.65 shows Impact Factor scoring for Section 36.

Table 3.65. Impact Factor scoring for Section 36.

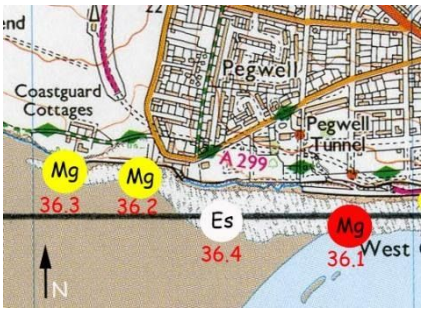
Section 36 Baseline 01.10.11	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	8	12	4	0	1	2	0	1	8	36
Site 2 Mg	1	4	4	0	1	0	0	1	0	11
Site 3 Mg	6	1	4	0	0	0	0	0	0	11
Site 4 Es	1	1	4	0	0	0	0	0	0	6
Section Total	16	18	16	0	2	2	0	2	8	64

Table 3.66 shows the location of sites within Section 36.

Table 3.66. Location of sites within Section 36.

GPS

Site 36.1: OS TR 36453 64026
Site 36.2: OS TR 36261 64186
Site 36.3: OS TR 36105 64141
Site 36.4: OS TR 36379 64028



1 - 10
11 - 20
21 - 30
> 30

Key

Figure 3.33 shows an Impact Factor comparison between species within the section.

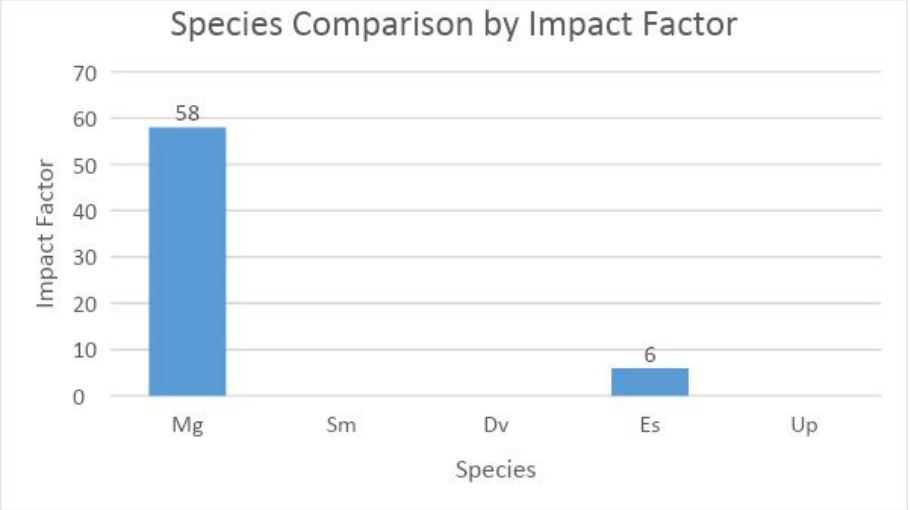


Figure 3.33. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 37

OS Sheet TR Eastings 34000 to 35999 (Pegwell Bay western limit)
11 Dec. 2012

Magallana gigas. A single oyster was recorded on the chalk reef close to the boundary with the mudflats. At the old Hoverport site 29 oysters were recorded along the edge of the concrete apron and also attached to a line of tyres in the adjacent mudflats.

Table 3.67 shows Impact Factor scoring for Section 37.

Table 3.67. Impact Factor scoring for Section 37.

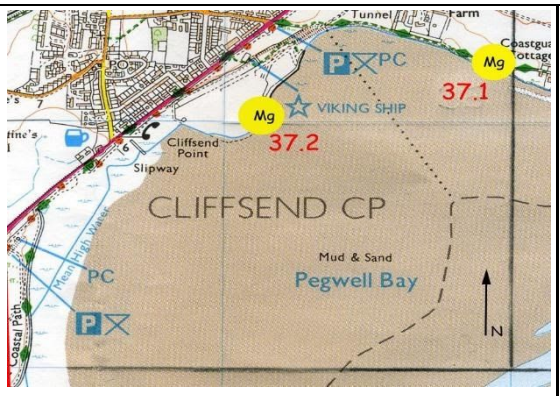
Section 37 Baseline 11.12.12	Peak Density Score	Surface Area Score	Substrate RE Score	Substrate SE Score	Substrate FL Score	Substrate FA Score	Substrate AL Score	Substrate MM Score	Species Affected Score	Impact Factor
Site 1 Mg	6	1	4	0	0	0	0	0	0	11
Site 2 Mg	6	4	0	0	0	0	0	1	0	11
Section Total	12	5	4	0	0	0	0	1	0	22

Table 3.68 shows the location of sites within Section 37.

Table 3.68. Location of sites within Section 37.

GPS

Site 37.1: OS TR 36453 64026
Site 37.2: OS TR 36261 64186



1 - 10
11 - 20
21 - 30
> 30
Key

Figure 3.34 shows an Impact Factor comparison between species within the section.

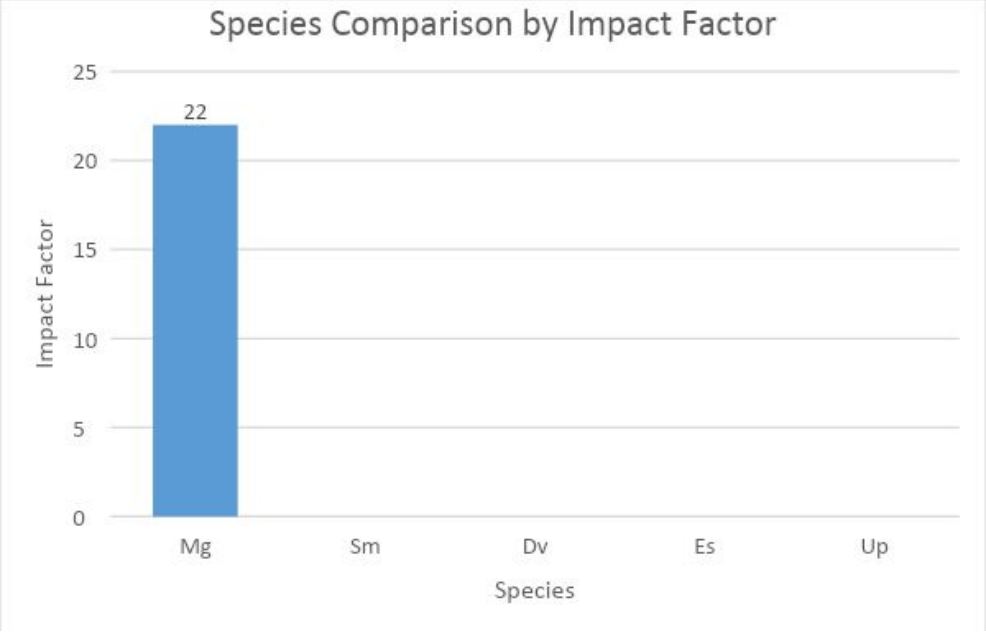


Figure 3.34. Species comparison by Impact Factor

3. Distribution and Impact by NEKMPA Section.

Section 38

OS Sheet TR Northings 62000 to 62999
26 Apr. 2012

No target species were seen.

3. Distribution and Impact by NEKMPA Section.

Section 39

OS Sheet TR Northings 61000 to 61999
26 Apr. 2012

No target species were seen.

3. Distribution and Impact by NEKMPA Section.

Section 40

OS Sheet TR Northings 60000 to 60999
26 Apr. 2012

No target species were seen.

3. Distribution and Impact by NEKMPA Section.

Section 41

OS Sheet TR Northings 59000 to 59999
26 Apr. 2012

No target species were seen.

3. Distribution and Impact by NEKMPA Section.

Section 42

OS Sheet TR Northings 58000 to 58999
26 Apr. 2012

No target species were seen.

3. Distribution and Impact by NEKMPA Section.

Section 43

OS Sheet TR Northings 57000 to 57999
26 Apr. 2012

No target species were seen.

3. Distribution and Impact by NEKMPA Section.

Section 44

OS Sheet TR Northings 56000 to 56999
26 Apr. 2012

No target species were seen.

3. Distribution and Impact by NEKMPA Section.

Section 45

OS Sheet TR Northings 55000 to 55999
26 Apr. 2012

No target species were seen.

3. Distribution and Impact by NEKMPA Section.

Section 46

OS Sheet TR Northings 54000 to 54999
26 Apr. 2012

No target species were seen.

Current Account

4. Control of Selected Non Native Species

4. Control of Selected Non Native Species.

Annual Progress

Table 4.1 shows control progress per year / project phase.

Table 4.1: Annual Progress

Natural England Team										
Period	Mg (Shore)	Mg (Harbour)	Sm (Kg. Wet Weight)	Dv	Es	Up				
Pilot 23.03.2011 04.02.2012 Phase 5	40196	0								
Trial 06.07.2012 29.06.2013 Phase 6 & 7	35740	0								
Post Trial 20.1.2014 05.03.2014 Phase 7	7153	0								
01.04.2014 31.03.2015 Phase 8	29299	0								
01.04.2015 31.03.2016 Phase 9	59675	0	55.31							
01.04.2016 31.03.2017 Phase 10	29450	0								
01.04.2017 31.03.2018 Phase 11	33067	1259								
01.04.2018 31.03 2019 Phase 12	30960	2926	346.86							
01.04.2019 31.12.2019 Phase 13	23724	968	850.36							
01.01.2020 31.12.2020 Phase 14										
01.01.2021 31.12.2021 Phase 15										
01.01.2022 31.31.2022 Phase 16										
Total	289264	5153	1252.53	0	0	0	0	0	0	0

KWT Team										
Period	Mg (Shore)	Mg (Harbour)	Sm (Kg. Wet Weight)	Dv	Es	Up				
Pilot 23.03.2011 04.02.2012 Phase 5										
Trial 06.07.2012 29.06.2013 Phase 6 & 7										
Post Trial 20.1.2014 05.03.2014 Phase 7										
01.04.2014 31.03.2015 Phase 8										
01.04.2015 31.03.2016 Phase 9										
01.04.2016 31.03.2017 Phase 10										
01.04.2017 31.03.2018 Phase 11										
01.04.2018 31.03 2019 Phase 12										
01.04.2019 31.12.2019 Phase 13										
01.01.2020 31.12.2020 Phase 14										
01.01.2021 31.12.2021 Phase 15										
01.01.2022 31.31.2022 Phase 16										
Total	0	0	0	0	0	0	0	0	0	0

4. Control of Selected Non Native Species.

Magallana gigas

Table 4.2 shows Ma*gallana gigas* control data since Natural England commissioned a control pilot in 2011. This was followed by the launch of Natural England's Coastbusters volunteer team in 2012 and in 2018 KWT launched their Coastbusters team. Oysters removed are counted by individual specimen. Only live, attached, oysters are counted.

Table 4.2 *Magallana gigas* control data since launch in 2011

Natural England Team					KWT Team				
NEKMPA Section	Mg Removed	Mg Manhours	Mg H&S Incidents	Mg Chalk Reef Impacts	NEKMPA Section	Mg Removed	Mg Manhours	Mg H&S Incidents	Mg Chalk Reef Impacts
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
10					10				
11					11				
12					12				
13					13				
14					14				
15					15				
16					16				
17					17				
18					18				
18					19				
20					20				
21					21				
22					22				
23					23				
24					24				
25					25				
26	5848	59.5	0	2	26				
27	13195	76.2	0	5	27				
28	3917	80.75	0	3	28				
29					29				
30					30				
31	2944	18	0	1	31				
32	47	2.75	0	7	32				
33	143	4.5	0	0	33				
34 Harbour	5153	88.75	1	0	34 Harbour				
35	212437	889.75	2	33	35				
36	46946	235.25	0	5	36				
37	3787	23.25	0	0	37				
38					38				
39					39				
40					40				
41					41				
42					42				
43					43				
44					44				
45					45				
46					46				
Total	294417	1478.7	3	56	Total				

4. Control of Selected Non Native Species.

Sargassum muticum

Table 4.3 shows *Sargassum muticum* control data since Natural England commissioned a control pilot in 2011. This was followed by the launch of Natural England's Coastbusters volunteer team in 2012 and in 2018 KWT launched their Coastbusters team. Sargassum removed is counted by wet weight (kg). Only live, attached, specimens are counted.

Table 4.3 *Sargassum muticum* control data since control launch in 2011.

Natural England Team					KWT Team				
NEKMPA Section	Sm Removed Kg	Sm Manhours	Sm H&S Incidents	Sm Chalk Reef Impacts	NEKMPA Section	Sm Removed Kg	Sm Manhours	Sm H&S Incidents	Sm Chalk Reef Impacts
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
10					10				
11					11				
12					12				
13					13				
14					14				
15					15				
16	55.3	7.5	0	0	16				
17					17				
18					18				
18					19				
20					20				
21					21				
22					22				
23					23				
24					24				
25					25				
26					26				
27					27				
28					28				
29					29				
30					30				
31	1197.22	46.5	0	0	31				
32					32				
33					33				
34 Harbour					34 Harbour				
35					35				
36					36				
37					37				
38					38				
39					39				
40					40				
41					41				
42					42				
43					43				
44					44				
45					45				
46					46				
Total	1252.52	54	0	0	Total				

4. Control of Selected Non Native Species.

Didemnum vexillum

Best practices for *Didemnum vexillum* control have not been designed or agreed with Natural England. No control measures have therefore been undertaken. This is reflected in Table 4.4.

Table 4.4 *Didemnum vexillum* control data since control launch in 2011.

Natural England Team					KWT Team				
NEKMPA Section	Dv Removed Kg	Dv Manhours	Dv H&S Incidents	Dv Chalk Reef Impacts	NEKMPA Section	Dv Removed Kg	Dv Manhours	Dv H&S Incidents	Dv Chalk Reef Impacts
1					1				
2					2				
3					3				
4					4				
5					5				
6					6				
7					7				
8					8				
9					9				
10					10				
11					11				
12					12				
13					13				
14					14				
15					15				
16					16				
17					17				
18					18				
18					19				
20					20				
21					21				
22					22				
23					23				
24					24				
25					25				
26					26				
27					27				
28					28				
29					29				
30					30				
31					31				
32					32				
33					33				
34 Harbour					34 Harbour				
35					35				
36					36				
37					37				
38					38				
39					39				
40					40				
41					41				
42					42				
43					43				
44					44				
45					45				
46					46				
Total					Total				

4. Control of Selected Non Native Species.

Eriocheir sinensis

Best practices for *Eriocheir sinensis* control have not been designed or agreed with Natural England. No control measures have therefore been undertaken. This is reflected in Table 4.5.

Table 4.5 *Eriocheir sinensis* control data since control launch in 2011.

Natural England Team				
NEKMPA Section	Es Removed	Es Manhours	Es H&S Incidents	Es Chalk Reef Impacts
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
18				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34 Harbour				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
Total				

KWT Team				
NEKMPA Section	Es Removed	Es Manhours	Es H&S Incidents	Es Chalk Reef Impacts
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34 Harbour				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
Total				

4. Control of Selected Non Native Species.

Undaria pinnatifida

Best practices for *Undaria pinnatifida* control have not been designed or agreed with Natural England. No control measures have therefore been undertaken. This is reflected in Table 4.6.

Table 4.6 *Undaria pinnatifida* control data since control launch in 2011

Natural England Team				
NEKMPA Section	Up Removed Kg	Up Manhours	Up H&S Incidents	Up Chalk Reef Impacts
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
18				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34 Harbour				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
Total				

KWT Team				
NEKMPA Section	Up Removed Kg	Up Manhours	Up H&S Incidents	Up Chalk Reef Impacts
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34 Harbour				
35				
36				
37				
38				
39				
40				
41				
42				
43				
44				
45				
46				
Total				

5. Summary of Management Group Action Points for Non Native Species

5. Summary of Management Group Action Points for Non Native Species.

NORTH EAST KENT MARINE PROTECTED AREA
Incorporating the North East Kent European Marine Sites (NEKEMS) and Marine Conservation Zone (MCZ)
MANAGEMENT SCHEME 2013-2018 ACTION PLAN

Species Management and Control

To launch the Current Account process this summary was compiled from the latest available version of the NEKMPA Management Scheme Action Plan (version 2013-2018). The Action Plan for 2019-2024 is currently under preparation. Text in black font is copied directly from the Management Scheme Action Plan. Text in red font is an update provided by agents responsible for the action point.

Species Management and Control: Item 2

Action Use
the non-native species baseline survey (of 5 species currently posing the greatest threat across the NEKMPA) results to target management measures to bring at least 50% of the site under active management for the following priority invasive species: Pacific Oysters Crassostrea gigas and seaweed Sargassum.

Type of Action
On ground

Timescale/Deadline for Action April
2013 onwards **Responsibility**
NE- Guillieta Holly/Ingrid Chudleigh TDC/NEKMPA – Tony Child

Progress Update
Pacific Oyster: Since 2012, control has taken place in 10 NEKMPA sections. This equates to 21.7% of NEKMPA. See Current Account register page 4.3 for details.
Sargassum: Since 2012, control has taken place in 2 NEKMPA sections. This equates to 4.4% of the NEKMPA. See Current Account register page 4.4 for details. (Willie McKnight)

Species Management and Control: Item 3

Action
Repetition of the baseline non-native species survey to be undertaken every three years.

Type of Action
Monitoring

Timescale/Deadline for Action 2016
Responsibility NE-
Willie McKnight **Progress**
Update The baseline
survey (46Km) took nearly 2 years to compile so a 3 year cycle is not feasible. Instead Natural England are training surveyors (staff and volunteers) in baseline methodology. NE will then deploy trained surveyors to priority sections. 11 surveyors have been trained so far. The data set will be maintained by NE. (Willie McKnight)

Species Management and Control: Item 4

Action
Monitor the spread of Carpet Sea squirt (Didemnum vexillum) across the NEKMPA and involve relevant organisations (Defra etc) if any management measures are required.
Type of Action
Monitoring
Timescale/Deadline for Action
Ongoing
Responsibility
MG – All
Progress Update
Baseline details *of Didemnum vexillum* are shown on pages 2.2, 2.4 and 2.5 of the Current Account Register. This includes a new site added on 23.06.15 at Minnis Bay, Section 16. (Willie McKnight)

Species Management and Control: Item 5

Action
Continue to monitor and implement agreed management measures for Pacific Oysters within the NEKMPA with the help of NEKMPA coastal wardens.
Type of Action
Monitoring and on-ground
Timescale/Deadline for Action April
2013 onwards
Responsibility
NE – Willie McKnight/ Guilietta Holly / Ingrid Chudleigh TDC – Tony Child
Progress Update Pacific
oyster distribution and impact data are shown in parts 2 and 3 of the Current Account Register. Pacific oyster control data is shown in part 4 of the Current Account Register. Control field work is ongoing focused on Sections 35 (Western Undercliff), Section 36 (Pegwell) and Section 34 (Ramsgate Harbour). (Willie McKnight)

Species Management and Control: Item 6

Action
Identify and trial control management measures to remove Wireweed (Sargassum muticum) within identified sections of the NEKMPA with the help of NEKMPA coastal wardens.
Type of Action
Research and on-ground
Timescale/Deadline for Action 2013
Responsibility
NEKSCAG – All TDC/NEKMPA – Tony Child / Willie McKnight
Progress Update Best
practices for *Sargassum* control have been agreed with Natural England (2014) and are distributed to Coastbusters volunteers at training sessions. *Sargassum* distribution and impact data are shown in parts 2 and 3 of the Current Account Register. Control data is shown in part 4 of the Current Account Register. Control work has taken place at Minnis Bay (Section 16) and Louisa Bay (Section 31). (Willie McKnight)

5. Summary of Management Group Action Points for Non Native Species.

Species Management and Control: Item 7

Action Study conducted to inform the current distribution and spread of Grateloupia turuturu (red algae) within the NEKMPA

Type of Action

Research and Monitoring

Timescale/Deadline for Action 2014 (NE funding TBC)

Responsibility

NEKSCAG – All NE – Guilietta Holly / Ingrid Chudleigh

Progress Update

Grateloupia turuturu was not included in the baseline selection therefore no baseline data exists. The species is present in Ramsgate harbour. (Willie McKnight)

Species Management and Control: Item 8

Action Non native species studies will be extended to assess the impacts on MCZ features.

Type of Action

Planning

Timescale/Deadline for Action

2015/2015

Responsibility

NE – / Guilietta Holly / Ingrid Chudleigh

Progress Update

Research in progress assessing the condition of inter-tidal Mussel beds in terms of Pacific oyster settlement. (Willie McKnight)

Appendix A
Description of Selected Non Native Species

Table A.1 lists the species currently included in the register and shows, per species, if an Identification Sheet is available to view and download from the GB NON NATIVE SPECIES SECRETARIAT website: http://www.nonnativespecies.org/home/index.cfm
Follow links Homepage/Species Information/Species ID Sheets.

Table A.1. Species currently included in the Current Account register.

Common Name	Scientific Name	Date added to Register	Identification Sheet Available
Pacific Oyster	*Magallana gigas*	August 2011	No (see note 1)
Wireweed	*Sargassum muticum*	August 2011	Yes
Carpet Sea Squirt	*Didemnum vexillum*	August 2011	Yes
Chinese Mitten Crab	*Eriocheir sinensis*	August 2011	Yes
Wakame	*Undaria pinnatifida*	August 2011	Yes
Note 1: ID sheet not available but an information sheet can be accessed via http://www.nonnativespecies.org/factsheet/factsheet.cfm?speciesId=1013			

Appendix B
Location of NEKMPA Sections

Table B.1 shows the location and boundaries of the 46 NEKMPA Sections using Ordnance Survey Eastings and Northings derived from OS Sheet TR.

Table B.1 Location and boundaries of NEKMPA Sections

Section Number	OS TR Eastings	OS TR Northings	Aspect	TCP Equivalent Section
1	13000 to 13999		N	Section 1: Swalecliffe
2	14000 to 14999		N	Section 1: Swalecliffe
3	15000 to 15999		N	Section 1: Swalecliffe
4	16000 to 16999		N	Excluded from NEKEMS
5	17000 to 17999		N	Excluded from NEKEMS
6	18000 to 18999		N	Section 7: Bishopstone
7	19000 to 19999		N	Section 7: Bishopstone
8	20000 to 20999		N	Section 8A: Reculver West
9	21000 to 21999		N	Section 8B: Reculver East
10	22000 to 22999		N	Section 9A: Reculver to Coldharbour
11	23000 to 23999		N	Section 9A: Reculver to Coldharbour
12	24000 to 24999		N	Section 9A: Reculver to Coldharbour
13	25000 to 25999		N	Section 9B: Coldharbour
14	26000 to 26999		N	Section 9C: Plumpudding
15	27000 to 27999		N	Section 10: Minnis Bay West
16	28000 to 28999		N	Section 11A: Minnis Bay East
17	29000 to 29999		N	Section 11B+11C: Grenham + Beresford
18	30000 to 30999		N	Section 12A: Epple Bay
19	31000 to 31999		N	Section 12B + 13: Epple + Westgate
20	32000 to 32999		N	Section 14+15: Westgate + St Mildreds
21	33000 to 33999		N	Section 16+17: St Mildreds + Westbrook Bay
22	34000 to 34999		N	Section 18+19A: Nayland Rock + Margate Bay
23	35000 to 35999		N	Section 19B+20A: Margate Harbour + Fulsam Rock
24	36000 to 36999		N	Section 20B+20C: Newgate Gap + Walpole Bay
25	37000 to 37999		N	Section 21A: Palm Bay
26	38000 to 38999		N	Section 21B+21C: Foreness Bay/Point & Foreness to Botany
27	39000 to 39999		N	Section 21D+21E: Botany Bay + Whiteness
28		70000 to 70999	E	Section 21F+22A: Kingsgate Bay & Joss Bay
29		69000 to 69999	E	Section 22B: North Foreland
30		68000 to 68999	E	Section 22C+22D: Stone Bay + Broadstairs East Cliff
31		67000 to 67999	E	Section 22E+23A: Viking Bay + Louisa Bay
32		66000 to 66999	E	Section 23B+23C: Dumpton Point + Dumpton Gap
33		65000 to 65999	E	Section 23D+24: Winterstoke + Ramsgate Main Sands
34		64000 to 64999	SE	Section 24+25: Ramsgate Sands & Harbour
35		63000 to 64999	S	Section 26: Western Undercliff
36		63000 to 64999	E	Section 26 and 27: Western Undercliff to Pegwell
37		63000 to 64999	E	Section 28: Pegwell Country Park & Saltmarsh
38		62000 to 62999	E	Section 30A: Sandwich Bay North
39		61000 to 61999	E	Section 30A: Sandwich Bay North
40		60000 to 69999	E	Section 30A: Sandwich Bay North
41		59000 to 59999	E	Section 30B: Sandwich Bay Mid
42		58000 to 58999	E	Section 30B: Sandwich Bay Mid
43		57000 to 57999	E	Section 30B + 30C: Sandwich Bay Mid + Sandwich Bay South
44		56000 to 56999	E	Section 30C: Sandwich Bay South
45		55000 to 55999	E	Section 30C: Sandwich Bay South
46		54000 t0 54999	E	Section 30C: Sandwich Bay South

Appendix C
Documentation Control

Appendix C. Documentation Control

Table C.1 shows the current status of each page of the register in terms of the date created.

Table C.1 Current page status

Content	Page	Current Status
1	1.1 Introduction	Issue 1: 31 December 2019
1	1.2 Introduction	Issue 1: 31 December 2019
2	2.1 Distribution and Impact by Selected Non Native Species	Issue 1: 31 December 2019
2	2.2 Distribution and Impact by Selected Non Native Species	Issue 1: 31 December 2019
2	23 Distribution and Impact by Selected Non Native Species	Issue 1: 31 December 2019
2	2.4 Distribution and Impact by Selected Non Native Species	Issue 1: 31 December 2019
2	2.5 Distribution and Impact by Selected Non Native Species	Issue 1: 31 December 2019
3	3.1 Distribution and Impact by NEKMPA Section	Issue 1: 31 December 2019
3	3.2 Distribution and Impact by NEKMPA Section 1	Issue 1: 31 December 2019
3	3.3 Distribution and Impact by NEKMPA Section 2	Issue 1: 31 December 2019
3	3.4 Distribution and Impact by NEKMPA Section 3	Issue 1: 31 December 2019
3	3.5 Distribution and Impact by NEKMPA Section 4	Issue 1: 31 December 2019
3	3.6 Distribution and Impact by NEKMPA Section 5	Issue 1: 31 December 2019
3	3.7 Distribution and Impact by NEKMPA Section 6	Issue 1: 31 December 2019
3	3.8 Distribution and Impact by NEKMPA Section 7	Issue 1: 31 December 2019
3	3.9 Distribution and Impact by NEKMPA Section 8	Issue 1: 31 December 2019
3	3.10 Distribution and Impact by NEKMPA Section 9	Issue 1: 31 December 2019
3	3.11 Distribution and Impact by NEKMPA Section 10	Issue 1: 31 December 2019
3	3.12 Distribution and Impact by NEKMPA Section 11	Issue 1: 31 December 2019
3	3.13 Distribution and Impact by NEKMPA Section 12	Issue 1: 31 December 2019
3	3.14 Distribution and Impact by NEKMPA Section 13	Issue 1: 31 December 2019
3	3.15 Distribution and Impact by NEKMPA Section 14	Issue 1: 31 December 2019
3	3.16 Distribution and Impact by NEKMPA Section 15	Issue 1: 31 December 2019
3	3.17 Distribution and Impact by NEKMPA Section 16	Issue 1: 31 December 2019
3	3.18 Distribution and Impact by NEKMPA Section 17	Issue 1: 31 December 2019
3	3.19 Distribution and Impact by NEKMPA Section 18	Issue 1: 31 December 2019
3	3.20 Distribution and Impact by NEKMPA Section 19	Issue 1: 31 December 2019
3	3.21 Distribution and Impact by NEKMPA Section 20	Issue 1: 31 December 2019
3	3.22 Distribution and Impact by NEKMPA Section 21	Issue 1: 31 December 2019
3	3.23 Distribution and Impact by NEKMPA Section 22	Issue 1: 31 December 2019
3	3.24 Distribution and Impact by NEKMPA Section 23	Issue 1: 31 December 2019
3	3.25 Distribution and Impact by NEKMPA Section 24	Issue 1: 31 December 2019
3	3.26 Distribution and Impact by NEKMPA Section 25	Issue 1: 31 December 2019
3	3.27 Distribution and Impact by NEKMPA Section 26	Issue 1: 31 December 2019
3	3.28 Distribution and Impact by NEKMPA Section 27	Issue 1: 31 December 2019
3	3.29 Distribution and Impact by NEKMPA Section 28	Issue 1: 31 December 2019
3	3.30 Distribution and Impact by NEKMPA Section 29	Issue 1: 31 December 2019
3	3.31 Distribution and Impact by NEKMPA Section 30	Issue 1: 31 December 2019
3	3.32 Distribution and Impact by NEKMPA Section 31	Issue 1: 31 December 2019

Appendix C. Documentation Control

Content	Page	Current Status
3	3.33 Distribution and Impact by NEKMPA Section 32	Issue 1: 31 December 2019

3	3.34 Distribution and Impact by NEKMPA Section 33	Issue 1: 31 December 2019
3	3.35 Distribution and Impact by NEKMPA Section 34	Issue 1: 31 December 2019
3	3.36 Distribution and Impact by NEKMPA Section 35	Issue 1: 31 December 2019
3	3.37 Distribution and Impact by NEKMPA Section 36	Issue 1: 31 December 2019
3	3.38 Distribution and Impact by NEKMPA Section 37	Issue 1: 31 December 2019
3	3.39 Distribution and Impact by NEKMPA Section 38	Issue 1: 31 December 2019
3	3.40 Distribution and Impact by NEKMPA Section 39	Issue 1: 31 December 2019
3	3.41 Distribution and Impact by NEKMPA Section 40	Issue 1: 31 December 2019
3	3.42 Distribution and Impact by NEKMPA Section 41	Issue 1: 31 December 2019
3	3.43 Distribution and Impact by NEKMPA Section 42	Issue 1: 31 December 2019
3	3.44 Distribution and Impact by NEKMPA Section 43	Issue 1: 31 December 2019
3	3.45 Distribution and Impact by NEKMPA Section 44	Issue 1: 31 December 2019
3	3.46 Distribution and Impact by NEKMPA Section 45	Issue 1: 31 December 2019
3	3.47 Distribution and Impact by NEKMPA Section 46	Issue 1: 31 December 2019
4	4.1 Control of Selected Non Native Species	Issue 1: 31 December 2019
4	4.2 Control: Annual Progress	Issue 1: 31 December 2019
4	4.3 Control: *Magallana gigas*	Issue 1: 31 December 2019
4	4.4 Control: *Sargassum muticum*	Issue 1: 31 December 2019
4	4.5 Control: *Didemnum vexillum*	Issue 1: 31 December 2019
4	46 Control: *Eriocheir sinensis*	Issue 1: 31 December 2019
4	4.7 Control: *Undaria pinnatifida*	Issue 1: 31 December 2019
5	5.1 Summary of Management Group Action Points for NNS	Issue 1: 31 December 2019
5	5.2 Summary of Management Group Action Points for NNS	Issue 1: 31 December 2019
5	5.3 Summary of Management Group Action Points for NNS	Issue 1: 31 December 2019
5	5.4 Summary of Management Group Action Points for NNS	Issue 1: 31 December 2019
Appendix A	A.1 Description of Selected Non Native Species.	Issue 1: 31 December 2019
Appendix A	A.2 Description of Selected Non Native Species.	Issue 1: 31 December 2019
Appendix B	B.1 Location of NEKMPA Sections	Issue 1: 31 December 2019
Appendix B	B.2 Location of NEKMPA Sections	Issue 1: 31 December 2019
Appendix C	C.1 Documentation Control	Issue 1: 31 December 2019
Appendix C	C.2 Documentation Control	Issue 1: 31 December 2019
Appendix C	C.3 Documentation Control	Issue 1: 31 December 2019

Table C.1 Current page status